

**ASIAN REGION**

**DATA COLLECTION SURVEY  
ON  
FOOD VALUE CHAIN DEVELOPMENT  
IN  
WITH/POST-COVID-19 SOCIETY  
IN  
THE SOUTH-EAST ASIAN REGION  
  
FINAL REPORT**

**MARCH 2022**

**JAPAN INTERNATIONAL COOPERATION AGENCY  
(JICA)**

**SANYU CONSULTANTS INC. (SCI)  
ORIENTAL CONSULTANTS GLOBAL CO., LTD.  
(OCG)**

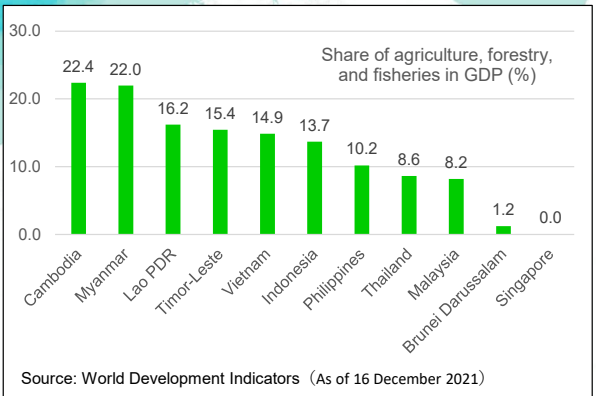


# Location Map of the Survey Area



	Causes	Deaths	Cases per Million	Deaths per Million
Global	308,458,509	5,492,595	39,574	705
Philippines	2,998,530	52,293	27,364	477
Indonesia	4,267,451	144,144	15,602	527
Timor-Leste	19,860	122	15,063	93
Malaysia	2,788,860	31,696	86,166	979
Thailand	2,284,609	21,850	32,731	313
Myanmar	532,167	19,293	9,781	355
Viet Nam	1,914,393	34,531	19,667	355
Cambodia	120,636	3,015	7,216	180
Lao PDR	119,521	448	16,428	62
Singapore	286,397	838	48,954	143
Brunei Darussalam	15,678	59	35,837	135

Note: WHO COVID-19 Dashboard and CSIS Southeast Asia Program (As of 11th January 2022)





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## **ACRONYMS AND ABBREVIATIONS**

ACC	ASEAN Coordinating Council
ACIA	ASEAN Comprehensive Investment Agreement
ACIAR	Australian Centre for International Agricultural Research
ACPHEED	ASEAN Centre for Public Health Emergencies and Emerging Diseases
ACRF	ASEAN Comprehensive Recovery Framework
ADB	Asian Development Bank
AEC	ASEAN Economic Community
AEO	Authorized Economic Operator
AEM	ASEAN Economic Ministers
AFAS	ASEAN Framework Agreement on Services
AFIP	Agri-Food Innovation Park (Singapore)
AFTA	ASEAN Free Trade Area
AI	Artificial Intelligence
AMPF	Agricultural Marketing Platform
AR	Augmented Reality
ARISE	Accelerated Recovery and Investments Stimulus for the Economy (Philippines)
ASC	Aquaculture Stewardship Council
ASEAN	Association of Southeast Asian Nations
ASF	African Swine Fever
ASW	ASEAN Single Window
ATCCT	ASEAN Tourism Crisis Communications Team
ATIGA	ASEAN Trade in Goods Agreement
ATISA	ASEAN Trade in Services Agreement
ATM	ASEAN Tourism Ministers
BAPPENAS	Ministry of National Development Planning Agency (Indonesia: Badan Perencanaan dan Pembangunan Daerah)
BAPPEDA	Regional Development Planning Agency (Indonesia: Badan Perencana Pembangunan Daerah)
BAPTC	Benguet Agri Pinoy Trading Center (Philippines)
BCG	Bio, Circular, Green (economy) (Thailand's policy)
BPS	Statistics Indonesia (Indonesian: Badan Pusat Statistik)
B2B (BtoB)	Business to Business
B2C (BtoC)	Business to Consumer
CBDC	Central Bank Digital Currency
CBT	Computer Based Testing
CBTA	Cross-border Transportation Agreements
C2C (CtoC)	Consumer to Consumer
CLMV	Cambodia, Lao PDR, Myanmar, and Viet Nam
COO	Certificates of Origin
COVID-19	Coronavirus Disease 2019
CP	Charoen Pokphand
CPD	Cooperative Promotion Department (Thailand)
CPI	Consumer Price Index
CSIS	Center for Strategic and International Studies
CSR	Corporate Social Responsibility
CQ	Community Quarantine
DA	Department of Agriculture (Philippines)
DAFO	District Agriculture and Forestry Office (Lao PDR)
DARD	Department of Agriculture and Rural Development (Viet Nam)

DENR	Department of Environment and Natural Resources (Philippines)
DEPA	Digital Economy Promotion Agency (Thailand)
DGH	Directorate General of Horticulture, Ministry of Agriculture (Indonesia)
DOLE	Department of Labor and Employment (Philippines)
DTI	Department of Trade and Industry (Philippines)
DX	Digital Transformation
EC, E-Commerce	Electronic commerce
EC	Electrical Conductivity
E-CIS	Electronic Certificate Information System
ECQ	Enhanced Community Quarantine (Philippines)
EDI	Electric Data Interchange
EEC	Eastern Economic Corridor (Thailand)
EEZ	Exclusive Economic Zone
EU	European Union
ERIA	Economic Research Institute for ASEAN and East Asia
FAO	Food and Agriculture Organization of the United Nation
FFEDIS	Farmers and Fisherfolk Enterprise Development Information System
FAOSTAT	Food and Agriculture Organization Corporate Statistical Database
FFRS	Farmers' and Fisherfolk's Registry System
FMD	Foot and Mouth Disease
FTA	Free Trade Agreement
FTI	Food Terminal Inc. (Philippines)
FVC	Food Value Chain
GAP	Good Agriculture Practice
GAqP	Good Aquaculture Practices
GCQ	General Community Quarantine (Philippines)
GDP	Gross Domestic Products
GHP	Good Hygiene Practices
GMP	Good Manufacturing Practices
GMS	Greater Mekong Sub-system
GSO	General Statistics Office (Viet Nam)
GSP	Generalized System of Preferences
HACCP	Hazard Analysis and Critical Control Points
HoReCa	Hotel, Restaurant, Café/Catering
IATA	International Air Transport Association
IATF	Inter-Agency Task Force for the Management of Emerging Infectious Diseases
ICT	Information and Communication Technology
IJHOP4-2	Public-Private-Partnership Project for the Improvement of the Agriculture Product Marketing and Distribution System (IJHOP4), Phase 2.
ILO	International Labor Organization
IMF	International Monetary Fund
I/O	Input/ Output
IoT	Internet of Things
ISSCAAP	International Standard Statistical Classification of Aquatic Animals and Plants
ITC	International Trade Center
ITU	International Telecommunication Union
IUU	Illegal, Unreported and Unregulated
JETRO	Japan External Trade Organization
JFP	Jakarta Fishing Port
JICA	Japan International Cooperation Agency

JOJMEC	Japan Oil, Gas and Metals National Corporation
LFPR	Labor force participation rate
LGU	Local Government Unit
LIB-SI	The Lead Implementing Body for Sustainable Infrastructure
LIMS	Laboratory Information Management System
LMS	Learning Management System
LoRaWAN	Long Range Wide Area Network
LPWN	Low Power Wide Area
MaaS	Mobility as a Service
MACCS	Myanmar Automated Cargo Clearance System
MARD	Ministry of Agriculture and Rural Development (Viet Nam)
MDES	Ministry of Digital Economy and Society (Thailand)
MECQ	Modified Enhanced Community Quarantine (Philippines)
METI	Ministry of Economy, Trade and Industry (Japan)
MFI	Micro Finance Institutions
MGB	Mines and Geosciences Bureau (Philippines)
MGCQ	Modified General Community Quarantine (Philippines)
MICT	Ministry of Information and Communication Technology (Thailand)
MoA	Ministry of Agriculture (Cambodia)
MOAC	Ministry of Agriculture and Cooperatives (Thailand)
MOU	Memorandum of Understanding
MT	Modern Trade
NEDA	National Economic and Development Authority, Philippines (Philippines)
NPK	Nitrogen, Phosphoric acid, Kalium
NSW	National Single Window
NTB	Non-Tariff Barrie
NVAT	Nueva Vizcaya Agricultural Terminal (Philippines)
OA	Organic Agriculture
OECD	Organization for Economic Co-operation and Development
OFW	Overseas Filipino. Workers (Philippines)
PAA	Philippine Association of Agriculturists, Inc.
PAFO	Provincial Agriculture and Forestry Office
PCR	Polymerase Chain Reaction
PDM	Project Design Matrix
pH	Potential of Hydrogen
PhP	Philippines Pesos
PO	Plan of Operation
POC	Proof of Concept
PPE	Personal Protective Equipment
PPP	Purchasing Power Parity
PRRS	Porcine Reproductive and Respiratory Syndrome
PSA	Philippine Statistics Authority (Philippines)
QR (Code)	Quick Response
RISMA	The Australia Indonesia Partnership for Promoting Rural Incomes through Support for Markets in Agriculture
RRMS	ASEAN Regional Reserve of Medical Supplies for Public Health Emergencies
RSBSA	Registry System for Basic Sectors in Agriculture
SATREPS	Science and Technology Research Partnership for Sustainable Development
SDGs	Sustainable Development Goals
SFC	Smart Food Chain

SFF	Small farmers and fisherfolks
SIM	Subscriber Identity Module
SIP	Cross-ministerial Strategic Innovation Promotion Program
SIPA	Software Industry Promotion Agency (Thailand)
SME	Small and Medium-sized Enterprise
SMEE	Continuous Training and Subject Matter Experts Exchange
SMS	Short Message Service
SNS	Social Network Service
SPS	Sanitary and Phytosanitary Requirements
TT	Traditional Trade
UNCTAD	United Nations Conference on Trade and Development
UNs	United Nations
UNICEF	United Nations International Children’s Emergency Fund
USA	United States of America
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
UNDP	United Nations Development Programme
VC	Value Chain
VietGAP	Good Agricultural Practice in Viet Nam (Basic GAP)
VND	Viet Nameese đồng
VR	Virtual Reality
WB	World Bank
WFP	World Food Programme
WHO	World Health Organization
WiFi	Wireless Fidelity
WPP	Wilayah Pengelolaan Perikanan (Indonesia)
WTO	World Trade Organization

#### UNIT CONVERSION

1 lb (pound)	0.453 592 kg
1 kilogram	2.205 pounds
1 gallon	4.5461 litre
1 litre	0.2200 gallon
1 inch (in.)	2.54 cm
1 feet (ft.)	30.5 cm
1 meter	3.279 feet
1 kilometer	0.621 mile
1 mile	1.601 kilometer
1 acre (ac)	0.40468 ha
1 hectare (ha)	2.471 ac

#### CURRENCY CONVERSION (AS AT JANUARY 2022)

Country	Unit	Yen	US\$	1/US\$
US	1 US\$	114.674	1.0000000	1.0000
Viet Nam	1 VND	0.00503	0.0000439	22,798
Indonesia	1 IDR	0.00870	0.0000759	13,181
Lao PDR	1 LAK	0.01043	0.0000910	10,995
Thailand	1 THB	3.42464	0.0298641	33.485
Philippines	1 PHP	2.28697	0.0199432	50.142

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# **PART I**

## **COVID-19 Impact Survey for Food Value Chain (FVC)**



## CHAPTER 1 RATIONAL AND GOAL OF THE SURVEY

### 1.1 Rationale of the Survey

Since early 2020, the COVID-19 has been spreading around the world, including in Southeast Asian countries. Governments across Southeast Asia have implemented various social and economic policies/measures in response to the COVID-19 pandemic including lockdowns. These policies/measures have significantly impacted the food value chains (FVCs) of these countries, which covers production, transportation, processing, sales, and import/export of agriculture produces.

The Japan International Cooperation Agency (JICA) has been supporting the agriculture and rural development in Southeast Asian countries for decades, with the special focus on building capacities of small-scale farmers. In light of the COVID-19 pandemic, JICA has launched the survey in February 2021 to collect and analyze information on the impacts of COVID-19 to the FVCs in Southeast Asian countries. The survey also includes implementation of pilot projects, which aims to mitigate the negative impacts of the COVID-19.

### 1.2 Objectives of the Survey

The objective of this Survey is to identify the impacts of COVID-19 on the FVCs, which have affected on-going and new JICA projects in the Southeast Asian Region. The Survey aims to formulate policy recommendations, with a view to developing resilient FVCs in with/post-COVID-19 Society.

### 1.3 The Survey Area

The target countries for the Survey are 11 countries in Southeast Asia, namely Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Timor-Leste and Viet Nam. The survey team first collected the COVID-19 related information through literature and desk study. Furthermore, 5 countries were selected to undertake field (in-country) surveys.

The 5 countries were selected taking into account the presence of on-going/future JICA projects, geographic features (e.g., maritime/islands country or continental country), and the level of economic development. As a result, Indonesia, the Philippines, Lao PDR, Thailand and Viet Nam were selected as the countries for field survey. (for detail, see sub-chapter 1.5).

### 1.4 Socio-Economic Indicators of the Eleven Countries

To begin a series of surveys, first, socio-economic indicators of the eleven countries are summarized. Table 1.4.1 shows the socio-economic indicators, e.g. population, Gross Domestic Product (GDP) / Gross National Income (GNI), share of GDP by sectors, etc. Indonesia presents by far biggest land area and population size in the Southeast Asia, i.e. land size being about five times and population being about twice more than those of Japan. The population size of the Philippines, Thailand, Myanmar and Viet Nam follows. Malaysia's land size is almost the same as those of the Philippines and Viet Nam though the population size is only one-third those of the two countries. The remaining countries are Timor-Leste, Cambodia and Lao PDR, which are small in terms of their land and population (see Figure 1.4.1).

Figure 1.4.2 shows Gross National Income (GNI) and Gross Domestic Product (GDP) per capita indicated at 2011 PPP USD price<sup>1</sup>. The GNI and GDP per capita (2011 PPP USD price) are very high in Singapore and Brunei Darussalam, attaining almost twice GNI and GDP to those of Japan. Following are Malaysia (around 30,000 USD per capita), Thailand (16,000 USD) and Indonesia (11,000 USD), all of which are already more than 10,000 USD per capita. The Philippines' GNI is also high, i.e. almost

<sup>1</sup> For those GNI and GDP per capita, PPP \$ (2011) equivalent values are entered as such PPP \$ equivalent values can indicate comparative living standard among the countries where the lower CPI a county shows, the higher PPP \$ equivalent value, the country may show.

10,000 USD per capita, while GDP which does not include forex remittance comes to only about 8,000 USD per capita. The other countries show only about half as compared to those of Thailand and Indonesia.

Sector's share in GDP is comparatively shown in Figure 1.4.3 by country-wise. Agriculture sector's share is relatively high in such countries as Cambodia (25%), Myanmar (24%), Lao PDR (21%), followed by Viet Nam (15%), Indonesia (14%), and the Philippines (10%). The other countries show only less than 10% agriculture share in their GDP, and as a matter of fact, the agriculture share of Brunei Darussalam is only about 1% and that of Singapore is almost NIL.

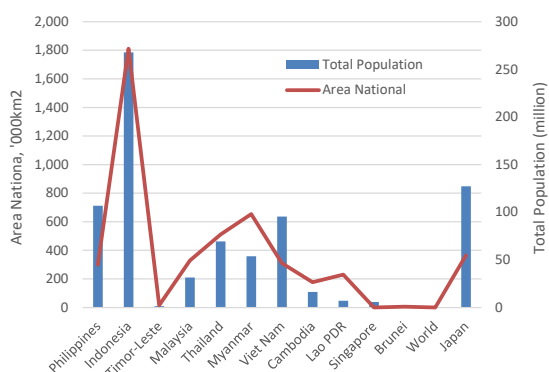
Foreign direct investments are shown in Figure 1.4.4 together with ODA net received as a share percentage to their GDP. Singapore's foreign direct investment ratio comes to the first position with 23% to GDP, followed by Cambodia (13%), Lao PDR (10%), Myanmar (6%) and Viet Nam (6%). On the other hand, looking at the ODA net received, Timor-Leste shows the highest share to the GDP, 10%, followed by Cambodia (4%), Lao PDR (3%), Myanmar (2%) and Viet Nam (1%).

Figures 1.4.5 and 1.4.6 show indicators in health sector; the former reveals sector's expenditure ratio to their GDP, while the latter does mortalities of under-5 years old and infant among 1000 live births. Figure 1.4.5 indicates that the health sector's expenditures of Cambodia, Viet Nam and Myanmar are more than 5% of GDP, while Lao PDR (2.4%) and Brunei Darussalam (2.3%) have used only less than 3% of GDP for the sector. The mortalities are higher in such countries of Lao PDR, Myanmar and Timor-Leste.

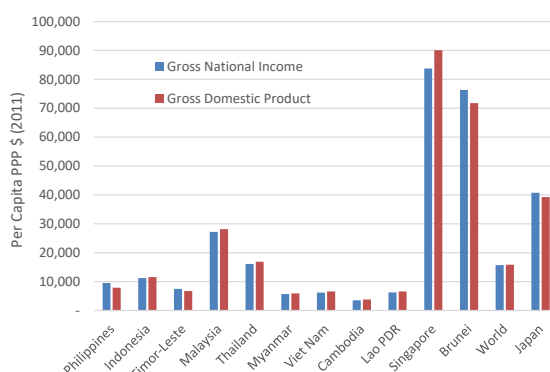
**Table 1.4.1 Socio-economic Indicators for the Eleven Countries (UNDP2019, WB2019, CIA2017)**

Indicators	Philippines	Indonesia	Timor-Leste	Malaysia	Thailand	Myanmar	Viet Nam
Area National (thousand km <sup>2</sup> )	298.2	1,811.6	14.9	328.6	510.9	653.1	310.1
Total population (millions)	106.7	267.7	1.3	31.5	69.4	53.7	95.5
GNI per Capita (2011 PPP USD)	9,540	11,256	7,527	27,227	16,129	5,764	6,220
GDP per Capita (2011 PPP USD)	7,943	11,606	6,796	28,176	16,905	5,922	6,609
Agricultural Sector (% to total)	9.6	13.7	9.1	8.8	8.2	24.1	15.3
Industrial Sector (% to total)	30.6	41.0	56.6	37.6	36.2	35.6	33.3
Service Sector (% to total)	59.8	45.4	34.3	53.6	55.6	40.3	51.4
Foreign D. Investment, Net (% of GDP)	3.0	1.9	0.3	3.0	2.6	6.0	6.3
Net ODA Received (% of GNI)	-	-	10.2	-	0.1	2.4	1.1
Health Expenditure (% of GDP)	4.4	3.1	4.0	3.8	3.7	5.1	5.7
Mortality Rate, infant (per 1,000 live births)	22.2	21.4	40.8	6.7	8.2	38.5	16.7
Mortality Rate, under-five (per 1,000 live births)	28.1	25.4	47.6	7.9	9.5	48.6	20.9
Indicators	Cambodia	Lao PDR	Singapore	Brunei D.	—	World	Japan
Area National (thousand km <sup>2</sup> )	176.5	230.8	0.7	5.3		NI	364.6
Total population (millions)	16.3	7.1	5.8	0.4		0.0	127.2
GNI per Capita (2011 PPP USD)	3,597	6,317	83,793	76,389		15,745	40,799
GDP per Capita (2011 PPP USD)	3,870	6,614	90,091	71,802		15,893	39,294
Agricultural Sector (% to total)	25.3	20.9	0.0	1.2		6.4	1.1
Industrial Sector (% to total)	32.8	33.2	24.8	56.5		30.2	30.1
Service Sector (% to total)	41.9	45.9	75.2	42.3		63.4	68.8
Foreign D. Investment, Net (% of GDP)	12.6	9.5	22.5	3.9		1.5	0.5
Net ODA Received (% of GNI)	4.1	3.0	-	-		0.3	0.0
Health Expenditure (% of GDP)	6.1	2.4	4.5	2.3		10.0	10.9
Mortality Rate, infant (per 1,000 live births)	25.1	48.6	2.2	9.0		28.8	1.9
Mortality Rate, under-five (per 1,000 live births)	29.2	63.4	2.8	10.5		37.7	2.6

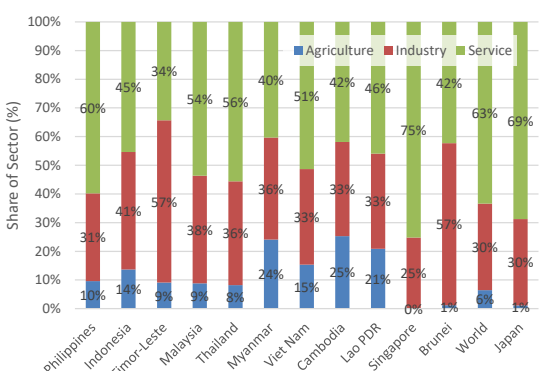
Sources: World Bank (2019 data) for Area National, CIA (2017 data) for GNI, GDP and Sector GDP ratio, UNDP Human Development Data (2019 data) for the others, NI stands for Not Indicated.



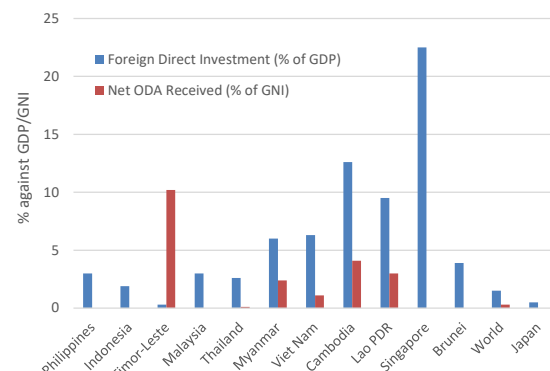
**Figure 1.4.1 Land and Population of the 11 Countries**  
Source: UNDP(2019), WB(2019), CIA(2017)



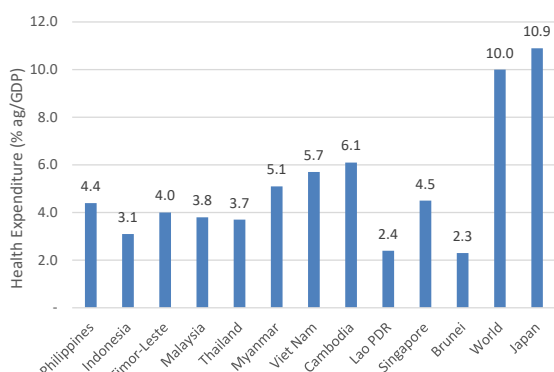
**Figure 1.4.2 GNI and GDP per Capita for the 11 Countries**  
Source: UNDP(2019), WB(2019), CIA(2017)



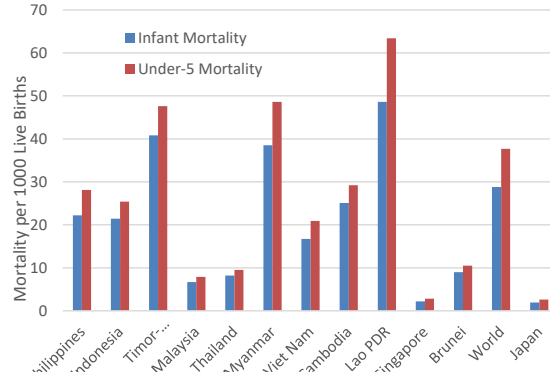
**Figure 1.4.3 Sector Shares in 11 Countries' GDP**  
Source: UNDP(2019), WB(2019), CIA(2017)



**Figure 1.4.4 Direct Foreign Inv. And ODA Net Received**  
Source: UNDP(2019), WB(2019), CIA(2017)



**Figure 1.4.5 Health Sector's Expenditure to GDP**  
Source: UNDP(2019), WB(2019), CIA(2017)



**Figure 1.4.6 Mortalities of Under-5 and Infant among 1000 Live Births**  
Source: UNDP(2019), WB(2019), CIA(2017)

### 1.5 Selection of Target Countries for the Field Survey

The Survey covers eleven Southeast Asian countries including ASEAN countries plus Timor-Leste. The JICA team is to collect information/ data through web and based on available materials and reports/literatures concerning COVID-19 infection status, measures taken, and impacts on food as well as agriculture/livestock/fisheries sectors. The JICA Team also selects five countries, at which series of field surveys including interviews to relevant stakeholders are conducted. Selection of the five countries should consider following points:

- 1) Should have JICA on-going or under-formulation project(s),
- 2) Should be selected considering geographical conditions such as island, continental, or otherwise

inland land-locked,

- 3) Should be selected covering different levels of economic conditions, lower to higher, referring to GNI and GDP per capita (note that Singapore and Brunei Darussalam would not be selected as those economically highly developed countries have little activities for agriculture, and also countries with higher economic development usually have lower agriculture GDP ratio, whereby the selection priority may become low), and
- 4) Should be those countries, to which many Japanese companies have deployed their activities in the sector of agriculture/livestock/fisheries and/or, which have big potential for Japanese companies to embark in future.

### 1.5.1 Countries with JICA On-going Projects or Under-Formation Projects

One of the objectives of the Survey is to identify COVID-19 impacts and deliver recommendations of additional inputs as required for the on-going and under-formulation JICA projects/programs. JICA on-going projects and under-formulation projects in the eleven countries are summarized by type of the schemes in the following table:

**Table 1.5.1 Examples of Recent On-going  
and Under-formulation JICA Projects in Southeast Asian Countries**

County	Scheme	Target Products	Project/Program Title	Schedule
Indonesia	TCP	Horticulture	Public-Private-Partnership Project for the Improvement of the Agriculture Product Marketing and Distribution System (Phase 2)	Jun. 2021 – Jun. 2025
Philippines	TCP	Horticulture	The Project for Improvement on Food Value Chain for Horticulture Crops	Dec. 2021 – Dec. 2026
Myanmar	TCP	Rice	The Project for Improvement on Accessibility of Rice Certified Seed	Oct. 2017 – Apr. 2023
	TCP	Horticulture	Project for Strengthening Horticultural Crop Value Chain through Food Safety Approach	Mar. 2020 – Feb. 2024
	TCP + Yen Loan	Rice	Project for Collaboration between Participatory Irrigation Management and Agricultural Extension	2020 – 2025
		Rice, Beans, Vegetables	Project for Profitable Irrigated Agriculture in Western Bago Region/ Irrigation Development Project in Western Bago Region	Mar. 2016 – Jun. 2021
	PPP	Tomato	Project for Strengthening Horticultural Crop Value Chain through Food Safety Approach	Mar. 2020 – Feb. 2024
Cambodia	TCP	Rice	The Project for Rice Seed Production and Distribution	Nov. 2017 – Nov. 2022
Lao PDR	TCP	Vegetables, Fruits	Clean Agriculture Development Project	Nov. 2017 – Nov. 2022
		Rice, Vegetables, Fruits	Participatory Agriculture Development in Savannakhet Province	Jun. 2017 – Jun. 2022
		Agr. commodities General	Project for Strengthening Food Value Chain	Mar. 2022 – Feb. 2025 (planned)
Timor-Leste	TCP	Rice	Project for Increasing Farmers Households' Income through Strengthening Domestic Rice Production in Timor-Leste	Sep. 2016 – Dec. 2023
Viet Nam	TCP	Vegetables, Fruits	Project for Strengthening Safe Crop Value Chains in Northern Viet Nam	Apr. 2022 – Apr. 2026 (planned)
ASEAN Courtiers	TCP	Agr. commodities General	ASEAN-JICA FVC Development Project (TBC)	2022 – 2024 (planned)
Indonesia	TCP	Vegetables, Fruits	Public-Private-Partnership Project for the Improvement of the Agriculture Product Marketing and Distribution System	Mar. 2016 – Mar. 2021
	PPP	Vegetables	SDGs Business Model Formulation Survey with the Private Sector for the Establishment of Production and Marketing System for Scientifically-assured High Quality Vegetables through Introducing the Soil	Mar. 2019 – Jun. 2020

County	Scheme	Target Products	Project/Program Title	Schedule
			Improvement Method by Ripened Compost in Indonesia	
Myanmar	PPP	Vegetables	Verification Survey with the Private Sector for Disseminating Japanese Technologies for Quality Seed Production, Processing and Sales Project for Intensive Agriculture in Myanmar	Nov. 2018 – Oct. 2021
		Herbs, Millets	Feasibility Survey for SDGs Business on Organic Herbs and Millet Production and Sales to Improve Income and Health of Low-income Farmers	Dec. 2017 – Jan. 2020
		Strawberry, Mango	Verification Survey with the Private Sector for Disseminating Japanese Technologies for Processing and Packing for Value Chain Development	Aug. 2018 – Mar. 2021
Viet Nam	TCP	Vegetables, Fruits	Project for improvement of reliability of safe crop production in the northern region	Jul. 2016 – Jul. 2021
	PPP	Shrimp	Project survey on improving shrimp farming productivity through natural harmonized aquaculture technology	May 2019 – Feb. 2021
		Fisheries	SDGs Business Model Formulation Survey with the Private Sector for the Establishment of Value Chain on Fisheries Product in Danang City	Mar. 2017 – Feb. 2020
		Beef Cattle	SDGs Business Model Formulation Survey with the Private Sector for Sustainable Beef Cattle Farming in Viet Nam	Jul. 2019 – Jul. 2020

Note: TCP stands for (JICA) Technical Cooperation Project, PPP is Public Private Partnership, TBC is To Be Confirmed.  
Source: JICA Survey Team based on published materials from JICA HP, JICA e-library

The upper part of the table mentioned above such projects/programs, which are to complete after early 2022, while the lower part summarizes those that have been completed or are scheduled to complete within 2020 or 2021 corresponding to the schedule of the Survey. The table indicates that horticulture related technical cooperation project is to start in 2021 in Indonesia and the Philippines, and there are such projects in Myanmar, Cambodia and Lao PDR, whose completions are scheduled beyond early 2022. Further, in Indonesia and Viet Nam, some projects had been recently implemented or others are on-going as of year 2020.

### 1.5.2 Selection with Reference to Geographical Conditions of the Countries

Agricultural products, livestock products and fisheries commodities vary according to the geographical conditions of the countries; namely, by topography, soil condition, with/without coastal lines, climate condition, etc. Likewise, import/export condition for those produces varies according to the geography wherein the country is located. Thus, magnitude of COVID-19 impacts on the FVC depends on the geographical condition, accordingly, such conditions shall be taken into account in selecting the target countries. Following table organizes the countries first by island or continental, and the latter further by the accessibility to marine.

**Table 1.5.2 Geography of the Countries (Island, Continental, or Land-locked)**

County	Island Counties	Continental Countries		Remarks
		Accessible to Marine	Land-locked	
Philippines	○			
Indonesia	○			
Timor-Leste	○			
Malaysia	○			*1
Thailand		○		
Myanmar		○		
Viet Nam		○		
Cambodia		○		
Lao PDR			○	

County	Island Counties	Continental Countries		Remarks
		Accessible to Marine	Land-locked	
Singapore	-	-	-	*2
Brunei Darussalam	-	-	-	*2

\*1: Malay peninsula, a part of Indochina peninsula, belongs to island country category from the view point of climate and culture (<https://www.y-history.net/appendix/wh0202-003.html>)

\*2: Singapore and Brunei Darussalam are excluded from this examination as the agriculture related activities are very little in the 2 countries.

Source: JICA Survey Team

Lao PDR is the only land-locked country, which does not have accessibility to coastal area, implying the country could be selected one of the target countries for the field survey if other conditions are met. Island country group has 4 countries while there are also 4 countries accessible to coastal areas within the continental country group. Thus, 2 countries each may be selected from the former group as well as from the latter group.

### 1.5.3 Selection with Reference to the Level of Economic Development

A diversified agricultural modality would take place based on the development stage of the country's economy, e.g., production-oriented agriculture for staple foods prevalent in a developing country vs. value added agriculture including horticulture/ fruits production and those processing as well in a somewhat developed country. Therefore, the countries for the field survey should be decided referring to the level of economic development.

Level of development may be substituted by a level of participation to production network as practiced by ERIA<sup>2</sup>, substituted by per-capita income by the World Bank<sup>3</sup>, etc. In this report, reference to the level of GNI and GDP per capita indicated at 2011 PPP USD price is simply made. Note that Singapore and Brunei Darussalam are not discussed here since agricultural activities in those countries are very little practiced with the very high GNI and GDP per capita, about twice more those of Japan (indicated at 2011 PPP USD).

**Table 1.5.3 Economic Level Represented by GNI and GDP per Capita (expressed at 2011 PPP USD)**

County	GNI/Capita*	GDP/Capita*	Agri. Share to GDP, %	Level of Economic Development		
				High	Middle	Low
Philippines	9,540	7,943	9.6		○	
Indonesia	11,256	11,606	13.7		○	
Timor-Leste	7,527	6,796	9.1			○
Malaysia	27,227	28,176	8.8	○ (agri GDP low)		
Thailand	16,129	16,905	8.2	○ (agri GDP low)		
Myanmar	5,764	5,922	24.1			○
Viet Nam	6,220	6,609	15.3			○
Cambodia	3,597	3,870	25.3			○
Lao PDR	6,317	6,614	20.9			○
Singapore	83,793	90,091	0.0	-	-	-
Brunei Darussalam	76,389	71,802	1.2	-	-	-

Note: \*/ These GNI and GDP are expressed at 2011 PPP USD.

Source: JICA Survey Team based on UNDP Human Development Data (2019), World Bank, CIA (2017)

Table 1.5.3 categorizes the countries into 3 groups according to the scale of their GDP and GNI per capita indicated 2011 PPP USD, together with the share of agriculture to the whole GDP. In those countries, which show higher to middle level economic development, share in agricultural sector to the GDP is less than 10%, while those in most of the low GNI/GDP per capita countries still show over two

<sup>2</sup> ERIA categorizes; Thailand, Malaysia and Singapore under Tier 1b, Viet Nam, Philippines and Indonesia under Tier 1a, and Cambodia, Lao PDR and Myanmar under Tier 2 according to 'The Comprehensive Asia Development Plan 2.0, Infrastructure for Connectivity and Innovation Nov. 2015'.

<sup>3</sup> The World Bank classifies Malaysia and Thailand under Upper Middle-Income countries while other countries such as Indonesia, Viet Nam, Lao PDR, Philippines, Cambodia, and Timor-Leste under Lower Middle-Income countries based on the GNI per capita, according to the banks' classification of 2021-2022.



digits. It should be noted that the target countries for field survey are selected preferably by covering all the economic development levels, but at the same time, those countries with high GNI/GDP per capita have very little agricultural activities and almost no JICA projects either.

#### 1.5.4 Selection Considering Livestock and Fisheries Industries

The main targets for the VC survey are agricultural produces, e.g., rice as the staple food in countries, horticulture crops as well as industrial crops mainly targeting export. Also, value chain of livestock and fisheries should be examined, since those sectors cannot be exempted from the COVID-19 impacts. In this regard, the countries for field survey, where livestock and fisheries industry show relatively large scale in its economy, should be selected.

Table 1.5.4 describes the numbers of livestock such as cattle, sheep, goat, pig, chicken and production tonnage for the cases of hen egg and cow milk. Further, the lower part of the table indicates those livestock numbers and tonnage per 1000 population of the countries. Looking at the livestock numbers, it is obvious that Indonesia rears huge number of chickens while Viet Nam does large number of pigs. The market size of each VC is large regardless of whether it is for export or domestic. In Southeast Asia, poultry and pig farming are traditionally popular. Therefore, Indonesia and Viet Nam should not be left in surveying the COVID-19 impacts on the livestock sector value chain.

**Table 1.5.4 Livestock No., and Tonnage of Hen Egg and Cow Milk, including per 1000 population (2018)**

Country	Cattle	Sheep	Goat	Pig	Chicken	Hen Egg	Cow milk
	No.	No.	No.	No.	No.	Ton	Ton
Philippines	2,553,937	30,000	3,724,808	12,604,441	175,772,000	533,905	14,865
Indonesia	16,432,945	17,398,000	18,721,000	8,542,000	2,384,147,000	1,644,460	909,638
Timor-Leste	209,104	47,085	138,773	392,281	943,000	1,121	N/A
Malaysia	752,547	138,111	443,733	1,654,801	321,309,000	856,767	43,737
Thailand	4,656,654	40,681	474,812	7,908,775	281,684,000	701,633	653,928
Myanmar	17,418,364	1,334,305	4,591,807	12,934,454	309,011,000	576,000	1,105,254
Viet Nam	5,802,907	N/A	2,683,942	28,151,948	316,916,000	582,280	936,003
Cambodia	2,855,353	N/A	N/A	1,760,952	13,200,000	18,700	24,273
Lao PDR	2,040,907	N/A	616,325	3,824,663	39,218,000	15,754	61,479
Singapore	179	N/A	742	N/A	3,724,000	29,304	N/A
Brunei D.	681	4,622	6,102	1,236	16,115,000	8,504	52
Numbers or Tonnage as per 1000 population							
Philippines	0.02	0.00	0.03	0.12	1.6	5.01	0.14
Indonesia	0.06	0.06	0.07	0.03	8.9	6.14	3.40
Timor-Leste	0.16	0.04	0.11	0.31	0.7	0.88	N/A
Malaysia	0.02	0.00	0.01	0.05	10.2	27.17	1.39
Thailand	0.07	0.00	0.01	0.11	4.1	10.11	9.42
Myanmar	0.32	0.02	0.09	0.24	5.8	10.72	20.58
Viet Nam	0.06	N/A	0.03	0.29	3.3	6.09	9.80
Cambodia	0.18	N/A	N/A	0.11	0.8	1.15	1.49
Lao PDR	0.29	N/A	0.09	0.54	5.6	2.23	8.71
Singapore	0.00	N/A	0.00	N/A	0.6	5.09	N/A
Brunei D.	0.00	0.01	0.01	0.00	37.6	19.82	0.12

Source: FAOSTAT (data for 2018)

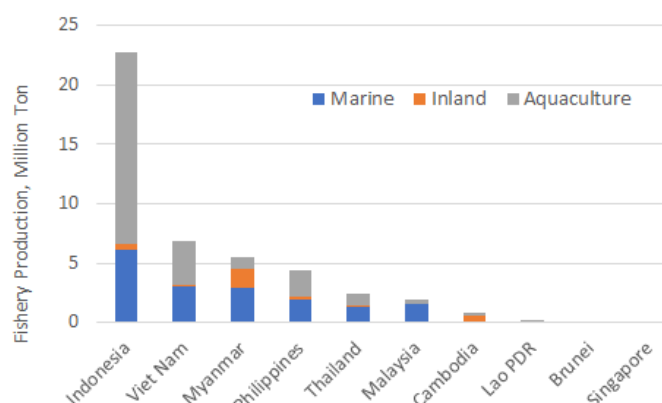
Turning to the fisheries sector, Figure 1.5.1 illustrates the average production for the years 2015-17, consisting of marine, inland and aquaculture productions for the 10 countries (Timor-Leste is not included due to lack of data)<sup>4</sup>. The chart shows by far large volume of fisheries production by Indonesia, reaching as much as over 20 million tons per year. Followed are such countries of Viet Nam, Myanmar, the Philippines, etc. As are well known, there are lots of aquaculture raising blackish shrimps and fresh water Pangasius mainly for export in those countries. One uniqueness can be found in Myanmar, that is

<sup>4</sup> Source: The Southeast Asian Fisheries Development Center (SEAFDEC) database, Note: Data for East Timor is not included in the source.

the large production in the inland fishery being practiced in Irrawaddy delta. By these findings, value chain survey for fisheries sector should target Indonesia, Viet Nam, and probably Myanmar as well.

### 1.5.5 Selection Considering Overseas Market Potential for Japanese Companies

In the ASEAN countries, there are lots number of Japanese companies doing business and planning to embark on various sectors including agricultural sector. As it is thought that COVID-19 have affected operation of Japanese companies in the target countries, the target countries for field survey shall be selected from those ones where there are many Japanese companies, especially engaged in agriculture sector, or there is high potential for Japanese companies to embark on in future.



**Figure 1.5.1 Average Annual Fisheries Production for 10 Countries based on 2015-17 Productions, Million Ton**

Source: The Southeast Asian Fisheries Development Center (SEAFDEC) database

Following table summarizes the number of Japanese companies, which operate their businesses in the eleven countries together with the agricultural share in GDP of those countries. Thailand has lots number of Japanese companies (3,925 as of 2018), it is followed by Indonesia, Viet Nam, the Philippines, Malaysia, etc. In addition, in terms of companies operating in agriculture/fisheries sectors, Lao PDR could be noted. Also, as of now, Myanmar does not have so many Japanese companies, only 512, however, the country has large share of agriculture in the GDP. Therefore, the country has a potential in the sector from the viewpoint of Japanese companies to embark on in future.

**Table 1.5.5 Status of Japanese Companies Operating in the Countries (2017, 2019, 2020)**

Country	Japanese Companies Already Embarked, 2020	Agriculture & Forestry + Fisheries 1/	Agriculture GDP Share (%) **	Potential Countries with Agriculture Related Business Activities
Philippines	1,469	16+3	9.6	
Indonesia	2,009	13+16	13.7	○
Timor-Leste	9	0+0	9.1	
Malaysia	1,237	8+0	8.8	
Thailand	3,925*	2 + 0*	8.2	
Myanmar	512	0+1	24.1	○
Viet Nam	1,944	10+2	15.3	○
Cambodia	405	7+0	25.3	○
Lao PDR	169	18+0	20.9	○
Singapore	1,251	1+0	0.0	—
Brunei Darussalam	16	0+0	1.2	—

Source: Ministry of Foreign Affairs of Japan (September 14, 2020), \* 2017 data, \*\* UNDP Human Development Data (2019)

1/: It is noted that it could be better to know all the Japanese companies related to agriculture sector, it is difficult, though. It is because that large supermarkets trading agriculture produces are categorized in retail sector, not in primary sector, companies producing agriculture machineries are under manufacturing industry sector. Therefore, the numbers of Japanese companies listed under 'Agriculture & Forestry + Fisheries' can only be a reference.

### 1.5.6 Selection of the Five Countries for Field Survey

Table 1.5.6 summarizes the discussions mentioned above, and with the following specific considerations, such 5 countries as the Philippines, Thailand, Lao PDR, Indonesia and Viet Nam are selected for the field surveys including pilot project implementation. In fact, Myanmar and Cambodia could also be a candidate, yet, there happened political turmoil in February 2021 for Myanmar, thereby not taken up.

Further, Cambodia shows similar social and economic conditions with Lao PDR, and with the peculiar fact that the Lao PDR is a landlocked county, Lao PDR was selected.

- 1) With regard to the objective of the Survey, the countries, with the highest priority from those ones where there are on-going and/or under-formulation JICA projects/programs, should be selected. With this, the Philippines, Indonesia and Lao PDR should be nominated. It is noted that there are on-going and planned JICA projects in Myanmar, however, the country is not taken up due to the political turmoil which had started in February 2021.
- 2) Following the 3 countries mentioned above, Thailand and Viet Nam could be the next candidate countries. In Thailand, there are a lot of Japanese companies operating, and there is a request to implement a project related to smart food chain development proposed in 2020 and 2021. In Vietnam, there is a horticulture related project being carried out as of August 2021 in Hanoi and its neighboring provinces.
- 3) Referring to the livestock sector and fisheries sector, Indonesia (chicken) and Viet Nam (pig) are important. In fact, Viet Nam has as long as 3,200 km coastal area, and there are huge fresh-water fisheries and lots number of shrimp farms along the blackish water areas. Therefore, Viet Nam should be selected taking into account this high potential of fish industry.
- 4) Indonesia has, among the eleven countries, the biggest land area and population, and there are many Japanese companies, which have operated. A Technical Cooperation Project related to FVC had been finished in March 2021, yet new one had started at middle of 2021, and also there are still on-going irrigation master plan study and agricultural insurance project in 2020-21. In addition, fisheries have high potential in the country. With these, Indonesia should be selected as one of the target countries for field survey.

**Table 1.5.6 Selection of the Field Survey Countries**

Country	JICA Projects*	Geography	Economic Development	Livestock, Fisheries	Japanese Companies	Selected
Philippines	○(under implementation)	To be selected from this group	Middle: To be selected from this group		◎ (many)	○
Indonesia	○(under implementation)			◎ (L, F)	◎ (many)	○
Timor-Leste	—		Same as Myanmar G.		—	—
Malaysia	—		High: Agri GDP low		◎	—
Thailand	—	Ditto	Low: To be selected from this group		◎ (very many)	○
Myanmar	◎ (3 TCPs)			◎ (F)	○ (high potential)	—
Viet Nam	○ (under implementation)			◎ (L, F)	◎ (many)	○
Cambodia	○				—	—
Lao PDR	◎ (2 TCPs)	◎			○	○
Singapore	—	—	—		—	—
Brunei D.	—	—	—		—	—

\* Status is the one as of August 2020.

Source: JICA Survey Team with reference to related project information of JICA, etc.



## CHAPTER 2 REVIEW OF COVID-19 OVERALL IMPACTS

This Chapter reviews COVID-19 overall impacts on the economy and society as well as on the agriculture sector in Southeast Asia. There had been a variety of previous research/works conducted by FAO and other international donor agencies with the cooperation of the ASEAN Secretariat and ASEAN member countries. At the commencement of this survey, the JICA team reviews them to understand the latest findings and situation concerning the COVID-19 pandemic.

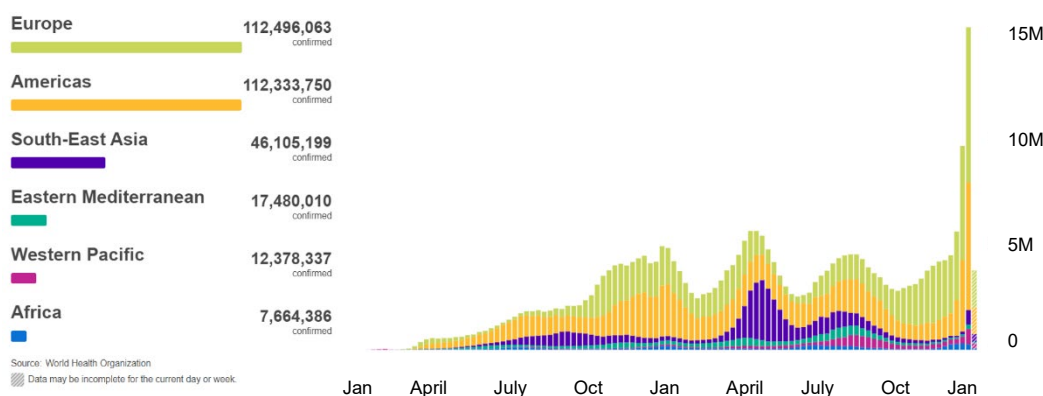
### 2.1 Overall COVID-19 Situation and Impacts

#### 2.1.1 Global COVID-19 Outbreak and the Situation in Southeast Asia

The novel infectious disease was found in late 2019 and was firstly reported in Wuhan, Hubei Province, the mainland of China. On 30 January 2020, WHO declared the outbreak “a public health emergency of international concern”. Then, the World Health Organization (WHO) officially called it coronavirus disease-19 (COVID-19) in February 2020. Thereafter, confirmed cases had been continuously increasing in the world. Further, on 11 March 2020, the agency declared the virus “a global pandemic”. At that time, the virus had rapidly spread over more than 121,000 people from Asia to the Middle East, Europe, and the United States.

As of 12 January 2022, there had been 308 million confirmed cases of COVID-19, including 5.5 million deaths affecting more than 200 countries, reported to the WHO. Globally, the number of new confirmed cases had been stable at a relatively lower level compared to the peak. However, several threats were emerging such as a new variant (Omicron (B.1.1.529) variant) and so-called “breakthrough infection”, a case a vaccinated individual becomes infected

At the beginning of 2021, the European Region and Region of the Americas were the centers of the pandemic. While the surges of new cases had been found in the Southeast Asian Region since April 2020 and peaked in May 2021 (see Figure 2.1.1). Increase of human mobility during the celebration of Lunar New Year (Vietnam) and Eid festival (Malaysia and Indonesia) and the spreads of high-transmission delta (B1617.2) variant virus were often mentioned as the background of sudden increase.



**Figure 2.1.1 New Confirmed Cases by WHO Region and by Date of Report (As of January 2022)**

Source: WHO Coronavirus Disease (COVID-19) Dashboard, accessed 12 January 2022

Given the high transmission, most the countries in the world had supported the immediate needs of local health systems and enacted containment and preventive measures including movement restrictions, and social distancing requirements to slow the spread of the virus. Thus, the pandemic had caused the loss of human life and a historical economic downturn due to global social and economic disruptions triggering severe and potentially lasting impacts on economic activities, employment, trades, etc.

Southeast Asian countries were no exception and got affected early in the 2020 outbreak of the virus. The government of Thailand announced the first PCR positive on 13 January 2020. It was the first confirmed case in the world outside of China. By the end of March 2020, all eleven countries confirmed at least one domestic case (see Table 2.1.1).

**Table 2.1.1 Overview of COVID-19 Infection in Southeast Asian Countries (As of 12 Jan 2022)**

Country	First Confirmed Domestic Case	Cases	Deaths	Total Fully Vaccinated	% Fully Vaccinated	Cases per Million
World	-	308,458,509	5,492,595	3,890,059,189	50.3	39,574
Philippines	30 January 2020	2,998,530	52,293	49,626,599	45.3	27,364
Indonesia	02 March 2020	4,267,451	144,144	114,692,899	41.9	15,602
Timor-Leste	21 March 2020	19,860	122	544,482	41.3	15,063
Malaysia	25 January 2020	2,788,860	31,696	25,344,958	78.3	86,166
Thailand	13 January 2020	2,284,609	21,850	46,172,663	66.2	32,731
Myanmar	23 March 2020	532,167	19,293	15,571,917	28.6	9,781
Viet Nam	23 January 2020	1,914,393	34,531	68,435,813	70.3	19,667
Cambodia	27 January 2020	120,636	3,015	16,659,518	81.7	7,216
Lao PDR	25 March 2020	119,521	448	3,099,003	42.6	16,428
Singapore	23 January 2020	286,397	838	4,744,632	81.1	48,954
Brunei Darussalam	10 March 2020	15,678	59	400,691	91.6	35,837

Source: WHO COVID-19 Dashboard and CSIS Southeast Asia Program

The above table shows that the infection had widely progressed differently across the eleven Southeast Asian countries. As of 12 January 2022, Indonesia was the country with the largest number of confirmed cases in the region, followed by the Philippines, Malaysia, and Thailand. Indonesia reported 4,267,451 confirmed cases and 144,144 deaths, the Philippines did 2,998,530 confirmed cases with 52,293 deaths, Malaysia 2,788,860 cases and 31,696 deaths, and Thailand 2,284,609 cases and 21,850 deaths.

Given the global unequal distribution of COVID-19 vaccines, the accessibilities to vaccines were different by each of Southeast Asian countries. Countries with higher percentages of people fully vaccinated include Brunei Darussalam (91.6%), Cambodia (81.7%), Singapore (81.1%), and Malaysia (78.3%). On the other hand, there were some countries with a lower percentage of people has vaccinated, such as Lao PDR (42.6%), Indonesia (41.9%), Timor-Leste (41.3%), and Myanmar (28.6%). Compound factors can be attributed to the struggle of vaccination in addition to the global vaccine supply shortage, including large and/ or dispersed populations that complicate “last mile” delivery, under-resourced public health systems, and other bureaucratic constraints, lack of financial wherewithal, vaccine hesitancy, with reasons ranging from religious concerns and doubt on safety<sup>1</sup>.

## 2.1.2 Overall Impacts on Economies and Society

United Nations (UNs) warned, in the article “UN’s Framework for the immediate Socio-Economic Response to the COVID-19 Crisis”, that “the COVID-19 pandemic is far more than a health crisis: it is affecting societies and economies at their core. While the impact of the pandemic will vary from country to country, it will most likely increase poverty and inequality at a global scale, making the achievement of SDGs even more urgent”.

Several reports pointed out that the COVID-19 affected both demand and supply sides, mainly caused by social and economic disruption from movement control / social distancing measures. For example, on the demand side, the slowing global economy had caused widespread work adjustments, incomes losses, and falling remittances in the short run. In the long run, new lifestyles and consumer’s behavioral changes had accelerated market swifts in many aspects e.g., teleworking, online markets, and home delivery, which made heterogenetic impacts depending on the type of commodities and value chain.

While on the supply side, the global slowdown and market disruption had affected international and domestic supply chains. In particular, countries in Southeast Asia had been largely influenced by

<sup>1</sup> Asia Society Policy Institute, “Southeast Asia and COVID-19 Vaccines Explained” (21 June 2021) <https://southeastasiacovid.asiasociety.org/southeast-asia-and-covid-19-vaccines-explained/>

neighboring countries especially China, and also by US and Japan for the supply chains and trades (see Table 2.1.2). Therefore, outbreaks in these countries should have caused non-negligible impacts on the markets.

About the domestic food supply chain, several disruptions had been reported. For example, movement controls had prevented local and migrant workers from moving, which caused labor shortages on-farm, processing, packaging industries as well as local markets<sup>2</sup>. Flight suspension and transport restriction had reduced the accessibility of inputs for farmers, such as fertilizers, pesticides, and seeds<sup>3</sup>. Thus, disruptions of domestic and international supply chains had raised the concern of producers' opportunity loss of production and cost increases<sup>4</sup>.

**Table 2.1.2 Trades in Southeast Asia (except for Timor-Leste) with Major Partners (2020)**

	Trade, In USD Billion			Share to ASEAN total, in %		
	Total Trade	Export	Import	Total Trade	Export	Import
ASEAN Total	<b>2,825.3</b>	<b>1,436.4</b>	<b>1,388.8</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>
Intra-ASEAN	650.7	346.5	304.3	23.03	24.12	21.91
China	483.8	199.0	284.8	17.12	13.85	20.51
EU	288.2	160.9	127.3	10.20	11.20	9.17
US	263.0	160.3	102.7	9.31	11.16	7.40
Japan	231.7	114.8	116.9	8.20	7.99	8.42
Korea	161.5	60.5	101.0	5.72	4.21	7.27
Hong Kong, China	118.3	100.2	18.1	4.19	6.98	1.30
Chinese Taipei	117.4	39.7	77.6	4.15	2.77	5.59
India	81.1	50.7	30.3	2.87	3.53	2.18
Australia	66.2	39.2	27.0	2.34	2.73	1.94

Source: ASEANStat (2020)

## 1) Economic Growth

The “Asian Development Outlook 2020 update” published by the Asia Development Bank (September 2020) mentioned that the COVID-19 crisis was characterized by the impact across the borders, with almost three-fourths of developing Asia economies projected to post negative growth. Such largest share of negative growth had never been recorded in the past 6 decades, including such historical incidences as the Asian financial crisis in 1997/1998 and the global financial crisis in 2007/2008.

According to the “Asian Development Outlook 2020 update”, projected regional GDP as of 2020 was revised down to 3.8% contraction. As shown in Table 2.1.3, for most of the countries in the region, the projected GDP annual growth ratio was revised down in September update from the previous volume published in June 2020. Strict quarantines and travel restrictions were mentioned as some of the main factors of the slowdown.

Among 11 Southeast Asian countries, only 3 of them were likely to remain positive because of resilient export petrochemicals from Brunei Darussalam, agricultural products from Myanmar, and work-from-home electrics from Viet Nam. On the other hand, Malaysia, the Philippines, Singapore, Thailand, and Timor-Leste have forecasted a remarkable decline of 5% or more on the annual basis of GDP.

<sup>2</sup> “Covid-19 pandemic causes labor shortage for Malaysia’s palm industry”, Successful Farming (21 May 2020) <https://www.agriculture.com/markets/newswire/covid-19-pandemic-causes-labour-shortage-for-malaysias-palm-industry>

<sup>3</sup> “Malaysia’s vegetable supply to be disrupted in coming months due to movement control order, say farmers”, CNA International Edition (27 March 2020) <https://www.channelnewsasia.com/news/asia/malaysia-covid-19-vegetables-supply-movement-control-order-12579348>

<sup>4</sup> FAO (May 2020): “Impacts of coronavirus on food security and nutrition in Asia and the Pacific: building more resilient food systems”

**Table 2.1.3 GDP Growth Rate and Perspective in Southeast Asian Countries, Annual % (2019-2021)**

Country	2019	2020				2021			
		April	June	September Update	Revise Jun-Sep	April	June	September Update	Revise Jun-Sep
China (Mainland)	6.1	2.3	1.8	1.8	-	7.3	7.4	7.7	Positive
India	4.2	4.0	-4.0	-9.0	Negative	6.2	5.0	8.0	Positive
Philippines	6.0	2.0	-3.8	-7.3	Negative	6.5	6.5	6.5	-
Indonesia	5.0	2.5	-1.0	-1.0	-	5.0	5.3	5.3	-
Timor-Leste	3.4	-2.0	-3.7	-6.3	Negative	4.0	4.0	3.3	Negative
Malaysia	4.3	0.5	-4.0	-5.0	Negative	5.5	6.5	6.5	-
Thailand	2.4	-4.8	-6.5	-8.0	Negative	2.5	3.5	4.5	Positive
Myanmar	6.8	4.2	1.8	1.8	-	6.8	6.0	6.0	-
Viet Nam	7.0	4.8	4.1	1.8	Negative	6.8	6.8	6.3	Negative
Cambodia	7.1	2.3	-5.5	-4.0	Positive	5.7	5.9	5.9	-
Lao PDR	5.0	3.5	-0.5	-2.5	Negative	6.0	4.5	4.5	-
Singapore	0.7	0.2	-6.0	-6.2	Negative	2.0	3.2	4.5	Positive
Brunei Darussalam	3.9	2.0	1.4	1.4	-	3.0	3.0	3.0	-
Southeast Asia	4.4	1.0	-2.7	-3.8	Negative	4.7	5.2	5.5	Positive

Source: Respective volumes of Asian Development Outlook

Note: highlighted in red means projected to negative growth by 5% or more, highlighted in yellow means projected to negative growth by smaller than 5%, while highlighted in blue means projected to positive growth as of September Update

## 2) Food Security

Disruptions in food supply chains around the world had raised concerns that food prices might increase sharply, as happened during the global financial crisis in 2007/2008. Despite the concern, world food markets had been relatively soft aside from locally panic buying for some specific commodities (e.g., cereals) at the initial phase of the outbreak. FAO (2020)<sup>5</sup> analyzed that there have been several positive factors that contributed to stabilizing the world food prices; e.g., the high stock-to-utilization ratio for rice, wheat, and maize (e.g., 35.6%, 36.5%, and 28.0% in 2019/20 estimation), no major production shocks by bad weather in 2019/20, low petroleum price which reduced demand for biofuel made from maize and sugar, etc. As shown in Table 2.1.4 the cereal production in major producer countries in Asia had not decreased either in 2019/2020, leading to stabilizing the food price.

**Table 2.1.4 Cereal Productions in Major Producer Countries of Asia (Million Tons)**

Countries / Region	Wheat				Coarse grains			
	5 Years Average	2019	2020	2021	5 Years Average	2019	2020	2021
World	750.0	762.0	776.5	769.6	1391.5	1,444.0	1,481.80	1503.3
China (mainland)	133.1	133.6	134.2	137.1	270.1	269.7	269.9	282.2
India	96.2	103.6	107.9	109.5	43.9	44	51.2	49
Cambodia	0	0	0	0	0.9	0.9	0.9	0.9
Myanmar	0.1	0.1	0.1	0.1	2.6	2.9	2.9	2.8
Nepal	2.0	2.2	2.2	2.1	2.8	3.0	3.1	3.1
Philippines	0	0	0	0	7.7	8.0	8.1	8
Thailand	0	0	0	0	4.9	4.5	5	5
Viet Nam	0	0	0	0	5.1	4.8	4.6	4.5
Countries / Region	Rice (paddy)				Total cereals			
	5 Years Average	2019	2020	2021	5 Years Average	2019	2020	2021
World	502.9	500.7	513.7	518.4	2,644.3	2,706.7	2,741.70	2,791.3
China (mainland)	211.5	209.6	211.9	214.3	614.7	612.9	616	633.6
India	168.5	177.6	183.4	185.9	308.6	325.2	342.5	344.4
Cambodia	10.3	10.9	11.1	11.4	11.2	11.8	12	12.3
Myanmar	26	25.3	25.3	24.8	28.7	28.3	28.3	27.7
Nepal	5.2	5.6	5.6	5.6	9.9	10.8	10.9	10.8
Philippines	18.6	18.9	19.6	19.9	26.3	26.9	27.7	27.9
Thailand	30.6	28.3	29.9	30.8	35.4	32.8	34.9	35.8
Viet Nam	43.7	43.4	42.8	43.3	48.8	48.2	47.4	47.8

Source: FAO (December 2021), "Crop Prospects and Food Situation" (quarterly global report no.4), FAO (December 2020), "Crop Prospects and Food Situation" (quarterly global report no.4), and previous volumes for calculation of five-year averages.

Note1: data in 2019 and 2020 are estimations, and data in 2021 are forecasts.

Note2: Totals computed from unrounded data. The five-year average refers to the 2015-2019 period.

Figure 2.1.2 shows FAO Food Price Index from November 2019 until December 2021. The cereal price

<sup>5</sup> FAO (May 2020): "Impacts of coronavirus on food security and nutrition in Asia and the Pacific: building more resilient food systems"



index in March 2020 shows almost the same price level as of December 2019 (increase only by 0.5%) and it has kept a stable price throughout the year 2020, implying less affected by the pandemic.

Prices for other food groups had fallen substantially between December 2019 and March 2020. For example, such price down was observed as meat by 7.1%, dairy by 2%, vegetable oils by 16%, and sugar by 9.1% during the initial phase of a global outbreak (i.e., March 2020). The overall food price index was decreased by 5.9% in the same period. It may be due to reduced demand, triggered by movement control measures.

This trend of lower food prices during the early period of global infection had contributed to attenuating the global food security concerns. In addition, it must have been favorable for consumers who lost their jobs and incomes.

Since the second half of 2020, international prices for grains have been rising due to dry weather in South America, increased import demand from China, and hot and dry weather in the northern part of North America in 2021. In this regard, FAO mentioned that although higher prices usually lead to increased production, the actual trend in 2022 would depend on several conditions, such as high fertilizer prices, the COVID-19 epidemic, and climatic conditions<sup>6</sup>. Therefore, food prices in 2022 need to be carefully monitored.

Table 2.1.5 shows CPI changes for food and general products in Southeast Asian Countries in March, June, September, and December 2020 and 2021 compared to the same period of the previous year. In most of the countries except for Myanmar, the domestic CPIs had been slightly increasing through the early period of 2020. Then, they had continued to rise in many countries as the global trend in food price indexes.

**Table 2.1.5 Changes of CPIs for Food and General Products (YoY) in Southeast Asia**

Countries	Changes of CPI for Food Products							
	March 20	June 20	Sep 20	Dec 20	March 21	June 21	Sep 21	Dec 21
Philippines	3.0	3.1	1.7	5.5	6.8	5.4	7.2	N/A
Indonesia	8.7	7.4	4.1	6.2	2.7	2.3	4.9	N/A
Timor-Leste	0.3	0.8	0.6	2.2	4.5	6.0	6.5	N/A
Malaysia	1.3	1.8	1.6	1.6	1.7	1.5	1.5	N/A
Thailand	1.6	0.1	1.5	1.4	-0.3	0.3	-1.3	N/A
Myanmar	6.2	2.3	3.1	1.1	2.8	6.9	5.0	N/A
Viet Nam	11.2	13.3	11.7	3.1	1.6	-0.4	1.6	N/A
Cambodia	4.7	6.4	5.3	5.5	3.5	2.7	3.7	N/A
Lao PDR	10.5	10.5	8.9	5.5	3.3	4.9	3.0	N/A
Singapore	1.6	4.6	3.3	2.5	2.3	0.1	1.7	N/A
Brunei	1.1	2.7	2.2	4.7	3.7	1.7	2.0	N/A
Countries	Changes of CPI for General Products							
	March 20	June 20	Sep 20	Dec 20	March 21	June 21	Sep 21	Dec 21
Philippines	2.8	2.8	2.6	4.0	5.1	4.8	5.5	N/A
Indonesia	3.4	1.9	1.5	1.8	1.6	1.6	1.9	N/A
Timor-Leste	0.2	0.5	0.3	1.2	2.9	3.8	4.3	N/A
Malaysia	-0.2	-2.0	-1.5	-1.5	1.8	3.7	2.3	N/A
Thailand	-0.6	-1.6	-0.7	-0.3	-0.1	1.3	1.7	N/A
Myanmar	8.3	5.4	2.7	1.0	3.5	7.6	7.9	N/A
Viet Nam	5.4	3.6	3.4	0.2	1.4	2.8	2.4	N/A

<sup>6</sup> Global food prices up 28.1% in 2021: FAO (January 8<sup>th</sup>, 2022) [Global food prices up 28.1% in 2021: FAO - OrissaPOST](#)

Cambodia	3.1	3.6	3.2	3.2	2.4	3.1	3.7	N/A
Lao PDR	6.5	5.7	5.2	3.6	2.8	4.5	4.0	N/A
Singapore	0.0	-0.5	0.0	0.0	1.3	2.4	2.5	N/A
Brunei	1.6	2.6	1.5	2.0	1.8	1.6	1.6	N/A

Source: FAOSTAT with calculation by the Survey Team

Note: as of January 2022, the available data are until September 2021

### 3) Migrant Workers and Remittances

There are millions of migrant workers moving within the region and beyond. Migrants originating from Asia and the Pacific accounted for 33% of migrant workers worldwide in 2019 (ILO 2020). Especially, the Philippines and Viet Nam were amongst the top 10 largest remittance recipients in the world in 2019. Most of the migrant workers from this region are characterized as low-skilled workers with short-duration contracts<sup>7</sup>.

Asia Development Bank (ADB) analyzed that remittance inflow was quickly stagnated in the months immediately after lockdowns imposed in major industrial economies (i.e., February 2020). Remittance inflow to the Southeast Asia region was expected to drop by 11.7 billion USD due to the COVID-19 outbreak<sup>8</sup>.

Table 2.1.6 shows international migrant stocks, remittance inflows, dependency per GDP, and expected loss under the worst case, in which remittances were projected to drop by 21.4% in Indonesia, 20.2% in the Philippines, 17.7% in Myanmar, 17.7% in Timor-Leste, and 18.1% in Viet Nam under the worst case.

**Table 2.1.6 International Migrant Stock, Remittances and Projected Loss under Worst Case**

Countries	International Migrant Stock At mid-year (Both sex) 2019	Total Remittance, Inflows (Million USD) 2019	Total Remittance, Inflows (% of GDP) 2019 *	Remittance Loss under Worst Case (%)	Share of Recipient Households with International Remittances (%)
Philippines	218,530	35,167	9.33	20.2	8.4
Indonesia	353,135	11,667	1.04	21.4	3.3
Timor-Leste	8,417	98	6.14	17.7	N.A.
Malaysia	3,430,380	1,659	0.45	5.2	N.A.
Thailand	3,635,085	7,075	1.30	15.8	N.A.
Myanmar	75,998	2,840	4.10	17.7	7.0
Viet Nam	76,104	17,000	6.49	18.1	4.6
Cambodia	78,649	1,575	5.81	15.4	9.0
Lao PDR	48,275	285	1.32	16.3	12.0
Singapore	2,155,653	N.A.	N.A.	10.0	N.A.
Brunei Darussalam	110,641	N.A.	N.A.	12.8	N.A.

Source: United Nations, Department of Economic and Social Affairs. Population Division (2019). International Migrant Stock 2019 and ADB, Key Indicators Database 2019

Note: Countries highlighted in red mean more than 5% of remittance inflow per GDP and more than 15% of remittance loss under the worst case. Lao PDR and Timor-Leste as of the year 2018.

### 4) Work Adjustment and Loss of Income

The agriculture, forestry, and fishing industries account for 30.5 percent of the total employment in Asia<sup>9</sup>. This sector is particularly the major source of employment for women. In the Asian financial crisis in 1997/1998, it was said that the agriculture sector played an important role in many countries by employing those who lost their jobs in urban areas. However, the agriculture sector is now expected to provide less employment this time because of its smaller share and structural changes.

According to the International Labor Organization (ILO)'s latest monitoring article<sup>10</sup>, due to the COVID-19 pandemic, 3.0%, 17.8%, 7.2%, and 5.7% of working hours were lost during the first, second,

<sup>7</sup> ASEAN Guidelines on Effective Return and Reintegration of Migrant Workers, adopted by the 26<sup>th</sup> ALMM

<sup>8</sup> ADB (2020): "COVID-19 Impact on International Migration, Remittances, and Recipient Households in Developing Asia1"

<sup>9</sup> ILO (April 2020): "COVID-19 and the impact on agriculture and food security", ILO Sectoral Brief

<sup>10</sup> ILO (January 2021): "ILO Monitor: COVID-19 and the world of work, Sixth Edition"

third, and fourth quarters of 2020 in Southeast Asia region (see Table 2.1.7). In developing economies, there are limited opportunities for teleworking, and therefore greater impact of the crisis on informal workers is anticipated. In addition, resources were under a constraint on the implementation of COVID-19 response measures, compared to developed economies. Therefore, a substantially higher loss of working hours was expected in developing countries.

**Table 2.1.7 Loss of Working Hours (compared to 4<sup>th</sup> quarter 2019)**

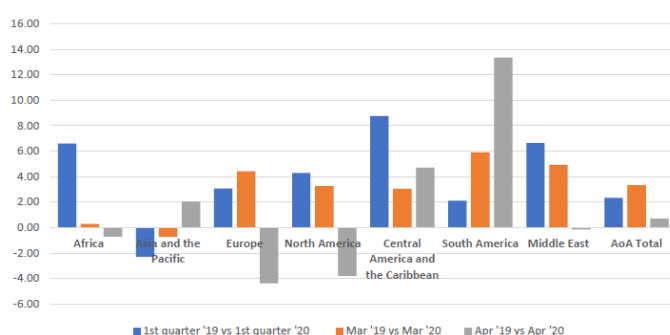
Region / Subregion	Loss of Working Hours				
	1Q	2Q	3Q	4Q	Annual
World	5.2	18.2	7.2	4.6	8.8
Africa	2.3	16.0	8.0	4.5	7.7
Americas	3.2	27.6	14.9	8.9	13.7
Arab States	3.3	18.8	9.4	4.7	9.0
Asia and the Pacific	6.5	16.9	5.4	2.8	7.9
<b>Southeast Asia Subregion</b>	<b>3.0</b>	<b>17.8</b>	<b>7.2</b>	<b>5.7</b>	<b>8.4</b>
Europe and Central Asia	3.9	17.2	6.8	8.9	9.2

Note: The losses are shown in comparison to the fourth quarter of 2019 (seasonally adjusted).

Source: ILO nowcasting model

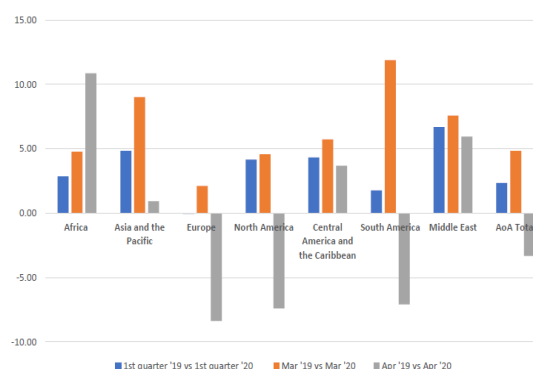
## 5) Trades in Agriculture Sector

According to World Trade Organization (WTO) (2020)<sup>11</sup>, the trade in the agriculture sector had been more resilient than overall trade. The report mentioned that while overall merchandise trade fell sharply in the first half of 2020, agricultural and food exports were increased by 2.5% during the first quarter of the year compared to the same period in 2019. It was because of the essential nature of food and the fact that most agricultural trade (notably cereals and oilseeds) takes place in bulk marine shipments that require less human interaction, thus not heavily disrupted by the related transport restrictions.



**Figure 2.1.3 Agriculture Exports by Region, percent of changes**

Source: WTO Secretariat



**Figure 2.1.4 Agriculture Imports by Region, percent of changes**

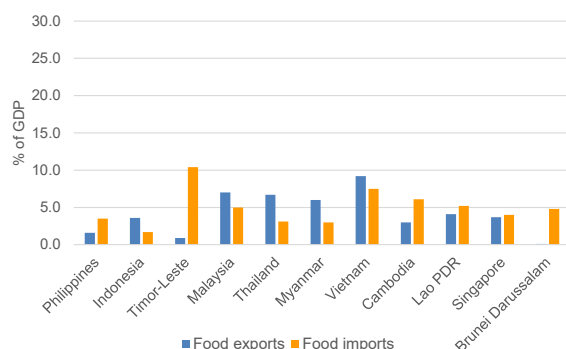
Source: WTO Secretariat

Among agricultural products, however, the impacts had varied across the types of products and infection phases; exports of cereals, some meat products, edible nuts, oilseeds, and oleaginous fruits and fruits increased in March 2020. After April, due to reduced demand triggered by lockdown measures, exports of non-food agricultural products such as raw fur skins, wool, flowers, and cotton were reported to have declined. It was also reported that a notable decline of export took place for the higher-value products, including fresh vegetables, fruits, dairy, and meat, which are generally more dependent on sales to restaurants, schools, and tourism sectors than home consumption. In addition, it was said high-value perishable products transported by air cargo were substantially affected by the suspension of air traffic.

Figure 2.1.3 and Figure 2.1.4 show that the changes in agriculture trades compared to the 1<sup>st</sup> quarter of the previous year (2019) had also varied across the region. The Asia and the Pacific Region declined its agricultural export in March 2020 and gradually recovered after April 2020. In contrast to this, Central

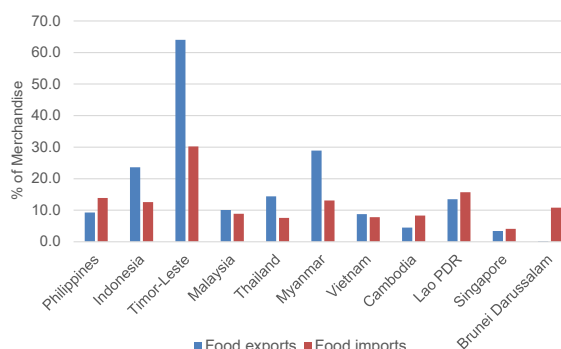
<sup>11</sup> WTO (August 2020): "COVID-19 and Agriculture: A Story of Resilience"

America and the Caribbean region significantly increased their export in March 2020 compared to the previous year. Regarding imports of agricultural products during the first quarter of 2020 and particularly in March, it increased for all regions compared to the same periods in 2019.



**Figure 2.1.5 Food Export and Import as % of GDP (2020)**

Source: World Development Indicator, edited by the Team  
Note: data of Timor-Leste and Lao PDR are 2017 and 2019 respectively.



**Figure 2.1.6 Food Export and Import as % of Merchandise Trades (2020)**

Source: World Development Indicator, edited by the Team  
Note: data of Timor-Leste and Lao PDR are 2017 and 2019 respectively.

Figure 2.1.5 and Figure 2.1.6 show the shares of food exports and imports as a percentage of national GDP and total merchandise trades. In 2020, some countries such as Malaysia, Thailand, Myanmar, and Viet Nam earned more than 5% of GDP through exporting agriculture and food commodities. Especially in Timor-Leste, the agriculture and food export, represented by coffee export, accounted for more than 60% of them and food import accounted for 10% of GDP.

## 2.2 Policies and Measures Taken by the Governments in Response to COVID-19

### 2.2.1 Lockdown and Other Regulative Measures to Prevent the COVID-19 Outbreak

As the number of confirmed cases began to rise rapidly worldwide, many countries including Southeast Asian countries imposed regulative measures and policies about movement control and social distancing to prevent the virus from spreading. In April 2020, at the timing of the initial phase of the global outbreak, it was said about half of the world's population was under lockdown, with more than 3.9 billion people across more than 90 countries asked or ordered to stay at home by their governments<sup>12</sup>. WHO recommended that such measures should be short-term, aiming to reorganize, regroup and rebalance resources, and protect health workers. Further, in the long run, strengthening of personal hygiene, contact tracing, and isolation of patients was recommended.

Table 2.2.1 summarizes these measures taken by the Southeast Asia countries. Despite the unsymmetrical domestic situations of the COVID-19 outbreak, the measures and policies taken by the governments were very similar, represented by business closures, school closures, closure of public transport, restrictions on the number of people in public spaces, cancellation of public events, voluntary or compulsory self-isolation and quarantine, work from home orders, internal and international travel restrictions<sup>13</sup>.

Importantly, those measures were not intended to disturb the transportation and movements of agricultural products and materials. Rather, most of the countries had managed to keep food supply chains going to avoid food shortages. For example, movement restriction often did not apply for the tasks related to agricultural commodities and food provisions. Supermarkets, public markets, grocery

<sup>12</sup> Coronavirus: Half of humanity now on lockdown as 90 countries call for confinement Archived 19 May 2020 at the Wayback Machine Alasdair Sandford ([www.euronews.com](http://www.euronews.com))

<sup>13</sup> The ASEAN Secretariat (2020): "ASEAN rapid Assessment: The Impact of COVID-19 on Livelihood across ASEAN"

stores, and convenience stores were exceptionally allowed to open. Working on farms and the movement of farm laborers were not prohibited in some countries. However, yet, most of the countries failed to mitigate the impacts, and unprecedented stresses on the food value chains took place.

**Table 2.2.1 Regulative Measures and Policies in Southeast Asia (As of 18 Jan 2022)**

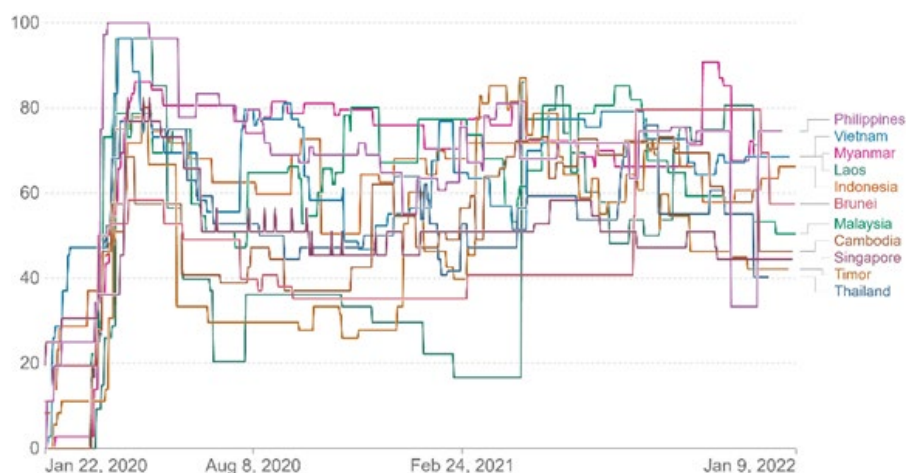
Countries	State of emergency declared	Partial or full lockdown	Movement Restrictions				Social Distancing		
			International flights suspension	Border Closure	Domestic travel restrictions	Curfews	Limit public gatherings	Schools closure	Closure of businesses and public services
Southeast Asia	<b>3</b>	<b>9</b>	<b>10</b>	<b>10</b>	<b>9</b>	<b>4</b>	<b>11</b>	<b>10</b>	<b>10</b>
Philippines	X	X	X	X	X	X	X	X	X
Indonesia	-	X	X	X	X	-	X	X	X
Timor-Leste	X	-	X	X	X	-	X	X	X
Malaysia	-	X	X	X	X	X	X	X	X
Thailand	X	X	X	X	X	X	X	X	X
Myanmar	-	-	X	X	-	X	X	-	X
Viet Nam	-	X	X	X	X	-	X	X	X
Cambodia	-	X	X	X	X	-	X	X	-
Lao PDR	-	X	X	X	X	-	X	X	X
Singapore	-	X	X	X	-	-	X	X	X
Brunei Darussalam	-	X	-	-	X	-	X	X	X

Source: ACAPS COVID-19 Government Measures Dataset, accessed 18 January 2022

Note1: "X" means the country has implemented at least one measure and policy in the category.

Note2: This table is prepared with a limited source of information collected in the ongoing survey. The table is tentative and will be continuously updated.

To understand the strictness of government policies in a certain period for a specific country, the Oxford COVID-19 government response stringency index is quite worthy to refer to. It is a composite indicator based on nine response sub-indicators including school closures, workplace closures, and travel bans, rescaled to a value from 0 to 100 (100=strictest). For example, as of January 10, 2022, the strongest measures in the region had been observed in the Philippines (74.54). While the least restrictive measures had been found in Thailand, Timor-Leste, and Singapore as in a range of 40 and 45, shown in Figure 2.2.1.



**Figure 2.2.1 Oxford's Government Response Stringency Index**

Source : Oxford COVID-19 Government Response Tracker, Blavatnik School of Government, university of Oxford -Last updated 9 January 2022(London time)

The indicator also shows the strongest regulations were seen in late March and April 2020 for many countries in the region. After April 2020, most of the Southeast Asian countries had tackled the challenges of rebalancing between public health concerns and reopening economies.

## 2.2.2 Economic Measures and Supports for Sustaining Food Value Chain

In terms of policy response to the pandemic, government and central banks in the world had implemented monetary policies and economic measures and supports to sustain the business and individual during lockdown and movement restriction periods.

There had been quite a lot of economic measures implemented by the government, some of which were restrictive while others were liberal. Some of them were specific measures to support farmers, and others were more general supports for consumers. JICA (2020) summarized the number of countries which had applied measures related to the Food Value Chain in the world as of July 2020. Table 2.2.2 shows that many countries had applied the measures in categories of financial support to farmers, restriction on distribution, price support and sustained price system, financial support to enterprise, tax policies, food distribution support, income support, and nutrition improvement program.

**Table 2.2.2 No. of Countries which have applied Measures related to FVC in Response to COVID-19**

Measures		Asia	Africa	South America	North America	Europe	Oceania	Total
Production	Material Support	3	8	2	0	2	4	19
	Tax Policies	11	11	4	0	9	1	36
	Finance for Farmer	44	34	10	5	50	3	146
	Subsidizes	5	3	2	1	6	2	19
Distribution	Price support and the sustained price system	10	5	4	0	2	2	23
	Finance for enterprise	3	18	0	0	18	0	39
	Support for Distributors and Processors	3	6	1	0	1	0	11
	Support for Small Scale Market	6	6	8	0	0	0	22
Consumption	Tax Policies	12	4	4	0	10	0	30
	Food Distribution	23	24	21	1	10	0	79
	Cash Transfer	29	27	15	1	22	1	95
	Payment deferral of utilities	5	8	1	0	2	0	16
	Food Stockpile	9	7	0	0	0	1	17
	Price Adjustment	14	7	4	0	4	2	31
	Income Support	13	19	12	1	26	2	73
	Employment Support	10	4	2	0	17	1	34
Nutrition Improvement	14	24	1	0	8	0	47	

Source: JICA (July 2020), "An Overview of COVID-19, Potential Affection on Food Value Chain, Future Scenario, and the Direction of JICA's Support", a presentation material written in Japanese.

Note: The Table is prepared with information collected until July 2020.

Table 2.2.3 summarizes economic measures and support for general business and consumers, particularly related to FVC in response to COVID-19, taken by the governments in the region. Within the Southeast Asia countries, the countries had introduced various measures since February 2020, to mitigate the outbreak. Common measures were tax policies for consumers and affected businesses particularly micro, small, and medium scale enterprises (MSMEs) and the most-hard hit sectors, subsidies such as cash assistance, subsidies, or payment deferral of utilities to households and laborers.

**Table 2.2.3 Economic Measures and Supports related to FVC in Response to COVID-19**

Countries	Production			Distribution			Consumption								
	Material Support	Tax Policies	Finance for Farmer	Loan to Businesses	Subsidies to Businesses	Support for Small Scale Market	Tax Policies	Food Distribution	Cash Transfer	Subsidies / Payment deferral of utilities	Food Stockpile	Price Adjustment	Income Support	Employment Support	Nutrition Improvement
<b>Southeast Asia</b>	<b>2</b>	<b>1</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>1</b>	<b>9</b>	<b>3</b>	<b>6</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>8</b>	<b>5</b>	<b>5</b>
Philippines	X	-	-	X	X	X	X	X	X	-	X	X	X	-	X
Indonesia	X	-	X	X	-	-	X	X	-	-	-	X	X	X	X
Timor-Leste	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A
Malaysia	-	-	-	X	X	-	X	-	X	-	-	-	X	-	X
Thailand	-	-	X	X	X	-	X	-	X	X	-	-	X	X	-
Myanmar	-	-	X	X	X	-	-	X	X	X	-	-	X	-	X

Countries	Production			Distribution			Consumption								
	Material Support	Tax Policies	Finance for Farmer	Loan to Businesses	Subsidies to Businesses	Support for Small Scale Market	Tax Policies	Food Distribution	Cash Transfer	Subsidies / Payment deferral of utilities	Food Stockpile	Price Adjustment	Income Support	Employment Support	Nutrition Improvement
Viet Nam	-	X	-	X	X	-	X	-	X	-	X	-	X	X	-
Cambodia	-	-	X	-	X	-	X	-	X	-	-	X	X	X	-
Lao PDR	-	-	-	X	X	-	X	-	-	-	-	-	-	-	-
Singapore	-	-	-	X	X	-	X	-	-	-	-	-	X	X	X
Brunei Darussalam	-	-	X	X	X	-	X	-	-	-	-	-	-	-	-

Source: FAO (2020) Food and Agriculture Policy Decision Analysis Tool, and The ASEAN Secretariat (2020): "ASEAN rapid Assessment: The Impact of COVID-19 on Livelihood across ASEAN, Edited by the Team

Note1: "X" means the country has implemented at least one measure and policy in the category.

Note2: This table is prepared with limited sources of information collected in the ongoing surveys, and accordingly the table should be understood as indicative.

### 2.2.3 Trade Policies

At the start of the pandemic, many countries had introduced trade policies. The ASEAN Secretariat (2020)<sup>14</sup> classified these trade policies using the ITC dataset which covers 139 economies in the world and found that an overwhelming number of export measures (127 out of 132) implemented were classified as restrictive, and the majority of import measures were liberalizing (134 out of 163), and relatively few numbers of import policies which are classified as restrictive aiming at quarantine strengthening.

Table 2.2.4 shows temporary export and import policies applied by Southeast Asia countries in response to COVID-19. As a typical example of regulative import policy, some Southeast Asian countries had imposed export restrictions for rice, though these measures were temporary and being relaxed. In Viet Nam, registration of rice-export contracts was temporarily halted in late March 2020, and then partially relaxed by introducing an export quota in April 2020. In Cambodia, the country had imposed an export prohibition of non-fragrant rice and paddy in early April 2020, which had already been lifted<sup>15</sup>. Myanmar had temporarily stopped issuing rice export licenses in early April. In addition, the country had announced a monthly export quota system in April 2020 until the time that the 2020 main crop harvest season began.

**Table 2.2.4 Temporary Export and Import Policies in Response to COVID-19 (as of Jan. 2021)**

Countries	Export Policies			Import Policies				
	Export prohibition	Export quotas	Tariff increase	Import ban	Tariff reduction	Non-automatic import-licensing procedures	Suspension of certification requirements	Certification requirements
Southeast Asia	<b>7</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>9</b>	<b>1</b>	<b>1</b>	<b>2</b>
Philippines	X		X	X	X			X
Indonesia	X				X		X	X
Timor-Leste	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A
Malaysia	X				X			
Thailand	X				X			
Myanmar	X				X			
Viet Nam	X	X		X	X			
Cambodia	X							
Lao PDR					X			
Singapore					X	X		

<sup>14</sup> Chandra et al (2020): "Trade Measures in the time of COVID-19: The Case of ASAN", ASEAN Policy Brief, The ASEAN Integration Monitoring Directorate at the ASEAN Secretariat, 2020 July

<sup>15</sup> Vietnam Plus, "Cambodia to remove ban on fish, white rice, paddy rice exports", May 17, accessed in August 2021

Countries	Export Policies			Import Policies				
	Export prohibition	Export quotas	Tariff increase	Import ban	Tariff reduction	Non-automatic import-licensing procedures	Suspension of certification requirements	Certification requirements
Brunei Darussalam					X			

Source: ITC, COVID-19 Temporary Trade Measures, accessed on January 13.

Note1: "X" means the country has implemented at least one measure and policy in the category.

Note2: This table is prepared with a limited source of information collected in the ongoing surveys, and accordingly the table should be understood as indicative.

## 2.2.4 ASEAN Region Initiative

ASEAN had responded promptly to the pandemic outbreak since early 2020, and relevant ASEAN sectors responded through their regular mechanisms, such as ASEAN ministerial meetings and senior official meetings to discuss the impacts of the pandemic and identify collective action measures. Table 2.2.5 summarizes the timeline of key ASEAN region initiatives:

**Table 2.2.5 Timeline of ASEAN Region Initiatives**

Date	Responses
31-Dec-19	The first Covid-19 case was announced in Wuhan, China
19-Feb-20	Joint statement of ASEAN Defense Ministers on Defense Cooperation against Disease Outbreak, from meeting in Viet Nam
20-Feb-20	The ASEAN Coordinating Council (ACC) held a Special Meeting on 20 February 2020 in Vientiane, Lao PDR to discuss follow-up actions to the ASEAN Chairman's Statement on ASEAN collective response to the Covid-19
9 March 2020	ASEAN health sector sustains cooperation in responding to Covid-19.
10 March 2020	Joint statement of ASEAN Economic Ministers on Strengthening ASEAN'S Economic Resilience in Response to The Outbreak of The Coronavirus Disease
13 March 2020	ASEAN senior health officials enhance regional collective actions against Covid-19 pandemic
7 April 2020	Joint Statement Special Video Conference of ASEAN Plus Three Health Ministers in Enhancing Cooperation on Coronavirus Disease 2019 (Covid-19) Response
9 April 2020	Joint Statement Special Video Conference of The ASEAN Health Ministers in Enhancing Cooperation on Covid-19 Response
10 April 2020	ASEAN Ministers Endorse New Covid-19 Response Fund Policy Brief on the Economic Impact of Covid-19 Outbreak on ASEAN released
13 April 2020	Joint Statement Special Video Conference of ASEAN Plus Three Health Ministers in Enhancing Cooperation on Coronavirus Disease 2019 (Covid-19) Response
14 April 2020	Declaration of the special ASEAN summit on Coronavirus Disease 2019 to build on the foundation of existing efforts by individual AMS and that of the ASEAN Community in curbing the spread of COVID-19 and mitigating its political security, economic, and social impacts
15 April 2020	ASEAN Ministers Meeting on Agriculture and Forestry stated on 15 April 2020 pledging to keep markets open and transportation of agricultural and food products continues.
29 April 2020	the ASEAN Tourism Ministers (ATM) agreed on information exchange on travel-related health and other measures through the enhanced operation of the ASEAN Tourism Crisis Communications Team (ATCCT)
6 June 2020	Joint statement of ASEAN Economic Ministers agreed on collective action to mitigate Covid-19 impact, via the Hanoi Plan of Action on Strengthening ASEAN Economic Cooperation and Supply Chain Connectivity in Response to the COVID-19 Pandemic.
29 July 2020	The ASEAN Economic Ministers (AEM) and the Japanese Minister of Economy, Trade, and Industry (METI) adopted the ASEAN-Japan Economic Resilience Action Plan at the Special AEM-METI Video Conference on COVID-19 Response
26 June 2020	The 36th ASEAN Summit on 26 June 2020 held in Viet Nam underscored the importance of strengthening ASEAN's capacity and regional public health and preparedness mechanisms to address Covid-19, emerging and re-emerging infectious diseases, and other public health emergencies. To implement the declaration, the ASEAN leaders adopted the Ha Noi Plan of Action on Strengthening ASEAN Economic Cooperation and Supply Chain Connectivity in Response to the COVID-19 Pandemic.
12 November 2020	the 37th ASEAN Summit was held via videoconference to approve the ASEAN Comprehensive Recovery Framework and its Implementation Plan, which will serve as the whole-of-community exit strategy to recover and build back better from the COVID-19 pandemic. In addition, the ASEAN Travel Corridor Arrangement was discussed which would facilitate the safe resumption of essential business travel in the region.
21 January 2021	The ASEAN Foreign Ministers' Retreat was held via videoconference to discuss the regional response to and recovery from the covid-19 pandemic and committed to swiftly implementing the ASEAN



Date	Responses
	Comprehensive Recovery Framework (ACRF) and its Implementation Plan, as well as working towards the timely establishment of the ASEAN Travel Corridor Arrangement Framework (ACRF) and operationalization of the ASEAN Regional Reserve of Medical Supplies for Public Health Emergencies (RRMS); as well as the timely establishment of the ASEAN Centre for Public Health Emergencies and Emerging Diseases (ACPHEED).
16 March 2021	Given the necessity of closer coordination among ASEAN membership countries, the stakeholders, and the partner organizations in the realization of “the ASEAN Comprehensive Recovery Framework”, the ASEAN Socio-Cultural Community (ASCC) held its first Partnership Conference with the theme “Towards Post-COVID Recovery and Resilience in ASEAN.”
22 July 2021	The Special Video Conference of ASEAN Health Ministers on “ASEAN COVID19 Response after One Year” was hosted by Indonesia, and it was confirmed that the ASEAN region has made significant progress in pandemic responses and vaccination deployment during the past year.
12 October 2021	The Lead Implementing Body for Sustainable Infrastructure (LIB-SI) conducted a regional workshop as part of the project “Assessing Future Sustainable Infrastructure Trends and Priorities in Post-Pandemic ASEAN”. In response to the COVID-19 outbreak, the ASEAN member countries were forced to reallocate their resources into immediate needs and high-prioritized issues, which affected infrastructure development. Recommendations of the prioritized infrastructure projects in the post-pandemic periods were made and opportunities and challenges toward sustainable infrastructure development and socio-economic recovery were discussed.
3 December 2021	The ASEAN Agreement on E-Commerce entered into force after the notice of ratification by the Indonesian Government. It provisions advanced trade rules in E-Commerce in the ASEAN region. It was announced that the entry into force of the agreement will bring the ASEAN closer to the realization of a regionally integrated digital economy and will have important implications for economic recovery from the COVID-19 pandemic.

Source: Djalante et al (2020)<sup>16</sup> and Press Release by ASEAN Secretariat

On 10 March, ASEAN Economic Ministers issued a statement on Strengthening ASEAN’s Economic Resilience in Response to the Outbreak of COVID-19, in which they reaffirmed commitment to maintaining ASEAN’s open economic and integration policies and resolved to take collective action to mitigate the impact of the COVID-19 outbreak inclusive of keeping markets open, strengthening information sharing and coordination, and working closely with industry stakeholders.

On 14 April 2020, the leaders of Southeast Asian countries agreed to establish an ASEAN COVID-19 Response Fund as a means to procure crucial medical supplies and equipment for response and preventive efforts in all member countries. ASEAN had invited ASEAN Plus 3 (Japan, South Korea, and China) to contribute to this fund.

On 14 April 2020, the Joint Statement of the Special ASEAN Plus Three Summit on Coronavirus Disease 2019 (COVID-19) reaffirmed its commitments to keep the market open for trade and investment and enhance cooperation among ASEAN countries to ensure food security, such as the utilization of the ASEAN Plus Three Emergency Rice Reserve (APTTER) and strengthen the resiliency and sustainability of regional supply chains.

On 15 April 2020, the ASEAN Ministers Meeting on Agriculture and Forestry (AMAF) issued a statement pledging to keep markets open and transportation of agricultural and food products continue. They also stressed the importance of reducing excessive price volatility, particularly price spikes, ensuring adequate emergency food and reserves, and providing timely and accurate market information.

Further, the ministers stressed the need to implement necessary measures, projects, and programs at the national level to meet the immediate food needs of the ASEAN population, particularly the vulnerable groups in the society, and highlighted the need of boosting the ASEAN Member States’ (AMSs’) social protection programs for smallholder farmers and Micro, Small & Medium Enterprises (MSMEs) to increase food production and ensure food security in the region. The ministers also agreed to a needs-assessment study to determine the effectiveness of mitigation measures on food security and livelihoods.

On 29 July 2020, the ASEAN Economic Ministers (AEM) convened with the Japanese Minister of

<sup>16</sup> Djalante et al (2020): “COVID-19 and ASEAN responses: Comparative policy analysis”, Progress in Disaster Science 8 (2020) 100129

Economy, Trade, and Industry (METI) at the Special AEM-METI Video Conference on COVID-19 Response adopted the ASEAN-Japan Economic Resilience Action Plan, which was published on 22 April 2020. The Action Plan aimed to enhance cooperation in mitigating the economic challenges brought about by the COVID-19 pandemic and ensure long-term economic resilience for ASEAN and Japan's post-pandemic recovery.

## 2.3 Sector-Wise Situation and Impacts of COVID-19

There are various policies against the New Coronavirus (COVID-19) pandemic such as border closure, travel ban, export restrictions, securing social distance, lockdown, suspension of business operations except for essential activities, etc. These various policies have in fact affected various economic sectors, e.g.;

- ✓ In the agricultural sector of the primary industry, the impact on the downstream part of the supply chain due to logistic disruption seems to be greater than the impact on the upstream part such as agricultural production. However, there are cases that such effects that had taken place at the downstream of the chain are impacting the upstream side.
- ✓ In the secondary industry, various measures against COVID-19 have had negative impacts on the manufacturing and construction industries. However, in the manufacturing industry in Singapore, biomedical manufacturing, electronic equipment, precision engineering clusters, etc. have driven economic growth which in turn resulted in a positive GDP growth rate of the industry.
- ✓ The impact on the tertiary sector, on the other hand, has been the most extensive and diverse among the three sectors. For example, negative impacts have appeared in the wholesale and retail trade, hotel and catering, transportation and storage, and arts, entertainment, and recreation sectors, while positive impacts have appeared in the information and communication sector.

The ILO has investigated the impact of COVID-19 on various industries from the perspective of working conditions and identified sectors particularly affected which include public emergency services, health care, education, food retail, automobile industry, travel and tourism, civil aviation, agriculture, shipping, and fishing, and textile, clothing, leather, and footwear industries<sup>1</sup>. This chapter summarizes the impacts of the COVID-19 on the major industrial sectors, referring to the industry overview data compiled by the ILO<sup>2</sup> in June 2020.

### 2.3.1 Primary Sector

In the agricultural, livestock, and fisheries industries, which are part of the primary sector and are related to the food value chain, socio-economic policies against COVID-19 including lockdowns, logistic restrictions, and movement restrictions on the workforce have made negative impacts on farmers' access inputs and working capital.

In addition, there have been problems such as a decrease in demand for foods in restaurants and hotels, a drop in farmgate prices due to a decrease in consumer demand, difficulties in securing buyers due to movement restrictions, and food losses caused by demand decrease and by a lack of processing technology and equipment. On the other hand, while consumers especially in urban areas have become reluctant to shop and eat conventionally, the use of take-out and catering services, as well as commercial transactions of foodstuffs through E-Commerce markets, have been increasing. These changes in individual and household consumption styles have been significant. In response, some producers have been forced to participate in E-Commerce markets to reach out directly to urban buyers and consumers.

On the other hand, in the forestry industry, as trade-in forest products has decreased worldwide due to supply chain disruptions, demand for wood and wood products such as tropical wood, graphic paper, and wooden furniture has decreased, whereas demand for packaging materials, wooden pallets, toilet

<sup>1</sup> ILO, "Sectoral impact, responses and recommendations (COVID-19 and the world of work)" < <https://www.ilo.org/global/topics/coronavirus/sectoral/lang--ja/index.htm> >

<sup>2</sup> The classification of industries is based on Colin Clark's classification, and the classification of each industry is based on the International Standard Industrial Classification of All Economic Activities (ISIC Rev.4).

paper, and mask tissue has been stable or increased. The mining industry has been hit hard by the shortage of labors, transportation restrictions, and port blockades, which have affected not only the mine workers and companies, but also the communities around the mines. The following table summarizes the impact of COVID-19 on those primary industries.

**Table 2.3.1 Impact of COVID-19 on the Primary Industries**

Industry	Impact
Agriculture	<ul style="list-style-type: none"> <li>✓ Since the beginning of COVID-19 pandemic to date, there has been relatively little disruption in terms of food production. However, restrictions on international and domestic movements have caused a variety of impacts, including logistical and labor problems in the food supply chain.</li> <li>✓ Lockdowns, movement restrictions, and suspension of air cargo services have made it difficult for farmers to access inputs such as fertilizers, pesticides, and quality seeds. In addition, farmers have lost their access to the markets due to the temporary closure of local markets, canteen, restaurants, hotels, and other leisure facilities. On the other hand, consumers, especially in urban areas, have become reluctant to shop and eat conventionally, and have instead seen a dramatic increase in electric transaction through E-Commerce markets.</li> <li>✓ Plantation-based agriculture, which is highly dependent on labor-intensive crop production and foreign workers, has been severely affected by labor shortages due to labor mobility restrictions.</li> </ul>
Livestock	<ul style="list-style-type: none"> <li>✓ The lockdowns and the logistical restrictions have affected the distribution of input materials including feed and vaccines, and the provision of artificial insemination services. In Indonesia's poultry industry, disruptions and delays in the supply of newborn chicks, feed, and medicines have made it difficult to operate poultry farms, resulting in reduction of profits for poultry entrepreneurs and farmers, as well as concerns about the sustainability of the business itself.<sup>3</sup></li> <li>✓ In Thailand, domestic consumption of poultry meat fell sharply due to a decline in tourism and service industries, but exports to Japan and China increased while exports to EU countries decreased.<sup>4</sup></li> <li>✓ In the Philippines, there was a report that the lease period for refrigeration facilities has been prolonged because of decreased demand due to lockdowns, etc., leading to increased costs.<sup>5</sup> On the other hand, in Malaysia, demand for milk and dairy products from restaurants and cafes has decreased, but general consumption is on an upward trend due to increased health consciousness and the stay home demand.<sup>6</sup></li> </ul>
Fisheries	<ul style="list-style-type: none"> <li>✓ Due to the lockdowns and the logistical restrictions, buyers and brokers were unable to come to the fisheries markets, and the supply of fishery products stagnated or shrank. In addition to fishing vessels being unable to leave port, some aquaculture businesses found it difficult to obtain fry, feed, and medical supplies, and some fishery processing factories were forced to reduce production due to shortages of employees and raw material supplies. Meanwhile, demand for marine products declined both domestically and internationally. The export volume of shrimps from Thailand decreased due to lower demand, resulting in lower prices. Since it become difficult in selling fishery products directly to markets, more and more sellers are trying to sell their products online basis.</li> <li>✓ Many fishermen and vessel owners also face problems such as difficulty in crew members replacement, expire of medical certificates and seamanship certificates, lack of necessary personal protective equipment, restrictions on embarkation and/or disembarkation and transportation, and difficulty in receiving adequate medical care on board or disembarkation for treatment. Since fishermen are engaged in severe physical labor, the long-term work onboard without change crews result in significant physical and mental problems<sup>7</sup>.</li> </ul>
Forest	<ul style="list-style-type: none"> <li>✓ Supply chain disruptions have led to decreasing in the import and export of forest products all over the world. Global demand for wood and wood products such as tropical timber, graphic paper, and wooden furniture has decreased, and forest-related industries have been forced to reduce production as orders for wood and processed products have been postponed or canceled. In addition, there are fears that the situation may become even more serious in the future, as the performance of industries closely linked to the forest and forestry industry, such as freight transportation, forest-based recreation, and tourism, as well as sectors that use wood as raw material, including construction and automobile manufacturing, is deteriorating in performance.</li> </ul>

<sup>3</sup> Journal & Proceeding FAKULTAS PETERNAKAN UNSOED, "Animal Production", February, 2021  
<<http://jnp.fapet.unsoed.ac.id>>

<sup>4</sup> United State of Department of Agriculture, "The Impact of the Outbreak of COVID-19 on Thai Agricultural Production", May 2020

<sup>5</sup> FAO, "Rapid assessment of the impact of COVID-19 on food supply chains in the Philippines", 2021.

<sup>6</sup> NNA ASIA, 2020/12/23

<sup>7</sup> ILO, "Industry Overview, COVID-19 and Shipping and Fishing", April 17, 2020.

Industry	Impact
	<ul style="list-style-type: none"> <li>✓ On the other hand, the demand for other forest-related products such as packaging materials, wooden pallets, toilet paper, and mask tissue has been stable or increasing. Demand for toilet paper increased sharply at the beginning of the outbreak. The expansion of E-Commerce, which is expected to increase in the future, may lead to increased demand for packaging materials.<sup>8</sup></li> </ul>
Mine	<ul style="list-style-type: none"> <li>✓ Most of the mineral resources produced in ASEAN are not processed domestically but are exported as crude ore or concentrates for processing outside the ASEAN countries. Therefore, despite their high potential, contribution to the economic development of the region is relatively low.<sup>9</sup> However, many of the mining sites are located in the deep mountain sites, far from cities, and their impact on the local communities around the mines is significant. Therefore, the suspension of mine operations would be a major blow to the local communities.<sup>10</sup></li> <li>✓ The mining industry has been hit hard by a shortage of labors, transportation restrictions, and port blockades due to the spread of the COVID-19 infection. In the Philippines and Lao PDR, mines where outbreaks of the new coronavirus have occurred have been forced to suspend operations. According to the Mines and Geosciences Bureau (MGB) of the Philippine Department of Environment and Natural Resources, 138,000 mining workers in the country have been unemployed in 2020.<sup>11</sup></li> <li>✓ One unique way of looking at the impact of COVID-19 is that it will mitigate global warming by reducing greenhouse gas emissions. The Centre for Research on Energy and Clean Air calculates that the stagnation of manufacturing in China will reduce greenhouse gas emissions by 25%, and similarly, the stagnation of manufacturing around the world will have the effect of mitigating global warming.<sup>12</sup></li> </ul>

### 2.3.2 Secondary Sector

In the secondary sector, the impact of various measures against COVID-19 has been observed especially in the manufacturing and construction industries. In the manufacturing industry, there were cases of delays in procuring raw materials, scaling down of production, and suspension or closure of factories due to lockdowns, logistics restrictions, and restrictions on the movement of workers. In addition, demand for masks, alcohol disinfectants, processed foods that can be stored for a long time (e.g., instant noodles and frozen foods), telework equipment, biomedical manufacturing, and precision engineering clusters is increasing, while demand for products related to outgoes, such as clothing, accessories, and cosmetics, is decreasing significantly.

Procurement of construction materials and equipment in the construction industry has been hampered by logistic restrictions, and the progress of construction work has been delayed due to such problems as the movement restrictions of subcontractors and construction workers. Construction materials and equipment have also been affected by the closure of factories of suppliers and stagnation in transportation and custom clearance procedures. As a result, many companies have faced profit decrease, particularly small and medium-sized companies. However, since the construction industry is also related to the government's emergency measures and stimulus packages, they can expect support measures to counter unemployment. The following table is a summary of the impact of COVID-19 on the secondary industry.

**Table 2.3.2 Impact of COVID-19 on the Secondary Industry**

Industry	Impact
Manufacturing	<ul style="list-style-type: none"> <li>✓ The lockdowns, the logistical restrictions, and the restrictions on the movement of workers have led to the suspension or closure of factories and the reduction in production scale in some cases. In addition, some manufacturing industries have enjoyed demand increase in products such as masks,</li> </ul>

<sup>8</sup> ILO, "Industry Overview, COVID-19 and its Impact on the Forest Sector", April 17, 2020.

<sup>9</sup> JOJMEC, "Overview of the Association of Southeast Asian Nations (ASEAN) Mining Industry", Hajime Ikeda, Metal Resources Report, September 2006.

<sup>10</sup> World Economic Forum, "How has the mining industry responded to COVID-19?", 14 Sep, 2020. <<https://www.weforum.org/agenda/2020/09/how-has-the-mining-industry-responded-to-covid-19/>>

<sup>11</sup> NNA Asia 2020.9.4 <<https://www.nna.jp/news/show/2089804>>

<sup>12</sup> Mongabay, "Mining activity in Indonesia takes a hit from COVID-19 pandemic" <<https://news.mongabay.com/2020/03/covid19-mining-indonesia-pandemic-coal-nickel-tin-china/>>

Industry	Impact
	<p>alcohol disinfectants, processed foods that can be stored for long periods of time (e.g., instant noodles and frozen foods), and equipment for telework, whereas some manufacturing companies which faces serious demand decrease, such as clothing, accessories, and cosmetics.</p> <ul style="list-style-type: none"> <li>✓ In the food processing industry, delayed deliveries of agricultural products due to logistical restrictions, and restrictions on the use of labor due to lockdowns and enhanced hygiene measures have resulted in reduced production, suspensions, and increased costs for hygiene measures. In addition, food hygiene systems such as GAP/GHP/GMP/HACCP have been strengthened.<sup>13</sup></li> <li>✓ The automotive industry has experienced decrease in demand and investment. Due to movement restrictions of factory labors, supply chain disruptions, and factory shutdowns, a negative ripple effect on the economy has been observed, including the impact on related sectors located forward and backward in the auto industry chains.<sup>14</sup></li> <li>✓ The impact of COVID-19 on the textile, clothing, leather, and footwear sectors has been observed in the form of a sharp decline in sales in the short term. This is because many retailers are forced to shut down due to lockdowns and other government orders, and consumers are refraining from going out. In addition, factory workers have been forced to stay at home, and supply-side disruptions have been caused by supply chain disruptions and factory shutdowns.<sup>15</sup></li> </ul>
Water supply; sewage, waste management and remediation activities	<ul style="list-style-type: none"> <li>✓ In response to the global expansion of COVID-19, the importance of handwashing with water and soap has increased, and the dissemination of water supply and hygienic behavior has been recognized as a crucial measure. However, as many as 3 billion people, or 40% of the world's population, do not have access to both water and soap at home, and many health facilities and schools lack water supply and handwashing facilities.</li> <li>✓ Informal settlements, slums, and marginal areas in developing countries are particularly at high risk for the spread of COVID-19 because of the low penetration of water and handwashing facilities and high population density. In addition, some water utilities in urban areas have suffered significant damage to their water supply operations due to economic stagnation and medium- to long-term lockdowns caused by the spread of COVID-19.<sup>16</sup></li> </ul>
Construction	<ul style="list-style-type: none"> <li>✓ In the construction industry, the supply chain for construction materials and equipment has become disrupted and stagnant, and the progress of construction work has been delayed due to problems such as stagnation of subcontractors, restrictions on the movement of construction workers, and financial difficulties. Construction materials and equipment have also been affected by factory closures and stagnant transportation and customs procedures, making it difficult to manage the process.</li> <li>✓ As a result, the profitability of many companies has declined, especially for small and medium-sized businesses. Construction workers, especially seasonal workers and migrant workers are directly affected by COVID-19 and are often left out of social protection. However, since the construction industry is also related to the government's emergency measures and stimulus packages, they can expect support measures to counter unemployment. The following is a summary of the impact of COVID-19 on the secondary industry.<sup>17</sup></li> </ul>

### 2.3.3 Tertiary Sector

The measures taken against COVID-19, such as the lockdowns, the movement restrictions, and the curfews, have had a widespread impact, especially in the service sector. Among the negatively affected industries are food service, accommodation, tourism, entertainment, transportation, and arts, entertainment, and recreation. Among them, small and medium-sized businesses, informal and day laborers, the urban poor, and the elderly have been seriously affected.<sup>18</sup>

In the wholesale and retail industry, middlemen and other distributors were affected by the movement restrictions, causing stagnation in product distribution. As a result of lockdowns and restrictions on going out, shopping malls and department stores were forced to reduce sales, and many retail stores

<sup>13</sup> FAO, "Rapid assessment of the impact of COVID-19 on food supply chains in the Philippines. Manila", 2021, <<http://www.fao.org/documents/card/es/c/cb2622en/>>

<sup>14</sup> ILO, "Industry Overview, COVID-19 and the Automotive Sector", April 8, 2020.

<sup>15</sup> ILO, "Industry Overview, COVID-19 and the Textiles, Clothing, Leather, and Footwear Sector", April 8, 2020.

<sup>16</sup> JICA, "Global Project Research on Lessons Learned and Necessary Support Measures to Combat Novel Coronaviruses in the Water Supply and Sanitation Sector," September 2020.

<sup>17</sup> ILO, "Sectoral Brief, Impact of COVID-19 on the construction sector", January 2021.

<sup>18</sup> The ASEAN Secretariat, "ASEAN Policy Brief, Economic Impact of COVID-19 Outbreak on ASEAN", April 2020.

were forced to close. While companies with strong capital are expanding their business to E-Commerce, small and medium-sized businesses that do not have such alternative delivery and sales mechanisms are being hit hard.

The tourism industry has been hit hard worldwide, with serious impacts on related industries such as hotels, restaurants, civil aviation, handicrafts, etc., as well as on the urban passenger services and the arts, entertainment, and recreation industries due to lockdowns and curfews. As shown in the table below, among the ASEAN countries, Cambodia (33%), the Philippines (25%), and Thailand (22%) are the most economically damaged due to the high percentage of tourism in their GDP.

**Table 2.3.3 Contribution of Tourism Industry to the GDP in ASEAN Countries (2018)**

Country	Share to GDP, (in real terms)		Jobs generated		Visitor spending, (in real terms)	
	in %	in USD bn	In '000s	In '000s	in USD bn per 1 mn visitor	Share to total exports, %
Brunei	6.7	0.9	17.0	8.1	0.2	3.5
Cambodia	32.8	8.0	2,911.6	31.6	4.6	30.3
Indonesia	6.0	62.6	12,966.4	10.3	15.5	6.8
Lao PDR	12.0	2.2	347.0	10.5	0.7	12.5
Malaysia	13.3	47.2	1766.7	11.9	19.7	7.9
Myanmar	6.8	5.0	1,351.8	5.9	2.3	20.0
Philippines	24.7	81.5	10,943.7	26.4	8.8	8.4
Singapore	10.0	34.5	325.0	8.8	19.9	3.2
Thailand	21.6	109.5	5,990.6	15.9	70.1	20.8
Viet Nam	9.2	22.4	4,029.4	7.4	10.0	3.9

Source: World Travel and Tourism Council (<https://www.wttc.org/>)

Note: All values are based on constant 2018 prices and exchange rates.

On the other hand, a positive impact is observed in the field of information and communication. There is also an increase in demand for "stay home consumption" through E-Commerce transaction such as C2C and B2C. In addition, there is an increase in demand for digitalization, communication devices, and information and communication services associated with these activities. The following table summarizes the impact of COVID-19 on tertiary industries.

**Table 2.3.4 Impact of COVID-19 on Tertiary Industries**

Industry	Impact
Wholesale and Retail	<ul style="list-style-type: none"> <li>✓ As a result of pandemic mitigation measures such as the lockdowns and the curfews, shopping malls and department stores have been forced to reduce their sales, and many retail stores have been forced to close. Meanwhile, demand for food retailers and food and grocery store workers has skyrocketed as people are forced to stay home and buy food and other necessities in preparation for prolonged quarantine measures.</li> <li>✓ The hardest hit is small and medium-sized food retailers in particular, as unlike large retailers, they do not have alternative mechanisms of delivery and sales including E-Commerce.</li> <li>✓ When selling food to consumers, some retailers are using new technology while adopting hygiene and precautionary measures on the front lines. For example, self-checkout is encouraged, cash payments are minimized, counters are equipped with protective screens, and shelves are restocked only before and after business hours.<sup>19</sup></li> </ul>
Transport and Storage	<ul style="list-style-type: none"> <li>✓ <b>【Land Transport】</b> In order to control the COVID-19 pandemic, border closures and restrictions on domestic transportation for land freight services have been implemented in most countries, resulting in stagnant or underperforming logistics and supply chain disruptions. In addition, new restrictions (or closures) at border crossings, national state/provincial borders, and local jurisdictions have negatively impacted the working conditions of land transport service workers in terms of waiting time, forced quarantine, enforced inspections, and discrimination.</li> <li>✓ Almost all long-distance tourist bus services (especially international services) have been suspended, and services on long-distance domestic route buses have been reduced or canceled. Other land freight operators, including those transporting essential goods, have seen their revenues</li> </ul>

<sup>19</sup> ILO, "Industry Overview, COVID-19 and Food Retail", June 2020.

Industry	Impact
	<p>decline by up to 40% or run empty more frequently (up to 40% more) due to the lack of new contracts.<sup>20</sup> On the other hand, small food delivery and digital services increase in sales as consumers choose to stay home to avoid crowded grocery stores. This has resulted in increased competition at the level of fragmentation, including increased use of subcontractors, and independent drivers and micro, small and medium enterprises (MSEs), including private carriers, have become a major part of the freight transportation industry.<sup>21</sup></p> <ul style="list-style-type: none"> <li>✓ <b>【Urban Passenger Transport Service】</b> Transportation modes such as buses, trains, and shared cabs were considered to be one of the industrial sectors at high risk of spreading COVID-19 infection, and crisis management systems were rapidly put in place. With the lockdowns and the travel restrictions, all modes of transportation have seen a drop in passengers and revenue. But since urban transit users include providers of hospitals, nursing care, and other critical services, many operators are working to maintain service by reducing schedules and frequency. Nevertheless, some taxi and distribution service companies have been forced to innovate and reform, and food and medicine delivery services have been done by those companies.<sup>22</sup></li> <li>✓ <b>【Air Transport】</b> In the air transport industry, flights have been canceled to prevent the spread of COVID-19, and travel restrictions and bans have been implemented in many countries, resulting in the suspension or reduction of many international passenger flights. Cargo flights are responsible for transporting essential medicines and medical equipment, as well as maintaining a global supply chain for urgently needed raw materials, and in some cases, restrictions have been imposed on air cargo shipments even though they are a means to combat COVID-19. Due to severe movement restrictions and the expected global economic downturn, IATA forecasts that overall industry passenger revenues will decline by USD252 billion in 2020, a 44% drop from the previous year.<sup>23</sup></li> <li>✓ <b>【Maritime Transport】</b> Shipping is a major artery in the international supply chain, accounting for 90 percent of global trade, and as of mid-April 2020, global trade transactions reduced 13 percent from the previous year, with some predicting a further decline of more than 32 percent. With 384 voyages already canceled, shipments are expected to fall 25% in the first half of 2020, and 10% for all of 2020. The impact of COVID-19 will be devastating for the shipping industry, which employs 2 million seafarers. The cruise ship sector, which employs 250,000 seafarers, has been hit particularly hard as some countries have asked cruise lines to refrain from travel and major cruise lines have shut down operations.<sup>24</sup></li> <li>✓ Since November 2019, there has been a global shortage of containers, which has pushed up transportation costs in many countries and consequently inhibited exports in many countries. The impact has been observed in ASEAN countries as well, with ocean freight rates soaring two to four times higher than usual in Indonesia, the Philippines, Thailand, Viet Nam, and other countries, severely impacting imports and exports. The reason for this is that while exports from China to the U.S. have been increasing, U.S. exports have been stagnant due to COVID-19, which is said to be causing a backlog of containers in the U.S.<sup>25</sup></li> </ul>
Hotel and Restaurant	<ul style="list-style-type: none"> <li>✓ Due to the lockdowns and the movement restrictions taken to prevent the COVID-19 pandemic, the hotel, foodservice and tourism industries have been directly impacted on a global scale. It is estimated that the international tourism economy could shrink by 45-70%, and as a result, all sectors that gain benefit from the spillover effects of tourism, such as hotels, restaurants, civil aviation, handicrafts, agriculture, and food and beverage supply, are being severely impacted.<sup>26</sup></li> <li>✓ In 2019, the tourism sector accounted for 10.3 percent of total global employment, including all direct and indirect employment, or about 330 million jobs. The ILO estimates that a pandemic could result in the loss of 305 million jobs, many of which are tourism-related workers.<sup>27</sup></li> <li>✓ As consumption styles change due to the refraining from stay-home policy and the expansion of "work from home", and as demand for eating out decreases drastically, the restaurant industry has been forced to review and change its business model by introducing take-out and delivery systems.<sup>28</sup></li> </ul>

<sup>20</sup> IRU, 2020. IRU Open Letter: Road transport industry call for action 'Driving the recovery', 06 May.

<sup>21</sup> ILO, "Industry Overview, Impact of COVID-19 on the Road Transport Sector," June 2020.

<sup>22</sup> ILO, "Industry Overview, COVID-19 and Urban Passenger Services", September 2020.

<sup>23</sup> Brian Pierce, "COVID-19: Updated impact assessment, op. cit.", 24 March 2020.

<sup>24</sup> ILO, "Industry Overview, COVID-19 and Shipping and Fishing", April 17, 2020.

<sup>25</sup> JETRO, "Business Briefs, Asian Countries, Container Shortage Hampers Exports, Affects Procurement", December 15, 2020.

<sup>26</sup> OECD, "Tackling coronavirus (Covid-19): Tourism Policy Responses." updated 15 April 2020.

<sup>27</sup> ILO, "Industry Overview, COVID-19 and the Tourism Sector", May 2020.

<sup>28</sup> Sankei Shimbun e-edition, "Emergency declaration accelerates 'food service industry' business transformation," January 21, 2021.



Industry	Impact
Information Communication	<ul style="list-style-type: none"> <li>✓ COVID-19 has drastically changed lifestyles, resulting in an increase in telework, activities and entertainment at home such as online classes and video distribution services, and an increase in demand related to "stay home consumption" through E-Commerce and mail-order sales such as C2C and B2C.</li> <li>✓ As the distribution of agricultural and marine products stagnates due to the lockdowns and logistical restrictions, online apps that directly connect producers and consumers have been developed one after another, expanding the E-Commerce market. Through the app platform, producers can directly monitor and check purchase prices, alleviating the information asymmetry between producers and marketers, and enabling producers to determine appropriate prices.</li> <li>✓ Digitalization in rural retail stores, including online ordering of daily necessities using smartphone apps, is making progress on the occasion of COVID-19. For example, an Indonesian startup company called Simbad (founded in 2018) has developed an app-based system for ordering products from manufacturers and major wholesalers, which is being adopted by small, family-run retailers called warungs and tokos.<sup>29</sup></li> </ul>
Professional, Specific and Technical Activities	<ul style="list-style-type: none"> <li>✓ Scientific research institutions, including drug manufacturers, are exploring COVID-19 treatments and developing vaccines under an unprecedented international collaboration.</li> <li>✓ The spread of the new coronavirus has led to the development and use of ICT and robots. For example, robotics is one of the 10 strategic areas set forth by the Thai government, but development had not progressed much. However, robots that can check a person's body temperature and wear a mask at a retail store or provide remote medical care using the next generation 5G communication standard, are appearing one after another.<sup>30</sup></li> </ul>
Education	<ul style="list-style-type: none"> <li>✓ Schools and universities have been closed in many countries to prevent the spread of COVID-19. 192 countries have mandated nationwide closures, disrupting the learning of 1.58 billion people (91.4% of all registered students), and nearly all education systems are implementing distance learning solutions. Schools and teachers are ingeniously adopting a variety of technology-based strategies to replace traditional classroom instruction, teaching through video conferencing and online learning platforms, and sharing learning materials and worksheets through school intranets and messaging tools. However, while some schools and communities are in a better position to leverage the resources, technology infrastructure, and educational technology market to respond to this crisis effectively and comprehensively, others are not, and disparities are emerging.<sup>31</sup></li> </ul>
Human Health and Social Work Activities	<ul style="list-style-type: none"> <li>✓ With the spread of COVID-19 infection, the resilience of the healthcare system and the country's preparedness and response to emergencies are attracting attention, and the securing of medical and isolation facilities, medical equipment, and healthcare workforce, which are essential for a resilient healthcare system, has become an urgent issue. In addition, healthcare workers are exposed to risks to their own health in the course of their daily work and are forced to work long hours, and the importance of mental health, including that of their families, is increasing.<sup>32</sup></li> </ul>
Arts, Entertainment, and Recreation	<ul style="list-style-type: none"> <li>✓ Due to COVID-19, the arts, entertainment, and recreation sector has been hit hard with lower revenues and job losses due to the cancellation or postponement of events and entertainment activities. For example, in the Philippines, the number of employees in the arts, entertainment, and recreation services sector in April 2020 was 55 percent lower than that in April 2019.<sup>33</sup></li> <li>✓ In terms of live performances, canceled concerts, festivals, and other events have delayed the release of new music. Also, orchestras and ballet companies, among others, have been experimenting with live-streamed performances for virtual audiences. Consumption of on-demand music and audiovisual content is also increasing, with streaming services replacing physical product sales.<sup>34</sup></li> </ul>

### 2.3.4 Specific Sub-Sectors with COVID-19: Nutrition

The spread of COVID-19 has affected existing food systems and all other industries. Restrictions on domestic and international movements have hampered food-related logistics services the entire food supply chain with influencing people's access to food. In addition, changes and decreases in the agricultural labor force at production sites and the impact on the supply of agricultural inputs give

<sup>29</sup> Nikkei Business, "Southeast Asia and India, Digitalization Accelerates Rapidly with New Corona," May 1, 2020.

<sup>30</sup> Nikkei Sangyo Shimbun, "Thailand's growing robot industry in Corona to transport disinfectant solution and check temperature", June 1, 2020. <<https://www.nikkei.com/article/DGXMZO59738370Z20C20A5XR1000/>>

<sup>31</sup> ILO, "Industry Overview, COVID-19 and the Education Sector", June 2020.

<sup>32</sup> ILO, "Industry Overview, COVID-19 and the Health Care Sector", April 11, 2020.

<sup>33</sup> Philippines Statistic Authority, "Labor Force Survey" April 2019 and April 2020.

<sup>34</sup> ILO, "Industry Overview, COVID-19 and the Media and Culture Industry", July 2020.

damages not only to farming productivity but also food security. Thus, it is expected that the impact of COVID-19 on the food value chain will impact the nutrition and health of many people at the global level further. Such a situation can cause food shortage and malnutrition, especially, for the poor.

The Food Systems Summit to discuss sustainable food systems was organized by the United Nations in September 2021 under the pandemic. The statement of the Summit presented the five action areas to be realized, and the first action area is “Nourish all people”. Furthermore, the Tokyo Nutrient for Growth Summit 2021 was held in December 2021, publishing “the 2021 Nutrition for Growth Compact” to achieve any global nutrition targets by 2030. The two summits aim at a solution of worldwide issues related to hunger and malnutrition, which won more attention by international societies. Various international organizations focus on the food security and nutrient sector.

FAO WFP, WHO, UNICEF, and other organizations have conducted a study on the effects of COVID-19 on nutrition in Asia and the Pacific regions. As a result, a joint statement was issued to call upon all governments, donors, and partners to protect the nutritional status of the most vulnerable families and individuals across Asia while implementing appropriate infection prevention control measures. This Joint Statement is intended to provide recommendations on a prioritized set of actions and policy guidance to support nutrition in the context of COVID-19 (April 2020).

In the statement, at the start of the COVID-19 crisis, an estimated 10.5 million children under five in Asia were suffering from wasting, 78 million children were stunted, and 17 million were overweight, while 400 million women were anemic. Furthermore, it has been concerned that the impact of COVID-19 would exacerbate these malnutrition situations. Therefore, this statement recommends healthy diets, maternal, infant, and young child nutrition, managing wasting; micronutrient supplementation; school feeding and nutrition, and nutrition surveillance<sup>35</sup>.

In addition, on June 5, 2020, FAO showed that the spread of COVID-19 poses a severe threat to food security and nutrition. Along with an assessment of the current situation in each country, FAO provided the relevant governments with examples of how institutions could rebuild their food system and then offered a wide range of policy recommendations. It was reported that the economic confusion caused by the spread of COVID-19 threatened both financial and physical access to food. In addition, along with the decline in income, there are also cases that especially nutritious foods are no longer available to the poor person at affordable prices. The disruption of markets, logistics, and trading systems has made it impossible to procure food in some areas. It suggested that hunger and malnutrition may increase in the future.

There is a report that the economic slowdown in Asia has caused widespread unemployment, reduced income, and reduced remittances. In addition, it was estimated that extreme poverty would increase by 60%. While it can drive many people into food insecurity in the short term, it would negatively affect many people in the long term. It is also predicted that children are unable to go to school due to household poverty or movement restriction etc. Then, those households have to sell livestock and other assets at low prices to secure food for children and family members. Significantly, it was concerned that children could not take nutritious food during the growing season when nutrition is needed (for example, the first 1000 days of life)<sup>36</sup>.

The following table summarizes COVID-19 impacts on people's nutrition, especially due to their involvement in the food value chain, from the surveys conducted in Southeast Asian countries.

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<sup>35</sup> FAO, “Joint statement on nutrition in the context of the COVID-19 pandemic in Asia and the Pacific”, April 17 2020, <<https://www.unicef.org/eap/joint-statement-nutrition-context-covid-19-pandemic-asia-and-pacific>>

<sup>36</sup> FAO, “Impacts of coronavirus on food security and nutrition in Asia and the Pacific”, June 5 2020, <<http://www.fao.org/policy-support/tools-and-publications/resources-details/en/c/1287454/>>

**Table 2.3.5 Impact of COVID-19 on the nutrition status related to the FVC**

Country	Impact of COVID-19 on the nutrition status related to the FVC
Philippine	<ul style="list-style-type: none"> <li>✓ An inefficient logistics system was excluding many Smallholder Farmers and Fisheries from agri-value chains, as well as many poor households from affordable foods.</li> <li>✓ Due to the ban on imports and exports and the stagnation of domestic distribution, the distribution of agricultural products to the market (especially in urban areas) was delayed, and the farm gate prices and retail prices of many crops were lower than the average year.</li> <li>✓ Regarding rice, measures were taken by local governments to purchase rice directly from farmers using the fund for disaster. In addition, the government purchased large quantities of rice from co-operatives and farm groups at prices higher than market prices for relief packages in urban areas where rice production is low.</li> <li>✓ Despite calls for the inclusion of vegetables in relief food packs for the poor people, it was only partially applicable due to the difficulty in transporting and distributing fresh food. On the other hand, due to lack of demand, it is said that farmers had to discard many vegetables such as cabbage.</li> <li>✓ Because public transportation was closed to restrict the spread of COVID-19, small retailers could not carry enough food by themselves and could only secure small quantities.</li> <li>✓ COVID-19 did not significantly affect the distribution of staple foods. While the distribution of many agricultural products was stagnant and stocks at food retail stores and markets decreased, large quantities of agricultural products were discarded without being sold on farms.</li> <li>✓ Due to the ban on public transportation, consumers without transportation could not go shopping to the fresh market or retail stores. Although purchases on the Internet were promoted, purchasing power declined among the poor people who could not have smartphones and access the Internet.</li> <li>✓ 7.3 million have been unemployed (not including the poorer informal sector) and rely on relief food packs distributed by the government and private donors. While those poor people can survive acute hunger with the relief food packs, their quality was inadequate to meet long-term nutritional requirements.</li> <li>✓ Examples of a standard food pack that the government distributed to targeted households nationwide contained rice, instant noodles, plain biscuit, bread, corned beef, cans of sardines, cans of tuna, energy drink or coffee, powder milk, etc. These foods contain only up to 10% of the recommended daily fiber intake. In addition, the amount of sodium contained in canned meat and fish and the amount of sugar contained in powdered beverages are very high. On the other hand, concerning micronutrients, all foods except milk had low amounts of minerals and vitamins.</li> </ul> <p>Source: FAO, "Rapid assessment of the impact of COVID-19 on food supply chains in the Philippines. Manila," 2021, &lt;<a href="http://www.fao.org/documents/card/es/c/cb2622en/">http://www.fao.org/documents/card/es/c/cb2622en/</a>&gt;</p> <p>Source: Australian Centre for International Agricultural Research, "COVID-19 and food systems in the Indo-Pacific: An assessment of vulnerabilities, impacts, and opportunities for action", November 10, 2020, &lt;<a href="https://aci-ar.gov.au/publication/covid-19-and-food-systems">https://aci-ar.gov.au/publication/covid-19-and-food-systems</a>&gt;</p> <p>Source: Madeline Mae Ong, etc., "Addressing the COVID-19 Nutrition Crisis in Vulnerable Communities: Applying a Primary Care Perspective", Journal of Primary Care &amp; Community Health, Volume 11: 1-4, 2020, &lt;<a href="https://journals.sagepub.com/doi/full/10.1177/2150132720946951">https://journals.sagepub.com/doi/full/10.1177/2150132720946951</a>&gt;</p>
Timor-Leste	<ul style="list-style-type: none"> <li>✓ Harvest of staples means April and May should be the months with the highest level of food security in a typical year, but over 40% of households are already engaging in coping strategies that reduce the amount of food they are eating at least once per week.</li> <li>✓ 81% of households reported the restrictions around COVID-19 had affected their food/income sources. For 75% of households, more than one food/income source had been affected. 50% of respondents had experienced a food shortage in shops and in markets, and 35% reported shortages of non-food items in shops due to COVID-19.</li> <li>✓ 64% of households have two months or less of food stored, including 18% who have no food stored. 58% of households rate their food storage levels as less than this time in a typical year.</li> <li>✓ Only 22% of respondents said that any member of their household had savings of any kind, and among those with savings, only 7% reported having more than USD250. On the other hand, 68% of households borrowed new money from villages and savings groups. The purpose of the loan is most often for urgent food procurement, and 66% of households borrow for this reason.</li> <li>✓ In normal conditions, food security should be highest at this time of the year but 14% of respondents fell into the 'moderate hunger' category. With 76% of respondents growing maize and if harvests were at normal levels, households may be depending on maize stocks for their food security at present. However, it seems that there will be little rice to follow. In total, less than 1% of households fell into the 'severe hunger' category. On the other hand, 66% of households bought less desirable cheap food, consumed seeds as a substitute for food, and procured food on loans.</li> <li>✓ Inability to travel to markets was the most prevalent shock (92%), followed by the closure of markets/shops (82%) and reduced/unavailable food in markets (74%).</li> <li>✓ 88% of households were impacted by livestock disease, 77% of households were impacted by</li> </ul>

Country	Impact of COVID-19 on the nutrition status related to the FVC
	<p>crops pests (Fall Armyworm inclusive), 73% were impacted by unseasonal or erratic rain, and 67% of households were impacted by a terrible harvest.</p> <p>Source: USAID etc., "Timor-Leste – Rapid Food Security Assessment 2020", June 9, 2020, &lt;<a href="https://asia.oxfam.org/latest/policy-paper/timor-leste-rapid-food-security-assessment-2020">https://asia.oxfam.org/latest/policy-paper/timor-leste-rapid-food-security-assessment-2020</a>&gt;</p>
Myanmar	<ul style="list-style-type: none"> <li>✓ A multi-country analysis of Demographic Health Surveys in 52 countries models shows how declines in economic growth contribute to increases in child wasting. This model predicts that the projected 8.6 percentage-point drop in the national income growth rate in Myanmar in 2020 may lead to over 110,000 extra under-fives being wasted. These children will be at increased risk of not surviving until their fifth birthday. In addition, it is estimated that 65,000 children a year will need treatment for severe acute malnutrition.</li> <li>✓ Declining incomes due to the COVID-19 crisis, as well as disruptions to Myanmar's food systems, could reduce caloric intake for the most vulnerable. But the main impact is likely to be a significant reduction in dietary diversity. It partially explains the increased risk of wasting, stunting, and micronutrient deficiencies, such as anemia.</li> </ul> <p>Source: IFPRI Myanmar, "The impacts of the COVID-19 crisis on maternal and child malnutrition in Myanmar", July 2020, &lt;<a href="http://ebrary.ifpri.org/utils/getfile/collection/p15738coll2/id/133814/filename/134024.pdf">http://ebrary.ifpri.org/utils/getfile/collection/p15738coll2/id/133814/filename/134024.pdf</a>&gt;</p> <p>Source: IFPRI, "Impacts of the COVID-19 crisis on maternal and child malnutrition in Myanmar", July 2020, &lt;<a href="https://www.ifpri.org/publication/maintaining-food-and-nutrition-security-myanmar-during-covid-19-crisis-lessons-indias">https://www.ifpri.org/publication/maintaining-food-and-nutrition-security-myanmar-during-covid-19-crisis-lessons-indias</a>&gt;</p>
Viet num	<ul style="list-style-type: none"> <li>✓ It was reported that the frequency and quality of children's meals had decreased compared to before school closures. Some 70.4% of study participants from urban areas more frequently reported their children had fewer meals during the day, compared to 29.6% of those in rural locations.</li> <li>✓ The nutritional quality of each family meal was much reduced, with limited diversity and essential nutrients. It was mainly due to rising food prices, especially for pork. The trend was compounded by many parents losing jobs and struggling to maintain subsistence levels of income, particularly parents who were freelance workers in industrial zones.</li> <li>✓ Some 34.5% of study participants reported experiencing worsened food quality and purchasing food at higher prices than usual. In contrast many parents experienced job losses or reductions in income already at subsistence level.</li> <li>✓ As for families living in restricted areas, where most local markets were closed and restrictions in movements implemented, they tended to stockpile food, use self-cultivated food or receive food from local authorities, such as noodles and eggs. Consequently, families adopted coping strategies by limiting the diversity and quality of food, preventing children from benefiting from essential nutrients needed for sound physical and cognitive development.</li> </ul> <p>Source: UNICEF, "Rapid assessment on the social and economic impacts of COVID-19 on children and families in Viet Nam", August 2020, &lt;<a href="https://www.unicef.org/eap/media/6506/file/Impact%20of%20COVID-19%20on%20children%20in%20Viet%20Nam.pdf">https://www.unicef.org/eap/media/6506/file/Impact%20of%20COVID-19%20on%20children%20in%20Viet%20Nam.pdf</a>&gt;</p>
Cambodia	<ul style="list-style-type: none"> <li>✓ Although COVID-19 did not significantly affect people's access to food, some took measures such as a new loan for food purchasing and reduced food intake depending on economic conditions.</li> <li>✓ More than half of the households surveyed had to reduce the quantity and quality of their meals.</li> <li>✓ Food prices increased during early 2020, especially for meat, eggs, and fish products in Phnom Penh and fresh vegetables in provincial markets. Although prices stabilized, many households decreased their food intake and diet diversity in important food categories such as products rich in protein, vitamin A and iron. These impacts are most worrying for more vulnerable household members, especially pregnant women and children.</li> <li>✓ As of August 2020, 30% of women's diets failed to reach minimum diversity, but this increased to 50% in November.</li> <li>✓ Households also resorted to more radical livelihood coping strategies, such as reducing essential spending on education and health, selling productive assets, and sending household members to other provinces to look for work.</li> </ul> <p>Source: Scaling Up Nutrition, "How COVID-19 has harmed nutrition in Asia and the Pacific", February 10, 2021, &lt;<a href="https://scalingupnutrition.org/news/how-covid-19-has-harmed-nutrition-in-asia-and-the-pacific/">https://scalingupnutrition.org/news/how-covid-19-has-harmed-nutrition-in-asia-and-the-pacific/</a>&gt;</p>
Laos	<ul style="list-style-type: none"> <li>✓ Food expenses has declined due to unemployment and reduced income (decrease in consumption).</li> <li>✓ Loans for food procurement were increased.</li> <li>✓ It became difficult to secure food due to synergistic effects with past problems (droughts, floods, pests, etc.).</li> </ul>

Country	Impact of COVID-19 on the nutrition status related to the FVC
	<ul style="list-style-type: none"> <li>✓ 30% of respondents of the survey said they had nutritional problems. They could not procure and consume five food groups in a well-balanced manner by increasing food prices.</li> <li>✓ Consumption of meat (especially pork) and fish decreased due to the price increase.</li> <li>✓ Especially in rural areas, people tried to collect food such as fish, herbs, fruits, and edible insects from their surrounding area other than the agricultural products they produce. Because their accessibility to a variety of food has been decreased due to price increases in the market.</li> </ul> <p>Source: UNSDG, UN Lao PDR Socio-Economic Response Framework to COVID-19, 2020, &lt;<a href="https://unsdg.un.org/resources/un-lao-pdr-socio-economic-response-framework-covid-19">https://unsdg.un.org/resources/un-lao-pdr-socio-economic-response-framework-covid-19</a>&gt;</p> <p>Source: WFP, FAO &amp; The Government of Lao PDR, "COVID-19 Rapid Assessment of Food Security and Agriculture in Lao PDR", May 2020, &lt;<a href="https://www.wfp.org/publications/covid-19-rapid-assessment-food-security-and-agriculture-lao-pdr">https://www.wfp.org/publications/covid-19-rapid-assessment-food-security-and-agriculture-lao-pdr</a>&gt;</p>
Malaysia	<ul style="list-style-type: none"> <li>✓ The Minister of Agriculture, Forestry and Fisheries has notified the public that domestic food inventories are stable. The domestic rice consumption is 200,000 tons per month, but the average monthly stock is sufficient, like 400,000 to 500,000 tons. Also, the production and supply of chicken and eggs were sufficient to meet domestic demand. The local production of vegetables and fruits does not have been impacted significantly on supply at this time. On the other hand, total exports to foreign countries such as Singapore and China are declining due to the COVID-19 epidemic.</li> <li>✓ Vegetables and fruits were distributed to households in occupations where it was difficult to purchase food in the market, such as security guards and health care workers, during the enforcement of movement restrictions.</li> <li>✓ The government has decided to provide financial support to the agriculture and food industries. The National Economic Revitalization Plan (PENJANA) for the agriculture and food industry decided to provide three types of support (microfinance business, support for pilot companies engaged in agricultural production activities, and physical support for urban agriculture).</li> </ul> <p>Source: BH ONLINE, "COVID-19: Stable, controlled national food supply," March 18, 2020, &lt;<a href="https://www.bharian.com.my/berita/nasional/2020/03/666516/covid-19-bekalan-makanan-negara-stabil-terkawal">https://www.bharian.com.my/berita/nasional/2020/03/666516/covid-19-bekalan-makanan-negara-stabil-terkawal</a>&gt;</p> <p>Source: Sinar Harian, "640 kg of vegetables, fruits were distributed to Covid-19 staff," March 26, 2020, &lt;<a href="https://www.sinarharian.com.my/article/75617/EDISI/Perak/640-kg-sayur-buah-diedar-kepada-petugas-Covid-19">https://www.sinarharian.com.my/article/75617/EDISI/Perak/640-kg-sayur-buah-diedar-kepada-petugas-Covid-19</a>&gt;</p> <p>Source: Suara Sarawak, "PEJANA inject capital for farmers, ranchers and fishermen," June 25, 2020, &lt;<a href="https://suarasarawak.my/pejana-suntik-modal-untuk-peladang-petani-dan-nelayan/">https://suarasarawak.my/pejana-suntik-modal-untuk-peladang-petani-dan-nelayan/</a>&gt;</p>
Indonesia	<ul style="list-style-type: none"> <li>✓ A survey to investigate malnourished children (under five years old) was conducted at Banten province, the capital of West Java, and Bali. The proportion of malnourished, underweight, and stunted children has increased due to the lack of domestic food availability and the lack of healthy dietary standards.</li> <li>✓ According to a survey in March 2020, 90% of those surveyed began to eat healthy diets, and 61% tried new cooking methods to prevent COVID-19 infections. The Ministry of Health calls it "Fill My Plate" ("Isi Piringku") and recommends a good balance of carbohydrates, fats, and proteins.</li> <li>✓ The Ministry of Agriculture has urged farmers and extension workers to strengthen their National Defense Movement to measure national food security. It proposes four action plans as "the role of farmers and extension workers in the national food security movement." The four action plans are (1) improvement of productivity (in addition to the expansion of cultivation of rice, maize, onion, etc., increase of production of sugar, garlic, etc. to reduce import volume), (2) diversification of agricultural products that can be produced, (3) increasing the stock volume of rice, (4) modernization of agriculture.</li> <li>✓ According to the Indonesian government, the food security budget for 2021 has increased significantly by 30% compared to the previous year. It was about 80 trillion rupiahs in 2020, but it was 104 trillion rupiahs in 2021. Of this amount, 21.8 trillion rupiahs was allocated to the Ministry of Agriculture, and 6.7 trillion rupiahs was allocated to the Ministry of Oceans and Fisheries. In addition, as a special allocation fund, 5.6 trillion rupiahs has been allocated to irrigation, agriculture, marine and fisheries, and non-physical food security services. There are plans to strengthen infrastructure in the agricultural sector, improve productivity, and strengthen food distribution.</li> </ul> <p>Source: Kumparan, "Corona pandemic, there are 3,162 toddlers in Bali experiencing malnutrition," February 23, 2021, &lt;<a href="https://kumparan.com/kumparannews/pandemi-corona-ada-3-162-balita-di-bali-mengalami-gizi-buruk-1uT1FCfpiwJ/full">https://kumparan.com/kumparannews/pandemi-corona-ada-3-162-balita-di-bali-mengalami-gizi-buruk-1uT1FCfpiwJ/full</a>&gt;</p> <p>Source: iNews, "Since the pandemic, cases of malnutrition in Bandung have increased," February 23, 2021, &lt;<a href="https://jabar.inews.id/berita/sejak-pandemi-kasus-balita-gizi-buruk-di-bandung-meningkat">https://jabar.inews.id/berita/sejak-pandemi-kasus-balita-gizi-buruk-di-bandung-meningkat</a>&gt;</p> <p>Source: Antara, "Consumption of healthy food has become a new habit during the pandemic," June 17,</p>

Country	Impact of COVID-19 on the nutrition status related to the FVC
	2020, <a href="https://www.antaraneews.com/berita/1558900/konsumsi-makanan-sehat-jadi-kebiasaan-baru-selama-pandemi">https://www.antaraneews.com/berita/1558900/konsumsi-makanan-sehat-jadi-kebiasaan-baru-selama-pandemi</a> Source: Liputan6, "The Minister of Agriculture is all out in the national food security movement," June 12, 2020, <a href="https://www.liputan6.com/bisnis/read/4277499/mentan-all-out-gerakan-ketahanan-pangan-nasional">https://www.liputan6.com/bisnis/read/4277499/mentan-all-out-gerakan-ketahanan-pangan-nasional</a> Source: Kompas, "Food security budget for 2021 reaches IDR 104 trillion", January 12, 2021, <a href="https://money.kompas.com/read/2021/01/12/110652726/anggaran-ketahanan-pangan-tahun-2021-ca-pai-rp-104-triliun">https://money.kompas.com/read/2021/01/12/110652726/anggaran-ketahanan-pangan-tahun-2021-ca-pai-rp-104-triliun</a>

### 2.3.5 Specific Sub-Sectors with COVID-19: Occupational Health

The spread of COVID-19 infection has encouraged people to keep social distance, wash their hands and wear masks. Due to the change, people are aware of ensuring workers' safety and health and the necessity to invest in good working conditions. In the agriculture sector, the risk of infection is generally low in open farm fields with low labor density. However, people who work in densely populated areas such as agro-food processing plants are exposed to high risks of infection. There are some cases of COVID-19 spreading among workers, which significantly impacts their businesses.

In particular, the risk of infection among workers and employees is high in labor-intensive sectors such as plantations, e.g., palm forests and agricultural processing and manufacturing plants, including livestock and fishery processing, which are abundant in the Southeast Asian region, as well as in environments where an unspecified number of people come and go, such as agricultural markets, retail stores, and restaurants. In such businesses, the spread of infection among workers and employees has led to the closure of agro-processing plants, markets, retailers, and restaurants. Then, it also has resulted in demand decrease for agricultural products, suspension of trade, and other impacts on the food value chain, including production sites and the agricultural sector in the long run.

Some issues caused by poor working conditions were identified even before COVID-19 in countries, where there are many migrant workers from other countries. However, the spread of COVID-19 has made these issues more apparent. Since many foreign workers are not fluent in the local language or English, it is difficult for the employers to provide necessary information to such migrant labors appropriately. In addition, it is necessary for employers to pay consideration to the work and health conditions of the workers. The following is a summary of the occupational health issues identified in Thailand and Malaysia as a result of COVID-19 and the measures taken by each country or company.

#### 1) Occupational Health Issues reported in Thailand

Most of the fishing workers in Thailand are foreign workers, and their countries of origin are mainly Myanmar and Cambodia. Labor and livelihoods on fishing boats are dense, it is extremely difficult to keep sufficient distances, and foreign workers cannot access to latest knowledge and information about COVID-19. The Ministry of Labor in Thailand has set up hotlines in Cambodian, Laotian, and Burmese languages, but many foreign workers are unaware of such assistance. They are in a vulnerable position, cannot prepare the documents to receive social security.<sup>37</sup>

An outbreak was identified in the seafood market in Samut Sakhon Province, which is adjacent to Bangkok in Thailand. COVID-19 cases were confirmed on December 17, 2020, and the number of infected people increased to more than 1,200. Most of them are migrant workers from Myanmar.<sup>38</sup>

<sup>37</sup> M. Marschke, P. Vandergeest, E. Havice, A. Kadfak, P. Duker, I. Isopescu1 and Mallory MacDonnell, "COVID-19, instability and migrant fish workers in Asia", 2021, *Maritime Studies* (2021) 20:87–99

<sup>38</sup> JETRO, "Increased tension over new corona outbreaks. Is it caused by illegal immigrants? From Thailand", 23<sup>rd</sup> December 2020, <<https://www.jiji.com/jc/article?k=2020122300898&g=int>>

Prime Minister Prayut pointed out that the infected were illegal immigrants from Myanmar and the responsibility lies with the factories that employ them. It has also been reported that this outbreak caused anti-Myanmar sentiment among Thai people<sup>39</sup>.

Furthermore, on January 6, 2021, 69 employees were confirmed to be infected with COVID-19 at a factory in Samut Sakhon Province owned by Thai Union Group, which is the largest tuna can company in the world with no indication of the nationality of infected persons. However, the Thai Union continued to operate the factory by restricting the movement of employees within the factory and thoroughly disinfecting the work area.<sup>40</sup>

## 2) Occupational Health Issues reported in Malaysia

In the palm oil sector in Malaysia, as of 2015, about 80% of the workers, namely, around 350,000, were foreigners, and 80-90% of them were Indonesians. It is noted the number of workers for palm oil refining is not included in the number mentioned above. Due to the outbreak of COVID-19, Malaysia issued the order of domestic movement restriction in March 2020, and many people were banned from the operation, but certain industries such as the palm oil sector were allowed to operate. The government has issued a “standard operating procedure” to control infections, urging industries, including the palm oil sector, to comply with this procedure.<sup>41</sup>

However, since before COVID-19, illegal immigrants have been widely employed in the palm oil sector in Malaysia to make up for the labor shortage. Some enter the country on an irregular basis, while others enter the country for travel purposes or with a work permit. In addition, there are cases that employers do not renew their work permissions.

In fact, since April 2020, more than 2,000 of these illegal workers have been arrested and detained in illegal immigration detention centers. The center is densely populated, resulting in an outbreak of COVID-19 with more than 700 people infected.<sup>42</sup> Most COVID-19 outbreaks were workplace-related, including factories and plantations, despite the imposition of “standard operating procedures”. The risk of infection is high for the foreign workers living in unsanitary dormitories where it is almost impossible to keep social distance.<sup>43</sup>

Malaysia faces some difficulties in terms of smooth communication with immigrant labors as well as other countries that accept many foreign labors. Information related to COVID-19 in the country is written in Malay (local language) or English, which will not be fully understood by foreign workers. Some organizations e.g., the International Organization for Migration (2020) in Malaysia provide information in a variety of languages, but many foreign workers do not have sufficient access to such information.<sup>44</sup>

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<sup>39</sup> Jiji Press, “Thai Prime Minister accuses foreign workers of corona outbreak”, 23<sup>rd</sup> December 2020, <<https://sp.m.jiji.com/article/show/2490372>>

<sup>40</sup> The Nikkei, “Corona infection at core factory, the world's largest tuna can industry in Thailand”, 7<sup>th</sup> January 2021, <<https://www.nikkei.com/article/DGKKZO67940120W1A100C2FFJ000/?unlock=1>>

<sup>41</sup> Fair Labor Association, “COVID-19 and Migrant Agriculture Workers in the Palm Oil Sector in Malaysia”, July 2020, <<https://www.fairlabor.org/sites/default/files/protecting-palm-oil-workers-malaysia.pdf>>

<sup>42</sup> Fair Labor Association, “COVID-19 and Migrant Agriculture Workers in the Palm Oil Sector in Malaysia”, July 2020, <[COVID-19 and Migrant Agriculture Workers in the Palm Oil Sector in Malaysia | Fair Labor Association](#)>

<sup>43</sup> J.R. S. Domingo, “Global Health Security COVID-19 and Its Impacts – Malaysia’s Vulnerable Migrants: Key to Economic Recovery?”, March 2021, <[Global Health Security COVID-19 and Its Impacts – Malaysia’s Vulnerable Migrants: Key to Economic Recovery? | RSIS](#)>

<sup>44</sup> Fair Labor Association, “COVID-19 and Migrant Agriculture Workers in the Palm Oil Sector in Malaysia”, July 2020, <[COVID-19 and Migrant Agriculture Workers in the Palm Oil Sector in Malaysia | Fair Labor Association](#)>

### **3) Occupational Health Status clarified from this Survey**

Surveys on the status of worker hygiene management were conducted targeting coffee the VC in Vietnam, and bananas and pineapple VCs in the Philippines. Normally labors/employees are hired from neighboring cities/villages, and those who hire their workers from outside are each one of coffee producers, coffee processor, banana producers, and pineapple producers.

The employers provide the workers with dormitories. Under the COVID-19 pandemic, they give instructions to the employees, which are related to hygiene considerations, namely, hand washing, wearing masks, ensuring social distance, and individual meals. In addition, some pineapple input suppliers and some pineapple producers reduce the number of employees who go to work to minimize density at their places. It means that the employers make efforts to prevent infection of the employees. As far as the interview survey, no severe issue was identified.



## 2.4 REVIEW ON DEVELOPMENT PARTNERS' IMPACT SURVEY RESULTS

The Survey Team investigated the COVID-19 impact survey results and reports, particularly in the agriculture sector which were implemented by United Nations, World Bank Group, Asia Development Bank, other multinational donor organizations, and bilateral assistance agencies. These results are summarized in Table 2.4.1.

- 1) As for the agriculture sector, FAO has implemented several impact studies collaborating with the ASEAN Secretariat and other ASEAN membership countries. These results are published on its website as policy briefs and country profiles. Based on the studies, the agency identified seven key priority areas in the COVID-19 Response and Recovery Program to ensure rapid and continued support to the most vulnerable while anticipating the secondary repercussions of the virus. In line with the UN approach to “build back better,” and in pursuit of the Sustainable Development Goals, it aims to mitigate the immediate impacts of the pandemic while strengthening the long-term resilience of food systems and livelihoods. (e.g., survey No.1 in the table below)
- 2) The United Nation mentioned in the report “The Impact of COVID-19 on Food Security and Nutrition” that “The COVID-19 pandemic is a health and humanitarian crisis threatening the food security and nutrition of millions of people around the world”. In particular, the pandemic came at a time when food security and our food systems were already under strain. Conflict, natural disasters, climate change, and the arrival of pests and plagues on a transcontinental scale preceded COVID-19 and were already undermining food security in many contexts. To tackle this issue, international society should jointly work for; 1) mobilizing to save lives and livelihoods, focusing attention where the risk is most acute; 2) strengthening social protection systems for nutrition; and 3) investing in a sustainable future. (i.e., survey No.2)
- 3) The ILO undertook a rapid assessment survey, interviewing ASEAN migrant workers about how COVID-19 has impacted them. This brief summarizes the responses of the 309 women and men migrant workers who participated in the survey. In addition, the agency has published a series of reports named “ILO Monitor: COVID-19 and the World of Work”, aimed at periodical updating about the situation of workers over the world. According to the Seventh Edition of the report (published in January 2021), in 2020, 8.8 percent of global working hours were lost relative to the fourth quarter of 2019, equivalent to 255 million full-time jobs. Working-hour losses in 2020 were approximately four times greater than during the global financial crisis in 2009. (i.e., survey No. 3 and No.4)
- 4) The ADB surveyed a total of 8,000 households by phone between May-July 2020 in samples of 1,000 in each of the following developing Association of Southeast Asian Nations (ASEAN) countries: Cambodia, Indonesia, Lao People’s Democratic Republic, Malaysia, Myanmar, Philippines, Thailand, and Viet Nam. Economic distress such as income reduction, loss of jobs was reported in many countries. In all countries, having at least one person who lost their job or had reduced working time increases the likelihood of experiencing financial difficulties by 17 percentage points. About 27% of children who stopped attending school could not fully participate in online learning programs due to weak/insufficient internet connections and a lack of digital devices. (i.e., survey No. 8)
- 5) Also, bilateral assistance agencies including JICA has conducted several studies. For example, RISMA (The Australia Indonesia Partnership for Promoting Rural Incomes through Support for Markets in Agriculture) Project in Indonesia, supported by the Australian government conducted a qualitative and quantitative impact survey for farmers, livestock breeders, and shops/stores handling agriculture inputs in April 2020. The shop/store reduced the purchase of agricultural input products, such as seeds, crop protection, fertilizers, and agricultural tools from suppliers. Many of

them experienced a decline in revenues, while there was an increase in loan requests from farmers. (i.e., survey No. 11)

**Table 2.4.1 Review on Development Partner's Impact Survey Results**

No	Title / Seminar Title	Institution	Main Points
1	COVID-19 and the risk to food supply chains: How to respond?	FAO (2020)	<p><b>【Impact of COVID-19】</b></p> <ul style="list-style-type: none"> <li>✓ Restrictions on movement are curbing farmers' access to markets to buy inputs and sell products. Fresh produce is accumulating at farms, resulting in food loss.</li> <li>✓ It is causing labor shortages as migrant seasonal workers are unable to travel. The food value chain can be broadly divided into two groups: the staple commodities (wheat, maize, corn, soybeans, and oilseeds) and the high-value commodities (fruits, vegetables, and fishery). The staple commodity production is capital intensive, and the labor shortage issue resulting from the coronavirus-related restrictions on movement has less impact on their production. However, the logistics to distribute the commodities is affected, as it hampers food transportation across cities, provinces, regions, and countries.</li> <li>✓ The high-value commodities, on the other hand, require a large amount of labor to produce. Therefore, they are substantially affected when employees get sick or local and migrant laborers are not able to travel due to lockdowns.</li> <li>✓ The high-value supply chain includes food processing plants, which are also labor-intensive. Currently, most of the sorting and packing lines do not comply with the social distancing requirements.</li> </ul> <p><b>【Policy Recommendation】</b></p> <ul style="list-style-type: none"> <li>✓ Expand and improve emergency food assistance and social protection programs</li> <li>✓ Give smallholder farmers support to both enhance their productivity and market the food they produce, also through E-Commerce channels</li> <li>✓ Keep the food value chain alive by focusing on key logistics bottlenecks</li> <li>✓ Address trade and tax policies to keep the global trade open</li> </ul>
2	The Impact of COVID-19 on Food Security and Nutrition	United Nation (2020)	<p><b>【Impact of COVID-19】</b></p> <ul style="list-style-type: none"> <li>✓ The COVID-19 pandemic is a health and humanitarian crisis threatening the food security and nutrition of millions of people around the world. Hundreds of millions of people were already suffering from hunger and malnutrition before the virus hit</li> <li>✓ In the longer term, the combined effects of COVID-19 itself, as well as corresponding mitigation measures and the emerging global recession could, without large-scale coordinated action, disrupt the functioning of food systems.</li> <li>✓ Deep global economic shocks caused by COVID-19 will impact the cash flow and financial liquidity of producers, small and medium agri-businesses to financial institutions, due to inhibited production capacity, limited market access, loss of remittances, lack of employment, and unexpected medical costs.</li> <li>✓ The pandemic came at a time when food security and our food systems were already under strain. Conflict, natural disaster, climate change, and the arrival of pests and plagues on a transcontinental scale preceded COVID-19 and were already undermining food security in many contexts</li> </ul> <p><b>【Policy Recommendation】</b></p> <ul style="list-style-type: none"> <li>✓ First, mobilize to save lives and livelihoods, focusing attention where the risk is most acute (e.g., preserve critical humanitarian food, livelihood, and nutrition assistance, declare food production, marketing, and distribution as essential service everywhere, ensure the protection of these workers and keep trade corridors open within and among nations, expand near-real-time food security monitoring system, ensure relief and stimulus packages reach the most vulnerable).</li> <li>✓ Second, strengthen social protection systems for nutrition (e.g., food and nutrition assistance, strengthen the health system response for nutritional care, protect the most vulnerable population groups, as well as women who play key roles in the household and essential service delivery, tailor nutrition-sensitive social protection programs).</li> <li>✓ Third, invest in a sustainable future (e.g., transforming food systems, laying the foundation for a more inclusive, green, and resilient recovery, using the opportunity of the secretary-general hosted food systems summit in 2021)</li> </ul>
3	Experience of ASEAN migrant work during COVID-19	ILO (2020)	<p><b>【Impact of COVID-19】</b></p> <ul style="list-style-type: none"> <li>✓ The COVID-19 pandemic is disrupting labor migration throughout the region and globally. The ILO undertook a rapid assessment survey, interviewing ASEAN migrant workers about how COVID-19 has impacted them. This brief summarizes the responses of the 309 women and men migrant workers who participated in the survey.</li> <li>✓ The majority of unemployed in destination (97 percent) had not accessed any social security support.</li> </ul>

No	Title / Seminar Title	Institution	Main Points
			<ul style="list-style-type: none"> <li>✓ Of migrant workers with current jobs in destination countries, 33 percent were not provided personal protective equipment (PPE) by their employers. This differed by country, and in Thailand, 57 percent did not have basic PPE of masks and hand sanitizer.</li> <li>✓ Among returnees, 47 percent reported that they left jobs because they chose to and wanted to return home, and 24 percent had a contract that was due to end. However, 16 percent reported that employers prematurely ended their contract – whether permanently or temporarily.</li> <li>✓ Among those who were quarantined, 23 percent reported problems including shortages of food and high temperatures due to lack of fans or air conditioning. In some quarantine centers, problems included unsafe practices of shared drinking glasses and crowded shared sleeping areas.</li> </ul>
4	ILO Monitor: COVID-19 and the world of work. Seventh edition	ILO	<p><b>【Impact of COVID-19】</b></p> <ul style="list-style-type: none"> <li>✓ Ninety-three (93) percent of the world's workers reside in countries with some form of workplace closure measures in place in early January 2021.</li> <li>✓ In relative terms, employment losses were higher for women (5.0 percent) than for men, and young workers (8.7 percent) than for older workers</li> <li>✓ In 2020, 8.8 percent of global working hours were lost relative to the fourth quarter of 2019, equivalent to 255 million full-time jobs. Working-hour losses in 2020 were approximately four times greater than during the global financial crisis in 2009.</li> </ul>
5	COVID-19 and the Food and Agriculture Sector: Issues and Policy Responses	OECD (2020)	<p><b>【Impact of COVID-19】</b></p> <ul style="list-style-type: none"> <li>✓ Enough food is available globally, but COVID-19 is disrupting supply and demand in complex ways</li> <li>✓ Limits on the mobility of people across borders and lockdowns are contributing to labor shortages for agricultural sectors in many countries, particularly those characterized by periods of peak seasonal labor demand or labor-intensive production.</li> <li>✓ Disruptions downstream from the farm gate are in some cases causing surpluses to accumulate, putting a strain on storage facilities and, for high perishables, increasing food losses.</li> <li>✓ This significant change in the composition – and for some commodities, the level – of demand will put whole value chains under pressure. Manufacturers are adjusting production and distribution, for example, to shift from producing bulk items for food service to smaller packages for home use. However, some will have difficulties keeping their businesses viable.</li> <li>✓ There is also a need to adapt and deliver food through different channels (for example, via supermarkets or direct home delivery, as opposed to open markets or direct to restaurants and catering businesses). This will be particularly challenging for smaller and specialized farmers – who are more likely to rely on open markets, restaurants, and catering – and who may struggle to identify new outlets and buyers</li> <li>✓ Lockdowns and limits on the mobility of people are also affecting the provision of key food safety, quality, and certification checks, including those that are required to facilitate trade, such as physical inspections of goods to certify compliance with sanitary and phytosanitary requirements (SPS). Moreover, additional checks may be required in response to new biosecurity arrangements for the sector, implemented in response to COVID 19.</li> <li>✓ Measures to contain the spread of the COVID-19 are causing delays and disruptions to transport and logistics services. Border closures and additional procedures and checks have led to congestion and delays, affecting the transit of perishable products. For example, social distancing requirements have reduced the numbers of import and export inspectors at borders, increasing the time needed for customs clearance.</li> <li>✓ The COVID-19 pandemic may also affect the availability of key intermediate inputs for farmers.</li> <li>✓ Closing borders or slowing down the transboundary movement of seeds could potentially hamper seed supply chains and on-time delivery of seed with negative impacts on agriculture, feed, and food production over the next season and further into the future.</li> <li>✓ The collapse in the consumption of food away from home will have a particularly large impact in developed countries. The closure of restaurants and food service providers in schools, hotels, and catering businesses has shrunk the market for some commodities</li> <li>✓ Demand also appears to have shifted away from higher value items and towards staple and ready-to-eat foods that can be stored.</li> <li>✓ There has also been a strong increase in E-Commerce.</li> </ul>
6	Food Supply	OECD	<b>【Impact of COVID-19】</b>

No	Title / Seminar Title	Institution	Main Points
	Chains and COVID-19: Impacts and Policy Lessons	(2020)	<ul style="list-style-type: none"> <li>✓ Farm production has been affected by bottlenecks for inputs, most notably labor. Some farm sectors are more dependent on (seasonal) labor than others: fruits and vegetables are more labor-intensive, while cereals and oilseeds typically require less labor.</li> <li>✓ COVID-19 has led to disruptions in food processing industries, which have been affected by rules on social distancing, by labor shortages due to sickness, and by lockdown, measures to contain the spread of the virus.</li> <li>✓ Transport and logistics problems have thus been most pronounced for perishable high-value products, such as fruits and vegetables. The fruits and vegetable sector is also affected by quarantine measures and delays in border inspections (including as the number of import/export inspectors has fallen). By contrast, cereal supplies have not faced major disruptions: bulk transport has been less affected, and cereals can be loaded, shipped, and handled with minimal labor input.</li> <li>✓ A first bottleneck relates to the availability of inputs for farming, notably labor for harvesting fruits and vegetables. A second relates to plant shutdowns in the food processing sector, notably in meat processing. A third relates to the ongoing disruption of air freight, which affects high-value perishable products, again notably fruits and vegetables. What these bottlenecks have in common is that they are difficult to overcome in the short run.</li> <li>✓ The biggest risk for food security is not with food availability but with consumers' access to food.</li> </ul>
7	Indonesia HRI Update-COVID-19 Impacts	USDA (United States Department of Agriculture) (2020)	<p><b>【Impact of COVID-19】</b></p> <ul style="list-style-type: none"> <li>✓ Indonesia's once-thriving Hotel, Restaurant (incl. large chain restaurant, cafe, mid-high-level dining, street food, and stalls), and Institutional foodservice sector have seen a sharp decline in sales as a result of social distancing measures implemented to mitigate the spread of COVID-19.</li> </ul>
8	Impact of COVID-19 Pandemic on Households in ASEAN Economics	ADB (2020)	<p><b>【Impact of COVID-19】</b></p> <ul style="list-style-type: none"> <li>✓ A total of 8,000 households were surveyed by phone between May-July 2020 in samples of 1,000 in each of the following developing Association of Southeast Asian Nations (ASEAN) countries: Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Thailand, and Viet Nam.</li> <li>✓ In all countries, having at least one person who lost their job or had reduced working time increases the likelihood of experiencing financial difficulties by 17 percentage points.</li> <li>✓ About 27% of children who stopped attending school could not fully participate in online learning programs due to weak/insufficient internet connections and a lack of digital devices.</li> </ul>
9	Food Security in Asia and the Pacific amid the COVID-19 Pandemic <sup>1</sup>	ADB (2020)	<p><b>【Impact of COVID-19】</b></p> <ul style="list-style-type: none"> <li>✓ The COVID-19 pandemic has increased food security risks in Asia and the Pacific as strict quarantine measures and export bans on basic food items have affected all stages of food supply chains.</li> <li>✓ household food consumption and nutrition have been significantly affected by the loss of jobs and income and limited access to food. Information sector workers – 70% of total employment in the region – in particular, are at higher risk.</li> <li>✓ In prolonged lockdowns, shortages of labor and input supplies can reduce the scale of crop production while disrupted logistics limit the options of smallholder farmers on better-priced markets.</li> </ul> <p><b>【Policy Recommendation】</b></p> <ul style="list-style-type: none"> <li>✓ Swift and comprehensive policy interventions should focus on protecting consumers and public health; securing supply chains for producers; and promoting fair labor, trade, sound macroeconomic policies, and regional cooperation.</li> <li>✓ Post-COVID-19 agriculture sector reforms should support a transition from a labor-intensive supply chain to a more resilient and efficient agriculture system including smart agriculture and mechanization.</li> </ul>
10	CODI-19 Impacts on International Migration, Remittances, and Recipient Households in Developing	ADB (2020)	<p><b>【Impact of COVID-19】</b></p> <ul style="list-style-type: none"> <li>✓ The economic recession from the COVID-19 pandemic threatens the job security and well-being of over 91 million international migrants from Asia and the Pacific.</li> <li>✓ Total remittances to Asia are expected to drop between</li> <li>✓ USD31.4 billion (baseline scenario) and USD54.3 billion (worst-case scenario) in 2020, equivalent to 11.5% and 19.8% of baseline remittances, respectively.</li> <li>✓ With many households depending on international remittances in developing Asia—particularly in the Pacific and Central and West Asian economies—a sudden stop in remittance flow to these regions could push people into poverty.</li> <li>✓ Source and host countries of migrant workers are encouraged to extend temporary</li> </ul>

No	Title / Seminar Title	Institution	Main Points
	Asia		social protection programs to assist stranded and returned migrants; extend social protection to the poor including the remittance recipient households who fall back to poverty; design comprehensive immigration, health, and labor policies that enable migrants to return to jobs; and ensure the continuity of remittance services and enabling business environment.
11	Impact of COVID-19 on Agriculture - Farmer Shop Perspective	RISMA (The Australia-Indonesia Partnership for Promoting Rural Incomes through Support for Markets in Agriculture) (2020)	<p><b>【Impact of COVID-19】</b>  The study conducted a qualitative survey in mid-April 2020 to farmers and ranchers and was followed by a survey of farmer shops or agricultural shops at the end of April 2020. The farmer shop survey was conducted in the 4 provinces (Central Java, East Java, NTB, and NTT) at 50 shops/stores.</p> <ol style="list-style-type: none"> <li>The main decline occurred in-store revenue <ul style="list-style-type: none"> <li>✓ The shop/store began to reduce the purchase of agricultural input products, such as seeds, crop protection, fertilizers, and agricultural tools from suppliers.</li> <li>✓ Shops/stores selling poultry feed have suffered heavy losses as the poultry sector has decreased significantly due to lower demand from the tourism industry (hotels, restaurants, and events).</li> <li>✓ The shop/store began to reduce the purchase of agricultural input products, such as seeds, crop protection, fertilizers, and agricultural tools from suppliers.</li> </ul> </li> <li>More than 50% of shops have difficulty in buying and selling <ul style="list-style-type: none"> <li>✓ Several cases occurred at the store level, such as a limited amount of subsidized fertilizers, expeditions began to experience delays (especially for inter-island transactions) and resulted in delays in product acceptance.</li> <li>✓ Farmers are no longer able to buy agricultural production inputs because of rising prices.</li> </ul> </li> <li>There was an increase in supplier prices between 10% - 30%. <ul style="list-style-type: none"> <li>✓ Some suppliers allow the use of payment schemes later, but some suppliers change from credit payments to cash.</li> <li>✓ Products that have experienced price changes are pesticide and herbicide products, spray equipment, and the price of corn kernels has also started to rise. CDIAI Indonesia SCI &amp; SOMPO IV-2-12 JICA  No. Title/ Seminar Title Author/ Presenter Year Category Agriculture FVC COVID-19 Others Main Points</li> </ul> </li> <li>Some of the products are not available in the market due to COVID-19, There are several challenges in purchasing multiple agricultural production inputs because: <ul style="list-style-type: none"> <li>✓ No supply from China and Japan for sprayers</li> <li>✓ Some farmers who chose a brand of rice seeds were not available in the market due to lockdown in West and Central Java.</li> <li>✓ Delay in supply from distributors due to limitations of transportation access</li> <li>✓ 30% of respondents said that the marketing agents of supply companies change the frequency they visit the shops. Some still manage contacts via phone calls or WhatsApp.</li> </ul> </li> <li>About 26 respondents said that there was an increase in loan requests from farmers. Most farmers wanted to pay for products after harvesting but the shops had not changed their payment methods.</li> <li>Half of the shops surveyed had problems with loans.</li> </ol>

Source: Prepared by JICA Survey Team based on each source.

## 2.5 Country-Wise Situation and Impacts of COVID-19, and Measures Taken

In this section, the status and trends of the COVID-19 pandemic, the impact on the economy, and the measures taken by governments will be summarized by country. The WHO has collected and organized information on the number of infected people and deaths of each country, and the statistical information will be used to provide an overview of the status and trends of COVID-19 of the target countries.

As for the measures taken by the governments to cope with the COVID-19 pandemic, JETRO's time-series report on each country's response to the COVID-19 spread will be adopted in the report. Also, the support measures of each country will be used from the website of the Center for Strategic and International Studies (CSIS). In addition, the impact of COVID-19 on agriculture, livestock, and fishery sectors will be organized based on statistical information, news reports, and survey results from each country.

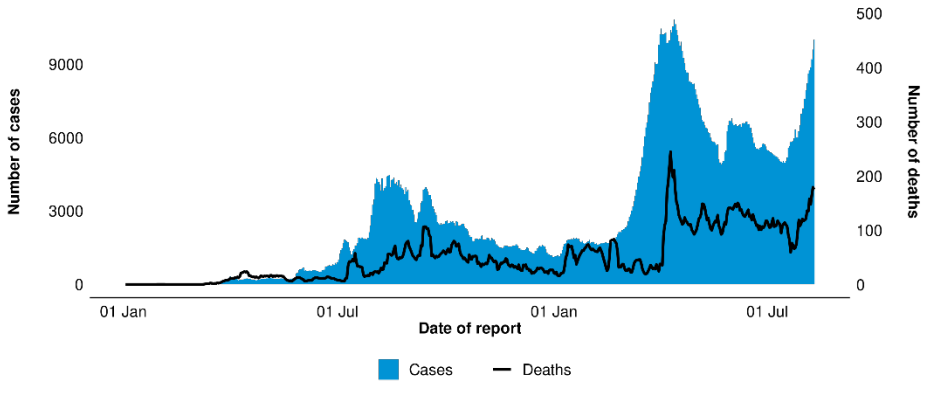
### 2.5.1 Philippines

In the Philippines, the situation and impacts of COVID-19 including measures taken are summarized in Table 2.5.1, and issues peculiar to the Philippines may be taken up as follows:

- 1) On January 30, 2020, a Chinese woman from Wuhan became the first case of infection with the new coronavirus, and on February 1, a Chinese man who was the spouse of the woman died for the first case due to the new coronavirus. After that, the number of newly infected people will remain at the level of several hundred until mid-May 2020. However, an outbreak of infection occurred from June to August in 2020, and the number of newly infected people reached 6,725 per day on August 11. After this peak, there was a downward trend thereafter, but the second wave came in January 2021, the third wave in September of the same year, and the fourth wave in January 2022, when the number of new infections reached 38,000 per day at its peak.
- 2) The Philippine government announced "Community Quarantine" from March 17th to April 13th, and so called the world's longest lockdown was started. Under the lockdown, school closures, bans on meetings and events, suspension of transportation, bans on entering and exiting the metro Manila area in principle (excluding medical staff, patients, carriers of necessities and foods, etc.), stay-home of government agencies, business suspension (excluding production activities such as daily necessities, foods, medicines, etc.) was stipulated, and going out from 8:00 pm to 5:00 am was also prohibited.
- 3) The longest lockdown in the world by the Philippines government had a serious impact on the economy. The Philippines' gross domestic product (GDP) was at a level of 6.7% to 5.9% from 2017 to 2019, but fell to -0.7% in the first quarter of 2020 when lockdown began, and since then the situation become serious with -16.9 in the 2nd quarter, -11.4 in the 3rd quarter, and -8.3 in the 4th quarter.
- 4) Total agricultural production fell by -3.8% in the fourth quarter of 2020. Production declined in all sectors of crop production, livestock and fisheries, with crop production down -0.4%, livestock -12.9%, poultry-5.5%, and fisheries -4.7% over the same period. In the agricultural sector, due to the long-term lockdowns, logistics restrictions, and restrictions on the movement of people, several damages were observed including difficulty in obtaining input goods and working capital, declining food demand in restaurants and hotels, and falling farmgate prices of agricultural products due to declining consumer demand. Also, it was observed that difficulty in finding middlemen and buyers due to movement restrictions, and food loss of agricultural products due to lack of processing technology and equipment.
- 5) Meanwhile, as a result of the lockdown associated with the COVID-19 pandemic, the majority of

Filipino consumers have opted to procure food and other necessities via online platforms, which in turn resulted in the development of E-Commerce in the Philippines. As the reliance on delivering foods from fast-food chains using mobile applications increases, food delivery services are developing in many cities and urban areas and are becoming one of the mainstreams of food distribution. In addition, some medium-sized to large-sized companies are trying to increase sales by shifting to online retailing in the wake of lockdown.

**Table 2.5.1 Situation and Impacts of COVID-19 in the Philippines**

Item	Description															
1. COVID-19 Pandemic General	<p><b>The trend of COVID-19 Pandemic Situation</b></p> <table border="1"> <thead> <tr> <th>Particulars</th> <th>At peak Per day</th> <th>Accumulated persons</th> <th>Per 1-million population</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>Infected</td> <td>96,724 (Aug. 16, 2021)</td> <td>1,857,646 (as of Aug. 23)</td> <td>16,952 (as of Aug. 23)</td> <td></td> </tr> <tr> <td>Death Case</td> <td>1,526 (Aug. 16, 2021)</td> <td>31,861 (as of Aug. 23)</td> <td>291 (as of Aug. 23)</td> <td></td> </tr> </tbody> </table> <p>Note: National population is 109,581,078.</p> <div> <p><b>Philippines</b></p> <p>1,667,714 cases, 29,128 deaths</p>  <p>Source: WHO, "WHO Coronavirus (COVID-19) Dashboard", &lt;<a href="https://COVID19.who.int/">https://COVID19.who.int/</a>&gt; (Aug. 25, 2021)</p> </div>	Particulars	At peak Per day	Accumulated persons	Per 1-million population	Remarks	Infected	96,724 (Aug. 16, 2021)	1,857,646 (as of Aug. 23)	16,952 (as of Aug. 23)		Death Case	1,526 (Aug. 16, 2021)	31,861 (as of Aug. 23)	291 (as of Aug. 23)	
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2. Control and Support Measures of the COVID-19 Pandemic	<p><b>Control Measures of COVID-19 (mentioned for the nation-wide and capital area only)</b></p> <table border="1"> <thead> <tr> <th>Date</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>2020/1/30</td> <td>The first case of COVID-19 infected person in the Philippines was observed and was a Chinese woman from Wuhan.</td> </tr> <tr> <td>2020/2/1 Immigration restrictions Chinese</td> <td>to The first confirmation of death by COVID-19. A Chinese man, the spouse of the first woman to be infected, died of corona-induced pneumonia. In response to this, the Philippine government introduced immigration restrictions from all over China in early February and extended it to some parts of South Korea on February 26.</td> </tr> <tr> <td>2020/3/16 ECQ (entire Luzon area)</td> <td>From March 17th to April 13th, 2020, Enhanced Community Quarantine (ECQ) including a stay-at-home order and suspension of public transportation was implemented for the entire Luzon region. It required both the public and private sectors to work from home and stipulated that only going out to purchase essential supplies such as food and medicine was permitted. Grocery stores such as supermarkets, hospitals, pharmacies, banks, and social infrastructure-related industries such as electricity, water, and telecommunications could continue to operate.</td> </tr> <tr> <td>2020/3/19 Prohibition of overseas travel</td> <td>The suspension of visa issuance to foreigners (excluding Filipino spouses and their children) was announced, and all Filipinos traveling abroad was banned, except for migrant workers.</td> </tr> <tr> <td>2020/4/7 Extension of ECQ</td> <td>It was announced that it would extend the period of ECQ for the entire Luzon region, which was supposed to be until April 13, 2020, and suspension of public transportation to April 30.</td> </tr> <tr> <td>2020/4/23 Extension of ECQ</td> <td>The period of ECQ for the entire Luzon area, which was extended until April 30, 2020, and the suspension of public transportation, had been extended to May 15. It is also expanded to the Visaya region and part of the Mindanao region.</td> </tr> </tbody> </table>	Date	Description	2020/1/30	The first case of COVID-19 infected person in the Philippines was observed and was a Chinese woman from Wuhan.	2020/2/1 Immigration restrictions Chinese	to The first confirmation of death by COVID-19. A Chinese man, the spouse of the first woman to be infected, died of corona-induced pneumonia. In response to this, the Philippine government introduced immigration restrictions from all over China in early February and extended it to some parts of South Korea on February 26.	2020/3/16 ECQ (entire Luzon area)	From March 17th to April 13th, 2020, Enhanced Community Quarantine (ECQ) including a stay-at-home order and suspension of public transportation was implemented for the entire Luzon region. It required both the public and private sectors to work from home and stipulated that only going out to purchase essential supplies such as food and medicine was permitted. Grocery stores such as supermarkets, hospitals, pharmacies, banks, and social infrastructure-related industries such as electricity, water, and telecommunications could continue to operate.	2020/3/19 Prohibition of overseas travel	The suspension of visa issuance to foreigners (excluding Filipino spouses and their children) was announced, and all Filipinos traveling abroad was banned, except for migrant workers.	2020/4/7 Extension of ECQ	It was announced that it would extend the period of ECQ for the entire Luzon region, which was supposed to be until April 13, 2020, and suspension of public transportation to April 30.	2020/4/23 Extension of ECQ	The period of ECQ for the entire Luzon area, which was extended until April 30, 2020, and the suspension of public transportation, had been extended to May 15. It is also expanded to the Visaya region and part of the Mindanao region.	
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2020/4/28 Relaxation of industry operation		Among the areas where the risk of spreading the new coronavirus infection is relatively low, the government announced the list of industries that would be permitted to operate in the general community quarantine (GCQ) from May 1.
2021/5/12 Implementation of MECQ		The government announced that the enhanced community quarantine (ECQ) which had been extended until May 15, 2020, would be revised to the modified enhanced community quarantine (MECQ) from May 16 to 31 in some Luzon regions including Metro Manila, Laguna, and Pateros Town. MECQ permits the operation of public transportation to procure essential goods and services that were not permitted by ECQ, and the operation of some industries.
2021/5/28 Relaxation of CQ		The Philippine government announced on May 28 that it will shift Metro Manila from modified enhanced community quarantine (MECQ) to general community quarantine (GCQ) from June 1.
2021/8/18 Relaxation of CQ		The Philippine government announced that from August 19th to 31st, the category of quarantine measures between Metro Manila and neighboring states would be relaxed from MECQ (relatively strict quarantine measures) to GCQ (relatively loose quarantine measures).
2021/8/31 Revision of CQ		From September 1st to 30th, the Philippine government eased the quarantine measures in Cavite, Laguna, Cebu City, and neighboring areas near the metropolitan area where Japanese companies are concentrated, to MGCQ (the loosest quarantine measures) in Manila. Metro Manila and neighboring Batangas have announced that they would remain in the previous GCQ (relatively loose restrictions).
2021/9/29 Revision of CQ		The Philippine government announces the community quarantine measures in October. The GCQ (relatively loose quarantine) applies to major cities across the country, including Metro Manila and Batangas in the Luzon region, and MGCQ (the loosest quarantine) applies to other areas.
2021/10/2 Relaxation of restrictions on corporate activities		On October 2, the Ministry of Trade and Industry announced that it would review the industry-specific operating rate which applied as a countermeasure against new coronavirus infections, and relax restrictions on service industries and construction work in the GCQ applicable area.
2021/10/15 Relaxation of Behavioral restrictions		On October 15, the Philippine government revised its guidelines for the community quarantine measures. The scope of restrictions on going out was reduced, and the target age of strict restrictions was changed from "people under the age of 21 and over the age of 60" to "people under 15 years old and older than 65 years old". Before the reduction, "people under the age of 21 and over the age of 60" were not allowed to go out other than procuring supplies and services necessary for living, working at licensed business establishments, and especially other licensed activities.
2021/10/30 Revision of CQ		The Philippine government officially announced the extension of community quarantine measures from November 1st to 30th. Metro Manila and other areas continued to be deferred to GCQ (relatively loose quarantine measures).
2021/11/30 Revision of CQ		The Philippine government has announced an extension of community quarantine measures from December 1st to 31st. Specifically, GCQ (general community quarantine measures), which is a relatively loose quarantine measure, would be applied to Metro Manila and other major cities across the country.
2021/12/28 Revision of CQ		The Philippine government has announced an extension of community quarantine measures from January 1st to 31st.
2021/1/29 Revision of CQ		The Philippine Presidential Office has announced an extension of community quarantine measures from February 1st to February 28th.
2021/3/16 Immigration restrictions		The COVID-19 Countermeasures Headquarters has notified that "for one month from March 20th to April 19th, foreigners and non-urgent Filipinos will be prohibited from entering the country." Diplomats (9eVISA holders), medical personnel, and Filipino migrant workers (OFW) are allowed to enter the country only at 1,500 people/day.
2021/03/19 Temporary Enhancement of CQ		On March 19, the Philippine government temporarily tightened restrictions on various economic activities under the GCQ (General Community Quarantine), a relatively loose measure, until April 4 in response to the re-spreading of the new corona infection. Cultural facilities such as libraries, art galleries, and museums, and entertainment industries such as traditional movie theaters were suspended, and the maximum percentage of capacity for in-store food and beverage was set at 50%.
2021/7/30 Revision of CQ		Metropolitan Manila has been operating the most restrictive "ECQ" (Enhanced Community Quarantine) since August 6. From July 30 to August 5, Metro Manila will operate the GCQ (General Community Quarantine), which is more restrictive.



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	<p>Source : JETRO, "Status of support for new coronavirus in Asia", <a href="https://www.jetro.go.jp/world/COVID-19/asia/">https://www.jetro.go.jp/world/COVID-19/asia/</a>, (Aug. 25, 2021)</p> <p><b>Support Measures (Economic Responses) against COVID-19</b></p> <table border="1"> <thead> <tr> <th>Date</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>March 17, 2020</td> <td> <p>The Philippine government announced the entire country would be placed under a "state of calamity" for six months, enabling national and local governments to quickly access relief funds.</p> <p>The Philippine government through the Inter-Agency Task Force for the Management of Emerging Infectious Diseases (IATF), issued resolution No. 13 which instructed police personnel in the checkpoints <i>to the unimpeded movement of all cargoes subject to its authority to conduct inspection procedures in checkpoints for the purpose of ensuring that protocols on strict home quarantine are observed.</i></p> <p>In consonance with Resolution No. 13, the Department of Agriculture (DA) released a memorandum on the 'Implementation procedures related to Food Lane Accreditation' facilitating the continued distribution of agricultural commodities between rural and urban regions such as rice, perishable agricultural commodities, fertilizers and other agricultural inputs and fishery commodities.</p> </td> </tr> <tr> <td>March 24, 2020</td> <td>President Duterte signed into law Republic Act No. 11469, granting him "special temporary power" for three months until June 24. The law allowed Duterte to direct the operations of private hospitals and ships, reappropriate the Executive Department's budget, and access USD5.36 billion from various government agencies to mitigate the potential economic fallout of the pandemic.</td> </tr> <tr> <td>March 30, 2020</td> <td>The government approved a USD3.9 billion social protection program for low-income families and health workers.</td> </tr> <tr> <td>April 7, 2020</td> <td>The Duterte administration announced a USD610 million "Bayanihan Grant to Cities and Municipalities" to assist local governments.</td> </tr> <tr> <td>May 12, 2020</td> <td>House of Representatives Speaker Alan Peter Cayetano and eight other lawmakers filed the COVID-19 Unemployment Reduction Economic Stimulus Act of 2020 aimed at creating jobs in rural areas through infrastructure projects worth USD29 billion. 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The law allowed Duterte to direct the operations of private hospitals and ships, reappropriate the Executive Department's budget, and access USD5.36 billion from various government agencies to mitigate the potential economic fallout of the pandemic.	March 30, 2020	The government approved a USD3.9 billion social protection program for low-income families and health workers.	April 7, 2020	The Duterte administration announced a USD610 million "Bayanihan Grant to Cities and Municipalities" to assist local governments.	May 12, 2020	House of Representatives Speaker Alan Peter Cayetano and eight other lawmakers filed the COVID-19 Unemployment Reduction Economic Stimulus Act of 2020 aimed at creating jobs in rural areas through infrastructure projects worth USD29 billion. More than 20 million families will receive government aid.	April 13, 2020	The government approved a USD1 billion wage subsidy package intended to support about 3.4 million small business workers. 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October 7, 2020	The government announced plans to distribute aid to the airline industry through loans and regulatory fee waivers.
October 20, 2020	The Philippine Department of Budget and Management announced that just USD91 million out of USD2.8 billion allocated for the Bayanihan 2 recovery scheme had been released.
November 9, 2020	The Manila city government provided approximately USD2,000 in cash rewards to 73 barangays that have been free of COVID-19 for two months.
November 16, 2020	President Duterte issued two directives allocating additional benefits to healthcare workers who work directly with COVID-19 patients.
December 14, 2020	The House of Representatives' labor and employment committee approved a measure providing 14-day paid pandemic leave to workers who are confirmed, probable, or suspected to be COVID-19 positive.

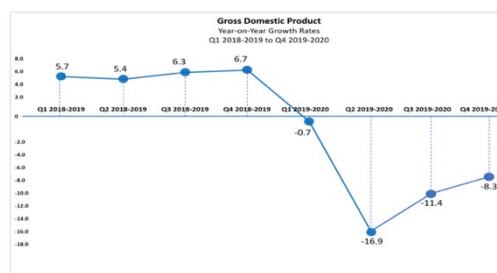
Source: Center for Strategic and International Studies (CSIS), "Southeast Asia Covid-19 Tracker", <<https://www.csis.org/programs/southeast-asia-program/southeast-asia-COVID-19-tracker-0>>, (Feb. 2021)

3. Impacts of COVID-19 Pandemic on Economy, e.g., economic growth (GDP), employment (unemployment, working hours), migrant work, remittance

- ✓ The Philippine government implemented one of the longest lockdowns in the world, as part of its response to contain the spread of COVID-19. Consequently, this bore an impact to its economy. The Philippine Gross Domestic Product (GDP) posted a growth rate of -8.3 % in the fourth quarter of 2020, resulting in the -9.5 % full-year growth rate for 2020.
- ✓ Contributory to the decline of the GDP growth for the fourth quarter of 2020 were as follows: Construction at -25.3 %; Other Services at -45.2 %; and Accommodation and Food Service Activities at -42.7 %.
- ✓ The Net Primary Income (NPI) from the Rest of the World, and the Gross National Income (GNI) have corresponding growth rates of -53.2 %, and -12.0 % in the fourth quarter of 2020, while full-year 2020 growth rates of NPI and GNI were at -27.3 %, and -11.1 % respectively.

Source: Philippine Statistics Authority (PSA), "National Accounts", <<https://psa.gov.ph/national-accounts>>, (Feb. 2021)

Figure 1. GDP of the Philippines



Source: Philippine Statistics Authority

- ✓ The unemployment rate of the Philippines in October 2020 was estimated at 8.7 %. This is equivalent to 3.8 million unemployed Filipinos who are 15 years old and over. While this unemployment rate is the lowest since April of 2020, however, it is still higher than the 4.6 % (or about 2.0 million unemployed Filipinos who are 15 years old and over) in the same period of 2019.
- ✓ The Labor force participation rate (LFPR) in October 2020 was 58.7 % or 43.6 million Filipinos reported as either employed or unemployed. This is the second lowest LFPR reported in the history of the Philippine labor market following the record low of 55.7 % reported in April 2020. In October 2019, the LFPR was posted at 61.4 %, translating to 44.6 million Filipinos in October 2019. See Table 1 below.

Table 1. Results from the October 2020 Labor Force Survey (LFS)

Philippines	October 2020 <sup>P</sup>	July 2020 <sup>P</sup>	April 2020 <sup>F</sup>	October 2019 <sup>r</sup>
Population 15 years old and over (in 000)	74,307	74,061	73,722	72,603
Labor Force Participation Rate (%)	58.7	61.9	55.7	61.4
Employment Rate (%)	91.3	90.0	82.4	95.4
Underemployment Rate (%)	14.4	17.3	18.9	12.8
Unemployment Rate (%)	8.7	10.0	17.6	4.6

Notes:

<sup>P</sup> Estimates are preliminary and may change  
<sup>r</sup> Revised estimates based on 2015 POPCEN-Based Population Projection  
<sup>F</sup> Final

Source: Philippine Statistics Authority, Labor Force Survey

- ✓ Employment rate in October 2020 was reported at 91.3 %. This translated to about 39.8 million

Item	Description
	<p>employed Filipinos out of the 43.6 million who were in the labor force. This employment rate was the highest since April 2020. Comparing in October 2019, employment rate was estimated at 95.4 % or 42.5 million employed persons.</p> <ul style="list-style-type: none"> <li>✓ The weekly average hours worked increased since April 2020. In October 2020, employed persons worked an average of 40.8 hours per week, an improvement from the 38.2 hours, and 35.0 hours reported in July 2020, and April 2020, respectively. However, this is still lower than the mean 42.0 hours per week reported in October 2019.</li> <li>✓ Employed persons reported with job but not at work was estimated at 1.0 % or 387 thousand in October 2020. This is the lowest number reported since April 2020 with the Coronavirus disease 2019 (COVID-19) pandemic or community quarantines as the paramount reasons expressed by most employed persons as reason for having a job but not at work. In October 2019, 0.8 % or 323 thousand employed persons were reported with job but not at work.</li> <li>✓ Underemployment rate further declined in October 2020 at 14.4 % from the rates in April and July 2020 at 18.9 %, and 17.3 %, respectively. However, this underemployment rate is still higher than the October 2019 rate at 12.8 %.</li> <li>✓ In October 2020, LFPR was lower among women at 45.0 %, compared to men at 72.3 %. Employment rates for men, and women were reported at 91.3 %, and 91.1 %, respectively. However, underemployment rate was higher in men (15.9%) than in women (12.0 %).</li> <li>✓ By industry group, in October 2020, the Services sector was the dominant industry with about 57.2 % share, followed by the Agricultural sector with about 24.5 % share.</li> <li>✓ In terms of year-on-year employment growth rate among the sub-sectors, arts, entertainment and recreation had the highest decline at 38.2 %, followed by accommodation and food service activities at 33.2 %. On the other hand, water supply, sewerage, waste management and remediation activities had the highest year-on-year employment growth rate (23.2%) followed by fishing and aquaculture (5.4%), and education (5.2%).</li> <li>✓ Youth LFPR was reported 33.9 % or about 6.8 million youth in October 2020. This is lower than the reported 38.9 % in July 2020, although higher than the 32.4 % in April 2020. The youth LFPR in October 2019 was reported at 37.1 %.</li> <li>✓ On the other hand, the number of employed youth dropped to about 5.5 million in October 2020 from July 2020 at 6.0 million. Meanwhile, unemployed youth was reported at 1.3 million in October 2020 from 1.7 million in July 2020.</li> </ul> <p>Source: Philippine Statistics Authority (PSA), "Labor force survey", &lt;<a href="https://psa.gov.ph/statistics/survey/labor-and-employment/labor-force-survey/title/Employment%20Situation%20in%20October%202020">https://psa.gov.ph/statistics/survey/labor-and-employment/labor-force-survey/title/Employment%20Situation%20in%20October%202020</a>&gt;, (Feb. 2021)</p> <ul style="list-style-type: none"> <li>✓ According to the Philippine Statistics Authority, the annual unemployment rate in 2020 was 10.3% or 4.5 million unemployed Filipinos. Since April 2005, this is the highest annual unemployment rate ever recorded.</li> </ul> <p>Source: Future Learn, "The Philippines Economy and the Impact of COVID-19", &lt;<a href="https://www.futurelearn.com/info/futurelearn-international/philippines-economy-covid-19">https://www.futurelearn.com/info/futurelearn-international/philippines-economy-covid-19</a>&gt;, (Aug. 2021)</p>
4. Impacts of COVID-19 Pandemic on Agriculture General, e.g., production, consumption, export/import, E-Commerce transaction change, price chance	<ul style="list-style-type: none"> <li>✓ Agricultural production went down by -3.8 % in the fourth quarter of 2020. Crops, livestock, poultry, and fisheries recorded decreases during the period. However, the value of agricultural production which amounted to PHP 503.8 billion (<i>USD 10.49 billion</i>) was 5.0 % higher than the year 2019 level. The growth rate of agricultural production, however, dropped to -1.2 % from January 2020 to December 2020.</li> </ul> <p>Source: Philippine Statistics Authority (PSA), "Performance of Agriculture", &lt;<a href="https://psa.gov.ph/ppa-main/id/163837">https://psa.gov.ph/ppa-main/id/163837</a>&gt;, (Accessed on Mar. 12, 2021)</p> <p>"Value of Production in Philippines Agriculture and Fisheries, Fourth Quarter 2020", &lt;<a href="https://psa.gov.ph/system/files/Value%20of%20Production%20in%20Philippine%20Agriculture%20and%20Fisheries%2C%20Fourth%20Quarter%202020.pdf">https://psa.gov.ph/system/files/Value%20of%20Production%20in%20Philippine%20Agriculture%20and%20Fisheries%2C%20Fourth%20Quarter%202020.pdf</a>&gt;, (Feb. 2021)</p> <ul style="list-style-type: none"> <li>✓ On March 8, 2020, President Duterte issued Proclamation 922, declaring a State of Public Health Emergency in the Philippines, under the Law on Reporting Communicable Diseases Act (RA 11332), following this issuance, led to the declaration of enhanced community quarantine (ECQ) in almost all parts of the country, which suspends a number school and office activities, conferences and religious gatherings, temporary closure of food service establishments, and stay-at-home order.</li> <li>✓ Prior to the enforcement of the policy, panic-induced buying was observed in retailer outlets, wet markets and service establishments in almost all parts of the country. However, during implementation of the lockdowns, establishments reported significant reduction of sales. It should be noted however that, reduced consumption among households is highly attributed to decline of purchasing power due to income loss, including decline of remittances, during the lockdowns (Murakami et.al. 2020 as cited by FAO 2021). The low demand for consumption of</li> </ul>

Item	Description
	<p>major commodities in 1<sup>st</sup> and 2<sup>nd</sup> quarter of 2020, resulted to reduction of farmgate prices of almost all locally produced commodities in the Philippines.</p> <p>Source: Department of Agriculture, "Price Monitoring", &lt;<a href="https://www.da.gov.ph/price-monitoring/">https://www.da.gov.ph/price-monitoring/</a>&gt;, (Feb. 2021)</p> <ul style="list-style-type: none"> <li>✓ Despite the lockdowns, a number of medium to large businesses have seen increases in sales as they shifted to online retail.</li> </ul> <p>Source: FAO. 2021. Rapid assessment of the impact of COVID-19 on food supply chains in the Philippines. Manila. &lt;<a href="http://www.fao.org/3/cb2622en/cb2622en.pdf">http://www.fao.org/3/cb2622en/cb2622en.pdf</a>&gt;, (Feb. 2021).</p> <ul style="list-style-type: none"> <li>✓ Attributed to reluctance of many Filipino households to shop and dine conventionally, e-commerce transactions dramatically increased in the Philippines during the COVID-19 pandemic.</li> </ul> <p>Source: Business World, "The state of e-commerce in the Philippines", &lt;<a href="https://www.bworldonline.com/the-state-of-e-commerce-in-the-philippines/">https://www.bworldonline.com/the-state-of-e-commerce-in-the-philippines/</a>&gt;, (Feb. 2021)</p>
4.1 Input for Agriculture	<ul style="list-style-type: none"> <li>✓ The implementation of ECQ resulted in the temporary closure of banks or limited opening hours (4-5 hours maximum) leading to difficulty of some farmers to secure loans. On the other hand, small farmers and fisherfolks (SFF) were able to secure financing through informal financiers, such as traders. However, with the loss of livelihood, and very meager profit, SFFs are driven deeper into debt. Large formal agribusiness enterprises in the crop, animal, and fishing industries reported no difficulty in securing financing or in obtaining inputs</li> </ul> <p>Source: FAO. 2021. Rapid assessment of the impact of COVID-19 on food supply chains in the Philippines. Manila. <a href="https://doi.org/10.4060/cb2622en">https://doi.org/10.4060/cb2622en</a>., (Feb. 2021)</p> <ul style="list-style-type: none"> <li>✓ Logistics restrictions and ineffective implementation of IATF Resolution No. 13 and Agricultural-lane passes in some LGUs created supply chain bottlenecks (Palo et al. 2020- ACIAR Technical Report 2020) which include inputs fertilizers, hog insemination services for the swine industry and hatchery fry for milkfish industry.</li> </ul> <p>Source: FAO. 2021. Rapid assessment of the impact of COVID-19 on food supply chains in the Philippines. Manila. &lt;<a href="http://www.fao.org/3/cb2622en/cb2622en.pdf">http://www.fao.org/3/cb2622en/cb2622en.pdf</a>&gt;, (Feb. 2021).</p> <ul style="list-style-type: none"> <li>✓ The pandemic also affected the importation of fertilizers to the Philippines such as urea due to travel restrictions.</li> </ul> <p>Source: Philstar Global, "Fertilizer prices affected by several factors", &lt;<a href="https://www.philstar.com/business/2020/07/08/2026327/fertilizer-prices-affected-several-factors">https://www.philstar.com/business/2020/07/08/2026327/fertilizer-prices-affected-several-factors</a>&gt;, (Feb. 2021)</p> <ul style="list-style-type: none"> <li>✓ The national government through the DA, and LGUs provided assistance to rice farmers in a form of seeds and fertilizers. Moreover, on April 2020, the agency implemented the Expanded SURE Aid and Recovery Project (SURE COVID-19) which is a component of RA 11469 to provide financial assistance to SFFs affected by the pandemic.</li> </ul> <p>Source: DA, press release 2020, "&lt;<a href="https://www.da.gov.ph/news/">https://www.da.gov.ph/news/</a>&gt;", (Feb. 2021)</p>
4.2 Production for Agriculture	<ul style="list-style-type: none"> <li>✓ <b>Crop production</b> which contributed 57.9% to the total agricultural production of the country contracted by -0.4 % in the fourth quarter of 2020. At prices in 2020, crop production in the Philippines was valued at PhP 275.5 billion (USD 5.74 billion). In total, crop production from January to December 2020 grew by 1.5 %.</li> </ul> <p>Source: Philippine Statistics Authority (PSA), "Performance of Agriculture", &lt;<a href="https://psa.gov.ph/ppa-main/id/163837">https://psa.gov.ph/ppa-main/id/163837</a>&gt;, (Feb. 2021)</p> <ul style="list-style-type: none"> <li>✓ <b>Livestock production</b>, which shared 15.4 % of total agricultural output decreased by 12.9 % in the last quarter of 2020. Nevertheless, at 4<sup>th</sup> quarter 2020 prices, the value of livestock production amounted to PhP 85.3 billion (USD 1.7billion) or 15.1 % increase. Overall, from January to December 2020 livestock production posted a -7.4 % decrease.</li> <li>✓ <b>Poultry production</b>, which shared 12.2 % in the total agricultural output, was reduced by -5.5 % in the fourth quarter of 2020. At 2020 prices, the value of poultry production at PhP 69.0 billion (USD 1.4 billion) was lower by -5.6 % compared to the previous year's record. From January 2020 to December 2020, poultry output growth rate dropped to -3.8 %.</li> <li>✓ <b>Fisheries</b> posted a -4.7 % decline in output in the last quarter of 2020. It accounted for 14.5 % of the total agricultural production. Production levels were down for fimbriated sardines by -35.9 %, blue crab by -19.6 %, threadfin bream by -17.1 %, tiger prawn by -16.4 %, tilapia by -14.3 %, and yellowfin tuna by -10.8 %. At current prices, the value of fisheries production amounted to PhP 74.0 billion (USD 1.5 billion), indicating a -6.8 % contraction in the fourth quarter. The annual fisheries production in 2020 decreased by -1.2 %.</li> </ul> <p>Source: Philippine Statistics Authority (PSA), "Value of Production in Philippines Agriculture and Fisheries, Fourth Quarter 2020", &lt;<a href="https://psa.gov.ph/system/files/Value%20of%20Production%20in%20Philippine%20Agriculture%20and%20Fisheries%2C%20Fourth%20Quarter%202020.pdf">https://psa.gov.ph/system/files/Value%20of%20Production%20in%20Philippine%20Agriculture%20and%20Fisheries%2C%20Fourth%20Quarter%202020.pdf</a>&gt;, (Feb. 2021)</p>
4.3 Processing for Agriculture	<ul style="list-style-type: none"> <li>✓ Aside from the delays of delivery of agricultural produce due to travel restrictions, processors are affected due to limited work force arrangements in compliance with the minimum health protocols set by the IATF in quarantine areas, namely: maintenance of social distancing among</li> </ul>

Item	Description
	<p>workers; isolation, testing, and, as applicable, contact tracing for workers with COVID-19 symptoms; limits on meetings and prohibition on mass gathering; observance of handwashing and other hygiene practices; and facility sanitation and disinfection. Moreover, it reinforces food hygiene systems such as Good Agricultural Practices (GAP), Good Hygiene Practices (GHP), Good Manufacturing Practices (GMP), Hazard Analysis and Critical Control Points (HACCP).</p> <p>Source: FAO. 2021. Rapid assessment of the impact of COVID-19 on food supply chains in the Philippines. Manila. &lt; <a href="http://www.fao.org/3/cb2622en/cb2622en.pdf">http://www.fao.org/3/cb2622en/cb2622en.pdf</a> &gt;, (Feb. 2021).</p>
4.4 Retail, Distribution for Agriculture	<ul style="list-style-type: none"> <li>✓ Similarly, with travel restrictions and imposition of minimum health protocols, the retail segment in the supply chain is affected due to low demand from consumers. In fact, reports in some news media revealed that agricultural products were put to waste due to low demand and the lack of processing skills or processing facilities.</li> </ul> <p>Source: ABS-CBN News, "DA to help farmers sell surplus crops amid Luzon lockdown", &lt;<a href="https://news.abs-cbn.com/news/03/28/20/da-to-help-farmers-sell-surplus-crops-amid-luzon-lockdown/">https://news.abs-cbn.com/news/03/28/20/da-to-help-farmers-sell-surplus-crops-amid-luzon-lockdown/</a>&gt;, (Feb. 2021)</p> <ul style="list-style-type: none"> <li>✓ Moreover, with the restrictions, consolidators have less chance of visiting their suppliers or producers to buy in bulk. In fact, volume of delivery trucks decreased to about 50 to 60% owing to the fact that majority of the consumers have lower purchasing power and are mostly on stay-at-home conditions.</li> </ul> <p>Source: FAO. 2021. Rapid assessment of the impact of COVID-19 on food supply chains in the Philippines. Manila. &lt; <a href="http://www.fao.org/3/cb2622en/cb2622en.pdf">http://www.fao.org/3/cb2622en/cb2622en.pdf</a> &gt;, (Feb. 2021).</p> <ul style="list-style-type: none"> <li>✓ Some farmers were fortunate to be suppliers of the Kadiwa ni Ani at Kita Program of the DA. The program provided a boost for many vegetable and fruit farmers as the national and local government were their bulk buyers for the relief programs for the people under their constituency/</li> </ul> <p>Source: ACIAR Technical Report 2020, "Chapter 7 COVID-19 and food systems in the Philippines", Palo et al. &lt;<a href="https://aciarc.gov.au/sites/default/files/2020-11/covid-chapter7.pdf">https://aciarc.gov.au/sites/default/files/2020-11/covid-chapter7.pdf</a>&gt;, (Feb. 2021)</p>
4.5 Market, Consumer for Agriculture	<ul style="list-style-type: none"> <li>✓ Consumer demand contracted due to decline of purchasing power owing to loss income whether from domestic sources or foreign remittances. It is expected that this will persist due to limited access to wet markets, shopping centers or the fear of shopping in those establishments.</li> </ul> <p>Source: NEDA, "DBCC REVISITS MEDIUM-TERM MACROECONOMIC ASSUMPTIONS AND FISCAL PROGRAM AMID THE COVID-19 PANDEMIC", &lt; <a href="https://neda.gov.ph/dbcc-revisits-medium-term-macroeconomic-assumptions-and-fiscal-program-amid-the-covid-19-pandemic">DBCC REVISITS MEDIUM-TERM MACROECONOMIC ASSUMPTIONS AND FISCAL PROGRAM AMID THE COVID-19 PANDEMIC - The National Economic and Development Authority (neda.gov.ph)</a> &gt;, (Feb. 2021)</p> <ul style="list-style-type: none"> <li>✓ With the lockdowns, majority of the Filipino consumers under ECQ opted to buy through online platforms, which boosted e-commerce in the Philippines. Food delivery services has been mainstreamed in many cities and urban areas as a result of closure of food establishments.</li> </ul> <p>Source: Inquire Net, "PH e-commerce gains during COVID-19 lockdown", &lt;<a href="https://business.inquirer.net/295234/ph-e-commerce-gains-during-covid-19-lockdown/">https://business.inquirer.net/295234/ph-e-commerce-gains-during-covid-19-lockdown/</a>&gt;, (Feb. 2021)</p>
5. Impacts of COVID-19 Pandemic on Livestock	<ul style="list-style-type: none"> <li>✓ The absence of hog artificial insemination services during the ECQ may have impacted the reduction of swine production.</li> </ul> <p>Source: FAO. 2021. Rapid assessment of the impact of COVID-19 on food supply chains in the Philippines. Manila. &lt; <a href="http://www.fao.org/3/cb2622en/cb2622en.pdf">http://www.fao.org/3/cb2622en/cb2622en.pdf</a> &gt;, (Feb. 2021).</p> <ul style="list-style-type: none"> <li>✓ However, it should be noted that traders, retailer processors of the swine industry commonly point to the African Swine Flu (ASF) as the main severe source of disruption of the industry more than COVID-19. In fact, the decrease in mobility could have contributed in the spread of the ASF in the country.</li> </ul> <p>Source: DA Virtual Presser, Issue No. 17 (Tagalog version)</p>
6. Impacts of COVID-19 Pandemic on Fisheries	<ul style="list-style-type: none"> <li>✓ In the case of milkfish, domestic fry is running out which put more dependence on imported fingerlings from Indonesia by air travel. Accordingly, output of "other fisheries" dropped by -5.7%.</li> </ul> <p>Source: Philippine Statistics Authority (PSA), "Value of Production in Philippines Agriculture and Fisheries, Fourth Quarter 2020", &lt;<a href="https://psa.gov.ph/system/files/Value%20of%20Production%20in%20Philippine%20Agriculture%20and%20Fisheries%2C%20Fourth%20Quarter%202020.pdf">https://psa.gov.ph/system/files/Value%20of%20Production%20in%20Philippine%20Agriculture%20and%20Fisheries%2C%20Fourth%20Quarter%202020.pdf</a>&gt;, (Feb. 2021)</p> <ul style="list-style-type: none"> <li>✓ Similar to other agricultural products, the consolidators and fish traders have less visits to their suppliers knowing that the demand is disrupted due to loss of income among consumers.</li> </ul> <p>Source: FAO. 2021. Rapid assessment of the impact of COVID-19 on food supply chains in the Philippines. Manila. &lt; <a href="http://www.fao.org/3/cb2622en/cb2622en.pdf">http://www.fao.org/3/cb2622en/cb2622en.pdf</a> &gt;, (Feb. 2021)</p> <ul style="list-style-type: none"> <li>✓ Cause of the lower demand due to the impacts of the COVID-19, shrimp production may remain stagnant for the rest of the year. The weak purchasing power in the pandemic may push the intentional lower production by shrimp producers. On the other hand, there has been a slight</li> </ul>

Item	Description
	<p>improvement in the farm-gate prices of shrimp, and it may encourage producers to increase their supply. Source: MANILA BULLETIN, "PH shrimp production to remain stagnant" , November 10, 2021, &lt; <a href="https://mb.com.ph/2021/11/10/ph-shrimp-production-to-remain-stagnant/">https://mb.com.ph/2021/11/10/ph-shrimp-production-to-remain-stagnant/</a> &gt;</p> <ul style="list-style-type: none"> <li>✓ Various Philippine Fisheries Development Authority (PFDA) Regional Fish Ports (RFPs) continue to conduct general cleaning and disinfection activities in their respective areas. The PFDA - Navotas Fish Port Complex (PFDA-NFPC), led by its Food Safety and Environmental Management Unit (FSEMU) and Port Maintenance Division (PMD), held general cleaning and disinfection activities. These activities are to avoid the spreading of the COVID-19 virus. Source: Philippine Fisheries Development Authority, PFDA RFPs CONDUCT GENERAL CLEANING ACTIVITIES VS COVID-19, December 2, 2021, &lt; <a href="https://pfda.gov.ph/index.php/news-and-events/all-news/596-pfda-rfps-conduct-general-cleaning-activities-vs-covid-19">https://pfda.gov.ph/index.php/news-and-events/all-news/596-pfda-rfps-conduct-general-cleaning-activities-vs-covid-19</a> &gt;</li> <li>✓ The Philippines is one of the strong growth markets for seafood imports from Vietnam. As of the end of October 2021, the turnover is up 46% over the same period last year. Acad, Pangasius, Tuna, Shrimp, and so on are the main export products. Currently, more than 100 Vietnamese enterprises export seafood products to the Philippines. Source: VASEP, Viet Nam's seafood exports to the Philippines increased more than 5 times in October 2021, November 25, 2021, &lt; <a href="http://seafood.vasep.com.vn/total-seafood-trade/news/viet-nams-seafood-exports-to-the-philippines-increased-more-than-5-times-in-october-2021-23277.html">http://seafood.vasep.com.vn/total-seafood-trade/news/viet-nams-seafood-exports-to-the-philippines-increased-more-than-5-times-in-october-2021-23277.html</a> &gt;</li> </ul>
7. Impacts on Japanese companies	<ul style="list-style-type: none"> <li>✓ The "Corporate Reconstruction Tax Preferential (CREATE) Law" that reduces corporate tax came into effect in April 2021. The new law would further expand the attraction of companies and promote the revitalization of industry. An increasing number of Japanese companies are reconsidering their deployment destinations due to the US-China conflict and the review of the supply chain due to the new coronavirus. Under the new law, exporters who meet certain conditions will be able to receive tax holidays for a certain period of time. The corporate tax has been reduced to about 25%, which is about the same as in countries around Southeast Asia. The number of Japanese companies in the Philippines in 2020 will be 1,418. "Investment from Japan to the Philippines peaked around 2011, but the position is still not low," said Ando of JETRO, which has maintained more than 1,000 in recent years. Source: Nikkan Kogyo Shinbun, "Accelerating expansion of Japanese companies into the Philippines; expansion of attracting policies such as corporate tax cuts", <a href="https://www.nikkan.co.jp/articles/view/612669">https://www.nikkan.co.jp/articles/view/612669</a> &gt;, ( Sep.-22 2021)</li> <li>✓ Japanese manufacturer Yokoisada continues its operations in the Philippines as producer of medical grade, high quality face masks and PPEs to address the needs of their East Asia and ASEAN market. Source: DTI, "The Philippines unveils unique advantages in COVID-critical PPE and medical supplies manufacturing at Japanese business event, &lt;<a href="https://www.dti.gov.ph/news/japanese-manufacturing-ppe-medical-supplies/">https://www.dti.gov.ph/news/japanese-manufacturing-ppe-medical-supplies/</a>&gt;, (Feb. 2021)</li> <li>✓ On September 16, 2020, Sumitomo Wiring System and local officials of Binalonan, Pangasinan launched a groundbreaking ceremony for their factory in Pangasinan Source: DTI, "DTI chief: Opening of Sumitomo factory in Pangasinan to push PH innovation", &lt;<a href="https://www.dti.gov.ph/overseas/tokyo/tokyo-news/opening-of-sumitomo-factory/">https://www.dti.gov.ph/overseas/tokyo/tokyo-news/opening-of-sumitomo-factory/</a>&gt;, (Feb. 2021)</li> <li>✓ In early June 2020, 95.6% (including 95.0% in the manufacturing industry and 96.0% in the non-manufacturing industry) resumed operations. The percentage of Japanese companies that expected a deficit in operating income in 2020 was 34.9% of the total, which had a particularly large impact on export-oriented companies. The impact on logistics was large, and the main causes were a decline in customs clearance functions and delays in marine transportation. Source: JETRO, Business report, &lt;<a href="https://www.jetro.go.jp/biznews/2020/06/83e28dca829b7eee.html">https://www.jetro.go.jp/biznews/2020/06/83e28dca829b7eee.html</a> &gt;, ( June-22 2020) As of March 2020, 15.7% of all Japanese companies have been able to operate and start up as usual, and 28.2% (99 companies) of the total have taken temporary return measures (all or part) of Japanese staff. Source: JETRO, Business report, &lt;<a href="https://www.jetro.go.jp/biznews/2020/03/f96967c5588d6708.html">https://www.jetro.go.jp/biznews/2020/03/f96967c5588d6708.html</a> &gt;, ( Mar.-26 2020)</li> </ul>
8. Impacts on IT/DX	<ul style="list-style-type: none"> <li>✓ Even before the pandemic forced the government to work on maintaining production and linkages, a series of technological solutions were built to improve farmers' access to financing. In the Philippine where 75% of the population does not have bank account, it is difficult to</li> </ul>

Item	Description
	<p>provide financial support to rural businesses with limited access to banking infrastructure.</p> <ul style="list-style-type: none"> <li>✓ Peer-to-peer lending by crowdfunding startups has emerged as a way to finance farmers and businesses seeking to increase productivity by investing in improved farmer education, enhanced agricultural inputs, and promoting mechanization. An example is the Cropital crowdfunding platform, where investors choose a farm to invest in and receive a fixed rate of return contingent on a successful harvest. In addition to providing credit, it also connects farmers with insurance companies and agricultural training.</li> <li>✓ Another startup, FarmOn, offers a financing model in which investors choose the crops they want to invest in. The farmer uses the funds to purchase the necessary agricultural inputs and technology, grows the crop, sells it, and then shares the profits equally with the investor.</li> </ul> <p>Source: Business World, "Agricultural trade falls in fourth quarter on import decline; exports rise", &lt;<a href="https://www.bworldonline.com/agricultural-trade-falls-in-fourth-quarter-on-import-decline-exports-rise/">https://www.bworldonline.com/agricultural-trade-falls-in-fourth-quarter-on-import-decline-exports-rise/</a>&gt;, (Feb. 2021)</p>
9. Other Impacts, e.g. on occupational health, nutrition, consumers behavior change	<ul style="list-style-type: none"> <li>✓ While the pandemic resulted to a number of travel restrictions and lessening face-to-face work arrangements, hence, a number of Filipinos were able to cultivate their yard in response to a need of more nutritious and homegrown vegetables. Source: FAO. 2021. Rapid assessment of the impact of COVID-19 on food supply chains in the Philippines. Manila. &lt;<a href="http://www.fao.org/3/cb2622en/cb2622en.pdf">http://www.fao.org/3/cb2622en/cb2622en.pdf</a>&gt;, (Feb. 2021)</li> <li>✓ Meanwhile, being at home most of the time with the family, leisurely watching movies through Netflix or YouTube, a number of Filipino consumers are patronizing food deliveries of fast-food chains using mobile apps such as Food Panda, Grab Food among others. Source: Inquire Net, "PH e-commerce gains during COVID-19 lockdown", &lt;<a href="https://business.inquirer.net/295234/ph-e-commerce-gains-during-covid-19-lockdown">https://business.inquirer.net/295234/ph-e-commerce-gains-during-covid-19-lockdown</a>&gt;, (Feb. 2021)</li> </ul>

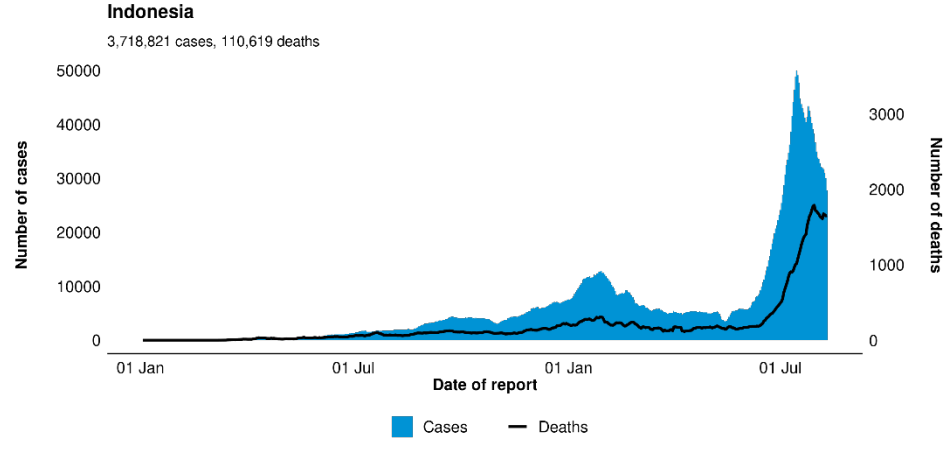
### 2.5.2 Indonesia

In Indonesia, the situation and impacts of COVID-19 including measures taken in terms of restriction/control and support are summarized in Table 2.5.2, and issues peculiar to Indonesia may be taken up as follows:

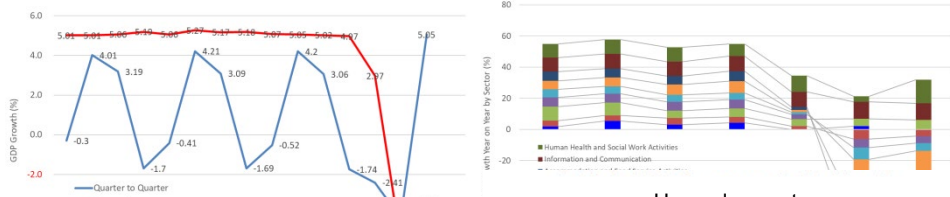

- 1) First COVID-19 case was found on March 2, 2020 in Indonesia, and its infection had increased showing the first peak in late September 2020, and started decreasing thereafter. However, since early November 2020, the infection started again increasing and after February 2021, it started decreasing. Yet, again, the infection started spiking since mid-June 2021, peaking on July 15, 2021 with per-day infection cases of 56,757. As of August 13, 2021, the accumulated cases are approximately 3.7 million and 110,000 for the infection case and death case respectively.
- 2) On April 3, 2020, the Indonesian government issued a health minister's order (No.9/2020) concerning large-scale social restriction to quickly respond COVID-19, based on which regional governments started enforcing large-scale social restriction, e.g., ban on the people's movement into the capital where there were high infection cases. On the other hand, support measures were also put into practice, e.g., economic stimulus packages were three times planned/adjusted and implemented, corporate income tax was reduced from 25 percent to 22 percent, and also Bank Indonesia cut its benchmark interest rate for the fifth time this year 2020 to 3.75 percent.
- 3) The GDP growth for the 2nd quarter of 2020 marked minus 5.3%, which is the lowest growth ratio since Asian financial crisis in 1999. By comparing to the last year's same period of growth by sector, such sectors were very much down as Transportation and storage (-30.8%), Accommodation and food service activities (-22.0%), Wholesale and retail trade, repair of motor vehicles and motorcycles (-7.5%). On the other hand, sectors which have marked positive growth are Agriculture, forestry and fishing (+2.2%), and Information and communication (+10.9%), etc. As of August 2020, the unemployment rate in Indonesia increased by 2.67 million people to 9.77 million people which marked 7.07% against around 5% before the COVID-19.
- 4) The average export volume of agriculture products including livestock and fisheries during the period of January-October 2020 was 4.697 million ton with a value of USD 3.238 billion while those of the same period of 2019 were 3.958 million ton with a value of USD 2.907 billion. Namely, the export of agriculture products including livestock and fisheries in 2020 were increased as compared to the previous year 2019 by 18.69% for the volume and 11.37% for the value respectively.
- 5) At an early stage of the COVID-19 pandemic, it was reported that agriculture production was to decrease a lot, yet, according to the statistics by BPS's Berita Resmi Statistik (Official Statistics News), the paddy production (for milled dry grain) from January-September 2020 was 45.45 million ton and also 9.71 million ton estimate from October – December 2020 while in 2019 the paddy production was 54.6 million ton. Thus, paddy production of year 2020 is estimated at 55.16 million ton, up by 557 thousand ton or by 1.02% from that of year 2019. However, farmers cultivating vegetables in West Java province, e.g., cabbage and chili, reported much loss due to plummeting farmgate price during the harvesting season, which reached more than 50% of the normal price.
- 6) There are a lot of online applications developed and came into internet market during the pandemic in order to sell farm and fisheries products, which also help farmers to monitor the prices of those produces, leading to appropriate pricing by themselves. In addition, utilizing online transportation service has become an alternative mean in selling or distributing farming products online with a direct sale, i.e., farmers to consumer, not through distributing companies.



**Table 2.5.2 Situation and Impacts of COVID-19 in Indonesia**

Item	Description																		
1. COVID-19 Pandemic General	<p><b>Trend of COVID-19 Pandemic Situation</b></p> <table border="1"> <thead> <tr> <th>Particulars</th> <th>At peak Per day</th> <th>Accumulated persons</th> <th>Per 1-million population</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>Infected</td> <td>56,757 (Jul. 15, 2021)</td> <td>3,718,821 (as of Aug. 10)</td> <td>13,596 (as of Aug. 10)</td> <td></td> </tr> <tr> <td>Death Case</td> <td>2,069 (Jul. 27, 2021)</td> <td>110,619 (as of Aug. 10)</td> <td>404 (as of Aug. 10)</td> <td></td> </tr> </tbody> </table> <p>Note: National population is 273,523,615.</p>  <p>Source: WHO, "WHO Coronavirus (COVID-19) Dashboard", &lt;<a href="https://COVID19.who.int/">https://COVID19.who.int/</a>&gt; (Aug. 11, 2021)</p>	Particulars	At peak Per day	Accumulated persons	Per 1-million population	Remarks	Infected	56,757 (Jul. 15, 2021)	3,718,821 (as of Aug. 10)	13,596 (as of Aug. 10)		Death Case	2,069 (Jul. 27, 2021)	110,619 (as of Aug. 10)	404 (as of Aug. 10)				
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	social restriction came back into effect after that day.
September 9, 2020 Business restriction	The Jakarta capital government announced again to enforce the large-scale social restriction back to the original control measures from September 14, 2020, under which business activities other than basic 11 sectors were ordered to work at home. In case work at home cannot be complied, commuting to offices/working places can be allowed by limiting employees up to 25%. Dine-in was also banned, and restriction on public transportation was enforced. These measures were lifted on October 11, 2020.
January 6, 2021 Business restriction	The central government instructed all the provinces within Jawa island and Bali island to strengthen the business activities restriction from January 11, 2021 to January 25, 2021. This was extended up to February 8, 2021.
January 9, 2021 Business restriction	The Jakarta capital government announced to strengthen the large-scale social restriction from January 11, 2021 to January 25, 2021. With this, sectors other than basic 11 essential ones and construction sector were ordered to do work-at-home with a ratio of more than 75%; for the restaurants, only up to 25% of the capacity was allowed for the customers dine-in; shopping centers did open hours curtail, public transportation was also restricted. This measure was extended up to February 8, 2021.
July 1, 2021 Urgent movement restriction	The government enforced an urgent movement restriction from July 3-20 in Java island and Bali island. Except for essential and critical sectors, 100% work at home was enforced. In addition, dine-in was prohibited and business facilities were all shut down. Passengers who use long-distance air flight, bus and trains were required to present at least one-shot vaccination. This was extended to July 25, and finally August 23.
July 25, 2021 Business restriction based on infection level	Business restriction measures should be conducted according to the level of infection, e.g. in Jakarta and other major cities whose level is at 4 (the highest), 100% work at home was enforced except for essential and critical sectors, dine-in was prohibited, and also business facilities were closed in principle.
Source: JETRO, "CORONA Virus Measurement Situation in Asia," < <a href="https://www.jetro.go.jp/world/COVID-19/asia/">https://www.jetro.go.jp/world/COVID-19/asia/</a> > (accessed on March 3, 2021)	
<b>Support Measures (Economic Responses) against COVID-19</b>	
Date	Description
February 25, 2020	The government announced a <u>stimulus package</u> worth USD725 million, which provides fiscal incentives to support the country's tourism, aviation, and property industries. The package also allocated USD324 million for low-income households.
March 13, 2020	The government <u>issued its</u> second emergency stimulus package worth USD8.1 billion. This included exempting some workers in manufacturing from income taxes and giving manufacturing companies a discount on corporate tax payments.
March 31, 2020	President Jokowi <u>introduced</u> Indonesia's <u>third stimulus package</u> worth nearly USD25 billion for health care spending, social protection, and tax incentives.
April 1, 2020	Ministry of Finance announced the <u>reduction</u> in corporate income tax from 25 percent to 22 percent, instead of waiting for the Omnibus Law to be ratified and only starting in 2021. Meanwhile, the decrease in corporate income tax to 20 percent could start in 2022, or one year sooner - previously targeted to be realized starting in 2023.
May 18, 2020	Minister of Finance Sri Mulyani Indrawati <u>announced</u> USD43 billion in <u>economic stimulus</u> . The funds will be used to support state-owned enterprises, subsidize loan repayments for approximately 60 million borrowers, and strengthen social safety net programs, among other things.
July 21, 2020	A new National COVID-19 Mitigation and Economic Recovery Committee was <u>established</u> to resuscitate the economy.
August 6, 2020	The National Economic and COVID-19 Recovery Committee <u>announced</u> the government will send workers earning less than USD340 per month payments of USD40 each month from September through December.
August 17, 2020	The public works and housing ministry <u>announced</u> it will speed up employment schemes to spur economic recovery. It will disburse about USD776 million through a regular cash-for-work program and USD44 million for a public employment scheme.
August 25, 2020	President Jokowi <u>launched</u> an economic assistance program for micro businesses, disbursing about USD160 million to 1 million small business
Early September, 2020	Indonesia launched micro-loans for female entrepreneurs from low-income families in order to assist with COVID-19 recovery, with approximately

Item	Description
	<p>USD67.5 million <u>disbursed</u> by October 3.</p> <p>September 8, 2020: The National Disaster Mitigation Agency <u>announced</u> it will assist the Health Ministry in setting a price ceiling for COVID-19 swab tests following numerous complaints over the high price for tests in many private testing facilities.</p> <p>October 16, 2020: The Tourism Ministry <u>announced</u> plans to set aside USD8 million to provide free cleanliness, health, safety, and environment certification for businesses across Indonesia to increase tourism.</p> <p>October 21, 2020: The Cooperatives and Small and Medium Enterprises Ministry <u>gave</u> small grants of about USD160 each to more than 50,000 businesses in Garut regency, West Java.</p> <p>October 26, 2020: The Tourism and Creative Economy Ministry announced plans to start disbursing USD224 million in grants to help the tourism industry recover from the pandemic.</p> <p>November 5, 2020: The government <u>adjusted</u> its stimulus budget to include the establishment of a USD1 million sovereign wealth fund which will be used to fund vaccine procurement and the establishment of agricultural plantations.</p> <p>November 12, 2020: Indonesia <u>accepted</u> a USD1 billion loan from Australia to fund pandemic response efforts.</p> <p>November 19, 2020: Bank Indonesia <u>cut</u> its benchmark interest rate for the fifth time this year to 3.75 percent.</p> <p>December 28, 2020: National flag carrier Garuda Indonesia and state-owned steelmaker PT Krakatau Steel <u>issued</u> mandatory convertible bonds worth trillions of rupiah as a means to receive a state capital injection to weather the economic downturn.</p> <p>April 18, 2021: Indonesia <u>announced</u> that it had disbursed USD448 million in cash aid to 9 million lower-income households during Ramadan.</p> <p>June 20, 2021: The government <u>announced</u> that it will extend tax deferrals, reduced monthly corporate tax installments, and accelerated value-added tax refunds through 2021. They were previously set to expire at the end of June.</p> <p>August 14, 2021: The Education, Culture, Research, and Technology Ministry <u>announced</u> that the government will distribute internet quota assistance worth USD159.7 million to 26.8 million students and teachers across the country.</p> <p>Source: CSIS, "Southeast Asia Covid-19 Tracker", <a href="https://www.csis.org/programs/southeast-asia-program/southeast-asia-COVID-19-tracker-0">https://www.csis.org/programs/southeast-asia-program/southeast-asia-COVID-19-tracker-0</a> (accessed on March 2, 2021)</p>
<p>3. Impacts of COVID-19 Pandemic on Economy, e.g., economic growth (GDP), employment (unemployment, working hours), migrant work, remittance</p>	<p>✓ The GDP growth for the 2<sup>nd</sup> quarter of 2020 marked minus 5.3%, which is the lowest growth ratio since Asian financial crisis in 1999. By comparing to the last year's same period of growth by sector, such sectors were very much down as Transportation and storage (-30.8%), Accommodation and food service activities (-22.0%), Wholesale and retail trade, repair of motor vehicles and motorcycles (-7.5%). On the other hand, sectors which have marked positive growth are Agriculture, forestry and fishing (+2.2%), Information and communication (+10.9%), etc.</p> <p>Source: BPS, <a href="https://www.bps.go.id/indicator/169/108/4/-2010-version-growth-rate-of-2010-version-gdp-by-expenditure.html">https://www.bps.go.id/indicator/169/108/4/-2010-version-growth-rate-of-2010-version-gdp-by-expenditure.html</a> (accessed on February 21, 2021)</p> <p><b>Trend of GDP Growth and Sector-wise GDP Growth</b></p>  <p><b>Unemployment (Left: Thousand People, Right: Percent)</b></p>  <p>✓ As of August 2020, the unemployment rate in Indonesia increased by 2.67 million people to 9.77 million people, triggered by the COVID-19 pandemic with an overall unemployment ratio of 7.07% (Source: BPS). The sectors which experienced high layoffs are the construction sector (29.3%) and the trade, restaurants, and accommodation services sector (28.9%).</p>

Item	Description
	<p>The worst cases of layoffs occurred in the construction sector since all the laid-off victims did not receive severance pay.</p> <ul style="list-style-type: none"> <li>✓ As of August 2020, the COVID-19 also has impacted Working Hours in Indonesia. Based on BPS Jakarta Province, the number of workers who work more than 35 hours per week has decreased from 87.83% in 2019 to 75.76% in 2020 or a reduction of 12.07% (BPS).</li> <li>✓ The number of formal sector workers fell from 44.12 % to 39.53 % while workers in the informal sector rose from 55.8 % to 60.4 % according to a survey conducted from April 24 – May 2, 2020, covering a total of 1,112 labors/ employees/ officers. Source: EKONOMI, &lt;<a href="https://ekonomi.bisnis.com/read/20201124/9/1321690/aduh-angka-peng-angguran-indonesia-naik-267-juta-orang-gara-gara-COVID-19">https://ekonomi.bisnis.com/read/20201124/9/1321690/aduh-angka-peng-angguran-indonesia-naik-267-juta-orang-gara-gara-COVID-19</a>&gt; (accessed on February 28, 2021)</li> <li>✓ The average import value of consumer goods during the period of January-October 2020 was USD 12,086.3 million (9.33 %) while imports of raw/ auxiliary materials were USD 96,838.0 million (74.53 %), and capital goods were USD 20,937.3 million (16.14 %). When compared to January-October 2019, the import value of all categories of goods has decreased, e.g., consumer goods category fell by 11.38 % (USD1,495.2 million down from the same period of 2019), raw/ auxiliary materials by 19.75 % (USD 20,696.4 million down), and capital goods by 20.29 % (USD 4,770.9 million). Source: BPS, &lt;<a href="https://www.bps.go.id/publication/2020/12/31/2deb01ef268999ec2776a053/-bulletin-statistik-perdagangan-luar-negeri-impor-oktober-2020.html">https://www.bps.go.id/publication/2020/12/31/2deb01ef268999ec2776a053/-bulletin-statistik-perdagangan-luar-negeri-impor-oktober-2020.html</a>&gt; (accessed on March 13, 2021)</li> <li>✓ On the tourism, the cumulative visits from January-August 2020 for foreign tourist to Indonesia had reached 3.41 million visits or decreased by 68.17 % as compared to the number of foreign tourist visits in the same period of 2019 which totaled 10.71 million visits. Source: BPS, &lt;<a href="https://www.bps.go.id/pressrelease/2020/10/01/1719/jumlah-kunjungan-wismana-ke-indonesia-agustus-2020-mencapai-164-97-ribu-kunjungan.html">https://www.bps.go.id/pressrelease/2020/10/01/1719/jumlah-kunjungan-wismana-ke-indonesia-agustus-2020-mencapai-164-97-ribu-kunjungan.html</a>&gt; (accessed on March 14, 2021)</li> <li>✓ The number of foreign tourist visits to Indonesia in June 2021 decreased by 10.04 percent compared to the number of visits in June 2020. When compared to the situation in May 2021, the number of foreign tourist visits in June 2021 also decreased by 7.71 percent. Cumulatively (January–June 2021), the number of foreign tourist visits reached 802.38 thousand visits or a drastic decrease of 74.33 percent when compared to the number of foreign tourist visits in the same period in 2020 which amounted to 3.13 million visits. Source: BPS, &lt;<a href="https://www.bps.go.id/pressrelease/2021/08/02/1802/jumlah-kunjungan-wismana-ke-indonesia-bulan-juni-2021-mencapai-140-85-ribu-kunjungan.html">https://www.bps.go.id/pressrelease/2021/08/02/1802/jumlah-kunjungan-wismana-ke-indonesia-bulan-juni-2021-mencapai-140-85-ribu-kunjungan.html</a>&gt; (accessed on August 23, 2021)</li> <li>✓ The daily nominal wage for national farm workers in July 2021 increased by 0.06 percent compared to the wages of farm workers in June 2021, from IDR 56,794.00 to IDR 56,829.00 per day. Meanwhile, real wages, after inflation adjusted, for farm laborers decreased by 0.08 percent. The daily nominal wage for construction workers (non-foreman) in July 2021 increased by 0.05 percent compared to June 2021, from IDR 91,126.00 to IDR 91,171.00 per day. Meanwhile, real wages decreased by 0.03 percent. Source: BPS, &lt;<a href="https://www.bps.go.id/pressrelease/2021/08/18/1837/upah-nominal-harian-buruh-tani-nasional-juli-2021-naik-sebesar-0-06-persen.html">https://www.bps.go.id/pressrelease/2021/08/18/1837/upah-nominal-harian-buruh-tani-nasional-juli-2021-naik-sebesar-0-06-persen.html</a>&gt; (accessed on August 23, 2021)</li> </ul>
4. Impacts of COVID-19 Pandemic on Agriculture General, e.g., production, consumption, export/import, E-Commerce transaction change, price chance	<ul style="list-style-type: none"> <li>✓ According to BPS, in the midst of the COVID-19 pandemic, it was recorded that around 77 out of every 100 companies in the agricultural and livestock sector were still trying to maintain their business operations, even some companies were still operating as usual, as before the pandemic. This fact was obtained from 2,482 agricultural and livestock company respondents or about 7.18 percent of the total 34,559 company respondents covering almost all business fields. Source: Measuring the Performance of the Livestock Subsector and the Welfare of Farmers in the Middle of the COVID-19 Pandemic (Nov. 2020)</li> <li>✓ The average export volume of agriculture products including livestock and fisheries during the period of January-October 2020 was 4.697 million ton with a value of USD 3.238 billion while those of the same period of 2019 were 3.958 million ton with a value of USD 2.907 billion, namely, up by 18.69% for the volume and 11.37% for the value. Of those, the average export volume of livestock only during the period of January-October 2020 was 29.342 thousand ton with USD 461.239 million while those of the same period of 2019 were 27.609 thousand ton with USD 334.353 million. For the fisheries, there are 2 categories; catch fisheries and fisheries cultivation. For the former, the production in the period of 2020 was 76.012 thousand ton with a value of USD 237.179 million while those of 2019 were 24.454 thousand ton with a value of USD 203.459 million, and for the latter the production in the period of 2020 was 145.659 thousand ton with a value of USD 227.338 million while those of 2019 were 161.650 thousand ton with a value of USD 262.193 million. Source: BPS, &lt;<a href="https://www.bps.go.id/publication/2020/12/31/2deb01ef268999ec2776a053/-bulletin-statistik-perdagangan-luar-negeri-impor-oktober-2020.html">https://www.bps.go.id/publication/2020/12/31/2deb01ef268999ec2776a053/-bulletin-statistik-perdagangan-luar-negeri-impor-oktober-2020.html</a>&gt; (accessed on February 21,</li> </ul>

Item	Description
	<p>2021)</p> <ul style="list-style-type: none"> <li>✓ On the other hand, Indonesia's agricultural import is said to decrease by 17.11% since international import-export is now restricted (exporting countries are enforcing lockdown), and the price for imported goods is rising. Source: Policy Brief No. 1, Indonesian Food Trade Policy during COVID-19, April 30, 2020</li> <li>✓ In April 2020, the Agricultural Extension and Human Resources Development Agency (BPPSDMP), Ministry of Agriculture instructed extension workers to continue to carry out their duties to assist farmers to keep producing while observing health protocols such as not gathering with large numbers of people, wearing masks, maintaining distance, and maintaining cleanliness.</li> </ul>
4.1 Input for Agriculture	<ul style="list-style-type: none"> <li>✓ In April 2020, farmers in the villages face challenges accessing markets to sell their products or buy agricultural raw materials such as fertilizers, seeds and pesticides due to limited supplies and transportation. Source: Hortiindonesia, "PT WAHANA INTI SELARAS", &lt;<a href="https://hortiindonesia.com/berita/ap-a-dampak-COVID-19-terhadap-pertanian-indonesiaquestion">https://hortiindonesia.com/berita/ap-a-dampak-COVID-19-terhadap-pertanian-indonesiaquestion</a>&gt; (accessed on February 12, 2021)</li> </ul>
4.2 Production for Agriculture	<ul style="list-style-type: none"> <li>✓ Published on October 15, 2020 by BPS's Berita Resmi Statistik (Official Statistics News), the paddy production (for milled dry grain) in 2019 was 54.6 million ton while the production from January-September 2020 is 45.45 million ton and also 9.71 million ton estimate from October – December 2020. Thus, 2020 paddy production is estimated at 55.16 million ton, up by 557 thousand ton or by 1.02% from 2019.</li> <li>✓ Since farmers are restricted to work on their field, the productivity has decreased due to the cost of production means such as seeds, fertilizer, and pesticides becoming high/expensive with limited and uneven distribution for all farm field/farming areas. Therefore, farmers cannot sell agriculture products with good quality because they do not work on the field as often. Source: Buletin Perencanaan Pembangunan Pertanian 2020 (Agriculture Development Plan Bulletin of 2020).</li> <li>✓ Farmers cultivating cabbage and chili reported loss due to plummeting farmgate price during the harvesting season, which reached more than 50% of the normal price. This is because the demand at markets has very much weakened. Source: PT PRASIDHA ANKEA NIAGA Tbk, &lt;<a href="https://www.prasidha.co.id/">https://www.prasidha.co.id/</a>&gt; (accessed on February 21, 2021)</li> <li>✓ The relationship between farmers with traders, suppliers, sellers (wholesale/retail), and processing companies is also disturbed. The large-scale restriction or limitation of social activity puts agriculture product distribution or mobility through face-to-face trade and also transportation/logistics system on hold. Source: PT PRASIDHA ANKEA NIAGA Tbk, &lt;<a href="https://www.prasidha.co.id/">https://www.prasidha.co.id/</a>&gt; (accessed on February 21, 2021)</li> <li>✓ The food crops sub-sector grew significantly by 10.32 percent, up double digits from the previous figure. Likewise, the horticulture sub-sector grew by 3.02 percent, mainly due to increasing paddy production. Followed by the livestock sub-sector which grew by 2.48 percent. The livestock sub-sector grew 2.48 percent due to high domestic demand, especially for chicken and eggs. Source: Tempo.co &lt;<a href="https://bisnis.tempo.co/read/1494375/nilai-ekspor-porang-2020-capai-rp-9236-m-mentan-komoditas-andalan-baru">https://bisnis.tempo.co/read/1494375/nilai-ekspor-porang-2020-capai-rp-9236-m-mentan-komoditas-andalan-baru</a>&gt; (accessed on August 23, 2021)</li> <li>✓ In year 2020, the harvested area and production of rice, corn, cassava have increased as compared to those of 2019 due mainly to favorable weather condition. Horticultural commodities grew by 7.85 percent, and banana by 8.38 percent, mangoes by 2.86 percent and cayenne pepper by 12.33 percent. Plantation commodities also grew by 1.13 percent with the commodity in the form of palm oil. Source: Indonesia.go.id &lt;<a href="https://indonesia.go.id/kategori/feature/2515/pertanian-menghijau-di-saat-yang-lain-merah">https://indonesia.go.id/kategori/feature/2515/pertanian-menghijau-di-saat-yang-lain-merah</a>&gt; (accessed on August 23, 2021)</li> </ul>
4.3 Processing for Agriculture	<ul style="list-style-type: none"> <li>✓ Indonesia's crude palm oil (CPO) exports to four countries' export destinations (India, China, the Netherlands and Pakistan) decreased from 5.35 million (2019) tons to 4.01 million tons (2020) or decreased by as much as 25.0%. The value of CPO exports decreased too, namely from USD2.41 billion (2019) to USD2.37 billion (2020), a decrease of 1.65% (note that due to significant increase in the markets of India and Pakistan, the value decrease was not much as that of volume). This was caused by the emergence of activity restrictions following the implementation of the lockdown policies carried out by several palm oil importing countries to break the spread of the pandemic, as well as due to the implementation of large-scale social restrictions in Indonesia. Source: Dampak Pandemi Terhadap Sektor Sawit &lt;<a href="https://www.infosawit.com/news/10545/dampak-pandemi-terhadap-sektor-sawit">https://www.infosawit.com/news/10545/dampak-pandemi-terhadap-sektor-sawit</a>&gt; (accessed on</li> </ul>

Item	Description
	January 18, 2021)
4.4 Retail, Distribution for Agriculture	<ul style="list-style-type: none"> <li>✓ With the limited demand due to decreasing mobility and repressed economy of the people (consumers), the prices are also pressed, causing losses for sellers. The tightened restriction in trading-no-crowd activities/social distancing to reduce COVID-19 possible spread makes sellers/traders not earning steady income. Most agriculture product sellers, around 50% of them, at main (traditional) markets in West Java province have stopped their business; only some stay with profit of IDR 20,000 to IDR 30,000 per day. Source: Policy Brief No. 2, UNPAD page 5, April 30, 2020</li> </ul>
4.5 Market, Consumer for Agriculture	<ul style="list-style-type: none"> <li>✓ The outbreak of COVID 19 infection has made people switch to choosing restaurants with a lower interaction pattern. For example, such changes have been observed as delivery system being promoted, an increase in E-Commerce delivery and an increase in eating at home. This is in fact supported by advances in information technology and communication. Source: Ministry of Agriculture, "Biro Perencanaan Pembangunan", &lt;<a href="http://perplan.setjen.pertanian.go.id/buletin">http://perplan.setjen.pertanian.go.id/buletin</a>&gt; (accessed on March 12, 2021)</li> <li>✓ The COVID-19 pandemic is driving changes in Indonesian people's consumption, e.g., more fresh fruit and vegetables are consumed, flour, rice, and wheat are also getting a lot of demand, and tea and coffee, dairy products are also increasingly being consumed by people to support health quality. Source: Ministry of Agriculture, "Biro Perencanaan Pembangunan", &lt;<a href="http://perplan.setjen.pertanian.go.id/buletin">http://perplan.setjen.pertanian.go.id/buletin</a>&gt; (accessed on March 12, 2021)</li> <li>✓ Toko Tani Indonesia Center (TTIC) can also be an alternative in strengthening food distribution. The deployment of TTIC in 34 provinces is the right network, because of its location in densely populated areas. The implementation is still following the COVID-19 protocol. TTIC has now connected with farmers, farmer groups and farmer groups associations in the production centers of rice, chili, shallots and eggs. Currently, TTIC Pasar Minggu and TTIC Bogor have been shopping for food commodities online through the Goshop feature. Source: Ministry of Agriculture, "Biro Perencanaan Pembangunan", &lt;<a href="http://perplan.setjen.pertanian.go.id/buletin">http://perplan.setjen.pertanian.go.id/buletin</a>&gt; (accessed on August 23, 2021)</li> </ul>
5. Impacts of COVID-19 Pandemic on Livestock	<ul style="list-style-type: none"> <li>✓ The negative impact is disruption of the supply chain of Day-Old Chick (DOC), feed and medicines and thus limiting the operational activities. The negative impact resulted in a decrease in business productivity and farmer income and threatening the sustainability of the broiler farm business. Source: FAKULTAS PETERNAKAN UNSOED, "JOURNAL &amp; PROCEEDING", &lt;<a href="http://jnp.fapet.unsoed.ac.id › psv › article › download">http://jnp.fapet.unsoed.ac.id › psv › article › download</a>&gt; (accessed on March 12, 2021)</li> <li>✓ 43% of NTT (Nusa Tenggara Timur) poultry farmers, 50% of NTT pig farmers and 45% of farmers in East and Central Java actively used the internet during COVID-19. Breeders used the internet to get information on good farming practices and selling livestock. Source: BPS &amp; Australian Government, "PEISMA", &lt;<a href="https://www.aip-prisma.or.id/data/public/uploaded_file/2020-06-12_03-54-35am_Final_Report_COVID-19_Study_-_Perspektif_Peternak.pdf">https://www.aip-prisma.or.id/data/public/uploaded_file/2020-06-12_03-54-35am_Final_Report_COVID-19_Study_-_Perspektif_Peternak.pdf</a>, May 2020&gt; (accessed on March 13, 2021)</li> </ul>
6. Impacts of COVID-19 Pandemic on Fisheries	<ul style="list-style-type: none"> <li>✓ In West Nusa Tenggara province, decline in the price of large tuna ranged from 25% - 37% down which occurred in all assessment locations, and on the other hand fishing operational costs did not decrease as the price of fuel/oil did not decrease. Likewise, decreasing fish prices of big tuna ranged from 17% -21 % down occurred in all assessment locations and around 23% down for small tuna occurred. The decline in the price of fish caught was due to the quiet activity of the Fish Selling Points caused by the absence of buyers from outside the region. Source: Surveyed from March 20 to May 5, 2020, Quick Assessment Report, the Impact of COVID-19 on Handling Tuna Fisherman</li> <li>✓ The price of fish has dropped in many places due to low turnover of fish traders (e.g., 50% price drop Gresik Regency of East Java province, 60% price drop in Central Java province, etc.). The low turnover occurred due to Government policies in dealing with COVID-19 including social distancing, physical distancing, work from home, and restrictions on gathering people. Source: Surveyed from March 20 to May 5, 2020, Quick Assessment Report, the Impact of COVID-19 on Handling Tuna Fisherman.</li> <li>✓ In April, fish exports from Aceh province to China has stopped, causing fish prices to fall down and thus fishermen who have boats over 15 ton stopped going to sea. Source: Literasi Ekonomi Kelautan, "data suhana", &lt;<a href="https://suhana.web.id/2020/04/17/dampak-COVID-19-terhadap-pelaku-perikanan-lokal">https://suhana.web.id/2020/04/17/dampak-COVID-19-terhadap-pelaku-perikanan-lokal</a>&gt; (accessed on March 15 2021)</li> <li>✓ The COVID-19 pandemic harmed the Indonesian aquaculture industry. The COVID-19 caused the policy of movement restriction by the government and the decline of people's purchasing power. As a result of the declining demand for fish, many farmers reduced or postponed stocking fish and shrimp. It automatically reduced the requisition of domestic aquafeeds. However, given the significant downward trend in COVID-19 cases and the increasing vaccination rate in the</li> </ul>

Item	Description
	<p>community, aquaculture production is predicted to rebound rapidly in the coming months, and it will hopefully be much better in the next year. Source: The Fish Site, Trends and challenges in Indonesia's aquafeed industry, November 8, 2021, &lt; <a href="https://thefishsite.com/articles/trends-and-challenges-in-indonesias-aquafeed-industry">https://thefishsite.com/articles/trends-and-challenges-in-indonesias-aquafeed-industry</a> &gt;</p> <ul style="list-style-type: none"> <li>✓ COVID-19 virus was tested positive in chilled fish products imported from Indonesia to Hong Kong. Although the risk of contracting COVID-19 via food and food packaging is low, authority encourages people to uphold good hygiene practices. Source: Centre for Food Safety (The Government of the Hong Kong Special Administrative Region), COVID-19 Virus Found on Fish Food Sample – Should I be Concerned?, September 15, 2021, &lt;<a href="https://www.cfs.gov.hk/english/multimedia/multimedia_pub/multimedia_pub_fsf_182_01.html">https://www.cfs.gov.hk/english/multimedia/multimedia_pub/multimedia_pub_fsf_182_01.html</a> &gt;</li> <li>✓ According to the Indonesian Traditional Fishermen Association, the economy of many traditional fishermen improved amid the COVID-19 because markets absorbed their catches. The survey was implemented for 5,292 fishers in 25 regions in Indonesia from April to May 2021. Source: XINHUANET, Asia Album: Daily life of Indonesian fishermen amid COVID-19 pandemic, August 4, 2021, &lt; <a href="http://www.xinhuanet.com/english/2021-08/04/c_1310106838.htm">http://www.xinhuanet.com/english/2021-08/04/c_1310106838.htm</a> &gt;</li> </ul>
7. Impacts of COVID-19 Pandemic on Japanese companies	<ul style="list-style-type: none"> <li>✓ Some Japanese manufacturing companies in Indonesia who procure raw materials from overseas have pointed out the impact on the supply chain. Company B, a manufacturing company related to transportation equipment, has switched to Thailand as a supplier because it became difficult to obtain raw materials imported from Malaysia. A company representative commented, "The cost has increased by 16% due to the change of supplier." Source: JETRO, Business news, &lt;<a href="https://www.jetro.go.jp/biznews/2021/08/d7fee71fc4403634.html">https://www.jetro.go.jp/biznews/2021/08/d7fee71fc4403634.html</a> &gt;, (2021/8/19)</li> <li>✓ Regarding sales compared to the same month of 2019, about 60% of the companies answered "decrease", but 22.4% of the companies answered "increase". In terms of sales compared to the same month of 2020, 62.9% of the companies answered that they "increased". In the manufacturing industry, 79.7% of companies answered "increase", and the recovery is more remarkable. Source: JETRO, Business news, &lt;<a href="https://www.jetro.go.jp/biznews/2021/07/9e067238e70a6a42.html">https://www.jetro.go.jp/biznews/2021/07/9e067238e70a6a42.html</a>&gt;, (2021/7/2)</li> <li>✓ Regarding the shortage of containers, as of January 2021, there were voices concerned about the prolongation of the period, but as of June 2021, it was the view that each company was converging. Due to the global rise in sea transportation costs, the freight rates for cargo originating in Asia are also rising. The price per 40-foot container is 3.4 times higher than in 2020. Source: JETRO, Business news, &lt;<a href="https://www.jetro.go.jp/biznews/2021/06/64477f249d6d0d92.html">https://www.jetro.go.jp/biznews/2021/06/64477f249d6d0d92.html</a>&gt;, (2021/6/1)</li> </ul>
8. Impacts of COVID-19 Pandemic on IT/DX	<ul style="list-style-type: none"> <li>✓ There are a lot of online application developed to sell farming and fisheries products, which also help farmers to monitor the price themselves, leading to appropriate pricing by themselves. In addition, utilizing online transportation service has become an alternative mean in selling or distributing farming/fisheries product online with a direct sale (farmers to consumer, not through distributing companies). Source: Reports of Socio-Demographic Survey on COVID-19 Impact 2020 (Hasil Survei Sosial Demografi Dampak COVID-19 2020)</li> </ul>
9. Other Impacts, e.g., on occupational health, nutrition, consumers behavior change	<ul style="list-style-type: none"> <li>✓ A study focusing on vulnerable groups; children, women and disabilities covering more than 12,000 families in 34 provinces and 247 districts during the period October-December 2020 showed that, for health and nutrition problems, 11.7 percent of Indonesian children experienced food insecurity problems. Source: Menganalisa Lebih Dalam Dampak Sosial dan Ekonomi Pandemi COVID-19 terhadap Rumah Tangga di Indonesia (March 5, 2021)</li> <li>✓ There are consumer behavior changes in Indonesia due to the pandemic such as: 1) looking for a clean and healthy lifestyle, 2) searching products or goods that could help them stay productive at home, 3) looking for ways and products so they don't get bored and keep their mental health in check while at home, 4) community becoming stronger while the pandemic had strengthened the sense of solidarity, 5) Reverse Maslow phenomenon where psychological needs and a sense of security including a healthy and hygienic environment are the top priorities of consumers, 6) consumers getting increasingly careful about their consumption and purchases, 7) increase in all-digital lifestyle with internet based, 8) increasing opportunists on social media selling. Source: Pandemi Covid-19 Rubah Perilaku Konsumsi Masyarakat &lt;<a href="https://www.gatra.com/news-507103-ekonomi-pandemi-covid-19-rubah-perilaku-konsumsi-masyarakat.html">https://www.gatra.com/news-507103-ekonomi-pandemi-covid-19-rubah-perilaku-konsumsi-masyarakat.html</a>&gt; (March 23, 2021)</li> </ul>

### 2.5.3 Timor Leste

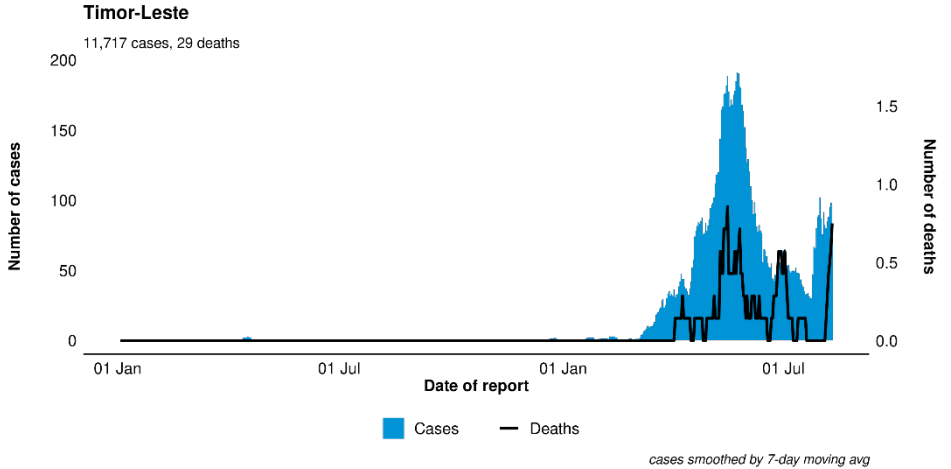
In Timor Leste, the situation and impacts of COVID-19 including measures taken in terms of restriction/control and support are summarized in Table 2.5.3, and issues peculiar to Timor Leste may be taken up as follows:

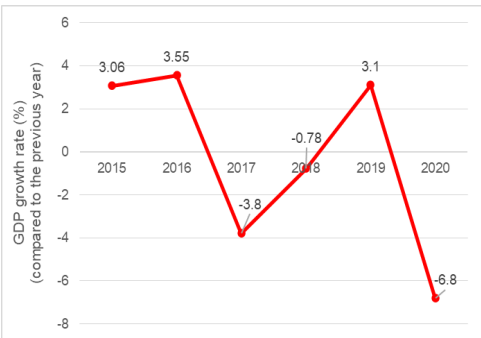
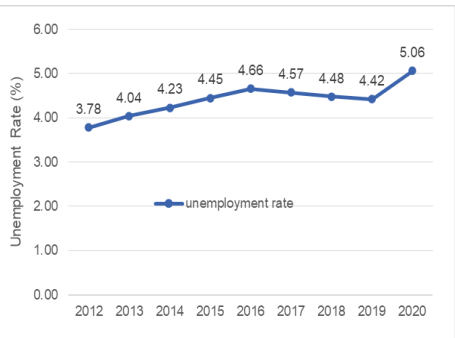
- 1) First COVID-19 case was found on March 21, 2020, and the State of Emergency, effective until April 26, was declared, saying travel restrictions, managed migration, and imposition of social health interventions. It was extended until June 26, 2020, and the State was lifted on June 27. However, the State was issued on August 6, 2020, again and again, and it is to be effective until August 30, 2021. The numbers of infection cases and death cases have been increasing, those are 11,717 and 29, respectively as of August 10, 2021.
- 2) GDP in 2020 is expected to decrease to minus 6.8 percent, which is the largest fall since independence due to the combined impacts of COVID-19 and political uncertainty.
- 3) In Timor-Leste, up to 70 percent of the rice consumption is covered through imports. The imposition of travel and transport restrictions had the greatest short-term impact on agriculture and food security. But the ban to import rice from Vietnam lasted only a month and was lifted on May 1, 2020. Otherwise, there was a possibility that severe food shortages could be caused.
- 4) With support from the World Food Programme (WFP), the prices of food and non-food items have been monitored since May 4, 2020, and there have been no significant variations due to the COVID-19 crisis. However, there have been several reports of food shortages and food waste, mainly at the farm level where farmers were unable to access markets due to travel restrictions. Producers were not allowed to move to other municipalities and local markets southern coast area were closed, which brought about a tentative shortage of vegetables.
- 5) Production of maize in 2020 was decreased compared to an average amount of 2014-2019, while that of coffee was increased. Rice production in 2020 was almost the same as the mean production in the same period. Thus, clear impacts on crop production by COVID-19 were not identified. On the other hand, due to African swine fever (ASF), many pigs were killed, and livestock farmers were damaged apart from COVID-19.
- 6) Import amount on monthly basis in Timor Leste keeps around USD50 million in 2019. It declined to USD35.54 million and USD41.67 million in April and May 2020, respectively. It recovered to USD54.3 million in July. On the other hand, the monthly export amount had increased sharply since the end of 2019, and it reached USD28.63 million in March 2020. However, in April 2020, it drastically decreased to less than 10% of the amount previous amount, namely, to USD2.42 million. For several months, the monthly import amount has remained sluggish, however, it recovered in August to the same level as before COVID-19.
- 7) Due to the continuous heavy rain in early April 2021, large parts of Dili area were inundated, and roads and houses were damaged by muddy streams. In addition, 42 people were killed by the flood. Many international aid agencies and NGOs provided the people in Timor Leste with kinds of necessary goods. Especially, the Government of New Zealand contributed USD200,000 to WFP for food supply for the people, responding to combat rising Food Insecurity in Timor-Leste.
- 8) Due to restrictions on movement, delay of agricultural products transaction was observed. The USAID project assisted smooth transactions between some supermarkets and producers by using the existing WhatsApp Chat Group. Also, the project encouraged some producers to participate in WhatsApp Chat Group, and collectors came to be able to get information of available crops from producers. So far, ICT for agriculture has not been utilized sufficiently in Timor Leste, however,



the project showed the potential of ICT in the agricultural sector.

**Table 2.5.3 Situation and Impacts of COVID-19 in Timor Leste**

Item	Description																								
1. COVID-19 Pandemic General	<p><b>Trend of COVID-19 Pandemic Situation</b></p> <table border="1"> <thead> <tr> <th>Particulars</th> <th>At peak Per day</th> <th>Accumulated persons</th> <th>Per 1-million population</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>Infected</td> <td>253 (May. 13, 2021)</td> <td>11,717 (as of Aug. 10)</td> <td>8,887 (as of Aug. 10)</td> <td></td> </tr> <tr> <td>Death Case</td> <td>3 (May. 13, 2021)</td> <td>29 (as of Aug. 10)</td> <td>22 (as of Aug. 10)</td> <td></td> </tr> </tbody> </table> <p>Note: National population is 1,318,445.</p> <p>Source: WHO, "WHO Coronavirus (COVID-19) Dashboard",            &lt;<a href="https://COVID19.who.int/">https://COVID19.who.int/</a>&gt; (Aug. 11, 2021)</p> <p><b>Timor-Leste</b></p>  <p>11,717 cases, 29 deaths</p> <p>cases smoothed by 7-day moving avg</p>	Particulars	At peak Per day	Accumulated persons	Per 1-million population	Remarks	Infected	253 (May. 13, 2021)	11,717 (as of Aug. 10)	8,887 (as of Aug. 10)		Death Case	3 (May. 13, 2021)	29 (as of Aug. 10)	22 (as of Aug. 10)										
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2. Control and Support Measures of the COVID-19 Pandemic	<p><b>Control Measures of COVID-19 (mentioned for the nation-wide and capital area only)</b></p> <table border="1"> <thead> <tr> <th>Date</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>March 21, 2020</td> <td>First COVID-19 infected found.</td> </tr> <tr> <td>March 28, 2020</td> <td>A state of emergency was declared by decree of the President of the Democratic Republic of Timor-Leste including travel restrictions, managed migration, and imposition of social health interventions. and it was extended until 26 June 2020.</td> </tr> <tr> <td>April 4, 2020</td> <td>Dili's international airport restricted international and domestic commercial operations as of April 4, with an unspecified end date.</td> </tr> <tr> <td>April 13, 2020</td> <td>Travelers, regardless of their citizenship, were forbidden from entering or exiting the country.</td> </tr> <tr> <td>April 29, 2020</td> <td>The Council of Ministers reinstated public transportation, including taxis.</td> </tr> <tr> <td>May 26, 2020</td> <td>The government removed most restrictions, retaining only those related to travel across borders. There were some exceptions, however, all individuals permitted to enter or leave the country were (and still are) subject to mandatory health controls.</td> </tr> <tr> <td>May 29, 2020</td> <td>Foreigners born in Timor-Leste, resident citizens, and legal guardians of Timorese minors were permitted to enter the country. In addition, foreigners deemed essential to business or transportation were allowed to enter.</td> </tr> <tr> <td>June 26, 2020</td> <td>While internal restrictions were relaxed, many restaurants, government buildings, and markets still mandated restrictions including mask-wearing and social distancing.</td> </tr> <tr> <td>August 6, 2020</td> <td>A State of Emergency was issued again, and it was extended repeatedly. It is in effect through March 3, 2021.</td> </tr> <tr> <td>March 4, 2021</td> <td>Extension of the State of Emergency, the State was extended repeatedly.</td> </tr> <tr> <td>September 23, 2021</td> <td>Extension of the State of Emergency until October 29, 2021, as of February 2022, the State has been lifted.</td> </tr> </tbody> </table> <p>Source: The Center for Strategic and International Studies (CSIS), "Southeast Asia Covid-19 Tracker"            &lt;<a href="https://www.csis.org/programs/southeast-asia-program/southeast-asia-COVID-19-tracker-0">https://www.csis.org/programs/southeast-asia-program/southeast-asia-COVID-19-tracker-0</a>&gt;            (February 2021)</p> <p>Source : Embassy of Japan in Timor Leste, Safety information of Timor Lest,</p>	Date	Description	March 21, 2020	First COVID-19 infected found.	March 28, 2020	A state of emergency was declared by decree of the President of the Democratic Republic of Timor-Leste including travel restrictions, managed migration, and imposition of social health interventions. and it was extended until 26 June 2020.	April 4, 2020	Dili's international airport restricted international and domestic commercial operations as of April 4, with an unspecified end date.	April 13, 2020	Travelers, regardless of their citizenship, were forbidden from entering or exiting the country.	April 29, 2020	The Council of Ministers reinstated public transportation, including taxis.	May 26, 2020	The government removed most restrictions, retaining only those related to travel across borders. There were some exceptions, however, all individuals permitted to enter or leave the country were (and still are) subject to mandatory health controls.	May 29, 2020	Foreigners born in Timor-Leste, resident citizens, and legal guardians of Timorese minors were permitted to enter the country. In addition, foreigners deemed essential to business or transportation were allowed to enter.	June 26, 2020	While internal restrictions were relaxed, many restaurants, government buildings, and markets still mandated restrictions including mask-wearing and social distancing.	August 6, 2020	A State of Emergency was issued again, and it was extended repeatedly. It is in effect through March 3, 2021.	March 4, 2021	Extension of the State of Emergency, the State was extended repeatedly.	September 23, 2021	Extension of the State of Emergency until October 29, 2021, as of February 2022, the State has been lifted.
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<p>3. Impacts of COVID-19 Pandemic on Economy, e.g., economic growth (GDP), employment (unemployment, working hours), migrant work, remittance</p>	<p><b>Trend of GDP Growth and Sector-wise GDP Growth</b></p> <div style="display: flex; justify-content: space-around;">   </div> <p style="text-align: center;"><b>GDP Growth Rate and Trend of Unemployment Rate</b></p> <p>✓ GDP is expected to decrease to minus 6.8 percent in 2020, which is the largest fall since independence due to the combined impacts of COVID-19 and political uncertainty (earlier in the year).</p> <p>Source: World Bank Group, "Timor-Leste Economic Report, towards A Sustained Recovery", October 2020</p> <p>✗ It is noted that GDP growth by sector in Timor Leste has been documented until 2018 only.</p> <p>✓ The unemployment rate in Timor Leste increased to 5.06% in 2020. However, the recent trend since 2012 has shown an increase in the unemployment rate, which does not indicate clear impact on the unemployment rate.</p>												

Item	Description
	<p>Source: Statista, "Economy &amp; Politics, International, Timor-Leste: Unemployment rate from 1999 to 2020" &lt;<a href="https://www.statista.com/statistics/809031/unemployment-rate-in-timor-leste/">https://www.statista.com/statistics/809031/unemployment-rate-in-timor-leste/</a>&gt; (August 2021)</p> <ul style="list-style-type: none"> <li>✓ The Government and private sector were enforced to suspend various infrastructural projects due to the movement restriction, which led to a decrease or becoming to zero of incomes of casual labors.</li> </ul> <p>Source: WFP, Food Security Assessment Timor Lest, A Look at the Impact of Cyclone Seroja in Times of COVID-19, September 2021</p>
<p>4. Impacts of COVID-19 Pandemic on Agriculture General, e.g., production, consumption, export/import, e-commerce transaction change, price chance</p>	<ul style="list-style-type: none"> <li>✓ In Timor-Leste, up to 70 percent of the rice consumption is covered through imports. The government had kept food stocks to some extent. However, all stocks had been distributed to flood victims on March 13, 2020, prior to the declaration of the state of emergency. On the other hand, private sector imported 30,226 tons of rice from January through May, mainly from Viet Nam, which is consistent imports during a normal year. The imposition of travel and transport restrictions had the greatest short-term impact on agriculture and food security. But the ban to import rice from Vietnam lasted only a month and was lifted on May 1, 2020. Otherwise, there was a possibility that severe food shortage could be caused.</li> </ul> <p>Source: FAO, "National agrifood systems and COVID-19 in Timor-Leste, Effects, policy responses, and long-term implications", October 2020</p> <ul style="list-style-type: none"> <li>✓ Import amount on monthly basis in Timor Leste keeps around USD50 million in 2019. It declined to USD35.54 million and USD41.67 million in April and May 2020, respectively. It recovered to USD54.3 million in July. On the other hand, the monthly export amount had increased sharply since the end of 2019, and it reached USD28.63 million in March 2020. However, in April, it drastically decreased to less than 10% of the amount previous amount, namely, to USD2.42 million. For several months, the monthly import amount has remained sluggish, however, it recovered in August to the same level as before COVID-19.</li> </ul> <p>Source: Trading Economics, "East Timor, Economic Indicators" &lt;<a href="https://tradingeconomics.com/east-timor-economic-indicators">East Timor - Economic Indicators (tradingeconomics.com)</a>&gt; (February 2021)</p>
<p>4.1 Input for Agriculture</p>	<ul style="list-style-type: none"> <li>✓ The low use of purchased inputs for subsistence farming may have provided partial insulation.</li> </ul> <p>Source: UN Office for the Coordination of Humanitarian Affairs (OCHA) services, "Managing the COVID-19 Outbreak in Timor-Leste" &lt;<a href="https://reliefweb.int/report/timor-leste/managing-covid-19-outbreak-timor-leste">https://reliefweb.int/report/timor-leste/managing-covid-19-outbreak-timor-leste</a>&gt; (February 2021)</p>
<p>4.2 Production for Agriculture</p>	<ul style="list-style-type: none"> <li>✓ Production of maize in 2020 was decreased by around 20% compared to the average amount of 2014-2019, while that of coffee was increased by around 30%. Rice production in 2020 was almost the same as the mean production in the same period. Thus, clear impacts on crop production by COVID-19 were not identified.</li> </ul> <p>Source : FAO Stat, <a href="https://www.fao.org/faostat/en/#data">https://www.fao.org/faostat/en/#data</a> (downloaded on February 20, 2022)</p>
<p>4.3 Processing for Agriculture</p>	<p>NA *</p>
<p>4.4 Retail, Distribution for Agriculture</p>	<ul style="list-style-type: none"> <li>✓ The State of Emergency on March 2020 restricted goods transport. Local markets were closed on the South Coast, and farmers were not allowed to travel from one municipality to the others to sell their products, which resulted in a temporary vegetable shortage.</li> </ul> <p>Source: USAID, AgriLINKS, "Adapting Agribusiness to Maintain Timor-Leste Food Supply", June 23, 2020, &lt;<a href="https://www.agrilinks.org/post/state-urgency-adapting-agribusiness-maintain-timor-leste-food-supply">https://www.agrilinks.org/post/state-urgency-adapting-agribusiness-maintain-timor-leste-food-supply</a>&gt;</p> <ul style="list-style-type: none"> <li>✓ Coffee accounts for 95% of the exported commodity in Timor Leste. However, due to international movement restrictions and a decrease in international needs, the exported amount in the 1<sup>st</sup> half of 2020 was decreased by 20% compared to that in the previous year.</li> </ul> <p>Source: World Bank, Timor-Leste Economic Report, Towards a Sustained Recovery, October 2020</p>
<p>4.5 Market, Consumer for Agriculture</p>	<ul style="list-style-type: none"> <li>✓ With support from the World Food Programme (WFP), the prices of food and non-food items have been monitored since 4 May and there have been no significant variations due to the COVID-19 crisis. However, there have been several reports of food shortages and food waste, mainly at the farm level where farmers were unable to access markets due to travel restrictions.</li> </ul> <p>Source: FAO, "National agrifood systems and COVID-19 in Timor-Leste, Effects, policy responses, and long-term implications", October 2020</p> <ul style="list-style-type: none"> <li>✓ In Dili, in April 2020, prices of chili and bean were high due to failing harvests affected by heavy rain and floods, and limited transport movement due to the COVID-19 pandemic. In May, prices of chili, bean, and tomato dropped compared to April. The prices of egg, sugar, cooking oil, and onion stayed relatively stable.</li> </ul>

Item	Description
	Source: WFP, "Timor-Leste, Food Security Bulletin" Edition No. 17 April – June 2020 <a href="https://docs.wfp.org/api/documents/WFP-0000119063/download/">https://docs.wfp.org/api/documents/WFP-0000119063/download/</a>
5. Impacts of COVID-19 Pandemic on Livestock	✓ In Timor Leste, more than 70% of households have pigs, however, in September 2019, the 1 <sup>st</sup> case of ASF infection was identified, and 28% of pigs in the country died. In addition, the number of customers of pigs and livestock products was decreased due to movement restriction by the COVID-19. In other words, livestock producers were damaged doubly by the decrease of pig numbers due to ASF and demand needs in the market by the COVID-19. Source: WFP, Food Security Assessment Timor Lest, A Look at the Impact of Cyclone Seroja in Times of COVID-19, September 2021
6. Impacts of COVID-19 Pandemic on Fisheries	✓ The second public-private partnership (PPP) Genetically Improved Farmed Tilapia (GIFT) hatchery has opened as part of the Partnership for Aquaculture Development in Timor-Leste Phase 2 project (PADTL2; 2020–2023). The project aims to combat poverty and malnutrition. Also, it expects to bolster fish production in the face of COVID-19. Source: WorldFish, "Timor-Leste's 2nd public-private-partnership tilapia hatchery opens in Lautem", October 6, 2021, < <a href="https://www.worldfishcenter.org/press-release/press-release-timor-lestes-2nd-public-private-partnership-tilapia-hatchery-opens">https://www.worldfishcenter.org/press-release/press-release-timor-lestes-2nd-public-private-partnership-tilapia-hatchery-opens</a> >
7. Impacts of Pandemic on Japanese companies in Timor Leste	✓ As of 2015, Japanese companies in Timor Leste in number are very limited, they are only Muginoho Holdings Co Ltd, which operates a cream puff shop, and Zencho Holdings, which promotes coffee fair trade, and so on. The former targets foreign people and the rich in the country, while the latter sells coffee made by local farmers at Sukiya, a beef bowl restaurant chain in Japan. Impacts on those companies by the COVID-19 were not identified in documents or internet information. However, considering that economic activities were suspended due to the State of Emergency as well as the restaurant industry in Japan, it is thought that the Japanese companies in Timor Leste mentioned above were influenced by the COVID-19 to some extent. Source: NNA, <a href="https://www.nna.jp/nnakanpasar/backnumber/161003/04">https://www.nna.jp/nnakanpasar/backnumber/161003/04</a> , October 2015
8. Impacts of COVID-19 Pandemic on IT/DX	✓ Due to restrictions on movement, delay of agricultural products transaction was observed. Thus, the UASID project assisted smooth transactions between some supermarkets and producers by using existing WhatsApp Chat Group. For instance, supermarkets send a list of necessary goods to collectors, and the collectors inform of available products to the supermarkets by confirming stock of farmers, which prevents delay of delivery. Also, the project encouraged some producers to participate in WhatsApp Chat Group, and collectors came to be able to get information of available crops from producers. So far, ICT for agriculture has not been utilized sufficiently in Timor Leste, however, the project showed the potential of ICT in the agricultural sector. Source : USAID, AgriLINKS, "Adapting Agribusiness to Maintain Timor-Leste Food Supply", (accessed on 23 <sup>rd</sup> June 2020) < <a href="https://www.agrilinks.org/post/state-urgency-adapting-agribusiness-maintain-timor-lestes-food-supply">https://www.agrilinks.org/post/state-urgency-adapting-agribusiness-maintain-timor-lestes-food-supply</a> >
9. Other Impacts, e.g., on occupational health, nutrition, consumers behavior change	✓ After the announcement of 1 <sup>st</sup> case of COVID-19 infection, many foreigners in Timor Leste, mainly, Indonesian, Chinese, and other foreign passport holders got panicky, and they have gone to other countries. They have yet to come back. Source : The Australian Centre for International Agricultural Research (ACIAR), "COVID-19 and food systems in the Indo-Pacific, An assessment of vulnerabilities, impacts, and opportunities for action ACIAR Technical Report 96, 8. COVID-19 and food systems in Timor-Leste", < <a href="https://aciarc.gov.au/publication/covid19/8-covid-19-and-food-systems-timor-lestes">https://aciarc.gov.au/publication/covid19/8-covid-19-and-food-systems-timor-lestes</a> > (accessed in Feb. 2021)

\*In Timor Leste, the sector of agricultural processing has not been developed sufficiently even before COVID-19, and the data and information concerned are very limited. Moreover, documents describing impacts on agricultural processing in Timor Leste by the COVID-19 cannot be identified. Thus, this column is blank.

#### 2.5.4 Malaysia

In Malaysia, the situation and impacts of COVID-19 including measures taken are summarized in the Table 2.5.4, and issues peculiar to Malaysia may be taken up as follows:

- 1) In Malaysia, the first confirmed case was reported on January 25, 2020. During the first wave of the infection around April 2020, the country has successfully controlled the virus, but the number of infected people increased sharply after October 2020. At the peak first wave on January 31, 2021, it has reached 5,728 infected cases (21 people died on February 3rd) and still an increasing tendency has been observed. Under such circumstances, the Malaysian government issued a national state of emergency on January 12, 2021. After decreasing trends in March and April, the cases have been increasing again since May 2021. On 28 May 2021, the government announced the implementation of a nationwide lockdown. As of August 10, 2021, the cumulative number of infected people was 1,279,776, and the cumulative number of deaths was 10,961.
- 2) The government of Malaysia announced the implementation of nationwide movement control order (MCO) on March 18, 2020. Under the order, several measures were taken such as the prohibition of gatherings including religious, sports, social and cultural events, closing religious facilities, offices, schools, restrictions on immigration, and closure of all government agencies and private companies (with some exceptions). After that, depending on the infection situation in each state as well as the federal territories, it transferred to the Conditional Movement Control Order (CMCO) and the Recovery Movement Control Order (RMCO), which are more lenient measures. As support measures by the government, a total of about 4.6 billion dollars of economic stimulus packages were announced on February 27. After that, three additional stimulus measures were implemented, which include support for the payment of utilities in industries, commerce, and households; financial support to employers; direct cash transfer which benefits to businesses and poor households provided with a total of USD 2.3 billion; and support to small and medium-sized enterprises.
- 3) Before the COVID-19 pandemic, Malaysia's economy continued to grow at an average annual rate of 4.8% in 2015-2019. Due to the COVID-19 outbreak and movement control in the first half of 2020, the annual GDP is projected to grow by 8.3% contraction. Although it was 0.7% positive growth in the first quarter, it plummeted to 17.1% in the second quarter. According to a report by Employment Insurance System (EIS) under the Malaysian Social Security Organization (SOCSO), unemployment in the first quarter of 2020 (January to March) increased by 42% year on year basis due to the spread of new coronavirus.
- 4) Travel restrictions to prevent the spread of COVID-19 are causing labor shortages at Malaysia's palm plantations. The country relies on foreigners for 70% of its plantation workforce, drawing mainly from neighboring Indonesia and South Asian countries. Recruitment, however, has stalled in recent months because of stay-at-home orders in Malaysia and other countries to prevent the spread of the disease. The Malaysian government said the country's plantation industry, including palm, was short by 500,000 workers in late May.
- 5) Due to the spread of the new coronavirus infection, the Malaysian government has set the target of export value for halal products this year was revised down to 42 billion ringgit (about 1.4 trillion yen), up 3% from the previous year. The reasons are the postponement of sports associations such as the Tokyo Olympic games and the decline in global demand for palm oil, which accounts for 40% of halal product export, reported by Malaysian Reserve on 15 April 2020. Initially, Malaysia expected an export contract worth up to USD 200 million (about 21.5 billion yen) for the Tokyo Olympic games, which was expected to be a catalyst for halal export growth. Malaysia's exports of halal products last year increased only by 4% year-on-year to RM40.2 billion.

**Table 2.5.4 Situation and Impacts of COVID-19 in Malaysia**

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1. COVID-19 Pandemic General	<p><b>The trend of COVID-19 Pandemic Situation</b></p> <table border="1"> <thead> <tr> <th>Particulars</th> <th>At peak Per day</th> <th>Accumulated persons</th> <th>Per 1-million population</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>Infected</td> <td>24,599 (Aug. 27, 2021)</td> <td>2,741,179 (as of 27 Dec 21)</td> <td>84,693 (as of 27 Dec 21)</td> <td></td> </tr> <tr> <td>Death Case</td> <td>592 (Sep. 12, 2021)</td> <td>31,334 (as of 27 Dec 21)</td> <td>968 (as of 27 Dec 21)</td> <td></td> </tr> </tbody> </table> <p>Note: National population is 32,365,999.</p> <p>Source: WHO, "WHO Coronavirus (COVID-19) Dashboard", &lt;<a href="https://COVID19.who.int/">https://COVID19.who.int/</a>&gt; (Dec. 28, 2021)</p>	Particulars	At peak Per day	Accumulated persons	Per 1-million population	Remarks	Infected	24,599 (Aug. 27, 2021)	2,741,179 (as of 27 Dec 21)	84,693 (as of 27 Dec 21)		Death Case	592 (Sep. 12, 2021)	31,334 (as of 27 Dec 21)	968 (as of 27 Dec 21)								
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Reintroduction of MCO and Prohibition of Interstate Movement	Johor, Malacca, Sabah states and Kuala Lumpur City, Putrajaya City, and Labuan State. Five industries were allowed to operate in the areas of MCO which included manufacturing, construction, service, trade and distribution, and plantation industries. Other industries were advised teleworking. Also, interstate movements were prohibited during the period.
2021/1/12 A State of Emergency	A state of emergency was declared on a nationwide scale with a period until August 1, or until the spread of the virus becomes slower. During the period, parliament and elections will be suspended.
2021/3/2 Conditional Movement Control Order (CMCO)	The MCO implemented in Selangor, Penang, Johor states, and Kuala Lumpur City would end on March 4 <sup>th</sup> , and transferred to CMCO from 5 March until 18 March. The CMCO in Kedah, Kelantan, Negeri Sembilan, Perak, and Sarawak states will be continued. Inter-movement will be prohibited in principle nationwide.
2021/5/28 Lockdown	Nationwide lockdown will be implemented from June 1, 2021. It will continue for 14 days. All economic and social activities except for essential areas and activities designated by the governments. The designated areas and activities include a part of the manufacturing industry; retail and distribution industries which are handing essential goods and some specific products; a part of the construction industry. Two-person per household at maximum are allowed to go outside to buy essential products for daily life. It is restricted shops within 10 km distance from the residence.
2021/6/15 National Recovery Plan	Economic and social activities will be phased in depending on the situation of COVID-19 infection. Starting from the first Phase as the current situation, the Second Phase will expand the designated areas and activities which are allowed to operate (up to 80% of the maximum capacity). Social activities and inter-state movements are continuously prohibited. At the third Phase, almost all activities are to be restarted but 80% operation of the maximum capacity is to be maintained. In the fourth Phase, all economic activities and some part of social activities will be permitted. In addition, the prohibition of inter-state movement and domestic travel is planned to end.
2021/7/16 Termination of EMCO and transferring to National Recovery Plan (1 <sup>st</sup> Phase)	The Enhanced Movement Control Order (EMCO) in Kuala Lumpur city and Selangor state will be terminated and transferred to the 1 <sup>st</sup> Phase of National Recovery Plan.
2021/9/22 Relaxing movement restrictions	Malaysia announced that it will relax movement restrictions, allowing food businesses to extend their operating hours, tourism attractions to reopen to fully vaccinated visitors after October 1, and businesses to operate in person if their employees are fully vaccinated.
2021/10/10 Domestic travel across states and overseas regulation	Prime Minister announced that fully vaccinated Malaysians may freely travel across state borders. Those traveling overseas no longer need to secure a special exemption pass, although returnees are still required to undergo a two-week quarantine.
2021/10/22 SOP to facilitate the arrival of foreign migrant workers	Malaysia approved a set of standard operating procedures (SOP) to facilitate the arrival of foreign migrant workers, including workers to be fully vaccinated before arrival and to undergo quarantine in government-approved facilities.
2021/11/30 Travel from countries affected by Omicron variant	Ministry of Health announced that travelers and aircrew with recent travel histories to countries affected by Omicron variant over the past 10 days must be tested.
2021/11/30 Pausing transition to Endemic Phase	Defense Minister announced that Malaysia will pause its transition into the 'Endemic Phase' of Covid-19 regulations and keep certain business and movement restrictions in place until more information on the Omicron variant becomes available.
2021/12/1 Banning of entry	Malaysia temporarily banned the entry of travelers from countries that have reported the Omicron Covid-19 variant or are considered high-risk.
Source: JETRO. < <a href="https://www.jetro.go.jp/world/COVID-19/asia/">https://www.jetro.go.jp/world/COVID-19/asia/</a> > (March 2021)	

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3. Impacts of COVID-19 Pandemic on Economy, e.g., economic growth (GDP), employment (unemployment, working hours), migrant work, remittance	<p><b>The trend of GDP Growth and Sector-wise GDP Growth</b></p> <ul style="list-style-type: none"> <li>✓ Before the COVID-19 pandemic, Malaysia's economy rose by 4.8 percent per annum from 2015 to 2019. Due to the worldwide spread of COVID-19 and travel restriction in the first half of 2020, contraction of GDP growth (-8.3%) has been projected in the full year. After growing by 0.7% in the first quarter (Q1) of 2020, GDP plunged by 17.1% in Q2. Source : Department of Statistics, Malaysia, "Malaysian Economic Statistics Review, Vol. 8" &lt;<a href="https://www.teeam.org.my/announcement/malaysian-economic-statistics-review-volume-82020/">https://www.teeam.org.my/announcement/malaysian-economic-statistics-review-volume-82020/</a>&gt; (January 2021)</li> <li>✓ The services sector contracted by 5.8 percent due to the full impact of COVID-19 pandemic in the second quarter of 2020. The Services sector, especially the tourism-related industry, remained weak but expected to recover after inter-state travel reopened in early December 2020. Nevertheless, the Information and Communication subsector expanded as online transactions increased significantly during the MCO and shopping online promotions towards the end of the year. In the meantime, the Manufacturing sector contracted by 4.5 percent as export-oriented</li> </ul>																												



Item	Description
	<p>industries were severely affected by the deceleration in global demand following the supply chain disruptions amid MCO.</p> <p>Source : Department of Statistics, Malaysia, "Malaysian Economic Statistics Review, Vol. 8" &lt;<a href="https://www.teeam.org.my/announcement/malaysian-economic-statistics-review-volume-820/">https://www.teeam.org.my/announcement/malaysian-economic-statistics-review-volume-820/</a>&gt; (January 2021)</p> <ul style="list-style-type: none"> <li>✓ According to a report released by the Malaysian Social Security Organization (SOCISO) Employment Insurance System (EIS), the number of unemployed in the first quarter of 2020 (January to March) increased by 42% compared to the same period of the previous year due to the spread of the new coronavirus. EIS pointed out that 37% of companies have reduced the demands and 42% could not operate normally due to the pandemic.</li> </ul> <p>Source: NNA ASIA (2020)</p> <ul style="list-style-type: none"> <li>✓ The unemployment rate in October 2020 was 4.7 percent, an increase of 0.1 percentage points as against September 2020 after registering a decreasing trend for four consecutive months since June 2020. In line with this, the number of unemployed persons went up by 1.5 percent to register 748.2 thousand persons (September 2020: 737.5 thousand persons). As for a year-on-year basis, the unemployment rate increased further by 1.5 percentage points, whereby the number of unemployed persons increased by 236.1 thousand persons (October 2019: 512.1 thousand persons).</li> </ul> <p>Source : Department of Statistics, Malaysia, "Malaysian Economic Statistics Review, Vol. 8" &lt;<a href="https://www.teeam.org.my/announcement/malaysian-economic-statistics-review-volume-82020/">https://www.teeam.org.my/announcement/malaysian-economic-statistics-review-volume-82020/</a>&gt; (January 2021)</p>
<p>4. Impacts of COVID-19 Pandemic on Agriculture General, e.g., production, consumption, export/import, e-commerce transaction change, price chance</p>	<ul style="list-style-type: none"> <li>✓ Although the agriculture sector has been less affected than other most affected sectors such as tourism and hospitality, aviation and logistics, oil and gas, business slowdowns in China and Europe lead to demand slumps for crude palm oil and other export fruits. Production is largely unaffected, however, the weak state of food security in Malaysia has given rise to fears of sustainability.</li> </ul> <p>Source: Ernst &amp; Young PLT, "Economic Impact of COVID-19: A Malaysian context", &lt;<a href="https://eiscentre.perkeso.gov.my/wp-content/uploads/2020/04/COVID-19-Economic-Impact_Malaysia_080420.pdf">https://eiscentre.perkeso.gov.my/wp-content/uploads/2020/04/COVID-19-Economic-Impact_Malaysia_080420.pdf</a>&gt; (2020)</p> <ul style="list-style-type: none"> <li>✓ Production of fresh fruit bunches in November 2020 was 7,513,250 tons, which is down 1.3 percent year-on-year compared to November 2019 (7,610,484 tons). Crude palm oil production in November 2020 was 1,491,551 tons, a decrease of 3.0 percent from November of the previous year (1,538,053 tons) as depicted.</li> </ul> <p>Source: Department of Statistics Malaysia, "Press Release, Malaysia External Trade Statistics Bulletin" &lt;<a href="https://www.dosm.gov.my/">https://www.dosm.gov.my/</a>&gt; (November 2020)</p> <ul style="list-style-type: none"> <li>✓ A year-on-year comparison shows, exports of agricultural goods, which represented 6.7 percent of total exports expanded by 6.0 percent from RM5.3 billion to RM5.6 billion. Exports of palm oil in November 2020 amounted to 1,303,318 tons, a decrease of 7.3 percent from November of the preceding year (1,405,638 tons). While imports of agricultural goods (6.1% of total imports) increased by 15.5 percent from RM3.6 billion to RM4.2 billion compared to the previous year.</li> </ul> <p>Source: Department of Statistics Malaysia, "Press Release, Malaysia External Trade Statistics Bulletin" &lt;<a href="https://www.dosm.gov.my/">https://www.dosm.gov.my/</a>&gt; (November 2020)</p> <ul style="list-style-type: none"> <li>✓ The Consumer Price Index (CPI) in October 2020 decreased 1.5 percent to 120.2 as against 122.0 in the same month of the preceding year. The decrease in the overall index was attributed to the decline in Transport (-10.2%), Housing, Water, Electricity, Gas &amp; Other Fuels (-3.0%) and Clothing &amp; Footwear (-0.4%) which contributed 41.6 percent to the overall weight.</li> </ul> <p>Source : Department of Statistics, Malaysia, "Malaysian Economic Statistics Review, Vol. 8" &lt;<a href="https://www.teeam.org.my/announcement/malaysian-economic-statistics-review-volume-82020/">https://www.teeam.org.my/announcement/malaysian-economic-statistics-review-volume-82020/</a>&gt; (January 2021)</p>
<p>4.1 Input for Agriculture</p>	<ul style="list-style-type: none"> <li>✓ Malaysia's vegetable farmers warned of a supply shortage, as the movement control order (MCO) has affected production processes. Among the challenges faced by farmers and sellers include difficulties in purchasing supplies (e.g., feed and fertilizers), labor shortage as well as a prolonged pause in farming due to the extended MCO.</li> </ul> <p>Source: Channel News Asia, "Malaysia's vegetable supply to be disrupted in coming months due to movement control order, say farmers" &lt;<a href="https://www.channelnewsasia.com/news/asia/malaysia-covid-19-vegetables-supply-movement-control-order-12579348?cid=h3_referral_inarticlelinks_24082018_cna">https://www.channelnewsasia.com/news/asia/malaysia-covid-19-vegetables-supply-movement-control-order-12579348?cid=h3_referral_inarticlelinks_24082018_cna</a>&gt; (March 2020)</p>
<p>4.2 Production for</p>	<ul style="list-style-type: none"> <li>✓ Travel restrictions to prevent the spread of COVID-19 are causing labor shortages at Malaysia's</li> </ul>

Item	Description
Agriculture	<p>palm plantations. The country relies on foreigners for 70% of its plantation workforce, drawing mainly from neighboring Indonesia and South Asian countries. Recruitment, however, has stalled in recent months because of stay-at-home orders in Malaysia and other countries to prevent the disease from the spread. The Malaysian government said this week (May 21, 2020, the country's plantation industry, including palm, was short by 500,000 workers.</p> <p>Source: Successful Farming, "Covid-19 Pandemic Cause Labor Shortage for Malaysia's Palm Industries" &lt;<a href="https://www.agriculture.com/markets/newswire/covid-19-pandemic-causes-labour-shortage-for-malaysias-palm-industry">https://www.agriculture.com/markets/newswire/covid-19-pandemic-causes-labour-shortage-for-malaysias-palm-industry</a>&gt; (May 2020)</p>
4.3 Processing for Agriculture	<p>✓ Malaysian Prime Minister announced that 'almost all economic sectors and business activities will be allowed to operate from May 4, 2020', including food manufacturing operations, after lockdown that has lasted around six weeks since it was implemented in the form of a Movement Control Order (MCO) in March. But this move was frowned upon by half of the country: Seven out of Malaysia's 14 states to be exact. The local governments of these states – Penang, Selangor, Pahang, Kedah, Sabah, Sarawak, and Negeri Sembilan – 'rebelled' against the prime minister and disallowed full reopening of the economy, saying that they are 'not yet ready' or 'it is not yet safe. Source: Pearly Neo, "COVID-19 in Malaysia: Food Industry Recovery Thwarted as half of the states refuse to leave lockdown" &lt;<a href="https://www.foodnavigator-asia.com/Article/2020/05/12/COVID-19-in-Malaysia-Food-industry-recovery-thwarted-as-half-of-states-refuse-to-leave-lockdown">https://www.foodnavigator-asia.com/Article/2020/05/12/COVID-19-in-Malaysia-Food-industry-recovery-thwarted-as-half-of-states-refuse-to-leave-lockdown</a>&gt; (May 2020)</p>
4.4 Retail, Distribution for Agriculture	<p>✓ In the first week after the implementation of the MCO, food supply chains (particularly those in urban areas) were disrupted due to the restrictions on traffic and market opening hours. Food supply to the cities in Malaysia is mainly reliant on land transport such as lorries to carry the products from farms, which are normally located a distance away from the cities.</p> <p>Source: Chin, C. F., "The impact of food supply chain disruptions amidst COVID-19 in Malaysia. Journal of Agriculture, Food Systems, and Community Development, 9(4), 161–163" &lt;<a href="https://doi.org/10.5304/jafscd.2020.094.031">https://doi.org/10.5304/jafscd.2020.094.031</a>&gt; (2020)</p>
4.5 Market, Consumer for Agriculture	<p>✓ According to Wong Keng Fatt of the Kuala Lumpur Vegetable Wholesalers' Association, some 50 percent of vegetable stalls have closed after the Kuala Lumpur City Hall mandated that only two foreign workers are allowed to work during the market's operation hours.</p> <p>Under the order, Wong said about 40 percent of wet markets in Kuala Lumpur have closed, but the supply of vegetables is still adequate and there's even an oversupply, resulting in nearly 30 percent of vegetables being discarded each day at the wholesale market.</p> <p>Source: Chin, C. F. (2020): "The impact of food supply chain disruptions amidst COVID-19 in Malaysia. Journal of Agriculture, Food Systems, and Community Development, 9(4), 161–163" &lt;<a href="https://doi.org/10.5304/jafscd.2020.094.031">https://doi.org/10.5304/jafscd.2020.094.031</a>&gt;</p>
5. Impacts of COVID-19 Pandemic on Livestock	<p>✓ Milk and dairy consumption have been growing in Malaysia. Home cons have been on the rise due to an increase in health consciousness, and the tendency has been accelerated as the time spent at home increased due to the crisis. The major local milk and dairy producers increased their sales by 20% in March-May 2020 until the MCO was loosened. For example, Holstein Milk Company, a local dairy producer, with a majority share of the Malaysian milk market known by the name of "Farm Fresh", increased the sales to the domestic by 15-20% in March-May.</p> <p>Source: NNA ASIA (2020/12/23)</p>
6. Impacts of COVID-19 Pandemic on Fisheries	<p>✓ Based on a preliminary survey done by the Department of Statistics Malaysia (2020), approximately 33 % of those within the fisheries and aquaculture sectors lost their jobs, and 33 % experienced working hour reduction due to COVID-19. Consequently, 79.1 % of farmers and fishers experienced an income reduction</p> <p>Source: Khor et al, "Potential impacts of COVID-19 on the aquaculture sector of Malaysia and its coping strategies", Aquaculture Reports 18 (2020)</p> <p>✓ Malaysia began a two-week lockdown from 1 June to contain a surge of coronavirus infections across the country. As a result, a labor shortage in the country's fisheries sector occurred because it became difficult to bring in crew members from other countries.</p> <p>Source: SeafoodSource, "Malaysia facing a shortage of foreign fishers", June 10, 2021, &lt;<a href="https://www.seafoodsource.com/news/supply-trade/malaysia-facing-shortage-of-foreign-fishers">https://www.seafoodsource.com/news/supply-trade/malaysia-facing-shortage-of-foreign-fishers</a>&gt;</p> <p>Source: The Star, "We've enough fish supply, says LKIM", June 8, 2021, &lt;<a href="https://www.thestar.com.my/news/nation/2021/06/08/weve-enough-fish-supply-says-lkim">https://www.thestar.com.my/news/nation/2021/06/08/weve-enough-fish-supply-says-lkim</a>&gt;</p>
7. Impacts of COVID-19 Pandemic on	<p>✓ In Malaysia, due to the rapid increase in the number of infected people since May 2021, many Japanese companies are having difficulty in labor management such as business continuity, infection control of employees, and securing of human resources. Demand for COVID-19 is</p>

Item	Description
Japanese companies	<p>increasing for advanced human resources related to digital technology and Industry 4.0 is increasing. On the other hand, in the manufacturing industry, securing factory workers has become an issue. In the background, there is a freeze on new employment of foreign workers, which has been implemented since June 2020 to prioritize the employment of Malaysians in COVID-19. As issues for Japanese companies, more complicated labor management is required, such as frequent changes in operating conditions by the government, measures to protect employees from infection, and diversification of working systems due to the generalization of telecommuting. Source: JETRO, Business report, &lt;<a href="https://www.jetro.go.jp/biz/areareports/special/2021/1001/7ac3652fa5b324ec.html">https://www.jetro.go.jp/biz/areareports/special/2021/1001/7ac3652fa5b324ec.html</a>&gt;, (Oct.-9 2021)</p> <p>✓ Japanese companies in Malaysia have traditionally focused on transactions between Japanese companies and local companies, and there are few transactions with other foreign companies. However, due to the spread of the new coronavirus infection, sales decreased and the supply chain was disrupted. With this as an opportunity, Japanese companies are accelerating their search for new sales channels and suppliers in the country. Source: JETRO, Business report, &lt;<a href="https://www.jetro.go.jp/biz/areareports/2021/09436be49a6c5bed.html">https://www.jetro.go.jp/biz/areareports/2021/09436be49a6c5bed.html</a>&gt;, (Feb.-2 2021)</p> <p>✓ Against the backdrop of a rapid increase in exports from China to Europe and the United States, there are frequent cases of leaving Malaysia, mainly by sea mail from major ports such as Shanghai to both regions. Most of the shipping services between Japan and Malaysia are via China, so it is difficult to secure them. Some Japanese manufacturing companies in Malaysia procure many parts from Japan, which has an impact on securing parts. Therefore, each company is having difficulty in responding to changes in shipping companies and airmail. The cost of marine transportation has jumped to about three times the normal cost, which has also pushed up the overall cost. Source: JETRO, Business report, &lt;<a href="https://www.jetro.go.jp/biznews/2020/12/f0a1d9dc11bbd09e.html">https://www.jetro.go.jp/biznews/2020/12/f0a1d9dc11bbd09e.html</a>&gt;, (Dec.-15 2020)</p>
8. Other Impacts, e.g., on occupational health, nutrition, consumers behavior change	<p>✓ Due to the spread of the new coronavirus infection, the Malaysian government has set the target of export value for halal products this year was revised down to 42 billion ringgit (about 1.4 trillion yen), up 3% from the previous year. The reasons are the postponement of sports associations such as the Tokyo Olympic games and the decline in global demand for palm oil, which accounts for 40% of halal product export, reported by Malaysian Reserve on 15 April 2020.</p> <p>✓ Export turmoil continued until the second quarter (April-June) 2020, and is expected to be recovered in the third quarter (July-September) of the year, according to Mr. Hairol Ariffein Sahari, the CEO of Halal Development Corporation (HDC), assumed that the export value of halal products in 2020 would be 16% below the target value of 50 billion ringgit set earlier this year.</p> <p>✓ Initially, Malaysia expected an export contract worth up to USD 200 million (about 21.5 billion yen) for the Tokyo Olympic games, which was expected to be a catalyst for halal export growth. Malaysia's exports of halal products last year increased by 4% year-on-year to RM40.2 billion. Source: 2020/4/17 NNA ASIA</p>

### 2.5.5 Thailand

In Thailand, the situation and impacts of COVID-19 including measures taken are summarized in Table 2.5.5, and issues peculiar to Thailand may be taken up as follows:

- 1) First COVID-19 case in Thailand was found on January 13, 2020, and its infection cases had increased showing the first peak in March 2020 and started decreasing thereafter. However, since January 2020, the infection started again increasing and showed the day peak of 21,838 cases for infection on August 7, 2021, 235 cases for death on August 7. As of August 10, 2021, the accumulated cases are approximately 795,951 and 6,588 for the infection case and death case, respectively.
- 2) The Prime Minister has issued a regulation under Section 9 of the Emergency Decree on Public Administration in Emergency Situation 2005 (No. 1) (the “Emergency Decree”) to cope with the COVID-19 situation on March 20, 2020. Based on the Emergency Decree, almost all commercial facilities and services, except for the sale of minimum required foods, were temporarily closed. All Thai borders by air, land, and water were closed for all foreigners to enter Thailand except for those who have permission. Crossing provincial borders is also prohibited or recommended to postpone. The Government of Thailand allocates some budgets to boost the economy, provide the people who are economically damaged by such with financial assistance including an extension of the loan payment deadline. The Emergency Decree has been extended again and again, and it will be effective until 31 March 2022 as of January 2022.
- 3) The GDP growth year on year for the 2<sup>nd</sup> quarter of 2020 remarkably dropped to minus 12.1%, however, it has been recovering due to some mitigation measures, business stimulation measures, vaccination, and so on. Concerning sector-wise GDP, by comparing to the last year’s same period of growth by sector, main sectors in Thailand were very much down, namely, Accommodation and food service activities (minus 50%), Transport and storage activities (minus 37%), Art and entertainment (minus 46%) for the 2<sup>nd</sup> quarter 2020, still, the situations were improved very much for the 3<sup>rd</sup> quarter 2020. The unemployment rate had been 1%-1.25% since 1<sup>st</sup> quarter 2018, however, the rate has increased and exceeded 2 % for the 3<sup>rd</sup> quarter, which is a very serious situation for the labor market.
- 4) In the sector of Agriculture, forestry, and fishing, GDP growth rates year on year are minus 9.9% and minus 4.3% for the 3<sup>rd</sup> quarter of 2021 which shows gradual recovery.
- 5) The suspension of rice export in neighboring countries such as Vietnam and the spreading of African Swine Fever in Southern East Asian countries brought about advantageous situations for Thailand. On the other hand, after the rapid increase of cases in August 2021, chicken process factories in Thailand were suspended by labor shortage and closure, which brought about less processed chicken export to Japan and insufficient supply for supermarkets in Japan.
- 6) A large-scale cluster of COVID-19 with more than 1,000 cases was identified at a fish market in Samt Skon Province in December 2020. Before COVID-19, the main export destinations of shrimps from Thailand are China, the EU, Japan, and the USA, and orders from those countries have been canceled or decreased, which gave severe impacts on the aquaculture of Thailand.
- 7) Thailand has received more than 4 million labor workers from neighboring countries such as Myanmar and Cambodia, however, due to the lockdown in Thailand, the workers went back to their countries or were prohibited to return to Thailand. Such a situation resulted in a farming labor shortage, which led to a delay in crop planting and a decrease in production. On the other hand, supply chain disturbance caused the delay of commodity distribution, consequently, demand for refrigerator systems to keep fresh vegetables and fruit has been increased. Thai people pay much

more attention to food safety and preservation than before, and they tend to purchase preservable processed foods such as sausage and canned foods.

- 8) Under the COVID-19, a group company in Thailand, established by Japanese businesspersons, started its operation to provide data use support services. It aims at the adaptability and growth of Japanese and local companies in Thailand, which respond to current digitalization.
- 9) Since November 2021, the Government of Thailand started accepting foreign tourists without quarantine at immigration, however, due to the new mutant virus, namely, Omicron, it is expected that economic recovery will be delayed.

**Table 2.5.5 Situation and Impacts of COVID-19 in Thailand**

Item	Description																
1. COVID-19 Pandemic General	<p><b>Trend of COVID-19 Pandemic Situation</b></p> <table border="1"> <thead> <tr> <th style="background-color: #d3d3d3;">Particulars</th> <th style="background-color: #d3d3d3;">At peak Per day</th> <th style="background-color: #d3d3d3;">Accumulated persons</th> <th style="background-color: #d3d3d3;">Per 1-million population</th> <th style="background-color: #d3d3d3;">Remarks</th> </tr> </thead> <tbody> <tr> <td>Infected</td> <td>23,418 (Aug. 13, 2021)</td> <td>2,217,287 (as of Dec. 29)</td> <td>31,648 (as of Dec. 29)</td> <td></td> </tr> <tr> <td>Death Case</td> <td>312 (Aug. 18, 2021)</td> <td>21,647 (as of Dec. 29)</td> <td>309 (as of Dec. 29)</td> <td></td> </tr> </tbody> </table> <p>Source: <a href="https://www.worldometers.info/coronavirus/">https://www.worldometers.info/coronavirus/</a> (accessed on 29<sup>th</sup> December 2021)</p> <p>Remarks: The graph is prepared based on data <a href="https://www.worldometers.info/coronavirus/">https://www.worldometers.info/coronavirus/</a> (accessed on 29<sup>th</sup> December 2021)</p>	Particulars	At peak Per day	Accumulated persons	Per 1-million population	Remarks	Infected	23,418 (Aug. 13, 2021)	2,217,287 (as of Dec. 29)	31,648 (as of Dec. 29)		Death Case	312 (Aug. 18, 2021)	21,647 (as of Dec. 29)	309 (as of Dec. 29)		
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2. Control and Support Measures of the COVID-19 Pandemic	<p><b>Control Measures of COVID-19 (mentioned for the nation-wide and capital area only)</b></p> <table border="1"> <thead> <tr> <th style="background-color: #d3d3d3;">Date</th> <th style="background-color: #d3d3d3;">Description</th> </tr> </thead> <tbody> <tr> <td>2020/1/13</td> <td>The first COVID-19 patient was identified.</td> </tr> <tr> <td>2020/3/20</td> <td>The Prime Minister has issued a regulation under Section 9 of the Emergency Decree on Public Administration in Emergency Situation 2005 (No. 1) (the "Emergency Decree"). Almost all commercial facilities and services, except for the sale of minimum required foods, were temporarily closed. All Thai borders by air, land, and water were closed for all foreigners to enter Thailand except for those who have permission. Crossing provincial borders is also prohibited or recommended to postpone and the quarantine was established in the suburb of Bangkok. The Emergency Decree was repeatedly extended, and it will be effective until the end of February 2021 as of January 2021.</td> </tr> <tr> <td>2020/3/25</td> <td>Domestic flight operation was suspended, and it was restarted step-by-step on May 6, 2020.</td> </tr> <tr> <td>2020/4/2</td> <td>Curfew from 10:00 p.m. to following 4:00 a.m. was issued.</td> </tr> <tr> <td>2020/4/4</td> <td>International flight operation was suspended, and it was restarted step-by-step since July 1, 2020.</td> </tr> <tr> <td>2020/5/1</td> <td>Based on the Emergency Decree, the regulation regarding measures to be kept and to be alleviated was publicized. The Government of Thailand and Bangkok issued the guidelines, respectively.</td> </tr> <tr> <td>2020/6/12</td> <td>Under the conditions that prevention measures against COVID-19 infection are taken, a restart of most of the daily activities in any facilities was admitted.</td> </tr> </tbody> </table>	Date	Description	2020/1/13	The first COVID-19 patient was identified.	2020/3/20	The Prime Minister has issued a regulation under Section 9 of the Emergency Decree on Public Administration in Emergency Situation 2005 (No. 1) (the "Emergency Decree"). Almost all commercial facilities and services, except for the sale of minimum required foods, were temporarily closed. All Thai borders by air, land, and water were closed for all foreigners to enter Thailand except for those who have permission. Crossing provincial borders is also prohibited or recommended to postpone and the quarantine was established in the suburb of Bangkok. The Emergency Decree was repeatedly extended, and it will be effective until the end of February 2021 as of January 2021.	2020/3/25	Domestic flight operation was suspended, and it was restarted step-by-step on May 6, 2020.	2020/4/2	Curfew from 10:00 p.m. to following 4:00 a.m. was issued.	2020/4/4	International flight operation was suspended, and it was restarted step-by-step since July 1, 2020.	2020/5/1	Based on the Emergency Decree, the regulation regarding measures to be kept and to be alleviated was publicized. The Government of Thailand and Bangkok issued the guidelines, respectively.	2020/6/12	Under the conditions that prevention measures against COVID-19 infection are taken, a restart of most of the daily activities in any facilities was admitted.
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	2020/5/1	Regulation of schooling, use of educational facilities, universities and sports events with audiences, operation of public transportation was alleviated under the condition that necessary preventive measures are taken.																						
	2021/1/29	The Government of Thailand re-sorted 5 zones of all provinces based on their infection status and stated that proper prevention measures in each zone are to be taken.																						
	2021/3/31	Extension of the Emergency Decree until the end of May 2021																						
	2021/5/28	Extension of the Emergency Decree until the end of July 2021																						
	2021/8/4	Extension of the Emergency Decree until the end of September 2021																						
	2021/9/28	Extension of the Emergency Decree until the end of November 2021 Re-start of tourism was prepared with softening of some regulations																						
	2021/11/1	Restart of accepting of foreign tourists																						
	2021/11/30	Extension of the Emergency Decree until the end of January 2022																						
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	<p>Source : Embassy of Japan in Thailand, "Information regarding Novel Coronavirus (COVID-19)", &lt;<a href="https://www.th.emb-japan.go.jp/itpr_ja/covid2019-index.html">https://www.th.emb-japan.go.jp/itpr_ja/covid2019-index.html</a>&gt;, February 2021</p> <p>Source: Nomura Research Institute, Ltd, "Study on oversea investment environment for agricultural and trade, Impacts on global food value chain by COVID-19 in Southeast Asian countries", (October, November, and December 2020)</p> <p>Support Measures (Economic Responses) against COVID-19</p> <p>Source: JETRO, "Extension of the Emergency Decree until the end of January 2022, while new deregulation in Thailand", 2<sup>nd</sup> December 2021, &lt;<a href="https://www.jetro.go.jp/biznews/2021/12/7aa3071cdd5967fb.html">https://www.jetro.go.jp/biznews/2021/12/7aa3071cdd5967fb.html</a>&gt;</p> <p>Source: JETRO, Extension of the Emergency Decree until the end of March and Restart of new registration of "Test and Go", January 31, 2022, <a href="https://www.jetro.go.jp/biznews/2022/01/f40bd9520c91429f.html">https://www.jetro.go.jp/biznews/2022/01/f40bd9520c91429f.html</a></p>																							
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2020/12/8	Half-Half co-payment scheme (Kon La Krueng in Thai) to boost domestic consumption, that half amount of payment at markets and food stalls is covered by the government, was extended.
2021/1/19	Case benefit measure to alleviate the economic burden of the people was unveiled. It will provide maximumly 3,500 Baht (=USD117) per person for two months, from January to February, targeting around 31.1 million people.
2021/3/10	As a new economic measure to mitigate the damages due to the COVID-19, the Cabinet decided to spend 400 billion baht in total, mainly for financial support and tax incentives for small and medium-sized enterprises
2021/6/29	The Cabinet decided to provide support measures in accordance with regulations related to COVID-19 prevention
2021/6/29	The government of Thailand issued the cabinet decision to implement support measures with deregulation against COVID-19
2021/11/26	A plan to provide 155 billion Bahts for farmers who are suffering from income decrease by COVID-19, flood, drought, decrease of agricultural products prices were issued.

Source: The Center for Strategic and International Studies (CSIS), "Southeast Asia Covid-19 Tracker" <<https://www.csis.org/programs/southeast-asia-program/southeast-asia-COVID-19-tracker-0>> (February 2021)

Source: JETRO, "Measures against COVID-119 in Asian countries", <<https://www.jetro.go.jp/world/covid-19/asia/>>(February 2021)

Source : JETRO," The Cabinet of Thailand decide the implementation of additional supports for alleviation of impacts by the COVID-10", March 13, 2020, <<https://www.jetro.go.jp/biznews/2020/03/10ce8cd4668cceb8.html>>.

Source: JETRO," The Government of Thailand decided the implementation of the support policies for those who have been affected by the regulations against the COVID-19", July 2, 2021 <https://www.jetro.go.jp/biznews/2021/07/691ad0b005db6193.html>

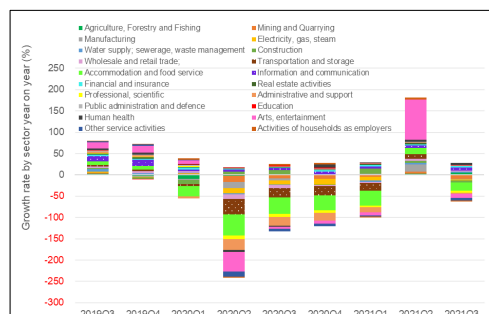
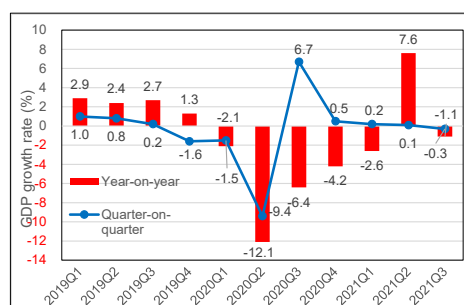
Source : Asia Economic News, "the Government of Thailand will give subsidy to rice and oil palm farmers" (11<sup>th</sup> February 2021) , <<https://www.nna.jp/news/show/2151856>>

Source : Asia Economic News, "The prime minister of Thailand said the government subsidize 540 billion JPY to farmers" (26<sup>th</sup> November 2021) , < <https://www.nna.jp/news/show/2267967> >

3. Impacts of COVID-19 Pandemic on Economy, e.g., economic growth (GDP), employment (unemployment, working hours), migrant work, remittance

**Trend of GDP Growth and Sector-wise GDP Growth**

✓ The GDP growth year on year for the 2<sup>nd</sup> quarter of 2020 is remarkably low, minus 12.1% compared with the previous year. After that, it has been gradually recovered showing plus figures in 2021 (see figure lower left). The sectors most likely to be affected are tourism, retail, accommodation, food, and manufacturing in export-oriented products. By comparing to the last year's same period of growth by sector, such sectors were very much down as Accommodation and food service activities (minus 50%), Transport and storage activities (minus 37%), Art and entertainment (minus 46%). The GDP growth rate of agriculture, forestry, and fishing recovered to 4.3% for the 3<sup>rd</sup> quarter of 2021 from minus 9.9% for the 1<sup>st</sup> quarter of 2020. It is expected that the GDP growth rate in 2022 will be improved by an increase in individual consumption and the number of tourists (see figure lower right).



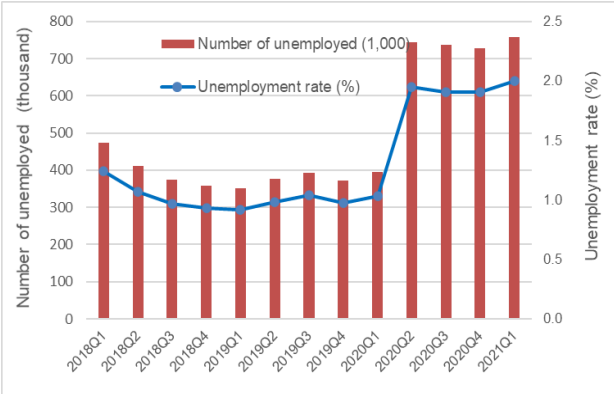
**Trend of GDP Growth Rate and Sector-wise GDP Growth Rate**

Source: Office of the National Economic and Social Development Council, "Gross Domestic Product: Q4/2020", August 16, 2021, <[https://www.nesdc.go.th/nesdb\\_en/article\\_attach/eng%20Q4-62\\_NEW.pdf](https://www.nesdc.go.th/nesdb_en/article_attach/eng%20Q4-62_NEW.pdf)>

Source: MUFG Bank, Ltd., "MUFG Thailand Monthly", 2021 Volume 12

**Trend of the unemployment rate and number of unemployed**

✓ The unemployment rate had been 1~1.25% Q1 in 2018. However, that has been increased 1.9-2.0% from Q2 2020 to Q2 2021, especially, it exceeded 2% for Q3 2020, giving big damages to the

Item	Description
	<p>labor market (see next figure).</p>  <p><b>Trend of Number of Unemployment and Unemployment Rate</b></p> <p>Source: National Statistical Office, “Number and Percentage of Population 15 years and over by Labor Force Status and Quarter: 2016 - 2020” &amp; “Unemployment Rate by Quarter: 2012 - 2020”, &lt;<a href="http://statbbi.nso.go.th/staticreport/page/sector/en/02.aspx">http://statbbi.nso.go.th/staticreport/page/sector/en/02.aspx</a>&gt; (accessed in December 2021)</p> <ul style="list-style-type: none"> <li>✓ It is noted that migrant laborers who worked in Bangkok returned to their hometowns in the rural area and they assisted family farming. Such a situation seemingly softened the rapid increase of unemployment. Source: Policy Research Institute, Ministry of Finance, Japan, “Impacts on tourism in emerging countries by COVID-19 expansion”, 23<sup>rd</sup> June 2021</li> <li>✓ The employed population in the agriculture sector was decreased by 602,700 while that for the non-agriculture sector was 1.634 million. Source: ASEAN, “ASEAN Rapid Assessment: The Impact of COVID-19 on Livelihoods across ASEAN”, November 2020, &lt;<a href="https://asean.org/?static_post=asean-rapid-assessment-impact-covid-19-livelihoods-across-asean">https://asean.org/?static_post=asean-rapid-assessment-impact-covid-19-livelihoods-across-asean</a>&gt;</li> <li>✓ From March 2019 to March 2020, employment in Thailand declined by 439.3 thousand, according to the monthly Labour Force Survey (LFS) report. There was a decline in agricultural employment by 602.7 thousand, but a reported increase in non-agriculture employment by 163.4 thousand. Source: ASEAN, “ASEAN Rapid Assessment: The Impact of COVID-19 on Livelihoods across ASEAN”, November 2020</li> <li>✓ The poor were directly damaged by COVID-19, and the population with income less than 5.5USD/day was increased to 9.7million from 4.7 million. Due to the impacts on employment and income resulting from lockdown, the people purchase minimum required foods and commodities mainly. Source: Nomura Research Institute, Ltd, “Study on oversea investment environment for agricultural and trade, Impacts on global food value chain by COVID-19 in Southeast Asian countries”, October, November, and December 2020</li> <li>✓ Under the devastated economy, rural areas, which have played as a role of adjustment of employment, cannot receive the people who are laid-off in the urban areas anymore Source: Nikkei Shinbun, “Unemployment in Thailand becomes severe since rural areas cannot receive land-off people under the COVID-19”, 17 August 2021.</li> </ul>
<p>4. Impacts of COVID-19 Pandemic on Agriculture General, e.g., production, consumption, export/import, e-commerce transaction change, price chance</p>	<ul style="list-style-type: none"> <li>✓ The outbreak of COVID-19 led to a decline in domestic demand for several food products such as wheat-based products, chicken meat, pork, ready-to-drink milk, fishery products, and fruits due to reduced tourism and temporary lockdown measures. The reduced demand has caused some supply chain disruptions such as an overproduction of milk and fruit. Demand for staple items, such as eggs and instant noodles, surged out of fear of supply shortages. Prices for eggs climbed so quickly, thus, the Thai government temporarily banned their export to keep domestic prices down. Some agricultural sectors like rice and hog farming saw temporary gains during this period due to domestic supply concerns in neighboring countries. Source : United State of Department of Agriculture, “The Impact of the Outbreak of COVID-19 on Thai Agricultural Production”, May 22, 2020</li> <li>✓ The total amount of Thai export as of 2020 April stood at USD18.9 billion (increased by 2.12%) despite COVID-19, and food and agriculture export accounted for 19.7% out of the amount, which is much higher than 15%-16% in recent years. Source: Food Navigator Asia, “Thailand post-COVID-19: Food and Agriculture exports continue to ‘star’-trade chief”, June 22, 2020, &lt;<a href="https://www.foodnavigator.com/Thailand-post-COVID-19-Food-and-agriculture-exports-continue-to-star-trade-chiefs">Thailand post-COVID-19: Food and agriculture exports continue to ‘star’ – trade chiefs (food navigator-asia.com)</a>&gt;</li> </ul>



Item	Description
4.1 Input for Agriculture	<ul style="list-style-type: none"> <li>✓ Impacts on access to agricultural inputs was limited, the supply chain was disrupted, though.</li> </ul> <p>Source: Nomura Research Institute, Ltd, "Study on oversea investment environment for agricultural and trade, Impacts on global food value chain by COVID-19 in South East Asian countries", October, November, and December 2020</p>
4.2 Production for Agriculture	<ul style="list-style-type: none"> <li>✓ Due to the decrease of demand for agricultural products and reduction of crop production, the farm household economy was deteriorated, which led to buying restraint of new agricultural machines. On the other hand, some farm households promote mechanization and digitalization of farming.</li> <li>✓ During the locked down period, many shops and restaurants suspended their operations and purchase of farm products, which resulted in waste of fresh fruits and vegetables, and income decrease for farm households.</li> <li>✓ Thailand has received more than 4 million labor workers from neighboring countries such as Myanmar and Cambodia, however, due to the lockdown in Thailand, the workers went back to their countries or were prohibited to enter Thailand. Such a situation resulted in a farming labor shortage, which led to a decrease in crop production due to delays in planting.</li> </ul> <p>Source: Nomura Research Institute, Ltd, "Study on oversea investment environment for agricultural and trade, Impacts on global food value chain by COVID-19 in South East Asian countries", October, November, and December 2020</p>
4.3 Processing for Agriculture	<ul style="list-style-type: none"> <li>✓ The supply chain disturbance caused the delay of commodity distribution, consequently, demand for refrigerator systems to keep fresh vegetables and fruit has been increased.</li> <li>✓ Thai people pay much more attention to food safety and preservation than before, and they tend to purchase preservable processed foods such as sausage and canned foods.</li> <li>✓ Procurement of raw materials such as fish for processed foods is delayed, which leads to a delay of supply.</li> </ul> <p>Source: Nomura Research Institute, Ltd, "Study on oversea investment environment for agricultural and trade, Impacts on global food value chain by COVID-19 in South East Asian countries", October, November, and December 2020</p>
4.4 Retail, Distribution for Agriculture	<ul style="list-style-type: none"> <li>✓ The COVID-19 worldwide pandemic caused a shortage of large-scale containers for export.</li> <li>✓ Rice export of Thailand in 2020 is expected to be only 6.5million tons, which is the smallest in the recent decade. The reasons are the decrease of worldwide demand for rice, down of international competitiveness of Thailand due to the strong Baht, and the decrease of rice production caused by prolonged drought.</li> </ul> <p>Source: Nomura Research Institute, Ltd, "Study on oversea investment environment for agricultural and trade, Impacts on global food value chain by COVID-19 in South East Asian countries", October, November, and December 2020</p>
4.5 Market, Consumer for Agriculture	<ul style="list-style-type: none"> <li>✓ Demand for sugarcane which is the raw material of disinfectant ethanol becomes high.</li> <li>✓ Due to the increase in demand for gum gloves in China and Thailand, the price of natural gum latex is increased.</li> <li>✓ Production of processed vegetable/fruits and pet foods is expanded due to demand increase.</li> <li>✓ Restriction on tourists' entry leads to a decrease of meat and consumption in the restraint industry and a decrease of sugar consumption for desserts targeting tourists.</li> <li>✓ Due to the worldwide economic recession, food export volume in the 1<sup>st</sup> quarter of 2020 was decreased, while export of processed seafood was increased due to demand increase.</li> <li>✓ Rice export volume in 2020 is expected to be decreased in 10 years due to the COVID-19 pandemic and strong Baht.</li> <li>✓ Covid-19 has developed distribution channels and especially promoted food delivery services, mainly for the rich and middle classes. Some restaurants started crowd kitchens in addition to delivery services.</li> <li>✓ Export of agricultural and agriculture-related industries was increased by 2.5% as of May 2020, while that of frozen and processed vegetables/fruits was increased by 83%.</li> </ul> <p>Source: Nomura Research Institute, Ltd, "Study on oversea investment environment for agricultural and trade, Impacts on global food value chain by COVID-19 in South East Asian countries", October, November, and December 2020</p> <ul style="list-style-type: none"> <li>✓ The outbreak of COVID-19 had a temporary positive impact on Thai rice prices between late March to April 2020, since India, Vietnam, and Cambodia imposed export restrictions on their rice exports due to concerns about their domestic supplies during the outbreak. Thai rice export prices surged to a 9-year record high at UDF570/MT (5% grade white rice, FOB) in mid-April 2020, up 43 percent from the same period in 2019, as foreign buyers were forced to buy Thai rice. However, Thai rice export prices gradually declined to U.S. USD470/MT in mid-May 2020 when Vietnam removed rice export restrictions. However, this current price level is still 18 percent higher than the same period in 2019.</li> </ul> <p>Source: United State of Department of Agriculture, "The Impact of the Outbreak of COVID-19 on Thai Agricultural Production", May 22, 2020</p>

Item	Description
	<p>✓ The numbers of domestic and foreign tourists in 2019 were 1.668 million and 399 thousand, respectively, which downed to 0.905 million and 67 thousand. The Government of Thailand accepts visitors, who are from counties with a low risk of infection, without quarantine. However, it is estimated that those numbers are 520 thousand and 350 thousand, respectively in 2021. It is important to increase the number of tourists.</p> <p>Source: MUFG Bank, Ltd., "MUFG Thailand Monthly", 2021 Volume 12</p>
5. Impacts of COVID-19 Pandemic on Livestock	<p>✓ Hoarding of eggs led to twice – three-times price increase. The government prohibited the export of eggs from March 2020, however, the measure resulted in excess supply in the domestic markets and price decrease. The export of eggs was restarted in May 2020.</p> <p>Nomura Research Institute, Ltd, "Study on oversea investment environment for agricultural and trade, Impacts on global food value chain by COVID-19 in Southeast Asian countries", October, November, and December 2020</p> <p>✓ Prices for live broilers have declined more than 13 percent from USD50.48/100 pounds in January to currently USD43.81/100 pounds. Domestic consumption of chicken meat reportedly dropped significantly in the past few months due to the troubled tourism and hospitality industries. Thailand's chicken meat exports in the first quarter of 2020 (Jan-Mar) registered a two-percent growth over the same period in 2019 since reduced exports to the EU are offset by increased exports to Japan and China.</p> <p>Source: United State of Department of Agriculture, "The Impact of the Outbreak of COVID-19 on Thai Agricultural Production", May 22, 2020  <a href="https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=The%20Impact%20of%20the%20Outbreak%20of%20COVID-19%20on%20Thai%20Agricultural%20Production%20Bangkok%20Thailand%2005-21-2020">https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=The%20Impact%20of%20the%20Outbreak%20of%20COVID-19%20on%20Thai%20Agricultural%20Production%20Bangkok%20Thailand%2005-21-2020</a></p> <p>✓ Migrant labors from neighboring countries have not been allowed to enter Thailand, thus, the chicken processing factories of Nichirei Foods Inc. in Thailand faced a labor shortage, which resulted in the suspension of their business. Soon after the factories restarted their business, however, the scale of production is reduced compared to before.</p> <p>Source: NHK News "Expansion of COVID-19 infection in Southeast Asia gives impacts on sale of chicken in Japan", 22<sup>nd</sup> October 2021  <a href="https://www3.nhk.or.jp/news/html/20211022/k10013316911000.html">https://www3.nhk.or.jp/news/html/20211022/k10013316911000.html</a> &gt;</p>
6. Impacts of COVID-19 Pandemic on Fisheries	<p>✓ The main export destinations of shrimp in Thailand are Japan, China, the USA, and so on, however, demand decrease in those countries leads to a price decrease of shrimp. Many shrimp aquaculture producers keep much stock still now. If COVID-19 will not be settled down so soon, the price of shrimp will be decreased further.</p> <p>Source: NNA ASIA, "Plunge of shrimp price, resulting from foreign demand decrease due to the COVID-19", April 10, 2020</p> <p>✓ Migrant workers working in the fisheries and seafood processing sectors whose jobs and livelihoods have been severely impacted by the COVID-19 pandemic will benefit from the financial support provided by the ILO Ship to Shore Rights South-East Asia, supported by the European Union (EU).</p> <p>Source: ILO, "Fisheries and seafood workers in Thailand receive support to recover from COVID-19", November 30, 2021, <a href="https://www.ilo.org/asia/media-centre/news/WCMS_830516/lang-en/index.htm">https://www.ilo.org/asia/media-centre/news/WCMS_830516/lang-en/index.htm</a> &gt;</p> <p>✓ The authority took lockdown measures for two villages of Khlong Yai district and movement restriction of migrant workers. It suggests that Cambodian workers who moved the areas affected the infection.</p> <p>Source: Bangkok Post, Fishing villages in Trat under lockdown, September 21, 2021, &lt;<a href="https://www.bangkokpost.com/thailand/general/2185447/fishing-villages-in-trat-under-lockdown">https://www.bangkokpost.com/thailand/general/2185447/fishing-villages-in-trat-under-lockdown</a> &gt;</p> <p>✓ The Phuket Fishing Port will shut down for 14 days to have all operators and fishing crews operating out of the port tested for COVID-19 following a spate of infections on board fishing boats using the port. While the fishing vessels were in the port due to the bad weather, the fishers disembarked from them and visited communities. Although more than 90% of them had already completed two vaccination injections, they got infected with COVID-19 in the community.</p> <p>Source: The Phuket News, Phuket's main fishing port to shut down to stem COVID outbreak, August 19, 2021, &lt;<a href="https://www.thephuketnews.com/phuket-main-fishing-port-to-shut-down-to-stem-covid-outbreak-81107.php">https://www.thephuketnews.com/phuket-main-fishing-port-to-shut-down-to-stem-covid-outbreak-81107.php</a> &gt;</p>
7. Impacts on Japanese companies	<p>✓ JETRO announced that it promotes the sales campaign of Japanese products through e-Commerce, which so-called "Japan Mall".</p> <p>Source : JETRO, "Sales promotion campaign of daily commodities made in Japan by e-Commerce, "Japan Mall" in collaboration with Shopee, <a href="https://www.jetro.go.jp/biznews/2021/08/7a9d464c12cf3121.html">https://www.jetro.go.jp/biznews/2021/08/7a9d464c12cf3121.html</a>&gt;, (2021/8/2)</p> <p>✓ At the beginning of COVID-19, the content of consultations with JETRO for Japanese companies were labor-related matters such as compensation for leave of absence, followed by immigration</p>

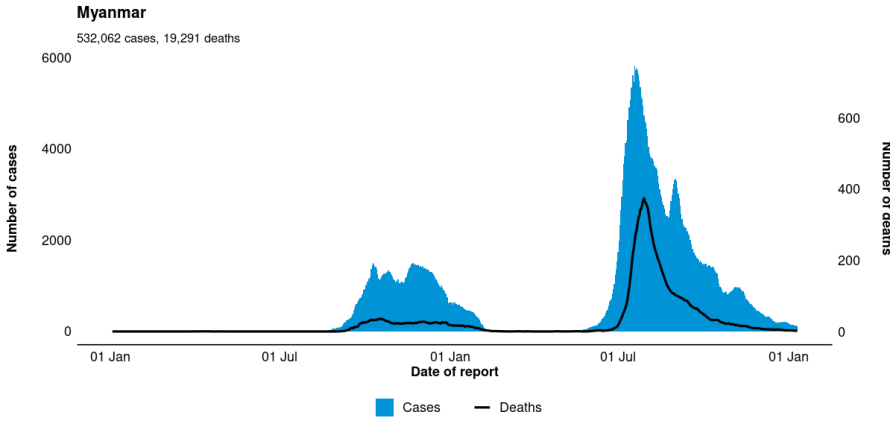
Item	Description
	<p>procedures and matching with new business partners. There were concerns about conflicts with foreign capital regulations regarding the dispatch of engineers from Japan, the development of after-sales services, and the leasing of vacant spaces, which were requested by Japanese companies.</p> <p>Source: JETRO, "Business trend of Japanese companies", &lt;<a href="https://www.boj.go.th/upload/content/Japanese%20Investment%20Trend%20in%20Thailand%20JP_603386e132d40.pdf">https://www.boj.go.th/upload/content/Japanese%20Investment%20Trend%20in%20Thailand%20JP_603386e132d40.pdf</a>&gt;, (2021/2/24)</p> <p>✓ The impact of COVID-19 on Japanese companies is the postponement of capital investment and cost reduction, resulting in a decrease in sales, the loss of business negotiation machines due to the suspension of business trips, the suspension of the machine installation and maintenance due to the absence of engineers from Japan, and the suspension of the machine installation and delays in payment due to remote work.</p> <p>Source: JETRO, "result of urgent questionnaire on the effects of COVID-19" &lt; <a href="https://www.jetro.go.jp/ext_images/thailand/j_pdf/COVID19JP.pdf">https://www.jetro.go.jp/ext_images/thailand/j_pdf/COVID19JP.pdf</a> &gt;, (2020/3/25)</p> <p>✓ Due to continuous struggling consumers' expenditure and uncertainty for prolonged COVID-19's impacts, Japanese department stores, and Lotte duty-free shop announced their withdrawals from Thailand. According to the JETRO's survey report of Japanese restaurants in Thailand, published December 15, 2020, the number of Japanese restaurants in Thailand is 4,094, increased by 12.6% compared to the previous year. On the other hand, the number of suspended or closed marked 726, which is the worst in the past due to the economic recession.</p> <p>Source: Nomura Research Institute, Ltd, "Study on overseas investment environment for agricultural and trade, Impacts on global food value chain by COVID-19 in Southeast Asian countries", (October, November, and December 2020)</p> <p>✓ The suspension of chicken processing factories in Thailand caused the decrease in the supply of frozen chicken to Japanese companies such as Ajinomoto Frozen Food Co., Ltd. In addition, the price of frozen broiler chicken for export to Japan was increased by 12% compared with that in 12 months before. Consequently, supermarkets in Japan faced difficulties securing a certain amount of chicken from Thailand, and some supermarkets shifted to chicken from China and USA, which they have not handled before.</p> <p>Source: NHK News "Expansion of COVID-19 infection in Southeast Asia gives impacts on sale of chicken in Japan", 22<sup>nd</sup> October 2021 &lt;<a href="https://www3.nhk.or.jp/news/html/20211022/k10013316911000.html">https://www3.nhk.or.jp/news/html/20211022/k10013316911000.html</a> &gt;</p>
8. Impacts on IT/DX	<p>✓ One of the Japanese affiliated local group companies, Icomm Avenue group started its operation to provide data utilization service through Google Analytics. The purpose of the works is to support Japanese and local companies in Thailand for adaptation to digitalization with the COVID-19 era and growing in such situations.</p> <p>Source: Nomura Research Institute, Ltd, "Study on overseas investment environment for agricultural and trade, Impacts on global food value chain by COVID-19 in Southeast Asian countries", (October, November, and December 2020)</p>
9. Other Impacts, e.g., on occupational health, nutrition, consumers behavior change	<p>✓ Foods in sacks and packaged ones have preference.</p> <p>✓ Consumers pay attention to health and hygiene further and they are interested in healthful foods and sanitation management in terms of food safety. Demand for healthy foods and organic foods is increased.</p> <p>Source: Nomura Research Institute, Ltd, "Study on overseas investment environment for agricultural and trade, Impacts on global food value chain by COVID-19 in Southeast Asian countries", (October, November, and December 2020)</p>

### 2.5.6 Myanmar

In Myanmar, the situation and impacts of COVID-19 including measures taken in terms of restriction/control and support are summarized in Table 2.5.6, and issues peculiar to Myanmar may be taken up as follows:

- 1) On March 23, 2020, the first infected person (2 people) was reported in Myanmar. Until mid-August 2020, the infection remained low, but then the infection spread rapidly from late August. On September 10, as many as 1,461 people were confirmed infected. The number of infected people reached 2,260 on November 16, 2020, although it had been declining. At its peak, the number of daily infections has been decreasing to this day. The cumulative number of infected people by February 10, 2021 was about 140,000, and the cumulative number of deaths was about 3,000 (WHO, “WHO Coronavirus (COVID-19) Dashboard” <https://covid19.who.int/region/searo/country/mm> (Feb 2021).
- 2) The entry ban on foreigners and the landing ban on commercial passenger flights were enforced in April 2020, followed by a curfew for large cities such as Yangon and Mandalay, and suspension of all businesses except for essential businesses and suspension of vehicle traffic (March to April 2020). In response to suppression in the number of infected people, the government announced the relaxation of the curfew zone and the resumption of entry by foreign government officials and businesspersons, but with the re-spread of the infection from the second half of August of 2020, measures were taken mainly to stay at home in large cities and restrict inter-regional movement. In 2021, with the military taking full power, various restrictive measures have been taken (restrictions on communications, prohibition of gatherings, etc.).
- 3) On April 27, the Government of Myanmar announced the COVID-19 Economic Relief Plan (CERP) as an economic measure against COVID-19. As a result, concrete measures such as extending the deadline for payment of corporate and commercial taxes, exempting pre-paid corporate taxes at the time of export, implementing low-interest loans, exempting electricity charges, and reducing and waiving various license fees were implemented. Specifically, the policy rate has been gradually lowered from 9.5% to 8.5% (March 24, 2020) and from 8.5% to 7.0% (April 27, 2020), and low-interest loans using the CERP Fund are also being distributed, as well as financial compensation during the suspension of business (September 24, 2020).
- 4) In addition to the favorable economic condition and rather strong agriculture sector, foreign direct investment is strong due to the government's thorough infection prevention measures to curb the first wave from April in a short period, and the economic growth rate in fiscal 2020 (October 2019 to September 2020) is expected to grow positively. However, the second wave, which has been expanding since late August 2020, has also put the economy at risk of a downing.
- 5) The vulnerability of the agricultural sector remains high. In addition to restrictions on planting and cultivation due to restrictions on movement, it is expected that poor weather (lack of rainfall) in 2020 will greatly affect the harvest of major crops. In addition, restrictions on movement and market closures have greatly affected sales to domestic and international markets after harvest (World Bank 2020/10/21). Meanwhile, exports of major crops are also recovering in the second half of 2020, and the agricultural sector as a whole is expected to recover early.
- 6) As people refrain from going out due to COVID-19 pandemic, application services for bicycle delivery are growing rapidly. In Yangon, five companies are expanding their operations, including “grabs” that have been around before. The Myanmar Fruit and Vegetable Producers Association has also started selling on delivery and selling fruits and vegetables online. Furthermore, cooperation for "cross-border E-Commerce" has been agreed upon between the two countries for the border trade with China.

**Table 2.5.6 Situation and Impacts of COVID-19 in Myanmar**

Item	Description																						
1. COVID-19 Pandemic General	<p><b>Trend of COVID-19 Pandemic Situation</b></p> <table border="1"> <thead> <tr> <th>Particulars</th> <th>At peak Per day</th> <th>Accumulated persons</th> <th>Per 1-million population</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>Infected</td> <td>7,083 (Jul. 14, 2021)</td> <td>532,062 (as of Jan. 11, 2022)</td> <td>9,779 (as of Jan. 11, 2022)</td> <td></td> </tr> <tr> <td>Death Case</td> <td>397 (Aug. 01, 2021)</td> <td>19,291 (as of Jan 11. 2022)</td> <td>354 (as of Jan. 11, 2022)</td> <td></td> </tr> </tbody> </table> <p>Note: National population is 54,409,800.</p>  <p>Source: WHO, "WHO, "COVID-19 Explorer", &lt;<a href="https://COVID19.who.int/">https://COVID19.who.int/</a>&gt;, (Jan. 11, 2022)</p>	Particulars	At peak Per day	Accumulated persons	Per 1-million population	Remarks	Infected	7,083 (Jul. 14, 2021)	532,062 (as of Jan. 11, 2022)	9,779 (as of Jan. 11, 2022)		Death Case	397 (Aug. 01, 2021)	19,291 (as of Jan 11. 2022)	354 (as of Jan. 11, 2022)								
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Control and Support Measures of the COVID-19 Pandemic	<p><b>Control Measures of COVID-19 (mentioned for the nation-wide and capital area only)</b></p> <table border="1"> <thead> <tr> <th>Date</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>2020/3/19 Entry ban of foreigners</td> <td>Prohibiting foreign nationals from entering and entering the country by land (Ministry of Foreign Affairs, Japan, "Kaigai Anzen HP" &lt;<a href="https://www.anzen.mofa.go.jp/covid19/pdfhistory_world.html#Myanmar1">https://www.anzen.mofa.go.jp/covid19/pdfhistory_world.html#Myanmar1</a>&gt; (Feb 2021)</td> </tr> <tr> <td>2020/3/23 Detection of the first infection case</td> <td>Detection of COVID-19 infection for the first time</td> </tr> <tr> <td>2020/3/31 Suspension of passenger flights</td> <td>Prohibition of landing commercial passenger flights ((Ministry of Foreign Affairs, Japan, "Kaigai Anzen HP" &lt;<a href="https://www.anzen.mofa.go.jp/covid19/pdfhistory_world.html#Myanmar1">https://www.anzen.mofa.go.jp/covid19/pdfhistory_world.html#Myanmar1</a>&gt; (Feb 2021))</td> </tr> <tr> <td>2020/4/6 Suspension of mobilities</td> <td>All vehicles except cargo vehicles and private vehicles (up to 7 people) in the Mandalay area are suspended. 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Suspension of all businesses except essential ones.</td> </tr> <tr> <td>2020/4/18 Curfew at night</td> <td>Curfew at night in Yangon (from 10:00 p.m. to 4:00 a.m.)</td> </tr> <tr> <td>2020/4/19 Closure of restaurant</td> <td>Yangon city and 45 ward offices in the city have been asked to close restaurants and limit them only to takeout.</td> </tr> <tr> <td>2020/5/14- Extension of various restrictive measures</td> <td>Extension of various restrictive measures (updated approximately every two weeks from May 14)</td> </tr> <tr> <td>2020/6 Resumption of entry</td> <td>From early June onwards, visa issuance to foreign government officials and businesspersons was resumed and allowed to enter the country under certain conditions only for government business, construction business, economic activities, etc. (Ministry of Foreign Affairs, Japan, "Kaigai Anzen HP" &lt;<a href="https://www.anzen.mofa.go.jp/covid19/pdfhistory_world.html#Myanmar1">https://www.anzen.mofa.go.jp/covid19/pdfhistory_world.html#Myanmar1</a>&gt; (Feb 2021)</td> </tr> <tr> <td>2020/8/18 Spread of COVID-19 infection</td> <td>Since August 18, the COVID-19 has spread across the country, with the western state of Rakhine becoming the epicenter of the infection. Especially in Yangon, the number of infected people has increased rapidly (JETRO, &lt;<a href="https://www.jetro.go.jp/biz/areareports/2020/86b4ef41f165b87f.html">https://www.jetro.go.jp/biz/areareports/2020/86b4ef41f165b87f.html</a>&gt; (2020/10/30).</td> </tr> <tr> <td>2020/11/8 General election</td> <td>General election</td> </tr> </tbody> </table>	Date	Description	2020/3/19 Entry ban of foreigners	Prohibiting foreign nationals from entering and entering the country by land (Ministry of Foreign Affairs, Japan, "Kaigai Anzen HP" < <a href="https://www.anzen.mofa.go.jp/covid19/pdfhistory_world.html#Myanmar1">https://www.anzen.mofa.go.jp/covid19/pdfhistory_world.html#Myanmar1</a> > (Feb 2021)	2020/3/23 Detection of the first infection case	Detection of COVID-19 infection for the first time	2020/3/31 Suspension of passenger flights	Prohibition of landing commercial passenger flights ((Ministry of Foreign Affairs, Japan, "Kaigai Anzen HP" < <a href="https://www.anzen.mofa.go.jp/covid19/pdfhistory_world.html#Myanmar1">https://www.anzen.mofa.go.jp/covid19/pdfhistory_world.html#Myanmar1</a> > (Feb 2021))	2020/4/6 Suspension of mobilities	All vehicles except cargo vehicles and private vehicles (up to 7 people) in the Mandalay area are suspended. 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Suspension of all businesses except essential ones.	2020/4/18 Curfew at night	Curfew at night in Yangon (from 10:00 p.m. to 4:00 a.m.)	2020/4/19 Closure of restaurant	Yangon city and 45 ward offices in the city have been asked to close restaurants and limit them only to takeout.	2020/5/14- Extension of various restrictive measures	Extension of various restrictive measures (updated approximately every two weeks from May 14)	2020/6 Resumption of entry	From early June onwards, visa issuance to foreign government officials and businesspersons was resumed and allowed to enter the country under certain conditions only for government business, construction business, economic activities, etc. (Ministry of Foreign Affairs, Japan, "Kaigai Anzen HP" < <a href="https://www.anzen.mofa.go.jp/covid19/pdfhistory_world.html#Myanmar1">https://www.anzen.mofa.go.jp/covid19/pdfhistory_world.html#Myanmar1</a> > (Feb 2021)	2020/8/18 Spread of COVID-19 infection	Since August 18, the COVID-19 has spread across the country, with the western state of Rakhine becoming the epicenter of the infection. 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Date	Description																						
2020/3/19 Entry ban of foreigners	Prohibiting foreign nationals from entering and entering the country by land (Ministry of Foreign Affairs, Japan, "Kaigai Anzen HP" < <a href="https://www.anzen.mofa.go.jp/covid19/pdfhistory_world.html#Myanmar1">https://www.anzen.mofa.go.jp/covid19/pdfhistory_world.html#Myanmar1</a> > (Feb 2021)																						
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2020/11/8 General election	General election																						

Item	Description	
2021/2/1 seizing full power by the military	(Special Note) Seizing full power by the military. After that, Facebook, Instagram, Twitter usage regulations were announced.	
2021/6/15 Detection of new variants infection case	Alpha and Delta VOCs, Kappa VOI were detected in Myanmar as per information from the Ministry of Health and Sports as of 15 June 2021. <a href="https://cdn.who.int/media/docs/default-source/searo/myanmar/newsletter-iss64-vol18.pdf?sfvrsn=96ff8271_3">https://cdn.who.int/media/docs/default-source/searo/myanmar/newsletter-iss64-vol18.pdf?sfvrsn=96ff8271_3</a>	
2021/6/30 Suspension on domestic airlines	Some domestic airlines, including Myanmar Airways International (MAI), Air KBZ (K7), have been suspended flights from Yangon to Dawei, Kalay, Kawthaung, Kyaing Tong, Myeik, and Tachileik through at least June 8 and continue to suspend at least July 31 due to rising COVID-19 activity.	
2021/7/3 Strict movement controls	Strict movement controls have been imposed throughout Mandalay District as of July 3 due to an increase in COVID-19 activity. Residents must remain home except when commuting to and from essential jobs or seeking medical care. One individual per household is allowed to purchase essential goods once per day. The level of enforcement of the measures is unclear.	
2021/7/17-8/22 Public holidays	From July 17 to 25, it has been declared a public holiday and it is exempted for people on official duty and funeral services. (updated approximately every few weeks from July 17 to August 31)	
2021/3/1-11/22 Curfew at night	A nationwide 20:00 – 04:00 curfew remains in place (due to the ongoing unrest since Feb.1). Curfew timings may differ in each region and state and change at short notice. The level of enforcement of the curfew is unclear. (updated every month from March 1 to November 22)	
2021/5/4-11/30 Travel Restrictions International passenger flights	Extension of International passenger flights restrictive measures (updated approximately every month from May 4 to December 31)	
<p>Source: Brookings, « Myanmar's response to the COVID-19 pandemic », &lt;<a href="http://www.brookings.edu/blog/future-development/2020/12/01/myanmars-response-to-the-covid-19-pandemic/">www.brookings.edu/blog/future-development/2020/12/01/myanmars-response-to-the-covid-19-pandemic/</a>&gt; (2020/12/1)</p> <p>JETRO, &lt;<a href="https://www.jetro.go.jp/world/COVID-19/asia/">https://www.jetro.go.jp/world/COVID-19/asia/</a>&gt; (Feb 2021)</p> <p>MOHS, &lt;<a href="https://mohs.gov.mm/Main/content/publication/2019-ncov">https://mohs.gov.mm/Main/content/publication/2019-ncov</a>&gt;</p> <p>WHO, &lt;<a href="https://www.who.int/myanmar/news">https://www.who.int/myanmar/news</a>&gt;</p> <p>GARDAWORLDIday, &lt;<a href="https://www.garda.com/crisis24/news-alerts?search_api_fulltext=Myanmar&amp;field_news_alert_categories=All&amp;field_news_alert_crit=All&amp;items_per_page=20">https://www.garda.com/crisis24/news-alerts?search_api_fulltext=Myanmar&amp;field_news_alert_categories=All&amp;field_news_alert_crit=All&amp;items_per_page=20</a>&gt;</p> <p>DCA Myanmar, &lt;<a href="https://www.dca.gov.mm">https://www.dca.gov.mm</a>&gt;</p>		
<b>Support Measures (Economic Responses) against COVID-19</b>		
	<b>Date</b>	<b>Description</b>
2020/3/18 Prepayment corporate tax exemption		The company announced that it will waive the 2% upfront corporate tax imposed on exports for fiscal 2019 (October 2019 to October 2020).
2020/3/18 Extension of deadline for payment of corporate and commercial taxes		The company announced that it will extend the deadline for payment of corporate and commercial taxes to the sewing industry, hotels and tourism businesses, and small and medium-sized enterprises. The corporate tax paid on a quarterly amount is extended to the second quarter (due March 31) and the third quarter (due on June 30) to September 30. All commercial taxes paid at the end of each month from March 31 to August 31 will be extended to September 30.
2020/3/18 Establishment of the COVID-19 Fund		The company announced emergency low-interest loans to sewing, hotel, and tourism industries and small and medium-sized enterprises that are expected to be the most significantly affected. The total amount of loans is 100 billion kyats (about 7.7 billion yen), the interest rate is 1% per year, and the loan period is one year. The loan application period is from March 29 to April 9 and will be accepted by the Federation of Myanmar Chambers of Commerce and Industry and the Chamber of Commerce and Industry of the State and District.
2020/3/24 The policy rate cut by 1%		In response to the economic impact of the coronavirus, the company announced that it will cut its policy rate by 1% to 8.5% from April 1. As a result, deposit rates were 6.5%, lending rates were 11.5% (with collateral) and 14.5% (unsecured).
2020/4/1 Lower lending and deposit rates		Cut the agricultural lending rate from 8% to 7%, JICA's two-step loan rate from 8% to 6.5%, and the Myanmar Economic Bank's two-step loan rate from 9% to 8%, respectively. At the same time, the deposit rate was lowered from 8% to 6.5%.
2020/4/6		The company announced that it will waive electricity prices of up to 150 units

Item	Description
Electricity fee exemption	(kwh) for Myanmar households, religious organizations, and civil society groups. It is exempt until the end of April.
2020/4/20 Electricity charge payment grace	The Yangon district's march power payment date is set for April 20-28, but this is suspended until May 20. In addition, even after the original payment date has passed, late fees will not be collected, and power supply will not be cut.
2020/4/27 Economic Relief Plan (CERP)	The COVID-19 Economic Relief Plan (CERP), consisting of 10 strategies and 36 action plans, was announced as an economic measure against COVID-19. As a result, concrete measures such as extending the deadline for payment of corporate and commercial taxes, waiving upfront corporate taxes at the time of export, implementing low-interest loans, exempting electricity charges, and reducing and waiving various license fees were implemented quickly (NNA:). In order to implement this action plan, it has been instructed to contribute 10% of the approved budgets of each ministry and agency (NNA: January 13, 2021).
2020/4/28 Benefits for wages during the closure period of the plant through inspection inspections	During the inspection period related to the prevention of the novel coronavirus infection, the wages of workers who were unable to work will be provided from social insurance. The period of application has been extended from April 20 to 30 to May 15.
2020/6/2 Small business loans	JICA's second phase of two-step loans to support small and medium-sized enterprises in capital investment provided a total of 64 billion kyats (approximately 5 billion yen)
2020/9/24 Benefits during corporate leave	Pay compensation will be paid to employees of companies and factories in Yangon district who were forced to close their homes after a notice from the Ministry of Health and Sports. For social security subscribers, 40% of the salary will be paid in June. It is a condition that you pay social insurance premiums for June and works until September 23. The benefit period has not been decided.
2020/11/8 General election	General election
2021/1/12 Vaccination	The company announced that it expects to be able to procure vaccines from countries such as India, China, the UK, and Russia, as well as participate in the WHO-led vaccine allocation plan "COVAX", which will be able to vaccinate 67.9% of its citizens against COVID-19 by 2022 (ANN).
2021/1/22 Vaccination	On January 22, Myanmar received India's gift of 1.5 million doses of Covishield to cover 750,000 people, with two doses per person. Around 260,000 vaccines are planned for health care staff, volunteers on the COVID-19 frontline, all parliamentarians, and senior government figures. <a href="https://www.irrawaddy.com/news/burma/myanmar-health-ministry-continue-vaccinations-despite-coup.html">https://www.irrawaddy.com/news/burma/myanmar-health-ministry-continue-vaccinations-despite-coup.html</a>
2021/1/24 Loan for tourism sector	The Myanmar Tourism Bank (MTB) has signed an agreement to provide loans for the Myanmar Restaurant Association and Myanmar Tourism Human Resource Development Organization. <a href="https://www.mmtimes.com/news/myanmar-tourism-bank-extends-loans-tourism-sector.html">https://www.mmtimes.com/news/myanmar-tourism-bank-extends-loans-tourism-sector.html</a>
2021/1/27 Vaccination	Myanmar started vaccinations in Rakhine state and Yangon, Mandalay, Ayeyarwady, and Bago regions while other areas are receiving their deliveries of vaccines on January 27. <a href="https://www.irrawaddy.com/specials/myanmar-covid-19/myanmar-starts-vaccinating-medics-nationwide-covid-19.html">https://www.irrawaddy.com/specials/myanmar-covid-19/myanmar-starts-vaccinating-medics-nationwide-covid-19.html</a>
2020/5/6~2021/3/25 Electricity charge exemption	Exemption (free) of 150 units per month electricity bill was extended (From June 2020 to 31 March 2021) excluding embassies, UN, and international organizations.
2021/3/31 Loan for tourism sector	Six more months for the term of Covid-19 loans issued to the hotels and tourism sector has been extended. <a href="https://www.gnlm.com.mm/about-one-year-suspension-of-hotels-and-tourism-industry-brings-loss-to-people/#article-title">https://www.gnlm.com.mm/about-one-year-suspension-of-hotels-and-tourism-industry-brings-loss-to-people/#article-title</a>
2021/7/23 Vaccination	A batch of Chinese COVID-19 vaccines arrived in Myanmar on July 22. The shipment contained 736,000 Sinopharm doses, according to media controlled by the State Administration Council. <a href="https://www.frontiermyanmar.net/en/batch-of-736000-chinese-vaccines-arrives-in-myanmar/">https://www.frontiermyanmar.net/en/batch-of-736000-chinese-vaccines-arrives-in-myanmar/</a>
2021/10/28 Vaccination	As of 23 October, there were 5.7 million people who had received two doses of the vaccine and 6.68 million people who had received one dose, over 12.38 million in total, according to the Ministry. Fifty percent of the total population is expected to get vaccinated at the end of this year. <a href="https://www.gnlm.com.mm/myanmar-receives-over-12-38-mln-jabs-of-covid-19">https://www.gnlm.com.mm/myanmar-receives-over-12-38-mln-jabs-of-covid-19</a>

Item	Description
	<p> <a href="#">-vaccine-till-23-oct/#article-title</a>            2021/11/25 Vaccination            Three million doses of Sinovac vaccines donated from China arrived in Myanmar on 21 November.  <a href="https://www.gnlm.com.mm/three-million-more-doses-of-sinovac-vaccines-from-china-arrive/#article-title">https://www.gnlm.com.mm/three-million-more-doses-of-sinovac-vaccines-from-china-arrive/#article-title</a> </p> <p>           Source: JETRO, <a href="https://www.jetro.go.jp/world/COVID-19/asia/">https://www.jetro.go.jp/world/COVID-19/asia/</a> (Feb 2021)            Myanmar Times, « Myanmar extends more COVID-19 funds to business », <a href="https://www.mmtimes.com/news/myanmar-extends-more-covid-19-funds-businesses.html">https://www.mmtimes.com/news/myanmar-extends-more-covid-19-funds-businesses.html</a> (2020/10/15)            MOEE, <a href="https://www.moee.gov.mm/mm/ignite/contentView/4171">https://www.moee.gov.mm/mm/ignite/contentView/4171</a> </p>
<p>3. Impacts of COVID-19 Pandemic on Economy, e.g., economic growth (GDP), employment (unemployment, working hours), migrant work, remittance</p>	<p>           ✓ Myanmar's growth rate in FISCAL 2018 was 6.8%, but economic growth in fiscal 2019 (October 2019 to September 2020) changed from the initial forecast of 7% to less than half at 3.2% (Global New Light of Myanmar, "MoPFI Deputy Minister holds virtual meeting with AMRO Mission chief," <a href="https://cdn.myanmarseo.com/file/client-cdn/gnlm/wp-content/uploads/2020/12/15_Dec_20_gnlm.pdf">https://cdn.myanmarseo.com/file/client-cdn/gnlm/wp-content/uploads/2020/12/15_Dec_20_gnlm.pdf</a> (2020/12/15)).            ✓ Myanmar's gross domestic product (GDP) growth rate for fiscal 2020 (October 2020 to September 2021) will remain at 2%. In the fiscal year 2019, it was 1.7%, a significant slowdown from 6.8% in the previous year (World Bank 2020/12/16). The ADB forecasts that GDP growth in 2020 will be 1.8 percent, a further decline from the 5 percent level at the time of the Lehman shock, but unlike many other Southeast Asian countries, positive growth is expected to remain, and growth is expected to be 6.0 percent in 2021 (figure below).         </p> <div> <p>Source: Asian Development Bank, Asian Development Outlook (ADO) 2020 Update (September 2020)</p> </div> <p style="text-align: center;"><b>Annual GDP Growth Rate (2014-2020 and 2018-2021 (projection))</b></p> <p>           GDP annual growth rate (left): The World Bank, "GDP growth (annual %) – Myanmar" <a href="https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?end=2019&amp;locations=MM&amp;start=2015">https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?end=2019&amp;locations=MM&amp;start=2015</a> (Feb 2021)            GDP annual growth rate (right): ADB, "Economic indicators for Myanmar", <a href="https://www.adb.org/countries/myanmar/economy">https://www.adb.org/countries/myanmar/economy</a> (Feb 2021)         </p> <p>           ✓ According to the Investment and Enterprise Management Bureau (DICA), the secretariat of MIC, the number of job creations exceeded 96,000 in FISCAL 2016 (April 2016 to March 2017) and 110,000 in FISCAL 2017. In addition, the transition period due to fiscal year changes (April 2018 to September 2019) was over 53,000, in FISCAL 2018 (October 2018 to September 2019) there were more than 180,000, and in FISCAL 2019 there were 210,000 (Global New Light of Myanmar, "Announcement on Extension of the Precautionary Restriction Measures Relating to Control of the COVID-19 Pandemic until 15 December 2020", <a href="https://www.moi.gov.mm/nlm/30-nov-20">https://www.moi.gov.mm/nlm/30-nov-20</a>, 2020/11/30). In contrast, the unemployment rate is expected to rise by 0.13 percentage points from 1.58% in 2019 to 1.71% in 2020.         </p> <p>           ✓ In Japan, the number of poor people is expected to increase rapidly due to economic stalls. Myanmar's poverty rate had declined from 48% in 2015 to 25% in 2017. However, even if the economic growth rate in FISCAL 2020 recovers to the 7 percent level, it will be difficult to restore the poverty rate to the level before the new corona until at least FISCAL 2021. As a result, there are concerns that Myanmar's GDP growth per capita will slow significantly  <a href="https://data.worldbank.org/indicator/NY.GDP.MKTP.CD">https://data.worldbank.org/indicator/NY.GDP.MKTP.CD</a>, (2020/6/25)         </p> <p>           ✓ In Fiscal 2019, GDP growth by industry is expected to slow to 1% in the service sector, where tourism and retail sectors were hit by air blockades and out-of-office restrictions, from 8.3% in the previous year. In the agricultural sector, growth of 2.7% was predicted, compensated for by losses due to a decline in exports of livestock and marine products due to good production. It is expected to exceed 1.5% of the previous fiscal year's results. Source: World Bank (2020/6/25)         </p> <p>           ✓ As of April 2020, nearly 17,000 workers lost their jobs as of April 2020, with 40 factories forced to close due to the impact of the new Corona and its response measures, according to business owners in Yangon.  <a href="https://asiatimes.com/2020/05/myanmars-viral-denial-turns-to-economic-despair/">https://asiatimes.com/2020/05/myanmars-viral-denial-turns-to-economic-despair/</a> (2020/5/14)         </p> <p>           ✓ More than 140,000 Myanmar workers returned from Thailand during the nine months from March 23 to December 2020 via the Thai-Myanmar Second Friendship Bridge connecting Myanmar's eastern Cain (formerly Karen) province and Thailand's northwestern Turk Province. Due to the increase in the         </p>



Item	Description
	<p>number of people infected with covid-19, it is prohibited to move between prefectures, but the number of returnees continues.  <a href="https://elevenmyanmar.com/news/myanmar-workers-returning-from-thailand-despite-inter-province-travel-ban">https://elevenmyanmar.com/news/myanmar-workers-returning-from-thailand-despite-inter-province-travel-ban</a> (2021/1/5)</p> <p>✓ Myanmar migrant workers are returning from China as they have trouble with their living conditions due to factory and shop closures caused by the pandemic in Ruili and Kyalgaung. More than 5,300 Myanmar migrant workers have returned from China via the Nandaw border checkpoint in the last 27 days after they faced employment difficulties during the lockdown period in Ruili.  <a href="https://www.gnlm.com.mm/myanmar-workers-return-from-china-due-to-factory-closures/#article-title">https://www.gnlm.com.mm/myanmar-workers-return-from-china-due-to-factory-closures/#article-title</a></p>
4. Impacts of COVID-19 Pandemic on Agriculture General, e.g., production, consumption, export/import, E-Commerce transaction change, price chance	<p>✓ In Myanmar's fiscal 2019 (October 2019 to September 2020), agricultural products exported USD1 billion, 39% higher than the same period last year. However, the failure to export melons and watermelons from the Chinese border is said to have cost USD65 million by mid-March. Source: IMF (2020/4/14).</p> <p>✓ Demand for chickpeas is growing in Myanmar. Due to the new coronavirus infection, more and more families are buying chickpeas, which have a wide range of applications such as curry and traditional confectionery. While demand for chickpeas is growing, prices have remained stable. 4,400 tons are exported to India, Pakistan, the United Arab Emirates (UAE), Turkey, and other countries.  <a href="https://www.gnlm.com.mm/chickpea-demand-up-as-local-consumption-rises/">https://www.gnlm.com.mm/chickpea-demand-up-as-local-consumption-rises/</a> (2020/3/30)</p> <p>✓ India has raised its import quota for Myanmar green gram from 150,000 tons to 400,000 tons in Fiscal 2019, and announced that it will import 250,000 tons by the end of March 2020. However, due to COVID-19, the deadline was postponed until the end of April and the middle of May. On the other hand, in Myanmar, enough amounts of green grams were secured for Indian exports, transportation has been delayed due to the spread of the new coronavirus infection. Restrictions to prevent the spread of the new corona disrupted logistics in Yangon and delayed arrival at the port.  <a href="https://www.gnlm.com.mm/covid-19-delays-trade-flow-to-india-despite-adequate-supplies-of-mung-bean/">https://www.gnlm.com.mm/covid-19-delays-trade-flow-to-india-despite-adequate-supplies-of-mung-bean/</a> (2020/4/21)</p> <p>✓ India has allocated 400,000 tons due at the end of August 2020. But Myanmar has exported only 100,000 tons by the deadline. In India, although there is demand for legumes, the impact of COVID-19 has disrupted supply chains. As a result, it has been unable to export legumes to India since September 2020.  <a href="https://www.gnlm.com.mm/india-delays-bean-purchase-due-to-covid-crisis/">https://www.gnlm.com.mm/india-delays-bean-purchase-due-to-covid-crisis/</a> (2020/9/1)</p> <p>✓ About 80% of Myanmar sesame is exported. The main destinations are China, Japan, South Korea, Taiwan, the United Kingdom, and other Western countries. In October 2020, prices began to rise, mainly white sesame and tea sesame, due to increased demand from China, although prices had fallen by more than 20% from the previous year due to the spread of COVID-19 infection. Japan imports black sesame produced in accordance with GAP from Myanmar every year, but there was no track record in 2020.  <a href="https://www.gnlm.com.mm/china-demand-drives-sesame-prices-up-in-oct/">https://www.gnlm.com.mm/china-demand-drives-sesame-prices-up-in-oct/</a> (2020/10/26)</p> <p>✓ The transaction price of watermelons fell from 800,000 chats per ton (about 60,000 yen) to 300,000 chats. Chinese traders have not appeared on the border exchanges, and there are no buyers for 200 watermelons or muskmelons for trucks.  <a href="https://www.gnlm.com.mm/china-coronavirus-hurts-muse-watermelon-trade/">https://www.gnlm.com.mm/china-coronavirus-hurts-muse-watermelon-trade/</a> (2020/1/31)</p> <p>✓ Myanmar's exports of watermelon to China have been sharply reduced, resulting in a loss of USD50 million on the Part of Myanmar. At all borders with China, 500 to 600 trucks usually pass through the area a day, but in 2020, only 30 to 40 trucks a day will pass through, after January 27, after the Chinese New Year. By May 2020, the company had targeted exports of 800,000 tons this year, but by the end of February 2020, the company had a track record of about 300,000 tons.  <a href="https://www.mmtimes.com/news/myanmar-watermelon-losses-reach-50m.html">https://www.mmtimes.com/news/myanmar-watermelon-losses-reach-50m.html</a> (2020/2/26)</p> <p>✓ About 100 tons of corn are discarded daily in Shan State on the Sheli River on the Chinese border, as exports to China have been suspended. Sweetcorn is said to be worthless about three days after harvest. Myanmar began exporting corn to Thailand tariff-free this year under a bilateral agreement. It is also exported to Thailand from Myawadi in the eastern province of Cain (formerly Karen Province), but export volumes are declining, prices have fallen and there are now piles of corn that cannot be exported to the border at cost-split prices.  <a href="https://www.mmtimes.com/news/hundreds-tonnes-maize-discarded-border-every-day.html">https://www.mmtimes.com/news/hundreds-tonnes-maize-discarded-border-every-day.html</a> (2020/5/11)</p> <p>✓ However, exports have since increased, with corn exports to Thailand from the beginning of FISCAL 2019 (October 2019 to September 2020) reaching 1.49 million tons, a 2.3-time increase from the same period last year. Thailand is becoming increasingly important as an export destination because the agreement allows corn to be exported to Thailand tariff-free from February to August.  <a href="https://www.gnlm.com.mm/myanmar-corn-exports-to-thailand-exceed-1-49-mln-tonnes-as-of-july-end/#article-title">https://www.gnlm.com.mm/myanmar-corn-exports-to-thailand-exceed-1-49-mln-tonnes-as-of-july-end/#article-title</a> (2020/8/26)</p> <p>✓ In response to this trend, the company will open a facility for corn exports in Myawadi, the eastern</p>

Item	Description
	<p>province of Cain (formerly Karen), which borders Thailand.  <a href="https://www.gnlm.com.mm/myanmar-to-export-corn-to-thailand-under-zero-tariff-from-1-february/#article-title">https://www.gnlm.com.mm/myanmar-to-export-corn-to-thailand-under-zero-tariff-from-1-february/#article-title</a> (2020/12/16)</p> <ul style="list-style-type: none"> <li>✓ In fiscal 2019 (October 2019 to September 2020), onion exports exceeded 105,000 tons as of August 2019, a record high. Exports reached USD48 million. The annual production volume in Japan has now reached about 1 million tons, exporting more than 60,000 tons to China, more than 22,000 tons to Bangladesh, more than 14,000 tons to Thailand, more than 5,000 tons to Malaysia, more than 2,500 tons to Singapore, more than 600 tons to India, and more than 27 tons to South Korea. In this way, onion exports are not significantly affected by COVID-19.  <a href="https://www.gnlm.com.mm/myanmar-records-highest-onion-export-this-fy/#article-title">https://www.gnlm.com.mm/myanmar-records-highest-onion-export-this-fy/#article-title</a> (2020/9/20)</li> <li>✓ This year, about 30,000 trucks of watermelon and 12,000 trucks of muskmelons were conveyed to China via the land border. Nevertheless, a thousand trucks went in vain as they were stranded in the road part, affecting the quality of the fruits. Some watermelons have been disposed of as well. The exports of watermelon drastically plunged as against last year as watermelon supply is exceeding the demand and transport delay triggered by the heightened COVID-19 measures in the border areas harm the quality of the fruits.  <a href="https://www.gnlm.com.mm/watermelon-growers-suggested-50-production-drop-next-growing-season/">https://www.gnlm.com.mm/watermelon-growers-suggested-50-production-drop-next-growing-season/</a> (2021/7/6)</li> <li>✓ Mango export remarkably dropped due to the closure of many China border gates triggered by the COVID-19 positive impacts this year. Only Kyinsankyawt post is available for cross-border trade, causing delays and long queues. It takes 4 to 5 days for a truck to enter the checkpoint. Heightened security measures on fruits and vegetables hinder the border trade. The exports of Seintalone mango this year are about 50 percent less than in the corresponding period last year and the growers of Seintalone mango have relied more on domestic demand.  <a href="https://www.gnlm.com.mm/seintalone-mango-growers-rely-more-on-domestic-market-this-year/">https://www.gnlm.com.mm/seintalone-mango-growers-rely-more-on-domestic-market-this-year/</a> (2021/7/4)</li> <li>✓ Myanmar exported 802,000 tonnes of rice and 601,000 tonnes of broken rice, totaling 1.14 million tonnes. Due to the transport difficulties and Kyat depreciation, over 500,000 tonnes of export volume were decreased in the past eight months as against last FY. Moreover, China banned all the border posts on 8 July 2021 as the COVID-19 infection is spiking in Myanmar. As a result of this, the agricultural exports dropped dramatically.  <a href="https://www.gnlm.com.mm/myanmar-rice-market-sees-flat-price-in-border-despite-sluggish-trade/">https://www.gnlm.com.mm/myanmar-rice-market-sees-flat-price-in-border-despite-sluggish-trade/</a> (2021/7/14)</li> <li>✓ The agricultural exports plummet to USD3.88 billion over the past nine months of the current financial year 2020-2021, along with the downward trend in other export groups amid the tightened coronavirus containment measures on the border and increase in the container shipping cost. The figures reflect a dramatic drop of USD1.8 billion this FY. The agro exports topped USD5.7 billion in the corresponding period of the 2019-2020FY, according to the trade figures released by the Ministry of Commerce.  <a href="https://www.gnlm.com.mm/agro-exports-fall-to-3-8-bln-as-of-2-july/">https://www.gnlm.com.mm/agro-exports-fall-to-3-8-bln-as-of-2-july/</a> (2021/7/17)</li> <li>✓ Although the high demand by foreign markets and a remarkable price rise prompted the growers to expand the onion cultivation in 2020, the prices of onions have been sharply dropped owing to the closure of the western border in this year 2021 following the coronavirus impacts. Additionally, the sluggish trade amid the current political conditions and shutdown of the restaurants, hotels, factories, and donation events exacerbates the onion market. The price remained low.  <a href="https://www.gnlm.com.mm/onion-market-remains-sluggish-due-to-lack-of-foreign-demand/">https://www.gnlm.com.mm/onion-market-remains-sluggish-due-to-lack-of-foreign-demand/</a> (2021/8/5)</li> <li>✓ The price of onion has decreased by over K200-K300 per viss depending on the variety and size of the onion, according to the onion market. Last October, the onion, an essential staple crop, the price was ranged between K950-K1,100 per viss in the local market as Bangladesh already bought Myanmar onions. However, the prices dropped to K600-K780 per viss on 12 November because onion merchants cannot export them to China due to the COVID-19 outbreak.  <a href="https://www.gnlm.com.mm/onion-price-falls-by-over-k200-k300-per-viss/#article-title">https://www.gnlm.com.mm/onion-price-falls-by-over-k200-k300-per-viss/#article-title</a> (2021/11/13)</li> </ul>
4.1 Input for Agriculture	<ul style="list-style-type: none"> <li>✓ According to a household survey conducted in May 2020, 45% of farm households were not able to farm normally, but the reasons were difficult to procure agricultural input and reduced access to fields due to restrictions on movement.  <a href="https://openknowledge.worldbank.org/handle/10986/34695">https://openknowledge.worldbank.org/handle/10986/34695</a> (2020/10/21)</li> <li>✓ Many smallholder farmers are cash-constrained, but credit for farm input purchases has been difficult to</li> </ul>

Item	Description
	<p>access. MFIs that would lend to farmers in normal times are currently liquidity constrained. The Myanmar Agriculture Development Bank (MADB) has a critical role in providing credit to farmers so that they can purchase inputs necessary for monsoon season planting, but has indicated that they will only serve new loans to clients who have been able to pay back previous loans. Less than 20 percent of its clients reportedly met this criterion as of the end of May. Crop traders and input retailers also act as credit providers, but about a third are expected to offer less credit to farmers during the 2021 monsoon season relative to 2020.</p> <p><a href="https://pubdocs.worldbank.org/en/525471627057268984/Myanmar-Economic-Monitor-July-2021.pdf">https://pubdocs.worldbank.org/en/525471627057268984/Myanmar-Economic-Monitor-July-2021.pdf</a></p>
4.2 Production for Agriculture	<ul style="list-style-type: none"> <li>✓ According to a household survey conducted in May 2020, 45% of farm households cannot continue regular farming as before. In addition, the vulnerability of the agricultural sector remains high. In addition to restrictions on cultivation and cultivation management due to restrictions on movement, it is expected that poor weather (lack of rainfall) in 2020 will greatly affect yields. Subsequent sales to the market also restricted movement.</li> <li><a href="https://openknowledge.worldbank.org/handle/10986/34695">https://openknowledge.worldbank.org/handle/10986/34695</a> (2020/10/21)</li> <li>✓ In recent months, farmers have been affected by (i) declining incomes because of lower farmgate prices for some produce (especially perishable items like tomatoes and onions); and (ii) higher prices for key inputs such as fertilizer, fuel, seeds, and equipment, as well as food items of which they are net buyers (such as cooking oil, as well as rice in certain regions). Reduced incomes and higher costs are likely having adverse impacts on consumption and food security now, and in combination with financial constraints and output market uncertainties are also reducing the ability and appetite of farmers to invest.</li> <li><a href="https://pubdocs.worldbank.org/en/525471627057268984/Myanmar-Economic-Monitor-July-2021.pdf">https://pubdocs.worldbank.org/en/525471627057268984/Myanmar-Economic-Monitor-July-2021.pdf</a> (2021/7)</li> <li>✓ Trade suspension in the border between Myanmar and China led to the dropping of the sown acreage of watermelon to over 200 in ChaungU Township, Sagaing Region, ChaungU Township Agriculture Department stated. Earlier, over 10,000 sown acreages of watermelon were yearly found in ChaungU Township.</li> <li><a href="https://www.gnlm.com.mm/watermelon-sown-acreage-drops-to-200-in-sagaing-region-due-to-market-obstacle/#article-title">https://www.gnlm.com.mm/watermelon-sown-acreage-drops-to-200-in-sagaing-region-due-to-market-obstacle/#article-title</a> (2021/11/22)</li> </ul>
4.3 Processing for Agriculture	<ul style="list-style-type: none"> <li>✓ The profit margin associated with rice polishing decreased due to the decrease in rice polishing prices rather than the decline in rice prices. Due to restrictions on movement, 55% of the rice polishing stations surveyed had problems selling polished rice, and 22% had problems purchasing rice. As a result, 32% of rice polishing stations have a lower amount of rice polishing than before. However, price trends and these issues have improved significantly since around October 2020.</li> <li><a href="https://www.ifpri.org/publication/monitoring-impact-covid-19-myanmar-rice-millers-%E2%80%93-november-2020-survey-round">https://www.ifpri.org/publication/monitoring-impact-covid-19-myanmar-rice-millers-%E2%80%93-november-2020-survey-round</a> (accessed Feb 2021)</li> </ul>
4.4 Retail, Distribution for Agriculture	<ul style="list-style-type: none"> <li>✓ In response to the spread of COVID-19 in China, shipments of agricultural products to China through the border trade of Muse have almost stopped, and as of February 2020, it has fallen to about 1/20 of the previous year. Transactions are expected to be down 95 percent from the previous year, and inventory that cannot be shipped is piling up. However, imports of electrical appliances and seasonings from China continue. Exports of fishery products, rice, and corn have stopped completely. Watermelons and muskmelons are slightly exported, but only about 100 trucks a day cross the border, a seventh of what they were a year ago.</li> <li><a href="https://www.gnlm.com.mm/myanmar-watermelon-muskmelon-fair-to-be-held-at-myaypadaytha-kyun/">https://www.gnlm.com.mm/myanmar-watermelon-muskmelon-fair-to-be-held-at-myaypadaytha-kyun/</a> (2020/2/14)</li> <li>✓ Due to covid-19, many of the containers used to export from Asia have stayed in various parts of Europe and have not returned, causing severe container shortages throughout Asia. Due to the soaring price of container procurement, sea freight rates in Asia have increased three to five times compared to last year. Myanmar has been running out of containers since October 2020, and traders expect it to take about two months to resolve</li> <li><a href="https://www.gnlm.com.mm/freight-rates-spike-to-triple-due-to-container-shortage/">https://www.gnlm.com.mm/freight-rates-spike-to-triple-due-to-container-shortage/</a> (2020/12/7).</li> <li>✓ In addition, Myanmar legumes cannot be exported overseas due to a shortage of containers, and they have no choice but to sell them domestically</li> <li><a href="https://www.mmimes.com/news/myanmar-face-shortage-containers-another-two-months.html">https://www.mmimes.com/news/myanmar-face-shortage-containers-another-two-months.html</a> (2020/11/17).</li> <li>✓ At the border trade gate with China in Muse, Shan Province, 24-hour traffic will be possible on a trial day from 5th to 14th. Requiring truckers to ensure that the new corona is not infected when opening the gate</li> <li>Source: Myanmar Times (2020/1/4).</li> <li>✓ Several checkpoints at the Chinese border have been closed at various points since March, due primarily to COVID-19 concerns, disrupting export trade. Transport times have increased and expensive diversions have been required in some cases. Exports of rice, corn, onion, beans, and pulses have all been affected. Border closures have become more widespread with the recent surge of COVID-19 cases. Higher shipping and container costs have also acted to squeeze margins. While rice exports rebounded in May, they have remained lower than in 2020, primarily due to the continued</li> </ul>

Item	Description
	closure of several checkpoints along the Myanmar-China border and lower demand from EU countries. <a href="https://pubdocs.worldbank.org/en/525471627057268984/Myanmar-Economic-Monitor-July-2021.pdf">https://pubdocs.worldbank.org/en/525471627057268984/Myanmar-Economic-Monitor-July-2021.pdf</a>
4.5 Market, Consumer for Agriculture	<ul style="list-style-type: none"> <li>✓ According to Kirin Holdings (HD), sales volumes (preliminary figures) for Myanmar Brewery (MBL), a joint venture company in Myanmar, fell 55% in April from a year earlier, as the market has shrunk sharply due to the coronavirus. In Myanmar, it is not easy to compensate for the decline in commercial beer with household beer due to the way people act. Source: NNA (May 19, 2020).</li> <li>✓ The government of the Ayarwaddy Region announced that all public market stores will be closed from April 19, 2020 to the end of the month, except grocery stores and pharmacies, as a measure to prevent the spread of covid-19. <a href="https://www.gnlm.com.mm/all-shops-to-close-but-food-drugstores-allowed-to-open-ayeyawady-region-govt/">https://www.gnlm.com.mm/all-shops-to-close-but-food-drugstores-allowed-to-open-ayeyawady-region-govt/</a> (2020/4/22)</li> </ul>
5. Impacts of COVID-19 Pandemic on Livestock	<ul style="list-style-type: none"> <li>✓ A survey of 300 domestic livestock producers by the Myanmar Livestock Federation (MLF) found that more than 90% of livestock companies are falling into profit declines and deficits due to the spread of the new coronavirus infection. This was due to a decline in prices due to a decrease in demand and a break in the transportation network, which made it less likely that transactions would proceed. Funding conditions also deteriorated due to the suspension of the business of microfinance institutions. If the current situation continues, only 20% of the companies will be able to continue operating in the long term, and many will have to stop operating within two years. Source: Myanmar Times (2020/5/20).</li> <li>✓ An African swine fever (ASF) infection was confirmed in Lachao, Shan State, northeastern Japan. This is the second case of ASF outbreaks in the state in August 2019. Of the 854 pigs, 30 died (preliminary information). Source: Myanmar Times (2020/2/21).</li> <li>✓ Exports of livestock products were legalized in the country at the end of 2017, but imports are not officially allowed in China. Large cows typically trade between 1.6 and 2.3 million chats per cow, but Chinese traders often manipulate prices by pausing purchases. Last year, it fell to less than 1 million chats per head. It is negotiating with the Chinese side on the legalization of livestock trade and preventive measures against infectious diseases at its borders. With regard to the prevention of infectious diseases of livestock, the Livestock and Veterinary Affairs Bureau of the Ministry of Agriculture, Livestock and Agriculture strengthened regulations on the movement of livestock in March. For domestic migration, medical certificates proving that livestock is not sick from the livestock and veterinary stations of the jurisdiction were required. There are 11.5 million cattle raised in Japan. Myanmar exported more than 460,000 heads by October 2019 from the legalization of exports in 2017. Exports amount to USD581 million. More than 5,000 companies nationwide have obtained export licenses for cattle (preliminary information). <a href="https://www.gnlm.com.mm/exports-of-cattle-animal-products-down-by-222-5-mln-in-current-fy/#article-title">https://www.gnlm.com.mm/exports-of-cattle-animal-products-down-by-222-5-mln-in-current-fy/#article-title</a> (2020/6/9)</li> <li>✓ Chicken exports from Thailand to Myanmar are on the rise as chicken consumption, which had been sluggish due to the covid-19 pandemic, recovers. Domestic production has not returned to normal levels. Consumption of chicken slumped in April and May when the infection of the new corona was spreading, but demand increased again due to the calming of the city's infections. Supply and demand are tight due to a decline in domestic chicken production during a period of spreading corona infections. Under these circumstances, Myanmar imported 920,000 broilers from Thailand from mid-June to mid-July 2020 and 1.8 million from Mid-July to mid-August. The company plans to import another 1.7 million birds from mid-August to the end of September. <a href="https://www.gnlm.com.mm/myanmar-to-import-over-3-mln-broiler-chicks-from-thai-in-4-months/">https://www.gnlm.com.mm/myanmar-to-import-over-3-mln-broiler-chicks-from-thai-in-4-months/</a> (2020/8/30)</li> <li>✓ Earlier, around 15,000 herds were stuck in Muse and some traders returned their cattle to their home towns owing to the burden of labor wages and cost of feedstuff. Nonetheless, some traders embarked on illegal sales. At present, about 6,000 herds remained stuck in Muse. It costs about 400,000-600,000 per 100 herds for feedstuff, labor wages, and general cost, the association stated. For legitimate trade, China permits live cattle import only after ensuring the cattle is free from 20 diseases including Foot and Mouth Disease, along with vaccination certificates, health certificates, and farming registration certificates. Yet, those import criteria do not matter on the black market. <a href="https://www.gnlm.com.mm/6000-cattle-stranded-in-muse-since-2020-end/">https://www.gnlm.com.mm/6000-cattle-stranded-in-muse-since-2020-end/</a> (2021/8/10)</li> <li>✓ Myanmar's exports of animal products in the financial year 2020-2021 touched a low of USD18.8 million, a sharp drop of USD88.9 million compared with the corresponding period of the 2019-2020FY since livestock trading was suspended by China. <a href="https://www.gnlm.com.mm/exports-of-cattle-animal-products-down-by-88-9-mln-in-fy2020-2021/#article-title">https://www.gnlm.com.mm/exports-of-cattle-animal-products-down-by-88-9-mln-in-fy2020-2021/#article-title</a>(2021/10/12)</li> </ul>
6. Impacts of COVID-19 Pandemic on	<ul style="list-style-type: none"> <li>✓ In response to the spread of COVID-19 in China, China suspended imports of marine products from Myanmar from January 27, 2020, and more than 50,000 people working in the fisheries industry in Myanmar lost their jobs. The losses associated with the suspension of exports of fishery products are expected to be more than USD50 million.</li> </ul>

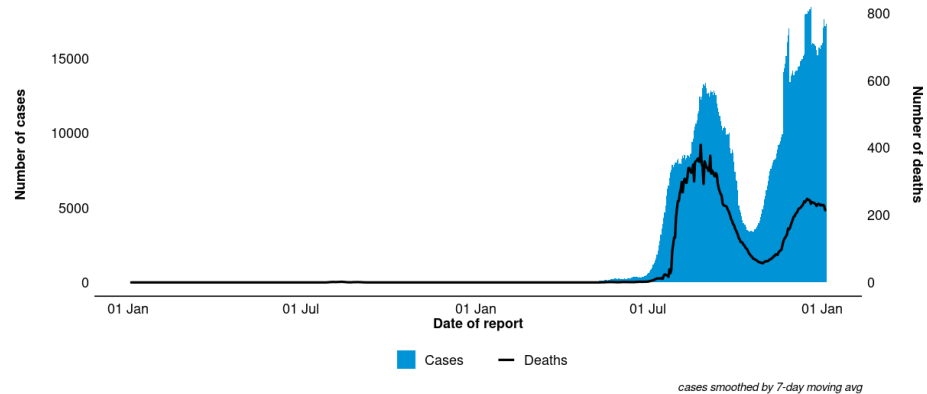
Item	Description
Fisheries	<p><a href="https://www.gnlm.com.mm/china-border-trade-suspension-hurts-over-50000-marine-workers-losses-pegged-at-50-mln/">https://www.gnlm.com.mm/china-border-trade-suspension-hurts-over-50000-marine-workers-losses-pegged-at-50-mln/</a> (2020/2/14).</p> <ul style="list-style-type: none"> <li>✓ Myanmar exports saltwater fish mainly to Europe and Asia and freshwater fish to Arab countries, but the spread of COVID-19 has almost halted seafood exports and pushed processing plants into a corner. Exports to the European Union have stopped completely and there are only a few orders from China for low-priced fisheries. <a href="https://www.mmtimes.com/news/exports-fisheries-products-slow-crawl.html">https://www.mmtimes.com/news/exports-fisheries-products-slow-crawl.html</a> (2020/4/8)</li> <li>✓ The Chinese government has ordered imports of marine products from Myanmar to present a certificate indicating that they have not been infected with COVID-19 since October 2020. As a result, it became virtually impossible to export various marine products, including frozen seafood, by land. <a href="https://www.gnlm.com.mm/exporters-urgently-need-covid-free-certificates-to-ship-fisheries-products-to-china-via-land-borders-mff-reports/">https://www.gnlm.com.mm/exporters-urgently-need-covid-free-certificates-to-ship-fisheries-products-to-china-via-land-borders-mff-reports/</a> (2021/1/12)</li> <li>✓ Export earnings from the fisheries sector over the nine months (1 October-9 July) of the current financial year 2020-2021 plunged to USD606 million, which is a significant decrease of USD113 million from the year-ago period, according to statistics released by the Commerce Ministry. The figures stood at USD719 million during a year-ago period. Myanmar's fishery exports have slightly declined this year, owing to the COVID-19 impacts and the transport difficulty. <a href="https://www.gnlm.com.mm/fishery-exports-plummet-to-606-mln-as-of-9-july/">https://www.gnlm.com.mm/fishery-exports-plummet-to-606-mln-as-of-9-july/</a> (2021/7/19)</li> <li>✓ THE value of Myanmar's aquaculture exports in the past ten months (Oct-July) dropped dramatically to USD640 million on account of the border trade restrictions by the neighboring countries China and Thailand amid the COVID-19 crisis. Myanmar exported USD750 million worth of marine products to the external market in the corresponding period of last FY, the Ministry of Commerce's data showed. <a href="https://www.gnlm.com.mm/myanmar-aquaculture-exports-plummet-down-to-640-million-this-fy/">https://www.gnlm.com.mm/myanmar-aquaculture-exports-plummet-down-to-640-million-this-fy/</a> (2021/8/20)</li> <li>✓ The value of Myanmar's aquaculture exports in the financial year 2020-2021 (October-September) dramatically dropped to USD784.889 million, showing a decrease of 8.6 percent compared to the previous FY2019-2020, as per the statistics released by the Ministry of Commerce. The figures fell short of USD74 million to reach the value recorded during the year-ago period. Myanmar's fishery export was experiencing a downturn due to the import restrictions triggered by the detection of the COVID-19 on fish imports in China. Chinese market constitutes about 65 percent of Myanmar's fishery exports. <a href="https://www.gnlm.com.mm/myanmar-aquaculture-exports-down-by-8-6-in-2020-2021fy/#article-title">https://www.gnlm.com.mm/myanmar-aquaculture-exports-down-by-8-6-in-2020-2021fy/#article-title</a> (2021/10/12)</li> </ul>
7. Impacts on Japanese companies	<ul style="list-style-type: none"> <li>✓ The spread of covid-19 has spread rapidly since late August. In late March 2020, about 60% of Japanese companies were evicted due to the ban on landing of international airliners due to water's-water measures and the suspension of ANA, the only direct flight to Japan. Source: NNA (2020/12/28).</li> <li>✓ Yakult is increasing production in Myanmar, where the number of people infected with the new coronavirus is spreading. This is because the demand for lactic acid bacteria drinks is increasing locally. The plant in the Thilawa Special Economic Zone (SEZ), near Yangon, the largest city, doubled production in March 2020 compared to January. Source: NNA (2020/4/13)</li> </ul>
8. Impacts on IT/DX	<ul style="list-style-type: none"> <li>✓ In Yangon, Myanmar's largest city, where more and more people refrain from going out, app services that deliver food and ingredients by bicycle are growing rapidly. In Yangon, motorcycles are not allowed to run, so bicycles are a means of home delivery. In addition to delivering restaurant meal menus, Grab mart y.5.5.5.1. In Yangon, five companies mainly expanded their business: Japanese "Hi-Saw", "Grab Food", German "Food Panda", Myanmar local "Yangon Door 2 Door", and "Food 2 U". Source: NNA (2020/4/8).</li> <li>✓ The Myanmar Fruit and Vegetable Producers Association (MFVPA) will start moving and online sales of fruits and vegetables in Yangon, the largest city. It mainly sells vegetables and fruits from the northeastern shan state. For mobile sales, three or four trucks were used to travel around the suburbs of Yangon. The company plans to sell fruits and vegetables transported from production areas. An online app was also launched and launched on May 20, 2020. It is an app that sells products of MFVPA members and includes information such as price and quality. MFVPA plans to use the app for wholesale and export in the future. <a href="https://www.gnlm.com.mm/mobile-market-system-underway-in-yangon-outskirts-mfvp/">https://www.gnlm.com.mm/mobile-market-system-underway-in-yangon-outskirts-mfvp/</a> (2020/5/21)</li> </ul>

### 2.5.7 Viet Nam

In Viet Nam, the situation and impacts of COVID-19 including measures taken in terms of restriction/control and support are summarized in Table 2.5.7, and issues peculiar to Viet Nam may be taken up as follows:

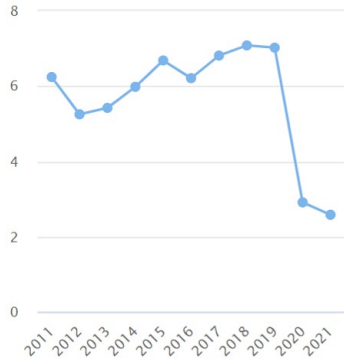
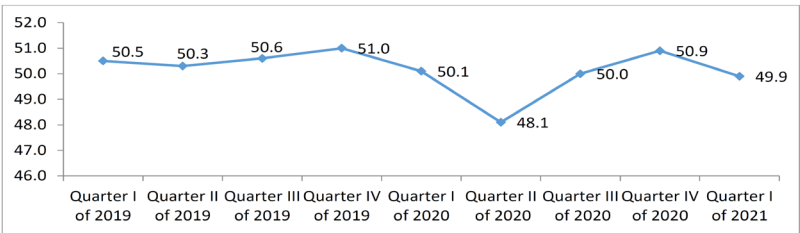
- 1) Vietnamese economy has been hit by the COVID-19 pandemic, but the GDP grew by 2.9 percent in 2020. GDP in 2021 is estimated to increase by 2.58%. Viet Nam's General Statistics Office (GSO) said that the GDP growth rate of 2.58% in 2021 has reflected the difficulties caused by the COVID-19 epidemic to all sectors of the economy, especially in the third quarter of 2021 when many localities implemented prolonged social distancing to prevent epidemics.
- 2) With drastic and effective solutions in complementing the dual goal of "prevent pandemic simultaneously with and develop socio-economic", Viet Nam economy still achieved positive results with the economic growth maintained. Although GDP growth in 2020 reached the lowest rate in the period 2011-2020, in the context of the COVID-19 pandemic, this was a success of the country in the group of highest growth rate in the world.
- 3) As of August 2021, the 4th wave of COVID-19 pandemic has aggravated the negative impacts on workers. In the second quarter of 2021, 12.8 million people aged 15 and over were negatively affected by the COVID-19 pandemic, including those who lost their jobs, got furloughed, worked alternate shifts, and reduced working hours, reduced income, etc. Besides, in the second quarter of 2021, the COVID-19 pandemic has resulted in at least 3.7 million more workers being negatively affected. The most severely affected are workers aged 25-54 with 75% of the total adversely affected.
- 4) In the agriculture, forestry and fishery sector, the output of some perennial crops, major livestock products and shrimp production in 2020 increased significantly, bringing the growth rate of this sector to 2.68%, higher than in 2019 (2.01%). Facing epidemics on crops and livestock, climate change, unremoved EC yellow card in fishing, especially COVID-19 pandemic, but this sector has reaped positive results with outstanding efforts through solutions to restructure crops and seasons.
- 5) Meanwhile, the agricultural sector also struggled to cope with the epidemics, in the provinces of the Mekong River Delta, saline intrusion in the dry season in 2019/2020 occurred at the highest level in history. According to the Department of Crop Production under the Ministry of Agriculture and Rural Development (MARD), the saline intrusion has directly affected ten out of 13 provinces and cities in the Mekong River Delta, causing many rice areas to be lost, while fruit trees, vegetables, and aquatic products also suffered heavy losses.
- 6) African Swine Fever (ASF) outbreaks have had major impacts on Viet Nam's livestock industry, leading to a decline in pork production and an unprecedented pork price crisis.
- 7) COVID-19 has provided market opportunities for E-Commerce in Viet Nam. According to GSO, 68.5 million, or 70 %, of Viet Nam's population has internet access, and about 43.7 million Vietnamese use smartphones. According to the Vietnam E-Commerce Association (VECOM), E-Commerce was already experiencing significant annual growth of 30% over the past two years and estimates that the market could reach 13 billion USD by the end of 2020.
- 8) The nutrition security of many households was significantly impacted by the pandemic, especially vulnerable groups of children such as ethnic minorities, children living in poor, near-poor, and disadvantaged households, or children.

**Table 2.5.7 Situation and Impacts of COVID-19 in Viet Nam**

Item	Description																								
1. COVID-19 Pandemic General	<p><b>Trend of COVID-19 Pandemic Situation</b></p> <table border="1"> <thead> <tr> <th>Particulars</th> <th>At peak per day</th> <th>Accumulated persons</th> <th>Per 1-million population</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>Infected</td> <td>39,132 (Nov 24, 2021)</td> <td>1,666,545 (as of Dec 29)</td> <td>17,121 (as of Dec 29)</td> <td></td> </tr> <tr> <td>Death Case</td> <td>804 (Sep 2, 2021)</td> <td>31,418 (as of Dec 29)</td> <td>322.8 (as of Dec 29)</td> <td></td> </tr> </tbody> </table> <p>Note: National population is 97,338,579.            Source: WHO, "WHO Coronavirus (COVID-19) Dashboard" &lt;<a href="https://COVID19.who.int/">https://COVID19.who.int/</a>&gt; (Aug. 11, 2021)</p> <p><b>Viet Nam</b>            1,800,704 cases, 33,245 deaths</p>  <p>cases smoothed by 7-day moving avg</p>	Particulars	At peak per day	Accumulated persons	Per 1-million population	Remarks	Infected	39,132 (Nov 24, 2021)	1,666,545 (as of Dec 29)	17,121 (as of Dec 29)		Death Case	804 (Sep 2, 2021)	31,418 (as of Dec 29)	322.8 (as of Dec 29)										
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2. Control and Support Measures of the COVID-19 Pandemic	<p><b>Control Measures of COVID-19 (mentioned for the nation-wide and capital area only)</b></p> <table border="1"> <thead> <tr> <th>Date</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>August 10, 2021</td> <td>Hanoi has decided to extend strict social isolation measures in line with Prime Minister's Directive No. 16 (16/CT-TTg) for measures against the COVID-19 until 6:00 am on August 23 throughout the city.</td> </tr> <tr> <td>July 27, 2021</td> <td>Hanoi has started strict social isolation measures following Prime Minister's Directive No. 16 (16/CT-TTg) throughout the city from 6:00 am on July 24 for 15 days.</td> </tr> <tr> <td>July 15, 2021</td> <td>On July 8, the Ministry of Health of Viet Nam approved Decision 3355/QD-BYT, which established a COVID-19 vaccination plan for 2021 to 2022. 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	<p>of 15 days from 1 to 15 April. Based on the order, the Ministry of Transportation orders suspension of public transport across the country.</p> <p>Source: JETRO, "Control Measures of COVID-19 in Asia" &lt;<a href="https://www.jetro.go.jp/world/COVID-19/asia/">https://www.jetro.go.jp/world/COVID-19/asia/</a>&gt; (Access on February 22, 2021, Original Japanese Version)</p> <p>Bộ y tế, trung tâm truyền thông, giáo dục sức khỏe trung ương &lt;<a href="http://t5g.org.vn/diem-bao-ngay-3132021">http://t5g.org.vn/diem-bao-ngay-3132021</a>&gt; (Access on August 8, 2021)</p> <p>Ministry of Health, central health education and communication center &lt;<a href="http://t5g.org.vn/diem-bao-ngay-3132021">http://t5g.org.vn/diem-bao-ngay-3132021</a>&gt; (Access on August 8, 2021)</p> <p>Source: Legal News &lt;<a href="https://thuvienphapluat.vn/tintuc/vn/thoi-su-phap-luat/chinh-sach-moi/36943/4-quy-dinh-khac-luat-se-duoc-ap-dung-de-phong-chong-covid-19">https://thuvienphapluat.vn/tintuc/vn/thoi-su-phap-luat/chinh-sach-moi/36943/4-quy-dinh-khac-luat-se-duoc-ap-dung-de-phong-chong-covid-19</a>&gt; (Access on August 8, 2021)</p> <p><b>Support Measures (Economic Responses) against COVID-19</b></p> <table border="1"> <thead> <tr> <th>Date</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>August 6, 2021</td> <td>On August 6, 2021, the Ministry of Industry and Trade issued Official Letter 4748/BCT-DTDL on support to reduce electricity prices and reduce electricity bills for electricity users affected by COVID-19 phase 4.</td> </tr> <tr> <td>August 5, 2021</td> <td>The People's Committee of Ho Chi Minh City has just approved the second support package with a total cost of 905 billion VND to help the poor and workers lose their jobs due to COVID-19, paid within 5 days.</td> </tr> <tr> <td>August 2, 2021</td> <td>On the afternoon of August 2, the Ministry of Information and Communications announced a support package for telecommunications services of up to nearly 10,000 billion VND from 7 service providers.</td> </tr> <tr> <td>July 1, 2021</td> <td>In Resolution 68/NQ-CP dated July 1, 2021, the Government introduced a series of policies to support employees and businesses facing difficulties due to COVID-19, including 3 related policies. to social insurance and unemployment insurance.</td> </tr> <tr> <td>July 1, 2021</td> <td>The rate of payment of compulsory social insurance to the fund of occupational accidents and diseases is 0% until June 30, 2022. 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Tổng hợp chế độ, chính sách hỗ trợ, khắc phục khó khăn do Covid-19 &lt;<a href="https://thuvienphapluat.vn/tintuc/vn/thoi-su-phap-luat/binh-luan-gop-y/35819/tong-hop-che-do-chinh-sach-ho-tro-khac-phuc-kho-khan-do-covid-19/">https://thuvienphapluat.vn/tintuc/vn/thoi-su-phap-luat/binh-luan-gop-y/35819/tong-hop-che-do-chinh-sach-ho-tro-khac-phuc-kho-khan-do-covid-19/</a>&gt; (Access on August 10, 2021)</p>	Date	Description	August 6, 2021	On August 6, 2021, the Ministry of Industry and Trade issued Official Letter 4748/BCT-DTDL on support to reduce electricity prices and reduce electricity bills for electricity users affected by COVID-19 phase 4.	August 5, 2021	The People's Committee of Ho Chi Minh City has just approved the second support package with a total cost of 905 billion VND to help the poor and workers lose their jobs due to COVID-19, paid within 5 days.	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✓	<p>In the agriculture, forestry and fishery sector, the output of some perennial crops, major livestock products and shrimp production in 2020 increased significantly, bringing the growth rate of this sector to 2.68%, higher than in 2019 (2.01%). Facing epidemics on crops and livestock, climate change, unremoved EC yellow card in fishing, especially COVID-19 pandemic, but this sector has reaped positive results with outstanding efforts through solutions to restructure crops and seasons.</p> <p>Source: General Statistics Office, Viet Nam "Press release socio-economic situation in the fourth quarter and the whole year 2020" December 27, 2020 &lt;<a href="https://www.gso.gov.vn/en/data-and-statistics/2021/01/press-release-socio-economic-situation">https://www.gso.gov.vn/en/data-and-statistics/2021/01/press-release-socio-economic-situation</a>&gt;</p>																								



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<p>3. Impacts of COVID-19 Pandemic on Economy, e.g., economic growth (GDP), employment (unemployment, working hours), migrant work, remittance</p>	<p><u>-in-the-fourth-quarter-and-the-whole-year-2020/&gt;</u></p> <p style="text-align: center;"><b>Trend of GDP Growth and Sector-wise GDP Growth</b></p>  <p style="text-align: center;"><b>Figure. GDP growth rate in the period 2011-2021 (%)</b>                  Source: General Statistics Office, Viet Nam, January 7<sup>th</sup>, 2022                  &lt;<a href="https://www.gso.gov.vn/en/homepage/">https://www.gso.gov.vn/en/homepage/</a>&gt;</p> <p>✓ The signing of Free Trade Agreements has brought positive signals to the Viet Nam economy, especially the Free Trade Agreement between Viet Nam and the EU (EVFTA). In 2020, exports to the EU reached 34.8 billion USD; notably, after 5 months of implementation (from August 1st, 2020), Viet Nam's total export turnover to the EU reached 15.4 billion USD, up 1.6% over the same period last year.                  Source: General Statistics Office, Viet Nam, "Viet Nam economy in 2020 the growth of a year with full of bravery", January 14, 2021                  &lt;<a href="https://www.gso.gov.vn/en/data-and-statistics/2021/01/viet-nam-economy-in-2020-the-growth-of-a-year-with-full-of-bravery/">https://www.gso.gov.vn/en/data-and-statistics/2021/01/viet-nam-economy-in-2020-the-growth-of-a-year-with-full-of-bravery/</a>&gt;</p> <p>✓ As for agriculture, forestry, and fishery production in the first 6 months of 2021 took place in relatively favorable weather conditions, crop productivity was quite good, especially winter-spring rice with the highest yield ever at 6,830kg/ha. Pig breeding is recovering, poultry breeding is developing well, pig and poultry population at the end of June was estimated to increase by 11.6% and 5.4% against the same period last year. Fishery exports showed signs of recovery, import demand for pangasius in foreign markets increased again, vannamei shrimp output in the first six months increased by 15.4% over the same period last year.                  Source: press release socio-economic situation in the second quarter and six months of 2021. August 11, 2021                  &lt;<a href="https://www.gso.gov.vn/en/data-and-statistics/2021/07/press-release-socio-economic-situation-in-the-second-quarter-and-six-months-of-2021/">https://www.gso.gov.vn/en/data-and-statistics/2021/07/press-release-socio-economic-situation-in-the-second-quarter-and-six-months-of-2021/</a>&gt; (Access on August 10, 2021)</p> <p>✓ As next figure shows, in 2020, the strong surge of the COVID-19 pandemic caused a sharp decline in the labor market in the second quarter, with the number of employed workers decreasing from 50.1 million in the first quarter to 48.1 million, or by nearly 2 million people. In the next two quarters of the same year, due to effective measures in place and the relaxation of social distancing measures plus relief policies set out by the government, the labor market rebounded, with the employed workers increasing to 50.9 million, almost reaching the pre-COVID-19 level of 51.0 million. However, by the first quarter of 2021, the resurgence of the COVID-19 pandemic with complicated developments on the Lunar New Year has reduced the momentum of the previously achieved labor market recovery. The number of employed workers decreased to 49.9 million people, down 1.8% from the previous quarter and 0.36% from the same period last year.                  Source: REPORT ON LABOR FORCE SURVEY Quarter 1 2021.                  &lt;<a href="https://www.gso.gov.vn/en/data-and-statistics/2022/02/report-on-labor-force-survey-quarter-1-2021/">https://www.gso.gov.vn/en/data-and-statistics/2022/02/report-on-labor-force-survey-quarter-1-2021/</a>&gt;                  &lt;Accessed on March 1, 2022&gt;</p>  <p style="text-align: center;"><b>Employed workers aged 15 and over across quarters, for the 2019-2021 period (Unit: Million people)</b></p>

Item	Description
	<ul style="list-style-type: none"> <li>✓ As of August 2021, the 4th wave of COVID-19 pandemic has aggravated the negative impacts on workers. In the second quarter of 2021, 12.8 million people aged 15 and over were negatively affected by the COVID-19 pandemic, including those who lost their jobs, got furloughed, worked alternate shifts, and reduced working hours, reduced income, etc.</li> <li>✓ Workers in urban areas suffered more damage than in rural areas. Up to 21.9% of workers in urban areas, compared to 14.3% in rural areas, were adversely affected. Source: Report on Impact of COVID-19 Pandemic on Labour and Employment of the Second Quarter of 2021 &lt;<a href="https://www.gso.gov.vn/en/data-and-statistics/2021/07/report-on-impact-of-covid-19-pandemic-on-labour-and-employment-of-the-second-quarter-of-2021/">https://www.gso.gov.vn/en/data-and-statistics/2021/07/report-on-impact-of-covid-19-pandemic-on-labour-and-employment-of-the-second-quarter-of-2021/</a>&gt; (Access on August 10, 2021)a</li> </ul>
4. Impacts of COVID-19 Pandemic on Agriculture General, e.g., production, export/import, E-Commerce transaction change, price chance	<ul style="list-style-type: none"> <li>✓ A survey of 1,300 rural households was conducted by the Institute of Policy and Strategy for Agriculture and Rural Development (IPSARD) with support from IFAD and ADB from May to June 2020 in twelve provinces implementing IFAD and ADB development projects.</li> <li>✓ The survey found that 64.7% of rural households with nonfarm activities experienced a decline in income compared to 53.3% of farming households. The former also suffered larger income reductions, estimated at 46.8% on average compared to 38.3% for the latter. This is explained by a larger drop of non-farm income of 46.8% versus 29.4% for agricultural income. The income impact also varied across locations, particularly between rural households in provinces with international borders and those without, estimated at 41.4% and 33.4% respectively. Source: FAO, IFAD, ILO, UNDP, UNICEF, UNIDO, UN Women and WHO, UN assessment on economic impacts of COVID-19 and strategic policy recommendations for Viet Nam, August 2020 &lt;<a href="https://www.vn.undp.org/content/vietnam/en/home/library/EcolImpact.html">https://www.vn.undp.org/content/vietnam/en/home/library/EcolImpact.html</a>&gt;</li> </ul>
4.1 Input for Agriculture	<ul style="list-style-type: none"> <li>✓ Input prices increased. Forty-five percentage of the agricultural households surveyed could not buy fertilizers and pesticides with the desired quantity or had to switch to other sources. In terms of inputs supply, 40.5% of agriculture households could not buy the required inputs, 32.5% had difficulties due to the interruption of the supply of input materials, and 20.8% encountered obstacles due to undesirable time and supply amount. Source: FFTC Agricultural Policy Platform, "Impacts of COVID-19 Pandemic on Smallholder Farmers and Vulnerable Rural People in Vietnam", December 22, 2020 &lt;<a href="https://ap.fttc.org.tw/article/2676">https://ap.fttc.org.tw/article/2676</a>&gt; (Access on August 11, 2021)</li> <li>✓ Agribank profit drops due to pandemics. Pre-tax profit of Agribank, one of the 'Big 4' state-owned lenders, fell nearly 9% last year to 12.87 trillion VND (561.1 million USD). The bank had to reduce its profit target by 5.5 trillion VND after lowering interest rates for customers affected by the COVID-19 pandemic. Credit growth was 8% against 11.1% in 2019. Source: VN Express "Agribank profit drops due to pandemic", January 31, 2021 &lt;<a href="https://e.vnexpress.net/news/business/data-speaks/agribank-profit-drops-due-to-pandemic-4220233.html">https://e.vnexpress.net/news/business/data-speaks/agribank-profit-drops-due-to-pandemic-4220233.html</a>&gt; (Access on August 11, 2021)</li> <li>✓ In the first months of 2021, fertilizers such as DAP, nitrogen and NPK increased sharply according to world prices. Besides, there is also the reason for the increase in transportation costs. It is estimated that fertilizers account for about 30% of the costs of growing crops. Besides fertilizers, the prices of plant protection drugs (insecticides, fungicides, etc.) also increased sharply. Source Tuoitre.Vn Agricultural "Supplies simultaneously increased prices" March 8, 2021 &lt;<a href="https://tuoitre.vn/vat-tu-nong-nghiep-dong-loat-tang-gia-20210316080239301.htm">https://tuoitre.vn/vat-tu-nong-nghiep-dong-loat-tang-gia-20210316080239301.htm</a>&gt; (Access on August 11, 2021)</li> </ul>
4.2 Production for Agriculture	<ul style="list-style-type: none"> <li>✓ Meanwhile, the agricultural sector also struggled to cope with the epidemics, in the provinces of the Mekong River Delta, saline intrusion in the dry season in 2019/2020 occurred at the highest level in history. According to the Department of Crop Production under the Ministry of Agriculture and Rural Development (MARD), the saline intrusion has directly affected ten out of 13 provinces and cities in the Mekong River Delta, causing many rice areas to be lost, while fruit trees, vegetables, and aquatic products also suffered heavy losses.</li> <li>✓ Despite unfavorable weather conditions, rice production is still in good season, rice yields in 2020 increase compared to 2019. The winter-spring crop in 2019/2020 saw a successful rice crop with a yield of 6,640kg per hectare, an increase of 90kg per hectare compared to that of 2018/2019, the total output of the whole crop reached 19.9 million tons. Source: MARD "Agriculture's strong transformation during natural disasters and epidemics", December 31, 2021 &lt;<a href="https://www.mard.gov.vn/en/Pages/agriculture%E2%80%99s-strong-transformation-during-natural-disasters-and-epidemics.aspx?item=12">https://www.mard.gov.vn/en/Pages/agriculture%E2%80%99s-strong-transformation-during-natural-disasters-and-epidemics.aspx?item=12</a>&gt;</li> </ul>
4.3 Processing for Agriculture	<ul style="list-style-type: none"> <li>✓ Food processing firms in Ho Chi Minh City have stepped up production to meet demand while enhancing safety measures for their staff amid the COVID-19 pandemic. Vissan has organized three shifts to produce canned foods and various kinds of sausages and meat paste for the last month but still does not have enough stocks to deliver to supermarkets and agents.</li> </ul>

Item	Description
	<p>✓ In addition to speeding up production, food processing firms have also enhanced the prevention of the COVID-19. Amid the pandemic outbreak, if one worker is infected, an entire factory has to be quarantined, and so enterprises have enhanced safety measures such as checking body temperature at the gate, requiring a medical declaration every day, and re-arranging the work and eating schedules to minimize the risk of transmission between workers.</p> <p>Source: Vietnam News “Food processing firms step up production, focus on safety measures for workers” , March 30, 2020  <a href="https://Vietnamnews.vn/economy/654365/food-processing-firms-step-up-production-focus-on-safety-measures-for-workers.html">https://Vietnamnews.vn/economy/654365/food-processing-firms-step-up-production-focus-on-safety-measures-for-workers.html</a></p>
4.4 Retail, Distribution for Agriculture	<p>✓ Saigon Coop has increased its inventory by more than 40% compared to normal days to meet demand amid the COVID-19 pandemic. It has stocked up on rice, instant noodles, cooking oils, spices, bottled water, canned foods, sausages, spring rolls, meat floss, fruits, and vegetables, cleaning products, and others. Saigon Coop also plans to supply localities hit by the disease in a safe manner.</p> <p>Source: Vietnam News, “Saigon Coop increases stocks, provides, 10,000 meals daily to quarantines”, March 24, 2020  <a href="http://bizhub.vn/corporate-news/saigon-coop-increases-stocks-provides-10000-meals-daily-to-quarantines_314164.html">http://bizhub.vn/corporate-news/saigon-coop-increases-stocks-provides-10000-meals-daily-to-quarantines_314164.html</a></p> <p>✓ On March 24, the government announced a rice export ban, citing concerns over domestic rice production and supply. On April 10, the government subsequently established a 400,000 ton rice export quota for April. After further consultations and input from industry and provincial governments, on April 29, the government announced the resumption of rice exports without a quota beginning on May 1, 2020.</p> <p>Source: USDA, “COVID-19 in Vietnam”, May 15, 2020  <a href="https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=COVID-19%20in%20Vietnam%20Ho%20Chi%20Minh%20City%20Vietnam_05-13-2020">https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=COVID-19%20in%20Vietnam%20Ho%20Chi%20Minh%20City%20Vietnam_05-13-2020</a></p> <p>✓ Exports of many agricultural products continued to decline sharply in January due to a shortage of empty containers. According to the General Department of Customs, in the first half of January, Viet Nam’s coffee exports decreased by 46 % in volume and nearly 43 % in value to 52,000 tons and 95 million USD, respectively, compared to the same period of 2020.</p> <p>✓ Rice exports also fell sharply by 44 % in volume to 131,000 tons and 38 % in value to 72 million USD. Fruit and vegetable exports reached 130 million USD, 33 % lower than the same period of last year. The general department said some other farming products also saw a strong reduction in export value during that period, including tea (22 % to 6.6 million USD), pepper (10 % to 21 million USD), and seafood (14 % to 278 million USD).</p> <p>✓ The reduction in exports of those key agricultural products was mainly due to a severe shortage of empty containers. Therefore, agricultural products exported in January had very high shipping costs.</p> <p>Source: Vietnam News, “Export of farming products down due to container shortage”, February 5, 2021  <a href="https://Vietnamnews.vn/economy/869646/export-of-farming-products-down-due-to-container-shortage.html">https://Vietnamnews.vn/economy/869646/export-of-farming-products-down-due-to-container-shortage.html</a></p>
4.5 Market, Consumer for Agriculture	<p>✓ Vegetable prices have been surging in Ho Chi Minh City as farmers reduce production due to the COVID-19 pandemic and costs increase because of saltwater intrusion in rivers in the Mekong Delta.</p> <p>Source: Vietnam News, “Vegetable shortage continue to push prices upward”, April 22, 2020  <a href="https://Vietnamnews.vn/economy/715646/vegetable-shortage-continue-to-push-prices-upward.html">https://Vietnamnews.vn/economy/715646/vegetable-shortage-continue-to-push-prices-upward.html</a></p> <p>✓ Vietnam’s coffee exports and consumption in the 2019/2020 period have taken a hit compared to the same period last year due to the impact of the COVID-19, according to the Viet Nam Coffee - Cocoa Association. The deputy standing chairman of the association, said during a recent conference reviewing last year’s industry’s activities that during the 2019/2020 coffee year (which started October 2019) coffee exports reached 1.61 million tons and turnover of 2.8 billion USD. Both export output and turnover were down by around 5% year-on-year. Export turnover of processed coffee products also dropped by 8.7%.</p> <p>✓ Due to unstable coffee prices, the number of coffee beans purchased from farmers for the 2020/2021 coffee year was a lot less than the same period last year. Coffee production has also been affected by heavy storms, climate change, and aging crops.</p> <p>✓ Current shortages of shipping containers for exports are also affecting coffee exports. Businesses have been urged to investigate exporting by railways, but they are not used to using a different export method.</p> <p>Source: Vietnam News, “Coffee exports, consumption drop due to COVID-19”, January 18, 2021  <a href="https://Vietnamnews.vn/economy/858039/coffee-exports-consumption-drop-due-to-covid-19.html">https://Vietnamnews.vn/economy/858039/coffee-exports-consumption-drop-due-to-covid-19.html</a></p>

Item	Description
	<ul style="list-style-type: none"> <li>✓ The Vietnam E-Commerce Association (VECOM) pointed out that the COVID-19 epidemic is changing consumption and shopping habits. Online shopping is increasing rapidly in the first half of 2021 when the COVID-19 epidemic becomes more and more complicated and widespread.</li> <li>✓ Surveys of market research companies show that consumer needs and behavior have changed much in the past 1 year since the outbreak of the COVID-19 epidemic. Most consumers, aiming for a healthy lifestyle, prioritize choosing essential items (especially food) products that help take care of their health and increase their resistance. The data of the General Statistics Office also show that in the first months of the year, the demand for food products increased by 4.51% compared to the previous year, food products increased by 12.28% compared to the previous year, of which the price of pork increased by 57.23%; prices of drugs and medical equipment increased by 1.35%. Source: NLD.com.vn "Shopping habits have completely changed during the Covid-19 epidemic" June 25, 2021 &lt;<a href="https://nld.com.vn/kinh-te/thoi-quen-mua-sam-thay-doi-hoan-toan-trong-dich-covid-19-20210624181024228.htm">https://nld.com.vn/kinh-te/thoi-quen-mua-sam-thay-doi-hoan-toan-trong-dich-covid-19-20210624181024228.htm</a>&gt; (Access on August 8, 2021)</li> </ul>
5. Impacts of COVID-19 Pandemic on Livestock	<ul style="list-style-type: none"> <li>✓ African Swine Fever (ASF) outbreaks have reoccurred in many parts of Viet Nam, leading to the death and culling of 43,150 pigs from January to August 8, 2020. The ASF outbreaks have had major impacts on Viet Nam's livestock industry, leading to a decline in pork production and an unprecedented pork price crisis. The government is promoting pork imports and supporting the rebuilding of swine herds to address the domestic hog/pork supply and price issues. Source: USDA, "Vietnam African Swine Fever Update", September 28, 2020 &lt;<a href="https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Vietnam%20African%20Swine%20Fever%20Update_Hanoi_Vietnam_09-19-2020">https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Vietnam%20African%20Swine%20Fever%20Update_Hanoi_Vietnam_09-19-2020</a>&gt;</li> <li>✓ In Viet Nam, raw materials of animal feed is mainly imported (accounting for about 80%-85%), the import price of animal feed in the first 6 months of 2021 increased by 8.71% compared to the same period in 2020, thus affecting the price of domestic animal feed.</li> <li>✓ Contrary to the upward trend in the price of input materials, live hog prices fell during "the storm" of animal feed prices. In the first 6 months of 2021, African swine fever was controlled, only small outbreaks occurred, in localities where the supply of live pigs was gradually recovering, causing live hog prices to continue to decrease. Source: GSO "Price of pork decreased animal feed increases the risk of rude farmers" July 20, 2021 &lt;<a href="https://www.gso.gov.vn/du-lieu-va-so-lieu-thong-ke/2021/07/gia-thit-lon-giam-gia-thuc-an-cha-n-nuoi-tang-cao-nguoi-chan-nuoi-nguy-co-thua-lo/">https://www.gso.gov.vn/du-lieu-va-so-lieu-thong-ke/2021/07/gia-thit-lon-giam-gia-thuc-an-cha-n-nuoi-tang-cao-nguoi-chan-nuoi-nguy-co-thua-lo/</a>&gt; (August 12, 2021)</li> </ul>
6. Impacts of COVID-19 Pandemic on Fisheries	<p>[Export]</p> <ul style="list-style-type: none"> <li>✓ According to the Vietnam Association of Seafood Exporters and Producers (VASEP), as of the end of 2020, Viet Nam's total exports of marine products reached 8.41 billion USD, a decrease of 1.9% compared to 2019. Viet Nam's marine products were unstable in 2020 due to the COVID-19. Viet Nam's marine exports experienced the biggest "crisis" in the first quarter of 2020 when the COVID-19 epidemic broke out. Only 30-50% of orders were delivered under the signed contract. Source: VASEP "5 highlights of Vietnam's fisheries sector in 2020", January 28, 2021 &lt;<a href="http://seafood.vasep.com.vn/why-buy-seafood/export-potentials/5-highlights-of-Vietnam-s-fisheries-sector-in-2020-20993.html">http://seafood.vasep.com.vn/why-buy-seafood/export-potentials/5-highlights-of-Vietnam-s-fisheries-sector-in-2020-20993.html</a>&gt;</li> <li>✓ The year 2021 has many significant changes, including the COVID-19 epidemic, severely affecting domestic economic development and exports. Seafood processing and export are significantly affected. However, with efforts to overcome difficulties caused by the COVID-19 epidemic and objective factors in transportation rates, Viet Nam's seafood export turnover is expected to reach the target of 8.67 billion USD, up 3% compared to 2020. Source: Vietnam News Agency "Overcoming the COVID-19 epidemic, seafood exports increased beyond expectations" December 12, 2021 &lt;<a href="https://ncov.vnnet.vn/tin-tuc/vuot-qua-dich-covid-19-xuat-khau-thuy-san-tang-ngoai-mong-do-i/e5391105-203b-4a42-a417-2b20c5b695a4">https://ncov.vnnet.vn/tin-tuc/vuot-qua-dich-covid-19-xuat-khau-thuy-san-tang-ngoai-mong-do-i/e5391105-203b-4a42-a417-2b20c5b695a4</a>&gt; (Access on December 27, 2021)</li> <li>✓ The customs procedure in China became stagnant, and more than 1,000 container trucks that carry Vietnamese export products must wait at the border gate. The stuck cargoes include over 700 containers of frozen seafood. Source: Tuoi Tre News, Vietnamese exports stuck at border as China mobilizes customs force for COVID-19 prevention, December 15, 2021, &lt;<a href="https://tuoitrenews.vn/news/business/20211215/vietnamese-exports-stuck-at-border-as-china-mobilizes-customs-force-for-covid19-prevention/64730.html">https://tuoitrenews.vn/news/business/20211215/vietnamese-exports-stuck-at-border-as-china-mobilizes-customs-force-for-covid19-prevention/64730.html</a>&gt;</li> <li>✓ Vietnamese exports of fisheries products amounted to 7.1 billion dollars from January to October. Although the Viet Nam faces national production instability and the impact on the international market due to the COVID-19 pandemic, there are signs of recovery in the sector. The USA is the major buyer of Vietnamese fisheries products, and Japan and China follow it. Source: Prensa Latina, Vietnam's fishery exports increase, November 11, 2021, &lt;<a href="https://www.plenglish.com/news/2021/11/11/vietnams-fishery-exports-increase/">https://www.plenglish.com/news/2021/11/11/vietnams-fishery-exports-increase/</a>&gt;</li> </ul>

Item	Description
	<p>[Pangasius]</p> <ul style="list-style-type: none"> <li>✓ In the first half of 2020, all 10 major locations in the Pangasius market saw a significant decline on a monetary basis. Shipments to China, the US, and the EU were down 15.5%, 24.4%, and 36.6%, respectively, compared to the same period in 2019. Exports to the US temporarily picked up in the third quarter of 2020, but the recovery trend weakened again due to postponement of resumption plans in several states. Source: GLOBEFISH (FAO), "Pangasius prices plunge as pandemic impact lingers on", January 7, 2021 &lt;<a href="http://www.fao.org/in-action/globefish/market-reports/resource-detail/en/c/1263847/">http://www.fao.org/in-action/globefish/market-reports/resource-detail/en/c/1263847/</a>&gt;</li> <li>✓ The harvesting volume of Pangasius in July and August in 2021 decreased 20% and 44.9%, respectively, compared to the same period of last year due to the social distancing measures. There are 106 Pangasius processing factories registered for export in five provinces and cities in the southern part of Viet Nam, and about 190 thousand employees work for them. However, 52 processing plants across five areas temporarily shut down, and over 70% of employees were out of work. Source: Viet Nam News, Basa fish industry in the Mekong Delta hit hard by social distancing, October 3, 2021, &lt;<a href="https://vietnamnews.vn/economy/1052155/basa-fish-industry-in-the-mekong-delta-hit-hard-by-social-distancing.html">https://vietnamnews.vn/economy/1052155/basa-fish-industry-in-the-mekong-delta-hit-hard-by-social-distancing.html</a>&gt;</li> </ul> <p>[Shrimp]</p> <ul style="list-style-type: none"> <li>✓ Export processors focused on value-added products and retail packages to meet changing market demand. Source: GLOBEFISH (FAO), "Global shrimp prices on the rise", January 7, 2021, &lt;<a href="http://www.fao.org/in-action/globefish/market-reports/resource-detail/en/c/1263851/">http://www.fao.org/in-action/globefish/market-reports/resource-detail/en/c/1263851/</a>&gt;</li> <li>✓ In 2020, shrimp exports alone reached 3.73 billion USD, accounting for 44.3% of total sector exports, an increase of 11% compared to 2019. In early 2020, the outbreak of the COVID-19 had a major impact on global shrimp production and trade, leading to oversupply and low prices. However, the world's major shrimp suppliers such as Ecuador, India, Indonesia, and Thailand were severely damaged by COVID-19 and domestic production was delayed, providing an opportunity for Viet Nam's shrimp industry. Source: VASEP, "5 highlights of Vietnam's fisheries sector in 2020", January 28, 2021, &lt;<a href="http://seafood.vasep.com.vn/why-buy-seafood/export-potentials/5-highlights-of-Vietnam-s-fishes-sector-in-2020-20993.html">http://seafood.vasep.com.vn/why-buy-seafood/export-potentials/5-highlights-of-Vietnam-s-fishes-sector-in-2020-20993.html</a>&gt;</li> <li>✓ The 4th wave of the COVID-19 spread throughout the Mekong Delta, causing difficulties in production, purchasing, processing, and exporting shrimp. There have been several shrimp farming supplies, including shrimp seed, aquafeed, transported to shrimp farming areas with difficulties, and disrupted the stocking schedule. Source: Agricultural newspaper "Fishery enterprises predict difficulties" August 5, 2021 &lt;<a href="https://nongnghiep.vn/doanh-nghiep-thuy-san-du-cam-kho-khan-d299095.html">https://nongnghiep.vn/doanh-nghiep-thuy-san-du-cam-kho-khan-d299095.html</a>&gt; (Access on August 9, 2021)</li> <li>✓ In the first ten months, shrimp exports reached to 3.2 billion USD, with shipments to the US rising sharply. With supply from other countries still hit by the pandemic, Vietnam's exports may increase enormously in the next few months due to the numerous free trade agreements and steady production. Source: NhanDan, Shrimp farming gradually recovers in Mekong Delta, exports remain robust, November 26, 2021, &lt;<a href="https://en.nhandan.vn/business/item/10831302-shrimp-farming-gradually-recovers-in-mekong-delta-exports-remain-robust.html">https://en.nhandan.vn/business/item/10831302-shrimp-farming-gradually-recovers-in-mekong-delta-exports-remain-robust.html</a>&gt;</li> </ul>
7. Impacts on Japanese companies	<ul style="list-style-type: none"> <li>✓ According to the "2020 Overseas Expansion Japanese Companies Survey" released by JETRO, 49.6% of Japanese companies in Viet Nam said that this year's operating profit will be in the black, exceeding the ASEAN average (43.9%). Compared to 2019, the outlook for operating profit was "improvement" at 17.8%, "flat" at 29.4%, and "deterioration" at 52.8%. Regarding the "impact of the spread of COVID-19 infection", "already normalized" was 7.9%, "within 2020" was 10.2%, and "within 2021" was 35.7%. Regarding "whether or not there is a review of business strategy or business model" by COVID-19, 44.4% answered that they "reviewed (planned)". By item, "Promotion of utilization of virtual exhibitions, online business meetings, etc." was 89.4%, "Cancellation or postponement of new investment / fixed investment" was 71.2%, and "Expansion of utilization of telework and telework" was 85.5%. Source: JETRO, "Survey of Japanese companies expanding overseas (Asia / Oceania edition)", &lt;<a href="https://www.jetro.go.jp/world/reports/2020/01/b5dea9948c30e474.html">https://www.jetro.go.jp/world/reports/2020/01/b5dea9948c30e474.html</a>&gt;, (2020/12/23)</li> <li>✓ Next Meats, an alternative meat venture, announced that it has put into operation a factory in Da Nang, central Viet Nam. The produced products will not be exported to Japan but will look for domestic demand in Viet Nam. In Viet Nam, where the number of middle- and high-income</li> </ul>

Item	Description
	<p>earners is increasing due to economic development, it is expected that the increase in health awareness due to COVID-19 will also be a tailwind.</p> <p>Source: PRTIMES, "The production line for the Next Meats and Vietnam factory for meat substitutes has started operation. The first step towards global expansion", &lt;<a href="https://prtimes.jp/main/html/rd/p/000000010.000062184.html">https://prtimes.jp/main/html/rd/p/000000010.000062184.html</a>&gt;, (2020/12/25)</p> <ul style="list-style-type: none"> <li>✓ Sojitz Invests in Digital Farming Platform Startup in Vietnam. With JETRO, Sojitz implements "Pig Net", a DX production management system, in the Vietnamese pig farming industry.</li> </ul> <p>Source: JETRO, Asia Digital Transformation (ADX) projects" &lt;<a href="https://www.jetro.go.jp/ext_images/News/announcement/2020/89bff31203b57b8b/agri-4.pdf">https://www.jetro.go.jp/ext_images/News/announcement/2020/89bff31203b57b8b/agri-4.pdf</a>&gt;</p> <p>(Access on February 22, 2021, Original Japanese Version)</p> <p>Sojitz HP, "Sojitz invests in a startup company that develops an agricultural platform in Vietnam" &lt;<a href="https://www.sojitz.com/jp/news/2020/02/20200227.php">https://www.sojitz.com/jp/news/2020/02/20200227.php</a>&gt;</p> <p>(Access on February 22, 2021, Original Japanese Version)</p> <ul style="list-style-type: none"> <li>✓ The spread of the infection from the end of April 2021 has affected production, such as restricting employee commuting. Since July, strict social isolation measures have been applied mainly to southern areas such as Ho Chi Minh City, and companies that cannot meet the requirements for factory isolation, such as accommodation and food provision, have not been able to operate. Some companies have decided to suspend operations due to the funds associated with the isolation of the factory and the burden of employees. Companies that continue production by isolating factories are also unable to secure sufficient employees and are forced to reduce their utilization rates.</li> </ul> <p>Source: JETRO, Business news, &lt;<a href="https://www.jetro.go.jp/biznews/2021/09/a26e04c9b52920f2.html">https://www.jetro.go.jp/biznews/2021/09/a26e04c9b52920f2.html</a>&gt;, (Access on September 8, 2021, Original Japanese Version)</p>
8. Impacts on IT/DX	<ul style="list-style-type: none"> <li>✓ COVID-19 has provided market opportunities for E-Commerce in Viet Nam. According to Viet Nam's General Statistics Office (GSO), 68.5 million, or 70 %, of Viet Nam's population has internet access, and about 43.7 million Vietnamese use smartphones. According to the Vietnam E-Commerce Association, E-Commerce was already experiencing significant annual growth of 30 % over the past two years and estimates that the market could reach 13 billion USD by the end of 2020.</li> <li>✓ During the mandated social distancing period for three weeks in April, and for at least a month after, consumers changed their shopping behavior. Online shopping platform providers in Viet Nam, including Tiki, Shopee, Lazada, Sendo, Foody, and Postmart, reported operating at full capacity to capture the growing demand, expanding their product ranges to include both food and beverage products and essential healthcare products, and offering diverse services to attract consumers, such as free delivery, contactless delivery, and discount programs. While some of the demand has dropped off from its peak, the industry had noted that it remains robust.</li> <li>✓ Food delivery and non-cash payment services have also developed to meet accelerating online shopping demand. Technology transport providers, including Be, Grab, and GoViet, collaborated with modern retailers and online shopping platforms to develop new applications, allowing consumers to shop for food products, including fresh produce, online and have the products delivered at home. Similarly, noncash payment transactions via Zalopay, VN Pay QR, Napas, Moca, and Momo reportedly increased by at least 30 % in recent months.</li> </ul> <p>Source: USDA, "Retail Foods", July 8, 2020 &lt;<a href="https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Retail%20Foods_Hanoi_Vietnam_06-30-2020">https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Retail%20Foods_Hanoi_Vietnam_06-30-2020</a>&gt;</p> <ul style="list-style-type: none"> <li>✓ According to the GSO, even in a time when COVID-19 crippled almost the entire economy of the country, Vietnamese online business still achieved an admirable growth rate of up to 30% per year during the period 2016-2020.</li> <li>✓ This market also welcomes 40% more new customers shopping online for the first time and revenue will exceed 15 billion USD this year, according to VECOM statistics.</li> </ul> <p>Source: Ministry of Industry and Trade of Viet Nam, "Industrial Revolution 4.0 and the Covid-19 epidemic have created a new trend in employment", August 12, 2021, &lt;<a href="https://moit.gov.vn/tin-tuc/phat-trien-cong-nghiep/cach-mang-cong-nghiep-4.0-va-dich-benh-covid-19-da-tao-ra-xu.html">https://moit.gov.vn/tin-tuc/phat-trien-cong-nghiep/cach-mang-cong-nghiep-4.0-va-dich-benh-covid-19-da-tao-ra-xu.html</a>&gt; (Access on August 9, 2021)</p>
9. Other Impacts, e.g., on occupational health, nutrition, consumers behavior change	<ul style="list-style-type: none"> <li>✓ According to a survey by UNICEF, although the frequency and quality of meals reportedly reduced, impacts on child malnutrition (wasting and stunting) may only be observed during 2020. Many mothers in the qualitative study reported the frequency of children's meals had decreased compared to before school closures. Some 70.4 % of study participants from urban areas more frequently reported their children had fewer meals during the day, compared to 29.6 % of those in rural locations. In addition, the nutrition security of many households was significantly impacted by the pandemic, especially vulnerable groups of children such as ethnic minorities, children living in poor, near-poor, and disadvantaged households, or children.</li> <li>✓ Furthermore, the nutritional quality of each family meal was much reduced, with limited diversity</li> </ul>

Item	Description
	<p>and essential nutrients. This was mainly due to rising food prices, especially for pork. The trend was compounded by many parents losing jobs and struggling to maintain subsistence levels of income, particularly parents who were freelance workers in industrial zones. Some 34.5 % of study participants reported experiencing worsened food quality and having to purchase food at higher prices than usual, while many parents experienced job losses or reductions in income already at subsistence level. In particular, the rise in prices of pork also compounded these pressures.</p> <p>Source: UNICEF, "Rapid assessment on the social and economic impacts of COVID-19 on children and families in Vietnam", September 2020 &lt;<a href="https://www.unicef.org/eap/reports/rapid-assessment-social-and-economic-impacts-covid-19-children-and-families-viet-nam">https://www.unicef.org/eap/reports/rapid-assessment-social-and-economic-impacts-covid-19-children-and-families-viet-nam</a>&gt;</p>

### 2.5.8 Cambodia

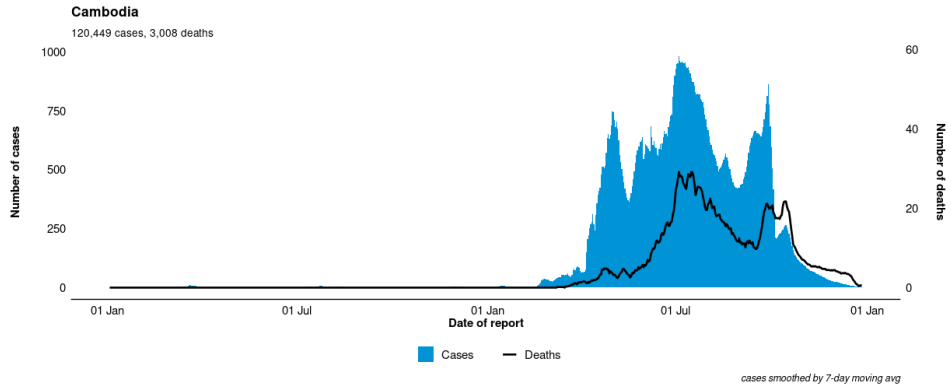
In Cambodia, the situation and impacts of COVID-19 including measures taken are summarized in Table 2.5.8, and issues peculiar to Indonesia may be taken up as follows:

- 1) On January 27, 2020, the Ministry of Health (MoH) of the Kingdom of Cambodia confirmed with WHO that the first case of COVID-19 had been detected. Cambodia had a relatively small number of cases and no deaths. However, the government delayed response at the beginning of the infection spread due to weak health infrastructure. Subsequently, the number of infected people started to increase in March 2021, and even after the peak in July and September 2021, a high daily average has been reported. As of December 28, 2021, although the number of infected people has been subsided, the cumulative number of infected people and death is approximately 120,000 and 3,000, respectively.
- 2) Cambodia has closed all schools and some categories of business space in sequence since March 16, 2020. Subsequently, the borders with surrounding countries such as Thailand and Vietnam were closed, and the Cambodian government restricted foreign travelers' entry except for the passage of cargo. On April 9, 2020, the government issued an order banning most travel throughout the country for a week to combat the spread of COVID-19. In addition, on April 29, the state of emergency was signed, going into effect immediately, according to a royal decree. (the declaration has not been invoked since then). On the other hand, as a support measure, the government has implemented economic recovery measures several times, focusing on support for the textile and tourism industry. The government allocated USD1.2 billion for Covid-19 recovery, with USD564 million earmarked for health and social assistance and USD600 million for economic support through lending to SMEs. Some USD100 million has been set aside for job training for suspended workers.
- 3) GDP growth in 2020 was predicted to be negative in each organization (-1.9 to -4.0%), it was -3.1%, and it is expected to recover to 1.9% in 2021. The unemployment rate of 2020 was 0.31%, increasing 0.18% than the previous year. ADB estimated that 390,000 people would be dismissed in 2020, of which 140,000 to 200,000 will shift to agriculture.
- 4) According to the MAFF, exports of agricultural products in 2020 reached USD3.433 billion. They are mainly exported to China, EU, ASEAN countries, etc. The exported agricultural products are milled rice, rice paddy, cassava, cashew nuts, mango, rubber, banana, Pailin longan, pepper, etc. Although rice exports were banned to secure domestic food in April 2020, the government lifted the restrictions in May because of sufficient domestic stocks and requests from surrounding countries. 2020's total paddy production was 10.93 million tons, enough to afford the nation a surplus of 5.9 million tons of paddies. Cambodia exported 690,829 tons of milled rice with a total value of USD538.8 million this year, an increase of 11.4% over 2019's numbers. Exports of rice paddy reached 2.89 million tons for 2020, with a total value of USD723.48 million.
- 5) While exports of cassava and mango have increased significantly, vegetable production is insufficient for domestic consumption, even rising by 5% compared to 2019. About 30% of vegetables are imported. Demand for high-quality fruits such as tropical fruits is increasing in China and South Korea, and discussions on Free Trade Agreements (FTAs) are underway. Mango exports to China officially began in 2020. Livestock and marine products increased by 17.6% and 3.06%, respectively, compared to 2019.
- 6) Flood damage caused by heavy rains that occurred in various places from September to October 2020 delayed the transportation of goods. There was a possibility that the impact on the production sector would become more severe due to the stagnation of the supply of raw materials. However, since the Cambodian government restricted reducing a production system to suppress the COVID-19, and the demand for raw materials was shrinking, the production sector's impact was minimal.



The government distributed the rice seed or agricultural products to flood-damaged farmers and carried out road repairs to facilitate the transportation of farm products.

**Table 2.5.8 Situation and Impacts of COVID-19 in Cambodia**

Item	Description															
1. COVID-19 Pandemic General	<p><b>The trend of COVID-19 Pandemic Situation</b></p> <table border="1"> <thead> <tr> <th>Particulars</th> <th>At peak Per day</th> <th>Accumulated persons</th> <th>Per 1-million population</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>Infected</td> <td>1,130 (July 1, 2021)</td> <td>120,449 (as of Dec. 28)</td> <td>7,204 (as of Dec. 28)</td> <td></td> </tr> <tr> <td>Death Case</td> <td>39 (July 16, 2021)</td> <td>3,008 (as of Dec. 28)</td> <td>180 (as of Dec. 28)</td> <td></td> </tr> </tbody> </table> <p>Note: National population is 16,718,965.</p>  <p>Source: WHO, "WHO Coronavirus (COVID-19) Dashboard", &lt;<a href="https://COVID19.who.int/">https://COVID19.who.int/</a>&gt; (December 28, 2021)</p>	Particulars	At peak Per day	Accumulated persons	Per 1-million population	Remarks	Infected	1,130 (July 1, 2021)	120,449 (as of Dec. 28)	7,204 (as of Dec. 28)		Death Case	39 (July 16, 2021)	3,008 (as of Dec. 28)	180 (as of Dec. 28)	
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2. Control and Support Measures of the COVID-19 Pandemic	<p><b>Control Measures of COVID-19 (mentioned for the nationwide and capital area only)</b></p> <table border="1"> <thead> <tr> <th>Date</th> <th>Response</th> </tr> </thead> <tbody> <tr> <td>2020/1/27</td> <td>Ministry of Health (MoH) of the Kingdom of Cambodia confirmed with WHO that the first case of COVID-19 had been detected. Source: WHO, "Ministry of Health responds to first positive case of new coronavirus," January 28, 2021, &lt;<a href="https://www.who.int/cambodia/news/detail/28-01-2020-ministry-of-health-responds-to-first-positive-case-of-new-coronavirus">https://www.who.int/cambodia/news/detail/28-01-2020-ministry-of-health-responds-to-first-positive-case-of-new-coronavirus</a>&gt;</td> </tr> <tr> <td>2020/3/16</td> <td>Cambodia announced nationwide <u>school closures</u>. Cambodia <u>bans</u> citizens from traveling to the EU (Germany, France, Spain, Italy), US, and Iran. Source: 1. Khmer Times, "All schools across the country ordered to be shuttered," March 16, 2020, &lt;<a href="https://www.khmertimeskh.com/702288/">https://www.khmertimeskh.com/702288/</a>&gt; 2. Khmer Times, "Cambodia bans all citizens of the country from traveling to EU, US, and Iran in move to curb COVID-19 spread", March 16, 2020, &lt;<a href="https://www.khmertimeskh.com/702181/">https://www.khmertimeskh.com/702181/</a>&gt;</td> </tr> <tr> <td>2020/3/18</td> <td>In late March, borders with neighboring countries, Vietnam, Laos (from March 18), and Thailand (from March 24), were closed off. Source: 1. Office of the Council of Ministers, "Ministry of Foreign Affairs letter's to Embassy of Viet Nam in Phnom Penh, In the spirit of friendship and mutual understanding about the prevention of the spread of COVID-19", March 19, 2020, &lt;<a href="https://pressocm.gov.kh/en/archives/64725">https://pressocm.gov.kh/en/archives/64725</a>&gt;, 2. TTR Weekly, "Thailand closes border checkpoints," March 24, 2020, &lt;<a href="https://www.ttrweekly.com/site/2020/03/thailand-closes-border-checkpoints/">https://www.ttrweekly.com/site/2020/03/thailand-closes-border-checkpoints/</a>&gt;</td> </tr> <tr> <td>2020/3/18</td> <td>Cambodia has established a National Committee to Combat COVID-19, a joint command in leading, introducing, and implementing measures to fight against COVID-19. Cambodia has decided to postpone the celebration of the Khmer New Year and imposed a ban on inter-provincial movements of people. 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2020/6/22	The government lifted cross-border travel restrictions with Vietnam.
2020/8/22	Cambodia and Japan announced they would ease travel restrictions between the two countries as early as September.
2020/11/29	The Ministry of Education, Youth and Sports directed all public schools to close. Private schools were ordered to shut down for two weeks temporarily.
2020/11/30	Prime Minister issued an order prohibiting gatherings of more than 20 people in Phnom Penh and Siem Reap province until December 15.
2020/12/20	Cambodia tightened its border with Thailand
2021/1/4	Schools and museums reopened. Cambodia and Vietnam tightened their border and began requiring individuals crossing the border to quarantine for 14 days.
2021/3/31	The government granted the authority to prohibit going out at night to Phnom Penh, each province, and city. Each province has issued regulations such as movement prohibition.
2021/7/28	Announced to lock down eight provinces near the Thai border
2021/7/29	The capital of Phnom Penh banned curfew, eating and drinking, and meetings with alcohol from July 29 to August 12.
2021/8/20	The government announced the obligation to wear masks and ensure social distance throughout Cambodia.
2021/9	Extension of measures to prevent the spread of the disease in Phnom Penh (extended until 9/9, re-extended until 9/23).
2021/10/5	The Phnom Penh Metropolitan Administration announced that it has decided to present proof of vaccination against COVID-19 guidelines for educational institutions, commercial facilities, restaurants, etc.
2021/10	Extension of measures to prevent the spread of infection in Phnom Penh (extended to 10/7, 10/14, 10/28, and 11/11 again).
2021/11/14	The Cambodian Ministry of Health announced that from November 15, travelers who have been vaccinated against the disease would no longer be required to be quarantined when entering Cambodia.
2020/12/1	Extension of measures to prevent the spread of infection in Phnom Penh Metropolitan Administration (extended to 12/5)
<p>Source: 1. JETRO, "Support for COVID-19 in Asia", &lt;<a href="https://www.jetro.go.jp/world/COVID-19/asia/">https://www.jetro.go.jp/world/COVID-19/asia/</a>&gt; (Feb 2021), 2. CSIS, "Southeast Asia Covid-19 Tracker", &lt;<a href="https://www.csis.org/programs/southeast-asia-program/southeast-asia-covid-19-tracker-0">https://www.csis.org/programs/southeast-asia-program/southeast-asia-covid-19-tracker-0</a>&gt; (Feb 2021), 3. Ministry of Foreign Affairs of Japan, "Safety Information from Local Embassies and Consulates General History Cambodia," &lt;<a href="https://www.anzen.mofa.go.jp/od/ryojiMail.html?countryCd=0855">https://www.anzen.mofa.go.jp/od/ryojiMail.html?countryCd=0855</a>&gt; (Dec 2021)</p>	
<p><b>Support Measures (Economic Responses) against COVID-19</b></p> <p>Main support measures by Cambodia Government</p> <p>(1) 100 million USD for public health, economic and social support</p> <p>(2) 64 million USD for vocational training and financial support for the unemployed</p> <p>(3) 100 million USD to support workers</p> <p>(4) 300 million USD to support poor households</p> <p>(5) 100 million USD to Agricultural and Rural Development Bank (ARDB) and Cambodian Small and Medium Enterprise bank (SME bank) for special funds, 50 million USD each.</p> <p>(6) 200 million USD as the basis of government trust guarantee</p> <p>(7) 300 million USD for major lending</p> <p>Source: NNA ASIA, "Contribution of US \$ 1.1 billion from government savings for COVID-19", July 13, 2020, &lt;<a href="https://www.nna.jp/news/result/2067856">https://www.nna.jp/news/result/2067856</a>&gt;</p>	
Date	Response
2020/3/16	The government has established a special base of USUSD 50 million for small and medium-sized agriculture-related companies such as agricultural products, food products, and livestock to mitigate the effects of the COVID-19 and the partial suspension of trade incentives by the EU. The target is about 1,000 companies, and each company can borrow up to 300,000 USD. Source: Khmer Times, "\$50 million emergency fund for small and medium enterprises," March 17, 2020, < <a href="https://www.khmertimeskh.com/702354/">https://www.khmertimeskh.com/702354/</a> >
2020/3/22	The government started paying compensation to workers in the garment and tourism industries who had lost their jobs due to the COVID-19. The target is 126 garment factories, 55,000 people, 53 tourist hotels, 4,300 people. It is expected to pay 40 USD/month/person, and the total amount will reach USUSD 2.372 million. The employer will compensate 30 USD/month/person. Source: Khmer Times, "Workers to receive entitlements next week," March 22, 2020, < <a href="https://www.khmertimeskh.com/50725719/workers-to-receive-entitlements-next-week/">https://www.khmertimeskh.com/50725719/workers-to-receive-entitlements-next-week/</a> >
2020/6/8	The Ministry of Labor provided a total of USD 2.4 million in leave compensation to 110,000 employees of 344 factories/companies that had stopped operations due to

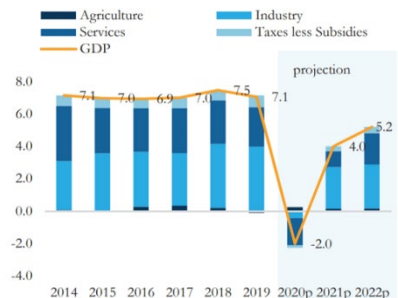
Item	Description
	the COVID-19. It is instructed to limit the period of operation suspension to a maximum of two months. Source: Khmer Times, "Further \$12million prepared for workers suffering suspension", June 8, 2020, < <a href="https://www.khmertimeskh.com/50731207/further-12million-prepared-for-workers-suffering-suspension/">https://www.khmertimeskh.com/50731207/further-12million-prepared-for-workers-suffering-suspension/</a> >
2020/6/17	The government launched a cash relief program for 600,000 families, 2.3 million people, especially vulnerable to the pandemic. A total of USD350 million are divided into three regions: Phnom Penh, each state capital, and the other regions, and the recipients are further divided into "level 1" and "level 2". (1) "Level 1" of Phnom Penh and state capital: 30 USD / household + 13 USD / person for adults or 10 USD / person for children under five years old, elderly people over 60 years old, persons with disabilities, and HIV-infected persons (referred to as "others"). (2) "Level 2" of Phnom Penh and state capital: 30 USD / household + 9 USD / person for adults, 7 USD / person for "others." (3) "Level 1" of the other regions: 20 USD / household + 6 USD / person for "others" (4) "Level 2" of the other regions: USD 20 / household + USD 4 / person for "others." Source: Khmer Times, "Government launches vulnerable family subsidies," June 22, 2020, < <a href="https://www.khmertimeskh.com/50736456/government-launches-vulnerable-family-subsidies/">https://www.khmertimeskh.com/50736456/government-launches-vulnerable-family-subsidies/</a> >
2020/8/12	Cambodia's National Committee for Counter Trafficking launched a USD 1 million initiative to support migrant workers forced to return to the country due to Covid-19 border closures.
2020/11/30	Prime Minister Hun Sen announced that the government disbursed USD 290,000 to support families under Cambodia's newly-instated 14-day quarantine.
2021/4/21	A government-led online site has been launched to provide a stable food supply for residents of the "Red Zone" (a district where infected people are particularly prominent and business operations and access are prohibited) in Phnom Penh. Source: JETRO "Launching of Government-led online site for stable food supply to Red Zone residents," April 28, 2021, < <a href="https://www.jetro.go.jp/biznews/2021/04/88f8c0573e41bbaa.html">https://www.jetro.go.jp/biznews/2021/04/88f8c0573e41bbaa.html</a> >
2021/6/11	As the social support policy, the government started subsidy on June 10 for the infected person with the COVID-19 and whose life is in need, his family, and the family of the infected person who died. Targets three specific areas: Phnom Penh, Ta Khmau, Kandal Province, Southern Sihanoukville.
2021/7/29	The Ministry of Labor and Vocational Training has announced financial support for suspended workers in the clothing and tourism industry. Workers can receive USD 15 to USD 40 depending on the suspension period.

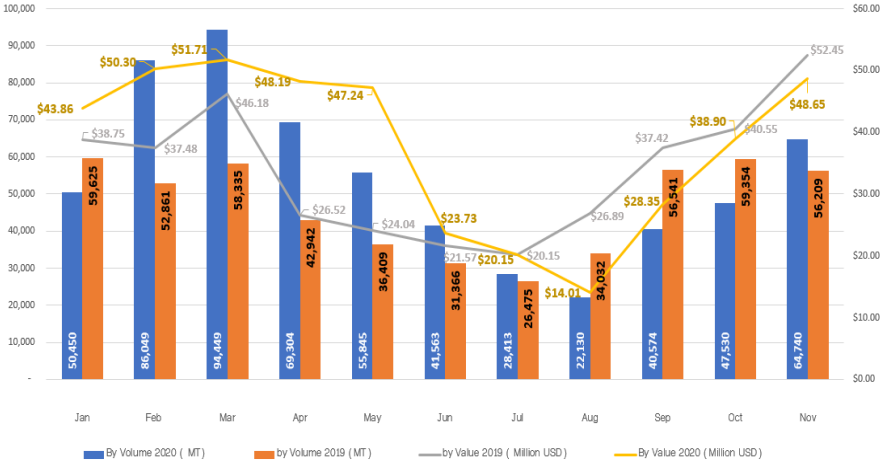
Source: CSIS, "Southeast Asia Covid-19 Tracker", <<https://www.csis.org/programs/southeast-asia-program/southeast-asia-covid-19-tracker-0>> (Aug 2021)

[List of donor's support related COVID-19]

Source org.	Description	Amount (US\$)	Funding status
Japan, Government of	COVID-19 response (SM200105)	\$966,579	Paid Contribution
United States of America, Government of	COVID-19 response (SM200097)	\$1,143,619	Paid Contribution
Denmark, Government of	COVID-19 response - Cambodia (SM1899100775)	\$428,000	Paid Contribution
US Fund for UNICEF	COVID-19 response - Cambodia (KM200023)	\$36,250	Paid Contribution
China, Government of	Response to the COVID-19 pandemic - Cambodia (SM200312)	\$800,000	Paid Contribution
Japan, Government of	Emergency procurement of critical medical equipment to support the Royal Government of Cambodia for enhancing their response to the Coronavirus outbreak	\$6,320,167	Paid Contribution
UN COVID-19 Response and Recovery Fund	COVID-19 response - Cambodia (SM200464)	\$200,000	Paid Contribution
UN COVID-19 Response and Recovery Fund	Strengthened National Preparedness, Response and Resilience to COVID19 in Cambodia	\$100,000	Commitment
Australia, Government of	Mekong Region: Responding to Cross Mobility Challenges at Points of Entry (PoE) During COVID-19 Outbreak - Cambodia	\$258,964	Commitment
UN COVID-19 Response and Recovery Fund	Strengthened National Preparedness, Response and Resilience to COVID19 in Cambodia	\$500,000	Commitment
Japan, Government of	Provision of medical equipments to address COVID-19 - Cambodia	\$18,559,762	Commitment
UN COVID-19 Response and Recovery Fund	Unlocking Cambodian Women's Potential through Fiscal Space Creation	\$246,338	Commitment

Source: Financial Tracking Service, "Cambodia 2020",

Item	Description
<p>3. Impacts of COVID-19 Pandemic on Economy, e.g., economic growth (GDP), employment (unemployment, working hours), migrant work, remittance</p>	<p><a href="https://fts.unocha.org/countries/38/flows/2020">https://fts.unocha.org/countries/38/flows/2020</a> (Feb 2021)</p> <p><b>The trend of GDP Growth and Sector-wise GDP Growth</b></p> <ul style="list-style-type: none"> <li>✓ According to the ADB, the GDP growth rate in Cambodia in 2020 was -3.1%. It is expected to recover to 1.9% in 2021. Source: ADB, "Economic indicators for Cambodia," <a href="https://www.adb.org/countries/cambodia/economy">https://www.adb.org/countries/cambodia/economy</a> (Dec 2021)</li> <li>✓ The Ministry of Economy, Trade, and Finance of Cambodia forecast the GDP growth rate by sector in 2021 for services such as hotels and restaurants at 0.3%, clothing industry at 4.5%, construction industry at 2.9%, real estate industry at 2.7%, agriculture at 1.3%, and non-clothing manufacturing industry at 12.5%. Source: Cambodia Business Partners, "Ministry of Economy and Finance officials confident in Cambodia's 2021 economic growth", January 28, 2021, <a href="http://business-partners.asia/cambodia/keizai-20210128-gdp/">http://business-partners.asia/cambodia/keizai-20210128-gdp/</a></li> <li>✓ According to the survey in June 2020, 12% of households were unemployed, 82% had decreased income, and 60% answered that they had reduced their income. Source: NNA ASIA, "363<sup>rd</sup> Cambodia Economy News", November 20, 2020, <a href="https://www.nna.jp/news/show/2119879">https://www.nna.jp/news/show/2119879</a></li> <li>✓ According to the WB, the unemployment rate in 2020 was 0.31% (increased 0.18% from the previous year). Source: WB, "Unemployment – Cambodia," January 29, 2021, <a href="https://data.worldbank.org/indicator/SL.UEM.TOTL.ZS?locations=KH">https://data.worldbank.org/indicator/SL.UEM.TOTL.ZS?locations=KH</a></li> <li>✓ According to the State of Small Businesses survey conducted by Facebook, the Organization for Economic Co-operation and Development, and the WB, 39% of Cambodian SMEs have furloughed workers. Many companies are accelerating business digitization, with 41% of the respondents saying that "online revenues account for more than 25% of the total." Source: Phnom Penh Post, "Survey sheds light on coronavirus-restricted SMBs," July 23, 2020, <a href="https://www.phnompenhpost.com/business/survey-sheds-light-coronavirus-restricted-smbs">https://www.phnompenhpost.com/business/survey-sheds-light-coronavirus-restricted-smbs</a></li> </ul> <p><b>Real GDP growth and contributions to real GDP growth (percent)</b></p>  <p>Source: Cambodia Business Partners, "World Bank predicts Cambodian economy to recover in 2021", Dec 17, 2020, <a href="http://business-partners.asia/cambodia/keizai-20201217/">http://business-partners.asia/cambodia/keizai-20201217/</a></p>
<p>4. Impacts of COVID-19 Pandemic on Agriculture General, e.g., production, consumption, export/import, E-Commerce transaction change, price chance</p>	<ul style="list-style-type: none"> <li>✓ Due to the border closure with Vietnam from March 18, 2020, the trade of cashew nuts and cassava has been suspended. After the border closure, sales prices fell closer to half within a few days. Source: Khmer Times, "Farmers worry over Vietnam border closure," March 20, 2020, <a href="https://www.khmertimeskh.com/703580/">https://www.khmertimeskh.com/703580/</a></li> <li>✓ Although some food prices rose temporarily due to the COVID-19 pandemic, prices remained stable after June 2020. Due to the borders blockade and the cross-border trade suspension, vegetable prices rose by up to 60%, eggs by 14.5%, and pigs by 5.7% from the end of March to the beginning of April. After that, some food prices rose due to flood damage in October and an increase of infected people with COVID-19 in the latter half of November. Source: Khmer Times, "Fear of food price inflation dropping as stability returns," July 9, 2020, <a href="https://www.khmertimeskh.com/50743104/fear-of-food-price-inflation-dropping-as-stability-returns/">https://www.khmertimeskh.com/50743104/fear-of-food-price-inflation-dropping-as-stability-returns/</a></li> <li>✓ Ministry of Agriculture, Forestry, and Fisheries (MAFF) reported that Cambodia had exported USD3.433 billion in agricultural products in 2020. Most products were exported to China, the EU, ASEAN countries, Hong Kong, etc. Those agricultural products are milled rice, rice paddy production, cassava, cashew nuts, mango, rubber, banana, Pailin longan, pepper, and other goods, animal production (cattle, pork and poultry, chicken and duck eggs, etc.), fishery products (river and marine fish products and aquaculture), forestry products (processed timber, birds' nests, leather products, live monkeys, etc.). Source: The Phnom Penh Post, "Agricultural exports rake in \$3.4 billion in 2020", April 23, 2021, <a href="https://www.phnompenhpost.com/business/agricultural-exports-rake-34-billion-2020">https://www.phnompenhpost.com/business/agricultural-exports-rake-34-billion-2020</a></li> </ul>
<p>4.1 Input for Agriculture</p>	<p>N/A*</p>
<p>4.2 Production for Agriculture</p>	<p><b>[Rice]</b></p> <ul style="list-style-type: none"> <li>✓ According to the MAFF, rice was harvested in more than 3.26 million hectares of paddy fields were</li> </ul>

Item	Description																																																												
	<p>in harvest, yielding an average of 3.34 tons/hectare. 2020's total paddy production was 10.93 million tons, and also it was sufficient to afford the nation a surplus of 5.9 million tons of paddies. Cambodia exported 690,829 tons of milled rice with a total value of USD538.8 million this year, increasing 11.4% by 2019. Exports of rice paddy reached 2.89 million tons for 2020 with a total value of USD723.48 million, and they were shipped to neighboring countries, mainly Vietnam. [Export market of milled rice]</p> <p>1. China : 289,439t (41.9%), 2. EU : 203,791t (29.5%), 3. ASEAN countries : 86,899 t (12.58%), and 4. Others (29 countries): 110,700t (16.02%).</p> <p>Source: Khmer Times, "Ministry shares 2020 agri-export numbers", January 5, 2021, &lt;<a href="https://www.khmertimeskh.com/50800406/ministry-shares-2020-agri-export-numbers/">https://www.khmertimeskh.com/50800406/ministry-shares-2020-agri-export-numbers/</a>&gt;</p>  <table border="1"> <caption>Data for Figure: Price trend and volume of exported milled rice in Cambodia</caption> <thead> <tr> <th>Month</th> <th>By Volume 2020 (MT)</th> <th>by Volume 2019 (MT)</th> <th>by Value 2019 (Million USD)</th> <th>By Value 2020 (Million USD)</th> </tr> </thead> <tbody> <tr><td>Jan</td><td>50,450</td><td>59,625</td><td>\$38.75</td><td>\$43.86</td></tr> <tr><td>Feb</td><td>86,049</td><td>52,861</td><td>\$37.48</td><td>\$50.30</td></tr> <tr><td>Mar</td><td>94,469</td><td>58,335</td><td>\$46.18</td><td>\$51.71</td></tr> <tr><td>Apr</td><td>69,304</td><td>42,942</td><td>\$26.52</td><td>\$48.19</td></tr> <tr><td>May</td><td>55,895</td><td>36,409</td><td>\$24.04</td><td>\$47.24</td></tr> <tr><td>Jun</td><td>41,563</td><td>31,366</td><td>\$21.57</td><td>\$23.73</td></tr> <tr><td>Jul</td><td>28,413</td><td>26,475</td><td>\$20.15</td><td>\$20.15</td></tr> <tr><td>Aug</td><td>22,130</td><td>34,032</td><td>\$14.01</td><td>\$14.01</td></tr> <tr><td>Sep</td><td>40,574</td><td>56,541</td><td>\$26.89</td><td>\$28.35</td></tr> <tr><td>Oct</td><td>47,530</td><td>59,354</td><td>\$40.55</td><td>\$38.90</td></tr> <tr><td>Nov</td><td>64,740</td><td>56,209</td><td>\$52.45</td><td>\$48.65</td></tr> </tbody> </table> <p><b>Figure: Price trend and volume of exported milled rice in Cambodia.</b></p> <p>Source: Cambodia Rice Federation, "63% of Cambodian Rice exported in November 2020 went to China Market", &lt;<a href="http://www.crf.org.kh/?page=api_location_detail&amp;id=1383&amp;lg=en">http://www.crf.org.kh/?page=api_location_detail&amp;id=1383&amp;lg=en</a>&gt; (Feb 2021)</p> <ul style="list-style-type: none"> <li>✓ Rice export volume in the first half of 2021 (January-July) was down 27.3% from last year. The reasons were the shortage of containers for overseas transportation and the resulting increase in transportation costs. The largest exporting country is still China, but export to Vietnam is increasing compared with last year. Exports of other crops such as mangoes, bananas, and cassava are expected to increase this year. However, for rice, the Cambodian government focuses on getting more buyers in Asian markets such as China instead of exporting to EU countries. Source: Khmer Times, "Rice exports plunge 27 percent, but demand from China and Vietnam rises," August 3, 2021, &lt;<a href="https://www.khmertimeskh.com/50907302/rice-exports-plunge-27-percent-but-demand-from-china-and-vietnam-rises/">https://www.khmertimeskh.com/50907302/rice-exports-plunge-27-percent-but-demand-from-china-and-vietnam-rises/</a>&gt;</li> </ul> <p><b>[Vegetables]</b></p> <ul style="list-style-type: none"> <li>✓ According to the MAFF of Cambodia, domestic vegetable production in 2020 was 716,113 tons, an increase of 5% from 681,099 tons in the previous year. The domestic consumption of vegetables in 2020 is estimated to be 1 million tons. Therefore, the portion that could not be covered by domestic production was imported, 329,612 tons (68%). Demand for safe food is on the rise in Cambodia. At the same time as meeting these demands, the government encourages domestic production of vegetables and supports them to increase income, create employment, and expand exports. Specifically, the MAFF is implementing some projects to boost the production of safe vegetables, such as "Agricultural Service Innovation, Revitalization and Expansion Program (ASPIRE)" by IFAD and "Cambodia Agriculture Diversify Project" by the WB. Currently, the vegetable cultivation area nationwide is 60,000 ha. Although Cambodia imports some vegetables, it exports small vegetables to the EU. Source: Khmer Times, "Domestic vegetable production increases in 2020", January 13, 2020, &lt;<a href="https://www.khmertimeskh.com/50803232/domestic-vegetable-production-increases-in-2020/">https://www.khmertimeskh.com/50803232/domestic-vegetable-production-increases-in-2020/</a>&gt;</li> <li>✓ In April 2021, several markets in Cambodia were closed due to the COVID-19 infection. It led to stagnation of distribution to supermarkets and other retail markets in the capital and neighboring cities, as well as the suspension of trade with Vietnam. In addition, residents who refrained from going out were forced to consume instant and canned foods for several weeks. It was expected that demand for fresh vegetables would increase after people resumed going out. Source: Khmer Times, "Cambodia, Vietnam resume vegetable trade," April 22, 2021, &lt;<a href="https://www.phnompenhpost.com/business/cambodia-vietnam-resume-vegetable-trade">https://www.phnompenhpost.com/business/cambodia-vietnam-resume-vegetable-trade</a>&gt;</li> </ul>	Month	By Volume 2020 (MT)	by Volume 2019 (MT)	by Value 2019 (Million USD)	By Value 2020 (Million USD)	Jan	50,450	59,625	\$38.75	\$43.86	Feb	86,049	52,861	\$37.48	\$50.30	Mar	94,469	58,335	\$46.18	\$51.71	Apr	69,304	42,942	\$26.52	\$48.19	May	55,895	36,409	\$24.04	\$47.24	Jun	41,563	31,366	\$21.57	\$23.73	Jul	28,413	26,475	\$20.15	\$20.15	Aug	22,130	34,032	\$14.01	\$14.01	Sep	40,574	56,541	\$26.89	\$28.35	Oct	47,530	59,354	\$40.55	\$38.90	Nov	64,740	56,209	\$52.45	\$48.65
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Item	Description
	<p><b>[Cashew nuts]</b></p> <ul style="list-style-type: none"> <li>✓ Cambodia's cashew nut prices slightly dropped because of border closures caused by the COVID-19 pandemic, although some goods are being let through. The price of raw and processed cashew nuts was dropped compared with 2019. Cambodia exported 230,981 tons of cashew nuts that were shipped in 2020. 95% of raw cashew nuts were sent to Vietnam for processing, and only 5% were processed locally. Others were exported to Japan, Russia, Hong Kong, China, France, and South Korea.</li> </ul> <p>Source: 1. Khmer Times, "Ministry shares 2020 agri-export numbers", January 5, 2021, &lt;<a href="https://www.khmertimeskh.com/50800406/ministry-shares-2020-agri-export-numbers/">https://www.khmertimeskh.com/50800406/ministry-shares-2020-agri-export-numbers/</a>&gt;, 2. Khmer Times, "Cashew nut prices in decline," September 10, 2020, &lt;<a href="https://www.khmertimeskh.com/50762676/cashew-nut-prices-in-decline/">https://www.khmertimeskh.com/50762676/cashew-nut-prices-in-decline/</a>&gt;</p> <ul style="list-style-type: none"> <li>✓ The government is now pushing the cashew nuts policy, and the draft on the policy is nearly completed. The sector's most significant challenges are the lack of infrastructure, warehouses, high electricity prices, laboratory services, difficulty obtaining credit, poor regulation implementation, lack of market awareness and research, and lack of experience in value-added processing. Source: Khmer Times, "Going nuts for cashews," September 14, 2020, &lt;<a href="https://www.khmertimeskh.com/50763659/going-nuts-for-cashews/">https://www.khmertimeskh.com/50763659/going-nuts-for-cashews/</a>&gt;</li> </ul> <p><b>[Cassava]</b></p> <ul style="list-style-type: none"> <li>✓ Cambodia exported 7.2 million tons of cassava in 2020, more than twice in 2019. Cambodia's cassava exports include cassava chips, fresh cassava, tapioca starch, and cassava pulp to markets in Thailand, Vietnam, India, China, and Belgium. On January 15, 2021, The Kingdom officially launched a "National Cassava Policy" (NCP) to boost domestic production, processing, and commercialization for export to international markets in line with the government's Industrial Development Policy for 2020-2025.</li> </ul> <p>Source: 1. Khmer Times, "Ministry shares 2020 agri-export numbers", January 5, 2021, &lt;<a href="https://www.khmertimeskh.com/50800406/ministry-shares-2020-agri-export-numbers/">https://www.khmertimeskh.com/50800406/ministry-shares-2020-agri-export-numbers/</a>&gt;, 2. UNDP, "National Cassava Policy," January 15, 2021, &lt;<a href="https://www.kh.undp.org/content/cambodia/en/home/library/national-cassava-policy.html">https://www.kh.undp.org/content/cambodia/en/home/library/national-cassava-policy.html</a>&gt;, 3. The Phnom Penh Post, "Cassava product exports grow 49%," October 13, 2020, &lt;<a href="https://www.phnompenhpost.com/business/cassava-product-exports-grow-49">https://www.phnompenhpost.com/business/cassava-product-exports-grow-49</a>&gt;</p> <p><b>[Mango]</b></p> <ul style="list-style-type: none"> <li>✓ According to the MAFF, Cambodia has planted more than 124,000ha of mango trees, yielding around 1.44 million tons of fresh mangoes per annum. With the free trade agreement signed between China and the Association of Southeast Asian Nations (ASEAN), Cambodia's dried mango exports to China enjoy tariff preferences. More than 20 Chinese companies are currently engaged in dried mango processing in Cambodia.</li> </ul> <p>Source: China.org.cn, "Feature: Mangoes lead the way, Cambodia eyeing opportunities on China's agricultural market," December 10, 2020, &lt;<a href="http://www.china.org.cn/world/Off_the_Wire/2020-12/10/content_76997987.htm">http://www.china.org.cn/world/Off_the_Wire/2020-12/10/content_76997987.htm</a>&gt;</p>
4.3 Processing for Agriculture	<ul style="list-style-type: none"> <li>✓ The frozen food market in Cambodia is strong, and it is expected that the average annual growth rate (CAGR) of 3.9% will be maintained until 2024, reaching the scale of 119.56 million USD in the same year. It is pointed out that the westernization of livelihoods and the increase in tourists will mainly drive the growth. It is said that people are very enthusiastic about ice cream, frozen yogurt, and cooked frozen foods, and that consumption of frozen vegetables such as shellfish and potatoes is increasing. Many overseas companies like Canada accounted for most of the frozen market, and it costs much money to introduce refrigeration equipment, so the entry of domestic companies is not progressing.</li> </ul> <p>Source: Khmer Times, "Cambodia frozen food market is forecasted to reach \$119.56 million by 2024", September 7, 2020, &lt;<a href="https://www.khmertimeskh.com/50761273/cambodia-frozen-food-market-is-forecasted-to-reach-119-56-million-by-2024/">https://www.khmertimeskh.com/50761273/cambodia-frozen-food-market-is-forecasted-to-reach-119-56-million-by-2024/</a>&gt;</p> <ul style="list-style-type: none"> <li>✓ The freezing food processors reported that prices soared due to the delay in access to raw materials (agricultural products) due to the corona damage. It was discussed that stakeholders of the food industry and producers should network to exchange experiences and learn from each other, particularly regarding the challenges faced amid COVID-19.</li> </ul> <p>Source: Khmer Times, "Food safety forum set up amid COVID-19", September 23, 2020, &lt;<a href="https://www.khmertimeskh.com/50765789/food-safety-forum-set-up-amid-covid-19/">https://www.khmertimeskh.com/50765789/food-safety-forum-set-up-amid-covid-19/</a>&gt;</p>
4.4 Retail, Distribution for Agriculture	N/A*
4.5 Market, Consumer for Agriculture	<ul style="list-style-type: none"> <li>✓ Singapore-based Grab Cambodia, which develops the vehicle allocation app "Grab," has started a home delivery service for food and daily necessities in some areas of the capital, Phnom Penh. The groceries, packaged foods, healthcare products, beauty products, gifts, and other merchandise are delivered within an hour by accessing the Grab app.</li> </ul>

Item	Description
	<p>Source: The Phnom Penh Post, "Grab rolling out delivery service," May 17, 2020, &lt;<a href="https://www.phnompenhpost.com/business/grab-rolling-out-delivery-service">https://www.phnompenhpost.com/business/grab-rolling-out-delivery-service</a>&gt;</p>
5. Impacts of COVID-19 Pandemic on Livestock	<p>✓ As of December 2, MAFF's minister said that livestock production increased from 42.02 million head to 49.42 million head, up 17.6% compared with the same period in 2019. Livestock production includes poultry (chicken and ducks), cattle (cows and buffalo), and pigs. The figure comprises 2.77 million head of cattle, 2.18 million head of pigs, and 40.39 million head of poultry. It is said that the market price of live pigs, chicken, ducks, and beef is at an acceptable level for producers, sellers, and consumers.</p> <p>Source: Khmer Times, "Kingdom's livestock production grew during the pandemic," December 4, 2020, &lt;<a href="https://www.khmertimeskh.com/50789582/kingdoms-livestock-production-grew-during-the-pandemic/">https://www.khmertimeskh.com/50789582/kingdoms-livestock-production-grew-during-the-pandemic/</a>&gt;</p>
6. Impacts of COVID-19 Pandemic on Fisheries	<p>✓ MAFF of Cambodia has decided to suspend the import of aquaculture temporarily. By totally banning imports, including illegal trade, the aim is to curb the decline in selling prices and promote the healthy growth of the domestic aquaculture industry.</p> <p>Source: The Phnom Penh Post, "Import bans to shore up aquaculture," January 10, 2021, &lt;<a href="https://www.phnompenhpost.com/business/import-bans-shore-aquaculture">https://www.phnompenhpost.com/business/import-bans-shore-aquaculture</a>&gt;</p> <p>✓ The Ministry predicts the actual output for this year will be 936,300 tons, representing a 3.06% increase from 2019. The Cambodian fisheries production in 2020:</p> <ul style="list-style-type: none"> <li>- Aquacultural: 400,400 tons</li> <li>- Freshwater fisheries: 413,200 tons</li> <li>- Marine fisheries: 122,700 tons</li> </ul> <p>Cambodia exported 3,590 tons of fisheries products worth more than USD8.33 million in 2020. This amount represents a decrease of 74.5% in volume from 14,100 tons in 2019.</p> <p>In 2020, Cambodia has 516 fishing communities, of which 475 are freshwater and 41 marines. There are 677 fisheries conservation areas, 895 community ponds, and 309 fish hatcheries, of which 269 are owned by farmers, with a total of 46,000 aquaculturists. There are also believed to be 6,000 frog and catfish farmers across the Kingdom.</p> <p>Source: B2B Cambodia, "Cambodia Fisheries production close to 1 million tonnes in 2020", December 24, 2020, &lt;<a href="https://www.b2b-cambodia.com/news/cambodia-fisheries-production-close-to-1-million-tons-in-2020/">https://www.b2b-cambodia.com/news/cambodia-fisheries-production-close-to-1-million-tons-in-2020/</a>&gt;</p>
7. Impacts on Japanese companies	<p>✓ In the lockdown (7/29-8/12) due to the spread of infection, the impact on production activities of Japanese companies is said to be small. It was because restricted corporate activities divided into red, orange, and yellow zones (zones) according to the infection situation were not located in areas or were not introduced in the Japanese companies' activities. On the other hand, the reduction in the number of employees when COVID-19 positive persons are found and the increase in costs for arranging housing and transportation for employees to be isolated continue to be a management risk. In addition, there is the most significant concern that the factory on the Thai side will be shut down due to the worsening infection situation in Thailand, which will affect parts procurement and parts supply. Source: JETRO, Business news, &lt;<a href="https://www.jetro.go.jp/biznews/2021/08/3bce8890764d1dfc.html">https://www.jetro.go.jp/biznews/2021/08/3bce8890764d1dfc.html</a>&gt;, (2021/8/6)</p> <p>✓ The Cambodian Japanese Chamber of Commerce requested the government to permit the early resumption of Japanese companies. While understanding the importance of lockdown, the suspension of operations for about two weeks not only adversely affects business continuity but also shifts orders to other countries, resulting in the loss of employment and investment opportunities throughout Cambodia. "There are precision parts produced only here in Cambodia, and there is concern that the supply chain to other countries will be affected, which will affect the global supply chain," said a Japanese company in Cambodia. Source: JETRO, Business news, &lt;<a href="https://www.jetro.go.jp/biznews/2021/04/e6c3425ed04fda86.html">https://www.jetro.go.jp/biznews/2021/04/e6c3425ed04fda86.html</a>&gt;, (2021/4/30)</p> <p>✓ The Ministry of Commerce and Yamato Green, a well-known agricultural development company, specializing in safe vegetable production, signed a memorandum of understanding (MoU) yesterday to develop a value-chain for agri-business production in Cambodia. Yamato Green's participation in developing a state-of-the-art production model will help boost local production today.</p> <p>Source: Khmer Times, "Commerce Ministry signs agri-business value-chain development MoU," January 7, 2021, &lt;<a href="https://www.khmertimeskh.com/50801454/commerce-ministry-signs-agri-business-value-chain-development-mou/">https://www.khmertimeskh.com/50801454/commerce-ministry-signs-agri-business-value-chain-development-mou/</a>&gt;</p>
8. Impacts on IT/DX	<p>✓ An uptick in business, especially in the delivery of food and essential items, enhances resilience in the wake of the crisis. Cambodian online startup "Grocerdel" delivers fresh farm produce and locally made products in the capital of Phnom Penh. Cambodia's e-commerce sector has experienced rapid growth within the past decade. Internet access, affordability, and uptake have</p>

Item	Description
	<p>ramped up significantly. However, most of these advances are limited to major urban areas, particularly the capital. According to the commerce ministry, the government has reduced the registration cost to ease the burden of formalization for startups. Moreover, the government also passed a consumer protection law last year to better safeguard the rights of online shoppers and businesses. Also, the private sector has rolled out various initiatives to improve the business environment. A draft cybercrime law is currently under review, but significant gaps remain in the legal framework of personal data protection and privacy.</p> <p>Source: UNCTAD, "Cambodia's digital startups help blunt economic impact of COVID-19", Jun 22, 2020, &lt;<a href="https://unctad.org/news/cambodias-digital-startups-help-blunt-economic-impact-covid-19">https://unctad.org/news/cambodias-digital-startups-help-blunt-economic-impact-covid-19</a>&gt;</p> <ul style="list-style-type: none"> <li>✓ Skymatix, a Japanese startup, will introduce "Iroha," a crop monitoring service that analyzes leaf color to grasp the growth status of crops based on images taken by drones. The company has been selected for the Asia DX project in Japan and ASEAN. A leaf color analysis service is introduced to Cambodia's agriculture, especially rice farming, Cambodia's main crop, testing and verifications of business feasibility is executed. From the perspective of agricultural modernization in Cambodia, even tractors are still in the early stages of introduction. But due to loose regulations on new technologies, the leapfrog phenomenon, in which developing countries jump over the technological developments of developed countries and achieve their development, is likely to occur. Spraying water and fertilizer appropriately by observing the growth situation using Iroha can reduce laboring hours and increase yield.</li> </ul> <p>Source: JETRO, "Agriculture as a Growth Industry, Gathering Expectations in Corona," March 31, 2021, &lt;<a href="https://www.jetro.go.jp/biz/areareports/special/2021/0302/a8b73a52ab8df8b0.html">https://www.jetro.go.jp/biz/areareports/special/2021/0302/a8b73a52ab8df8b0.html</a>&gt;</p>
9. Other Impacts, e.g., on occupational health, nutrition, consumers behavior change	<ul style="list-style-type: none"> <li>✓ Discussions on free trade agreements (FTAs) are underway with China and South Korea. According to the Cambodian government, exports of many agricultural products to China, such as pepper and fruits, will be subject to tax exemption after the FTA comes into effect, so they intend to expand exports. An FTA with China is scheduled to be issued in early 2021. Source: NIKKEI, "FTA signed with Cambodia and China, effective in early 2009", October 12, 2020, &lt;<a href="https://www.nikkei.com/article/DGXMZO64917380S0A011C2EAF000/">https://www.nikkei.com/article/DGXMZO64917380S0A011C2EAF000/</a>&gt;</li> <li>✓ The Ministry of Rural Development has estimated that USD91 million is needed to fix roads and water pumps damaged by recent floods. As part of the USD91 million estimated budget, USD900,000 has been allocated to restoring and repairing a total of 4,155 water pumps polluted and rusted by the floods. As the dry season approaches, this will become a pressing issue. Source: Khmer Times, "\$91 million needed to repair flood-damaged infrastructure", November 25, 2020, &lt;<a href="https://www.khmertimeskh.com/50785842/91-million-needed-to-repair-flood-damaged-infrastructure/">https://www.khmertimeskh.com/50785842/91-million-needed-to-repair-flood-damaged-infrastructure/</a>&gt;</li> <li>✓ Grab, Southeast Asia's leading company, announced GrabProtect, a comprehensive set of safety and hygiene tech features and stricter safety policies to minimize risks of the spread of COVID-19. Grab distributed care packs comprising rice, drinks, and hygiene essentials to 5,000 ride-hailing drivers in Phnom Penh as part of the program launch. Source: Khmer Times, "Grab launches new safety features," June 20, 2020, &lt;<a href="https://www.khmertimeskh.com/733029/">https://www.khmertimeskh.com/733029/</a>&gt;</li> </ul>

\*: No description is available for the section of "4.1" and "4.4" because relevant articles and papers were not available at the time of the survey, or the content of their impact was included in the other sections above.



### 2.5.9 Lao PDR

In Lao PDR, the situation and impacts of COVID-19 including measures taken in terms of restriction/control and support are summarized in Table 2.5.9, and issues peculiar to Lao PDR may be taken up as follows:

- 1) First two COVID-19 cases were found on March 24, 2020 in Lao PDR. The Lao government enacted a nationwide lockdown early in the outbreak, and as of February 14, 2021, the country recorded forty-five COVID-19 cases and no death cases. Therefore, the impact of COVID-19 in Lao PDR is mainly for socio-economic ones since domestic and regional supply chains collapsed due to the government-imposed lockdown. This increases unemployment rate and loss of household incomes, and therefore fears of food security crisis.
- 2) On April 11, 2021, community spread of COVID-19 occurred in Lao PDR for the first time in a year. In response to the rapid increase in the community spread, the capital city of Vientiane took measures to block the city from April 22, 2021. Furthermore, due to the community spread caused by large-scale clusters at garment factories, the government locked down the capital city of Vientiane on September 19. Since October 31, the lockdown had been reviewed for behavioral restrictions according to the risk of infection.
- 3) The COVID-19 outbreak slows the Lao growth, plunging Lao PDR's economy into its first recession since the Asian financial crisis in 1998.
- 4) The pandemic is partly to blame for the budget deficit rising from the equivalent of 4.7% of GDP in 2019 to 6.5% in 2020 despite fiscal consolidation efforts. Lower revenue collection and resulting cashflow problems could prove critical, given the government's large public debt burden at 60% of GDP and debt service costs in 2020 estimated at 1.2 billion USD.
- 5) According to World Bank, the economic recovery in 2021 is likely to be slower than previously anticipated, mainly owing to containment measures introduced to tackle a second wave of COVID-19 since mid-April 2021. GDP growth will rebound to 3.6 percent in 2021. The fiscal deficit is expected to narrow slightly to 4.7 percent in 2021, due to improved revenue collection and lower spending. However, following the second COVID-19 wave and lockdown, the total revenue-to-GDP ratio is projected to fall over the rest of the year, mostly on account of lower profits, income taxes, and non-tax revenues.
- 6) According to the World Bank, the agricultural sector is expected to grow by an estimated 2 % in 2020, up from - 0.9 % in 2019. Forestry and logging, fishing, crop, and livestock production are expected to rebound. This is partly helped by reduced imports of food and closure of customary checkpoints due to the lockdown which has reduced competition and facilitated local production. Fishing, crop, and livestock production are expected to grow at 3.2 %, 3 % and 1.5 % respectively in 2020. The flooding experienced in Savannakhet and other southern provinces in October had some negative impacts and moderated overall agricultural growth for 2020.
- 7) In 2021, Agriculture and industry are expected to drive growth, supported by solid external demand. There has been strong growth in agricultural exports, while industrial growth reflects a rebound in energy, mining, and export-oriented manufacturing and processing.
- 8) WFP, FAO and the Government of Lao PDR implemented "Rapid Assessment of Food Security and Agriculture in Lao PDR" in May 2020 and clarified major impacts of COVID-19 on agriculture. The agriculture sector, which accounts for 62.4% of total employment and 15.3% of GDP, also faced supply chain disruptions, affecting both exports and production inputs, especially during the lockdown. Luang Namtha province, which has an international border crossing with

China, is reported to have been the most severely affected. Immediate negative impacts have centered on cash crops linked to the exports and tourism industries.

- 9) The survey by WFP, FAO and the Government of Lao PDR clarified that the cash crops were affected by reduced local trade and exports. This was followed by non-timber forest products (28.3%), horticultural products (e.g., beans, pumpkins, cucumbers, kale, cabbage, etc. at 26%) and cattle (25.4%).
- 10) Aside from COVID-19 ripple effects, African Swine Fever on pig production, yellow-spined bamboo locusts and armyworms on Sweet corns and Maize production are major challenges in 2020 in Lao PDR.

**Table 2.5.9 Situation and Impacts of COVID-19 in Lao PDR**

Item	Description															
1. COVID-19 Pandemic General	<p><b>Trend of COVID-19 Pandemic Situation</b></p> <table border="1"> <thead> <tr> <th>Particulars</th> <th>At peak Per day</th> <th>Accumulated persons</th> <th>Per 1-million population</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>Infected</td> <td>9,577 (Dec. 06, 2021)</td> <td>118,880 (as of Jan. 11, 2022)</td> <td>16,340 (as of Jan. 11, 2022)</td> <td></td> </tr> <tr> <td>Death Case</td> <td>57 (Dec. 27, 2021)</td> <td>437 (as of Jan. 11, 2022)</td> <td>60 (as of Jan. 11, 2022)</td> <td></td> </tr> </tbody> </table> <p>Note: National population is 7,275,560. Source: WHO, "WHO Coronavirus (COVID-19) Dashboard" &lt;<a href="https://COVID19.who.int/">https://COVID19.who.int/</a>&gt; (Jan. 11, 2022)</p> <p><b>Lao People's Democratic Republic</b> 118,880 cases, 437 deaths</p> <p>Number of cases</p> <p>Number of deaths</p> <p>Date of report</p> <p>■ Cases — Deaths</p> <p><i>cases smoothed by 7-day moving avg</i></p>	Particulars	At peak Per day	Accumulated persons	Per 1-million population	Remarks	Infected	9,577 (Dec. 06, 2021)	118,880 (as of Jan. 11, 2022)	16,340 (as of Jan. 11, 2022)		Death Case	57 (Dec. 27, 2021)	437 (as of Jan. 11, 2022)	60 (as of Jan. 11, 2022)	
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	Bureau or the Prefectural Commerce and Industry Bureau after meeting the guidelines announced by the Coronavirus Infectious Diseases Control Committee on April 21, and the relevant ministries and agencies. Operation is permitted after witness inspection by a committee consisting of village organizations.
May 1, 2020	From May 4 to May 17, the government permits leave their homes and travel within their provinces, the public and private sectors are allowed to resume normal operations, operation of restaurants, etc. following the conditions and measures.
May 15, 2020	The government partially permitted movement between provinces, reopening of work and schools, foreigners to return to their home countries, etc. following the conditions and measures from May 18 to June 1.
May 16, 2020	The government permitted reopening of tourism, hotel, resorts, guest house, restaurants, café, hair salons and barber, massage, and spas, following the measures for COVID-19 prevention. The opening should be until 21:30.
May 29, 2020	The government announced new measures to reduce and contain the spread of COVID-19. The measures, which will be in effect from June 2 to 30, 2020, and relax some of the restrictions announced by the Government of Laos on May 15; Allow projects, businesses, and factories to operate as usual by following the conditions and preventive measures against infection, have schools and academic institutions under their supervision to reopen the classrooms, port competitions are allowed, but without an audience.
June 2, 2020	The government permitted reopening of the projects and business on April 20 and eased the condition on May 11 and June 2.
June 30, 2020	From July 1 to 30, sports competitions with spectators, casinos, and some social gatherings are allowed to resume
July 29, 2020	On Aug 1st, Government announced it would continue to implement COVID-19 prevention measures through August.
April 21, 2021	From 6:00 am on April 22 to 24:00 on May 5, Lao PDR introduced a ban on traffic between the capital Vientiane and other districts and a ban on going out from home in the capital in principle. Business of goods transportation, factories, financial institutions, medical facilities, pharmacies, mail, telecommunications, electricity, water, restaurants, cafes, etc. is permitted.
May 5, 2021	Regarding Prime Minister Ordinance No. 15 dated April 21, a notice was issued to extend the deadline for lockdown of the city by 15 days from 0:00 on May 6 to 24:00 on May 20.
May 20, 2021	The Prime Minister's Office has announced that it will extend the city lockdown, which has been in effect since April 22, until 24:00 on June 4. As an additional measure, the city of Vientiane was divided into zones according to the outbreak situation of newly infected people of the COVID-19. And the introduction of new infection spread prevention measures was notified to impose different behavioral restrictions for each zone.
June 4, 2021	The Prime Minister's Office has announced that the period of urban lockdown measures will be extended from April 22 to June 19. With the same notification, some regulatory measures have been relaxed, such as enabling land passenger transportation between prefectures without the infections regarding the traffic of people.
August 3, 2021	The Prime Minister's Office has extended the implementation period of the city lockdown measures to August 18.
August 13, 2021	Declaration from the minister to continue the measures to prevent COVID-19 from 19 August to 2 September 2021
Source: JETRO, < <a href="https://www.jetro.go.jp/world/COVID-19/asia/">https://www.jetro.go.jp/world/COVID-19/asia/</a> >	
(accessed on February 22, 2021)	
* Information after April 21, 2021 is obtained through local news and interviews.	
<b>Support Measures (Economic Responses) against COVID-19</b>	
<b>Date</b>	<b>Description</b>
2020/3/20	On March 20, the Lao cabinet approved a preliminary 13-part stimulus package during its monthly meeting. Only about 11 million USD was allocated to COVID-19 prevention and control.
2020/4/10	The government approved relief measures on April 10 exempting micro- and small businesses from paying income tax for three months.
2020/10/16	On October 16, the Lao government approved a resolution to stimulate economic growth by ramping up manufacturing.
Source: CSIS, "Southeast Asia Covid-19 Tracker" < <a href="https://www.csis.org/programs/southeast-asia-program/southeast-asia-COVID-19-tracker-0">https://www.csis.org/programs/southeast-asia-program/southeast-asia-COVID-19-tracker-0</a> >	

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3. Impacts of COVID-19 Pandemic on Economy, e.g., economic growth (GDP), employment (unemployment, working hours), migrant work, remittance	<p>(accessed on February 22, 2021)</p> <p>✓ The data on the GDP growth rate and fiscal deficit in Laos that appear in "3. Impacts of COVID-19 Pandemic on Economy" differ depending on the time of data acquired and the data source. The data as of March 2022 are summarized as follows. Therefore, the data in the text is described as reference information at that time.</p> <p><b>GDP growth rate and fiscal deficit (% of GDP) from 2019 to 2021 in Lao PDR</b></p> <table border="1"> <thead> <tr> <th colspan="2"></th> <th>2019</th> <th>2020</th> <th>2021</th> </tr> </thead> <tbody> <tr> <td rowspan="2">GDP grown</td> <td>ADB</td> <td>4.7%</td> <td>-0.5%</td> <td>2.3% (forecast)</td> </tr> <tr> <td>World Bank</td> <td>5.5%</td> <td>0.5%</td> <td>3.6% (forecast)</td> </tr> <tr> <td rowspan="2">Fiscal deficit (% of GDP)</td> <td>ADB</td> <td>4.7%</td> <td>6.5% (forecast)</td> <td>N.A.</td> </tr> <tr> <td>World Bank</td> <td>5.1%</td> <td>7.6% (forecast)</td> <td>4.7% (forecast)</td> </tr> </tbody> </table> <p>✓ Source: World Bank, World Bank Open Data, &lt;<a href="https://data.worldbank.org/">https://data.worldbank.org/</a>&gt; (March 2022) World Bank, Lao PDR Economic Monitor Reports,</p> <p>✓ &lt; <a href="https://www.worldbank.org/en/country/lao/publication/lao-pdr-economic-updates">https://www.worldbank.org/en/country/lao/publication/lao-pdr-economic-updates</a> &gt; (March 2022) ADB, Economic indicators for the Lao PDR, &lt;<a href="https://www.adb.org/countries/lao-pdr/economy">https://www.adb.org/countries/lao-pdr/economy</a>&gt; (March 2022) ADB, "Asian Development Outlook 2020 Update : Wellness in Worrying Times", September 2020</p> <p>✓ As of September 2020, the COVID-19 outbreak, and global economic downturn slowed the economy sharply in the first half of 2020. While agriculture recovered from last year's severe flood and drought, industry and services were hit hard by slower growth in exports and credit and by fewer tourist arrivals. Recovery over the medium term is expected to be slow.</p> <p>✓ COVID-19 effects include closed factories, disrupted supply chains, deterred tourists, and reduced consumer spending. Major construction projects and large increases in hydroelectric production are nevertheless projected to sustain industry growth by 1.4% in the full year. Services are projected to contract by 5.5% in 2020. Agriculture is expected to grow by 1.9% in 2020, somewhat slower than the 2.5% predicted by "Asian Development Outlook (ADO) 2020 Supplement" for lack of rain. Disrupted inflows of foreign direct investment will shrink all investment by 17.5%.</p> <p>✓ The pandemic is partly to blame for the budget deficit rising from the equivalent of 4.7% of GDP in 2019 to 6.5% in 2020 despite fiscal consolidation efforts. Lower revenue collection and resulting cashflow problems could prove critical in the first half, given the government's large public debt burden at 60% of GDP and debt service costs in 2020 estimated at 1.2 billion USD.</p> <p>✓ Average inflation tripled from 2.0% year on year in the first half of 2019 to 5.9% a year later as Lao kip depreciation and high prices for food and imported goods, notably electronics, overwhelmed lower oil prices. Inflation is expected to ease in the second half as demand softens and food production recovers but still exceeds the "Asian Development Outlook (ADO) 2020 Supplement" forecast in the whole of 2020.</p> <p>✓ Exports and imports are expected to contract by 12.0% and 15.8% year on year, respectively in 2020. Source: ADB, "Asian Development Outlook 2020 Update : Wellness in Worrying Times", September 2020</p> <p>✓ In January 2021, the COVID-19 outbreak has intensified the growth slowdown, plunging Lao PDR's economy into its first recession since the Asian financial crisis in 1998.</p> <p>✓ The COVID-19 has affected livelihoods and poses a serious risk to Lao PDR's progress on poverty reduction. The poverty rate (measured as 3.2 USD a day, 2011 PPP) is expected to increase by at least 1.7 % in 2020, as compared with a non-COVID-19 scenario. The sharp drop in domestic revenue mobilization has led to worsening of the fiscal situation and a growing debt problem.</p> <p>✓ Despite the export market disruption in the first half of 2020, the agricultural sector is expected to grow by an estimated 2 % in 2020, up from -0.9 % in 2019. Forestry and logging, fishing, crop, and livestock production are expected to rebound. This is partly helped by reduced imports of food and closure of customary checkpoints due to the lockdown which has reduced competition and facilitated local production. Forestry and logging are expected to grow by an estimated 7.5 % in 2020, aided by strong external demand for wood and wood pulp. In the first eleven months of 2020, wood pulp export grew by 15.2 % from the same period last year. Fishing, crop, and livestock production are expected to grow at 3.2 %, 3 % and 1.5 % respectively in 2020. The flooding experienced in Savannakhet and other southern provinces in October had some negative impacts and moderated overall agricultural growth for 2020.</p>			2019	2020	2021	GDP grown	ADB	4.7%	-0.5%	2.3% (forecast)	World Bank	5.5%	0.5%	3.6% (forecast)	Fiscal deficit (% of GDP)	ADB	4.7%	6.5% (forecast)	N.A.	World Bank	5.1%	7.6% (forecast)	4.7% (forecast)
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	<p>Source: World Bank, "Lao Economic Monitor, January 2021: Supporting Economic Recovery", January 2021</p> <ul style="list-style-type: none"> <li>✓ According to World Bank, the economic recovery in 2021 is likely to be slower than previously anticipated, mainly owing to containment measures introduced to tackle a second wave of COVID-19. GDP growth will rebound to 3.6 percent in 2021. Agriculture and industry are expected to drive growth, supported by solid external demand. There has been strong growth in agricultural exports, while industrial growth reflects a rebound in energy, mining, and export-oriented manufacturing and processing.</li> <li>✓ The fiscal deficit is expected to narrow slightly to 4.7 percent in 2021, due to improved revenue collection and lower spending. Domestic revenues rose by 12 percent year-on-year in the first half of 2021, supported by a strong rebound in revenues. However, following the second COVID-19 wave and lockdown, the total revenue-to-GDP ratio is projected to fall over the rest of the year, mostly on account of lower profits, income taxes, and non-tax revenues.</li> <li>✓ While the labor market recovered in the first quarter of 2021, the second outbreak is threatening jobs and livelihoods. Employment among adults dropped sharply in May 2021. Around a third of family businesses are temporarily closed, and of those still open, more than half have seen revenue decline.</li> <li>✓ Evidence suggests that around 16 percent of Lao firms have invested in digital technologies or new delivery methods associated with lower sales losses.</li> </ul> <p>Source: World Bank, "Lao PDR Economic Update, August 2021: A Path to Recovery", &lt;<a href="https://www.worldbank.org/en/news/feature/2021/08/20/lao-pdr-economic-update-august-2021-a-path-to-recovery">https://www.worldbank.org/en/news/feature/2021/08/20/lao-pdr-economic-update-august-2021-a-path-to-recovery</a>&gt; (accessed on August 27, 2021)</p> <ul style="list-style-type: none"> <li>✓ The COVID-19 pandemic has had a devastating effect on the tourism industry. It disrupted tourism, severely affecting businesses in the sector, which deprived up to 70-80% of their total revenue (from the direct and indirect workforce in the tourism sector).</li> </ul> <p>Source: UNDP, "Lao PDR Tourism COVID-19 Recovery Roadmap for 2021-2025" <a href="https://www.la.undp.org/content/lao_pdr/en/home/library/poverty/lao-tourism-recovery-road-map-from-the-impact-of-covid-19.html">https://www.la.undp.org/content/lao_pdr/en/home/library/poverty/lao-tourism-recovery-road-map-from-the-impact-of-covid-19.html</a> (Access January 11, 2021)</p> <ul style="list-style-type: none"> <li>✓ To monitor the social and economic impacts of the pandemic, the World Bank is conducting a series of COVID-19 Rapid Monitoring Phone Surveys in Lao PDR. The resulting data help provide insights into the effects of the pandemic on household well-being. The results are following. <ul style="list-style-type: none"> <li>• The second wave of COVID-19 and its lockdown measures hit employment. Around 51% of respondents were without work or had to stop working in April–May 2021, against 17% in February–March 2021.</li> <li>• Employment disruption is widespread in the services sector. More than half of workers in wholesale and retail trade and other services had to stop working or switch jobs during the lockdown.</li> <li>• By May 2021, 5.5% of businesses had permanently closed, while 33% were temporarily closed. Among businesses that remained in operation, 65% experienced a fall in revenue from pre-lockdown levels.</li> <li>• Around 43% of households experienced a decline in household income in March 2021 relative to before lockdown.</li> <li>• The ratio of respondents who were very concerned about food insecurity for people in their community increased from 16% before the second wave arrived, to 26% during the lockdown.</li> </ul> </li> </ul> <p>Source: World Bank, "Monitoring the Impact of COVID-19 in Lao PDR" &lt;<a href="https://www.worldbank.org/en/country/lao/brief/monitoring-the-impact-of-covid-19-in-lao-pdr">https://www.worldbank.org/en/country/lao/brief/monitoring-the-impact-of-covid-19-in-lao-pdr</a>&gt; (Accessed January 11, 2022)</p>
4. Impacts of COVID-19 Pandemic on Agriculture General, e.g., production, consumption, export/import, E-commerce transaction	<ul style="list-style-type: none"> <li>✓ In May 2020, the agriculture sector, which accounts for 62.4% of total employment and 15.3% of GDP, also faced supply chain disruptions, affecting both exports and production inputs, especially during the lockdown. Luang Namtha province, which has an international border crossing with China, is reported to have been the most severely affected. Immediate negative impacts have centered on cash crops linked to the exports and tourism industries.</li> </ul> <p>Source: UNSDG, "UN Lao PDR Socio-Economic Response Framework to COVID-19" October 2020</p> <ul style="list-style-type: none"> <li>✓ While on average, significant reductions in agricultural activity or access to inputs were not reported, significant disparities were observed across provinces, with those in Luangnamtha perceiving significant negative impacts across issues. In terms of agricultural sub-sectors, cash crops (e.g., cardamom, rubber, tea, coffee, etc.) were by far the most impacted, followed by</li> </ul>

Item	Description
change, price chance	<p>horticulture. Provinces perceived to be most impacted: Attapeu, Bokeo, Bolikhamxai, Luangnamtha, Savannakhet and Xaixomboun</p> <p>Source : WFP, FAO &amp; The Government of Lao PDR, "Rapid Assessment of Food Security and Agriculture in Lao PDR", May 2020</p> <ul style="list-style-type: none"> <li>✓ A moderate recovery in agriculture is expected in 2021, largely due to growth in livestock trade. But the planting of food crops has been delayed by cooler weather and water shortages.</li> <li>✓ Rising food prices due to COVID-19 and natural disasters pushed up the Lao PDR's inflation to 5.1% in 2020.</li> </ul> <p>Source: ADB, "Macroeconomic Management Key to Recovery in Lao PDR — ADB", April 28, 2021, &lt;<a href="https://www.adb.org/news/macroeconomic-management-key-recovery-lao-pdr-adb">https://www.adb.org/news/macroeconomic-management-key-recovery-lao-pdr-adb</a>&gt; (accessed on August 27, 2021)</p> <ul style="list-style-type: none"> <li>✓ The COVID-19 pandemic has disrupted supply chains resulting in localized food price increases, has contributed to rising unemployment and is estimated to push more than 200,000 people into poverty. In addition, many returning migrant workers have led to falling remittances. Though the pandemic has pointed again to the importance of local production and in-country food systems is also vital that disruptions in international trade are minimized.</li> </ul> <p>Source: SYNTHESIS REPORT, Pathways to Sustainable Food Systems, Food Systems Summit 2021: Member State Dialogues in Lao PDR &lt;<a href="https://laopdr.un.org/en/137391-synthesis-report-pathways-sustainable-food-systems-food-systems-summit-2021-member-state">https://laopdr.un.org/en/137391-synthesis-report-pathways-sustainable-food-systems-food-systems-summit-2021-member-state</a>&gt; (accessed August 27, 2021)</p>
4.1 Input for Agriculture	<ul style="list-style-type: none"> <li>✓ Luangnamtha seems to have been particularly affected based on the respondents' perceptions of the survey by WFP, FAO and the Government of Lao PDR. With regards to agriculture, respondents noted that it was very difficult to obtain agricultural inputs, including fertilizers, animal feed, tools, and agricultural equipment, with some items in short supply and others experiencing significant price increases. Sugarcane harvest may have been particularly impacted as there was no movement and thus no access to external labour during this time.</li> <li>✓ While the level of agricultural activities remained relatively stable (at least on average), almost half of respondents reported some (36%) or major (7%) problems in accessing essential inputs, such as seeds and fertilizers. In line with these findings, 37% of respondents noted that there were issues with input suppliers and transport services for the provision of production inputs.</li> <li>✓ There was some disparity between provinces, with, for example, 69% of respondents in Luangnamtha reporting "major problems" with the supply of agricultural inputs. In Luangnamtha, 93% of respondents replied that there were issues with input suppliers and transport services, with high rates also seen in Bokeo (94%) and Bolikhamxai (91%). These results could be linked with the importance of border trade in these provinces.</li> <li>✓ In addition to inputs, 35% of respondents reported reduced (30%) or much reduced (5%) access to external labour. Luangnamtha and Bokeo were among the provinces where this was perceived to be a more significant issue.</li> </ul> <p>Source: WFP, FAO &amp; The Government of Lao PDR, "Rapid Assessment of Food Security and Agriculture in Lao PDR", May 2020</p>
4.2 Production for Agriculture	<ul style="list-style-type: none"> <li>✓ Many hectares of trees and crops in Luang Prabang province have been ravaged by yellow-spined bamboo locusts and armyworms, prompting authorities to spray chemicals to prevent further destruction of the vegetation. In 2019, armyworms found their way into nine provinces, including Oudomxay, Huaphan, Xieng Khuang, Luang Prabang, Vientiane, Borikhamxay, Xayaboury and Savannakhet. The total impacted area in the nine provinces was more than 92,000 hectares. More than 27,300 hectares accounted for 33 % of the worst-affected sweet corn fields. Oudomxay, Xayaboury and Xieng Khuang provinces suffered the most from this outbreak.</li> </ul> <p>Source: Vientiane Times, "Luang Prabang battles locust and armyworm outbreaks", May 20, 2020 &lt;<a href="https://vientianetimes.org.la/freeContent/FreeContent_Luang95.php?fbclid=IwAR115U72O1Uj3PMm6rhzXi6IS3zeG9Y6BSTileD4Ec_q36fdKE0JnO9i_Z4">https://vientianetimes.org.la/freeContent/FreeContent_Luang95.php?fbclid=IwAR115U72O1Uj3PMm6rhzXi6IS3zeG9Y6BSTileD4Ec_q36fdKE0JnO9i_Z4</a>&gt;</p>
4.3 Processing for Agriculture	—
4.4 Retail, Distribution for Agriculture	<ul style="list-style-type: none"> <li>✓ The movement of traders/middlemen and overall trade and labour flows were restricted following the lockdown instituted by the Government on 29 March 2020. This has had visible impacts on the availability and prices of food in some provinces, including Luangnamtha and Bokeo.</li> <li>✓ Markets were also significantly impacted, possibly in part due to the absence of Vietnamese traders, who constitute most mobile traders. In addition, Luangnamtha may have been disproportionately affected as its international borders – with Myanmar, China as well as Thailand through Bokeo – are significant in terms of trade.</li> </ul>

Item	Description
	<ul style="list-style-type: none"> <li>✓ According to the survey by WFP, FAO and the Government of Lao PDR, cash crops were by far most affected by reduced local trade and exports. This was followed by non-timber forest products (28.3%), horticultural products (e.g., beans, pumpkins, cucumbers, kale, cabbage, etc. at 26%) and cattle (25.4%).</li> <li>✓ Source: WFP, FAO &amp; The Government of Lao PDR, "Rapid Assessment of Food Security and Agriculture in Lao PDR", May 2020</li> </ul>
4.5 Market, Consumer for Agriculture	<ul style="list-style-type: none"> <li>✓ As of May 2020, the commodities seeing the largest price increases were eggs (45%), condiments (34.7%), pork (31.9%) and rice (23.2%). The increase in prices of eggs may be linked to a false rumor that spread around January/ February that eating eggs may protect against COVID-19. In addition, Thailand banned the exports of eggs, which may have contributed to higher prices. The increase in prices of condiments may be linked to the poorly reduced activity of middlemen and inter-province trade.</li> <li>✓ The price increases for pork may be the result of lasting impacts of the African Swine Fever, which hit Laos hard in 2019. The FAO/WFP Crop and Food Security Assessment Mission (CFSAM) reported that although widespread outbreaks of African Swine Fever (ASF) were reported during the second half of 2019, no new cases have been reported since November 2019 and local authorities declared that the disease had been contained. Source: WFP, FAO &amp; The Government of Lao PDR, "Rapid Assessment of Food Security and Agriculture in Lao PDR", May 2020</li> <li>✓ A weakened local currency (LAK) has caused the cost of living to rise in Laos, as well as affecting businesses amid the COVID-19 pandemic. Food prices have increased by 4.71 percent this year, while clothing prices have increased by 4.17 percent, furniture prices have increased by 3.84 percent, and medicines have increased by 4.93 percent.</li> <li>✓ Transportation costs have increased by 1.3 percent, and valuable items have increased by 10 percent, according to a report issued by the Economic Research Institute for Industry and Trade (ERIT), under the Ministry of Industry and Commerce.</li> <li>✓ The COVID-19 crisis has influenced businesses in Laos, as well as the weakened Lao currency, which has driven up product prices with most raw materials imported. Source: The Laotian Times, "Cost of Living Rises as Lao Currency Depreciates", &lt; <a href="https://laotiantimes.com/2021/03/17/cost-of-living-rises-as-lao-currency-depreciates/">https://laotiantimes.com/2021/03/17/cost-of-living-rises-as-lao-currency-depreciates/</a>&gt; (accessed on August 27, 2021)</li> </ul>
5. Impacts of COVID-19 Pandemic on Livestock	—
6. Impacts of COVID-19 Pandemic on Fisheries	<ul style="list-style-type: none"> <li>✓ Lao PDR has temporarily banned the import of seafood from Thailand after a new outbreak of COVID-19 in the kingdom. Health authorities are concerned that seafood could be contaminated with the virus, so imports have been halted with immediate effect.</li> <li>✓ The ban was implemented after Thailand's Samut Sakhon district became the epicenter of a new COVID-19 outbreak, with over 1,000 people testing positive after a shrimp wholesaler contracted the virus last week. The ban has had a direct effect on seafood importers in Lao PDR. Source: Vientiane times, "Laos bans import of Thai seafood after COVID-19 outbreak", December 25, 2020 &lt;<a href="https://www.vientianetimes.org.la/freeContent/FreeContent_Laos251.php">https://www.vientianetimes.org.la/freeContent/FreeContent_Laos251.php</a>&gt;</li> <li>✓ The Government of Lao PDR has extended COVID-19 restriction measures for another 15 days until 30 October. Boats may be used for fishing activities in rivers that act as borders with neighboring countries between 6 am and 6 pm only. Local authorities are tasked with strictly monitoring and reporting all boat activities. Source: The Laotian Times, Laos Covid Taskforce Extends Restrictions For Another 15 Days, October 15, 2021, &lt;<a href="https://laotiantimes.com/2021/10/15/laos-covid-taskforce-extends-restrictions-for-another-15-days/">https://laotiantimes.com/2021/10/15/laos-covid-taskforce-extends-restrictions-for-another-15-days/</a>&gt;</li> </ul>
7. Impacts of COVID-19 Pandemic on Japanese companies	<ul style="list-style-type: none"> <li>✓ The Japanese Chamber of Commerce and Industry of Laos (JCCIL) and the JETRO Vientiane Office have requested the Lao government to consider implementing urban lockdown measures. The three main points are (1) deregulation of factory operations and workers in the factory, (2) deregulation of imports, customs clearance, and domestic transportation of international cargo, and (3) compensation measures by temporarily suspending factory operations. Source: JETRO, Business news, &lt;<a href="https://www.jetro.go.jp/biznews/2021/05/28a19bf4ce901d5e.html">https://www.jetro.go.jp/biznews/2021/05/28a19bf4ce901d5e.html</a>&gt;, (2021/5/11)</li> <li>✓ On April 22, the Ministry of Commerce and Industry of Laos announced that it would cancel the</li> </ul>

Item	Description
	<p>measures announced at the end of 2020 to temporarily ban the import of marine products from COVID-19-infected countries from May 1. The owner of a Japanese restaurant in the capital city of Vientiane said, "While the import ban was in place, it was very difficult to purchase high-quality Japanese marine products. We would like to inform you that you can now use Japanese seafood as it is, and appeal to more people to know the deliciousness of Japanese ingredients."</p> <p>Source: JETRO, Business news, &lt;<a href="https://www.jetro.go.jp/biznews/2021/04/e791ef0e211bcd1c.html">https://www.jetro.go.jp/biznews/2021/04/e791ef0e211bcd1c.html</a>&gt;, (2021/4/27)</p> <p>✓ The negative impacts of COVID-19 were "restrictions of travel and immigration", "domestic movement restrictions", "domestic market stagnation" and "export stagnation". On the other hand, the impact on "rising logistics costs" and "rising procurement costs" was small. These countermeasures include "implementing online business negotiations," "reducing salaries and bonuses," "reviewing products and services," "changing and expanding suppliers," and "reviewing sales destinations."</p> <p>Source, JETRO, "The new coronavirus and its impact on Japanese companies", &lt;<a href="https://www.asean.or.jp/ja/wp-content/uploads/sites/2/20200909_Presentation_JETRO_Mr.Na_kajima.pdf">https://www.asean.or.jp/ja/wp-content/uploads/sites/2/20200909_Presentation_JETRO_Mr.Na_kajima.pdf</a>&gt;, (2020/9/9)</p>
8. Other Impacts, e.g., on occupational health, nutrition, consumers behavior change	<p>✓ Despite largely unchanged agricultural activity, farmers have been unable to sell their produce at normal rates to middlemen/ traders who have slowed operations as markets have been intermittently closed. As the pandemic reduces employment opportunities for daily laborers in the provinces, many will face acute rice shortages, hunger, and limited access to diversified food. As a result, they are likely to fall back to less diverse diets leading to increased rates of malnutrition.</p> <p>✓ Food shortages and malnutrition will be more prevalent in the poorest households, especially those in rural areas, those dependent on daily labor, and those of the Mon-Khmer ethnolinguistic groups. Similar findings on consumption were observed among pregnant women, breastfeeding mothers, and small children; 29% noticed a change to consumption, with most reporting an inability to consume the five main food groups because of price increases and supply shortages of products such as meats. The survey of 1,200 households by UNDP found that 48.9% have reduced spending on food or have simply reduced food consumption; 15.2% expressed an inability to pay for basic food.</p> <p>Source: Socio-economic impact assessment of COVID-19 on Lao PDR, 08 April 2021 <a href="https://laopdr.un.org/en/124250-socio-economic-impact-assessment-covid-19-lao-pdr">https://laopdr.un.org/en/124250-socio-economic-impact-assessment-covid-19-lao-pdr</a> (accessed 20/8/2021)</p>

"4.3 Processing for Agriculture" and "5. Impacts of COVID-19 Pandemic on Livestock" are not described since no articles or papers clearly investigated and described about the impact were found at the time of the survey.

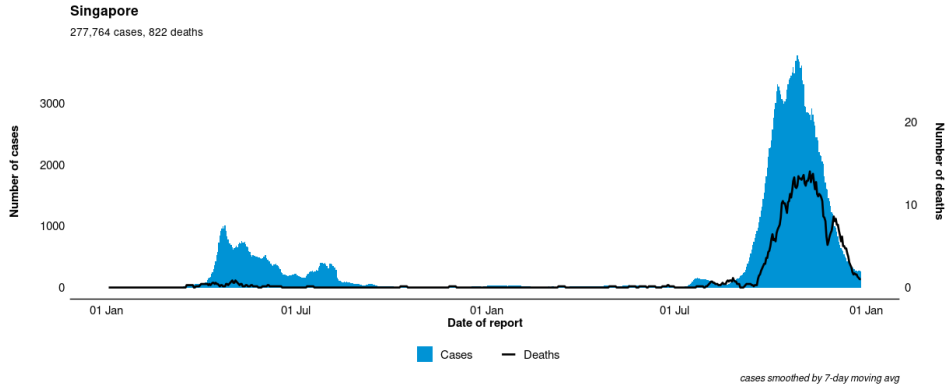


### 2.5.10 Singapore

In Singapore, the situation and impacts of COVID-19 including measures taken in terms of restriction/control and support are summarized in Table 2.5.10, and issues peculiar to Singapore may be taken up as follows:

- 1) The first COVID-19 case was found on January 23, 2020, in Singapore, and its infection had increased, showing the first peak in late April to May 2020 and showed the day peak of around 1,000 cases for infection and started decreasing after that. As of December 2021, the average number of infected people per day has decreased to approximately 200. As of December 28, 2021, the total number of infected people was about 277,764, and the total number of deaths was 822.
- 2) Singapore initially contained the virus through widespread testing, comprehensive contact tracing, and mandatory, well-enforced quarantines. But then, the city-state suffered a sharp increase in cases linked to foreign workers' dormitories. It has since flattened the curve with the help of an innovative contact tracing mobile app and the token system called TraceTogether. However, migrant workers continue to suffer from infections disproportionately.
- 3) For the whole of 2020, the Singapore economy contracted by 5.4%, a reversal from the 1.3% growth in 2019. By sectors, the manufacturing sector expanded by 7.3% in 2020, a turnaround from the 1.5 % contraction in 2019. The sector's growth was supported by robust expansions in the biomedical manufacturing, electronics, and precision engineering clusters. Services producing industries shrank by 6.9% in 2020, reversing the 2.0% growth in 2019. Among the services sectors, only the finance & insurance and, information & communications sectors expanded in 2020.
- 4) Singapore currently imports more than 90% of its food from more than 170 countries and regions. Import source diversification is our core strategy. The main import partner is France, Malaysia, the UK, China, the USA, Indonesia, etc. The Singaporean government has set a goal to raise the self-sufficiency rate of agricultural and aquacultural products from less than 10% to 30% by 2030, "30 by 30." As a part of the government's strategy, Singapore's Ministry of the Environment and Water Resources and Singapore Food Agency (SFA) provided S \$ 30 million to local private companies that produce food in August 2020. The new support measure subsidizes companies that cultivate eggs, leafy vegetables, and fish.
- 5) Singapore's vegetable production in 2020 was 22,793 tons, a decrease compared to 2018 and 2019. Similarly, fish production also declined, reaching its lowest level since 2014. It was due to a decrease in the number of workers from overseas due to the COVID-19 pandemic, the closure of markets, a buying spree that did not lead to improved sales of fresh produce, and the closure of hotels and restaurants, which affected B-to-B sales. On the other hand, egg production is highly automated, so the production increases regardless of the labor force.
- 6) Infocomm Media Development Authority (IMDA) and other related authorities promote the Hawkers Go Digital Programme that helps hawkers safely operate in the post-COVID future. The Hawkers Go Digital Programme, launched on June 8, 2020. has made good progress, with a growing number of stallholders offering e-payments and receiving their E-payment Bonus. More than 2,000 stallholders, as of existing 3,500 already had received the E-payment Bonus in June 2020.

**Table 2.5.10 Situation and Impacts of COVID-19 in Singapore**

Item	Description																														
1. COVID-19 Pandemic General	<p><b>The trend of COVID-19 Pandemic Situation</b></p> <table border="1"> <thead> <tr> <th>Particulars</th> <th>At peak Per day</th> <th>Accumulated persons</th> <th>Per 1-million population</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>Infected</td> <td>4,248 (Oct. 30, 2020)</td> <td>277,764 (as of Dec. 28)</td> <td>47,478 (as of Dec. 28)</td> <td></td> </tr> <tr> <td>Death Case</td> <td>18 (Nov. 17, 2020)</td> <td>822 (as of Dec. 28)</td> <td>140 (as of Dec. 28)</td> <td></td> </tr> </tbody> </table> <p>Note: National population is 5,850,342.</p>  <p>Source: WHO, "WHO Coronavirus (COVID-19) Dashboard", &lt;<a href="https://COVID19.who.int/">https://COVID19.who.int/</a>&gt; (December 28, 2021)</p>	Particulars	At peak Per day	Accumulated persons	Per 1-million population	Remarks	Infected	4,248 (Oct. 30, 2020)	277,764 (as of Dec. 28)	47,478 (as of Dec. 28)		Death Case	18 (Nov. 17, 2020)	822 (as of Dec. 28)	140 (as of Dec. 28)																
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Control and Support Measures of the COVID-19 Pandemic	<p><b>Control Measures of COVID-19 (mentioned for the nationwide and capital area only)</b></p> <table border="1"> <thead> <tr> <th>Date</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>2020/1/23</td> <td>First COVID-19 infected found (imported from Wuhan, China).</td> </tr> <tr> <td>2020/1/31</td> <td>Singapore banned the entry of all travelers from China.</td> </tr> <tr> <td>2020/3/3</td> <td>Malaysia closed the border with Singapore.</td> </tr> <tr> <td>2020/3/20</td> <td>The government established and distributed "TraceTogether," a contact tracking application that tracks people infected with the COVID-19 and notifies them of the possibility of close contact.</td> </tr> <tr> <td>2020/3/22</td> <td>The city-state barred all short-term visitors from entering Singapore. 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	2020/10/20	Education Minister and co-chair of the multi-ministry task force on Covid-19 Lawrence Wong announced that the nightlife industry would likely not resume its activities even after Singapore enters Phase 3 of its reopening.												
	2020/11/21	Singapore's Ministry of Health announced that the country would tighten border measures with Malaysia, given cases' resurgence.												
	2020/12/14	The government announced to enter Phase 3 of its reopening on December 28. Social gatherings of up to eight people will be permitted, and capacity limits in public places will be increased.												
	2020/12/30	Singapore began vaccinating healthcare workers. Singapore has started vaccinating seniors against Covid-19, with residents in Tanjong Pagar and Ang Mo Kio receiving their first dose of the vaccine on January 27.												
	2021/4/5	Regarding work restrictions in the workplace, 50% of all staff can work has been relaxed to 75%.												
	2021/5/8	Reinforce the ratio of workers to 50% again. Limit the maximum number of people who can attend the meeting from 8 to 5. Due to the spread of the infection, it returned to the second stage from May 8 to 30th.												
	2021/5/16	Since the number of infected people with the COVID-19, including mutant strains, increased, the maximum number of people in the meeting was reduced from 5 to 2. Infection control measures have been strengthened, including the inability to eat at restaurants.												
	2021/7/22	From July 22 to August 18, the transition from the third stage (Phase 3 strict alert) to the second stage (Phase 2 severe alert) of the resumption of economic activity. In addition to cabaret, the COVID-19 infection has spread further among fresh fish dealers, and infection control measures have been strengthened, such as banning meals in restaurants again. Regarding the work system in the workplace, working from home will continue to be the default (basic).												
	2021/7/31	Eight market and food center stalls closed for Covid-19 have announced that they will be exempt from service, maintenance, and temporary occupational license fees.												
	2021/9/27	The COVID-19 prevention measures were restarted until October 24. (extended to November 21)												
	2021/11/22	Some of the COVID-19 prevention measures that had been in place since September 27 were mitigated. For example, the maximum number of people who can eat together in a restaurant was increased from two to five.												
<p>Source: 1. JETRO, "Support for COVID-19 in Asia," &lt;<a href="https://www.jetro.go.jp/world/COVID-19/asia/">https://www.jetro.go.jp/world/COVID-19/asia/</a>&gt; (Dec 2021), 2. CSIS, "Southeast Asia Covid-19 Tracker," &lt;<a href="https://www.csis.org/programs/southeast-asia-program/southeast-asia-covid-19-tracker-0">https://www.csis.org/programs/southeast-asia-program/southeast-asia-covid-19-tracker-0</a>&gt; (Dec 2021)</p>														
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2020/8	The government allocated an additional \$5.8 billion to support the construction, retail, food services, and arts sectors. The aviation industry will receive \$136.7 million in other relief, while the tourism industry will be supported by \$233.9 million in domestic travel vouchers. The government has also launched a billion-dollar scheme to help biomedical sciences and financial services companies to hire local talent.
2020/9/4	The government passed amendments to its Covid-19 Act, expanding rent relief efforts.
2020/9/29	The Ministry of Health announced that all Singaporeans would receive a one-time Covid-19 subsidy to offset the net increase in premiums for their healthcare plans.
2020/10/28	470,000 lower-income Singaporean workers had received Workfare Special Payment payouts from the Ministry of Finance.
2020/11/2	Deputy Prime Minister launched a \$2.9 million fund for Singaporean households impacted by Covid-19-related job losses, with each household receiving a one-time payment of approximately \$370.
2020/11/3	President formally approved Singapore's third Supplementary Supply and Budget Adjustments Bill, providing an additional \$5.8 billion in Covid-19 support.
2021/2/16	Following the support for corporations, workers, and individuals totaling S \$ 100 billion (about 8 trillion yen) in 2020, a support package of S\$ 11 billion (about 880 billion yen) was announced as continuous support in the 2021 budget plan. In addition, a total budget of S\$24 billion (about 1,920 billion yen) was set for medium-term structural reforms.
2021/9	Subsidize 25% of monthly wages to employers in the retail, food and beverage, sports, and tourism industries whose operations will be affected by the re-enforcement of infection control measures from September 27 to November 21.
2021/12	Exemption of 0.5 month's rent for tenants of public commercial facilities. In addition, tenants of private commercial facilities will receive 0.5 months' rent in cash.

Source: 1. CSIS, "Southeast Asia Covid-19 Tracker," <<https://www.csis.org/programs/southeast-asia-program/southeast-asia-covid-19-tracker-0>> (Feb 2021), 2. JETRO, "Countermeasures for COVID-19 in Asian countries," <<https://www.jetro.go.jp/world/covid-19/asia/>> (Aug. 2021)

3. Impacts of COVID-19 Pandemic on Economy, e.g., economic growth (GDP), employment (unemployment, working hours), migrant work, remittance

**The trend of GDP Growth and Sector-wise GDP Growth**

✓ For the whole of 2020, the Singapore economy contracted by 5.4%, a reversal from the 1.3% growth in 2019. By sectors, the manufacturing sector expanded by 7.3% in 2020, a turnaround from the 1.5 % contraction in 2019. Services producing industries shrank by 6.9% in 2020, reversing the 2.0% growth in 2019. Among the services sectors, only the finance & insurance and, information & communications sectors expanded in 2020. Specifically, the finance & insurance sector grew by 5.0%, lower than the 7.8% growth recorded in 2019. The information & communications sector expanded by 2.1%, slower than the 12% growth registered in 2019.

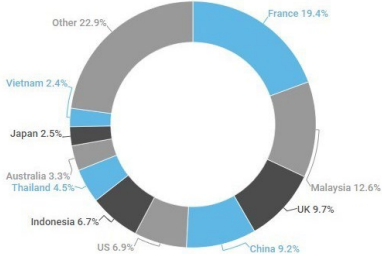
Source: Ministry of Trade and Industry "Economic Survey of Singapore 2020", <<https://www.mti.gov.sg/Resources/Economic-Survey-of-Singapore/2020/Economic-Survey-of-Singapore-2020>> (Feb 2021)

**Figure: GDP and Sectoral Growth Rates in 2020**



Source: Ministry of Trade and Industry "Economic Survey of Singapore 2020", <<https://www.mti.gov.sg/Resources/Economic-Survey-of-Singapore/2020/Economic-Survey-of-Singapore-2020>> (Feb 2021)

✓ Against the backdrop of the COVID-19 pandemic, total employment fell by 186,600 in 2020, reversing the increase of 69,700 in 2019. The decline in total employment was due to a fall in foreign employment (-195,900), which outstripped a rise in local employment (9,300). By sectors,

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	<p>total employment declined across all broad sectors (i.e., manufacturing, services, and construction). Excluding Foreign Domestic Workers (FDWs), total employment contracted by 172,200. The annual average unemployment rate rose from 2.3% in 2019 to 3.0% in 2020 at the overall level.</p> <p>Source: Ministry of Trade and Industry, "Economic Survey of Singapore 2020," &lt;<a href="https://www.mti.gov.sg/Resources/Economic-Survey-of-Singapore/2020/Economic-Survey-of-Singapore-2020">https://www.mti.gov.sg/Resources/Economic-Survey-of-Singapore/2020/Economic-Survey-of-Singapore-2020</a>&gt; (Feb 2021)</p>																								
<p>4. Impacts of COVID-19 Pandemic on Agriculture General, e.g., production, consumption, export/import, E-Commerce transaction change, price change</p>	<ul style="list-style-type: none"> <li>✓ In August 2020, Singapore's Ministry of the Environment and Water Resources and Singapore Food Agency (SFA) launched an open grant call for the "30x30 Express." The grant will provide \$30 million of funding support for the local agrifood industry to ramp up local eggs, leafy vegetables, and fish over the next six to 24 months. As the world's food trade becomes unstable due to the spread of COVID-19, support is provided to the local companies to increase food production as soon as possible.</li> <p>Source: Singapore Food Agency, "SFA Launches Grant Call For 30X30 Express To Ramp Up Local Food Production," April 17, 2020, &lt;<a href="https://www.sfa.gov.sg/docs/default-source/default-document-library/sfa-media-release---launch-of-30x30-express-grant-call.pdf">https://www.sfa.gov.sg/docs/default-source/default-document-library/sfa-media-release---launch-of-30x30-express-grant-call.pdf</a>&gt;</p> <li>✓ In July 2020, Enterprise Singapore (ESG) had set aside over S\$55 million to accelerate the growth of promising local agriculture and aquaculture companies by "developing their innovation capabilities to grow more with less." The funding is part of the government agency's efforts to develop an agrifood tech ecosystem in the Republic that uses innovation and scalable solutions to meet evolving needs. ESG's six accelerators under the Startup SG Accelerator programme are expected to groom over 150 agrifood tech start-ups over the next three years. It will also promote introducing the latest technology of existing agriculture and fisheries companies. The spread of the COVID-19 has affected the global food supply chain, reaffirming the importance of local agriculture and fisheries workers to introduce the latest technology and improve productivity.</li> <p>Source: Enterprise Singapore, "ESG sets aside over S\$55m for local agriculture, aquaculture firms," June 29, 2020, &lt;<a href="https://www.enterprisesg.gov.sg/media-centre/news/2020/june/esg-sets-aside-over-55m-for-local-agriculture-aquaculture-firms">https://www.enterprisesg.gov.sg/media-centre/news/2020/june/esg-sets-aside-over-55m-for-local-agriculture-aquaculture-firms</a>&gt;</p> <li>✓ Singapore currently imports more than 90% of its food from more than 170 countries and regions. Import source diversification is a core strategy. The main import partner is France, Malaysia, the UK, China, the US, Indonesia, etc.</li> <p>Source: ASEAN Today, "30 by 30: Boosting food security in land-scarce Singapore," March 22, 2019, &lt;<a href="https://www.aseantoday.com/2019/03/30-by-30-boosting-food-security-in-land-scarce-singapore/">https://www.aseantoday.com/2019/03/30-by-30-boosting-food-security-in-land-scarce-singapore/</a>&gt;</p> <li>✓ Singapore usually imports large amounts of fresh produce from Malaysia. Therefore, Malaysia's announcement that borders of the entire country will be closed for two weeks in an attempt to control the local spread of COVID-19 has led to renewed panic in Singapore. However, the Singapore government reassures that food supplies would continue as usual.</li> <p>Source: Food navigator-asia.com, "Malaysia in lockdown: COVID-19 reignites food supply fears in Singapore despite government reassurance," March 28, 2020, &lt;<a href="https://www.foodnavigator-asia.com/Article/2020/03/18/Malaysia-in-lockdown-COVID-19-reignites-food-supply-fears-in-Singapore-despite-government-reassurance?utm_source=copyright&amp;utm_medium=OnSite&amp;utm_campaign=copyright">https://www.foodnavigator-asia.com/Article/2020/03/18/Malaysia-in-lockdown-COVID-19-reignites-food-supply-fears-in-Singapore-despite-government-reassurance?utm_source=copyright&amp;utm_medium=OnSite&amp;utm_campaign=copyright</a>&gt; <li>✓ Singapore's vegetable production in 2020 was 22,793 tons, a decrease compared to 2018 and 2019. Similarly, fish production also declined, reaching its lowest level since 2014. It was due to a decrease in the number of workers from overseas as a result of the spread of the new coronavirus infection, the closure of markets, a buying spree that did not lead to improved sales of fresh produce, and the closure of hotels and restaurants, which affected B-to-B sales. On the other hand, egg production is highly automated, so the production increases regardless of labor.</li> <p>Source: The Straits Times, "Local production of fish, veggies in S'pore fell last year amid</p> </p></ul> <div style="text-align: center;"> <p><b>Singapore's food product import partner share (2017)</b></p> </div>  <table border="1"> <caption>Singapore's food product import partner share (2017)</caption> <thead> <tr> <th>Partner</th> <th>Share (%)</th> </tr> </thead> <tbody> <tr> <td>France</td> <td>19.4%</td> </tr> <tr> <td>Malaysia</td> <td>12.6%</td> </tr> <tr> <td>UK</td> <td>9.7%</td> </tr> <tr> <td>China</td> <td>9.2%</td> </tr> <tr> <td>US</td> <td>6.9%</td> </tr> <tr> <td>Indonesia</td> <td>6.7%</td> </tr> <tr> <td>Thailand</td> <td>4.5%</td> </tr> <tr> <td>Australia</td> <td>3.3%</td> </tr> <tr> <td>Japan</td> <td>2.5%</td> </tr> <tr> <td>Vietnam</td> <td>2.4%</td> </tr> <tr> <td>Other</td> <td>22.9%</td> </tr> </tbody> </table> <p>Source: WITS, ASEAN Today, "30 by 30: Boosting food security in land-scarce Singapore", Mar 22, 2019, &lt;<a href="https://www.aseantoday.com/2019/03/30-by-30-boosting-food-security-in-land-scarce-singapore/">https://www.aseantoday.com/2019/03/30-by-30-boosting-food-security-in-land-scarce-singapore/</a>&gt;</p>	Partner	Share (%)	France	19.4%	Malaysia	12.6%	UK	9.7%	China	9.2%	US	6.9%	Indonesia	6.7%	Thailand	4.5%	Australia	3.3%	Japan	2.5%	Vietnam	2.4%	Other	22.9%
Partner	Share (%)																								
France	19.4%																								
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US	6.9%																								
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Japan	2.5%																								
Vietnam	2.4%																								
Other	22.9%																								

Item	Description
	<p>Covid-19 pandemic", October 11, 2021,  <a href="https://www.straitstimes.com/singapore/environment/local-production-of-fish-veggies-in-spore-fell-last-year-amid-covid-19">https://www.straitstimes.com/singapore/environment/local-production-of-fish-veggies-in-spore-fell-last-year-amid-covid-19</a></p>
4.1 Input for Agriculture	<p>✓ Singapore state investment firm Temasek has joined hands with the impact investment arm of German pharmaceutical and chemical maker Bayer to form a company that aims to develop new varieties of vegetable seeds better suited for indoor vertical farms. The joint venture "Unfold" will utilize Bayer's genetic resources to develop vegetable varieties tailored to the unique indoor environment of vertical farms. The aim is to increase the yield per area while reducing the amount of artificial lighting, water, and fertilizers needed to grow crops. Source: CNA, "New company by Temasek, Bayer to develop vegetable seed varieties for vertical farming," August 12, 2020, <a href="https://www.channelnewsasia.com/news/business/vertical-farming-temasek-bayer-new-vegetable-seeds-13013842">https://www.channelnewsasia.com/news/business/vertical-farming-temasek-bayer-new-vegetable-seeds-13013842</a></p>
4.2 Production for Agriculture	<p>✓ The Singapore Food Agency (SFA) has announced a master plan to create a "high-tech, highly productive and resource-efficient agrifood cluster" in Northern Lim Chu Kang as part of its policy "30 by 30." Source: The Straits Times, "Lim Chu Kang set to be redeveloped into high-tech agrifood cluster: SFA," February 10, 2021, <a href="https://www.straitstimes.com/singapore/environment/lim-chu-kang-set-to-be-redeveloped-into-high-tech-agri-food-cluster-sfa">https://www.straitstimes.com/singapore/environment/lim-chu-kang-set-to-be-redeveloped-into-high-tech-agri-food-cluster-sfa</a></p> <p>✓ The government has eased to the newly constructed high-tech agri-cluster, Agri-Food Innovation Park (AFIP), to pilot new services and technologies that cannot be done in the current regulation. In the AFIP, a cross-sector working group to support the development of new markets will be established. It supports the various companies in production facilities such as closed plant factories, a nursery of edible insects, animal feed factories, etc., and high-tech agriculture-related research and development.</p> <p>Source: The Strait Times, "Strengthening food security with R&amp;D," August 13, 2020, <a href="https://www.straitstimes.com/singapore/strengthening-food-security-with-rd">https://www.straitstimes.com/singapore/strengthening-food-security-with-rd</a></p>
4.3 Processing for Agriculture	<p>✓ According to the "circuit breaker" announced to be extended to June 1, 2020, standalone outlets that sell only beverages, packaged snacks, confectionery, or desserts have to close. Manufacturing plants that make cakes, ice cream, and chocolate are also banned from operating. Some companies are responding to refunds for orders already received, some are switching to online sales, and some are reducing the number of staff. On the other hand, the demand for companies that manufacture dried and frozen foods for home use increases. However, due to the activity restriction ordinance of neighboring Malaysia and export restrictions of other countries, there are effects such as insufficient procurement of unprocessed ingredients and packaging materials. In addition, there are some places where customer payment delays occur one after another, which hinders cash flow. Early government support and subsidies are needed.</p> <p>Source: CNA, "F&amp;B businesses come to grips with new circuit breaker measures, but some unsure what to do," April 22, 2020, <a href="https://www.channelnewsasia.com/news/singapore/food-beverage-businesses-open-close-circuit-breaker-essential-12667324">https://www.channelnewsasia.com/news/singapore/food-beverage-businesses-open-close-circuit-breaker-essential-12667324</a></p>
4.4 Retail, Distribution for Agriculture	<p>✓ Singapore's retail sales in March 2020 fell by 13.3% at the steepest pace in 22 years as consumption across nearly all categories plunged due to the COVID-19 outbreak. However, a few sectors were unscathed, most notably supermarkets and hypermarkets. Supermarkets and hypermarkets saw higher sales of 35.9% year-on-year in March. With more people staying home because of safe distancing measures, supermarkets, hypermarkets, mini-marts, and convenience stores benefitted from higher demand for groceries. Turnover of food caterers and restaurants fell 58.1% and 30.3%, respectively, compared to the previous year. In March, the total sales value of food and beverage services was estimated at S\$678 million. Online food and beverage sales made up an estimated 15.6% of these. Source: CNA, "Singapore retail sales suffer the biggest drop in 22 years; supermarkets buck the trend," May 5, 2020, <a href="https://www.channelnewsasia.com/news/singapore/singapore-retail-sales-down-march-supermarkets-rise-covid-19-12703506">https://www.channelnewsasia.com/news/singapore/singapore-retail-sales-down-march-supermarkets-rise-covid-19-12703506</a></p> <p>✓ Contractions in most categories of goods underpinned the decrease in non-motor vehicle sales volume due to sluggish demand arising from the COVID-19 pandemic and public health measures (e.g., border restrictions, Circuit Breaker measures) to limit COVID-19 transmissions. The exceptions were supermarkets &amp; hypermarkets (30%), computers &amp; telecommunications equipment (3.4%), and mini-marts &amp; convenience stores (3.0%), which saw increases in sales volumes. Source: Ministry of Trade and Industry, "Economic Survey of Singapore 2020", <a href="https://www.mti.gov.sg/Resources/Economic-Survey-of-Singapore/2020/Economic-Survey-of-Si">https://www.mti.gov.sg/Resources/Economic-Survey-of-Singapore/2020/Economic-Survey-of-Si</a></p>

Item	Description
4.5 Market, Consumer for Agriculture	<p><a href="#">ngapore-2020</a>&gt; (Feb 2021)</p> <ul style="list-style-type: none"> <li>✓ Demand for food delivery services has increased by about 20 to 30% since a ban on dining-in kicked in on April 7. Besides customers, new food and beverage operators and workers have also been flocking to the sector. Source: 1. The Straits Times, "Coronavirus: No more dining in at hawker centers, coffee shops, restaurants, and other F&amp;B outlets, says MTI," April 14, 2020, &lt;<a href="https://www.straitstimes.com/singapore/health/no-more-dining-in-at-hawker-centres-coffeeshops-restaurants-and-other-fb-outlets">https://www.straitstimes.com/singapore/health/no-more-dining-in-at-hawker-centres-coffeeshops-restaurants-and-other-fb-outlets</a>&gt;, 2. The Straits Times, "Food delivery sector booms in a time of coronavirus," April 20, 2020, &lt;<a href="https://www.straitstimes.com/singapore/transport/sector-booms-in-a-time-of-coronavirus">https://www.straitstimes.com/singapore/transport/sector-booms-in-a-time-of-coronavirus</a>&gt;</li> <li>✓ Infocomm Media Development Authority (IMDA) started the Tekka Online Market Facebook page to sell the agricultural products of Tekka Fresh Market. Five business owners selling vegetables, meat, fruits, seafood, and dried foods from the Tekka Market were given a one-hour slot to live through Facebook's live stream. "Pay Now," which uses a mobile phone number or NRIC (national ID) number instead of a bank account number, was used for payment. Source: CNA, "Tekka market stalls turn to live-streaming to sell fresh produce, as people stay home amid COVID-19", March 5, 2020, &lt;<a href="https://www.channelnewsasia.com/news/singapore/tekka-wet-market-facebook-live-covid-19-12704724">https://www.channelnewsasia.com/news/singapore/tekka-wet-market-facebook-live-covid-19-12704724</a>&gt;</li> <li>✓ The survey reported that 62 % of restaurants that continued to operate on a takeaway and delivery basis had seen significant falls of 50 % or more in revenue compared with last year's same period. Moreover, 11.4% of the restaurant have retrenched full-time staff, and 41.8% have implemented pay cuts. Source: Chope, "White paper update: COVID-19's impact on restaurants in Singapore," May 20, 2020, &lt;<a href="https://restaurants.chope.co/blog/white-paper-covid-19-restaurants-singapore-circuit-breaker-lockdown/">https://restaurants.chope.co/blog/white-paper-covid-19-restaurants-singapore-circuit-breaker-lockdown/</a>&gt;</li> <li>✓ According to the survey by the Straits Times, in the middle of January, the prices of vegetables and fish are going up across the board at wet markets in Singapore, with some vegetables costing about twice as much as they were just weeks ago. Poor weather conditions in Malaysia have caused a shortage in supplies as farms are flooded, resulting in poor crop output. Transportation is an issue because roads are closed owing to severe flooding. Moreover, the fish prices also increased because they have risen due to bad weather that has prevented fishing boats from going out to sea. Source: The Straits Times, "Fish and vegetable prices up at wet markets in S'pore due to floods in Malaysia," January 12, 2021, &lt;<a href="https://www.straitstimes.com/singapore/consumer/floods-in-malaysia-drive-up-price-of-fish-and-vegetables-at-wet-markets-in">https://www.straitstimes.com/singapore/consumer/floods-in-malaysia-drive-up-price-of-fish-and-vegetables-at-wet-markets-in</a>&gt;</li> </ul>
5. Impacts of COVID-19 Pandemic on Livestock	<ul style="list-style-type: none"> <li>✓ American start-up Eat Just has obtained the green light from Singapore Food Agencies to sell its lab-grown chicken product in November 2020. It is said that this is the first case in the world to receive similar approval. Eat Just develops "clean meat," meat made from animal cells by artificial culture. It was approved that it was possible to confirm the safety of using artificial chicken cultivated chicken cells as a nugget. It is expected to contribute to the stable supply of food. Source: 1. CNA, "The Lab-grown chicken company Eat Just to house Asia-Pacific HQ, possibly global manufacturing hub in Singapore, says CEO," December 21, 2020, &lt;<a href="https://www.channelnewsasia.com/news/singapore/eat-just-chicken-substitute-singapore-hq-manufacturing-hub-13818182">https://www.channelnewsasia.com/news/singapore/eat-just-chicken-substitute-singapore-hq-manufacturing-hub-13818182</a>&gt;, 2. CNA, "Plant-based egg producer Eat Just to build Singapore factory," October 20, 2020, &lt;<a href="https://www.channelnewsasia.com/news/singapore/plant-based-egg-producer-eat-just-to-build-singapore-factory-13320744?cid=h3_referral_inarticlelinks_24082018_cna">https://www.channelnewsasia.com/news/singapore/plant-based-egg-producer-eat-just-to-build-singapore-factory-13320744?cid=h3_referral_inarticlelinks_24082018_cna</a>&gt;</li> </ul>
6. Impacts of COVID-19 Pandemic on Fisheries	<ul style="list-style-type: none"> <li>✓ Fish farming start-up Aquaculture Centre of Excellence Pte. Ltd. (ACE) has been operating a high-tech fish farm off the coast of Pulau Ubin. It opened an E-Commerce site to cater to people who want to buy fresh fish amid stay-home regulations due to the circuit-breaker measures to contain the Covid-19 outbreak. "ACE Fish Market" is an E to C site that sells edible fish produced at its own floating offshore aquaculture facility "Eco-Ark" directly to consumers. Source: The Straits Times, "First local fish farm to have own post-harvest facility," November 23, 2020, &lt;<a href="https://www.straitstimes.com/singapore/first-local-fish-farm-to-have-own-post-harvest-facility">https://www.straitstimes.com/singapore/first-local-fish-farm-to-have-own-post-harvest-facility</a>&gt;</li> <li>✓ Singapore has started importing frozen shrimp from Saudi Arabia as part of its efforts to diversify its supply chain in terms of food security. Source: THE STRAITS TIMES, "Singapore imports shrimp from Saudi Arabia in a first," November 26, 2020,</li> </ul>

Item	Description
	<p><a href="https://www.straitstimes.com/singapore/singapore-imports-shrimp-from-saudi-arabia-in-a-first">https://www.straitstimes.com/singapore/singapore-imports-shrimp-from-saudi-arabia-in-a-first</a></p> <ul style="list-style-type: none"> <li>✓ The COVID-19 cluster at Jurong Fishery Port, first announced on July 16, had 1,155 COVID-19 cases linked to it before it was closed. It was the largest community cluster in Singapore. Source: CNA, "Jurong Fishery Port: Singapore's biggest COVID-19 community cluster closes," September 7, 2021, <a href="https://www.channelnewsasia.com/singapore/jurong-fishery-port-biggest-community-cluster-closes-covid-19-2155351">https://www.channelnewsasia.com/singapore/jurong-fishery-port-biggest-community-cluster-closes-covid-19-2155351</a> &gt;</li> <li>✓ Lockdowns and border restrictions in the last year (2020) caused dulled demand and led to a fall in fish production (the volume is the lowest since 2014). Although the surges in demand occurred at the initial stage of the pandemic, it did not translate to consistent demand throughout the year. Source: THE STRAITS TIMES, Local production of fish, veggies in S'pore fell last year amid Covid-19 pandemic, November 11, 2021, <a href="https://www.straitstimes.com/singapore/environment/local-production-of-fish-veggies-in-spore-fell-last-year-amid-covid-19">https://www.straitstimes.com/singapore/environment/local-production-of-fish-veggies-in-spore-fell-last-year-amid-covid-19</a> &gt;</li> </ul>
7. Impacts on Japanese companies	<ul style="list-style-type: none"> <li>✓ KOKUBU SINGAPORE Pte. Ltd., a wholly-owned subsidiary of KOKUBU GROUP CORP., has acquired a share of TCGC Pte. Ltd., a wholesaling company in the Commonwealth Group. With its food market based on high-income levels and its position at the center of the economy, logistics, and information in the ASEAN area, KOKUBU GROUP CORP. positions Singapore as a core region. In addition to setting up a wholesaling company, the group will leverage the supply chain network that the Commonwealth Group has built up to strengthen sales within Singapore and expand our import/export business with neighboring countries. Source: KOKUBU GROUP CORP., News Release, May 27, 2020, <a href="https://www.kokubu.co.jp/news/file/download/2780">https://www.kokubu.co.jp/news/file/download/2780</a></li> <li>✓ Techfirm Holdings will start the "Japanese Food Frozen Meal Kit Sales Project" to support the expansion of Japanese food exports within COVID-19 as a subsidized project of the Ministry of Agriculture, Forestry and Fisheries. WeAgri, a group company, has established a system to create high-value-added products from production areas to consumers in collaboration with JTB and ABC Mall, and has set Japanese frozen foods and easy-to-cook frozen foods. Aim to expand exports of frozen meal kits. They aim to increase demand for home-cooked meals from the wealthy to the middle class. Due to the influence of COVID-19, the demand for ready-to-eat meals, delivery, mail order, etc., has expanded in Singapore, and to change their lifestyle to refrain from eating out. Source: JETRO, Business news, <a href="https://www.jetro.go.jp/biznews/2021/03/ec9640a28ffb15e0.html">https://www.jetro.go.jp/biznews/2021/03/ec9640a28ffb15e0.html</a> &gt;, March 18, 2021</li> <li>✓ One of the issues facing Japanese companies in Singapore was that many expatriates could not travel from Japan to Singapore due to travel restrictions, which had a major impact on the businesses and personnel of each company. In addition, as a domestic employment measure, it is recommended to replace the position occupied by foreigners with Singaporeans, and the requirements for issuing work visas to foreigners are tightened. For these reasons, it is not possible to move smoothly, which is a factor that hinders economic exchange. Source: The Japan chamber of commerce and industry, "The situation of each country in the corona disaster and the efforts of the Japan Chamber of Commerce and Industry overseas," <a href="https://drive.google.com/file/d/1MPAcnOJ1HkqdH9iK8jICTpaSiIWxkUjVe/view">https://drive.google.com/file/d/1MPAcnOJ1HkqdH9iK8jICTpaSiIWxkUjVe/view</a> &gt;, October 1, 2021</li> </ul>
8. Impacts on IT/DX	<ul style="list-style-type: none"> <li>✓ JETRO, in partnership with Enterprise Singapore, has built this DXPF to facilitate the promotion of open innovation collaboration between Japanese corporations and ASEAN-based start-ups and tech companies. The corporates and start-ups or tech companies will work together to create new business ideas that solve a specific problem or tackle a particular opportunity area. Source: JETRO, "Promoting the Digital Transformation by Japanese company in Asia," May 1, 2020, <a href="https://www.jetro.go.jp/news/releases/2020/3a030bdfca68f48b.html">https://www.jetro.go.jp/news/releases/2020/3a030bdfca68f48b.html</a> &gt;</li> <li>✓ Enterprise Singapore (ESG), Infocomm Media Development Authority (IMDA), and the SG Digital Office (SDO) announced that more than 2,000 stallholders had received the E-payment Bonus under the Hawkers Go Digital Programme. This change makes up about 60% of the existing 3,500 stallholders offering e-payment in June 2020. The Hawkers Go Digital programme, launched on June 8, 2020, has made good progress, with a growing number of stallholders offering e-payments and receiving their E-payment Bonus. Source: Infocomm Media Development Authority, "More than 5,000 stallholders now offer e-payment; over 2,000 have received the E-payment Bonus for the month of June," October 14, 2020, <a href="https://www.imda.gov.sg/news-and-events/Media-Room/Media-Releases/2020/Good-Progress-for-Hawkers-Go-Digital-Programme">https://www.imda.gov.sg/news-and-events/Media-Room/Media-Releases/2020/Good-Progress-for-Hawkers-Go-Digital-Programme</a> &gt;</li> <li>✓ While traditional farmers in Singapore are also incorporating technology into their farming</li> </ul>



Item	Description
	<p>systems, new players are deploying technologically advanced infrastructure and smart systems such as IoT sensors and analytics to optimize food production. The Singapore government has launched two innovation centers collaborating with Nanyang Technological University and Temasek Polytechnic to help solve agricultural challenges. The Temasek Life Sciences Laboratory identified and selected fish with desirable characteristics and found a way to breed freshwater tilapia in seawater without genetic modification. They have also developed weather-resistant vegetables requiring less light and enhanced nutritional value. One of the pioneering research results that entered the Singapore market was the Temasek rice. This rice is formulated to withstand floods, droughts, fungal and bacterial attacks, effectively producing weather-resistant rice. Source: UNDP, "Singapore's Emerging AgriTech Ecosystem," &lt;<a href="https://sgtechcentre.undp.org/content/sgtechcentre/en/home/blogs/sg-agritech-ecosystem.html">https://sgtechcentre.undp.org/content/sgtechcentre/en/home/blogs/sg-agritech-ecosystem.html</a>&gt; (Feb 2021)</p>
<p>9. Other Impacts, e.g., on occupational health, nutrition, consumers behavior change</p>	<ul style="list-style-type: none"> <li>✓ Global food and agri-business Olam International Limited and its wholly-owned subsidiary, Olam Treasury Pte. Ltd. ("OTPL"), have secured multi-tranche financing facilities (the "Facilities") aggregating US\$176.0 million from the International Finance Corporation ("IFC") and Japan International Cooperation Agency ("JICA"). Proceeds from the Facilities will procure specific agri-commodities from smallholder farmers in Vietnam, Indonesia, Timor-Leste, Papua New Guinea, and Uganda and expand Olam's cocoa processing facility in Indonesia. Source: Olam International, Press Release, "Olam secures a US\$176 million term loan from IFC and JICA", April 29, 2020, &lt;<a href="https://www.olamgroup.com/news/all-news/press-release/olam-secures-a-usdollar176-million-term-loan-from-ifc-and-jica.html">https://www.olamgroup.com/news/all-news/press-release/olam-secures-a-usdollar176-million-term-loan-from-ifc-and-jica.html</a>&gt;</li> <li>✓ Singapore Food Authorities announced that food stalls would no longer sell Chinese-style raw fish dishes - including raw fish porridge - unless they could show that the fish is from safe suppliers. It comes as they confirm that there is "an association" between eating Chinese-style raw fish dishes and what appears to be an aggressive strain of Group B Streptococcus (GBS) bacteria. Source: Marler Clark, "Officials probe rise in GBS infections in Singapore," September 1, 2020, &lt;<a href="https://www.foodsafetynews.com/2020/09/officials-probe-rise-in-gbs-infections-in-singapore/">https://www.foodsafetynews.com/2020/09/officials-probe-rise-in-gbs-infections-in-singapore/</a>&gt;</li> </ul>

### 2.5.11 Brunei Darussalam

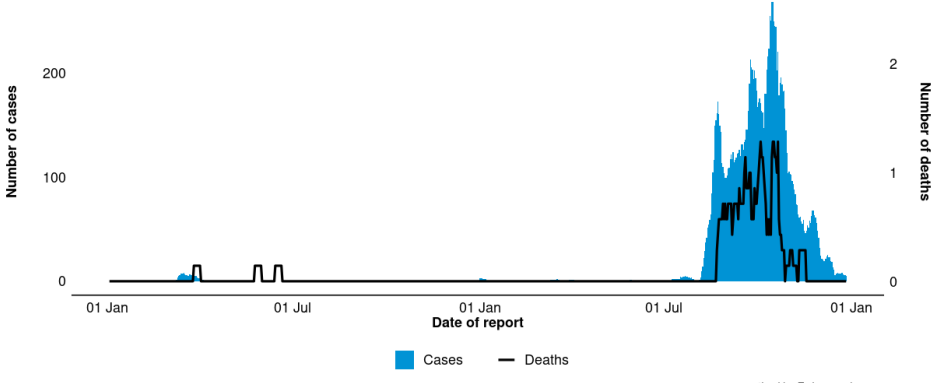
In Brunei, the situation and impacts of COVID-19 including measures taken are summarized in Table 2.5.11, and issues peculiar to Brunei may be taken up as follows:

- 1) In Brunei, the first COVID-19 case was confirmed on 4 January 2021 and the peak was seen on 13 March 2020, with 26 confirmed cases per day. After April, it continued zero or few cases per day until the end of 2020. As many countries did, the country also suspended to enter the country for citizens, foreign residents, and green card holders on March 16. While, phrasal easing measures has been implemented early on May 16, which allowed the reopening of businesses like sports facilities and markets with social distancing. The easing policy also found that the government has gradually expanded the limitation of social gatherings started in July from 50 people to 350 people in September.

On 7 August 2021, The Ministry of Health of Brunei announced that 7 COVID-19 positive cases were found. It had never been found since May 6, last year. Given that, quarantine regulations have been enhanced including the prohibition of gathering with some exceptions including funeral, marriage, etc., compulsory implementation of teleworking aside from the inevitable ones. As of August 2021, it was reported that 406 accumulated cases and 3 accumulated deaths.

- 2) In the first quarter of 2020, GDP grew by 2.4% year on year as growth in export and private consumption more than offset declines in investment and government consumption. By sector, growth was driven by 5.3% expansion in the industry with new petroleum and chemical production. Services contracted as the COVID-19 outbreak affected many segments, in particular air transport, finance, government services, and hotel and restaurants.
- 3) Due to the travel ban coupled with panic buying, the price of essential products especially chicken at supermarkets has increased, for example, whole fresh chickens by 6% (BND 4.28/kg to BND 4.52/kg); chicken eggs by 6% (BND 4.58 to BND 4.87 a tray) and chicken wings by 3% (BND 7.78/kg to BND 8.03/kg).
- 4) Local restaurants and eateries businesses were also affected by the crisis through the implementation of the government's order which advised to only provide takeaway and delivery service rather than dine-in service at the food premises during Ramadan Bazaar.
- 5) To support farmers and other food value chain stakeholders, the government of Brunei promoted "Buy Local Produce Campaign" which aims to help local farmers and market vendors sell their agricultural produce and not be affected by the temporary closures of the market. This initiative also aims to ensure stability in the price of agricultural products such as vegetables and fruits, and promote continuous agricultural production.
- 6) On the backdrop of the COVID-19 outbreak, tendencies of E-Commerce promotion have appeared. For example, the Authority for Info-communications Technology Industry of Brunei Darussalam (AITI) and Darussalam Enterprise (DARE) have launched Brunei's first local online E-Commerce directory, eKadaiBrunei to help businesses and the public find trusted providers. Also, an agritech startup called Agrome IQ has launched an online business platform called 'AgromeMarket' which only offers locally produced vegetables and fruits to consumers at an affordable price.

**Table 2.5.11 Situation and Impacts of COVID-19 in Brunei**

Item	Description																												
1. COVID-19 Pandemic General	<p><b>The trend of COVID-19 Pandemic Situation</b></p> <table border="1"> <thead> <tr> <th>Particulars</th> <th>At peak Per day</th> <th>Accumulated persons</th> <th>Per 1-million population</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>Infected</td> <td>504 (Oct. 18, 2021)</td> <td>15,447 (as of 27 Dec 21)</td> <td>35,309 (as of 27 Dec 21)</td> <td></td> </tr> <tr> <td>Death Case</td> <td>5 (Oct. 18, 2020)</td> <td>57 (as of 27 Dec 21)</td> <td>130 (as of 27 Dec 21)</td> <td></td> </tr> </tbody> </table> <p>Note: National population is 437,479.</p> <p><b>Brunei Darussalam</b></p> <p>15,447 cases, 57 deaths</p>  <p>Source: WHO, "WHO Coronavirus (COVID-19) Dashboard", &lt;<a href="https://COVID19.who.int/">https://COVID19.who.int/</a>&gt; (Dec. 27, 2021)</p>	Particulars	At peak Per day	Accumulated persons	Per 1-million population	Remarks	Infected	504 (Oct. 18, 2021)	15,447 (as of 27 Dec 21)	35,309 (as of 27 Dec 21)		Death Case	5 (Oct. 18, 2020)	57 (as of 27 Dec 21)	130 (as of 27 Dec 21)														
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Control and Support Measures of the COVID-19 Pandemic	<p><b>Support Measures (Economic Responses) against COVID-19</b></p> <table border="1"> <thead> <tr> <th>Date</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>2020/3/9</td> <td>The first COVID-19 case was confirmed in Brunei.</td> </tr> <tr> <td>2020/3/16</td> <td>Citizens, foreign residents, and green card holders in the country were barred from leaving without permission from the Prime Minister's Office.</td> </tr> <tr> <td>2020/3/23</td> <td>Brunei banned all foreign visitors from March 24.</td> </tr> <tr> <td>2020/5/16</td> <td>Phase 1 of the government's plan to ease Covid-19 measures started in certain areas, beginning with social distancing and the reopening of businesses like sports facilities and markets.</td> </tr> <tr> <td>2020/6/2</td> <td>Schools partially reopened on June 2, and childcare and special needs centers resumed operations on June 8</td> </tr> <tr> <td>2020/6/4</td> <td>In-person classes for secondary students resumed on July 4.</td> </tr> <tr> <td>2020/6/15</td> <td>Phase 2 of the Covid-19 de-escalation plan commenced on June 15. Many public spaces and businesses reopened, and restaurants were allowed to operate at 60 percent capacity.</td> </tr> <tr> <td>2020/7/6</td> <td>Phase 3 of the government's reopening plan started on July 6 with the reopening of additional public spaces. Public gatherings remain restricted to 50 people.</td> </tr> <tr> <td>2020/7/27</td> <td>Brunei began allowing gatherings of up to 100 people on July 27. Mosques and restaurants can now operate at full capacity.</td> </tr> <tr> <td>2020/8/17</td> <td>As of August 17, the government is allowing mass gatherings of up to 200 people.</td> </tr> <tr> <td>2020/9/7</td> <td>Brunei announced it was increasing the limit for social and public gatherings from 200 to 350 people beginning September 7</td> </tr> <tr> <td>2020/9/15</td> <td>Brunei announced that foreigners would be allowed to enter the country for essential travel from September 15. It also reduced the isolation period for travelers from low-risk countries</td> </tr> <tr> <td>2021/8/7</td> <td>On 7 August 2021, The Ministry of Health of Brunei announced that 7 COVID-19 positive cases were found. It had never been found since May 6, last year. 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Item	Description	
		Compulsory wearing of mask regardless of vaccination.
2021/8/11		Prohibition of gathering with some exceptions including funeral, marriage, etc., compulsory implementation of teleworking aside from the inevitable ones. No more than two persons in one family are allowed to go outside of their home to purchase essential goods for daily life.
2021/10/4		The government tightened movement restrictions through October 17, banning residents from leaving their homes between 8 pm and 4 am. All non-essential businesses must also close by 8 pm due to curfew. Residents who violate movement restrictions will face a BND 73 fine.
2021/10/25		The government announced a three-phase pandemic exit plan. The first phase will see Brunei loosen travel restrictions when 70 percent of the population is fully vaccinated, which it is expected to achieve by the end of November.
2021/10/30		Announced that employers are responsible for ensuring that foreign migrant workers under their employment conduct Covid-19 self-tests at least once per week.
2021/11/9		Fully vaccinated individuals can return to workplaces and dine at restaurants starting November 19.
2021/11/27		Suspending travel from South Africa, Botswana, Eswatini, Lesotho, Malawi, Mozambique, Namibia, and Zimbabwe to prevent the spread of the Omicron variant.
2021/12/15		Brunei transitioned to the "endemic phase" under its National Covid-19 Recovery Framework, permitting public spaces and businesses to operate at 75 percent capacity while allowing entry for those who are not fully vaccinated, with specific conditions.
	Source: CSIS, "Southeast Asia Covid-19 Tracker", < <a href="https://www.csis.org/programs/southeast-asia-program/southeast-asia-COVID-19-tracker-0">https://www.csis.org/programs/southeast-asia-program/southeast-asia-COVID-19-tracker-0</a> > (March 2021)	
	<b>Support Measures (Economic Responses) against COVID-19</b>	
	<b>Date</b>	<b>Description</b>
2020/4/1		The Ministry of Finance and Economy announced additional steps to aid SMEs and individuals affected by the pandemic, amounting to about BND 1.7 million in the form of deferment of principal or loan repayment and exemptions from fees.
2020/4/13		Brunei announced a special BND 400 monthly allowance for health care workers, including doctors, nurses, volunteers, hospital cleaners, and security guards
2020/3/19		The Brunei Darussalam Monetary Authority announced measures to alleviate the financial burden on sectors hit hard by the pandemic, including a six-month deferment of principal repayments of financing and loans for tourism, hospitality, food, air transport, and medical supplies industries.
	Source: CSIS, "Southeast Asia Covid-19 Tracker", < <a href="https://www.csis.org/programs/southeast-asia-program/southeast-asia-COVID-19-tracker-0">https://www.csis.org/programs/southeast-asia-program/southeast-asia-COVID-19-tracker-0</a> > (March 2021)	
3. Impacts of COVID-19 Pandemic on Economy, e.g., economic growth (GDP), employment (unemployment, working hours), migrant work, remittance	<p><b>The trend of GDP Growth and Sector-wise GDP Growth</b></p> <ul style="list-style-type: none"> <li>✓ In the first quarter of 2020, GDP grew by 2.4% year on year as growth in export and private consumption more than offset declines in investment and government consumption. By sector, growth was driven by 5.3% expansion in the industry with new petroleum and chemical production. Services contracted as the COVID-19 outbreak affected many segments, in particular air transport, finance, government services, and hotel and restaurants.</li> <li>✓ In the first 5 months of 2020, exports rose by 21.0% in USD while imports declined by 3.4% under the pandemic. The current account surplus is thus seen expanding this year mainly on strong growth in exports of petroleum products from the Hengyi plant. Source: ADB: "Asian Development Outlook Update" (September 2020)</li> <li>✓ There is no official report on the employment impact of COVID-19 in Brunei Darussalam, but the Asian Development Bank, in its economic impact assessment of COVID-19 in Brunei Darussalam, estimated that the country's best-case scenario is a 0.44% reduction in total employment, and its worst-case scenario is a 3.8% decline.  Source: The ASEAN Secretariat: "ASEAN Rapid Assessment: The Impact of COVID-19 on</li> </ul>	

Item	Description
	Livelihood across ASEAN” (2020)
4. Impacts of COVID-19 Pandemic on Agriculture General, e.g., production, consumption, export/import, E-Commerce transaction change, price chance	<ul style="list-style-type: none"> <li>✓ Increasing production costs have raised the price of chicken and eggs within the country, while high local consumption from households and the food and beverage industry due to the travel ban – coupled with panic buying – has led to chicken selling out at supermarkets recently, despite Brunei’s poultry industry producing a record high of 26,000 tonnes this year.</li> <li>✓ MoFE’s Department of Economic Planning and Statistics’ (DEPS) monitoring over the past four months (August - November) has seen the following increases: whole fresh chickens by 6% (BND 4.28/kg to BND 4.52/kg); chicken eggs by 6% (BND 4.58 to BND 4.87 a tray) and chicken wings by 3% (BND 7.78/kg to BND 8.03/kg).</li> <li>✓ Beef has also increased; fresh meat has gone from BND 15.20 per/kg to BND 16.14 per/kg in the past four months while frozen variety has gone from BND 12.40 per/kg to BND 13.50 per/kg over the year.</li> <li>✓ Crops with notable increases over the past four months (August - November): red onions (BND 2.34 per/kg to BND 6.24 per/kg), ginger (BND 3.88 per/kg to BND 4.24 per/kg), and chilies (BND 9.15 per/kg to BND 10 per/kg)</li> </ul> <p>Source: BIZ Brunei, “Increased production costs raise the price of poultry in Brunei”, <a href="https://www.bizbrunei.com/2020/12/increased-production-costs-raise-price-of-poultry-chicken-brunei/">https://www.bizbrunei.com/2020/12/increased-production-costs-raise-price-of-poultry-chicken-brunei/</a> (December 2020)</p>
4.1 Input for Agriculture	NA
4.2 Production for Agriculture	NA
4.3 Processing for Agriculture	NA
4.4 Retail, Distribution for Agriculture	<ul style="list-style-type: none"> <li>✓ Food stall businesses are affected by the restrictions conducted by the government. The owner of a small food vendor in Gaadong night market and Ramadhan bazaar are facing difficulties during this crisis.</li> </ul> <p>Source: Borneo Bulletin, “Food Stall Business Hard Hit by Covid-19” &lt;<a href="https://borneobulletin.com.bn/food-stall-business-hit-hard-by-covid-19/">https://borneobulletin.com.bn/food-stall-business-hit-hard-by-covid-19/</a>&gt; (April 2020)</p>
4.5 Market, Consumer for Agriculture	<ul style="list-style-type: none"> <li>✓ Due to the COVID-19 outbreak, the local markets in some specific districts had to close down temporarily to control the possibility of mass gatherings and practice the social distancing policy enforced by the MOH. Moreover, local restaurants and eateries businesses who were usually involved during Ramadan Bazaar were advised to only provide takeaway and delivery service rather than dine-in service at the food premises.</li> </ul> <p>Source: Mohd Salleh, Farida “MACROECONOMICS: PRINCIPLES AND ISSUES: The Contrast in Economic Impacts during SARS and COVID-19 Pandemic” (2020)</p>
5. Impacts of COVID-19 Pandemic on Livestock	<ul style="list-style-type: none"> <li>✓ Because of the increasing demand for food due to returning Bruneians and panic buying in the second half of 2020, retailers started to report that supplies might be insufficient to meet consumer demands.</li> <li>✓ Brunei’s heavy reliance on imports of food caused a shortage of chicken, lamb, and other meat products in the country, also due to the increasingly complex logistics of handling imports and exports.</li> <li>✓ Local poultry farmers have cited high costs of production, in particular the increased cost of chicken feed as a damper to their effort to meet the heightened demand for chicken locally.</li> </ul> <p>Source: S. F. Pehin Dato Musa and K. H. Basir “Livestock Shortage Amidst COVID-19: A Case of Brunei Darussalam” &lt;<a href="https://iopscience.iop.org/article/10.1088/1755-1315/756/1/012013">https://iopscience.iop.org/article/10.1088/1755-1315/756/1/012013</a>&gt; (2021)</p>
6. Impacts of COVID-19 Pandemic on Fisheries	<ul style="list-style-type: none"> <li>✓ To ensure food supply and take precautional measures, foreign transport operators that bring fishery products into the country are only allowed to enter Brunei three times a week. Fisheries Department will accompany the operators throughout their journey to unload the fish at Gadong Market. Drivers must also undergo COVID-19 testing and wear personal protective equipment.</li> </ul> <p>Source: THE SCOOP, “Prepare for post-pandemic travel, tourism service providers told”, October 4, 2021, &lt; <a href="https://thescoop.co/2021/10/04/prepare-for-post-pandemic-travel-tourism-service-providers-told/">https://thescoop.co/2021/10/04/prepare-for-post-pandemic-travel-tourism-service-providers-told/</a> &gt;</p>
7. Impacts of	<ul style="list-style-type: none"> <li>✓ In addition to the closure of religious sites, dining in restaurants is prohibited, indoor and outdoor</li> </ul>

Item	Description
COVID-19 Pandemic on Japanese companies	<p>sports facilities, leisure centers, and cinemas are closed. Most mass gatherings are banned and all residents are banned from leaving the house for no significant reason.            Source: Food Industry ASIA, "Brunei: Government extended ongoing COVID-19 restrictions to 14 November", &lt;<a href="https://covid-19.foodindustry.asia/brunei-government-extended-ongoing-covid-19-restrictions-to-14-november/">https://covid-19.foodindustry.asia/brunei-government-extended-ongoing-covid-19-restrictions-to-14-november/</a>&gt;, (2021/10/27)</p> <p>✓ Brunei Meat Company (BMC), Brunei's largest food company, has partnered with four small and medium-sized Japanese companies to develop more than a dozen halal Japanese foods such as okonomiyaki, udon, and curry. Okonomiyaki has already been certified and is sold at retail stores in Brunei.            Source: VAC consulting, "Japanese company and local manufacturer jointly develop tag halal-certified Japanese food", &lt;<a href="https://vac-jp.com/report/ma/3705/">https://vac-jp.com/report/ma/3705/</a>&gt;, (2020/4/20)</p> <p>✓ Referring to the interim measures announced last year in March 2020 to support targeted private sectors in addressing the challenges resulting from the spread of COVID-19 in the country. (1) Deferment of Payment on TAP Contribution (5%) and SCP (3.5%) for Local Workers that earns BND 1,500 per month and below in the affected sectors under the category of Micro, Small, and Medium Enterprise (MSMEs). (2) Provide a salary payment subsidy of 25 percent to local workers of MSMEs those which have employees not exceeding 100 people from the 1st August to 31st December 2021. (3) The Government will fund SCP Contributions to the Self-Employed in the period mentioned above. (4) Provide at least 30% discount on rental rates on government buildings to MSMEs according to the affected sectors. (5) Provide a tax discount of 50% on corporate income tax for the year of assessment 2022 to the affected sectors. (6) Provide 20% discount on water and electricity bills for affected companies within the affected sectors. (7) Temporary exemption of customs duty and excise duty for personal hygiene products.            Source: Brunei Ministry of Finance and Economy, "Interim Measures by The Ministry of Finance and Economy in Assisting the Private Sector Affected by COVID-19", &lt;<a href="https://www.mofe.gov.bn/Lists/News/NewDispForm.aspx?ID=259">https://www.mofe.gov.bn/Lists/News/NewDispForm.aspx?ID=259</a>&gt;, (2021/8/12)</p>
8. Impacts on IT/DX	<p>✓ An agritech startup called Agrome IQ has launched an online business platform with the help of Ghanim and DARE called 'AgromeMarket' which only offers locally produced vegetables and fruits to consumers at an affordable price.</p> <p>✓ The Authority for Info-communications Technology Industry of Brunei Darussalam (AITI) and Darussalam Enterprise (DARE) have launched Brunei's first local online e-commerce directory, eKadaiBrunei, to help businesses and the public find trusted providers. eKadaiBrunei's launch takes place against the backdrop of the COVID-19 outbreak, which has seen the government banning dining at eateries and encouraging social distancing to curtail the spread of the illness.            Source : Biz Brunei, "eKadaiBrunei: Brunei's first online e-commerce directory launched" &lt;<a href="https://www.bizbrunei.com/2020/04/ekadai-brunei-bruneis-first-online-e-commerce-directory-launched/">https://www.bizbrunei.com/2020/04/ekadai-brunei-bruneis-first-online-e-commerce-directory-launched/</a>&gt; (April 2020)</p>
9. Other Impacts, e.g., on occupational health, nutrition, consumers behavior change	NA

Note: The blank in the Table shows that there was the non-significant impact and/or no relevant information in the literature review.

## CHAPTER 3 COVID-19 IMPACT SURVEY FOR FOOD VALUE CHAIN (FVC)

### 3.1 Selection of the Priority Food Value Chains to Survey

In this chapter, the impacts of COVID-19 on the food value chains (FVCs) in Southeast Asia are discussed. As a first step, major agricultural, livestock and fishery products which are produced, processed, and distributed in the 11 countries are identified, and the priority FVCs to be surveyed are selected. In the survey, the impact of COVID-19 on each stage of the priority FVCs will be surveyed in the selected countries. Then, the measures which should be taken toward the with / post-COVID-19 society will be proposed.

#### 3.1.1 Methodologies to Select Priority FVCs

Target FVCs for the impact survey are selected from agriculture, livestock and fishery sectors. The selection procedure of the target FVCs consists of three steps which are: “Longlisting by Organizing Statistical Data” → “Shortlisting by Taking Consideration of COVID-19 Impacts” → “Adjustment of Balance among Agriculture, Livestock and Fisheries Sectors”. Then, a total of 15 to 20 FVCs are selected (Figure 3.1.1).

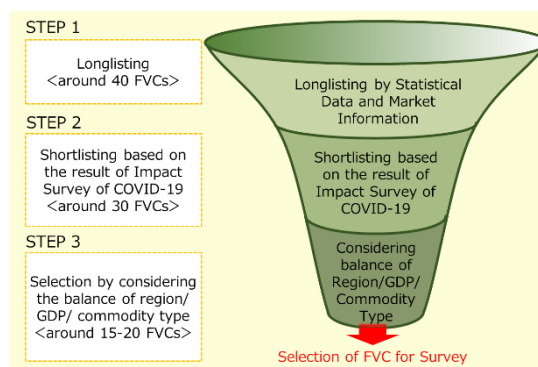
In the first step, the long list is developed based on various statistics, in which products with high production volume and high transaction volume are listed by country. Regarding the longlisting of agricultural products, FAOSTAT is used by taking a three-year average of harvested area, production volume, and export value, and the top five products are selected in descending order of production volume and value. Agricultural products with relatively small production volumes are represented by those products with relatively large volumes in the same countries. For example, production volumes of agricultural products in Singapore and Brunei are quite low; thus the products are represented by “processed food” since the category is relatively thriving in these countries.

The result of the first step of agricultural product selection in Indonesia and Viet Nam, for example, are summarized in the table below. In Indonesia, the major products in view of production volume include oil crops, cereals, vegetables, root crops, fruits, tree nuts, and sugar crops, whereas major crops in terms of export value include fat and oil, vegetables, natural rubbers, tobacco, cereals and nuts. In Viet Nam, on the other hand, the major products in view of production volume include cereals, vegetables, fruits, root crops, oil crops, pulses, tree nuts, sugar crops, and citrus fruit, whereas major crops of export value include nuts, cereals, fruits, root crops, natural rubbers, vegetables, tobacco, and sugar/ honey.

**Table 3.1.1 Major Agricultural Products in Indonesia (harvested area and export value)**

	Major Crops by Harvested Area	Ave. 3 years (ha)	Major Crops by Export Value	Ave. 3 years (1000USD)
Agricultural Products	Oil crops	18,264,140	Fats and Oils	20,067,134
	Oil crops, Cake Equivalent	18,259,907	Vegetable Oil and Fat	19,311,942
	Cereals, Total	16,795,042	Natural Rubber	4,194,620
	Vegetables Primary	1,134,459	Tobacco	1,181,130
	Roots and Tubers, Total	945,550	Cereals and Preparations	832,851
	Fruit Primary	833,623	Nuts	798,920
	Tree nuts, Total	722,683	Crude Materials nes	524,452
	Sugar Crops Primary	496,456	Fruit	340,094
	Fiber Crops Primary	206,142	Sugar and Honey	260,404
	Pulses, Total	194,432		

Source : FAOSTAT



**Figure 3.1.1 Selection of FVC for Survey**

Source: JICA Study Team

**Table 3.1.2 Major Agricultural Products in Viet Nam (harvested area and export value)**

	Major Crops by Harvested Area	Ave. 3 years (ha)	Major Crops by Export Value	Ave. 3 years (1000USD)
Agricultural Product	Cereals, Total	8,625,888	Nuts	3,691,981
	Vegetables Primary	1,005,082	Cereals and Preparations	3,144,024
	Fruit Primary	696,122	Fruit	2,825,262
	Roots and Tubers, Total	662,622	Roots and Tubers	1,064,302
	Oil crops	437,108	Natural Rubber	967,143
	Oil crops, Cake Equivalent	429,108	Vegetables	380,346
	Pulses, Total	328,480	Tobacco	303,669
	Tree nuts, Total	284,577	Crude Materials nes	232,868
	Sugar Crops Primary	261,323	Sugar and Honey	194,392
Citrus Fruit, Total	129,441			

Source : FAOSTAT

Regarding livestock, FAOSTAT is also used to compare the number of livestock and the volume and value of livestock production among the countries. Then, only for the top five countries (Indonesia, Philippines, Viet Nam, Thailand, Myanmar), the livestock sector is added to the longlist. For the fisheries sector, production volume data of marine fishery, inland fishery and aquaculture are compared among the countries, and the fishery sector is added to the list of the top five countries (Indonesia, Viet Nam, Myanmar, Philippines, Thailand). Following table shows the long list of the main FVCs in each country.

**Table 3.1.3 The Main FVC by Country (Longlist)**

Country	Main FVC	
Indonesia	Oil crops (oil palm), Rice, Vegetables, Root crops, Fruits, Livestock (chicken), Fisheries (Tuna, Shrimp, Devil fish)	7
Cambodia	Rice, Vegetables, Root crops	3
Singapore	Processed foods	1
Thailand	Rice, Sugarcane, Vegetables, Livestock (chicken), Fishery (Asian Seabass, King Prawn)	5
Philippines	Rice, Oil crops, Fruits (Coconuts, Banana, Pineapple), Vegetables (horticulture), Fishery (Sardinellas nei, Skipjack tuna, Scads nei, Frigate tuna)	5
Brunei Darussalam	Processed foods	1
Viet Nam	Rice, Vegetables (highland), Fruits, Root crops, Livestock (Pork, Egg, Milk), Fishery (Shrimp, Pangasiidae)	6
Malaysia	Oil crops, rice, Fruits, Vegetables, Halal food	5
Myanmar	Rice, Pulses, Oil crops (Sesame), Livestock (Beef, pork, Egg, Milk), Fishery (inland fishery, Shrimp)	5
Lao PDR	Rice, Root crops, Vegetables (horticulture, organic), Livestock (beef, pork, milk)	4
Timor-Leste	Rice, Root crops, Livestock (beef, pork, egg, milk)	3
Total		45

Source : JICA Survey Team

In the second step, products and goods are further filtered by “Taking Consideration of COVID-19 Impacts”, using existing documents for the impact of COVID-19 on the FVCs. Regarding the impact of COVID-19 pandemic on the FVCs in each country, following facts are quite important in selecting the FVCs.

- The labor shortage affects the labor-intensive farming including paddy, pulses and sesame production which depend heavily on temporary workers from nearby villages and seasonal labor. Oil palm plantation is also suffering from labor shortage since the industry is also depending on labor from foreign countries.
- Due to the logistic restriction, distribution volumes of input materials are decreasing, and prices of them are increasing. As a result, production volume and quality of agricultural products are reduced especially for that of smallholders who do not have enough cash in hand.



- On the other hand, the logistic restrictions of distributors make it difficult to ship agricultural products in a timely manner. Then, distribution of edible crops (root crops, kitchen crops, etc.) and perishable products (fresh vegetables and fruits, etc.), produced especially by smallholders who do not have their own distribution means, are also affected.
- The decrease in distribution of agricultural products due to the logistic restrictions results in stagnation of raw material procurement by processors and food procurement by consumers. Under these circumstances, the vulnerability of the distribution has also been observed, including 1) transportation of perishable products (fresh vegetables and fruits) with long distance and with complex transportation modes and networks, and 2) transportation of processed foods (dairy and livestock) for domestic and overseas markets, and 3) inland transportation of fish and shellfish.
- In addition to the reduction of procurement volume and increase in the procurement price, the lockdown caused the shutdown of processing plant, which in turn resulted in higher prices for some processed foods. In particular, the vulnerabilities of distribution of processed foods, which are made from perishable raw materials including vegetables, fruits, oil seeds, fresh fish, dairy products, etc., have been clarified.
- The decrease in the distribution volume and price increase of input materials (chicks, fry, compound feed, vaccines, etc.) due to the distribution restrictions, have affected the production of small and medium-scale poultry farms and aquaculture farms, and their vulnerability has become clear.

Based on the above, from the 45 FVCs selected in the first step, a total of 31 FVCs are selected in the second step, in which the major FVCs seriously affected by the COVID-19 pandemic are identified. Also, those products which are identified in many countries are listed only in the country where higher productions are confirmed. The result of the second step selection is shown in the table below.

**Table 3.1.4 Priority FVCs selected in the Second Step by Country**

Country	Main FVC	
Indonesia	Oil crops (oil palm), Rice, Vegetables, Root crops, Fruits, Livestock (chicken), Fisheries (Tuna, Shrimp, Devil fish)	7
Cambodia	Rice, Vegetables, Root crops	2
Singapore	Processed foods	0
Thailand	Rice, Sugarcane, Vegetables (inc. root crops), Livestock (chicken), Fishery (Asian Seabass, King Prawn)	3
Philippines	Rice, Oil crops, Fruits (Coconuts, Banana, Pineapple), Vegetables (horticulture), Fishery (Sardinellas nei, Skipjack tuna, Scads nei, Frigate tuna)	3
Brunei Darussalam	Processed foods	0
Viet Nam	Rice, Vegetables (highland), Fruits, Root crops, Livestock (Pork, Egg, Milk), Fishery (Shrimp, Pangasiidae)	6
Malaysia	Oil crops, rice, Fruits, Vegetables, Halal food	3
Myanmar	Rice, Pulses, Oil crops (Sesame), Livestock (Beef, pork, Egg, Milk), Fishery (inland fishery, Shrimp)	3
Lao PDR	Rice, Root crops, Vegetables (horticulture, organic), Livestock (beef, pork, milk)	3
Timor-Leste	Rice, Root crops, Livestock (beef, pork, egg, milk)	1
Total		31

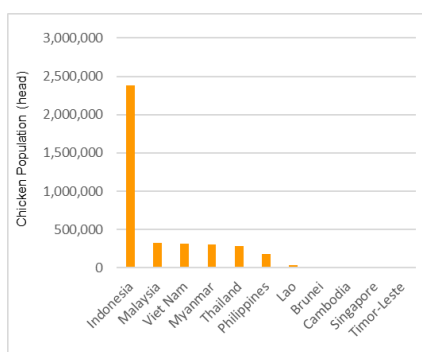
Source : JICA Survey Team

In the third step, the balance of the three sectors, agriculture, livestock and fishery, is considered, in addition to the regional balance (maritime or continental countries) and GDP of each economy. For agricultural products, basically, products with high production volume are listed in all target countries. For livestock and fisheries products, the top five countries with production volumes are considered when selecting FVCs to be surveyed.

“Vegetables” and “fruits”, for example, are the collective noun and further clarification is necessary to discuss detail impacts and to implement effective pilot projects. For this purpose, such commodities

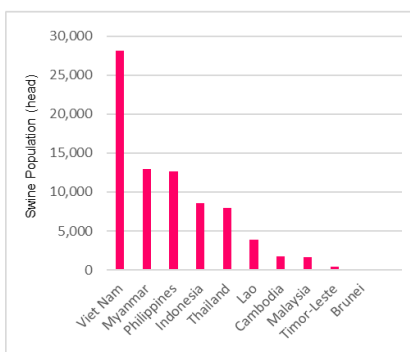
addressed in JICA’s FVC-related projects in Southeast Asia are referred.

For livestock, the number of livestock raised was compared among the countries. Among the target countries, Indonesia has the largest number of goats, sheep, and chickens (Figure 3.1.2), whereas Viet Nam has the largest number of pigs (Figure 3.1.3). Myanmar has the largest number of cattle (Figure 3.1.4), but it should be noted that Myanmar has an overwhelmingly larger number of draft cattle than livestock for food. In the existing impact survey of the COVID-19 pandemic, Indonesian poultry farming, and Vietnamese pig farming were often discussed, thus both are selected as designated FVCs of the livestock sector.



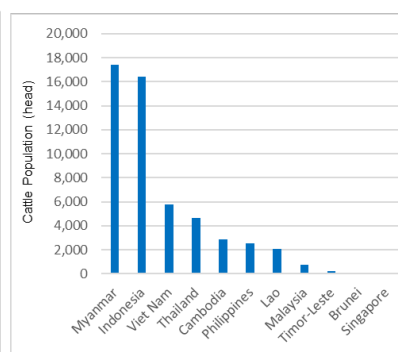
**Figure 3.1.2 Livestock Population (Chicken)**

Source: FAOSTAT 2018



**Figure 3.1.3 Livestock Population (Swine)**

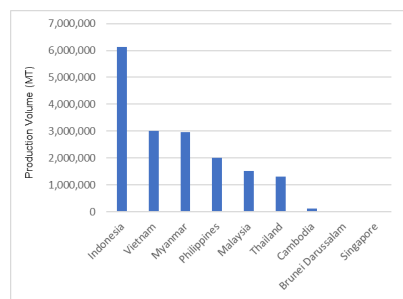
Source: FAOSTAT 2018



**Figure 3.1.4 Livestock Population (Cattle)**

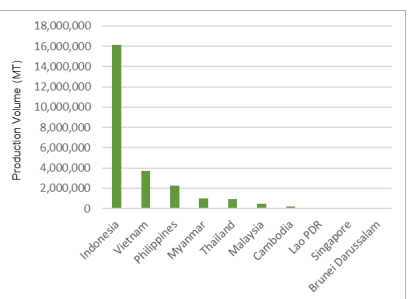
Source: FAOSTAT 2018

In terms of fisheries, Indonesia has the highest production volume of the marine fishery sector, followed by Viet Nam, Myanmar, the Philippines, and Malaysia (Figure 3.1.5). For aquaculture, Indonesia is the largest country in production, whereas Thailand and Viet Nam are leading countries in shrimp export (Figure 3.1.6). On the other hand, Myanmar has the highest production in the inland fishery (Figure 3.1.7). For this reason, Indonesia and Viet Nam are selected as the representatives of the marine fishery FVC, while Thailand and Viet Nam are the representatives of aquaculture for export.



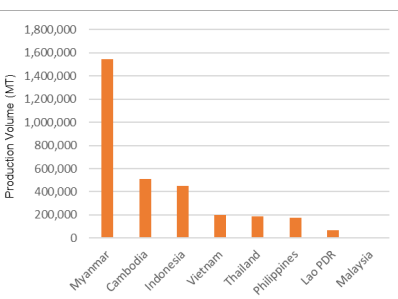
**Figure 3.1.5 Production Volume of Marine Fishery**

Source: SEAFDEC



**Figure 3.1.6 Production Volume of Aquaculture**

Source: SEAFDEC



**Figure 3.1.7 Production Volume of Inland Fishery**

Source: SEAFDEC

In addition, the result of considering the balance for the regions, GDPs, and subsectors of agriculture, livestock and fisheries industries in the third step are summarized in the following table.

**Table 3.1.5 Balance of the Regions, GDPs and Subsectors in the Third Step**

Country	Regional Balance		Balance in Subsectors		
	Region	GDP	Agriculture	Livestock	Fishery
<b>Indonesia</b>	Maritime	Middle	○	○	○
Cambodia	Continent	Low	○		
Singapore	Maritime	High	○		
<b>Thailand</b>	Continent	Middle	○	○	○
<b>Philippines</b>	Maritime	Middle	○	○	○
Brunei Darussalam	Maritime	High	○		

Country	Regional Balance		Balance in Subsectors		
	Region	GDP	Agriculture	Livestock	Fishery
<b>Viet Nam</b>	<b>Maritime</b>	<b>Low</b>	○	○	○
Malaysia	Continent	Middle	○		
<b>Myanmar</b>	Continent	Low	○	○	○
<b>Lao PDR</b>	<b>Continent</b>	<b>Low</b>	○		
Timor-Leste	Maritime	Low	○		

Source : JICA Survey Team

### 3.1.2 Selection of the Priority Food Value Chains and Countries

Based on the procedure discussed above, the priority crops/ products of the 11 target countries are selected as the FVCs for the further survey. To specify the crops/ products to be surveyed, those crops/ products handled by JICA's FVC-related projects in Southeast Asia are also taken into consideration.

For the countries to be surveyed, as discussed in Chapter 1, five countries of Indonesia, the Philippines, Viet Nam, Thailand, and Laos, are proposed. Therefore, the FVCs of the five countries are nominated in the table below as the target FVCs for the further survey. In total, 16 FVCs are finally selected. The 17 FVCs below cover all priority crops/ products in countries other than the 5 selected countries.

**Table 3.1.6 Target FVC for the Survey (Draft)**

Country	Target Crops/ Products	Reason for Selection
Indonesia	Oil crops (Oil Palm)	An important industry in Indonesia. Although the production volume of palm oil and palm kernel is the highest in the world, the weakness of the production structure has been highlighted due to the influence of restrictions on the movement of the labor force because it is a labor-intensive industry.
	Rice	It is the staple food of Indonesians and is an industry where many small-scale farmers engage. "The Project on Formulation of Irrigation Development and Management Strategy for Food Security" is underway.
	Vegetables (high quality)	Among the agricultural products of the country, the production volume is large, and many small-scale farmers engage in the production. Strengthening FVC by improving quality is an issue, and "Public-Private-Partnership Project for the Improvement of the Agriculture Product Marketing and Distribution System" and "a support for improving the supply of high-value-added agricultural products for consumers in Jakarta" are underway.
	Livestock (chicken)	The production of poultry is the 8th largest in the world. The poultry industry was affected by a decrease in the distribution volume of input goods and a rise in prices.
	Fisheries (Tuna)	Production volume of the marine fishery is the highest in ASEAN countries. One of the industries that were damaged by COVID-19 due to distribution stagnation. With the cooperation of Hitachi Naka City, a project to build a model to support the income improvement of coastal fishermen engaged in octopus fishing is underway.
Philippines	Fruits (Banana, Pineapple)	The Philippines produces a lot of tropical fruits and has an international supply chain. Since it is a maritime nation and the transportation modes from major production areas such as Mindanao are diverse, the weakness of distribution has been observed under distribution restrictions.
	Vegetables (horticulture)	Demand for both highland vegetables and lowland vegetables is growing for middle-income earners in urban areas, but quality improvement is an issue. In many cases, JICA implements technical cooperation and yen loan projects, and "a project to improve safety vegetable production and marketing skills" is being implemented with grassroots technical cooperation, and horticultural FVC support is planned.
Viet Nam	Vegetables (highland)	Highland vegetables are produced year-round in the Central Highlands (Lam Dong Province, etc.) including Darad, and processing plants for frozen vegetables and dried vegetables have an international FVC. There are also highland vegetables for the Japanese market, and the challenges are to improve production technology and quality.
	Coffee	Vietnam is the world's second largest coffee exporter, but most of the coffee is Robusta, which is used for canned coffee and instant coffee and is relatively cheap. In addition, 90% of exports are green beans, which are roasted, ground, extracted, and blended with other beans at the export destination. So, there is little value added in Vietnam, and Vietnam is only a supplier of cheap raw materials in the international FVC. Global demand has reduced due to COVID-19, and in March 2020, coffee prices were on a downward trend in the domestic market, with Robusta varieties produced in the Central Highlands region recording the lowest prices in the past 10 years.

Country	Target Crops/ Products	Reason for Selection
	Livestock (swine)	Swain production accounts for about 80% of Viet Nam's meat production and is the main pillar of livestock farming in Viet Nam, but most of the producers rely on the combined management of micro-farmers. Modernization including breeding is an issue. A project to support the strengthening of agricultural and livestock industry management was implemented. It is a good case study to see how the effects of distribution restrictions have impact on livestock product distribution.
	Fishery (Shrimp, Pangasiidae)	Fishery production is the second highest in ASEAN countries. Shrimp, tuna, cephalopods, liverworts, and groupers are the main products, and the effects of marine products with international FVC under COVID-19 will be confirmed. A marine product VC model construction project is underway in Da Nang.
Thailand	Rice (export)	In March-April 2020, India, Vietnam, and Cambodia banned the export of their rice, making the situation favorable for Thai rice exports. In April 2020, Thai rice traded at the highest price in nine years, which was US\$570/ton, 43% higher than the price at the same time the previous year. However, the price gradually dropped thereafter, returning to US\$470/ton by mid-May 2020 as Vietnam resumed exports. Nonetheless, prices are still 18% higher in 2019/20 than in the same period in 2019 due to drought conditions resulting in lower production.
	Cassava	Thailand is the second largest producer of cassava in the world and the largest exporter. In recent years, in addition to its edible uses, including tapioca, its use as an industrial starch has been expanding as a raw material for paper, plastics, and bioethanol. However, due to COVID-19, exports to China, the main export destination, have been declining and the market price has been stagnant, and the crop has been subject to the price guarantee system.
	Fishery (Shrimp)	Decreased demand for shrimp in Japan, China, Europe, and the U.S. has reduced the volume of shrimp export, resulting in lower market prices of shrimp. The market prices have fallen to just below the cost of production, but many aquaculture producers have a large stock of shrimp unshipped, which is expected to fall further if the new corona is not terminated soon.
Lao PDR	Rice	It is a staple food of the Lao people and an important industry where many small-scale farmers engage. With the goal of becoming a major rice exporter, commercialization and export promotion of rice through quality improvement have become issues. Production support of rice is being implemented through technical cooperation projects such as rice seed management advisory work.
	Vegetables (organic)	Many small farmers are engaged, but they have no choice but to sell at low prices, resulting in difficulty in escape from poverty. The challenge is to increase added value by improving quality, and a poverty reduction model demonstration project (grass-root technical cooperation) for farmers by disseminating organic farming technology is underway in Southern Laos.

Source : JICA Survey Team

### 3.1.3 Survey Methodologies: Questionnaire Survey

Questionnaire surveys were conducted on 16 commodity items in 5 countries selected by the above method regarding the impact of the COVID-19 pandemic on FVC. The implementation period was from April 2021 to July 2021, in which a specific survey period was set by the country in consideration of the increase in the number of people infected with COVID-19 and the accompanying restrictions on movement by the governments of each country. During this period, Japanese consultants were not able to be dispatched to these countries except for Indonesia, so the survey was conducted by the local staff through remote instructions.

In terms of the selection of the target areas of the questionnaire surveys, interviews with experts involved in existing technical cooperation projects conducted by JICA, etc., had been carried out and in principle, target areas of these projects were selected. Target areas of such commodities that are not covered by such projects (coffee, tuna, fruit, etc.) were selected based on statistical data from major production areas and accessibility from the bases of the surveyors. It was finalized after obtaining suggestions and approval from the local authorities concerned.

In conducting the survey, interviews were made with government agencies and other stakeholders concerned and confirmed the typical flow of FVC of the target commodities in the target areas, then, target stage groups were decided. For example, since it was confirmed that the flow of vegetable produces in Indonesian is different between traditional and modern markets, both local and modern markets were selected to capture the actual situation of the FVC.

The questionnaires used in the survey are generally the same for all countries and commodities: (1) basic information of respondents, (2) basic information of the target organization, (3) impacts of COVID-19 pandemic (overview), (4) impact of COVID-19 pandemic (by issues in three grade evaluation), (5) impact of COVID-19 pandemic (by business item in 5 grade evaluation), (6) period most affected, and (7) matters worried about. In such a common structure, specific question items were set according to the characteristics of each commodity.

Table 3.1.7 shows the number of respondents by commodity and stage of the FVC. A total of 650 responses were received in a total of 8 stages of 16 commodities/ countries. Initially, it was planned to cover 10 samples for each stage and 5 stages per commodity, 50 samples per commodity in total. However, it was difficult to secure as many as 10 targets in some stages (supermarkets, etc.). Therefore, the sample size was reduced in such a stage, especially in the downstream stages of FVC. In term, the sample size of producers which are targeted by many existing projects was increased to secure a sample size of about 50 for each commodity. In some items, more than five stages were covered.

**Table 3.1.7 Number of Respondents by Commodity and FVC Stage**

Commodity/ Country	Input Supplier	Producer	Processor	Trader/ Wholesaler	Retailer	Modern Market	Exporter	Consumer	Total
				Marketing	Local Market				
Vegetable (IND)	9	10	-	10	5	10	-	5	49
Vegetable (VN)	6	12	5	7	6	13	-	15	64
Vegetable (Lao)	4	10	4	6	10	9	-	11	54
Vegetable (PP)	2	10	-	27	5	6	-	8	58
Banana (PP)	5	8	-	5	-	-	2	5	25
Pineapple (PP)	5	5	1	12	-	-	2	5	30
Rice (TH)	10	19	12	10	-	-	3	-	54
Rice (Lao)									
Coffee (VN)	10	7	8	7	-	7	7	10	56
Palm (IND)	6	15	4	8	6	-	1		40
Cassava (TH)									
Chicken (IND)	6	13	6	6	-	9	-	3	43
Pig (VN)	5	10	5	5	-	17	-	5	47
Tuna/ (IND)	-	6	6	11	3	3	6	-	35
Pangasius (VN)	15	13	8	14	9	3	5	-	67
Shrimp (TH)	6	5	3	6	3	2	3	-	28
Total	89	143	62	134	47	79	29	67	650

Source : JICA Survey Team (Provisional as of the end of July 2021)

### 3.2 COVID-19 Impact Survey on Vegetable (Indonesia, Philippines, Lao PDR, Viet Nam)

The COVID-19 impact survey in the vegetable Value Chain (VC) was conducted in a total of four countries: Indonesia, the Philippines, Lao PDR, and Viet Nam. In this section, the outline of vegetable VCs in each country is first introduced, then the impact of COVID-19 pandemic for each stage of vegetable VCs is discussed by integrating the data of four countries.

#### 3.2.1 Outline of Vegetable VCs in the Four Countries

The relative characteristics of vegetable production situation in the target countries are described below in comparison with the value of Japan in the same year. In 2019, the area harvested in Indonesia was 298% of the harvested area in Japan; Viet Nam 276%, and the Philippines 217%. Although the definite size of the harvested area in Indonesia is large, the ratio of harvested area to land area is the smallest of the four countries due to the large land area in Indonesia. In other words, although it is large in relative scale, vegetable production in Indonesia might be still in the developing stage.

On the other hand, in Lao PDR, where the harvest area is as small as 51% compared to Japan, the production per head of population is 210 kg/year; it is a country where vegetables are of high importance. In either one of four countries, the annual production per harvested area is about 60% of the one in Japan in Viet Nam and roughly 30% in the other three countries. It can be seen that the production method is not as intensive as in Japan.

**Table 3.2.1 Production of Vegetables in the Four Countries Targeted (2019)**

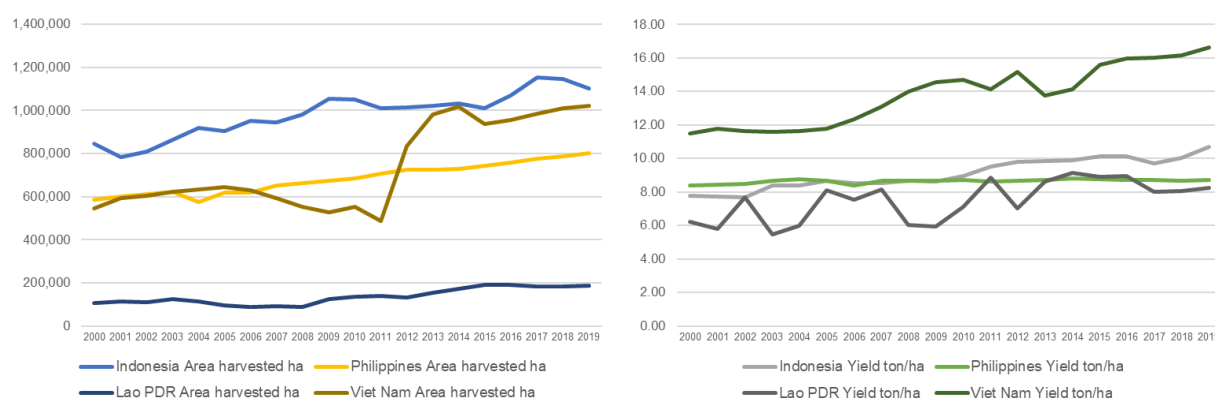
Country	Land Area km <sup>2</sup>	Population 1,000 People	Area Harvested			Production			Yield	
			ha	Per Land Area (Ratio)	Compared to Japan	1000 ton	Per Capita (kg/people)	Compared to Japan	ton/ha	Compared to Japan
Indonesia	1,811,569	271,350	1,102,338	0.61%	298%	11,772	43	115%	10.7	39%
Philippines	298,170	110,596	801,861	2.69%	217%	6,978	63	68%	8.7	32%
Lao PDR	230,800	7,338	187,751	0.81%	51%	1,544	210	15%	8.2	30%
Viet Nam	310,070	97,580	1,020,612	3.29%	276%	16,966	174	166%	16.6	60%
Japan	364,546	125,360	370,179	1.02%	100%	10,204	81	100%	27.6	100%

Source (Area harvested, production, and yield): FAOSTAT (accessed on August 9, 2021), "vegetable, primary"

Land Area: "List of countries and dependencies by area" (Wikipedia, accessed on August 9, 2021)

Population: "List of countries and dependencies by population" (Wikipedia, accessed on August 9, 2021)

As shown in Figure 3.2.1, the area harvested of each country had continued to increase gradually from the early 2000s to 2019 (figure on the left). However, Viet Nam is an exception. its area harvested had declined from 2005 to 2011, followed by a rapid increase starting in 2014, which was just after the launch of VietGAP in 2008, the 10-year Socio-Economic Development Strategy (2011-2020) in 2011, and an increase in foreign agricultural investment in the recovery from the Lehman shock.

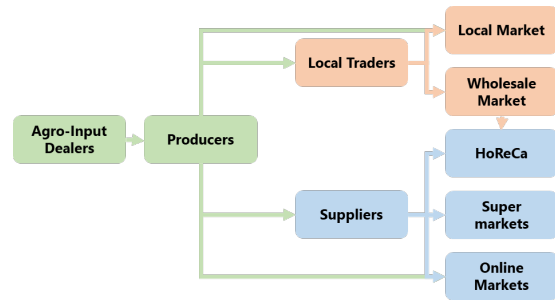


**Figure 3.2.1 Transitions of Area Harvested (left, ha) and Yield (right ton/ha) of Vegetable (2000-2019)**

Source: FAOSTAT ( "vegetable primary ", accessed on August 9, 2021)

As for the yield of vegetables, on the other hand, there had been a gradual increase in the countries, but the yield of vegetables in Viet Nam had greatly separated the other three countries. Since this figure is based on the yearly data of “vegetables primary” of FAOSTAT, it is considered that the difference in the composition of vegetables contained in the data (vegetables primary) and the difference in the number of harvests per year might have created such a difference. It is noted that the yearly yield of vegetables in Lao PDR is unstable. Low-input vegetable cultivation is said to dominate in Lao PDR, under which they might have been strongly affected by weather fluctuations and the occurrence of pests. It suggests that vegetable production in this country is more vulnerable than in other countries.

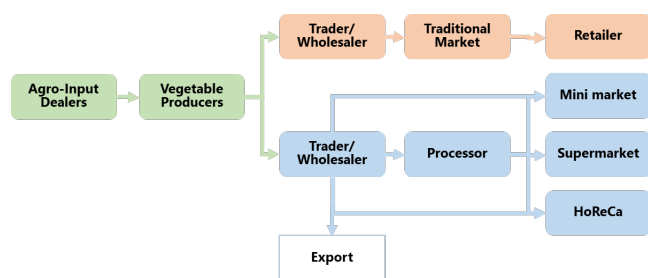
Next, the typical structure of vegetable VC in each country is shown in Figure 3.2.2. These are based on the interviews with related organizations and officials who are engaged in vegetable VC in each country and thus show a rough flow (consumer is omitted). According to this figure, Indonesia is characterized by a clear division between the local market and the modern market. In Indonesia, where a large volume of middle class earns salary income in urban areas and tourism is thriving, the demand for the foodservice industry called HoReCa is large. In such a background, a modern market consisting of these HoReCa<sup>1</sup> stages, supermarkets, and online markets has already been established.



**Figure 3.2.2 Typical Vegetable VC in Indonesia**  
 Source: JICA Survey Team (based on interviews)  
 Red represent local market, while blue modern market

Vegetable VC in the Philippines is similar; there are flows to the local market, including those that go through local trading centers, and to the modern markets, flowing into urban areas such as Manila. In addition, actors such as “assembler,” “disposer,” “purchaser,” and “trucker” are involved in distribution (in the Figure, “trader” and “supplier” represent all). According to the Department of Agriculture (DA) of the Philippines, in some circumstances, transactions of about 7 steps may be in place during this process, making it very difficult to grasp the whole picture.

According to a survey on vegetable supply chain conducted by Benguet University in 2020, broccoli farmers in Benguet ship about 70% to trading posts in the state capital. Including all other products, they sell broccoli to a total of 10 business partners, and they are eventually distributed to a total of more than 26 provinces, and big cities. Five of these 10 suppliers have sales channels to Manila, and 23% of the broccoli produced by Benguet farmers is distributed to Manila.



**Figure 3.2.3 Typical Vegetable VC in the Philippines and Viet Nam**  
 Source: JICA Survey Team (based on interviews)  
 Red represent local market, while blue modern market

Typical vegetable VC in Viet Nam is similar to the one in the Philippines, where vegetables produced near production areas are sold to local markets through local traders/wholesalers, while also establishing sales routes to modern urban markets. Ho Chi Minh City, for example, has an influx of vegetables produced in the Dalat Plateau and Mekong Delta, some of which are traded in supermarkets and restaurants, and many of the rest in small wet markets in each town.

<sup>1</sup> HoReCa: A food industry term that means hotel, restaurant, cafe / catering. This report refers to it as the food service industry in these forms. The ready-to-eat industry may be included, but basically it is not assumed in the report unless otherwise noted.

In addition, in northern Viet Nam near Hanoi, which was surveyed, there are several villages that have different target destinations depending on the production area. They focus on the different marketing routes of local markets, exports, industrial parks (canteens, etc.), and modern markets in Hanoi. In this case, it is thought that the influence of COVID-19 pandemic also has different features among such areas due to the difference in the marketing structure.

Vegetable VC in Lao PDR has a different characteristic from the other three countries. In general, it is said that the amount of fertilizers and pesticides used for vegetable cultivation per area is said to be much smaller, if not at all, quite similar to chemical-free cultivation. In addition, there are farmer groups that grow organic vegetables with the support of JICA's technical cooperation project in the area nearby Vientiane. As a result, two major sales routes can be observed: organic vegetables and non-organic vegetables.

As shown in Figure 3.2.4, organic vegetables flow to the modern market through trader/ wholesaler or through processor. There are also several markets dedicated to the trade of organic vegetables called Organic Agricultural (OA) markets in Vientiane, where farmers bring their organic vegetables to sell, mainly targeting the upper-middle segment of the consumers (in the figure, that means the flow from producers to retailer). Non-organic vegetables, on the other hand, are also sold through trader/ wholesaler to modern markets and traditional markets. Since the size of the modern market is not yet large in Lao PDR, it is thought that the main market is in the traditional market where vegetables are traded at relatively low prices.

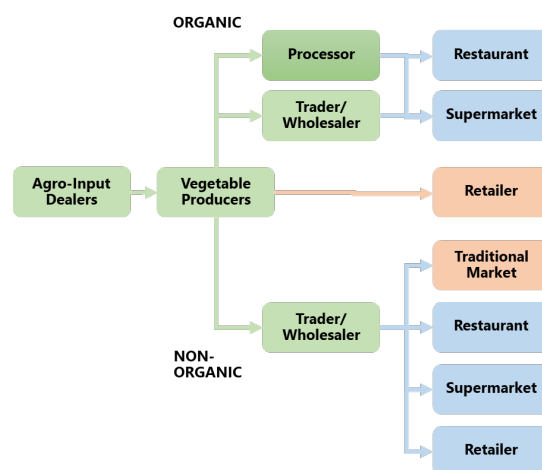
In addition, the names of the actors concerned in vegetable VCs in each country are various, and the functions and area of services may differ even when the same name is applied. For this reason, in this report, the actors involved in distribution who are mainly responsible for purchase from farmers are called “trader”, and those who are responsible for buying goods from multiple traders and selling them to the next buyer are called “wholesalers.” Then, those who purchase at the request of a specific supermarket or restaurant is called “supplier.”

### 3.2.2 Outline of the Impact Survey on Vegetable VCs

#### (1) Sample Size

The impact survey on vegetable VCs in four countries using questionnaires was started in Indonesia in April 2021. The sample size in each country is as shown in Table 3.2.2. The target was a total of eight stage groups, including consumers, related to vegetable production and distribution. The initial plan was to implement the survey on average of about 10 in each stage and about 5 stages (total 50 samples per country), but due to COVID-19 pandemic, it was difficult to conduct interviews, especially to the groups located downstream of the VC, so it was about 5 samples each in such stage groups.

As they are traded fresh, the processing of vegetables did not enter the VC process in some countries, with 4 samples in Lao PDR, 5 samples in Viet Nam, and no survey subjects in other countries. Thus, based on the adjustment of the number of respondents for each stage, a total of 225 samples of data had been obtained and analyzed in 8 stages in 4 countries.



**Figure 3.2.4 Typical Vegetable VC in Lao PDR**

Source: JICA Survey Team (based on interviews)

Red represent local market, while blue modern market



In addition, for Indonesia and Viet Nam, an additional survey (follow-up survey: FU survey) was conducted in December 2021 for the two stages that had the great impact found in the first survey (31 samples in total).

**Table 3.2.2 Number of Respondents for the Impact Survey on Vegetable VC in Four Countries**

Country	Input Supplier	Producer	Processor	Trader/ Wholesaler	Retailer/ Local Market	Restaurant	Super market	Consumer	Total
Indonesia	9	10	0	10	5	5	5	5	49
Philippines	2	10	0	27	5	4	2	8	58
Lao PDR	4	10	4	6	10	5	4	11	54
Viet Nam	6	12	5	7	6	9	4	15	64
Total	21	42	9	50	26	23	15	39	225
<i>Follow-up Survey (Dec 2021)</i>									
Indonesia		10			3				
Viet Nam		12			6				
Total		22			9				

Source: JICA Survey Team

**(2) Target Area**

The survey area(s) in each country are shown in Figure 3.2.5. In Indonesia, the survey was conducted mainly in the project area of the existing JICA technical cooperation project, in three districts in West Java. In the Philippines, after confirming the intention of DA, it was carried out in Benguet Province, which is a production base for vegetables in Luzon island and is a district that is targeted for the next technology cooperation project. In Lao PDR, it was conducted in and around Vientiane where the JICA technical cooperation project is being conducted, and in Viet Nam, it was carried out at two locations: the northern provinces near Hanoi, which are the target areas of the technical cooperation project, and Nghe An province where a food value chain expert is now providing an advisory service.



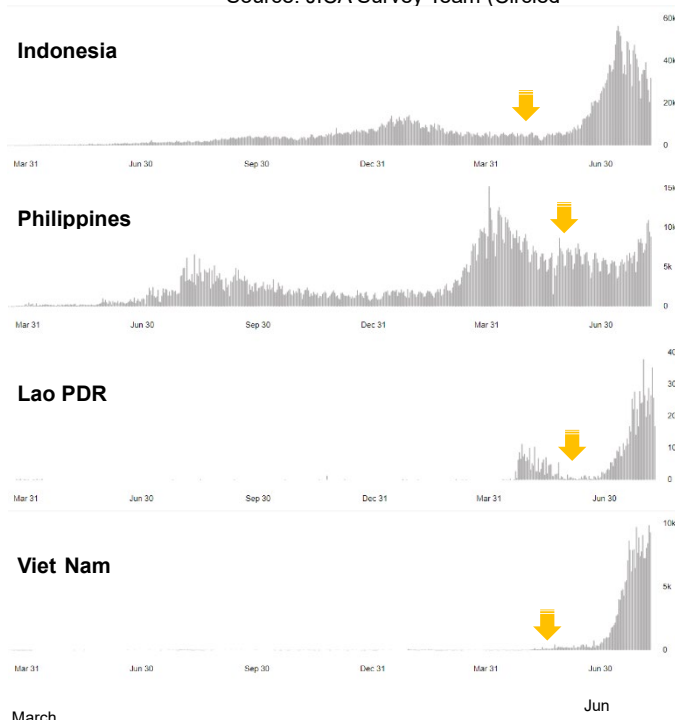
**Figure 3.2.5 Target Area of the Impact Survey on Vegetable VCs**

Source: JICA Survey Team (Circled)

**(3) Survey Period**

The survey had conducted in West Java, Indonesia from April 14 to 16, 2021, ahead of the other three countries. In the other countries, the survey was conducted intermittently with an eye on the spread of COVID-19 in each country, and the survey was completed by April 29 in northern Viet Nam, by May 12 in Nghe An Province, by June 26 in the Philippines, and by May 21 in Lao PDR (with some additional survey in Lao PDR after that).

Figure 3.2.6 shows the number of daily infected people of COVID-19 and survey timing (arrows) in each country surveyed (note: the range of vertical axes varies by country). In Indonesia, the number of COVID-19 cases had been on a downward trend after



**Figure 3.2.6 Number of Infected People in the Four Countries Surveyed**

Source: <https://covid19.who.int/region/searo/country/>  
 Note: Ranges of the Y-axis are different by country. Orange arrows show the timing of the survey in each country

the peak of the first wave in February 2021. Then, the number of daily cases had been around 5,000 per day from late March to May. This survey was conducted at a relatively stable period based on the peak. In the Philippines, the number had peaked in early April 2021, and it was on a bit of a downward trend with around 5,000 to 7,000 cases per day. It was a time when the outlook for the subsequent trend was difficult.

Lao PDR had been maintaining a smaller absolute number of infected cases than the other three countries, but the number of infected people has increased rapidly just before the survey began, overlapping with the period when social measures such as restrictions on movement had continued. Fortunately, however, the survey was finished before the subsequent surge of infection cases. In Viet Nam, as in Lao PDR, the survey had been finished before the rapid expansion of the infection cases from July 2021. Toward the end of the survey, the number of people who had been in the single to double digits increased to 100-200 people per day, and society was under fear against the spread of infection.

In this way, they do not always reflect the results of the period when the spread of infection is the greatest. Yet, the impact of COVID-19 on FVC is not necessarily proportional to the number of infected people. The impact of government restrictions on movement, especially in the early stages, is considered greater. In the following, based on the results obtained during these survey periods, the impact of COVID-19 pandemic in the four countries is discussed by each stage of vegetable VCs.

### 3.2.3 Impact of COVID-19 Pandemic by Stage of Vegetable VCs

#### (1) Overview of the Impact

In the questionnaire survey, impacts of COVID-19 pandemic were grasped by using a pre-determined questionnaire. Since the sample size in each stage is limited and thus it is difficult to generalize using statistical methods, this section describes the obtained information in a depictive way to understand the main point of the impacts on each stage. In section 3.2.4 (4), the impact on each stage is quantitatively evaluated and discussed.

First, the main issues in each stage and the impacts of COVID-19 pandemic are summarized in Table 3.2.3. This table summarizes the main stakeholders in vegetable VCs in each stage on the top, and then issues are divided into two groups: issues predominant since before COVID-19 pandemic and issues which are newly caused or worsened by the COVID-19 pandemic. Overall, almost all countries except Lao PDR have similar problems, as follows:

**Table 3.2.3 Issues on Vegetable Value Chain before and after COVID-19 Pandemic**

FVC Stage	Input	Production	Distribution	Market	Consumption
<b>Major Player</b>	Input supplier	Famer	Trader, wholesaler, and distributor	Local market and supermarket	Hotel, restaurant, and cafe
<b>Key Point for Vegetable Value Chain since Before</b>	<ul style="list-style-type: none"> <li>- Quality of input</li> <li>- Availability of high-quality input</li> </ul>	<ul style="list-style-type: none"> <li>- Quality of product</li> <li>- Yield of product (bad weather and occurrence of pest/disease)</li> <li>- Insufficient labor</li> </ul>	<ul style="list-style-type: none"> <li>- Bargaining both with producers and buyers</li> <li>- Distribution cost</li> <li>- Distance of transportation</li> <li>- Reservation of freshness (loss and waste)</li> </ul>	<ul style="list-style-type: none"> <li>- Quality and quantity control upon the demand</li> <li>- Financial management</li> <li>- Competition between traditional and modern market</li> <li>- Introduction of online ordering and delivering system</li> </ul>	<ul style="list-style-type: none"> <li>- Consumers' preference</li> <li>- Price of food to provide</li> </ul>
<b>Cross-Cutting Issue</b>	Maintenance of quality and quantity of materials/ products traded, access to finance, matching of demand and supply, and food safety				
<b>Major Impact of COVID-19 (Occurred or Revealed)</b>	<ul style="list-style-type: none"> <li>- Increase in price of imported materials</li> <li>- Delay in distribution of input materials</li> <li>- Reduction in farmers' demand</li> </ul>	<ul style="list-style-type: none"> <li>- Increase in price of input</li> <li>- Reduction in the price of product due to oversupply of harvest</li> <li>- Reduction or termination of contract from buyers</li> <li>- Reduction of</li> </ul>	<ul style="list-style-type: none"> <li>- Reduction of the price of the service requested by farmers</li> <li>- Termination of contract with restaurant and mobile retailer who deliver products to consumers</li> <li>- Difficulty to rent a car for</li> </ul>	<ul style="list-style-type: none"> <li>- Vicious cycle caused by the reduction in sales, making it difficult to purchase raw materials</li> <li>- Reduction of quality products</li> <li>- Reduction of customers</li> <li>- Reduction of</li> </ul>	<ul style="list-style-type: none"> <li>- Reduction of quality of food materials</li> <li>- Increase/ fluctuation in the price of foods</li> <li>- Increase of opportunity of self-procurement of food materials</li> <li>- Increase of bulk-</li> </ul>

FVC Stage	Input	Production	Distribution	Market	Consumption
		quality of product associated with low quality/ insufficient amount of input - Higher transaction cost for direct selling to consumer	transportation - Increase in the cost for the communication and self-protection for infection control	opening hours of market	buying to reduce the number of transactions - Reduction in the number of customers and amount of money spent per customer - Shut-down of restaurant due to lock-down
<b>Cross-Cutting Issue</b>	- Disruption of physical distribution of materials and produces, infection control (social distancing, and hygiene control), and change in social behavior and people's lifestyle, resulting in the reduction of profit in all stages				

Source: JICA Survey Team

**Input:** There had been a challenge to secure enough amount of input materials such as quality seeds since before. However, due to COVID-19 pandemic, the problem became more complicated coupled with the delays in transportation and an increase in prices, especially for imported goods. Different from the rice seeds, which are often recycled by farmers and even the certified seeds are multiplied in the country, seeds of vegetables are transported through relatively longer distribution channels from other countries. As a result, it was the first bottleneck of the vegetable value chain to obtain quality seeds.

**Production:** It has been a stage facing many risk factors such as floods, droughts, and the occurrence of pests, but there was a rise in input prices and a decrease in quality of inputs (good quality ones were not available). In addition, due to the decrease in demand generated in the downstream stages, it became difficult to sell or situated to sell at a low price. In addition to risk factors in cultivation, such as weather, issues in farm management such as higher costs and lower profits had become more serious.

**Distribution:** Distribution is a kind of business in which profits increase or decrease according to the volume of transactions and its efficiency, thus, transportation costs, loss at the time of transportation, negotiation with customers, etc. had been the issues since before. In this setting, the volume of transactions had decreased significantly due to a decrease in demand, including the cancellation of contracts with restaurants, etc. In addition, transportation of goods had been delayed due to movement restrictions, contributing to the loss of the produces.

**Market:** There are two kinds of players in the market: ones who operate the market and the others who conduct business there. The former had faced a problem that it was forced to close the market for infection prevention. For the latter, as they are in a business form that repeats a short-term purchase and sales cycle, they had faced a vicious cycle in which sales volume decreased, revenue deteriorated, the amount of purchasable produces decreased, and then the profit deteriorated further.

**Retail:** The “retail” stage includes the food service industry called HoReCa. The most significant impact was the closure of such businesses due to lockdown or any restriction measures. Even if it was possible to open the shop/ restaurants, many of them had lost customers due to fluctuations in food prices and changes in consumers’ purchasing behavior.

These are the general problems that occurred in each stage of the vegetable value chain.

As discussed in detail in “(2) Chain of Problems along the Food Value Chain” of “3.13 Summary of the Impacts and Direction of the FVC With/Post COVID-19”, the impact of the COVID-19 pandemic is sometimes completed within each stage, but in many cases, problems are linked over multiple stages in the form of price-rise and demand-decline. There are also cases where it is not possible for the players of a stage to pass on prices and thus must absorb the cost increase by themselves. In this report, focus is also put on the places of the linkage between stages. In the next section, the problems of each stage are described more specifically.

## (2) Impact by Stage

### 1) Input Supplier

Table 3.2.4 shows the impact of COVID-19 pandemic on the agricultural input suppliers, together with basic information of the suppliers surveyed. Many agricultural input suppliers had been forced to pass on the increase in the price of imported goods (seeds, etc.) to the sales price. As a result, the amount of sales had halved as farmers could not afford it, resulting in a decrease in profits by about 30% to 50%. Many answers pointed to a decline in farmers' purchasing power. The impact of price increases due to the influence of the upstream side of the value chain (especially the impact of international trade) and the decrease in expected profits of farmers seemed to have led farmers to refrain from buying the inputs.

In response to this situation, wholesalers of seeds and fertilizers had given the input suppliers a post-payment method of about one to two months (Philippines). However, this kind of arrangement might be only possible if some level of trust has already been established with each other. In addition, there was an example of trying to sell farm inputs online (Viet Nam) to get more access to the purchasers.

**Table 3.2.4 Impact of COVID-19 Pandemic on "Input Supplier" Stage**

Items	Situation
<b>Basic Information</b>	
Main financial institution for borrowing money	• Most respondents get financial sources from private lenders
Main settlement method of payment	• Cash or bank transfer
Main handling items	• Seeds, fertilizers, pesticides, agricultural machinery, vitamins for livestock farming, etc.
<b>Impact of COVID-19 Pandemic</b>	
Issues on purchasing	• High prices, and delays in delivery mainly for imported items • Increased prices of imported goods due to the depreciated currency (Lao)
Issues on selling	• Hesitation of purchases due to higher prices, and delays in payments from farmers • Reduced efficiency of transportation and sales due to the passage of many checkpoints
Profit	• Number of customers and sales decreased due to the refrain of buying by farmers, and profits decreased by about 30% to 50% • Sales trends also fluctuated
Purchasing	• Delay of delivery • Shortage of supply for some imported goods • Increase of transportation costs by about 10% due to travel restrictions • Increase of the price of Imported goods by up to 70%
Selling	• Sales volumes decreased as unit prices increased by 20%-30% or more than doubled • Farmers' purchasing power decreased due to a decrease in farm gate prices • Payment from farmers delayed
Management, employment	• There were reductions in workers and their salaries • Shortage of funds due to increased buying prices • Workers cannot come back from their homecoming
Others	• Customers started purchasing by bag instead of in boxes (reduction of amount) • Some stores can sell only by car, not at the shop

Source: JICA Survey Team

Note: In the questionnaire, first the impact of COVID-19 on the procurement and sales was roughly asked, and then the detailed items were asked. Therefore, although there is some overlap in the information, the latter half (after the double ruled line) is a summary of the results of detailed interviews (hereinafter the same).

### 2) Producer

Table 3.2.5 provides basic information on vegetable producers and the impact of COVID-19 pandemic they faced. Some farmers responded that their final destinations are hotels and restaurants, and the type of vegetables they cultivate are diverse, from leafy vegetables to fruit vegetables. Since the onset of COVID-19 pandemic, the price of seeds, and fertilizers, especially imported goods had more than doubled in many cases, and therefore the production had become less. In addition, some farmers had given up the harvest or disposed of their harvests because of the sharp decline in demand, which had made the surplus of their product.

In such countries where measures to restrict movement were strictly implemented, it had become quite difficult to sell in the areas/regions where it is not possible to move. There were many examples of “giving up harvesting” in the responses from the respondent farmers of Viet Nam. Some pointed out that the market closures had increased the time and cost of looking for individual customers. In other words, the market's key function of “matching” was temporarily lost, and then farmers needed to fulfill its functions by themselves. Since the number of infected people in Viet Nam was still before the rapid increase at the time of the survey, it is shown how the impact of social restriction measures is large.

It was expected to have little negative impact on the organic vegetable farmers in Lao PDR as they had a certain demand from the upper-middle class and foreigners. However, even organic vegetable farmers had lost sales destinations due to the temporary closure of the Organic Vegetable (OA) Market, which sells organic vegetables. Moreover, there were a lot of farmers in Lao PDR who pointed out that the difficulty of obtaining the quality imported seeds was a bigger problem, implying that the impact from the upper side of vegetable value chain was big in the country.

As long as they are using regular sales channels, many farmers had faced a decrease in demand, which had reduced sales volumes, and then the profits had declined by more than 50%. On the other hand, since some farmers who switched to selling online had made more profit than usual, total demand at the consumer level is not decreasing. Therefore, it is suggested that the route of the ordinary value chain had been temporarily disconnected to such demand. In other words, there may be mismatches in the value chain.

Looking at the answers of farmers who had turned their marketing modality to direct sales online, there were some issues: they must correspond to different sales volumes in small lots to deal with individual consumers; late (longer) times for sales (unpredictable pick-up time of transporters); and higher transportation costs. In addition, responding to various demands in types of vegetables was also a challenge. For example, spinach is in high demand, but the demand for broccoli is small.

In conclusion, in an emergency, it is considered that having a route of direct sales to consumers in addition to the ordinary sales route will increase the resilience of individual farmers. To this end, in addition to the acquisition of new sales channels (especially online), it is suggested to have a mechanism and enough experience to respond to the unique demands of the sales channels (sales volume, transportation method, etc.). As the impact may not be prolonged so long, diversification of sales channels is more important and realistic than fundamentally changing the structure of the value chain.

According to the follow-up survey conducted in December 2021, input prices continued to rise in both Indonesia and Viet Nam. Even after social measures such as road blockages were lifted, the prices of high-quality seeds and fertilizers, which are imported products, were particularly high, indicating that the delay in the recovery of international distribution had remained problematic. It seems that the tight supply-demand balance is reflected in the price because farmers must purchase the input at the onset of the next cropping season.

In addition, it was reported that sales prices had risen after the last survey in Viet Nam. However, the main reasons for such price increase were that buyers visit farmers less frequently due to movement restrictions and flood damage due to heavy rain. Therefore, it does not necessarily lead to an increase in sales volume, and thus not so many farmers could enjoy the benefits of price increases. There was also an increasing trend of price in Indonesia depending on the type of vegetables; for example, recovery of the vegetables used for events was slow as not many events could be organized yet.

In general, demand and prices continued to be weak in the latter half of 2021, but individual differences are beginning to appear depending on the type of vegetables, location, and degree of access to the market. For example, in Viet Nam, there were cases where contract cultivation of cantaloupe and cucumbers had already started, and investment was made in net houses. Since it is difficult for many farmers to forecast

the market conditions, many of them hesitate to invest especially under fluctuating market circumstances. On the other hand, farmers who have secured sales outlets can invest more. For example, a farmer household in Viet Nam had invested in net-house for vegetable cultivation as the farmer started contract farming, with which risk in marketing at the time of harvest can be reduced and expected benefit from net-house cultivation can be more promising. Securing a sales outlet by a means of contract farming is a good example to harness the resilience of producers.

**Table 3.2.5 Impact of COVID-19 Pandemic on “Vegetable Producer” Stage**

Items	Situation
<b>Basic Information</b>	
Type of business	• Full time or part-time farmers
Main handling items	• Lettuce, paprika, tomato, chili, broccoli, asparagus, leek, bitter melon, watermelon, long bean, other herbal vegetables
Main financial institution for borrowing money	• Government financial institutes, private banks/ lenders, microfinance, etc.
Main settlement method of payment	• Cash or bank transfer
Availability of irrigation	• More than half of the respondents have access to irrigation
Farmers organization	• 70%-80% of farmers in each country are members of any organization (most of them are for technical purposes, collective buying. Financial function is not included)
<b>Impact of COVID-19 Pandemic</b>	
Issues on purchasing	<ul style="list-style-type: none"> <li>• Prices of seeds, seedlings, and fertilizers, especially imported goods, had risen, making it difficult to obtain</li> <li>• Material store closed and not available to obtain inputs (Lao)</li> <li>• fertilizers, utilization of organic fertilizers, and changes of government systems</li> <li>• Price continued to increase toward the end of 2021 (FU survey: Indonesia and Viet Nam)</li> </ul>
Issues on selling	<ul style="list-style-type: none"> <li>• Price decline due to oversupply, decrease in order volume, difficulty in transportation (due to movement restrictions), termination of contract due to restaurant closures, especially for those who depend on shipping to restaurants</li> <li>• Selling price also increased at the end of 2021. However, distribution channel remained tight (Viet Nam) and recovery was slow for specific types of vegetables (Indonesia) (FU survey)</li> </ul>
Profit	<ul style="list-style-type: none"> <li>• Decrease of profit due to higher prices for seeds and fertilizers, ranging from 30% to 50%.</li> <li>• There was a case that profit was increased from online sales (1 person)</li> <li>• Toward the end of 2021, many farmers experienced an increase in profit in Viet Nam and Indonesia (FU survey)</li> </ul>
Purchasing	<ul style="list-style-type: none"> <li>• For farmers who usually receive orders and grow, cultivation was canceled due to no order</li> <li>• Also faced a decrease in crop quality due to insufficient input or low-quality seeds and fertilizers, leading to lower selling prices</li> <li>• Harvest has dropped due to bad weather</li> </ul>
Selling	<ul style="list-style-type: none"> <li>• Trading volume decreased about 5% and in some cases from half to 1/3</li> <li>• Disposal of products (some farmers have given up harvesting especially in VN)</li> <li>• In the case of direct sales to consumers, the shipment volume is different by customer, but the overall sales volume was sufficient</li> <li>• Direct sales are done at a later time of the day and transportation costs increase</li> </ul>
Management, employment	<ul style="list-style-type: none"> <li>• Shortage of labors and decrease in working hours at the same rate of payment</li> <li>• Especially for farmers who reduced the production amount, number or workers/ working hours had remained low (Indonesia and Viet Nam: FU survey)</li> </ul>
Others	<ul style="list-style-type: none"> <li>• Having communication with buyers (distributors) by phone or chat tool more than usual, and there are not many opportunities for direct contact when dealing with them</li> <li>• In many countries, the sharp decline in demand had been resolved in a short period</li> <li>• There was a case in Viet Nam where a farmer started contract farming of cantaloupe and cucumber in late 2021 (FU survey).</li> </ul>

Source: JICA Survey Team

### 3) Trader/ Wholesaler

Table 3.2.6 provides basic information on distributors (trader/ wholesaler of vegetables) and the impact of COVID-19 pandemic they faced. There were relatively smaller numbers of responses to the problem associated with the procurement of vegetables, but a lot of problems were pointed out on the downstream side of the value chain. It seems to be influenced by the form of their businesses; in a situation where there is a lot of supply, it is easy to adjust the amount of purchasing vegetables from farmers (upstream) according to the orders from buyers (downstream), but when demand at the downstream side has fallen (i.e., closure of restaurants), demand for their services is eliminated. This is what happened.

On the other hand, it was implied that the impact of a temporary suspension of trading to distributors could be relatively mild as compared to producers, as there are relatively a few management resources already invested except for some stocks such as warehouses and vehicles. On contrary, farmers will face a big problem if they cannot sell their produces as they already invested in production and there are products harvested or to be harvested. As an example of supporting this hypothesis, some distributors responded that they would just borrow less from banks because of the decline in transaction volume.

Thus, it is observed that distributors who do not have a lot of produces in stock are in a different position from the upstream actors of the FVC. As to disperse such risks, the commitment by both parties by contract farming, etc. may function. Distributors contracting with farmers, meaning they are committed in advance, complained to the “lockdowns without any compensation.”

It should also be noted that the meaning of “problem” varies depending on the timing in the progress of the pandemic even in the same stage. For example, distributors in the Philippines responded that there had been problems in two periods of March-June 2020 and January-May 2021, of which “increase in price (purchasing price)” was the main problem during the former period, while “decrease in volume” due to a decline in demand for hotels and other consumers was the main problem during the latter period.

The way the problem occurred has changed dynamically, from the emergency negative effect of policy responses to COVID-19 pandemic to the subsequent changes in consumer behavior due to the prolonged situation, especially the effects of the decrease in consumption through HoReCa.

As a new issue under COVID-19 pandemic, the increase in internet communication charges and the purchase price of masks for communicating with customers was cited. Especially for distributors who have contacts with many customers, health and hygiene management of themselves and workers may be more costly and laborious. That can be a problem at any stage of FVC having the function of communicating with a lot of customers.

Mobile retailers that go around consumers' residences seem to be convenient at first glance and have a lot of demand under this kind of situation. However, the residential area was closed, and they were not able to get into the area to look for customers. As a result of losing their business chances, suppliers/wholesalers to such vendors also lost the demand. Similarly, there would be a difference in the accessibility to customers depending on whether it was a form of sale for unspecified customers or delivered based on customers' orders.

**Table 3.2.6 Impact of COVID-19 Pandemic on “Distributor” Stage**

Items	Situation
<b>Basic Information</b>	
Main types of business	• 5 distributors and 5 wholesalers
Main handling items	• Paprika, tomato, chili, broccoli, cabbage, lettuce, carrot, ginger, garlic, bitter melon, cauliflower, leeks, other leafy vegetables, etc.
Main financial institution for borrowing money	• Individuals (private lenders), and private banks (about a half)
<b>Impact of COVID-19 Pandemic</b>	
Issues on purchasing	• Lower price for services offered by farmers • Lockdown measures without compensation despite a contract with farmers is in effect
Issues on selling	• Cancellations of contracts with restaurants • Temporary increase in demand at the early days of infection spread, and decrease in demand after about two months • Suspension of contracts with mobile retailers who go around residential areas (due to closing the gates of residence)
Profit	• Reduction of profit from 50% to 70%
Purchasing	• No order, no transportation • Difficult to get access to vehicles to rent
Selling	• It varies from slightly decreased, drastically decreased, to completely lost • Demand has been reviving since vaccination began (Ind)
Management, employment	• Shortage of labors (up to 80%) • Demand for funding was lightened due to a decrease in handling volume

Items	Situation
Others	• Cost of internet communication charges and mask purchases increased

Source: JICA Survey Team

#### 4) Market (Local Market)

Vendors who are operating stores in the market are repeatedly buying and selling the products (vegetables) with cash on hand, and purchasing more vegetables based on the funds obtained. For this reason, many respondents said that the decrease in demand due to the COVID-19 pandemic first reduced sales, which made it difficult to purchase vegetables due to insufficient operating funds. In other words, even if demand recovers, there still is a risk that sufficient vegetables cannot be procured immediately. Reflecting this, many of the responses cited “lack of funding for procurement due to a decrease in sales.” Therefore, financial support is considered to be a potential need for stakeholders in the local market.

As indicated in the “producers”, buying prices (i.e., sales prices of farmers and distributors) had been kept low, and procurement problems for the vendors appeared to be mild. However, some vendors indicated that “while the unit price of purchase is high, it is difficult to obtain fresh vegetables;” a shortage of high-quality products, that is, logistical issues, was a problem. In this way, perishable crops are more likely to be affected by logistics stagnation.

According to the follow-up (FU) survey conducted in Indonesia and Viet Nam in December 2021, the situation of retail shops in the local market was generally improving in Indonesia. All survey items tended to recover from the time of the previous survey. The reason for this was the relaxation of movement restrictions. In addition, there was a seemingly contradictory situation that the procurement price of vegetables was declining while the selling price was rising. The background to this was that prices and transaction volumes fluctuate greatly during this period, and some retail shops could capture good opportunities. One of the challenges is to secure sufficient funds for operations, which limits the amount to be purchased, implying a loss of opportunities.

On the other hand, although there was an increase in the number of infected people in the fourth wave during the survey period in Viet Nam, many respondents said that access to farmers was not a problem. The reasons cited were that they had become accustomed to the situation and that there was government support for traffic control. It may be because traffic restrictions are easier than in the early stages of the outbreak.

Sales prices were evaluated like “not much changed” and “there are fluctuations, but they were due to seasonal factors.” However, in the case of Viet Nam, there was variation in the responses (positive and negative impacts); the differences among businesses entities were larger than in Indonesia. In the period of the recovery process of social conditions, such retailers with relatively good conditions seem to be able to get benefit ahead of the rest.

In Vietnam, two out of six respondents indicated that they do business with agricultural cooperatives. This can be evidence that buyers find it more effective and efficient to deal with organizations than with individual farmers in terms of quality assurance and reduction of transaction costs, which in turn suggests that producers may be able to expand their sales channels by forming a group as far as it is functional to produce and ship quality vegetables.

In both Indonesia and Viet Nam, it was pointed out that customers remained highly concerned about the hygienic conditions of the products and selling environment; this situation may become new-normal in with/post COVID-19 society.



**Table 3.2.7 Impact of COVID-19 Pandemic on “Local Market” Stage**

Items	Situation
<b>Basic Information</b>	
Main handling items	• Cabbage, chili, lettuce, spinach, tomato, and other leafy vegetables
Scale of business	• From 40 customers per day to more than 200 per day
Source of products	• 4 retailers doing business with several farmers and 2 buying from distributors (with overlap) • Some respondents purchase produces from cooperatives (Viet Nam: FU survey)
Types of customers	• Although there are differences, middle-class customers are the main target
<b>Impact of COVID-19 Pandemic</b>	
Issues on purchasing	• As sales decrease, purchasable amount of vegetables decreased (financial point of view)
Issues on selling	• Decrease in customers (mainly due to movement restrictions) and suspension of sales to main cities
Profit	• 3 out of 5 "very" 2 "slightly" decreased • Toward the end of 2021, the situation was getting better in Indonesia and had variation in Viet Nam (FU survey)
Purchasing	• Not much Impact of price increase when purchasing • High prices, but insufficient high-quality fresh vegetables
Selling	• Decrease in customers, in purchased amount per customer, and then in the sale • Some suppliers had experienced the disposal of vegetables
Management, employment	• Employment status of workers is not a big problem • Situation remains almost unchanged in late 2021 (FU survey)
Others	• Communication with customers and suppliers is generally no problem • Opening hours were reduced and market closed due to travel restrictions • Customers' concern on the hygiene condition remains high (FU survey)

Source: JICA Survey Team

## 5) Restaurant

There were three types of restaurants surveyed: home-country restaurants, other Asian restaurants, and cafes. Of these, many stores discussed issues in the procurement of food (raw materials). For example, there were cases (cafes) in which procurement personnel frequently went shopping due to the absence of a delivery company or a limited number of items that can be procured at a time. On the other hand, there were cases of restricting the number of procurements of sourcing ingredients, once every two weeks or alike. They depend on the type of food required, the storage period, and the accessibility to shops/ markets.

The situation of price fluctuation is varied depending on the types of foods/ food materials. Price of some vegetables (garlic, tomatoes, etc.) became higher, while others have declined (lettuce, etc.). Demand for vegetables across the restaurant industry had declined, as many restaurants temporarily closed in response to the reduction of customers under travel restrictions. Along with this, there had been an oversupply of vegetables and a decline in prices. In this situation, individual restaurants that continued to be open, it was a good opportunity to procure vegetables at relatively low prices. Yet, this kind of high price-elasticity might be the case only with perishable vegetables such as lettuce, but not for long-life vegetables such as garlic.

In addition, the availability of food stocks has changed greatly depending on the types of foods under the limitations in COVID-19 pandemic. For example, while vegetables were easy to obtain in the Philippines, which were not subject to movement restrictions, cross-regional transportation of meat had been restricted. Also, the means of transportation are different depending on the types of foods (marine products are airlifted), so the degree of certainness of delivery varied depending on the means of transport. As a result, there was a problem that all the ingredients necessary for the menu were not prepared, and the menu had to be given up.

The route of the value chain discussed so far was generally close to one-line in the category of “vegetable”, but in this “restaurant,” the influence on other FVC also affects the vegetable value chain because multiple food items shall be integrated into the restaurant stage. The restaurant stage is not only a nodal point on vegetable value chain but is a hub for multiple food items.

**Table 3.2.8 Impact of COVID-19 Pandemic on “Restaurant” Stage**

Items	Situation
<b>Basic information</b>	
Type of cuisine	• Home-country food, Asian food, and café
Number of customers	• 10 to 100 customers per day
Financial source	• Government financial institutes, private banks, and private renders
Types of customers	• Family, youth group, and tourists
Type of commodities to handle	• Tomato, cabbage, chili, lettuce, carrot, broccoli, leek, etc.
<b>Impact of COVID-19 Pandemic</b>	
Issues on purchasing	• Quality degradation and price increases • Number of opportunities for personnel to go shopping on their own increases (cafe) • Frequency of procurement reduced to be once every 2 weeks (Indonesian restaurant)
Issues on selling	• Temporary closure and no income • Reduced revenue due to price discount
Profit	• Significantly reduced
Acquisition of food materials	• Food required for the restaurant's regular menu was not available, and the menu was changed • Purchased food materials had been disposed because they could not be used • While prices of lettuce and other products had become cheaper, garlic and tomato had risen • There was no significant impact on prices when purchasing at supermarkets
Amount of sales	• Decrease in consumption per customer, decrease in sales due to decrease in the number of customers, and significant impact of closures of the restaurant

Source: JICA Survey Team

## 6) Consumer

Table 3.2.9 shows the basic information of consumers and the impact of COVID-19 pandemic they faced. As shown in the table, COVID-19 pandemic had caused many behavioral changes in consumers. Although the number of respondents is small, many had experienced working and learning from home, and working hours have decreased. The income has decreased in some households by working from home or losing job opportunities. Focusing on household consumption, while electricity and telecommunications expenses had increased due to the increase in living time at home, expenditures on social activities and transportation expenses had decreased. Several respondents mentioned that spending on medical expenses had increased. This was related to the purchase of masks and disinfectants in the short term, and the lack of exercise and changes in food associated with working from home might be also expected in the long run.

Many respondents stated that eating behavior changes after COVID-19 resulted in fewer purchases at stores and increased use of delivery services. However, it was observed that delivery services were used to procure daily necessities more than food. On the other hand, with the increase in opportunities to stay at home, the frequency of eating out had decreased overall, and the amount of food purchased at home had increased. In doing so, many respondents claimed that they would consider nutritional balance and actively consume vitamin-rich foods.

As mentioned, opportunities to cook at home had increased even for families who used to eat out. Even if there is no significant change in the total demand for food, it is shown that the significant change in the route of obtaining the foods had caused a significant change, especially in the restaurant industry (hotels, restaurants, and cafes/ catering) and the distributors who wholesale foods for the restaurant industry.

Although it was based on the multiple choices question, it was observed that awareness about food safety had increased, and several individuals feared the adhesion of pathogenic bacteria to foodstuffs. Of the “food demand”, demand for vegetables and fruits had increased for the consideration of health, and there was a change in demand in terms of quality also attributed to health consciousness.

**Table 3.2.9 Impact of COVID-19 Pandemic on “Consumer” Stage**

Items	Situation
<b>Basic Information</b>	
Sex	• About 60% female and 40% male
Occupation	• Mainly employees and some students
<b>Impact of COVID-19 Pandemic</b>	
Change of living behavior	• There had been changes in many items especially changes in eating habits
Work/ study from home	• Almost all respondents had experience working and learning from home (including a few days a week) • Working hours and days decreased
Household income	• Income declined for many of the respondents
Household spending	• Generally, household spending increased, especially in food, lighting, communications, entertainment, education, and medical expenses • Some respondents spent less on social activities, transportation, etc.
Change of consumption behavior	• Fewer visits to physical stores and more online delivery services (Purchase of daily necessities is the main, and the purchase of fresh food is not much)
Change of eating habit	• Purchase volume increased overall (for stay-at-home) • Concern on food safety had increased since COVID-19 pandemic • Fear of mixing pathogenic bacteria into foodstuffs increased • More opportunities to cook at home • More consciousness on diet balance and taking vitamin-rich food

Source: JICA Survey Team

### 3.2.4 Impact of COVID-19 Pandemic by Theme

#### (1) Concern on the Impact of COVID-19 Pandemic

Concerns on the impact of COVID-19 pandemic were asked in each stage of the vegetable value chain on three items: “infection risk”, “financial impact”, and “psychological effect”. As shown in Table 3.2.10, concerns about the “financial impact” (1.66) outweigh 1.61 concerns about the “risk of infection”. However, in the three stages of input, producer, and retail, concerns about “infection risk” were exceeded. As such, the most concerning item appeared to be different by stage.

As the survey in the four targeted countries was conducted before the extreme phase of infection, it is likely that the financial impact of restrictions on movement, various social measures, and changes in consumer behavior to prevent COVID-19 pandemic was more concerned than the infection itself.

**Table 3.2.10 Concern on the Impact of COVID-19 Pandemic by FVC Stage**

FVC Stage	Risk of Infection	Financial Impact	Psychological Effect	No. of Respondents
Input Supplier	1.62	1.57	1.38	63
Farmer	1.58	1.55	1.18	120
Processor	1.56	1.78	1.33	27
Trader/ Wholesaler/ Distributor	1.62	1.70	1.57	149
Local Market	1.60	1.80	1.60	15
Retailer	1.67	1.62	1.38	63
Restaurant	1.73	1.86	1.73	66
Supermarket	1.40	1.60	1.47	45
Consumer	1.66	1.68	1.32	114
<b>Total/ Average</b>	<b>1.61</b>	<b>1.66</b>	<b>1.42</b>	<b>662</b>

Source: JICA Survey Team

Note: 2. Very much concerned, 1. Slightly Concerned, 0. Not concerned at all (the higher the number, higher the impact)

#### (2) Period Most Affected by COVID-19 Pandemic

In each stage of the vegetable value chain, answers were given about the period when they felt most affected<sup>2</sup>. Since the total number of responses in each FVC stage is different, it cannot be said that the influence in a specific stage is large due to the large number, but some tendency might be seen. First, a country-by-country overview of the four countries surveyed on vegetables shows that there are two

<sup>2</sup> Figures 3.2.7 and 3.2.8 are based on the results of the open-ended question to capture the time when they were affected. If a respondent says that they have been affected over several months, response is counted in each month over the said period.

peaks: the first wave peaking around April 2020 and the second wave peaking from February to April 2021. In individual countries, Indonesia's first peak was a little late around July 2020, and there was almost no second wave by the time the survey was completed. This is probably because the survey had been completed by May 2021 and does not include the subsequent spread of the infection in Indonesia.

Viet Nam and the Philippines had largely formed two peaks, and it seems to characterize the trend of the four countries. In Lao PDR, there was little spread in 2020 and the spread of infection occurred in 2021, as a result, the impact period is concentrated in April 2021.

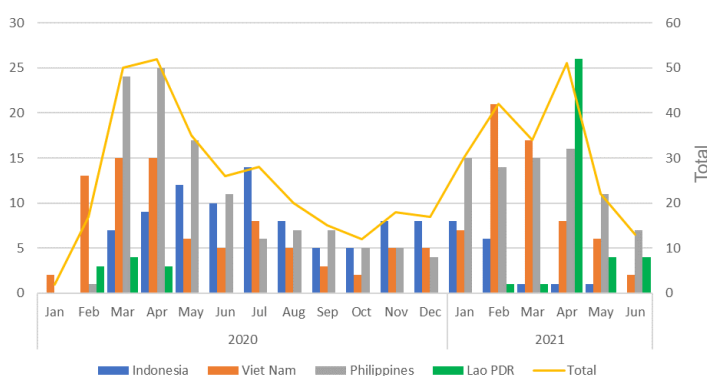
Next, looking at the period most affected by FVC stage (Figure 3.2.8), all stages have been on an overall trend with two peaks. Although it is with limited sample size, one scenario is that the occurrence of COVID-19 pandemic and the emergency measures had caused stagnation of logistics, closure of restaurants, etc., and then various problems occurred later due to the change in consumers' eating habits from eating out to self-catering/ home cooking. In these countries, the number of COVID-19 infections was not so large during the first peak, so the "impact of restriction measures" is rather strong. After that, the degree of influence once became lowered as various constraints were lifted. However, the peak had come again due to the rapid increase in the number of COVID-19 infected people.

It should be noted that the content of the problem was different depending on the timing. As mentioned above, distributors in the Philippines, for example, mentioned that "increase in purchasing price" was the main problem during the first wave, but "decrease in trading volume" was the main problem during the second wave.

**(3) Degree of COVID-19 Impacts by Evaluation Index and FVC Stage**

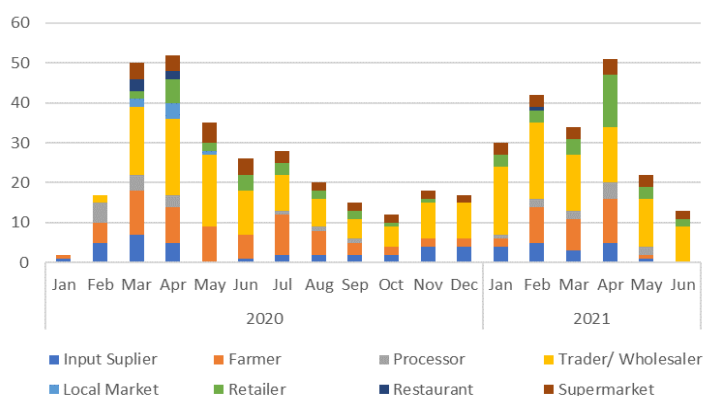
Questionnaire items were classified into 12 indices based on the points of operation such as "goods," "money", and "human resource". Table 3.2.11 shows the degree of COVID-19 impacts on each index and stage (irrespective of positive impact and negative impact, however, most of them are negative impacts). Note that, however, the number of responses categorized into each index is different, and the answers were given by different players based on their subjective judgement. Thus, it does not completely serve for the comparison of definite value among the FVC stages, the following can be implied.

- ✓ To give an overview of the impact by FVC stage, the impact on "restaurant" and "local market",



**Figure 3.2.7 Period Most Affected by COVID-19 Pandemic by Country**

Source: JICA Survey Team (left axis: by country, right axis: total)



**Figure 3.2.8 Period Most Affected by COVID-19 Pandemic by FVC Stage**

Source: JICA Survey Team

which had been directly affected by restrictions on movement and closing orders, is significant, followed by the impact on the “production” and “processing” sectors, which had lost demand. On the other hand, the influence on “distributors,” “retailer”, and “supermarket” who are in the position between them is relatively low.

- ✓ Looking at the impact by indicator, “goods-handling volume”, “money-profit”, and “money-price” had generally received a strong impact. In terms of large indicators (theme) of people, goods, money, and information, the influence from the viewpoint of “money” is the largest.

**Table 3.2.11 Degree of COVID-19 Impacts by Evaluation Index and Stage**

Item		Input Supplier	Producer	Processor	Trader/ Wholesaler/ Distributor	Local Market	Retailer	Restaurant	Super market
Good	(1) goods – handling volume	0.82	1.02	0.70	1.17	0.93	0.69	0.92	0.96
	(2) goods - access	0.96	0.74	0.51	0.41	0.00	0.34	0.20	0.02
	(3) goods – transportation means	0.30	0.16	0.28	0.09	N/A	0.16	N/A	N/A
Money	(4) money - profit	1.17	1.28	0.96	1.19	0.88	0.79	1.63	1.00
	(5) money - cost	0.54	0.60	0.83	0.18	1.00	0.20	0.87	0.45
	(6) money - price	1.16	1.24	0.72	1.25	0.75	0.46	0.77	0.20
	(7) money - others	0.53	0.20	0.26	0.35	0.00	0.22	0.91	0.10
HR	(8) people – labor, expense	0.43	0.24	0.30	0.25	0.20	0.12	0.61	0.36
	(9) information	0.45	0.35	0.19	0.08	0.33	0.39	0.84	0.34
	(10) operation/ management	0.27	0.15	0.08	0.12	0.80	0.52	1.70	0.72
	(11) environment	0.75	0.10	0.56	0.36	N/A	0.31	N/A	N/A
	(12) input	0.22	0.20	N/A	N/A	N/A	N/A	N/A	N/A
	Average	0.57	0.47	0.51	0.39	0.64	0.42	0.88	0.50
	Number of Respondents	21	42	9	50	5	21	23	15
	Total Number of Responses	1,408	3,592	467	3,344	141	1,156	632	381

Source: JICA Survey Team

Note: Answer to each question was categorized into three degrees of low, medium, and high impacts, then, scores were given to them with a higher score (3) to “high” and lower score (1) to “low.” These were then divided by the total number of responses. So, the higher the average score is, the bigger the impact of COVID-19 on each stage shown in the table.

### 3.2.5 Conclusion of the Impacts and Countermeasures Proposed

In general, FVC is defined as “to create a chain of value on food by connecting them while adding value at each stage from the production of agricultural, forestry and fishery products to manufacturing and processing, distribution, and consumption.<sup>3</sup>”, and this is usually expressed by an increase in price. From the viewpoint of FVC, it should be noted that price increases had been caused in various stages, but this was by cost increases due to shortages of imported goods, etc., but not by the addition of new values (e.g., quality improvement, efficiency improvement of marketing routes). In addition, there were cases where temporary mismatches in demand caused an oversupply of harvests, leading to disposal. This was absolutely damage to the value in the whole process of FVC. Many people involved in vegetable VCs were negatively affected in the form of income declines.

On the other hand, there had been some producers and distributors who introduced online delivery early after COVID-19 pandemic and built a route to sell directly to consumers, which is a good example of high resilience. However, with the change from the form of conventional distribution, various changes of operation, such as small delivery and response to different demands (quantity and timing), were necessary. It was also a valuable lesson that many behavioral changes were required.

Assuming that the total volume of demand of the final consumer does not change, while the consumer's behavior changes from an “eating out” to a “home-cooking” will continue for a certain extent in the

<sup>3</sup> Global Food Chain Strategy – promotion of “Made WITH Japan” with Industry-Academia-Government Collaboration (MAFF, June 2014) [https://www.maff.go.jp/j/kokusai/kokkyo/food\\_value\\_chain/attach/pdf/140606\\_2-01.pdf](https://www.maff.go.jp/j/kokusai/kokkyo/food_value_chain/attach/pdf/140606_2-01.pdf)

future, diversification of distribution channels and response to the change in demands will be one of the key strategies for strengthening resilience in post/with COVID-19 society.

In addition, it was reported that awareness of food safety had increased in the COVID-19 pandemic. In general, “food safety” is usually concerned about pesticide residues and food hygiene, and agricultural, livestock, and fishery products are not often considered as infection sources of infectious diseases such as COVID-19. Yet, it is quite possible that people in the midst of social turmoil such as COVID-19 consider both of them as “food safety.” In any case, COVID-19 pandemic had risen consumers’ interest in food safety more than ever. As a result, it is assumable that the proper use of pesticides is more required in post/with COVID-19 society.

In such case, proper use of pesticides and the application/ promotion of certification systems (e.g., GAP) seems to be a good policy recommendation. On the other hand, labor shortage had become a significant problem during COVID-19 pandemic, and thus the vulnerability of labor-intensive production system became obvious. Furthermore, it was observed that farmers cannot necessarily pass on the costs associated with such proper management (application of GAP) to prices especially when demand declines. Satisfying the social needs of FVC, in this case, ensuring food safety, can be a risky initiative for farmers in the “production” sector. Therefore, it should be noted that there is a contradiction between the overall optimization and partial optimization.

Finally, Table 3.2.12 shows the issues in vegetable value chain upon COVID-19 pandemic described above, and measures to strengthen vegetable value chain suggested by this survey.

**Table 3.2.12 Issues and Countermeasures for Vegetable Value Chain before/ after COVID-19**

Input	Production	Distribution	Market	Consumption
<b>Issue</b>				
<ul style="list-style-type: none"> <li>- Quality of input</li> <li>- Availability of high-quality input</li> <li>- Increase in price of imported materials</li> <li>- Delay in distribution of input materials</li> <li>- Reduction in farmers' demand</li> </ul>	<ul style="list-style-type: none"> <li>- Quality of product</li> <li>- Yield of product (bad weather and occurrence of pest/ disease)</li> <li>- Insufficient labor</li> <li>- Increase in price of input</li> <li>- Reduction in price of product due to oversupply of harvest</li> <li>- Reduction or termination of contract from buyers</li> <li>- Reduction of quality of product associated with low quality/ insufficient amount of input</li> <li>- Higher transaction cost for direct selling to consumer</li> </ul>	<ul style="list-style-type: none"> <li>- Bargaining both with producers and buyers</li> <li>- Distribution cost</li> <li>- Distance of transportation</li> <li>- Reservation of freshness (loss and waste)</li> <li>- Reduction of the price of the service requested by farmers</li> <li>- Termination of contract with restaurant and mobile retailer who deliver products to consumers</li> <li>- Difficulty to rent a car for transportation</li> <li>- Increase in the cost for the communication and self-protection for infection control</li> </ul>	<ul style="list-style-type: none"> <li>- Quality and quantity control upon the demand</li> <li>- Financial management</li> <li>- Competition between traditional and modern market</li> <li>- Introduction of on-line ordering and delivering system</li> <li>- Vicious cycle caused by the reduction in sales, making it difficult to purchase raw materials</li> <li>- Reduction of quality products</li> <li>- Reduction of customers</li> <li>- Reduction of opening hours of market</li> </ul>	<ul style="list-style-type: none"> <li>- Consumers' preference</li> <li>- Price of food to provide</li> <li>- Reduction of quality of food materials</li> <li>- Increase/ fluctuation in the price of foods</li> <li>- Increase of opportunity of self-procurement of food materials</li> <li>- Increase of bulk-buying to reduce the number of transactions</li> <li>- Reduction in the number of customers and amount of money spent per customer</li> <li>- Closure of restaurant due to lock-down</li> </ul>
<ul style="list-style-type: none"> <li>- Maintenance of quality and quantity of materials/ products traded, access to finance, matching of demand and supply and food safety</li> <li>- Disruption of physical distribution of materials and produces, infection control (social distancing, and hygiene control), and change in social behavior and people's lifestyle, resulting in the reduction of profit in all stages</li> </ul>				
<b>Countermeasure</b>				
<ul style="list-style-type: none"> <li>- Seed production in the country</li> <li>- Application of agriculture loan even to input suppliers</li> </ul>	<ul style="list-style-type: none"> <li>- Improvement of cultivation techniques suited to the local condition</li> <li>- Seed production by farmers</li> <li>- Use of automation techniques</li> <li>- Direct selling to consumers</li> <li>- Diversification of selling route</li> </ul>	<ul style="list-style-type: none"> <li>- Enhancement of delivery service and take-out service</li> <li>- Selling through EC platform</li> <li>- Enhancement and upgrading of storages</li> </ul>	<ul style="list-style-type: none"> <li>- Improvement of hygiene condition at traditional markets</li> <li>- Enlargement of modern market sector</li> </ul>	<ul style="list-style-type: none"> <li>- Support and promotion of events and tourism</li> </ul>
<b>Cross-stage countermeasures</b>				
<ul style="list-style-type: none"> <li>- Promotion and development of vegetable distribution platformers, which include the transportation functions</li> <li>- Disease control</li> <li>- Development of agricultural data platform</li> </ul>				

Source: JICA Survey Team

### 3.3 COVID-19 Impact Survey on Fruits (Philippines)

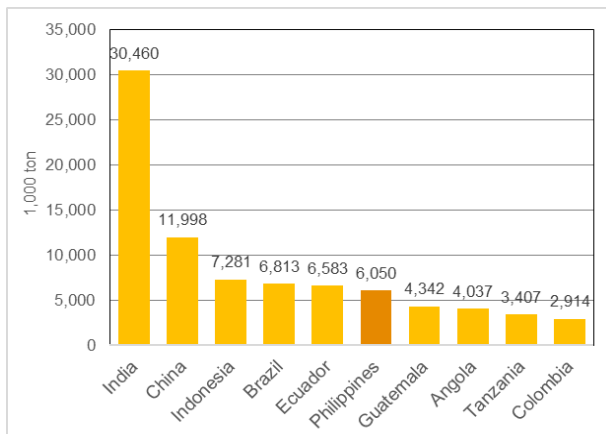
#### 3.3.1 Outline of Fruits (Pineapple and Banana) VCs in the Philippines

The Philippines has benefited from expanding production of processed foods over the past decade, most of which is consumed locally. In addition, the export of processed food also has more than doubled in value between 2006 and 2015<sup>1</sup>. The food industry has good potential for export expansion, with the opening of the ASEAN Common Market in 2015, and the growing demand of China for fresh and tropical products. Banana, pineapple, and mango are the major export commodities of the Philippines.

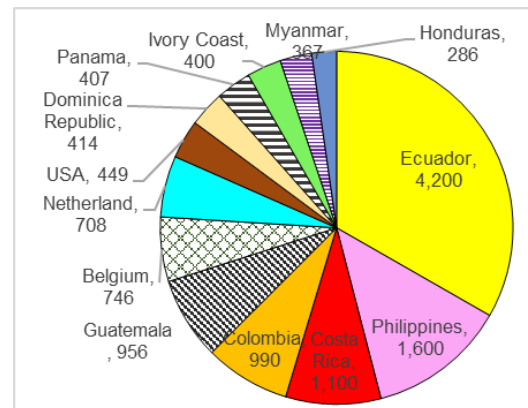
##### 1) Banana

Figure 3.3.1 indicates that the Philippines is ranked at the 6<sup>th</sup> largest banana production in the world<sup>2</sup>. It produces some varieties of bananas and plantains such as the Cavendish, Lakatan, and the Saba/ Cardaba varieties. While Cavendish is mainly produced as an export product, the Lakatan is consumed mostly as fresh fruit in the domestic market, while a good portion of the Saba/ Cardaba variety is processed into banana chips<sup>3</sup>. Among those varieties, Cavendish banana accounts for 50-60% of the total banana production<sup>4</sup>.

The Philippines ranks as the second leading global banana exporter behind Ecuador as shown in Figure 3.3.2. The main Philippine banana export markets are Japan, China, Korea Republic, UAE, and so on. Banana exports from the Philippines were affected by severe production difficulties arising from the spread of plant diseases, which were worsened by the movement restrictions due to COVID-19. Such a situation had a particularly detrimental effect on small-scale banana producers, who faced canceled orders due to quality concerns<sup>5</sup>.



**Figure 3.3.1 Top 10 Banana Production Countries**  
Source; FAO STAT, 2021<sup>2</sup>



**Figure 3.3.2 Major Banana Exports Countries (million USD)**  
Source; World Top Export, 2021

It is noted that the VCs of bananas are various depending on the banana varieties. For instance, Cardaba is for the local market where household-level buyers purchase fresh fruit for their consumption or home cooking. Cardava is also used as banana chips for export. The main banana variety in the Philippines is Cavendish, thus, hereinafter, this variety is focused, and the general flow of VC of Cavendish is illustrated in Figure 3.3.3. In general, the VC for Fresh Fruit Banana consists of five (5) stages, namely, “Input supplier”, “Producer”, “Consolidator”, “Exporter” and “Consumer” as follows:

**Input supply:** Input suppliers in the banana VC are enterprises that provide planting materials, fertilizers,

<sup>1</sup> ILO, Economic and social upgrading in the Philippines’ pineapple supply chain, November 2019

<sup>2</sup> Food and Agriculture Organization of the United Nations (FAO) - FAOSTAT - Production, Crops, Bananas, 2021

<sup>3</sup> Philippines Statistics Authority, Major fruit Crops Quarterly Bulletin, Volume 15 No.1, January -Marh 2021, May 2021

<sup>4</sup> Department of Agriculture, “Philippines Banan Industry Roadmap 2019-2022”, December 2018

<sup>5</sup> FAO, “Banana Market Review Preliminary Results 2020”, 2021

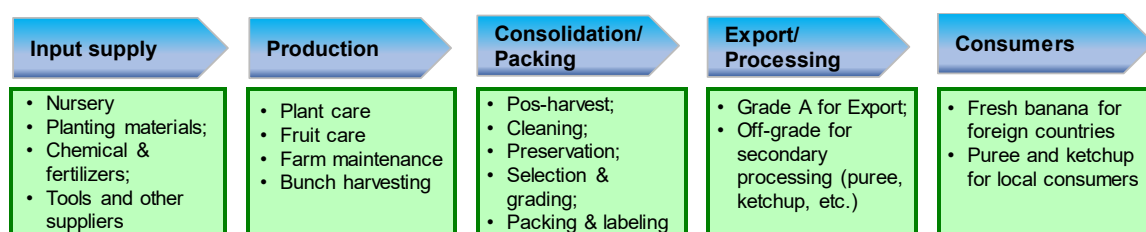
agrochemicals, and so on. Some enterprises supply tissue-cultured planting materials.

**Production:** Production includes plant care, application of chemicals & fertilizers, other inputs, and practices. Even before COVID-19, they have faced damages due to Panama disease, which is caused by Fusarium, and the situations were aggregated by the movement restrictions.

**Consolidation/Packing:** Consolidators (collectors) and packaging companies purchase bananas from producers and wholesalers and sell the bananas to exporters or large-scale consolidators. This stage consists of post-harvest consolidation and packing which includes cleaning, selection, grading, and labeling.

**Export:** The banana produced in the Philippines are exported to Japan, China, Korea, and Middle Eastern countries. Sumifru (Philippines) Corporation and Dole Philippine are well-known as major export companies of banana export.

**Consumer:** Exported bananas are mainly to be consumed fresh while that for domestic markets are processed into ketchup and so on. As of 2016, Bananas exported to Japan accounted for 36.4% of total exported bananas.

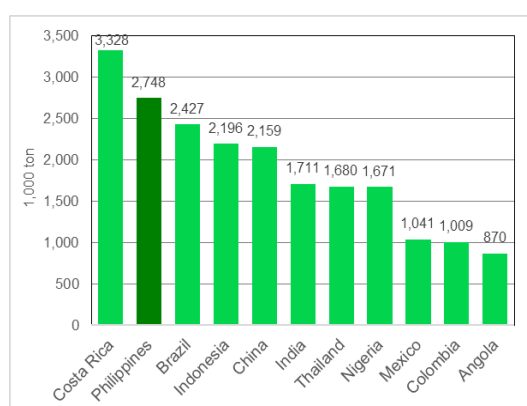


**Figure 3.3.3 Bananas Fresh Fruit VC (Cavendish)**

Source: JICA Survey Team<sup>6</sup>

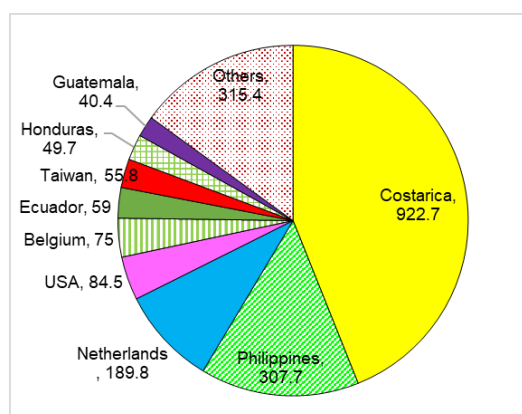
## 2) Pineapple

Philippines is the second-largest pineapple production country as illustrated in Figure 3.3.4. The pineapple supply chain in the Philippines is largely dominated by two multinational enterprise-led supply chains, namely, Del Monte Philippines, Inc. and Dolefil<sup>7</sup>. Their supply chains involve national processing and handling subsidiaries or suppliers, which in turn manage direct production under their acreage. The enterprises also contract larger corporate growers, who in turn may contract out production through agribusiness venture arrangements.



**Figure 3.3.4 Top 10 Pineapple Production Countries**

Source : ILO, 2019<sup>7</sup>



**Figure 3.3.5 Major Pineapple Export Countries (million USD)**

Source: World's Top Export, 2021

The top 5 exporters of pineapple countries in value in the world are Costa Rica, the Philippines,

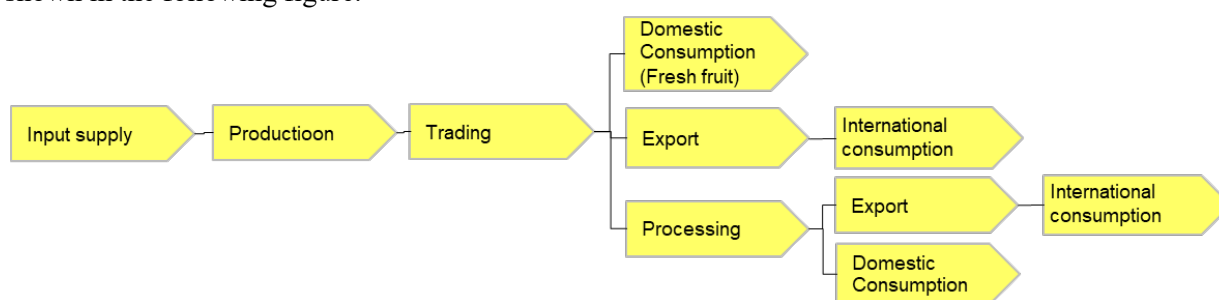
<sup>6</sup> It is modified based on “Philippines Banan Industry Roadmap 2019-2022” issued by Department of Agriculture, 2018

<sup>7</sup> ILO, Economic and social upgrading in the Philippines’ pineapple supply chain, November 2019



Netherlands, United States, Belgium in turn, and the Philippines accounts for 15% of all globally exported pineapples in 2020 as illustrated in Figure 3.3.5<sup>8</sup>. Pineapples produced in the Philippines are exported in processed forms in addition to the fresh fruit, and the most popular processed forms of pineapple for export are purees, juices, dried fruit, and preserves in syrup.

Flow of the pineapple VC in the Philippines is divided into domestic consumption and export, and the former is major. As of 2015, the pineapple export volume was 713.94 tons, while production volume was 2,582.7<sup>9</sup>, which means that 28% of production is for export. The main stakeholders of the VC are “Input supplier”, “Producer/Farmer”, “Trader”, “Processor”, “Exporter”, and Consumers (shoppers) as shown in the following figure.



**Figure 3.3.6 Pineapple VC Map in the Philippines**

Source: JICA Survey Team

**Input supplier:** Input suppliers handle various agricultural inputs, namely, fertilizers and chemicals, and purchase them from Davao city, Manila, China, Vietnam, and Indonesia. Before COVID-19, the stage did not have any severe issues, however, some of them have faced competition with other suppliers.

**Producer:** The scales of pineapple producers are various, from 1.5ha to several hundred farmland owners. Some of them exchange contracts with Dole Philippines for stable sales. Pineapple harvesting in the Philippines is a year-round experience.

**Trader:** Produced pineapple is collected from farmers or export companies such as Del Monte Philippines. They sell the products to wholesalers mainly and sometimes to consumers directly.

**Processor:** There are a number of processing plants in the Philippines, and some of them are owned by multinational companies such as Dole Philippines and Del Monte Philippines.

**Exporter:** Pineapples produced in the Philippines are exported in processed forms in addition to fresh fruit. Dole and Del Monte are the primary exporters of pineapple products for the industry. Main destinations for export are Japan, China, South Korea, and so on.

**Consumer:** Local people can purchase pineapple at local markets or modern supermarkets.

### 3.3.2 Outline of the Impact Survey on Fruits VCs

A series of questionnaire surveys of fruits VC to examine the impact of COVID-19 was implemented in May 2021. Davao region accounted for 39% of the country’s total bananas production, followed by Northern Mindanao with 19%<sup>10</sup>. Concerning pineapple, Northern Mindanao (Region X) is the top producing region for pineapples and accounts for an average of 61% of the annual crop. The next closest

<sup>8</sup> World’s Top Export, “Pineapples Exports by Country”, <<https://www.worldstopexports.com/pineapples-exports-by-country/>>

<sup>9</sup> ILO, “Economic and social upgrading in the Philippines’ pineapple supply chain”, November 2019

<sup>10</sup> ASIAFRUIT, “Philippine banana production down”, September 2020, <<http://www.fruitnet.com/asiafruit/article/182785/philippine-banana-production-down-1>>

region is Soccsksargen (Region XII), which accounts for 28%<sup>11</sup>.

Thus, the surveys for fruits were implemented in Davao Region (Region XI), Bukidnon in North Mindanao Region, and South Cotabato in Region XII and Davao. On the other hand, “Exporters” and “Consumers”, who stay in Manila and so on, were targeted as shown in Table 3.3.1 and Table 3.3.2. The locations of the target areas are illustrated in Figure 3.3.7.

**Table 3.3.1 No. of Respondents of Bananas VC**

Segment	Davao Region	South Cotabato	Bukidnon	Manila	UAE	Total
Input supplier	5	0	0	0	0	5
Producers	8	0	0	0	0	8
Consolidator	5	0	0	0	0	5
Exporters	2	0	0	0	0	2
Consumer	3	0	0	1	1	5
<b>TOTAL</b>	<b>23</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>25</b>

Source: JICA Survey Team

**Table 3.3.2 No. of Respondents of Pineapple VC**

Segment	Davao	South Cotabato	Bukidnon	Manila	Total
Input supplier	2	2	0	1	5
Producers	0	4	1	0	5
Traders	7	4	1	0	12
Processors	1	0	0	0	1
Exporters	2	0	0	0	2
Consumer	2	0	1	2	5
<b>TOTAL</b>	<b>14</b>	<b>10</b>	<b>3</b>	<b>3</b>	<b>30</b>

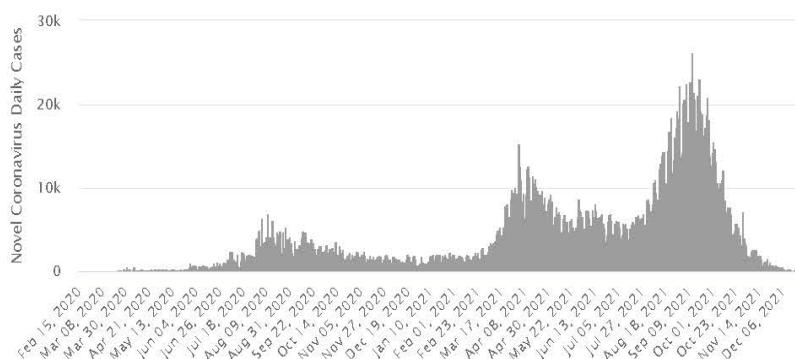
Source: JICA Survey Team



**Figure 3.3.7 Target Regions of the VC Survey**

Source: JICA Survey Team

The Philippines experienced the 1<sup>st</sup> peak, 2<sup>nd</sup> peak, and 3<sup>rd</sup> peak in August 2020, April 2021, and October 2021, respectively as shown in Figure 3.3.8<sup>12</sup>. It means that the situations were relatively calmed when interview surveys were implemented in May and December 2021.



**Figure 3.3.8 Daily Cases of COVID-19 in Philippines**

Source: World Meter<sup>12</sup>

### 3.3.3 Impact of COVID-19 Pandemic by Stage of Fruits VCs

#### 1) Banana

The results of the questionnaire survey by stage in the banana VC are summarized as shown below:

**Table 3.3.3 Issues of Banana VC by Stage in the Philippines before and after COVID-19**

FVC Stage	Input	Producer	Trader	Exporter	Consumer
Main stakeholders	Input supplier	Producer/Farmer	Consolidators	Exporter	Consumer/ Shopper
Issues before COVID-19	<ul style="list-style-type: none"> <li>High electricity cost, labor costs, and inflation rates</li> <li>Severe competition with other suppliers</li> <li>Most of the materials are</li> </ul>	<ul style="list-style-type: none"> <li>Banana prices were low or not constant</li> <li>Quality was deteriorated due to the outbreak of Panama disease</li> </ul>	<ul style="list-style-type: none"> <li>Insufficient financial support</li> <li>High management costs</li> </ul>	<ul style="list-style-type: none"> <li>Competition with other exporters</li> </ul>	None

<sup>11</sup> IPS-Ingredis, “12 Facts about the Pineapple Industry in the Philippines”, 2018, <<https://www.ipsingredis.com/markets/12-facts-about-the-pineapple-industry-in-the-philippines/>>

<sup>12</sup> <https://www.worldometers.info/coronavirus/country/philippines/#graph-cases-daily>, downloaded on 9<sup>th</sup> August 2021

FVC Stage	Input	Producer	Trader	Exporter	Consumer
	imported and cannot be controlled.				
Cross-cutting issue	<ul style="list-style-type: none"> <li>Most of the materials are imported and not self-sufficient.</li> <li>Production and quality are decreased due to Panama disease (root rot caused by Fusarium).</li> </ul>				
Issues caused by COVID-19	<ul style="list-style-type: none"> <li>Arrival of materials was delayed due to the closure of the border.</li> <li>Movement restrictions made it difficult for the customers to purchase materials, and the number of customers decreased.</li> <li>Since it took a long time to wait at the checkpoint, which made the cost of the driver high.</li> </ul>	<ul style="list-style-type: none"> <li>Decrease in demand</li> <li>Decrease in sales volume due to movement restrictions</li> <li>Decrease in selling price</li> <li>Production decreased due to insufficient spraying of drugs for Panama disease</li> </ul>	<ul style="list-style-type: none"> <li>Decrease in production due to Panama disease, and decrease in supply from producers</li> <li>Traffic regulation and long waiting time</li> <li>Decrease in demand due to lockdown</li> <li>Decrease in selling price</li> <li>Customers can be access</li> <li>Insufficient funds and delay in payment from customers</li> </ul>	<ul style="list-style-type: none"> <li>Increase in refrigerator rent</li> <li>Intensifying competition with peers (Chinese capital)</li> </ul>	<ul style="list-style-type: none"> <li>Increase of food expense</li> </ul>
Cross-cutting issue	<ul style="list-style-type: none"> <li>Due to the delay in the arrival of importing materials, chemicals, which control Panama disease, could not be sprayed sufficiently or on time, which affected the production and quality of bananas.</li> <li>Decreased demand for bananas by COVID-19 intensified competition with the person in the same trade as one (especially Chinese-owned companies)</li> </ul>				

Source: JICA Survey Team

### 1.1) Input supplier

Due to restrictions of movement and closure of the border, input materials, namely, fertilizers, chemicals, and coconut fiber were not available for a while. Travel restrictions made it difficult for them to sell inputs to other areas, which led to a decrease in inputs. In addition, prevention measures against COVID-19, namely, purchasing masks and alcohol was costly. They were not impacted from March to May of 2020. Those impacts are as shown in the following table:

**Table 3.3.4 Impacts on the Input Supplier of Banana by COVID-19**

Item	Situation
<b>【Basic Information】</b>	
Financial resource	<ul style="list-style-type: none"> <li>Commercial banks, many of the respondents are not financed</li> </ul>
Settlement methods	<ul style="list-style-type: none"> <li>Cash, bank transfer, and check</li> </ul>
Commodity	<ul style="list-style-type: none"> <li>Coconut fiber, plastic bags, fertilizers, pesticides, seedlings</li> </ul>
<b>【Impacts by COVID-19】</b>	
Issues of procurement	<ul style="list-style-type: none"> <li>Locked down from March to May 2020.</li> <li>Materials are temporarily unavailable</li> <li>Prices of pesticides were increased</li> </ul>
Issues of sale	<ul style="list-style-type: none"> <li>Due to lockdown, transportation was restricted. However, since some of the respondents have their trucks and it did not affect the means of transportation.</li> </ul>
Increase/decrease of profit	<ul style="list-style-type: none"> <li>The border restrictions resulted in delayed delivery of stocks decreasing their inventory for selling, which resulted in a decrease in profit.</li> </ul>
Receipt of commodities	<ul style="list-style-type: none"> <li>Due to border regulations, the arrival of input materials, namely, pesticides, coconut fiber, etc. was delayed.</li> <li>Coconut fiber is no longer available in Davao City from March to May 2020</li> </ul>
Handling volume and sales amount	<ul style="list-style-type: none"> <li>Movement restriction made it difficult for customers to purchase materials, reducing the number of customers.</li> </ul>
Management/Employment	<ul style="list-style-type: none"> <li>It cost money for masks and disinfectants to prevent infection.</li> </ul>
Most impacted period	<ul style="list-style-type: none"> <li>March-June 2020</li> </ul>
Others	

Source: JICA Survey Team

### 1.2) Producer

The farmland scales of respondents are various from less than one hectare to 10ha. Since before COVID-19, Panama disease, which is caused by a Fusarium, has been a big issue for banana producers. Moreover, due to the closure of borders and restrictions of domestic movements, chemicals were not available, which made it difficult to spray chemicals in a timely and appropriate amount. Such conditions gave damages to the production and quality of bananas. Furthermore, sales volume was decreased since buyers did not buy bananas due to their poor quality. The impacts on the producers are as follows:

**Table 3.3.5 Impacts on the Producer of Banana by COVID-19**

Item	Situations
<b>【Basic Information】</b>	
Financial resource	• Commercial banks, local banks, cooperative/association
Settlement methods	• Cash
Commodity	• Banana, rice
<b>【Impacts by COVID-19】</b>	
Issues of procurement	• Root rot due to Panama disease has been observed since before COVID-19, but due to closure of borders and restriction of domestic movements, chemicals could not be obtained, which made it difficult to spray chemicals in a timely and appropriate amount. Such conditions gave impacts on the production and quality of bananas.
Issues of sale	• Decrease of demand for banana • Sales volume was decreased due to movement restrictions • In some cases, buyers did not buy due to poor quality.
Increase/decrease of profit	• Due to the decrease in production volume, the sales volume decreased. • Due to the closure of borders and restriction of movement, the amount handled has decreased and profits have decreased.
Receipt of commodities	• Originally, there was a problem of Panama disease, but due to restrictions on borders and domestic movements, chemicals became unavailable, and it was difficult to spray chemicals in a timely and sufficiently, which affected the production and quality of bananas.
Volume of handling and sales	• Handling volumes were decreased due to production decrease and movement restriction
Management/Employment	• Since there was a long queue at the border, it was needed to wait for a long time for drivers, which increased fuel costs and driver labor costs (accommodation costs).
Most impacted period	• March-July in 2020

Source: JICA Survey Team

### 1.3) Consolidator

Consolidators faced big challenges to access their customers such as exporters from foreign countries due to the closure of the border. Some consolidators suspended their businesses from June to July 2020. Moreover, banana production was decreased by Panama disease, and the amount collected from farmers was decreased significantly.

Some farmers also control shipments, and the frequency of banana collection was decreased from four times per week to once per week. It is noted that competition with other consolidators becomes more serious than before. Some Chinese capitals have offices in the Philippines, and they can dispatch their employees for collection, which intensified competition. The impacts on the consolidators are shown in the following table:

**Table 3.3.6 Impacts on Consolidators of Banana by COVID-19**

Item	Situations
<b>【Basic Information】</b>	
Financial resource	• Loans from commercial banks, local banks, cooperatives, and individuals
Commodity	• Banana
<b>【Impacts by COVID-19】</b>	
Issues of procurement	• Due to movement restrictions, buyers and exporters from other countries cannot come to the collection point. • Due to Panama disease, banana production was decreased, and the amount collected from farmers was decreased significantly. Some farmers also control shipments. • Lockdowns and movement restrictions have made it difficult to visit people. • The business was suspended from June to July 2020.
Issues of sale	• Chinese capital, which has offices in the Philippines, can dispatch its employees and can collect goods, which has intensified competition with them. • The number of pickups, which was four times a week, has been reduced to one.
Increase/decrease of profit	• In addition to the decrease in production volume and collection volume, selling prices and demand were decreased, thus, profits were decreased significantly.
Handling volume and sales amount	• Revenue was decreased due to lower collection volume and lower prices (50-60% decrease)
Management/Employment	• The number of employees employed has not changed, but the number of working hours has decreased.
Most impacted period	• February-July 2020

Source: JICA Survey Team

The follow-up survey targeting consolidators was conducted in November 2021. Normally, banana

handling volume decreases after June and rises from January, reaching a peak in May, which is the same in 2021. However, with the increase of availability of other domestic bananas and other fruits, demand for Filipino bananas is decreased, and Panama disease is still prevalent in Santo Tomas, North Davao del Norte. For this reason, many banana farmers are curbing production and the frequency of banana consolidation was also lower than before. In addition, since traffic restrictions have been lifted, transportation has become smoother, but the amount of transportation has decreased due to a decrease in demand.

Regarding the unit sales price, one company, which handles Talaningod bananas can sell at a high price, while the other four companies had to sell bananas at low prices since June. In addition, Chinese collectors purchase bananas from producers at higher prices, which causes more intensive competition. Revenues have been decreased since June 2021 due to demand decrease in China, and one company has stopped trading since October 2021. On the other hand, the other four companies also faced the most severe decline of profits from June to July 2021, however, their businesses are recovering in the second half of the year, and they are expected to be improved in the first half of 2022.

#### 1.4) Exporter

The respondents in number were only two, thus, it is difficult to assess general impacts by COVID-19 on exporters. One of them did not face a decrease in sine prices, while another person did. The issues both experienced were an increase in tariff and retention fees for the storage of bananas and competition with Chinese competitors. They feel that sales prices are controlled by Chinese consolidators. The impacts on the exporters are as shown below:

**Table 3.3.7 Impacts on the Exporters of Banana by COVID-19**

Item	Situations
<b>【Basic Information】</b>	
Financial resource	• Commercial bank
Commodity	• Banana
<b>【Impacts by COVID-19】</b>	
Issues of procurement	• Panama disease • Delay in transportation
Issues of sale	• Restriction protocols by the government • Decrease in banana consumption, sale prices, and customers
Increase/decrease of profit	• Profit was decreased by 21-40% compared with before.
Receipt and sale of commodities	• The buying price of bananas was low • Competition with other exporters
Handling volume and sales amount	• Handling volume was not changed after COVID-19.
Management/Employment	• Retention fees and low market prices commanded by foreign importers • Tariff was increased • High cost of rent for storage of bananas in reefer vans
Most impacted period	• February-May 2020
Others	• Some bananas are easily ripened due to delays in transport from the farms • Increases in tariff and transport cost are the big reason for the spike in operational cost

Source: JICA Survey Team

The follow-up survey was conducted targeting the same two exporters in November-December 2021. The storage cost was decreased for one who handled less Banana while that was increased for another who did not. In addition, new Chinese companies with strong bargaining power have emerged, which caused intensified competition. In addition, due to the demand decrease of bananas in the export market, the unit sales price has decreased compared to before, and the profits of traders have also decreased. The most affected period after May 2021 for the exporters was June-October 2021.

#### 1.5) Consumer

The five consumers surveyed are retired, sales technicians, students, housewives, and university teachers, and all of them said that COVID-19 changed their lives. The incomes of sales staff and university

teachers were decreased due to COVID-19, but those of the other three did not change. On the other hand, expenses of food, daily necessities, communication, and medical were increased in general. Moreover, there were changes in the purchasing style of food and goods, such as "fewer purchases overall (online and in-store)", "increase an opportunity of using on-line/delivery service", and "using local stores as much as possible".

## 2) Pineapple

The results of the questionnaire survey by stage in the banana VC are summarized as shown below:

**Table 3.3.8 Issues of Pineapple VC by Stage before and after COVID-19**

FVC Stage	Input	Producer	Trader	Processor	Exporter	Consumer
Main stakeholders	Input supplier	Producer/ Farmer	Trader	Processor	Exporter	Consumer/ Shopper
Issues before COVID-19	<ul style="list-style-type: none"> <li>• Competition with other suppliers</li> <li>• High operation costs and low profits</li> </ul>	None	<ul style="list-style-type: none"> <li>• Competition with other traders</li> </ul>	<ul style="list-style-type: none"> <li>• Competition with other processors</li> <li>• High operation cost and low profits</li> </ul>	<ul style="list-style-type: none"> <li>• Shipment and payment take a long time</li> <li>• Competition with foreign exporters</li> </ul>	None
Cross-cutting issue	<ul style="list-style-type: none"> <li>• None</li> </ul>					
Issues caused by COVID-19	<ul style="list-style-type: none"> <li>• Delay in arrival of materials (foreign pesticides, etc.) due to movement restrictions</li> <li>• Increase in the wholesale price of materials</li> <li>• Decrease in demand for materials by producers due to shifting to other crops in their farms</li> <li>• Rise in transportation costs</li> <li>• Labor shortage due to movement restrictions</li> </ul>	<ul style="list-style-type: none"> <li>• Increase in material costs, e.g., fertilizer</li> <li>• Labor shortage due to movement restrictions</li> <li>• Increase of labor costs</li> <li>• Delay in remittance &amp; collection</li> <li>• Increase of fuel costs</li> </ul>	<ul style="list-style-type: none"> <li>• Movement restriction</li> <li>• Decrease in the number of travelers purchasing pineapple</li> <li>• Shop closure and decrease of customers</li> <li>• Decrease in sales volume</li> <li>• Decrease in selling price</li> <li>• Disposal of pineapple and pineapple was feed for livestock</li> <li>• The cost of purchasing masks and alcohol is high.</li> </ul>	<ul style="list-style-type: none"> <li>• Business suspension during the lockdown</li> <li>• Decrease in demand for school lunches of pineapple</li> </ul>	<ul style="list-style-type: none"> <li>• Lockdown &amp; movement restrictions</li> <li>• Increase in operation costs, e.g., cost of PCR test and labor costs</li> <li>• Labor shortage</li> <li>• Delay in bank transactions, payments from foreign companies, and restrictions on bank remittances</li> <li>• Reduction of business hours</li> <li>• Delay in delivery of crops due to border movement regulations</li> <li>• Deterioration of quality</li> </ul>	<ul style="list-style-type: none"> <li>• Increase of food expense</li> </ul>
Cross-cutting issue	<ul style="list-style-type: none"> <li>• Movement restrictions caused a shortage of agricultural input and an increase of those costs, on the other hand, traders had to dispose of unsold pineapples due to business suspensions and demand decrease.</li> <li>• As a whole, competition with other companies in the same industry is intensified.</li> </ul>					
Remarks	None	<ul style="list-style-type: none"> <li>• Some farmers have contracts with Dole, and Dole provides materials and machinery, and the sales destination is Dole. Thus, sales volume is not impacted by COVID-19 very much.</li> </ul>	<ul style="list-style-type: none"> <li>• Traders in Davao City get high profits since pineapple is rich in vitamin C, which meets the needs of consumers. However, traders in South Cotabato got fewer profits, since the main consumers are travelers.</li> <li>• Even if the pineapple quality does not satisfy the requirement by Dole and Del Monte, it is possible to sell them in the local market.</li> </ul>	<ul style="list-style-type: none"> <li>• Only one company can answer</li> <li>• The products are sold to Del Monte, but some of them are sold locally if the quality does not meet the requirements of Del Monte</li> <li>• Competition with other processors is intensified.</li> </ul>	None	<ul style="list-style-type: none"> <li>• Some of the respondents are online store owners and data analysts, thus, their incomes were increased due to COVID-19.</li> <li>• Under COVID-19, changes such as a decrease in shopping in number or an increase in online shopping were observed.</li> </ul>

Source: JICA Survey Team

### 2.1) Input supplier

The input suppliers for the pineapple VC have faced delays in the arrival of inputs due to the suspension

of trade with foreign agrochemical suppliers. Moreover, restriction of transportation hindered the movements of their customers, which led to the decrease of daily revenue. Those impacts on the input suppliers are as shown below:

**Table 3.3.9 Impacts on the Input Supplier of Pineapple by COVID-19**

Item	Situations
<b>【Basic Information】</b>	
Financial resource	• Commercial bank, commercial bank, cooperative/association, financial investment
Settlement methods	• Bank transfer, check, and cash
Commodity	• Fertilizers and chemicals
<b>【Impacts by COVID-19】</b>	
Issues of procurement	<ul style="list-style-type: none"> <li>• Delay in the arrival of materials such as foreign pesticides, etc. due to movement restrictions</li> <li>• Increase of wholesale price of materials</li> <li>• Rise of transportation costs</li> <li>• There is no change in the means of transportation itself</li> </ul>
Issues of sale	• Pineapple disease and movement restrictions have reduced the motivation of pineapple producers, affecting material sales.
Increase/decrease of profit	• While demand was decreased, transportation costs, namely, ship transportation costs, increase in road checkpoints, were increased, which resulted in a decrease in profits.
Receipt of commodities	<ul style="list-style-type: none"> <li>• The arrival of imported materials was delayed by about two months</li> <li>• Delivery priority of the respondents was low since agricultural materials were not recognized as essential.</li> </ul>
Volume of handling and sales	• The handling volume was decreased slightly due to movement restrictions and demand decrease.
Management/Employment	<ul style="list-style-type: none"> <li>• One supplier experienced a reduction of employment from 16 to 7.</li> <li>• Skeletal work was implemented during lockdowns (March-May 2020)</li> </ul>
Most impacted period	• April-May 2020 and October-December 2020
Others	• The number of employees was reduced as much as possible to avoid “denseness” in the workplace.

Source: JICA Survey Team

## 2.2) Producer

Pineapple producers experienced an increase in agrochemical prices by around 15-20%. However, those who contract with Dole did not face any difficulties getting inputs. During the lockdown period, labor costs were also increased. For those interviewees from South Cotabato, the demand for pineapple was decreased due to the restrictions of the movement of tourists. On the other hand, in urban areas such as Davao City, demand was increased due to the high nutritional value of pineapple. However, the opportunity to join in agricultural technical training was limited. Those impacts on the producers are shown below:

**Table 3.3.10 Impacts on the Producer of Pineapple by COVID-19**

Item	Situations
<b>【Basic Information】</b>	
Financial resource	• Government-affiliated financial institutions, borrowing from individuals, microfinance
Settlement methods	<ul style="list-style-type: none"> <li>• Payment methods for obtaining materials and machinery are provided by cash or Dole.</li> <li>• Payment from buyers is cash</li> </ul>
Commodity	• Pineapple, papaya, coffee, cacao
<b>【Impacts by COVID-19】</b>	
Issues of procurement	<ul style="list-style-type: none"> <li>• Two of the respondents receive materials from Dole, and the other respondents do not have much problem procuring goods.</li> <li>• Costs of inputs are increased.</li> </ul>
Issues of sale	<ul style="list-style-type: none"> <li>• Producers, who contract with Dole, can sell stably without any problems.</li> <li>• Pineapple contains Vitamins C, so the demand for pineapple has increased in the urban areas</li> </ul>
Increase/decrease of profit	• While operating costs e.g., material costs, employment costs, fuel costs, were increased, profit was decreased due to a decrease in sales.
Receipt of commodities	• No special issues
Volume of handling and sales	• During the lockdown, it was difficult to implement harvesting works, which lead to a yield decrease.
Management/Employment	<ul style="list-style-type: none"> <li>• Some respondents reduced the number of full-time employees</li> <li>• During lockdowns, experienced lack of labors</li> </ul>
Most impacted period	• March-May 2020

Item	Situations
Others	<ul style="list-style-type: none"> <li>• Opportunities to attend agricultural technology training were limited.</li> <li>• In some cases, the products are delivered by their truck, but in other cases, a middleman comes to buy them.</li> <li>• Producers, who do not grow under contract with Dole, have transactions with multiple customers.</li> </ul>

Source: JICA Survey Team

### 2.3) Trader

The traders in Davao City experienced income increased despite the lockdowns while the traders in Polomolok South Cotabato did not. The difference is mainly attributed to different kinds of markets or customers. For Davao City, its consumers are mainly urban residents, who eat pineapple as a good source of fiber and Vitamin C. The traders in Davao city can deliver pineapples directly to their customers. On the other hand, the usual consumers in South Cotabato are travelers and tourists, and they could not come to South Cotabato due to the lockdowns, which resulted in less revenue for them. The impacts on the trader are as follows:

**Table 3.3.11 Impacts on Trader of Pineapple by COVID-19**

Item	Situations
<b>【Basic Information】</b>	
Financial resource	• Commercial bank, loan from individuals, cooperative/association, microfinance
Commodity	Pineapple
<b>【Impacts by COVID-19】</b>	
Issues of procurement	• Since pineapples are normally procured from producers in the specified province and Del Monte, the procurement was not affected by COVID-19.
Issues of sale	• Many of the respondents wait for the producers to deliver the crops rather than picking up pineapple by themselves, and there is no change in the manner.
Increase/decrease of profit	<ul style="list-style-type: none"> <li>• The number of tourists buying pineapple has decreased and the demand has decreased.</li> <li>• The unit sales price was decreased</li> <li>• Stores closure brought about a decrease in customers number.</li> </ul>
Handling volume and sales amount	• Due to movement restrictions, the amount handled was decreased significantly and profits were decreased.
Management/Employment	• During the lockdowns, some laborers were unable to go back to work from their provinces, however, the respondents did not experience a severe lack of labor.
Most impacted period	• March-May 2020
Others	<ul style="list-style-type: none"> <li>• Traders in Davao City enjoyed income increase since Vitamin C-rich pineapples meet consumers' needs. On the other hand, those in South Cotabato did not, since their main consumers were travelers, who could not come to South Cotabato under the movement restriction.</li> <li>• If the quality of pineapple does not meet the requirement of Dole and Del Monte, such low-quality pineapples are sold in the local market.</li> </ul>

Source: JICA Survey Team

### 2.4) Processor

Due to some difficulties in an interview, it is noted that only one processing cooperative, which processes pineapple into pineapple juice, jams, wines, and vinegar, was interviewed for this survey. Under the pandemic, the processing volume was decreased by 30%. The main product is pineapple juice for school students, however, due to the closure of schools, the business was suspended, which brought about a decrease in profit. Also, the number of employees was decreased from 7 to 5. Those impacts on the processor are as shown below:

**Table 3.3.12 Impacts on the Processors of Pineapple by COVID-19**

Item	Situations
<b>【Basic Information】</b>	
Financial resource	• None
Commodity	• Pineapple Juice, Pineapple Jam, Pineapple Wine, Pineapple vinegar
<b>【Impacts by COVID-19】</b>	
Issues of procurement	• Delay in shipment/deliveries of packaging material
Issues of sale	• The number of market/customers was decreased, especially, schools impose no entry of non-biodegradable packaging food, further, schools were closed



Item	Situations
Increase/decrease of profit	• Profit was decreased due to less handling volume and fewer customers.
Receipt and sale of commodities	• Delay in the transportation of products to customers
Handling volume and sales amount	• Handling volume was decreased due to fewer customers to the shops, school closure by the lockdown.
Management/Employment	• The number of employers was decreased from 7 to 5.
Most impacted period	• March-July 2020
Others	• More companies produce juices and other products out of other fruits after COVID-19

Source: JICA Survey Team

## 2.5) Exporter

Operational cost for export was decreased by 20%, which is attributed to the restrictions and required minimum public health standards due to the pandemic. In addition, with the limited banking hours, the exporters experienced delays in payments and less financial capital. One of the reasons for the lack of finance is the delay in arrival at destination ports. However, handling volume for export was not changed. Those impacts on the exporters are shown in the following table:

**Table 3.3.13 Impacts on the Exporters of Pineapple by COVID-19**

Item	Situations
<b>【Basic Information】</b>	
Financial resource	• Commercial bank
Settlement methods	• Cash transfer
Commodity	• Pineapple
<b>【Impacts by COVID-19】</b>	
Issues of procurement	• Travel restrictions, Logistical cost increase
Issues of sale	• Delays in shipment and payment before COVID-19 and with the pandemic, the problem aggravated. • Retention fees and low market prices commanded by foreign importers
Increase/decrease of profit	• Profit was increased by 21-40%.
Receipt and sale of commodities	• The source of supply was not changed.
Handling volume and sales amount	• Handling volume was not changed.
Management/Employment	• Experienced delays in the payment from the foreign buyers, moreover, there is limited banking transactions related to government policy • Lack of labor due to restriction of movement
Most impacted period	• April-June and July-September 2020
Others	• PCR tests for employees and consideration for hygiene in the office etc. were costly. • The exporters directly get pineapple for export from their plantations, and they feel that competition in terms of rental rates in farmlands is intensified

Source: JICA Survey Team

## 2.6) Consumer

Five consumers were targeted for the survey, and their occupations are teachers, none (retired), researcher, online freelancer, and data analyst. With COVID-19, the incomes of teachers and researchers were decreased, but the income of the retired was not changed, and the incomes of online freelancers and data analysts were increased. Most of them experienced increases in expenses for food, communications, electricity, daily necessities, and medicines. Three out of five responded that they started using online and delivery services by the pandemic.

### 3.3.4 Impact of COVID-19 Pandemic by Theme

#### 1) Concerns by COVID-19

##### 1.1) Banana

In terms of “Risk of infection”, “Financial impact” and “Psychological effect”, concerns caused by COVID-19 were analyzed by referring to the result of the questionnaire survey. As the following table shows, “Risk of infection” is the biggest concern for all stages. Especially, “Consolidator” and

“Exporter”, who frequently meet with many business partners have big concerns about the risk of infection.

**Table 3.3.14 Concerns in the Banana VC due to COVID-19 by Stage**

FVC Stakeholder	Risk of Infection	Financial Impact	Psychological Effect
Input Supplier	2.80	2.80	2.60
Producer	2.75	2.63	2.50
Consolidator	3.00	3.00	2.60
Exporter	3.00	3.00	2.50
Consumer	2.80	2.60	2.60
<b>Average</b>	<b>2.87</b>	<b>2.81</b>	<b>2.56</b>

Remarks : 1.Very much concerned, 2.Slightly Concerned, 3.Not concerned at all (1~3 : the higher, the more concern)  
Source: JICA Survey Team

## 1.2) Pineapple

Regarding concerns on the pineapple VC, “Risk of infection” is the biggest concern for all stages as well as the banana VC, the differences among the stages are not big very much, though as shown in the following table. Almost all the respondents have strong concerns about all of the risks, financial impacts, and psychological effects.

**Table 3.3.15 Concerns in the Pineapple VC due to COVID-19 by Stage**

FVC Stakeholder	Risk of Infection	Financial Impact	Psychological Effect
Input Supplier	3.00	2.50	2.75
Producer	3.00	2.80	2.80
Traders	2.92	2.75	2.92
Processor	3.00	3.00	3.00
Exporter	3.00	3.00	3.00
Consumer	3.00	2.80	2.80
<b>Average</b>	<b>2.98</b>	<b>2.81</b>	<b>2.89</b>

Remarks : 1.Very much concerned, 2.Slightly Concerned, 3.Not concerned at all (1~3 : the higher, the more concern)  
Source: JICA Survey Team

## 2) Impacted Period

The Government of the Philippines announced "Community Quarantine" from 17<sup>th</sup> March to 13<sup>th</sup> April 2020 and so-called the world's longest lockdown was started. In the agricultural sector, due to the long-term lockdowns, logistics restrictions, and restrictions on the movement of people, several damages were observed including difficulty in obtaining input goods and working capital, decrease in food demand in restaurants and hotels, and decrease in farmgate prices of agricultural products by a decline of consumer's demands.

Concerning impact on the Banana VC period by the COVID-19 in terms of period, March in 2020 was the most impacted for all of the stakeholders, there was time-lag, though. On the other hand, the most impacted period for the Pineapple VC was March-May 2020 in all stages, while Input suppliers and Traders were impacted much longer than other stakeholders of the VC by the movement restrictions. The following tables show the most impacted periods of Banana VC and Pineapple VC.

**Table 3.3.16 Most Impacted Period for Banana VC**

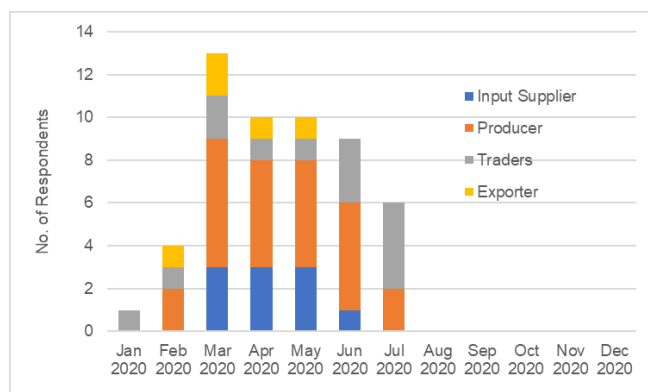
FVC Stakeholder	Most Impacted Period
Input Supplier	March-June in 2020
Producer	February- July in 2020
Trader	January -July in 2020
Exporter	February-May in 2020

Source: JICA Survey Team

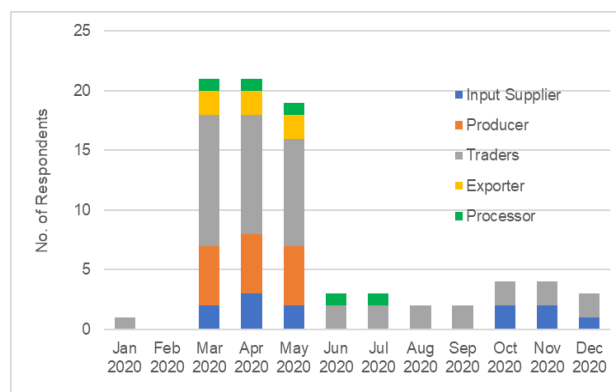
**Table 3.3.17 Most Impacted Period for Pineapple VC**

FVC Stakeholder	Most Impacted Period
Input Supplier	March-May and October-December in 2020
Producer	March-May in 2020
Trader	January, March -December in 2020
Processor	March-July in 2020
Exporter	March-May in 2020

Source: JICA Survey Team

**Figure 3.3.9 Most Impacted Period for Banana VC**

Source: JICA Survey Team

**Figure 3.3.10 Most Impacted Period for Pineapple VC**

Source: JICA Survey Team

### 3) Labor and Food Safety

Out of all the respondents, only one pineapple producer hires workers from outside of their places and provides them with dormitory or staying places. In those places, the respondents give some instruction, namely, ventilation of dormitories/houses, social distancing, hand washing, wearing masks. Other producers, who don't hire labors from outside, also give instructions for prevention measures to their staff. It is thought that safety for labors has been paid more than before to avoid COVID-19 infection among labors. In addition, originally, the safety of bananas, namely, quality, has been important in the international markets. However, after the COVID-19, such trend was accelerated, and more careful consideration to the safety of bananas has been required by the international market, especially, by Chinses market.

Regarding food safety and traceability, half of "Producers" and one "Consolidator" (five companies surveyed in total) are requested by their buyers for product safety and traceability. On the other hand, in the Pineapple VC, four "Producers" out of five in total, four out of twelve "Traders", and one "Processor" (only one company surveyed) were requested to do so by their customers. It implies that food safety and traceability are paid more attention than before COVID-19 to some extent. On the other hand, among the producers surveyed, one banana producer and two pineapple producers have introduced GAP, and other producers are considering introducing GAP in the future.

### 4) Impacts by Indicator and Stage

In terms of management and business, all questions are categorized into 12 indicators as shown in Table 3.3.18. The significances of impacts are converted into numerical values regardless of negative or positive impacts, as shown in Table 3.3.19 and Table 3.3.20. It is possible to summarize the impacts of COVID-19 on the banana VC and pineapple VC as follows:

- ✓ From the perspective of indicators, in both banana VC and pineapple VC, the impact on "Profitability" was the largest in all stages, followed by "Price". Moreover, "Competition" was relatively high for banana "Input supplier" and "Exporters" and pineapple "Processor".
- ✓ By the FVC stage, the impact on "Consolidator", who had fewer customers, in the banana VC,

was the largest. On the other hand, in the pineapple VC, the impact on “Trader” who faced lower selling prices was the largest. In addition, “Producer” was the least impacted stage in both VCs.

**Table 3.3.18 Categorization of Questionnaire (12 Indicators)**

Category	Contents
① Handling volume	Supplied commodity, purchase volume, handling volume
② Accessibility	Access to production districts/markets, procurement source, customer, a destination for export
③ Transportation measure	Procurement means, shipment means, transportation routes
④ Profitability	Benefit / revenue / capital / financial condition
⑤ Cost	Expense / input cost / transportation cost / electric cost / rental cost
⑥ Price	Buying price, sales price, market fluctuation
⑦ Finance and capital	Financial support, governmental support, capital turnover
⑧ Labor	Available labor, labor cost
⑨ Information	Market information, communication with buyers and sellers
⑩ Management/Storage	Inventory of storage, loss of commodity
⑪ Customer/Buyer	Demand of buyers/ number of customers
⑫ Competition	Competition with other companies

Source: JICA Survey Team

**Table 3.3.19 Impacts on Banana VC by COVID-19 by Indicator**

Target	Indicator	Input Supplier	Producer	Consolidator	Exporter	Total
Material	① Handling volume	0.60	0.74	1.16	0.00	2.50
	② Accessibility	0.37	0.08	0.00	0.25	0.70
	③ Transportation measure	0.00	0.16	0.08	0.25	0.49
Money	④ Profitability	1.60	1.75	1.80	2.00	7.15
	⑤ Cost	0.95	0.53	0.71	0.88	3.06
	⑥ Price	0.60	1.69	1.60	0.67	4.55
	⑦ Finance and capital	0.40	0.50	0.93	1.10	2.93
Labor	⑧ Labor	0.23	0.11	0.50	0.00	0.84
	⑨ Information	1.00	0.06	0.80	0.00	1.86
	⑩ Management /Inventory	0.05	0.25	0.11	0.00	0.41
	⑪ Customer/Buyer	0.47	0.65	1.10	0.25	2.46
	⑫ Competition	1.50	n/a	0.20	1.50	3.20
	<b>Total</b>	<b>7.76</b>	<b>6.50</b>	<b>9.00</b>	<b>6.89</b>	

**Table 3.3.20 Impacts on Pineapple VC by COVID-19 by Indicator**

Target	Indicator	Input Supplier	Producer	Traders	Processor	Exporter	Total
Material	① Handling volume	0.34	0.33	1.08	0.83	0.33	2.93
	② Accessibility	0.13	0.00	0.08	0.00	0.00	0.22
	③ Transportation measure	0.00	0.00	0.02	0.00	0.25	0.27
Money	④ Profitability	1.20	0.70	1.50	1.50	0.75	5.65
	⑤ Cost	1.20	0.92	0.38	0.27	0.67	3.43
	⑥ Price	0.20	0.00	1.21	0.00	0.33	1.74
	⑦ Finance and capital	0.20	0.40	0.44	0.00	0.80	1.84
Labor	⑧ Labor	0.48	0.34	0.40	0.25	1.50	2.98
	⑨ Information	0.20	0.00	0.00	0.00	0.00	0.20
	⑩ Management /Inventory	0.00	0.40	0.42	0.00	0.75	1.57
	⑪ Customer/Buyer	0.13	0.07	0.42	1.33	0.00	1.95
	⑫ Competition	0.70	n/a	0.04	1.00	0.00	1.74
	<b>Total</b>	<b>4.79</b>	<b>3.16</b>	<b>5.99</b>	<b>5.19</b>	<b>5.38</b>	

Source: JICA Survey Team

Remarks : Depending on the impact significance, the answers are categorized into three stages and the scores are divided by the number of effective responses. The more score they present, the more significant their impacts are.

### 3.3.5 Conclusion of the Impacts and Countermeasures Proposed

In the banana VC, both upstream and downstream stages were impacted by COVID-19 due to suspension of import & export suspensions, the city lockdown, and movement restrictions. On the other hand, banana production has been severely damaged by the spread of Panama disease since before COVID-19, and the disease spread further due to insufficient chemical application. It is desirable to

cultivate bananas in the new farmland away from contaminated soil, however, it is very difficult to find new places.

Banana production in the Philippines was about 6.1 million tons in 2018, a decrease by 30% from the 2010s, which exceeded 9 million tons<sup>13</sup>. Furthermore, apart from South American countries including Ecuador, a large number of Chinese companies have started investing large-scale capital in Vietnam, Laos, and Cambodia, for new business of banana plantations. The banana industry in the Philippines needs to compete with these banana-producing countries<sup>14</sup>.

After COVID-19 is settled down, current issues, namely, an increase in transportation costs and delays in transportation can be solved. On the other hand, Panama disease and a decline in presence of the Philippines as a banana export country need to be tackled in the long term regardless of COVID-19 comprehensively. In September 2020, the Department of Agriculture announced that it will spend 263 million pesos to combat Panama disease, and through the research, supply of necessary materials and equipment, and construction of tissue culture facilities, disease-resistant banana seedlings will be distributed to producers.<sup>15</sup> It is important to promote such activities. At the same time, it is needed to pay attention to demand in China and the situations of banana production in other Southeast Asian countries.

**Table 3.3.21 Issues before/after COVID-19 and Expected Measures in the Banana VC**

Input supplier	Producer	Integrator	Exporter	Consumer
<b>Issues</b>				
<ul style="list-style-type: none"> <li>High electricity cost, high overhead costs, and high inflation rates</li> <li>Competition with other suppliers</li> <li>Most of the inputs are imported and cannot be controlled.</li> <li>Dealy in the arrival of Input due to movement restrictions.</li> </ul>	<ul style="list-style-type: none"> <li>Deterioration of quality due to the outbreak of Panama disease</li> <li>Decrease in demand</li> <li>Decrease in sales volume due to movement restrictions</li> <li>Decrease in selling price</li> </ul>	<ul style="list-style-type: none"> <li>Insufficient financial support</li> <li>High management costs</li> <li>Traffic regulation and long waiting time</li> <li>Decrease in demand due to lockdown</li> <li>Decrease in selling price</li> <li>Customers cannot move for purchase</li> <li>Lack of funds, delay in payment from customers</li> </ul>	<ul style="list-style-type: none"> <li>Increase in refrigerator rent</li> <li>Intensifying competition with Chinese companies</li> </ul>	<ul style="list-style-type: none"> <li>Income decrease</li> <li>Increase in expense for food, electricity, medical, daily necessities</li> </ul>
Cross-cutting issues				
<ul style="list-style-type: none"> <li>Due to the delay in importing materials, chemicals against Panama disease could not be sprayed sufficiently or on time, which deteriorated the production and quality of bananas.</li> <li>Decrease in demand for banana by COVID-19 intensified competition with other companies, especially Chinese-owned capitals</li> </ul>				
<b>Expected countermeasures</b>				
<ul style="list-style-type: none"> <li>Development of input materials, which can be produced in the Philippines</li> <li>Development of Panama disease-resistant varieties</li> <li>Gathering information on banana demand in export destinations such as China and Japan, and situations of other banana production countries in Southeast Asia</li> </ul>				

Source : JICA Survey Team based on a review of documents and survey results

In the Pineapple VC, some issues, namely, delays in delivery of agricultural inputs and increase of prices in the upstream, decrease in needs of customers due to the lockdowns and school closures in the downstream, were identified. In South Cotabato Province, "Trader" disposed of unsold pineapples, while those in Davao enjoyed income increase due to demand increase in the urban area, which is opposite effects depending on the place even in the same FVC stage.

Originally, multinational companies, namely, Dole and Del Monte had great influences on the

<sup>13</sup> Food and Agriculture Organization of the United Nations (FAO) - FAOSTAT - Production, Crops, Bananas, April 2021

<sup>14</sup> JETRO, "Decrease in banana export by 6% due to Panama Disease and new issues, land securement and competition with other new export countries (Philippines)", <https://www.jetro.go.jp/biznews/2020/03/492dca416a37c880.html>, 2<sup>nd</sup> March 2020

<sup>15</sup> Business World, "Banana farms to get P263-M fund in fight against Panama disease", <https://www.bworldonline.com/banana-farms-to-get-p263-m-fund-in-fight-against-panama-disease/>, September 21, 2020

production, sales, and export of pineapple, many producers have contracts with the companies, which makes it difficult for small-scale companies to start a new business model. The survey shows that pineapple producers, who contract cultivation, were not affected by the shortage of materials and the decrease in buyers due to COVID-19. It means that the impacts of COVID-19 are different depending on their customers even in the same FVC stage.

Among the issues caused by COVID-19, issues such as movement restrictions, business suspension, and labor shortages are likely to recover to their original status, once COVID-19 is settled down. However, relying on imports for inputs is a risk, and it is necessary to promote domestic procurement. “Producer” and “Trader”, who have contracts with Del Monte and Dole are relatively less affected by COVID-19, and it is considered important to secure sales destinations and materials through contracts with companies.

However, it is pointed out that many producers and workers who have contracts with companies in the cultivation of pineapples in Mindanao receive only the minimum wage, and working conditions are unstable and unorganized<sup>16</sup>. Such producers need to be organized and their working conditions are to be improved so that many farmers are left behind.

**Table 3.3.22 Issues before/after COVID-19 and Proposed Measures in the Pineapple VC**

Input supplier	Producer	Trader	Processor	Exporter	Consumer
<b>Issue</b>					
<ul style="list-style-type: none"> <li>• Delayed arrival of materials due to movement restrictions</li> <li>• Increase in the wholesale price of materials</li> <li>• Decrease in demand for materials of producers</li> <li>• Increase in transportation costs</li> <li>• Labor shortage due to movement restrictions</li> <li>• Competition with other suppliers</li> </ul>	<ul style="list-style-type: none"> <li>• Increase in inputs costs</li> <li>• Labor shortage due to movement restrictions</li> <li>• Rise in labor costs</li> <li>• Delay in remittance</li> <li>• Increase in fuel costs</li> </ul>	<ul style="list-style-type: none"> <li>• Movement regulation</li> <li>• Competition with other traders</li> <li>• Decrease in the number of travelers purchasing pineapple</li> <li>• Shop closure, decrease in customers</li> <li>• Decrease in sales volume</li> <li>• Decrease in selling price</li> <li>• Disposal of pineapple</li> </ul>	<ul style="list-style-type: none"> <li>• Business suspension</li> <li>• Decrease in demand for school lunch</li> <li>• Competition with other processors</li> </ul>	<ul style="list-style-type: none"> <li>• Movement regulation</li> <li>• Increase in operating costs (PCR inspection costs, labor costs)</li> <li>• Labor shortage</li> <li>• Bank transactions</li> <li>• Delayed payments from foreign companies, restrictions on bank remittances</li> <li>• Reduction of business hours</li> <li>• Delays and quality deterioration of crop transportation due to movement restrictions</li> </ul>	<ul style="list-style-type: none"> <li>• Increase in expense for food, electricity, medical, daily necessities</li> </ul>
<b>Cross-cutting impacts</b> <ul style="list-style-type: none"> <li>• In the upstream of pineapple VC, movement restrictions caused input shortages and its cost increase, while traders disposed of unsold pineapples due to business suspensions and a decrease in demand.</li> <li>• Overall, competition with other companies in the same industry was intensified</li> </ul>					
<b>Countermeasure</b>					
<ul style="list-style-type: none"> <li>• Promotion of input procurement in the Philippines</li> </ul>	<ul style="list-style-type: none"> <li>• Stable sales through contract cultivation with companies.</li> <li>• Producers who are already engaged in contract cultivation are to be organized</li> <li>• Negotiation for contract terms so that the producers are not disadvantaged.</li> </ul>	None	None	None	None
<b>Cross-cutting measures</b> <ul style="list-style-type: none"> <li>• Improvement of the working conditions of producers and workers, who contract with Dole and Del Monte</li> </ul>					

Source : JICA Survey Team based on a review of documents and survey results

<sup>16</sup> ILO, Economic and social upgrading in the Philippines' pineapple supply chain, November 2019

### 3.4 COVID-19 Impact Survey on Rice (Lao PDR, Thailand)

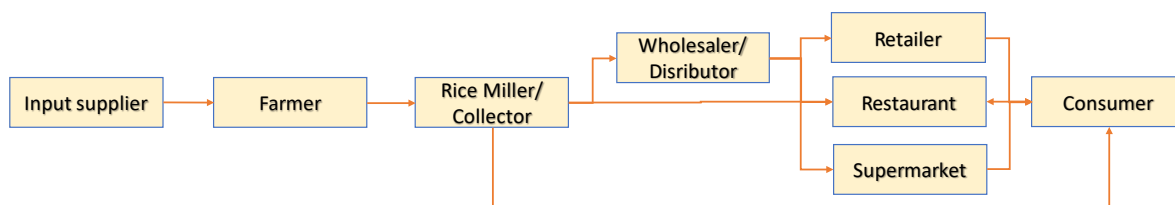
The impact survey of COVID-19 in the rice value chain (VC) was conducted in two countries, Lao PDR and Thailand. Rice, which is the staple food in Asian countries, is one of the three major grains in the world, but it is characterized by high consumption in the country of production. On the other hand, the volume of export transactions of rice is large, and it is a major export agricultural product in some countries. In order to understand the impact of COVID-19 on both domestic consumption and export, the impact survey on rice VCs was carried out in Lao PDR for domestic consumption and Thailand for export.

#### 3.4.1 Outline of Rice VCs in the two countries

##### 1) Lao PDR

In Lao PDR, rice production under the rain-fed paddy was occupied most of the cultivated area in the past. Since 1986, irrigation development projects have been promoted, and it had become possible to carry out double-cropping widely, then rice self-sufficiency was achieved in 1999. Since then, the purpose of increasing rice production had been shifted from self-sufficiency to foreign currency acquisition through exports, but the amount was extremely limited. The rice production in Lao PDR in 2019 was 3,438,000 tons, but the export volume was only 6,769 tons for paddy rice and 27,059 tons for milled rice<sup>1</sup>. Therefore, most of the rice produced in Lao PDR is still consumed domestically.

The rice VC in Lao PDR revealed in this survey is relatively simple (see Figure.3.4.1). It is thought that this is because many rice farmers still produce rice for their own consumption and the surplus is used for sale, it reflects the character of Lao PDR. The survey addressed the rice VC stages, input suppliers – farmers - rice millers – wholesalers – retailers - consumers. In some cases, rice was sold directly from rice millers to retailers and from rice millers to consumers.

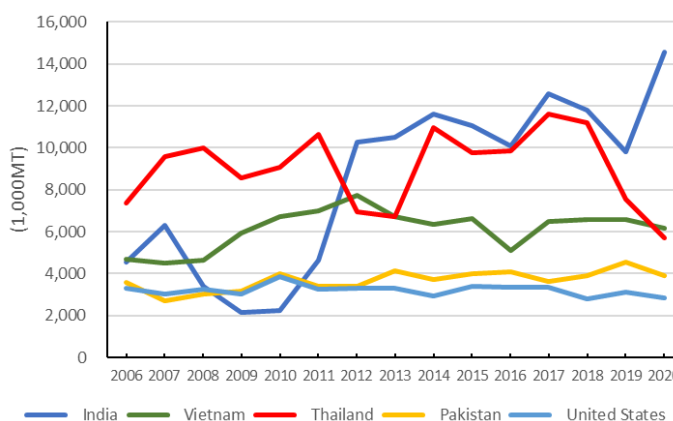


**Figure 3.4.1 Rice VC in Lao PDR**  
Source: JICA Survey Team (based on interviews)

##### 2) Thailand

Rice is the staple food in Thailand, and it can be cultivated throughout the year under tropical and subtropical climates. Especially in the irrigated rice fields in the central plain where the Chao Phraya River runs, multiple harvests such as 5 crops in 2 years and 3 crops in a year were actively carried out after the latter half of the 1990s and rice production was increased.

Thailand was the world's sixth-largest rice producer in 2019/20, while it was also the

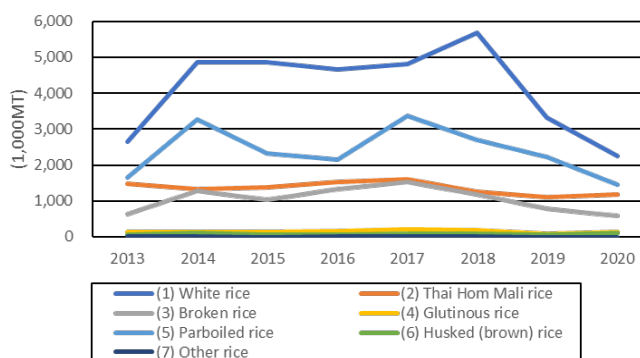


**Figure 3.4.2 Amount of Export Rice by Country**  
Source: USDA data (modified by JICA Survey Team)

<sup>1</sup> FAOSTAT, < <http://www.fao.org/faostat/en/#home> > (Access on Aug. 8, 2021)

world's third largest rice exporter in 2020<sup>2</sup>. Until it was overtaken by India and Vietnam in 2012, it was the world's largest rice exporter for more than 30 years. From 2013 to 2019, it was the second-largest rice exporter in the world after India.

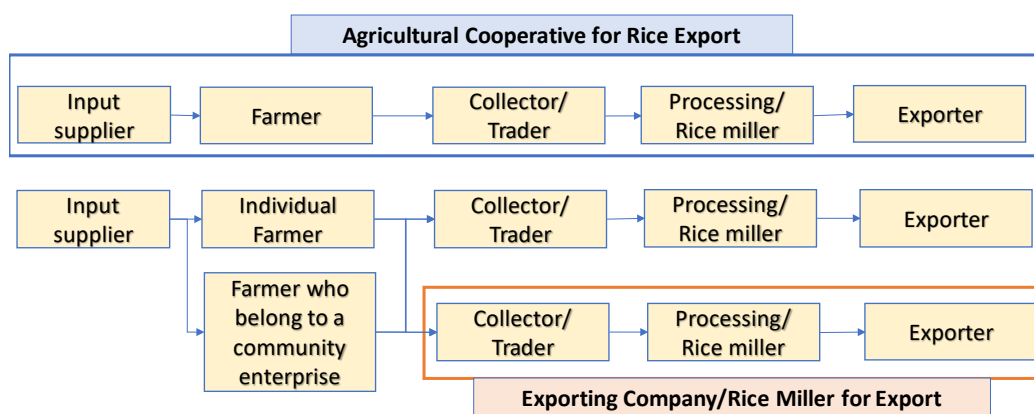
Thai Rice Export Association classifies rice for export into seven categories (White Rice, Thai Hom Mali Rice, Broken Rice, Glutinous Rice, Parboiled Rice, Husked (Brown) Rice, and Other Rice)<sup>3</sup>. White Rice has the largest export volume, followed by Parboiled Rice and Thai Hom Mali Rice (see Figure 3.4.3). Since 2014, the export volume had been steadily increasing, however, the export volume was sharply decreased due to the influence of COVID-19 from 2019.



**Figure 3.4.3 Amount of Exported Rice in Thailand by Rice Category**

Source: Thai Rice Export Association

The VCs of Thai export rice were found out several types by this survey. The most common VC is that each player takes charge of each stage independently such as input supplier – farmer – distributor - rice miller - exporter (see Figure 3.4.4). However, there are many cases such that exporters purchase rice directly from farmers and milled it, and there are agricultural associations that handle the entire flow from procurement of agricultural inputs to production, transportation, rice milling, and export.



**Figure 3.4.4 Export Rice VC in Thailand**

Source: JICA Survey Team

### 3.4.2 Outline of the Impact Survey on Rice VCs

#### 1) Survey Area

The target area of this survey is shown in Figure 3.4.5. In Lao PDR, Savannakhet Province in the southern part of the country, which is the main rice-producing area, and in Thailand, Royette Province (mainly producing Hom Mali Rice in the rainy season) in Northeastern Thailand and Ayutthaya Province (mainly producing white rice in the rainy season and dry season crops) in Central Thailand were



**Figure 3.4.5 Survey Area**

Source: UN map (JICA Survey Team)

<sup>2</sup> USDA, Rice Year Book <<https://www.ers.usda.gov/data-products/rice-yearbook/>> (Access on July 26, 2021)

<sup>3</sup> Thai Rice Export Association <[http://www.thairiceexporters.or.th/default\\_eng.htm](http://www.thairiceexporters.or.th/default_eng.htm)> (Access on July 22, 2021)



selected for the survey areas.

## 2) Sample Size

The number of respondents of each FVC stage in this survey is shown in Table 3.4.1 and Table 3.4.2. Six stages were found out in rice VC in Lao PDR, and a total of 51 responses were obtained. Five stages were clarified in export rice VC in Thailand and a total of 54 respondents were interviewed. In Lao PDR, the rice was focused on domestic consumption, so "retailers" and "consumers" were surveyed. Since the export rice was targeted in Thailand, "exporters" were included in the survey.

**Table 3.4.1 No. of Respondents on Rice VC in Lao PDR**

FVC Stakeholder	No. of Respondents
Input Supplier	9
Farmer	10
Rice Miller/Collector	9
Wholesaler/Distributor	8
Retailer/Restaurant/Supermarket	10
Consumer	5
<b>Total</b>	<b>51</b>

Source: JICA Survey Team

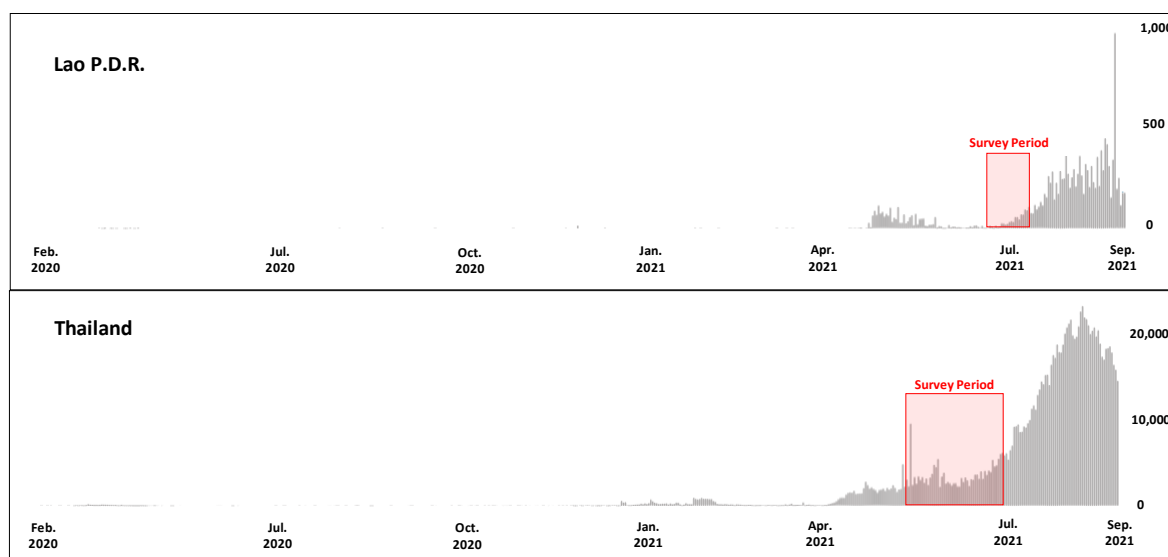
**Table 3.4.2 No. of Respondents on Rice VC in Thailand**

FVC Stakeholder	No. of Respondents
Input Supplier	10
Farmer	19
Trader/Collector	10
Rice Miller	12
Exporter	3
<b>Total</b>	<b>54</b>

Source: JICA Survey Team

## 3) Survey Period

Figure 3.4.6 shows the timing of this survey and the number of new COVID-19-positive individuals in the target countries. Since the lockdown had continued in Lao PDR after April 22, this survey was conducted from June 25 to July 14, 2021, when the number of cases was small. During this period, the number of new positives had gradually increased in Lao PDR. On the other hand, although the survey started on May 12, 2021, in Thailand, the survey period was extended due to the restrictions on intercity movement during the survey period and the difficulty in interviewing rice millers and exporters. However, it was completed on July 4. During this period, 2,000 to 3,000 new positive cases were found per day in Thailand, but there was not much increase or decrease.



**Figure 3.4.6 Number of Infected People during the Survey in Lao PDR and Thailand**

Source: <https://covid19.who.int/region/searo/country/>

### 3.4.3 Impact of COVID-19 Pandemic by Stage of Rice VCs

#### 1) Lao PDR

The results of interviews on rice VCs in Lao PDR are summarized, and the issues before and after COVID-19 in each VC stage and cross-stage issues are summarized in Table 3.4.3.

Challenges before COVID-19 were the dependence of most agricultural inputs on Thailand, low rice productivity of farmers, and fierce competition among the retailers, but there were no cross-stage challenges. On the other hand, the negative impact on goods and money due to the stagnation of logistics, the rise in electricity and fuel costs, and the decline in rice prices were cited as cross-stage issues under the COVID-19 situation.

**Table 3.4.3 Issues on Rice VC before and after COVID-19 Pandemic in Lao PDR**

FVC Stage	Input	Production	Processing	Distribution	Retail	Consumption
Major Player	Input supplier	Famer	Rice Miller	Distributor	Retailer, Supermarket, Restaurant	Consumer
<b>Key Point for Rice Value Chain since Before</b>	<ul style="list-style-type: none"> <li>Most agricultural inputs were depended on imports from Thailand</li> </ul>	<ul style="list-style-type: none"> <li>Low productivity</li> <li>No seed renewal</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>Fierce competition with Retailers</li> <li>Many customers from other countries (Thailand)</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
<b>Cross Cutting Issue</b>	N/A					
<b>Major Impact of COVID-19 (Occurred or Revealed)</b>	<ul style="list-style-type: none"> <li>Delay of the material procurement from Thailand due to the movement restriction</li> <li>Decrease of the customer by movement restriction</li> <li>Increase the cost due to the fuel price rise</li> </ul>	<ul style="list-style-type: none"> <li>Increase the price of agricultural inputs</li> <li>Decrease the price of Rice</li> <li>Decrease the money transfer after selling</li> <li>Increase the labor cost</li> </ul>	<ul style="list-style-type: none"> <li>Delays in procurement and transportation due to movement restrictions and a decrease in customers</li> <li>Decrease the profit by the drop of Rice price</li> </ul>	<ul style="list-style-type: none"> <li>Decrease the profit by the drop of Rice price</li> <li>Delay of procurement due to movement restrictions and suspension of rice miller operations</li> </ul>	<ul style="list-style-type: none"> <li>Decrease the number of customers and profit due to the movement restriction</li> <li>Decrease of working hours and profit</li> <li>Increase the expenditure due to the rise of electricity price</li> </ul>	<ul style="list-style-type: none"> <li>Decrease of the working days and hours</li> <li>Increase of the amount of food purchased due to the decrease of eat-out</li> </ul>
<b>Cross Cutting Issue</b>	<ul style="list-style-type: none"> <li>Negative impact on both goods and money due to movement restrictions, especially due to the disruption of logistics with Thailand</li> <li>Electricity and fuel costs rising</li> <li>Movement restrictions caused the increase of the total amount of rice in the region and reduce the prices</li> </ul>					

Source: JICA Survey Team

#### 1.1) Input Supplier

For the “Input Supplier” VC stage, 9 respondents were interviewed. The products handled were rice seeds, fertilizers, pesticides, etc. Since rice farmers in Lao PDR traditionally procure rice seeds by self-seeding or exchanging the seeds with neighboring farmers, the purchase of rice seeds by input suppliers is limited.

Regarding the procurement of agricultural inputs, it was not possible to procure products from Thailand during the movement restriction. Lao PDR is in contact with Thailand across the Mekong River, and since Savannakhet Province has the Second Friendship Bridge, which opened in 2006,

input suppliers in Lao PDR often use this bridge to procure the agricultural inputs in Thailand. As a result, many respondents said that the lockdown after April 2021 delayed the procurement of agricultural inputs.

Sales were also affected by lockdowns. Farmers were restricted from coming to the store to purchase agricultural inputs, which led to a decrease in sales volume. In addition, regarding rice seeds, the number of farmers who procured rice seeds by self-seeding or exchange with neighboring farmers had increased due to movement restrictions, so the answer was that the stock remained in the warehouse at the input supplier's store. Unlike other agricultural inputs, rice seeds may be caused a decrease in germination rate if stored for a long time, so unsold rice seeds have a great impact on input suppliers.

**Table 3.4.4 Impact of COVID-19 Pandemic on “Input Supplier” Stage in Lao PDR**

Items	Situation
<b>Basic Information</b>	
Main financial institution for borrowing money	• Government Finance Institution or Commercial Bank
Main settlement method of payment	• Cash only
Main handling items	• Seeds, fertilizers, pesticides, agricultural chemicals, etc.
<b>Impact of COVID-19 Pandemic</b>	
Issues on purchasing	• Could not purchase the commodities from Thailand • Could not purchase enough amount of commodities • High price of agricultural inputs
Issues on selling	• Could not deliver the rice seed to the farmers in an appropriate time of sowing • Farmers could not come and buy the commodities during Lockdown period • During Lockdown, the order from farmers was decreased
Profit	• The profit of April and May 2021 was dropped 30% to 50% due to decrease of selling • Expenditure was increased due to increase of fuel price
Purchasing	• Price of purchasing of rice seed was increased from 5,000kip/kg to 6,500kip/kg • Amount of dealing commodities was decreased about 60% from April to May 2021
Selling	• The sales volume of rice seeds decreased, and it remained in the warehouse • Sales volume decreased due to movement restrictions
Management, employment	• Shortened business hours due to lockdown • Expenditure increased due to a 50% increase in electricity price
Period Most Affected by COVID-19 Pandemic	• From April 2021 to May 2021

Source: JICA Survey Team

## 1.2) Farmer

For “Farmer” stage, 10 households were interviewed. Most of the respondents are full-time farmers who have been growing rice for many years. Almost all farmers have irrigated rice fields and are engaged in double cropping.

Regarding procurement, some respondents said that the prices of chemical fertilizers and pesticides were increased. Since these agricultural inputs were procured mainly in Thailand, the distribution was restricted by lockdown and the distribution volume was decreased. In addition, although some farmers purchased seeds from seed-producing farmers, it was found that seeds could not be transported due to lockdown and the planting time was delayed. The rainy season starts around April to May when the monsoon begins in Lao PDR, so it is necessary to procure rice seeds and chemical fertilizers for rain-fed cultivation, but since this time coincided with the lockdown period of 2021, the negative impact for the rice farmers became bigger.

Regarding sales, there were cases the farmers could not sell the rice to the rice millers because the operation was suspended due to lockdown. Many rice mills were suspended due to the inability to transport rice and employees could not commute, which had a major impact on farmers' households during the lockdown period.

Some respondents said that the price of rice had been dropped. Fuel price rising leads to higher

production and transportation costs and it is usually reflected in the rising in rice prices. However, the price of rice was declining in Savannakhet Province. Savannakhet Province is a rice-producing region and supplies rice to other regions. Due to the lockdown after April 2021, the distribution was stopped and it was not possible to transport rice to consumption areas such as Vientiane capital and Luang Prabang which are the big cities in the country, and there was excess rice in the Savannakhet province. As a result, the unit price of rice was decreased, and the profits of rice farmers were also decreased.

As the “Farmer” stage was strongly affected by COVID-19 in rice VC in Lao PDR, a follow-up survey (FU survey) was conducted from November 3 to 16, 2021 in order to understand the changes from the previous survey. As a result, the price of chemical fertilizers was risen further, while the selling price of rice was decreased in 7 out of 10 households. Farm profits were declining due to higher production costs and lower selling prices. Regarding the cultivation area, 7 out of 10 households answered that there was no change, and it became clear that rice farmers continue to grow rice even under the influence of COVID-19.

**Table 3.4.5 Impact of COVID-19 Pandemic on “Farmer” Stage in Lao PDR**

Items	Situation
<b>Basic Information</b>	
Livelihood means	<ul style="list-style-type: none"> <li>9 out of 10 households are full-time farmers and 1 is a part-time farmer</li> <li>9 out of 10 households have more than 15 years of agricultural experience</li> </ul>
Cultivation season	<ul style="list-style-type: none"> <li>8 out of 10 households can carry out double cropping. 2 households cultivate rice in the rainy season only.</li> </ul>
Cultivation area	<ul style="list-style-type: none"> <li>1 to 3ha per household</li> </ul>
Financial source	<ul style="list-style-type: none"> <li>None</li> </ul>
Mode of payment	<ul style="list-style-type: none"> <li>Cash only</li> </ul>
Irrigation facility	<ul style="list-style-type: none"> <li>8 out of 10 households have irrigation facility</li> </ul>
Agricultural cooperative	<ul style="list-style-type: none"> <li>7 out of 10 households belong to agricultural cooperative</li> </ul>
<b>Impact of COVID-19 Pandemic</b>	
Issues on purchasing	<ul style="list-style-type: none"> <li>Increase of the price of chemical fertilizer, agriculture chemicals and fuel</li> <li>The price of chemical fertilizers had risen further (FU survey)</li> <li>Could not go to the agriculture shop to buy agricultural inputs during lockdown period</li> <li>Delay of the arriving of seed from seed growers due to movement restriction</li> </ul>
Issues on selling	<ul style="list-style-type: none"> <li>Rice price drop (before 3,300kip/kg, since April 2021 2,300kip/kg)</li> <li>The selling price of rice has dropped further (FU survey)</li> <li>Delay of money transfer from rice miller</li> <li>Could not sell the rice to the rice millers due to the closedown of operation</li> </ul>
Profit	<ul style="list-style-type: none"> <li>Decrease the profit due to the increase of cost e.g., agricultural inputs, fuel and transportation</li> <li><u>Profit decreased due to higher production costs and lower selling prices</u></li> </ul>
Management, employment	<ul style="list-style-type: none"> <li>Could not hire the farm workers due to the drop of rice price</li> <li>Increase the price of casual workers</li> <li>Increase the price of agricultural inputs from Thailand due to the changing of exchange rate between Lao PDR kip and Thailand bath</li> </ul>
Period Most Affected by COVID-19 Pandemic	<ul style="list-style-type: none"> <li>From April 2021 to May 2021</li> </ul>

Source: JICA Survey Team

### 1.3) Rice Miller

For “Rice Miller” stage, 9 millers were interviewed. The rice millers interviewed this time are all family-owned and relatively small-scale businesses. Basically, these rice millers purchase rice from farmers and mill it, and then sell it to wholesalers and traders. In some cases, the rice miller sells the rice directly to retailers and consumers without through wholesalers.

Regarding procurement, the response was that the arrival of trucks was delayed due to the increase in checkpoints on the main road due to the spread of the COVID-19 cases, but no other major changes were observed. This is because rice is a staple food in Lao PDR, so the rice farmers produced rice as usual even under the COVID-19 situation.

Regarding sales, there were three rice millers who answered that they could not transport the products to the customers outside of the province after April 2021 due to the lockdown and then the sales

volume was decreased. In this survey, relatively small rice mills were targeted, so the five rice mills mainly had customers in the province, so they answered that there was no decrease in profits. On the other hand, the three rice millers that were transporting outside the province answered that their profits had decreased.

Similar to the “Farmer” stage, 7 out of 9 rice millers responded that rice price was fell, and profit was also down. It is a characteristic of this region that the selling price of rice had been decreased due to the impact of COVID-19. Some respondents said that they purchased a large amount of products before the lockdown, but the profits decreased considerably due to the lockdown. This is a problem unique to large rice-producing areas, while it is possible that rice price had been risen due to a shortage of rice in areas where rice was supplied from Savannakhet province, and it is presumed that price fluctuations had occurred.

**Table 3.4.6 Impact of COVID-19 Pandemic on “Rice Miller” Stage in Lao PDR**

Items	Situation
<b>Basic Information</b>	
Business	• Rice Milling, Middleman and Retailing (selling for Military base and Police office)
Financial Source	• Private, Government Finance Institution or Commercial Bank
Operation	• Family Operation
<b>Impact of COVID-19 Pandemic</b>	
Issues on purchasing	<ul style="list-style-type: none"> <li>• Many checkpoints were set up to prevent the spread of the COVID-19, delaying the arrival of rice-laden trucks.</li> <li>• There were no major problems with procurement.</li> </ul>
Issues on selling	<ul style="list-style-type: none"> <li>• Due to movement restrictions, it was not possible to carry rice to distant places such as outside the prefecture (after April 2021).</li> <li>• Rice prices have fallen, profits have fallen, and customer payments have been delayed.</li> <li>• Customers are unable to come to buy due to movement restrictions.</li> <li>• Large-scale rice mills have lowered prices, so they have lowered prices to counteract them.</li> </ul>
Profit	<ul style="list-style-type: none"> <li>• Of the 8 locations, 1 had a large decrease, 2 had a slight decrease, and 5 had no effect.</li> <li>• Purchasing rice before the lockdown, but profits declined as rice prices fell after the lockdown in April 2021.</li> <li>• Spending on truck drivers has increased as fuel costs have risen by about 10%.</li> </ul>
Purchasing	• There were no major problems with the arrival of goods.
Selling	<ul style="list-style-type: none"> <li>• Due to the inability to transport to customers outside the prefecture, sales volume decreased at 3 out of 8 locations.</li> <li>• After April 2021, sales competition with middlemen became fierce, and sales volume decreased.</li> <li>• Customer purchases have decreased compared to before.</li> <li>• The market price of rice has decreased.</li> <li>• Sales to retailers fell by 70% (in April 2021).</li> </ul>
Management, employment	<ul style="list-style-type: none"> <li>• Due to the increase in electricity bills in May 2021, 3 of the 8 locations were large and 3 were slightly increased in operating costs.</li> <li>• The workers could not commute due to movement restrictions.</li> </ul>
Period Most Affected by COVID-19 Pandemic	• From April 2021 to May 2021

Source: JICA Survey Team

#### 1.4) Wholesaler/ Distributor

For “Wholesaler” stage, 8 companies were interviewed. As same as “Rice Miller”, wholesalers interviewed were small family-owned businesses. As for the impact of COVID-19, a negative impact on rice procurement and sales due to lockdown after April 2021 was found as same as “Rice Miller”. In addition, many respondents said that their spending was increased due to the increase in fuel and electricity prices, and therefore their profits were decreased.

Lower rice prices were also affected to lower their profits. Since rice is a relatively well-stored commodity, it is often profitable to purchase it at a low price period, immediately after harvesting, and sell it just before harvesting when the price is high. However, due to the lockdown after April 2021, the rice harvested in the dry season of 2020/21 could not be transported to other areas and was stored in Savannakhet province, so the price of rice was decreased. This also resulted in a decrease in the

profits of wholesalers.

**Table 3.4.7 Impact of COVID-19 Pandemic on “Wholesaler” Stage in Lao PDR**

Items	Situation
<b>Basic Information</b>	
Business	• Wholesale, Distribution and Transportation
Financial Source	• Private, Government Finance Institution, etc.
Operation	• Family Operation
<b>Impact of COVID-19 Pandemic</b>	
Issues on purchasing	• Due to lockdown after April 2021, it was not possible to procure from distant counties. • Procurement was not possible because the rice mill was shut down due to lockdown.
Issues on selling	• Due to lockdown after April 2021, rice could not be shipped to customers. • Since April 2021, customers have stopped purchasing.
Profit	• It arrived just before the lockdown, but profits declined due to the drop in rice prices after the lockdown. • In December 2020, the wholesaler purchased a large amount of rice from the rainy season, but after April 2021, the price dropped. The shop sold it but there was no profit.
Purchasing	• There were no major problems with the purchasing the rice.
Selling	• The purchase volume of regular customers (retailers) has decreased. • As the rice millers closed, the volume of transactions decreased.
Management, employment	• Prices have risen by 10% for fuel and 50% for electricity, increasing costs.
Period Most Affected by COVID-19 Pandemic	• From April 2021 to May 2021

Source: JICA Survey Team

### 1.5) Retailer (Retail shop, Supermarket and Restaurant)

As “Retailer” stage, 5 retailers, 3 restaurants, and 2 supermarkets were interviewed. The impact of COVID-19 on retailers was the largest by the movement restrictions due to lockdown. Many restaurants and supermarkets procure foods and ingredients from Thailand, and the movement restrictions made it difficult. In addition, some restaurants are doing business for tourists from Thailand, so the sales of these stores were decreased significantly. Moreover, retailers responded that customers were refraining from buying. The income of consumers was also declining due to the expansion of COVID-19, and it was thought that the sales volume in the retailers were also decreased.

In the rice VC in Lao PDR, a follow-up survey (fixed-point observation) was carried out for the “Retailer” stage which was affected the impact of COVID-19 strongly. As a result, out of 10 respondents, 4 respondents answered that the procurement price was increased, 2 respondents answered decreased, and 4 respondents answered did not change. This was related to the time of rice harvest and the time of lockdown. In the survey area of Savannakhet province, a lockdown was in October 2021, but when new rice was procured at that time, the price was about 10-20% higher than the previous price. Meanwhile, the price was lower than during the lockdown when procured after the lockdown was released. Regarding the handling volume, 7 out of 10 companies answered that it was decreased, and 9 out of 10 companies answered that the profit was decreased. It was revealed that the “Retailer” stage was strongly affected by the lockdown in October 2021.

**Table 3.4.8 Impact of COVID-19 Pandemic on “Retailer” Stage in Lao PDR**

Items	Situation
<b>Basic Information</b>	
Financial Source	• Private, Government Finance Institution, etc.
Operation	• Retailer and Restaurant : Family Operation, Supermarket: Company
<b>Impact of COVID-19 Pandemic</b>	
Issues on purchasing	• During the lockdown, transportation was delayed, and procurement became difficult. • Due to restrictions on movement to Thailand, it was not possible to procure the items from Thailand.
Issues on selling	• Decrease the selling amount. • Decrease the customer due to the restriction of movement. • Decrease the selling amount due to decrease of working hours. • The lockdown in October 2021 has significantly reduced the number of customers.

Items	Situation
Profit	<ul style="list-style-type: none"> <li>Out of 5 retailers, 3 stores decreased profit significantly and 1 store decreased.</li> <li>The restaurant was aimed at tourists from Thailand, but the number of customers decreased due to movement restrictions, and sales also decreased significantly.</li> <li>Expenditure exceeded income.</li> <li>Profit declined due to the impact of lockdowns and limiting store opening times (FU survey)</li> </ul>
Purchasing	<ul style="list-style-type: none"> <li>Due to movement restrictions, it was not possible to receive goods from Thailand or far provinces.</li> </ul>
Selling	<ul style="list-style-type: none"> <li>Sales volume decreased due to customers refraining from buying.</li> <li>The number of customers per day decreased, and the sales volume decreased.</li> <li>Since April 2021, sales have fallen by 30% -50%.</li> <li>Products are in stock at supermarkets, but customers have stopped coming since April 2021.</li> <li>Due to the lockdown from October 2021, sales volume decreased by 30% -60% (FU survey).</li> </ul>
Management, employment	<ul style="list-style-type: none"> <li>Electricity prices have risen and spending has increased.</li> <li>Employee was unable to commute due to lockdown.</li> </ul>
Period Most Affected by COVID-19 Pandemic	<ul style="list-style-type: none"> <li>From April 2021 to May 2021</li> </ul>
Others	<ul style="list-style-type: none"> <li>Most restaurants went to Thailand to procure ingredients, but since April 2021, they have been procured in Savannakhet Province due to movement restrictions, and the cost of procurement has increased.</li> <li>Withdrawal of savings due to reduced sales.</li> </ul>

Source: JICA Survey Team

### 1.6) Consumer

For “Consumer” stage, 5 respondents were interviewed. Two of the respondents were housewives and three were small-scale brokerage businesses. Regarding lifestyle, all respondents answered “changed”. In particular, many respondents answered that their eating habits and working environment had been changed. The number of people infected with the COVID-19 was kept low level until March 2021 in Lao PDR, so there was no significant change in lifestyle. However, the number of positive cases of COVID-19 was increased after April 2021, then the lockdown was started throughout the country. This effect was strongly manifested as a change in lifestyle. Respondents engaged in the brokerage business also experienced a decrease in working hours and working days. In addition, all five respondents answered that their household income was decreased by 20% for two people, by 40% for two people, and by 60% for one person.

On the other hand, household consumption was increased by 4 out of 5 people. This was caused for the increase in food costs at home due to the inability to go out, the increase in fuel and electricity costs, and the increase in communication costs due to the decrease in face-to-face communication. As household income was declined while spending was increased, it became clear that the impact of COVID-19 was made households suffer.

**Table 3.4.9 Impact of COVID-19 Pandemic on “Consumer” Stage in Lao PDR**

Items	Situation
<b>Basic Information</b>	
Gender	<ul style="list-style-type: none"> <li>All Female</li> </ul>
Occupation	<ul style="list-style-type: none"> <li>Housewife and trader</li> </ul>
<b>Impact of COVID-19 Pandemic</b>	
Changing of Lifestyle	<ul style="list-style-type: none"> <li>Everyone answered that there was a change</li> <li>In particular, there were changes in eating habits, working environment, and shopping.</li> </ul>
Work and Study	<ul style="list-style-type: none"> <li>Everyone is experienced working / studying at home (including several days a week)</li> <li>Working hours and days have decreased.</li> </ul>
Household income	<ul style="list-style-type: none"> <li>All respondents answered decreased.</li> <li>Compared to last year, 2 responded that the number decreased by about 20%, 2 responded by about 40%, and 1 responded by about 60%.</li> </ul>
Expenditure	<ul style="list-style-type: none"> <li>4 out of 5 respondents answered increased.</li> <li>In particular, food expenses, utilities expenses, communication expenses, and travel expenses increased.</li> </ul>
Changing of consumption habitat	<ul style="list-style-type: none"> <li>4 out of 5 responded that there was no change.</li> <li>As a change, going to physical stores has decreased.</li> <li>There is no change in the place and frequency of purchasing ingredients.</li> </ul>
Changing of food	<ul style="list-style-type: none"> <li>Purchase volume has increased since April 2021 (because the number of people staying at</li> </ul>

consumption	<ul style="list-style-type: none"> <li>home has increased)</li> <li>Out of 5 people, 3 people are very afraid of virus contamination in food, and 1 person is a little afraid.</li> <li>Out of 5 people, 3 people believe that the new coronavirus is transmitted through the diet.</li> <li>All 5 people have more opportunities to cook at home.</li> <li>1 person answered increased the vegetable intake and increased the number of times of hot tea and other drinks to combat the COVID-19.</li> </ul>
Period Most Affected by COVID-19 Pandemic	<ul style="list-style-type: none"> <li>From April 2021 to May 2021</li> </ul>

Source: JICA Survey Team

## 2) Thailand

The results of interviews with rice VCs in Thailand are summarized, and the issues before and after COVID-19 and cross-stage issues in each VC stage are summarized (see Table 3.4.10).

As issues from before COVID-19, there were issues for each stage, such as competition among input suppliers and damage caused by drought in production, but there were no issues across stages. On the other hand, delays in procurement and transportation due to movement restrictions, an increase in transportation costs, and a decrease in sales volume and profits were found out as cross-stage issues under the COVID-19 situation.

**Table 3.4.10 Issues on Rice VC before and after COVID-19 Pandemic in Thailand**

FVC Stage	Input	Production	Transport	Processing	Export
Major Player	Input supplier	Famer	Trader, Collector, Middleman	Rice Miller	Exporter
Key Point for Rice Value Chain since Before	<ul style="list-style-type: none"> <li>Competition with other shops</li> </ul>	<ul style="list-style-type: none"> <li>Drought</li> <li>Weed, Rat Feeding</li> </ul>	<ul style="list-style-type: none"> <li>Low quality of rice</li> <li>Competition with others</li> </ul>	<ul style="list-style-type: none"> <li>High operation cost</li> </ul>	<ul style="list-style-type: none"> <li>Severe competition with others</li> <li>Fluctuations in exchange rates</li> </ul>
Cross Cutting Issue	N/A				
Major Impact of COVID-19 (Occurred or Revealed)	<ul style="list-style-type: none"> <li>Difficult to procure materials due to movement restrictions and suspension of production plants</li> <li>Increase of the price of imported fertilizer</li> <li>Decrease of Customer</li> </ul>	<ul style="list-style-type: none"> <li>High price of agricultural inputs</li> <li>Difficult to procure agricultural materials due to movement restrictions</li> <li>High price of Labor cost</li> <li>Stagnation of group work</li> </ul>	<ul style="list-style-type: none"> <li>Difficult to purchase rice due to movement restrictions</li> <li>Decrease of sales volume due to decrease in export</li> <li>Decrease of rice price</li> </ul>	<ul style="list-style-type: none"> <li>Decrease in sales volume due to decrease in export volume</li> <li>Cost increased due to rising fuel prices</li> <li>Commuting is restricted due to movement restrictions</li> </ul>	<ul style="list-style-type: none"> <li>Transportation delay due to shortage of export containers</li> <li>Decrease in rice selling price</li> <li>Increase in transportation costs due to rising fuel prices</li> </ul>
Cross Cutting Issue	<ul style="list-style-type: none"> <li>Procurement and transportation delays due to movement restrictions.</li> <li>Increase in transportation costs due to rising fuel prices.</li> <li>Decrease in sales volume and profit due to decrease in export volume</li> </ul>				

Source: JICA Survey Team

### 2.1) Input Supplier

For “Input Supplier” stage, the interview was made to a total of 10 stores, 5 in Roi Et province and 5 in Ayutthaya province. Due to the impact of COVID-19, the suspension of imports and the suspension of factory operations occurred and it made decreased the market distribution of the materials. The price of materials was also increased due to increasing fuel prices.

In addition, some commented that it was difficult to procure the seed of paddy. Sales of agricultural materials are usually concentrated in the period before planting, but because that period coincided with the period of movement restrictions, there were cases where farmers could not come to purchase it. Cases of reduced sales were also reported.



Rice farmers, who are main customers of input suppliers, continued to produce rice even under the COVID-19 situation. Therefore, although the strength of the impact was limited, the cultivation period depends on rainfall, especially in the rainy season, and the impact of movement restrictions during that period had a negative impact on the transactions of input suppliers.

**Table 3.4.11 Impact of COVID-19 Pandemic on “Input Supplier” Stage in Thailand**

Items	Situation
<b>Basic Information</b>	
Main financial institution for borrowing money	<ul style="list-style-type: none"> <li>All shops receiving the personal source</li> </ul>
Main settlement method of payment	<ul style="list-style-type: none"> <li>Cash, check or bank account transfer</li> </ul>
Main handling items	<ul style="list-style-type: none"> <li>Seed, fertilizer and agriculture chemicals, etc.</li> </ul>
<b>Impact of COVID-19 Pandemic</b>	
Issues on purchasing	<ul style="list-style-type: none"> <li>The factories were unable to secure workers and stopped production, which reduced the distribution volume in the market and made procurement difficult.</li> <li>Prices of imported fertilizers and pesticides have increased.</li> <li>The procurement price soared due to the decrease in the distribution volume of the market.</li> <li>Difficult to procure a sufficient amount of rice seeds.</li> <li>The procurement of goods was restricted due to movement restrictions.</li> </ul>
Issues on selling	<ul style="list-style-type: none"> <li>Prevented a large number of people come to the store at the same time.</li> <li>Shortage of rice seed.</li> <li>Decrease the number of customer due to movement restrictions.</li> </ul>
Profit	<ul style="list-style-type: none"> <li>Transaction volume decreased and then income decreased.</li> <li>Profit decreased due to increased shipping costs by increasing of fuel costs.</li> </ul>
Purchasing	<ul style="list-style-type: none"> <li>Increase of purchasing price.</li> <li>Decrease of rice seed production amount and made it difficult to purchase it.</li> <li>Difficult to purchase due to the movement restrictions.</li> <li>Lost the sales opportunity due to the delay of items arrival.</li> </ul>
Selling	<ul style="list-style-type: none"> <li>Demand was the same as before, but the required quantity could not be received, and the sales volume decreased.</li> <li>The number of customers decreased, and the sales volume decreased.</li> <li>Sales volume decreased due to movement restrictions.</li> <li>Farmers' incomes have declined, and sales have also declined.</li> </ul>
Management, employment	<ul style="list-style-type: none"> <li>The salesperson could not go to work due to movement restrictions.</li> <li>Some stores were short of funds but could not borrow from banks.</li> </ul>
Period Most Affected by COVID-19 Pandemic	<ul style="list-style-type: none"> <li>From Feb. 2020 to April 2020</li> </ul>

Source: JICA Survey Team

## 2.2) Farmer

For “Farmer” stage, 19 farmers were interviewed. 10 farmers were in Roi Et province and 9 farmers were in Ayutthaya province. In Ayutthaya province, all farmers are cultivating double-cropping (rainy season and dry season), while only two farmers are cultivating double cropping and the other eight farmers are cultivating only rainy season crop in Roi Et province. The cultivation area of one farmer’s paddy fields was about 3 ha to 12 ha in Ayutthaya province and about 1.5 ha to 3 ha in Roi Et province, so relatively small-scale farmers were interviewed in Roi Et province.

The most severe impact of COVID-19 was the purchasing cost of agricultural inputs. Similar to the results of interviews with “Input Supplier”, this was due to a decrease in market distribution volume associated with import suspensions, movement restrictions, production factory operation suspensions, etc. In addition, it was a negative effect that materials could not be procured due to movement restrictions at the appropriate time for rice cultivation.

In addition to these, the rainy season crops in Thailand have continued to be poor due to unseasonable weather in recent years. In rain-fed paddy fields where irrigation facilities are not installed, a shortage of rainfall causes no standing water in the paddy fields and weeds grow up, and farmers need to hire laborers for weeding. Due to movement restrictions by the COVID-19, weeding was delayed due to

the inability to secure a labor force, leading to a decrease in yield and quality.

**Table 3.4.12 Impact of COVID-19 Pandemic on “Farmer” Stage in Thailand**

Items	Situation
<b>Basic Information</b>	
Livelihood means	<ul style="list-style-type: none"> <li>• Agricultural specialty or agricultural main business</li> <li>• Mainly more than 15 years cultivation experience</li> </ul>
Cultivation season	• All farmers cultivate Double cropping in Ayutthaya Province and two farmers plant double cropping in Roi et province
Cultivation area	• 3 to 12 ha in Ayutthaya province and 1.5 to 3ha in Roi et province
Financial source	• Various
Mode of Payment	• Mainly by cash, partially bank transfer
Irrigation facility	• All farmers have irrigation facility in Ayutthaya province and 2 out of 10 farmers have irrigation facility in Roi et province
Agricultural cooperative	• All farmers belong to agricultural cooperative in Ayutthaya province and 6 of 10 farmers joined agricultural cooperatives in Roi et province
<b>Impact of COVID-19 Pandemic</b>	
Issues on purchasing	<ul style="list-style-type: none"> <li>• High price of seed, chemical fertilizers agricultural chemicals and fuel</li> <li>• Difficult to purchasing due to movement restrictions</li> </ul>
Issues on selling	• Transportation increased due to fuel cost raised.
Profit	• Profit decreased due to rising production costs (chemical fertilizers and pesticides) and transportation costs.
Cultivation	<ul style="list-style-type: none"> <li>• Prices of fertilizers and pesticides have risen.</li> <li>• In some fields where drought occurred, the water level in the paddy fields became low and weeds grew, but weeding work became insufficient due to movement restrictions and rising labor costs.</li> </ul>
Production amount	<ul style="list-style-type: none"> <li>• There was no significant impact on production, but some farmers had poor quality.</li> <li>• Increase of transportation cost of production due to the increase of fuel price.</li> <li>• Difficult of transportation arrangement due to movement restriction.</li> </ul>
Management, employment	<ul style="list-style-type: none"> <li>• Meetings with other farmers became difficult, and union activities stagnated</li> <li>• Increase of labor cost</li> </ul>
Period Most Affected by COVID-19 Pandemic	• Mainly from March 2020 to May 2020
Others	• Some farmers were temporarily delayed in sales due to lack of funds from buyers.

Source: JICA Survey Team

### 2.3) Trader (Collector, Middlemen)

For “Trader” stage, 10 traders were interviewed. 5 traders were in Roi Et province and 5 traders were in Ayutthaya province. The biggest impact of COVID-19 on traders was the increase in transportation costs due to increasing fuel prices. In many cases, the traders purchase rice from farm fields and transport it, so the increase in fuel price will cause a negative impact directly. Some respondents said that there was not enough storage space for rice before selling due to movement restrictions and delays in sales for exporters refraining from buying.

Although rice can be stored for a relatively long period, it is required a large storage space when the supply chain is delayed. Normally, traders sell in a planned manner while managing inventory, but this time due to the impact of COVID-19, movement restrictions are suddenly imposed, and transactions with the next stage (rice millers and exporters) on VC was delayed.

Procurement is from farmers and the period is mainly during the harvest season. It is required storage space for the time between procurement and sale. In addition, some traders responded that the quality of rice deteriorated due to unforeseen circumstances, leading to a decrease in selling prices. Because of these effects mentioned above, all 10 companies answered that their profits decreased, and 5 of them said that their profits decreased significantly.

**Table 3.4.13 Impact of COVID-19 Pandemic on “Trader” Stage in Thailand**

Items	Situation
<b>Basic Information</b>	
Main financial institution	• Individuals, private banks, government financial institutions, etc.

Items	Situation
for borrowing money	
Organization	<ul style="list-style-type: none"> <li>8 out of 10 organizations were agriculture cooperative</li> </ul>
<b>Impact of COVID-19 Pandemic</b>	
Issues on purchasing	<ul style="list-style-type: none"> <li>Increase of transportation cost</li> <li>Shortage of storage for rice due to delay of selling.</li> </ul>
Issues on selling	<ul style="list-style-type: none"> <li>Decrease of customer due to the movement restrictions.</li> <li>Drop of the selling price of rice.</li> </ul>
Profit	<ul style="list-style-type: none"> <li>Out of 10 traders, 5 answered significanty decreased and 5 answered decreased.</li> <li>Decreased due to drop of rice price and increase of transportation price.</li> </ul>
Purchasing	<ul style="list-style-type: none"> <li>Due to movement restrictions, it was not possible to purchase rice from a wide area.</li> </ul>
Selling	<ul style="list-style-type: none"> <li>Decreased of selling amount due to decline of export amount.</li> <li>Rice prices have fallen as exporters have bought cheaper rice.</li> <li>Due to the lack of funds of exporters and restrictions on movement, orders did not come in and the sales volume decreased.</li> <li>Rice prices have fallen by about 15%.</li> </ul>
Management, employment	<ul style="list-style-type: none"> <li>Meeting opportunities were limited and union activity stagnated.</li> <li>The employment situation of workers is not a big issue.</li> </ul>
Period Most Affected by COVID-19 Pandemic	<ul style="list-style-type: none"> <li>From March 2020 to May 2020 and from November 2020 to December 2020</li> </ul>
Others	<ul style="list-style-type: none"> <li>Due to movement restrictions, there was a period during which communication with customers and suppliers was not possible.</li> <li>The rice was stored for a longer period of time and the quality deteriorated.</li> </ul>

Source: JICA Survey Team

## 2.4) Rice Miller

For “Rice Miller” stage, 12 millers, 2 millers in Roi Et province and 10 millers in Ayutthaya province, were interviewed. Many respondents said that there was no significant impact on procurement. This is because rice cultivation farmers continue to grow rice as usual even under the COVID-19 situation, so the rice millers were not affected significantly. However, some rice millers who deal directly with farmers said that some farmers were reluctant to sell due to the decline in the price of rice for export.

Sales were decrease by the decline in exports. There was a reply that the shortage of containers had a negative impact on rice millers due to the delay in marine transportation by the impact of COVID-19. In addition, as same as the "Trader" stage, some respondents said that the quality of rice deteriorated due to long-term storage in the warehouse due to delayed sales. Due to these effects above mentioned, 70% of all rice millers answered that their sales were decreased significantly, and 10% was decreased.

**Table 3.4.14 Impact of COVID-19 Pandemic on “Rice Miller” Stage in Thailand**

Items	Situation
<b>Basic Information</b>	
Livelihood means	<ul style="list-style-type: none"> <li>Rice milling and middleman</li> </ul>
Financial source	<ul style="list-style-type: none"> <li>Individual and commercial bank</li> </ul>
<b>Impact of COVID-19 Pandemic</b>	
Issues on purchasing	<ul style="list-style-type: none"> <li>There was no problem on purchasing</li> </ul>
Issues on selling	<ul style="list-style-type: none"> <li>Due to movement restrictions, it was not possible to sell to major exporters.</li> <li>Rice could not be exported due to a shortage of containers for marine transportation.</li> <li>Export volume decreased.</li> </ul>
Profit	<ul style="list-style-type: none"> <li>About 70% answered that it decreased significantly, and about 10% answered that it decreased.</li> <li>Profit decreased due to higher fuel costs and higher transportation costs.</li> </ul>
Purchasing	<ul style="list-style-type: none"> <li>Farmers were reluctant to sell because the price of rice fell.</li> </ul>
Selling	<ul style="list-style-type: none"> <li>The selling price fell due to the decrease in export volume.</li> <li>The sales volume decreased because the trader who came to buy rice could not come.</li> <li>Due to a shortage of export containers, overseas transportation was delayed.</li> </ul>
Management, employment	<ul style="list-style-type: none"> <li>Labors could not commute due to the movement restriction.</li> </ul>
Period Most Affected by COVID-19 Pandemic	<ul style="list-style-type: none"> <li>Mainly from March 2020 to May 2020 and from January 2021 to April 2021</li> </ul>
Others	<ul style="list-style-type: none"> <li>The quality of rice that could not be sold deteriorated because it was stored for a long time in the warehouse of the rice mill.</li> <li>The online market has developed.</li> </ul>

Source: JICA Survey Team

## 2.5) Exporter

It was very difficult to get answers from exporters because the sales amount is a part of the company secret, but the survey team was able to receive answers from three companies. All the exporters who were able to get the answers were private companies, and the source of funds was private banks. Exporters are selling rice for African countries, the United States, the EU, etc. All of these companies handled all seven categories of exported rice. Exporters procure rice from rice millers and traders.

As same as the answer of “Rice Millers”, exporters answered that there were no problems with procurement. On the other hand, many issues were found out regarding sales. The biggest problem was that the price of rice was higher than in other countries. This is also influenced by the high Baht rate from the beginning of 2019. The transportation for exports was stalled by the impact of COVID-19, the selling price of rice was fell due to competition with other countries, so all three companies answered that their profits were decreased.

**Table 3.4.15 Impact of COVID-19 Pandemic on “Exporter” Stage in Thailand**

Items	Situation
<b>Basic Information</b>	
Category of Company	• Private company
Handling scale (number of customers)	• From 30 to 180 companies
Financial Source	• Commercial Bank
Sale destination	• African countries, the United States and EU
Line of business	• All 7 category of rice
<b>Impact of COVID-19 Pandemic</b>	
Issues on purchasing	• There was no problem on purchasing
Issues on selling	• The selling price of Thai rice is higher than in other countries. • Due to a shortage of export containers, transportation was delayed. • The purchase of overseas customers was delayed. • The selling price of rice has dropped. • Transportation costs have increased due to rising fuel costs.
Profit	• One of the three companies had a "significant" decrease in profits, and two had a "slightly" decrease in profits.
Customers	• Two of the three companies had a "significant" decrease in profits and one had a "slightly" decrease in profits.
Expenditure	• Two of the three companies saw a "significant" increase in expenditure and one company "slightly" increased expenditure.
Selling	• All three companies decreased the selling. • Overseas demand has decreased.
Period Most Affected by COVID-19 Pandemic	• From December 2020 to February 2021

Source: JICA Survey Team

### 3.4.4 Impact of COVID-19 Pandemic by Theme

#### 1) Concerns by COVID-19

Regarding concerns about the effects of COVID-19 in Lao PDR, the survey team received responses from the survey subjects on three items: "concerns about infection," "financial effects," and "psychological effects." In the result of the survey, they expressed two or more high concerns in all stages except for the “mental impact” of wholesalers. This is because although the number of infected people is kept low in Lao PDR until March 2021, the number of COVID-19 cases were increased since April 2021, and the lockdown and similar measures to prevent the spread of infection was continued for a long time so that the people in Lao PDR is concerning about COVID-19 infection, strongly.

**Table 3.4.16 Concerns in the Rice VC due to COVID-19 by Stage in Lao PDR**

FVC Stage	Risk of Infection	Financial Impact	Phycological Effect
Input Supplier	2.67	2.56	2.22
Farmer	2.22	2.56	2.00

FVC Stage	Risk of Infection	Financial Impact	Phycological Effect
Rice Miller/Collector	2.67	2.44	2.44
Wholesaler/Distributor	2.38	2.38	1.88
Retailer/Restaurant/Supermarket	2.50	2.50	2.50
Consumer	2.40	2.40	2.40
<b>Total</b>	<b>2.47</b>	<b>2.47</b>	<b>2.24</b>

Note : 3.Very much concerned, 2.Slightly Concerned, 1.Not concerned at all  
Source: JICA Survey Team

There was no tendency for Thai export rice for all stages, but the average was 2 or more, and there was a tendency to be strongly concerned about the impact of COVID-19. In particular, exporters are strongly concerned about the "financial impact", and it seems that this is related to the fact that exports were not possible due to the impact of COVID-19, resulting in a decrease in profits.

**Table 3.4.17 Concerns in the Rice VC due to COVID-19 by Stage in Thailand**

FVC Stage	Risk of Infection	Financial Impact	Phycological Effect
Input Supplier	2.30	1.90	2.80
Farmer	2.21	2.21	2.68
Trader/Collector	2.30	2.30	2.30
Rice Miller	2.42	2.08	1.92
Exporter	2.33	2.67	2.33
<b>Total</b>	<b>2.31</b>	<b>2.23</b>	<b>2.41</b>

Note : 3.Very much concerned, 2.Slightly Concerned, 1.Not concerned at all  
Source: JICA Survey Team

## 2) Impacted Period by COVID-19

In Lao PDR, although there was some variation in the time when each stage felt most affected, almost all stages answered that they were most affected from April to May 2021 (Table 3.4. 18 and Figure 3.4.7). Due to strict border measures in Lao PDR, the number of cased of COVID-19 was kept very low in 2020. However, as the number of cased increased in April 2021, traffic blockage (lockdown) between cities was carried out from April 22, 2021. This measure was continued until June 4, 2021, and many respondents said that COVID-19 had the strongest impact during this period.

In Thailand, even respondents within the same stage had different times and periods, but the trends were shown in Table 3.4.19 and Figure 3.4.8. According to these results, many respondents said that the influence from March to May 2020 was stronger in the stages other than "exporters". The first case of COVID-19 was found in January 2020 in Thailand and the number of cases were increased, and then the lockdown was started from the end of March 2020. Therefore, many respondents have affected the impact of COVID-19 during this first lockdown period. In addition, rice cultivation is started using rainfall around May, when the monsoon comes, and many respondents had been affected negative impact in this period because of the lockdown. On the other hand, the largest number of exporters answered that the most impacted period was from December 2020 to February 2021 after the harvest of the rainy season in 2020.

**Table 3.4.18 Most Impacted Period in the Rice VC due to COVID-19 in Lao PDR**

FVC Stakeholder	Most Impacted Period
Input Supplier	From April 2021 to May 2021
Farmer	From April 2021 to May 2021
Rice Miller/Collector	From April 2021 to May 2021
Wholesaler/Distributor	From April 2021 to May 2021
Retailer/Restaurant/Supermarket	From April 2021 to May 2021
Consumer	From April 2021 to May 2021

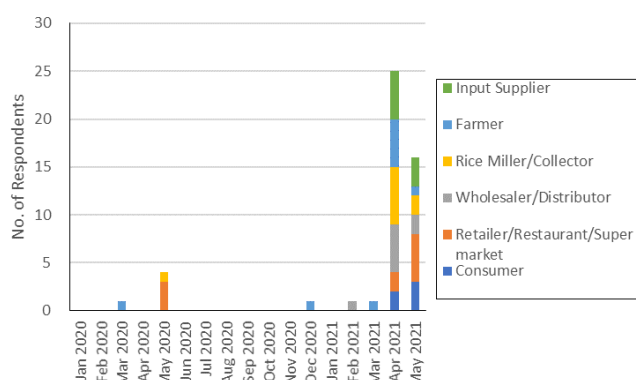
Source: JICA Survey Team

**Table 3.4.19 Most Impacted Period in the Rice VC due to COVID-19 in Thailand**

FVC Stakeholder	Most Impacted Period
Input Supplier	From February 2020 to April 2020
Farmer	From March 2020 to May 2020
Trader/Collector	From March 2020 to May 2020 and from November 2020 to

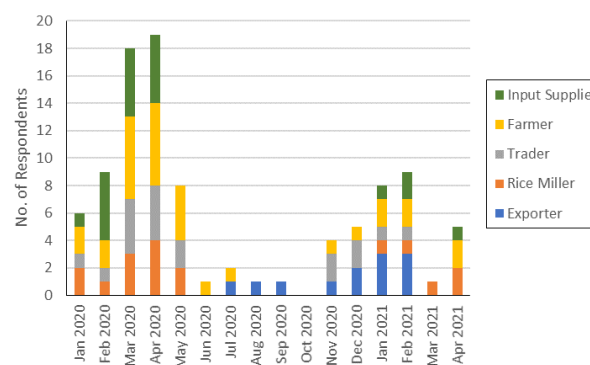
FVC Stakeholder	Most Impacted Period
	December 2020
Rice Miller	From March 2020 to May 2020 and from January 2021 to April 2021
Exporter	From December 2020 to February 2021

Source: JICA Survey Team



**Figure 3.4.7 Most Impacted Period in the Rice VC due to COVID-19 in Lao PDR**

Source: JICA Survey Team



**Figure 3.4.8 Most Impacted Period in the Rice VC due to COVID-19 in Thailand**

Source: JICA Survey Team

### 3) Impacts by Indicator and Stage

The question items in this survey are classified into 12 indicators as shown in Table 3.4.20, and the degree of influence of the indicators in each stage is shown in Table 3.4.21 and Table 3.4.22.

**Table 3.4.20 Categorization of Questionnaire (12 Indicators)**

Category	Contents
① Handling volume	Supplied commodity, purchase volume, handling volume
② Accessibility	Access to production districts / markets, procurement source, customer, destination for export
③ Transportation measure	Procurement means, shipment means, transportation routes
④ Profitability	Benefit / revenue / capital / financial condition
⑤ Cost	Expense / input cost / transportation cost / electric cost / rental cost
⑥ Price	Buying price, sales price, market fluctuation
⑦ Finance and capital	Financial support, governmental support, capital turnover
⑧ Labor	Available labor, labor cost
⑨ Information	Market information, communication with buyers and sellers
⑩ Management/Storage	Inventory of storage, loss of commodity
⑪ Customer/Buyer	Demand of buyers/ number of customers
⑫ Competition	Competition with other companies

Source: JICA Survey Team

In Lao PDR, the influence on "money" was stronger than the influence on "Materials" as a whole. In particular, it has the greatest impact on "price," which is thought to be most affected by the decline in prices due to oversupply of rice in the region.

In Thailand, as same as Lao PDR, the impact on "money" was stronger than the impact on "materials" throughout. In particular, the impact on "traders," "rice millers," and "exporters" was strong, and the negative impact on the cost and sales of rice for export was large. Overall, the impact was stronger than in Lao PDR, which is thought to have been strongly influenced by the difference in sales channels between domestic consumption and exports.

**Table 3.4.21 Impacts on Rice VC by COVID-19 by Indicator in Lao PDR**

Target	Indicator	Input Supplier	Farmer	Rice Miller/Collector	Wholesaler/Distributor	Retailer	Total
Material	① Handling volume	0.44	0.60	0.50	0.94	0.76	3.25
	② Accessibility	0.22	0.24	0.00	0.29	0.53	1.28
	③ Transportation measure	0.00	0.50	0.26	0.75	0.00	1.51

Target	Indicator	Input Supplier	Farmer	Rice Miller/ Collector	Wholesaler/ Distributor	Retailer	Total
Money	④Profitability	0.22	1.74	0.79	1.19	1.11	5.05
	⑤Cost	0.61	0.66	1.27	0.83	1.11	4.48
	⑥Price	0.86	1.53	1.50	1.79	0.72	6.40
	⑦Finance and capital	0.28	0.00	0.00	0.00	0.43	0.71
Labor	⑧Labor	0.44	0.26	0.42	0.05	0.00	1.17
⑨Information		0.22	0.29	0.00	0.00	0.33	0.85
⑩Management /Inventory		0.00	0.00	0.33	0.54	1.10	1.97
⑪Customer/Buyer		0.00	0.00	0.78	0.69	1.37	2.83
⑫Competition		0.00	n/a	0.00	0.00	0.00	0.00
Total		3.30	5.82	5.85	7.08	7.46	

Note: Depending on the importance of the impact, the responses are divided into three levels and the score is divided by the number of valid responses. The more scores presented, the greater the impact.

Source: JICA Survey Team

**Table 3.4.22 Impacts on Export Rice VC by COVID-19 by Indicator in Thailand**

Target	Indicator	Input Supplier	Farmer	Trader/ Collector	Rice Miller	Exporter	Total
Material	①Handling volume	0.90	0.25	0.53	0.53	0.83	3.04
	②Accessibility	0.80	0.39	0.27	1.33	0.92	3.72
	③Transportation measure	0.62	0.12	1.05	0.50	0.25	2.55
Money	④Profitability	1.30	0.97	1.44	1.56	1.33	6.60
	⑤Cost	0.90	0.78	0.83	1.03	1.47	5.00
	⑥Price	0.50	0.53	0.71	0.97	1.39	4.10
	⑦Finance and capital	0.25	0.19	0.23	0.69	0.47	1.82
Labor	⑧Labor	0.05	0.21	0.18	0.53	1.42	2.38
⑨Information		0.20	0.68	1.50	1.03	0.33	3.75
⑩Management /Inventory		0.02	0.28	0.33	0.56	0.50	1.69
⑪Customer/Buyer		0.60	0.37	1.25	1.05	1.17	4.44
⑫Competition		0.38	n/a	1.00	0.40	1.33	3.11
Total		6.52	4.78	9.31	10.18	11.41	

Note: Depending on the importance of the impact, the responses are divided into three levels and the score is divided by the number of valid responses. The more scores presented, the greater the impact.

Source: JICA Survey Team

#### 4) Differences in the impact of COVID-19 on rice VC due to differences in sales channels

This time, the survey was targeted the impact of COVID-19 on both rice VCs for domestic consumption in Lao PDR and rice VCs for export in Thailand. The following commonalities and differences were confirmed, although there are large differences in the impact not only due to differences in sales channels but also due to differences in regulations in the country of origin.

##### 4.1) Common points

- Rice is the staple food of both countries, and farmers continue to produce it as usual regardless of the influence of COVID-19.
- It was negatively affected by movement restrictions (delays in transportation and procurement, etc.).
- Rice procurement has not been significantly affected.
- Agricultural material costs and fuel costs have risen, and costs have increased.
- The degree of influence of COVID-19 increased toward the downstream of VC.
- The price of rice has dropped.

##### 4.2) Difference

Although the rice price was felled in both countries, it was due to excess rice in the region by transport restrictions in Lao PDR, and it was due to export restrictions and competition with other rice-producing countries in Thailand.

### 3.4.5 Conclusion of the Impacts and Countermeasures Proposed

#### 1) Lao PDR

Rice VC In Lao PDR, the negative effect mainly due to the movement restriction of COVID-19 was found out. This is because it depends on imports of agricultural inputs from Thailand, and rice is sold and consumed in other parts of the country, and it is transported over long distances. Therefore, as countermeasures against the impact of COVID-19, it is expected to strengthen domestic production of agricultural inputs and implement policies that will not stop the necessary distribution even in the case of COVID-19.

For Savannakhet province which is the target area of the survey, the transportation distance is considerably shorter when exporting to neighboring countries such as Thailand, Vietnam, and Cambodia than the transporting to Vientiane capital which is the main consumption area of rice. The neighboring countries are rice-producing countries as same as Lao PDR, so the exports of rice to them seem difficult, but the Ministry of Agriculture and Forestry of Lao PDR has mentioned for expansion of rice exports in the policy document. Therefore it is needed to consider the expanding sales channels of rice to the neighboring countries.

**Table 3.4.23 Issues before/after COVID-19 and Expected Measures in the Rice VC in Lao PDR**

Input	Production	Processing	Distribution	Retail	Consumption
<b>Issues</b>					
<ul style="list-style-type: none"> <li>• Most of the materials depend on imports from Thailand</li> <li>• Delay in arrival from Thailand due to movement restrictions</li> <li>• Decrease of customers due to movement restrictions</li> <li>• Increase costs due to rising fuel costs</li> </ul>	<ul style="list-style-type: none"> <li>• Low productivity</li> <li>• No seed renewal</li> <li>• High price of Agricultural inputs</li> <li>• Drop the rice price</li> <li>• Delay of payment after selling</li> <li>• High price of labor cost</li> </ul>	<ul style="list-style-type: none"> <li>• Delays in procurement and transportation due to movement restrictions and a decrease of customers</li> <li>• High competition with others</li> <li>• Decrease of profit due to drop of rice price</li> </ul>	<ul style="list-style-type: none"> <li>• Decrease in profit due to decrease of rice price</li> <li>• Delayed procurement due to movement restrictions and suspension of rice mill operations</li> </ul>	<ul style="list-style-type: none"> <li>• High competition</li> <li>• Many customers from Thailand</li> <li>• Customer decline and profit decrease due to mobility restrictions</li> <li>• Decrease in profit due to shortened business hour</li> <li>• Increased expenditures due to rising electricity bills</li> </ul>	<ul style="list-style-type: none"> <li>• Reduction of working hours and working days</li> <li>• Increased purchase of foods for the house consumption due to decrease in eating out</li> </ul>
Cross-cutting issues					
<ul style="list-style-type: none"> <li>• Negative impact on both materials and money due to movement restrictions, especially due to the disruption of logistics with Thailand</li> <li>• Electricity and fuel costs rise</li> <li>• Movement restrictions increase the total amount of rice in the region and drop the rice price</li> </ul>					
<b>Expected countermeasures</b>					
<ul style="list-style-type: none"> <li>• Expansion of domestic production of agricultural materials</li> <li>• Promotion of rice seed renewal for farmers</li> <li>• Continued transportation to rice consuming areas under COVID-19 situation</li> <li>• Expansion of sales channels for rice for export</li> </ul>					

Source : JICA Survey Team

#### 2) Thailand

Since the rice VC in Thailand targeted export rice, the negative impact of the suspension of exports was significant. In particular, in the “transportation”, “processing” and “export” stages, the impact of the suspension of exports after purchasing rice from farmers was seen, and quality and price declines due to improper storage were observed. Therefore, as a countermeasure, it is conceivable to install a large storage place or storage in each stage. However, since the need for such a large warehouse is low in normal times, storage should be used for multiple purposes.



Regarding "production", low productivity due to drought and inadequate field management has been raised as an issue before COVID-19, but due to the shortage of agricultural inputs and labor by COVID-19, further production has declined. For these issues, in addition to the implementation of support that contributes to productivity improvement and stabilization as before such as construction and maintenance of irrigation facilities, water management, cultivation technology guidance, etc., it is important to introduce smart agriculture and agricultural DX to save the labor force.

**Table 3.4.24 Issues before/after COVID-19 and Expected Measures in the Rice VC in Thailand**

Input	Production	Transport	Processing	Export
<b>Issues</b>				
<ul style="list-style-type: none"> <li>High competition with others</li> <li>Difficult to procure materials due to movement restrictions and suspension of production plants</li> <li>High price of imported fertilizers</li> <li>Decrease of Customers</li> </ul>	<ul style="list-style-type: none"> <li>Drought damage</li> <li>Weed and feeding damage by mice</li> <li>High price of agricultural inputs</li> <li>Difficult to procure agricultural materials due to movement restrictions</li> <li>High price of labor cost</li> <li>Stagnation of agriculture group activities</li> </ul>	<ul style="list-style-type: none"> <li>Poor rice quality</li> <li>High competition with others</li> <li>Difficult to procure due to movement restrictions</li> <li>Sales volume decreased due to a decrease of export volume</li> <li>Drop the rice price</li> </ul>	<ul style="list-style-type: none"> <li>High management cost</li> <li>Decrease in sales volume due to decrease in export volume</li> <li>Increased costs due to rising fuel prices</li> <li>Commuting is restricted due to movement restrictions</li> </ul>	<ul style="list-style-type: none"> <li>High competition with others</li> <li>Receive fluctuations in exchange rates</li> <li>Delayed transportation due to shortage of export containers</li> <li>Decrease in rice selling price</li> <li>Increased transportation costs due to rising fuel prices</li> </ul>
Cross-cutting issues <ul style="list-style-type: none"> <li>Procurement and transportation delays due to movement restrictions</li> <li>Increased transportation costs due to rising fuel prices</li> <li>Decrease in sales volume and profit due to decrease in export volume</li> </ul>				
<b>Expected countermeasures</b>				
<ul style="list-style-type: none"> <li>Installation of storage that can properly store rice in the "transportation", "processing", and "export" stages</li> <li>Deregulation of distribution restrictions in COVID-19</li> <li>Improvement of productivity in "production" stage</li> </ul>				

Source : JICA Survey Team

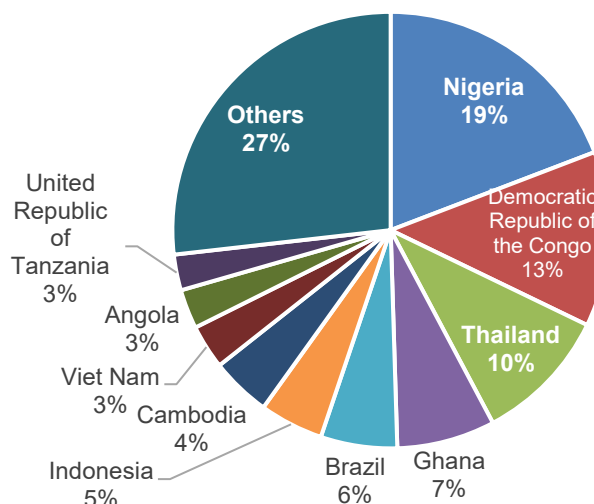
### 3.5 COVID-19 Impact Survey on Cassava (Thailand)

#### 3.5.1 Outline of Cassava VCs in Thailand

##### 1) Cassava VC

The tropical crop cassava is cultivated in a wide range of tropical regions such as Africa, Asia, and Latin America due to its resistance to adverse environments and high yields, making it the fifth-largest crop among the major food crops by following wheat, corn, rice, and potatoes. It is said that cassava has high agricultural and industrial value because it can use its roots and other parts such as leaves and stems.

Global cassava production in 2020 is 308.55 million tons (FAO, 2020), and about 60% is produced in Africa and 30% in Asia. Among them, Thailand is ranked as the third-largest production country globally after Nigeria and the Democratic Republic of the Congo (31 million tons, about 10% of the whole production).



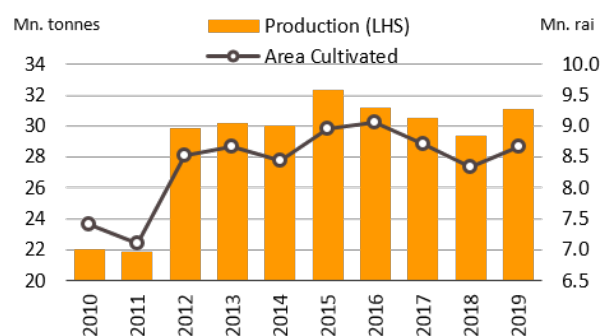
**Figure 3.5.1 Cassava Production (2020)**

Source: FAO

Cassava is used for various purposes such as food, feed (for livestock), fuel (biofuel and ethanol), and industrial products (alcohol, citric acid, paper, chemical products, etc.). Most of the cassava produced in Africa is for domestic consumption, while most of the cassava produced in Asia, such as Thailand, Cambodia, and Vietnam, is exported to foreign countries. China mainly imports cassava, 80% of the cassava traded in the world market on a monetary basis<sup>1</sup>.

##### 2) Cassava VC in Thailand

Over the last two decades, rising demand in the export market has expanded Thailand's cassava processing capacity and increased cassava production steadily. In 2019, it was cultivated at approximately 14 million hectares (8.7 million Rai) of farmland, producing 31.1 million tons of cassava. Nakhon Ratchasima (about 15% of the national production area<sup>2</sup>) is cassava's most concentrated production area, followed by Kamphaeng Phet, Chaiyaphum, and Kanchanaburi.



Source: Office of Agricultural Economics (OAE), Krungsri Research

**Figure 3.5.2 Production and cultivated area of cassava in Thailand**

Source : Office of Agricultural Economics (OAE), Krungsri Research

As of 2019, there are about 400 cassava processing plants in Thailand, and these are mostly established near cassava farms for convenience and transportation cost savings. Nakhon Ratchasima has the largest number of around 40 cassava processing factories in Thailand. Some companies have built processing plants in areas with easy access to cassava imported from neighboring countries such as Laos and Cambodia. Cassava processing plants are concentrated in Kalasin, Udonthani, and Khon Kaen, adjacent

<sup>1</sup> Source: "Cassava", Tridge, 2021, <<https://www.tridge.com/intelligences/mandioca/import>> (August 2021)

<sup>2</sup> Source: Thai Tapioca Development Institute, <[https://www.tapiocathai.org/English/Mainpage\\_e.html](https://www.tapiocathai.org/English/Mainpage_e.html)> (August 2021)

to Nakhon Ratchasima. In addition, there are also many processing plants built in Chonburi, which have good access to major ports for export<sup>3</sup>.

Cassava VCs in Thailand are roughly divided into three VCs according to their purpose of use. First, VC is to produce cassava starch (tapioca), second is to produce dry cassava such as cassava chips for animal feed or other uses, and lastly, VC is to produce ethanol fuel. Cassava starch is classified into two types Native Starch and Modified Starch. The former is used as a raw material or flavoring for processed foods. In contrast, the latter is processed into various products such as monosodium glutamate, sweeteners, sauces, cosmetics, pharmaceuticals, etc. Cassava starch is produced at about 100 processing plants in Thailand. Dried cassava is used to produce animal feed, alcohol, and citric acid.

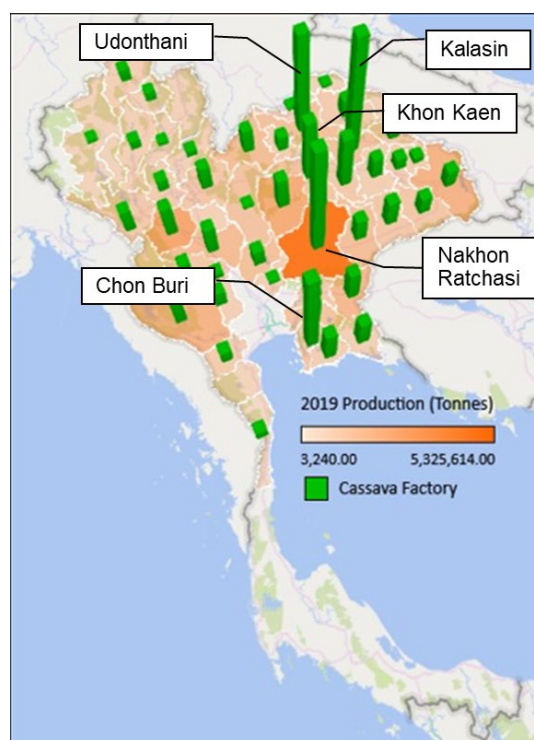
As of 2019, approximately 90% of materials for the cassava processing industry in Thailand were procured domestically, and the remaining 10% were imported from neighboring countries such as Laos and Cambodia. Of the cassava produced and imported to Thailand, 36% is processed to produce goods for domestic consumption, and 64% is exported<sup>4</sup>.

Thailand supplies 80% of the global exports of Native Starch, 57% of cassava chips exports, and 30% of modified starch exports. Until around 2005, cassava pellets accounted for 70% of the cassava exported from Thailand, and most of them were exported to the EU as livestock feed at low prices. However, as the production of grain in the EU increased, the number of livestock farmers shifting to domestic feed increased, and the EU's import of cassava from Thailand decreased due to trade systems such as the WTO. On the other hand, exports of cassava pellets decreased significantly as the EU stopped importing cassava from Thailand in 2005<sup>5</sup>. Such EU policy has significantly changed Thailand's cassava export structure, shifting it to exports to the Asian market, especially to China. Currently, most of the cassava exported from Thailand is exported to China.

In the case of food use, Cassava VC in Thailand is classified into two chains. One is that large companies consistently carry out from processing to export after collecting cassava produced by farmers. Another is that each company undertakes its business from processing to retail. The main actors related to the VC of cassava starch used in foods are described below:

**Input suppliers:** Provide fertilizers and chemicals used for cassava production. Many cassava farmers use chemical fertilizers, and also some farmers use pesticides and herbicides sold by input suppliers.

**Farmers:** For planting cassava, leave a part of the stem of the previous crop, cut it to a length of about 25 cm, and put it in the soil, and then roots and buds will come out, and growth will start. Therefore, the farmers prepare the cuttings of the next crop from a part of the previous crop or purchase them from



Note: Cassava factory include cassava pellets, cassava chips, native starch, Modified starch and others (cassava pulp, processed cassava)

**Figure 3.5.3 Cassava production area and number of cassava processing factories in Thailand**

Source : Office of Agricultural Economics (OAE), Krungsri Research

<sup>3</sup> Source: "Industry Outlook 2020-2022 : Cassava Industry", Chaiwat Sowcharoensuk, Krungsri, 11 May 2020, <<https://www.krungsri.com/en/research/industry/industry-outlook/Agriculture/Cassava/IO/io-cassava-20>>

<sup>4</sup> Source: same as "note 3".

<sup>5</sup> Source: same as "note 3", "Basic knowledge of Cassava", Nobuyuki ISERI, August 2016, <[https://www.jica.go.jp/project/all\\_asia/005/materials/ku57pq000025s2lv-att/cassava\\_about.pdf](https://www.jica.go.jp/project/all_asia/005/materials/ku57pq000025s2lv-att/cassava_about.pdf)>

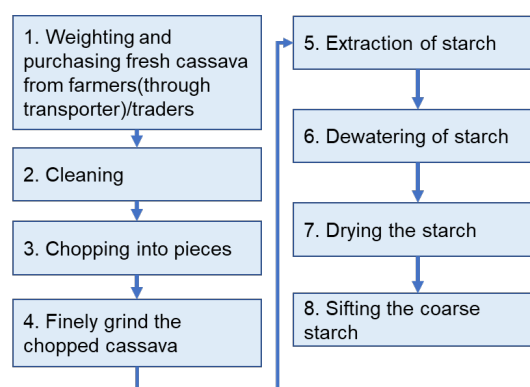
neighboring farmers. Farmers only purchase a new one if the cassava production is greatly affected by illness. Varieties researched and developed at the Thai Tapioca Development Institute and Kasetsart University may also be distributed. Although cassava cultivation work is carried out by family members in general, some workers are hired daily from nearby acquaintances, relatives, contractors, etc.

**Traders/ Transporters:** Most of the produced cassava is transported directly to the processing plant by the farmer; however, some of them are undertaken by the traders or transporters. Traders are located basically near farm fields, able to easily buy raw cassava from the farmers and sell it to processing companies. When the processing companies cannot purchase cassava from nearby farmers, they purchase from the traders who collect cassava from other areas. On the other hand, there are two types of transporters, and one is a company that has small or large trucks and transports raw cassava from a farm field to a processing factory. At the same time, another company transports cassava starch from a processing factory to a domestic market or an export company. The former transport of cassava is done by large-scale farmers who use their spare time or their vehicles as a secondary source of income in general. On the one hand, the latter employs workers for the transport of cassava starch to domestic food processing plants and ports for export over long distances by large trucks. Many companies handle cassava and other crops such as rubber and sugar cane, etc.

**Processor:** A factory that buys raw cassava from farmers, traders, or transporters and processes it into starch. Many factories have a processing capacity of 400 to 800 tons per day, and the processing procedure is as shown in the figure as right.

**Food processor:** A company purchases cassava starch from the processors as a raw material for processed foods and manufactures various processed products.

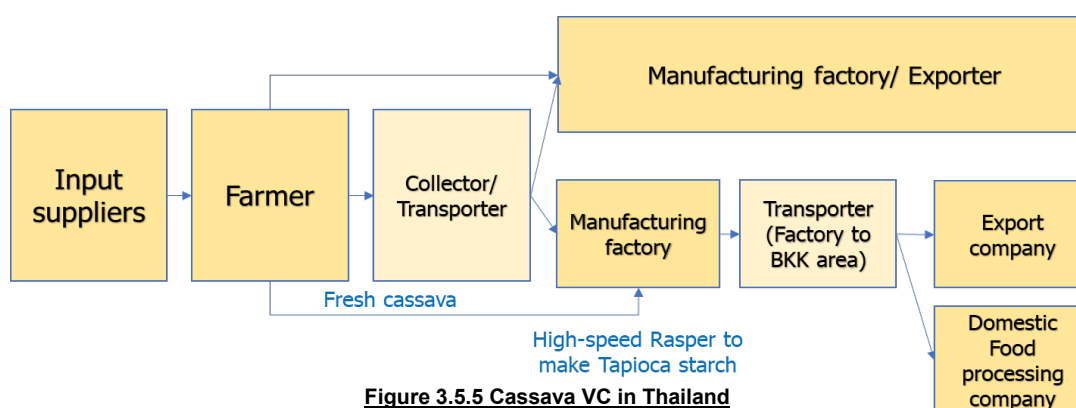
**Exporter:** A company buys cassava starch from processors and exports it mainly to China and other Asian countries.



**Figure 3.5.4 Procedure of cassava processing**

Source: "Cassava Production and Processing in Thailand" (2018, FAO)

The figure below shows the cassava VC for food use in Thailand.



**Figure 3.5.5 Cassava VC in Thailand**

Source: JICA Study Team

### 3) Situation of Cassava VC in Thailand

In the first half of 2020, the market price of cassava in Thailand was sluggish (Refer to Table 3.5.1). As a background, the quality of cassava deteriorated due to the drought and pests (cassava mosaic virus, etc.) in the previous year, and the diffusion of COVID-19 caused the export of cassava products to China,

which is the leading export destination, to be decreased compared to previous years. In April 2020, the Government of Thailand approved an additional budget of 458 million baht (about 1.5 billion Yen) to support cassava farmers, assuming that the market price will continue to fall below the guaranteed standard price (USD 2.50 / kg)<sup>6</sup>. Such a decrease in market prices is expected to affect the production trends and trade trends of cassava and tapioca starch in the country in the future.

On the other hand, in the latter half of 2020, the stock of corn, which is a raw material for ethanol, decreased in China. Instead, the demand for cassava in Thailand increased, and accordingly, the price of cassava had increased too<sup>7</sup>. In addition, the decrease in cassava production in Thailand also affected the price increase.

### 3.5.2 Outline of the Impact Survey on Cassava VCs

From June to July 2021, a COVID-19 impact survey was conducted on cassava VCs, mainly in Khon Kaen, as shown in the right figure. As mentioned above, Khon Kaen is adjacent to Nakhon Ratchasima Province, a major cassava producing area, so there are stakeholders in cassava production, including farmers.

As a survey method, staff deployed by the JICA team conducted a series of interviews with the survey respondents using a pre-structured questionnaire. The respondents of the survey are those involved in cassava VC, which are shown in the following table:

**Table 3.5.2 Number of respondents by stage in Cassava VC**

No.	FVC Stakeholder	Address	Respondents
1	Input suppliers	Khon Kaen, Wang Noi	10
2	Farmers	Khon Kaen	10
3	Traders/ Transporters	Khon Kaen	5
4	Processors	Ayutthaya, Khet Prawet, Mahasarakham, Kalasin, Khon Kaen, Bangkok	7
	<b>Total</b>		32

Source: JICA Study Team

### 3.5.3 Impact of COVID-19 Pandemic by Stage of Cassava VCs

For the questionnaire survey, a series of inquiries were prepared for each FVC stage to investigate the impacts of COVID-19. Since the number of respondents in each stage is limited, some points are extracted to understand the impacts of each stage. The following table summarizes the major issues that occurred in each stage before/after the COVID-19 and the impact of COVID-19, followed by each stage's impacts.

**Table 3.5.1 Cassava Market Price in Thailand (THB/kg)**

	2018	2019	2020	2021
Jan	2.01	2.20	1.94	2.03
Feb	2.12	2.17	1.92	2.07
Mar	2.36	2.15	1.89	2.13
Apr	2.51	2.11	1.73	2.08
May	2.55	1.83	1.67	1.92
Jun	2.47	1.65	1.62	
Jul	2.38	1.65	1.64	
Aug	2.38	1.72	1.73	
Sep	2.49	1.62	1.76	
Oct	2.57	1.70	1.74	
Nov	2.41	1.87	1.85	
Dec	2.30	1.99	2.05	
<b>Avg</b>	<b>2.38</b>	<b>1.89</b>	<b>1.80</b>	<b>2.05</b>

Source: Office of Agricultural Economics (OAE), Thai Tapioca Starch Association, Krungsri Research (2020)



**Figure 3.5.6 Target area of Study of Cassava VC (Khon Kaen Province)**

Source: Wikipedia

<sup>6</sup> Source: "Government allots extra Bt458 million for tapioca price guarantee", The Nation Thailand, 29 April 2020, <<https://www.nationthailand.com/news/30386967>>

<sup>7</sup> Source: "Demand from China expected to boost tapioca chip exports", The Nation Thailand, 31 August 2020, <<https://www.nationthailand.com/in-focus/30393723>>

**Table 3.5.3 Main Issues and Impacts of COVID-19 in Thailand Cassava VC**

FVC Stage	Input	Production	Distribution	Processing
Stakeholders	Input suppliers	Farmers	Traders/ Transporters	Processors
Issues before COVID-19	—	<ul style="list-style-type: none"> <li>Decrease of the sales price with lack of quality due to the impact of drought and pest and disease.</li> <li>Farmers need to hire casual laborers for some work because young family members work in urban areas.</li> <li>Farmers can do other work during cassava cultivation. However, some of them shift to other crops because of the low benefit of cassava cultivation.</li> </ul>	<ul style="list-style-type: none"> <li>The quality of cassava collected from farmers is low due to a mix of sand and soil, which tend to be avoided by processors, and the selling price may drop.</li> </ul>	<ul style="list-style-type: none"> <li>The supply of raw materials is insufficient by the cultivation season. Then it is an issue to secure the raw materials when the supply amount is not enough.</li> <li>Due to the low price of cassava, the number of producers, will decrease, and the supply will be insufficient.</li> </ul>
Issues between/ over the stage before COVID-19	<ul style="list-style-type: none"> <li>Expansion of cassava's non-food use. The government is considering policies for expanding the domestic market, such as cassava for biodegradable plastics and the use of bioethanol.</li> <li>Farmers shift from cassava cultivation to other crops because the profits from cassava are lower than other agricultural products.</li> </ul>			
Issues due to COVID-19	<ul style="list-style-type: none"> <li>Rising procurement costs due to rising material prices</li> <li>Decrease in purchasing power due to decreased income of farmers</li> </ul>	<ul style="list-style-type: none"> <li>Cost increase of input materials</li> <li>Unstable market price</li> </ul>	<ul style="list-style-type: none"> <li>Increase of transportation cost</li> </ul>	<ul style="list-style-type: none"> <li>Increase of transportation/export cost</li> <li>Cost for preventative measures of COVID-19</li> <li>Shortage of workers</li> </ul>
Issues between/ over the stage due to COVID-19	<ul style="list-style-type: none"> <li>Exports were suspended due to the impact of COVID-19. The transaction volume decreased, especially from March to May 2020, due to a shortage of containers.</li> </ul>			

Source: JICA Study Team

### 1) Input suppliers

The table below shows the impacts of COVID-19 on input suppliers, along with basic information on the surveyed suppliers. Many input suppliers responded that sales volume and profits decreased due to the impacts of rising prices of fertilizers and pesticides, and all the respondents answered that the impact continued until January 2021.

**Table 3.5.4 Impact of COVID-19 to the Input Suppliers (Including basic information of respondents)**

Particular	Situation
<b>【Basic Information】</b>	
Main financial institution for borrowing money	<ul style="list-style-type: none"> <li>Own resources, Commercial bank, Government Finance Institution, Bank for Agriculture and Agricultural Cooperatives (BAAC), etc.</li> </ul>
Main settlement method of payment	<ul style="list-style-type: none"> <li>Most input suppliers use cash and bank transfer.</li> </ul>
Main handling items	<ul style="list-style-type: none"> <li>Fertilizer, pesticide, and seed (vegetables, rice, etc.)</li> </ul>
<b>【Impact of COVID-19】</b>	
Issues on the purchasing	<ul style="list-style-type: none"> <li>Price increase of input materials, shortage of stock, undelivered of ordered items</li> </ul>
Issues on the selling	<ul style="list-style-type: none"> <li>Decrease in demand due to decrease in income of customers (farmers), decrease in purchasing power, increase in selling price</li> </ul>
Profit	<ul style="list-style-type: none"> <li>The number of customers and sales volume decreased</li> </ul>
Purchasing	<ul style="list-style-type: none"> <li>Shortage of stock, Not able to transport</li> </ul>
Selling	<ul style="list-style-type: none"> <li>Selling price increase due to increase of purchase cost</li> </ul>
Management, employment	—
Most affected period	<ul style="list-style-type: none"> <li>A long period of impact of COVID-19 until January 2021 (all respondents)</li> </ul>
Others	—

Note: In the questionnaire, first, the impact of COVID-19 on the procurement and sales was roughly asked, and then the detailed items were asked. Therefore, although there is some overlap in the information, the latter half (after the double ruled line) summarizes the results of detailed interviews (hereinafter the same).

Source: JICA Study Team

## 2) Farmers

The table below provides basic information on cassava farmers and their issues on COVID-19. Of the ten farmers who responded, all cultivate rice in addition to the cassava, and five also cultivate sugar cane. In addition, four farmers belonged to agricultural cooperatives for saving and lending. All respondents said that the cost of input materials increased due to the price rising of agricultural input materials such as fertilizers and pesticides. In terms of sales, many farmers pointed out price instability. However, there was almost no impact of COVID-19 on sales destinations and sales volume.

**Table 3.5.5 Impact of COVID-19 to Farmers (Including basic information of respondents)**

Particular	Situation
<b>【Basic Information】</b>	
Main income source and year of farming	<ul style="list-style-type: none"> <li>Main income source is agriculture (cassava, rice, sugar cane)</li> <li>Experiences from 5 to 10 years or more than 15 years</li> </ul>
Main financial institution for borrowing money	<ul style="list-style-type: none"> <li>Own resources</li> <li>Bank for Agriculture and Agricultural Cooperatives (BAAC)</li> </ul>
Main settlement method of payment and selling	<ul style="list-style-type: none"> <li>Cash (all), Bank transfer (1 respondent)</li> </ul>
Irrigation facilities	<ul style="list-style-type: none"> <li>Nor established</li> </ul>
Cooperation activity	<ul style="list-style-type: none"> <li>Four farmers among ten farmers belong to cooperatives whose purpose is saving and loan</li> </ul>
<b>【Impact of COVID-19】</b>	
Issues on the purchasing	<ul style="list-style-type: none"> <li>Price increase of fertilizer and chemicals</li> </ul>
Issues on the selling	<ul style="list-style-type: none"> <li>Unstable market price</li> </ul>
Profit	<ul style="list-style-type: none"> <li>Increase of production cost due to price increase of input materials (all)</li> <li>Increase of profit due to unstable market price (all)</li> </ul>
Selling	<ul style="list-style-type: none"> <li>Not impact to customers and selling amount despite the unstable market price</li> </ul>
Management, employment	<ul style="list-style-type: none"> <li>Not impacted</li> </ul>
Most affected period	<ul style="list-style-type: none"> <li>Not impacted</li> </ul>

Source: JICA Study Team

## 3) Traders/ Transporters

The table below provides basic information on traders and transporters related to cassava VC and the impact of COVID-19 they faced. Trades and transporters are divided into two types: collect cassava from the producer farmers, and collect cassava dry chips from processing plants, both of which are sold or transported to processors who make cassava flour.

Cassava production was not significantly affected by COVID-19, and accordingly, there was not much significant impact on traders and transporters. In some cases, the effects of a decrease in cassava supply and an increase in transportation costs due to rising fuel prices were observed. In addition, while the quality and safety of agricultural products were often required, many traders/transporters assumed that the quality of cassava from farmers was not so high because they are often mixed with sand and soil. However, the COVID-19 impact is small regarding this issue, and it was probably listed as an issue prevailing even before COVID-19.

**Table 3.5.6 Impact of COVID-19 to the Traders/ Transporters (Including basic information of respondents)**

Particular	Situation
<b>【Basic Information】</b>	
Main income source and year of farming	<ul style="list-style-type: none"> <li>Traders or transporters (Individual)</li> </ul>
Detail of business	<ul style="list-style-type: none"> <li>Buy/Collect cassava from farmers and sell/ transport to processing companies</li> <li>Buy/Collect dry cassava chips from farmers and sell/ transport them to processing companies</li> </ul>
Main financial institution for borrowing money	<ul style="list-style-type: none"> <li>Commercial bank (4 respondents)</li> <li>Own resources (1 respondent)</li> </ul>
<b>【Impact of COVID-19】</b>	
Issues on the purchasing	<ul style="list-style-type: none"> <li>Shortage of purchasing amount (Supply amount of cassava production)</li> </ul>
Issues on the selling	<ul style="list-style-type: none"> <li>Restriction of transportation</li> </ul>
Profit	<ul style="list-style-type: none"> <li>Not impacted</li> </ul>

Particular	Situation
	<ul style="list-style-type: none"> <li>Small impact, such as transportation cost increase due to fuel price increase</li> </ul>
Collecting products	<ul style="list-style-type: none"> <li>Not impacted</li> </ul>
Selling	<ul style="list-style-type: none"> <li>Not impacted</li> </ul>
Management, employment	<ul style="list-style-type: none"> <li>Not impacted</li> </ul>
Most affected period	<ul style="list-style-type: none"> <li>From November 2020 to December 2020</li> </ul>
Others	<ul style="list-style-type: none"> <li>The quality and safety of agricultural products are often required by customers. The problem is that cassava collected from farmers is often mixed with soil or sand (2 respondents out of 5 respondents).</li> </ul>

Source: JICA Study Team

#### 4) Processors

The table below provides basic information on processors that make starch from cassava and the impact they faced on COVID-19. Processors include those who sell to domestic food processing plants or export directly.

Due to the impact of COVID-19, 5 out of 7 processors have insufficient supply, increased costs (transportation costs due to increased fuel costs to prevent the spread of COVID-19, etc.), decreased demand from customers, etc. As a result, their profit has decreased. In addition, some processors responded that there was a shortage of workers due to restrictions on employment from other regions or abroad. However, most processors responded that these effects were limited, only to the early stages of the spread of COVID-19 (around March-May 2020).

**Table 3.5.7 Impact of COVID-19 to the Processors (Including basic information of respondents)**

Particular	Situation
<b>【Basic Information】</b>	
Main income source and year of farming	<ul style="list-style-type: none"> <li>Processors (Operation years: from 5 to 47 years)</li> </ul>
Detail of business	<ul style="list-style-type: none"> <li>Make cassava starch from raw cassava</li> </ul>
Main financial institution for borrowing money	<ul style="list-style-type: none"> <li>Commercial bank, cooperative, Government Finance Institution</li> </ul>
<b>【Impact of COVID-19】</b>	
Issues on the purchasing	<ul style="list-style-type: none"> <li>Shortage of supply due to shortage of workers for cassava harvest</li> <li>Unstable quality, raw material screening</li> </ul>
Issues on the selling	<ul style="list-style-type: none"> <li>Delay in receiving the product by the customer</li> <li>Export delay due to container shortage and reduced demand</li> <li>Tightening of product standards by customers</li> <li>Increased transportation costs</li> </ul>
Profit	<ul style="list-style-type: none"> <li>Costs for COVID-19 prevention, increase of transportation costs including exports, while profits decreased due to a decrease in sales volume (around March 2020) (5 out of 7 respondents)</li> </ul>
Handling volume	<ul style="list-style-type: none"> <li>In particular, the amount of raw material decreased immediately after the spread of COVID-19 (around March 2020), so the amount of processing also decreased (1 out of 7 respondents).</li> </ul>
Selling	<ul style="list-style-type: none"> <li>In particular, immediately after the spread of COVID-19 (around March 2020), orders from customers stopped (or the receipt of ordered products stopped), resulting in a decrease in sales volume (4 out of 7 respondents).</li> <li>Sales price decreased (3 out of 7 respondents)</li> </ul>
Management, employment	<ul style="list-style-type: none"> <li>Shortage of workers due to restrictions on employment from other regions and overseas (2 out of 7 respondents)</li> </ul>
Most affected period	<ul style="list-style-type: none"> <li>March to May 2020</li> </ul>

Source: JICA Study Team

### 3.5.4 Impact of COVID-19 Pandemic by Theme

#### 1) Concern for the impact of COVID-19

Regarding the impact of COVID-19, respondents in each FVC stage were asked their concerns regarding the three items of “risk of infection,” “financial impact,” and “psychological impact” of COVID-19. Most of the stages were concerned about the financial impact. However, the concern for the risk of infection and the psychological effect was also serious since the infection increased during the survey period from June to July 2021.



**Table 3.5.8 Concern Level for the Impact of COVID-19**

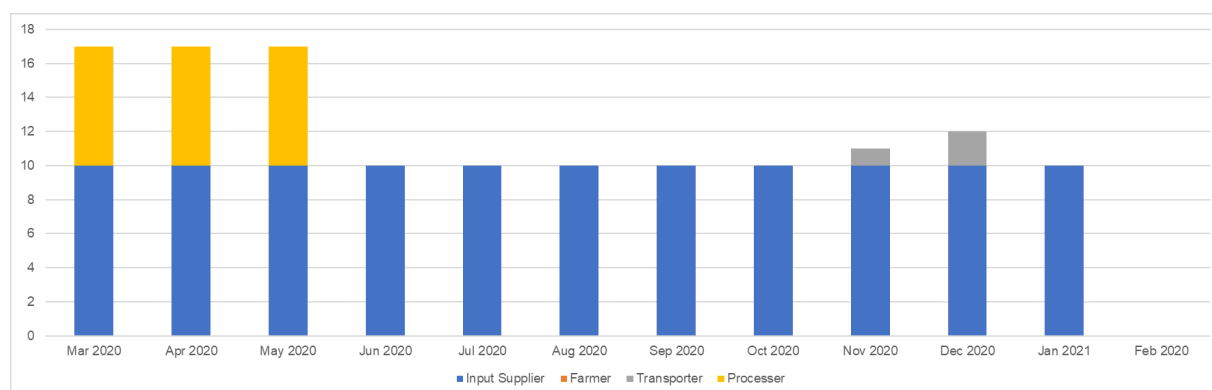
FVC Stakeholder	Risk of Infection	Financial Impact	Phycological Effect
Input Supplier	2.30	2.50	2.50
Farmer	2.55	2.64	2.64
Transporter	2.40	2.40	2.30
Processor	2.43	2.43	2.43
<b>Total</b>	<b>2.43</b>	<b>2.52</b>	<b>2.50</b>

Note : 3. Very much concerned, 2. Slightly Concerned, 1. Not concerned at all (1~3 : The higher the number, the stronger the concern)

Source: JICA Study Team

## 2) Most Affected Period of COVID-19

Each stage group was interviewed about the period between January 2020 and May 2021 that had the greatest impact on management activities they undertook. The answer is summarized in the figure below:



**Figure 3.5.7 Most Affected Period of COVID-19**

Source: JICA Study Team

Input suppliers also handle materials for crops other than cassava. Therefore, the impact of COVID-19 on their business management, like profit and sales volume, has not been affected only during a temporary period but continued until January 2021. On the other hand, all farmers answered that there was no impact on management activities related to COVID-19. During the global spread of COVID-19, the impact of COVID-19 on farmers' production activities was very much limited since the spread occurred only in urban areas in Thailand at the initial time. For the processors who sell or export cassava starch, export delays due to movement restrictions, suspension of international transactions, shortage of containers, etc., have an impact immediately after the spread of COVID-19 from March to May 2020.

## 3) Labor Management and Food Safety

In this survey, labor management and food safety were also interviewed with each stage. When asked if any workers could not commute to work, some processors responded to have hired workers from overseas and prepared a place of residence for workers. These companies have taken measures to prevent the spread of COVID-19 (wearing masks, hand-washing practices, securing social distance, etc.) in the working places and the workers' places of residence.

In addition, confirming customer requests for food safety and traceability systems after the spread of COVID-19 infection, only one out of seven processors responded that there was a request. In addition, all the farmers answered that there was no request. On the other hand, all the traders who collect cassava from the farmers answered that they had requests regarding food safety and traceability systems from their customers, such as processors. The reason for such a request from the processors is that cassava generally collected from farmers often has been low quality due to being mixed with soil and sand.

#### 4) Degree of COVID-19 Impacts on Each Index and Each Stage

Questionnaire items are classified into 12 indices based on the main points of organizational operation. Table 3.7.9 shows the degree of COVID-19 impacts on each index and stage (irrespective of positive impact and negative impact), from which the following are raised:

- ✓ Overall, the impact of COVID-19 on the Cassava VC was relatively strong on input suppliers and processors. Input suppliers that handle imported materials and processors that sell processed products to the downstream stage of Cassava VC, such as exporters and domestic food processors, are affected by the COVID-19, such as distribution disruption and reduced demand. On the other hand, there was almost no impact of COVID-19 on farmers and traders/transporters.
- ✓ Overall, the impact on “money” such as “money-profit” and the impact on “goods” such as “goods-handling volume” was relatively high. The stagnation of logistics had a significant impact on the overall cassava VC. As cassava can be used for various products other than food, the impact of COVID-19 related regulations was not significant on the business operation and management of the production and processing of cassava VC.

**Table 3.5.9 Degree of COVID-19 impacts on each index and each stage**

Particulars	Sub-group	Input Supplier	Farmer	Traders/ Transporters	Processors	Total
Goods	①Goods – Handling volume	0.55	0.00	0.00	0.18	0.73
	②Goods – Access	0.53	0.23	0.00	0.14	0.89
	③Goods – Transportation means	0.47	0.00	0.00	0.48	0.94
Money	④Money – Profit	0.70	0.00	0.00	0.36	1.06
	⑤Money – Cost	0.33	0.04	0.17	0.26	0.81
	⑥Money – Price	0.60	0.05	0.00	0.14	0.79
	⑦Money – Others	0.43	0.00	0.00	0.19	0.62
People	⑧People – Labor, expence	0.24	0.08	0.00	0.14	0.46
	⑨Information	0.50	0.00	0.00	0.29	0.79
	⑩Operation/Management	0.15	0.00	0.13	0.00	0.28
	⑪Environment	0.43	0.00	0.00	0.29	0.72
	⑫Input	0.20	0	0	0.19	0.39
	Total	5.13	0.39	0.31	2.66	

Source: JICA Study Team

#### 3.5.5 Conclusion of the Impacts and Countermeasures Proposed

Cassava VC in Thailand was affected by the spread of COVID-19, which caused the price of agricultural input materials to rise, the delay in exports, and the decline in demand from China, resulting in a decrease in sales volume and a decrease in selling price. However, on the other hand, cassava can be stored for a long time after processing and has various uses other than food. Therefore, the impact of COVID-19 on cassava VC is not so significant as compared with other agricultural products. The situation and impact by COVID-19 are summarized as follows, and the countermeasures for strengthening cassava VC are shown in the lower part of the following table:

**Table 3.5.10 Issues and Countermeasures for Thailand Cassava VC before/after COVID-19**

Input	Production	Transportation	Processing
<b>Issues</b>			
<ul style="list-style-type: none"> <li>• Rising procurement costs due to rising material prices</li> <li>• Decrease in purchasing power due to decreased income of farmers</li> </ul>	<ul style="list-style-type: none"> <li>• Cost increase of input materials</li> <li>• Unstable market price</li> </ul>	<ul style="list-style-type: none"> <li>• Increase of transportation cost</li> </ul>	<ul style="list-style-type: none"> <li>• Increase of transportation/export cost</li> <li>• Cost for preventative measures of COVID-19</li> <li>• Shortage of workers</li> </ul>
<ul style="list-style-type: none"> <li>• Exports were suspended due to the impact of COVID-19. The transaction volume decreased, especially from March to May 2020, due to a shortage of containers.</li> </ul>			
<b>Countermeasures</b>			
–	<ul style="list-style-type: none"> <li>• Financial support for purchasing input materials, development of financial services with low</li> </ul>	<ul style="list-style-type: none"> <li>• Development of matching application between farmers and trader/transportation to</li> </ul>	<ul style="list-style-type: none"> <li>• Development of matching application between workers and processors</li> <li>• Technical assistance for labor</li> </ul>

Input	Production	Transportation	Processing
	rate • Providing technical assistance regarding the cultivation techniques and post-harvest treatment to produce high-quality cassava	efficient and stable collection	hygiene and health.

Source: JICA Study Team

For cassava farmers, yields and profits declined due to the impact of price increase of agricultural input materials and lower selling prices (especially in early 2020). On the other hand, there was no problem securing sales destinations because demand for non-food products continued. Since before COVID-19, traders/transporters have had a problem that the cassava quality collected from the farmers is low due to the mixture of soil and sand.

However, after the COVID-19, the demand for the safety of agricultural products from customers has increased. Therefore, it has become necessary to provide for farmers guidance on appropriate cultivation techniques and post-harvest treatment techniques to improve the quality of cassava, financial support for purchasing input materials, and development of financial products with a low-interest rate, etc. Those measures can contribute to benefit increases not only for farmers but also processors and traders.

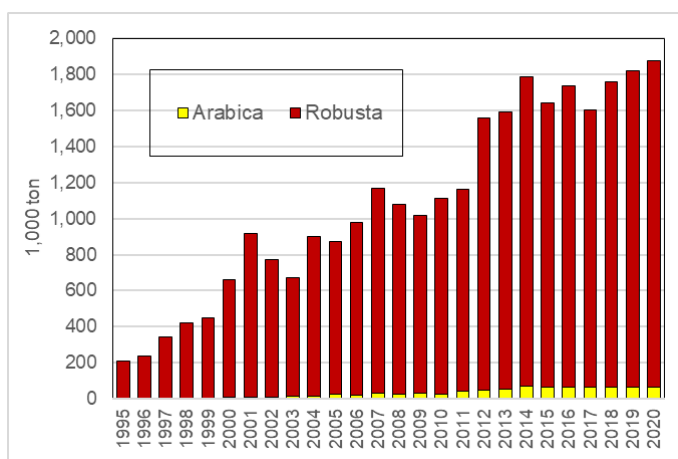
Before the COVID-19, the distribution of cassava depended on the harvest time, so the issue was how to secure stable agricultural products when the supply was low. Due to the influence of COVID-19, an increase in transportation costs was raised as an acute issue. With this situation, developing a matching application with farmers for efficient and stable collection may have to be considered a countermeasure. By creating a system in which the farmer registers the harvest time, yield, variety, etc., in advance, the distributors can confirm it and make a reservation. Thus both the distributor and the farmer can make stable sales and purchases.

As many workers are engaged in the processing factory, the cost of measures to prevent the spread of COVID-19 is relatively high. Therefore, financial support for occupational health and support should be considered, such as training workers in terms of occupational health. There was a shortage of workers for processors who employ overseas workers due to the effects of the border blockade enforced under the COVID-19. When hiring workers, it is possible to consider measures to efficiently secure workers by using a matching application, including short-term employment.

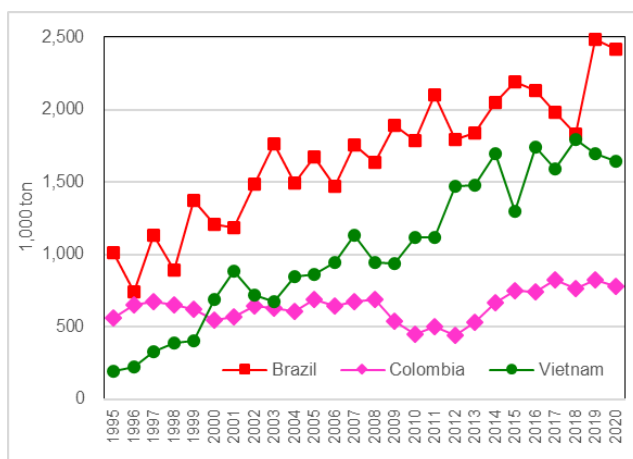
### 3.6 COVID-19 Impact Survey on Coffee (Viet Nam)

#### 3.6.1 Outline of Coffee VCs in Viet Nam

After the reform policies launched in Vietnam in 1986, known as Doi Moi, which encourage a market-oriented economy and investment of foreign capitals, coffee production in Viet Nam presents a sharp increase and exceeded 1,800,000 tons in 2019 as shown in Figure 3.6.1<sup>1</sup>. The two main types of coffee (Robusta and Arabica) are produced in Viet Nam, but Robusta accounts for 97% of total production<sup>2</sup>. Most of the products are for export, and Viet Nam is the second biggest exporter of coffee in the world following Brazil (see Figure 3.6.2<sup>3</sup>). Viet Nam accounts for more than 21 % of total coffee output (according to the International Coffee Organization, 2016). Coffee is a major agricultural export commodity of Viet Nam with the export value accounting for 3% of the national GDP in 2014 and the coffee industry provides a livelihood for approximately 2.6 million people<sup>4</sup>.

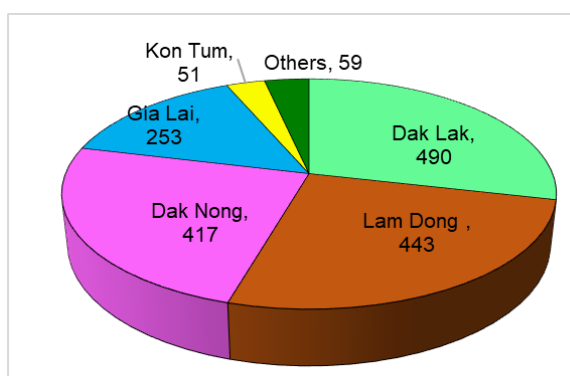


**Figure 3.6.1 Coffee Production in Viet Nam**  
Source: USDA Foreign Agricultural Service , 2021<sup>1</sup>



**Figure 3.6.2 Coffee Export of Major Coffee Production Countries**  
Source: USDA Agricultural Service, 2021<sup>3</sup>

In 2018/2019, Robusta coffee output in Viet Nam reached 1,714 thousand tons, and coffee production of five provinces in the Central Highlands, namely, Dak Lak, Lam Dong, Dak Nong, Gia Lai, and Kon Tum was 1,654 thousand tons, accounting for 97% of the whole production in the country<sup>5</sup> (see Figure 3.6.3). Coffee production in the Central Highland plays an important role in the social economy of Viet Nam. Most of the coffee grown in the Central Highlands is exported.

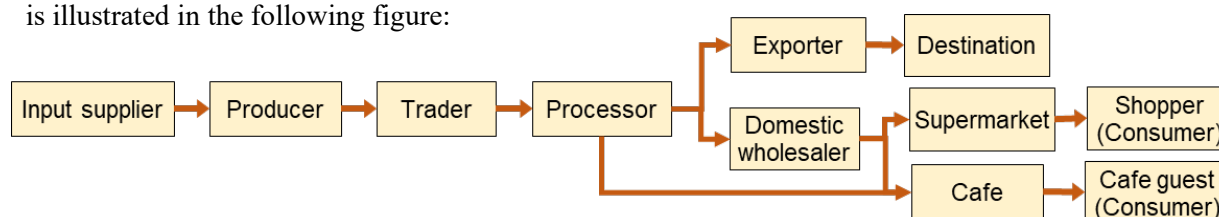


**Figure 3.6.3 Coffee Production by Province in Viet Nam**  
Source: Tasa Coffee Vietnam Co. Ltd<sup>5</sup>

Flow of the coffee value chain in Viet Nam is

<sup>1</sup> United States Department of Agriculture Foreign Agricultural Service, downloaded in July 2021, <<https://apps.fas.usda.gov/psdonline/app/index.html#/app/downloads>>, it is noted that the data of production and export are converted of number of bags, supposed that 1 bag is 60kg.  
<sup>2</sup> Vietnam Coffee and Cacao Association, <<http://www.vicofa.org.vn/country-coffee-profile-vietnam-bid385.html>>, Country Coffee Profile: Vietnam  
<sup>3</sup> United States Department of Agriculture Foreign Agricultural Service, downloaded in July 2021, <<https://apps.fas.usda.gov/psdonline/app/index.html#/app/downloads>>, it is noted that the data of production and export are converted of number of bags, supposed that 1 bag is 60kg.  
<sup>4</sup> Giang N. T. Nguyen and Tapan Sarker, Sustainable coffee supply chain management: a case study in Buon Me Thuot City, Daklak, Vietnam, 2018  
<sup>5</sup> Tasa Coffee Vietnam Co. Ltd, “Coffee area of Vietnam – estimated 2018/2019”, <<https://tasacoffee.com/dien-tich-ca-phe-viet-nam-2018.html>>, downloaded on 31 July 2021

divided into (1) domestic consumption and (2) export, and later is major, accounting for more than 90%. The main stakeholders of the VC are “Input supplier”, “Producer/Farmer”, “Trader”, “Processor”, “Exporter”, “Café owner” and Consumers (café customers and shoppers). The chain is complicated, some processors supply processed coffee to café directly, while others supply the products to supermarkets through wholesalers. Out of them, “Input supplier”, “Producer”, “Trader”, “Processor”, “Exporter”, “Café” and “Café customer” were interviewed in the survey. The coffee value chain map is illustrated in the following figure:



**Figure 3.6.4 Coffee VC Map in Viet Nam**

Source: JICA Survey Team

**Input supplier:** Input suppliers handle various agricultural inputs, namely, fertilizer, chemical, net, seedlings, and so on related to coffee production. Before COVID-19, the stage did not have any severe issues, however, they have faced competition with other suppliers and a decrease in demand since before.

**Producer:** Coffee growers in the Central Highland are mainly small-scale farmers and households with an area of 0.5ha to 1ha account for almost half, followed by an area of 1-2 ha and over 2 ha<sup>6</sup>. The producers are divided into two main groups, namely, independent farmers and contract farmers with coffee companies. Harvested coffee is sold to traders, pre-processing companies, and processing companies. Most of the coffee produced in Viet Nam is Robusta variety, which is relatively cheap, and the Robusta bean is exported in raw. Thus, Viet Nam is regarded as a country, which produces coffee at a low price, and the business is not necessarily profitable for the producers.<sup>7</sup>

**Trader:** Produced coffee is collected by local traders or the local coffee company and supplied to coffee processing facilities. In the Central Highlands, traders include local private collection agents and coffee company agents. Most of the coffee companies are under the Viet Nam government coffee corporation. In Viet Nam, the people have customers to present gifts to their friends and relatives before New Year (Tet), and since coffee is one of the popular gifts, the demand for coffee is seasonal.

**Processor:** Coffee processing factories mainly produce soluble coffee and filter coffee with a variety of different products for the domestic and export market. There are many large coffee processing enterprises such as Olam, Trung Nguyen (in Dak Lak province), Thu Ha (in Gia Lai province), Dak Ha (in Kon Tum province), Vinacafé Bien Hoa, and Nestle.

**Exporter:** As it is mentioned, more than 90% of coffee output in Viet Nam is exported to foreign countries, for instance, Swiss, Japan, Korea, the United Kingdom, and Russia. Out of the coffee exporters, Nestlé Ltd. shows a big presence and purchases 20-25% of whole coffee raw bean produced in Viet Nam and sells coffee after processing to domestic and international markets<sup>8</sup>.

**Consumer (café customer):** The people in Viet Name have a habit of drinking coffee at cafes, so consumption at cafes accounts for more than 70 percent of coffee consumption. In these days, the

<sup>6</sup> Nguyen Thi Thuy Hanh and Mai Thi Thuy Diem, Australasian Agribusiness Perspectives 2017, Volume 20, Paper 5, Describing the Coffee Value Chain in the Central Highlands of Vietnam

<sup>7</sup> JETRO, Issues in the Vietnamese coffee industry, -From raw material supplier to coffee processing country-, Feb. 2019

<sup>8</sup> JETRO, Issues in the Vietnamese coffee industry, -From raw material supplier to coffee processing country-, Feb. 2019

number of cafés or coffee shops has been rapidly increasing. Most of them are private operations, however, coffee chain stores have been increased in number. Especially, Highlands Coffee, one of the local coffee chain shops, has established 236 shops and 94 shops nationwide and Ho Chi Minh City, respectively, as of the beginning of 2019.

### 3.6.2 Outline of the Impact Survey on Coffee VC

A series of questionnaire surveys of the coffee VC to examine the impact of COVID-19 was implemented from May-June 2021. As Table 3.6.1 shows, the survey targeted “Input suppliers”, “Producers”, “Traders”, “Processor” and “Exporter” in Dak Nong, Dak Lak, and Lam Dong provinces in the Central Highland, while it targeted “Exporters”, “Café owners” and “Café guests” in Ho Chi Minh city, and the location of the surveyed area is shown in Figure 3.6.5.

**Table 3.6.1 No. of Respondents of Coffee VC**

FVC Stage	Dak Nong Province	Dak Lak Province	Lam Dong Province	Ho Chi Minh city	Total
Input supplier	4	6	0	0	10
Producers	4	3	0	0	7
Traders	4	3	0	0	7
Processors	4	3	1	0	8
Exporters	5	0	1	1	7
Café owner	3	0	0	4	7
Café customer	0	0	0	10	10
TOTAL	24	15	2	15	56

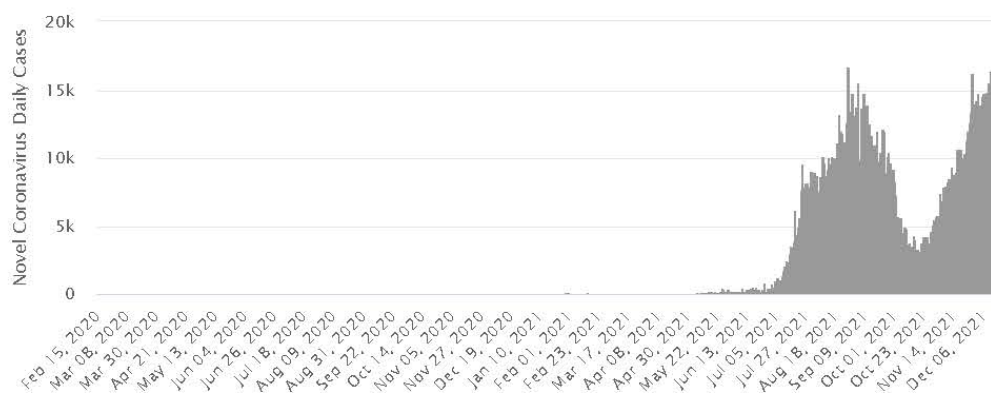
Source: JICA Survey Team



**Figure 3.6.5 Location of Target Provinces in the Central Highland**

Source: JICA Survey Team

As Figure 3.6.6 illustrates, Viet Nam succeeded to control the pandemic after March 2020 in general, however, the rapid infection started in April 2021 again, which leads to transport restriction. Hanoi and Ho Chi Minh City had been locked down until 20<sup>th</sup> August and 30<sup>th</sup> September, respectively. The case was decreased in October, however, it increased again so soon, showing around 15 thousand cases per day in December 2021. The main interview survey targeting all stages was implemented in May -June 2021, while the follow-up survey targeting processors and café owners only, who were damaged mostly, was done in October 2021. It is noted that the main survey targeted four café owners, however, the follow-up survey could target only one café owner since other cafes were closed.



**Figure 3.6.6 Daily Cases of COVID-19 in Viet Nam**

Source: World Meter as of December 2021<sup>9</sup>

<sup>9</sup> World Meter, <<https://www.worldometers.info/coronavirus/country/viet-nam/>>, downloaded on 20th December 2021

### 3.6.3 Impact of COVID-19 Pandemic by Stage of Coffee VCs

The results of the questionnaire survey in the coffee VC are analyzed, and issues before/after COVID-19 and cross-cutting issues in the VC by stage are summarized as shown below:

**Table 3.6.2 Issues of Coffee VC by Stage in Viet Nam before and after COVID-19**

FVC Stage	Input	Producer	Trader	Processor
Main stakeholder	Input supplier of fertilizers, seeds, seedlings, and nets	Coffee producer	Trader of coffee	Coffee processor
Issues before COVID-19	<ul style="list-style-type: none"> <li>High wholesale prices of fertilizer, chemical, net, and other input materials</li> <li>Decrease in customers and needs</li> <li>Competition with other input suppliers</li> </ul>	<ul style="list-style-type: none"> <li>High price of agricultural inputs</li> <li>Unstable market prices</li> </ul>	<ul style="list-style-type: none"> <li>Competition with other input suppliers</li> <li>Seasonal demand of coffee due to the custom to give presents prior to Tet</li> </ul>	<ul style="list-style-type: none"> <li>Insufficient financial support</li> <li>High operation cost, e.g., electric and transportation cost</li> </ul>
Cross-cutting issue	None			
Issues caused by COVID-19	<ul style="list-style-type: none"> <li>Wholesale prices of fertilizer, chemical, packing materials, wires were increased, they are partly imported.</li> <li>Due to a decrease in the coffee sale price, producers shifted crops to avocado and pepper from coffee, which led to a demand decrease.</li> <li>Increase in transportation cost</li> <li>Increased of local input suppliers and competition with them</li> <li>Access to seed producers in other provinces became difficult due to movement restriction</li> </ul>	<ul style="list-style-type: none"> <li>Increase in wholesale prices of agricultural inputs</li> <li>Due to mass gathering restrictions, participation in technical training was limited, which makes it difficult to access new techniques and knowledge</li> <li>Movement restriction made it difficult to hire labors from other provinces, which led to labor cost increase</li> <li>Increase in transportation cost</li> </ul>	<ul style="list-style-type: none"> <li>Decrease in domestic and international demand</li> <li>Decrease in coffee distributed</li> <li>Increase in transportation cost due to the movement restriction among provinces</li> <li>Prolongment of coffee inventory time, which led to storage and electric cost, and further loss of coffee</li> </ul>	<ul style="list-style-type: none"> <li>Decrease in travelers by movement restriction and café closure due to gathering and caused a decrease in sale volume</li> <li>Increase in transportation cost due to movement restriction and loss of transportation measures to other provinces</li> <li>Loss of opportunities to develop new customers due to restriction of gathering</li> </ul>
Cross-cutting issue	Access to agricultural inputs imported or produced in other provinces became difficult with a cost increase, which gave to a big impact on the producers. Demand for coffee for the domestic and international markets was drastically decreased, consequently, traders responsible for delivery and storage had excess coffee inventories, sometimes they had to dispose of the unsold coffee.			

FVC Stage	Exporter	Café Owner	Consumer
Main stakeholder	Exporter	Café owner	Café customers
Issues before COVID-19	<ul style="list-style-type: none"> <li>competition with other exporters</li> <li>Insufficient financial support</li> <li>High operation cost</li> </ul>	<ul style="list-style-type: none"> <li>Decrease in customers</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
Cross-cutting issue	Same as above		
Issues caused by COVID-19	<ul style="list-style-type: none"> <li>Decrease in customers</li> <li>Increase in transportation cost</li> <li>Degradation of capital turnovers due to delay in loan from banks</li> </ul>	<ul style="list-style-type: none"> <li>Business suspension due to city lockdown and a significant decrease in customers</li> </ul>	<ul style="list-style-type: none"> <li>Income decrease</li> <li>Increase in fuel and light prices, and food expense</li> </ul>
Remarks	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>Start of take away service of coffee after the COVID-19 pandemic</li> </ul>	<ul style="list-style-type: none"> <li>Decrease in shopping frequency by COVID-19</li> <li>Frequent use of local shops</li> <li>Use of online shopping of foods and medical goods</li> </ul>

Source: JICA Survey Team

#### 1) Input supplier

Due to the restriction of movement between provinces, transportation cost and wholesale prices of fertilizers, chemicals, packing materials, nets, and other inputs were increased, and delivery of those, especially, imported materials was delayed. In addition, it was difficult to access seed producers in other provinces. Such situations led to a lack of high-quality agricultural inputs from im-export companies in Ho Chi Minh city. Moreover, since producers changed their cultivation crops from coffee to other crops, e.g., pepper and avocado, a decrease in demand and customers was observed as shown in the following table.

**Table 3.6.3 Impacts on the Input Supplier of Coffee by COVID-19**

Item	Situation
<b>【Basic Information】</b>	
Financial resource	• Company/corporation and rural bank
Settlement methods	• Mainly cash, partly bank transfer
Commodity	• Fertilizer, net, chemical, seeds of coffee, packing materials
<b>【Impacts by COVID-19】</b>	
Issues of procurement	• Delay in delivery due to movement restriction and wholesale price increase
Issues of sale	• Demand was decreased since producers reduced coffee planted area or converted coffee field to pepper or avocado field
Increase/decrease in profit	• Significantly profit was decreased due to increase in wholesale price
Receipt of commodities	• Access to seed producers in other provinces was difficult due to movement restriction • Delay in delivery of agricultural materials, since some of them are imported
Handling volume and sales amount	• Due to a decrease in the coffee sale price, producers shifted crops to avocado and pepper from coffee, which led to a demand decrease.
Management/Employment	• Not very impacted
Most impacted period	• March-May, July–August, November–December in 2020, and March-May in 2021
Others	• Due to the increase in the number of local input suppliers, competition with them was tightened.

Source: JICA Survey Team

## 2) Producer

Prices of fertilizers and pesticides were increased sharply due to the restriction of movement, which made it difficult for some producers to hire workers from other provinces, and the labor cost was increased, especially in the harvesting season. In addition, since mass gathering was prohibited, the opportunities to participate in some training courses on pest control, preservation, and harvesting were limited. Also, access to new techniques. e.g., participation in workshops to introduce new pesticides and fertilizers became difficult. Those situations gave a big impact on the quality of coffee for the producers. The impacts on the producers are as shown below:

**Table 3.6.4 Impacts on the Producer Supplier of Coffee by COVID-19**

Item	Situations
<b>【Basic Information】</b>	
Financial resource	• All interviewed producers don't get loans
Settlement methods	• Mostly they use cash for purchasing and sale of inputs, rarely cash transfer
Commodity	• Coffee
<b>【Impacts by COVID-19】</b>	
Issues of procurement	• Drastic increase in inputs cost since January 2021, which was very severe
Issues of sale	• Unstable coffee market price • A part of interviewed producers experienced a decrease in sales volume and price
Increase/decrease in profit	• Decrease in profit due to increase in agricultural inputs cost and decrease or no change of sale volume
Receipt of commodities	• Due to a shortage of imported high-quality fertilizers, producers had to apply low-quality ones
Volume of handling and sales	• Some faced a decrease in handling volume or sale prices, but the impact was not significant
Management/Employment	• Movement restriction made it difficult to employ labors from other provinces. • The number of labors has not been changed. However, the labor cost was increased. • Due to a shortage of labor, a part of producers could not apply chemicals sufficiently.
Most impacted period	• January-February, August, and December in 2020, April-May in 2021
Others	• Due to the restriction of mass gathering, technical training was postponed, which made it difficult for the producers to gain new techniques.

Source: JICA Survey Team

## 3) Trader

The interviewed traders faced big challenges to get coffee outputs by a decrease in coffee distribution, since transportation costs, collection costs, etc. were increased. During the epidemic, a mass gathering was restricted, further, many cafés were closed, which led to a decrease in coffee demand and fewer customers for the traders. Movement restrictions also made it difficult to sell products, leading to increase costs to maintain and store coffee. The main impacts are summarized as follows:



**Table 3.6.5 Impacts on Trader of Coffee by COVID-19**

Item	Situations
<b>【Basic Information】</b>	
Financial resource	• Half of the respondents don't get a loan, while others do from companies/corporations, government financial institutions, and private/individual.
Settlement methods	• Cash or bank transfer
Commodity	• Crops including coffee, fertilizer
<b>【Impacts by COVID-19】</b>	
Issues of procurement	• Handling volume (wholesale) was significantly decreased, by 20 to 80% • Half of the respondents experienced an increase of wholesale unit price to some extent
Issues of sale	• Decrease in volume of sales
Increase/decrease in profit	• Volume of sales was decreased while operating cost was increased, which led to a decrease in profit significantly
Receipt of commodities	• Coffee has been purchased from producers or wholesalers and the situation is not changed by COVID-19. • Since coffee cannot be sold, inventory time was prolonged, which led to storage and electric cost. Some respondents said that capital turnover became difficult. • Due to the prolonged storage period, coffee was partly wasted. • The respondents keep trucks and did not have difficulties with transportation means. However, movement to other provinces was restricted. • Half of the respondents experienced an increase in transportation costs.
Handling volume and sales amount	• Due to demand decrease and business suspension, the sale of coffee was decreased. • Sale price was decreased. • A decrease in demand for coffee causes competition with other traders.
Management/Employment	• Labor shortage was not a big problem. Only one respondent faced a labor shortage since he hires labors from other provinces.
Most impacted period	• July to August, and November to December in 2020, April to June in 2021
Others	• Demand is seasonal since people send gifts to each other prior to Tet and the demand for coffee is increased.

Source: JICA Survey Team

#### 4) Processor

Due to the epidemic, restaurants and cafés were closed, and demand for coffee was decreased. Such a situation caused competition with other coffee processors. Moreover, the traders had to shoulder labor and operation costs in spite of a decrease in sales, which led to profit reduction and lack of capital turnover. Also, it became difficult to sell the processed coffee, and the processors had to store the coffee outputs longer than usual, which led to increasing operation costs such as electricity costs, and sometimes they wasted the stored coffee. Furthermore, it was difficult to organize programs to connect trade with localities for domestic consumption promotion since the mass gathering was restricted. The epidemic has reduced tourists to Viet Nam, as a result, opportunities to promote Viet Name coffee to the world were limited. The impacts on the processors are as shown below:

**Table 3.6.6 Impacts on the Processors of Coffee by COVID-19**

Item	Situations
<b>【Basic Information】</b>	
Financial resource	• Only one respondent gets a loan from a cooperative while others don't.
Settlement methods	• Cash or bank transfer
Commodity	• Coffee
<b>【Impacts by COVID-19】</b>	
Issues of procurement	• Increase in transportation cost of raw coffee
Issues of sale	• Delay in the export procedure, closure of cafe, decrease in sales volume due to movement restriction to other provinces
Increase/decrease in profit	• Decrease in sales volume, and decrease in profit due to increase in transportation and electric cost
Receipt and sale of commodities	• Decrease in travelers in number due to restriction of gathering and movement • Decrease in sales volume due to café closure • No transportation measure to other provinces
Handling volume and sales amount	• The transportation cost increased due to movement restrictions, and the means of transportation to other prefectures was lost.
Management/Employment	• Sales volume is decreased due to a decrease in coffee demand/customers, which caused cash flow deterioration. • Market information is not accessible due to travel restrictions
Most impacted period	• July-August in 2020 and April to the present in 2021

Item	Situations
Others	<ul style="list-style-type: none"> <li>• Due to the gathering prohibition and movement restrictions, there were no opportunities to hold meetings to sell coffee, which made it difficult to sell processed coffee to other provinces, showrooms were closed, etc., and opportunities to develop new customers were lost.</li> <li>• High-quality coffee could not be sold and had to be sold at a low price.</li> <li>• After coffee processing, it remained unsold for a long time, so the aroma and taste have deteriorated.</li> </ul>

Source: JICA Survey Team

The follow-up survey to see the situations after the interview in May 2021 was implemented in October 2021. According to the interviewees, special permission, called as “Green Line” issued by the Ministry of Transport was needed to go to other provinces and drivers had to take medical checks every three days, which leads to the transportation costs increase. Also, it took more days for transportation than before. Since cafés had suspended their business or provided takeaway service only, the handling volume of processors had also been decreased. The price of coffee for sale had not been changed, however, profits of processors were decreased due to a decrease in the volume of sales and an increase in transportation costs. The most impacted periods were various: May-October, August, or July-September 2021 depending on the respondents. Still, generally, those months were periods, in which limitation of movement was the strictest and the number of cases was increased.

## 5) Exporter

As the following table shows, the business of coffee export became difficult due to competition with other exporters from foreign countries. The coffee handling volumes by the interviewees were decreased significantly, since transportation costs, especially, ocean freight was increased sharply by movement restriction and shortage of empty containers. While export volume was decreased, the exporters face operation cost increases for labors, banks interest, and so on.

**Table 3.6.7 Impacts on the Exporters of Coffee by COVID-19**

Item	Situations
<b>【Basic Information】</b>	
Financial resource	• Cooperative/association, private individual/traders, company/corporation, agri-bank, capital contribution
Settlement methods	• Cash transfer
Commodity	• Raw coffee and processed one
<b>【Impacts by COVID-19】</b>	
Issues of procurement	Increase in transportation cost, lack of labors, a drastic decrease in handling volume
Issues of sale	<ul style="list-style-type: none"> <li>• Shortage of available containers and prolonged staying period at the ports</li> <li>• Increase in ocean freight</li> <li>• It became difficult to get export orders</li> </ul>
Increase/decrease in profit	• 20-60% decrease in profit due to transportation cost increase and coffee demand decrease
Receipt and sale of commodities	<ul style="list-style-type: none"> <li>• Some respondents experienced higher buying prices while others did lower one</li> <li>• Export demands were decreased</li> <li>• During the pandemic, some coffee destination countries closed their borders, which made it difficult to export coffee</li> <li>• Waiting for containers long time at the transits port due to no space of mother vessel</li> </ul>
Handling volume and sales amount	• Decrease in handling volume
Management/Employment	• Lack of labor due to restriction of movement was not observed, however, prolongment of the export period made it difficult to turn over capital for operation
Most impacted period	• January, Mar, Apr, May, November, December 2020, and April to the present in 2021
Others	• Increase in food waste & loss due to fewer customers, but slightly

Source: JICA Survey Team

## 6) Café owner

Customers of the cafés in number were sharply decreased due to social distancing, shop closures, or the city is locked down. The café owners started takeaway services, however, the volume of sales was not high, since their consumers shifted their drinking places from cafés to their homes. Under the situation, the café owners had to shoulder costs such as electronics, space rental, and staff employment. The impacts on the café owners are as follows:

**Table 3.6.8 Impacts on the Café Owners by COVID-19**

Item	Situations
<b>【Basic Information】</b>	
Financial resource	Private Individual/Traders and Company/Corporation
Settlement methods	• Cash
<b>【Impacts by COVID-19】</b>	
Issues of procurement	None
Issues of sale	• Closure of café and fewer guests
Increase/decrease in profit	• Profit was significantly decreased due to café closure. • Take-away service was started, but the benefit was not sufficient.
Receipt and sale of commodities	• No big change for purchasing coffee volume • Closure of cafe led to a loss of profit.
Handling volume and sales amount	• Most respondents experienced a drastic decrease in volume of sales
Management/Employment	• Some respondents didn't get any income due to city lockdown, however, they had to pay operation costs during the period.
Most impacted period	• March-May and July in 2020
Others	• Most of the respondents closed their cafes in April-June 2020 or January-March 2020.

Source: JICA Survey Team

In October 2021, the follow-up survey targeting the café owners was implemented to see situations after May 2021. The cafes in Ho Chi Minh City and Dak Lak Province were closed from 1st June to 30th September 2021 and from 24th July to 8th August 8, respectively, based on the instructions by the government. Even during other periods, the number of customers was limited to a certain amount, or only take-out services were allowed. Due to the significant decrease in business hours and the number of customers, the profit was also decreased significantly, especially during the suspension period. Even during the closure, the café owners had to pay shop rent. The most influential period for the interviewees was from July to October 2021.

## 7) Café customer

The COVID-19 pandemic has caused many cases of business closure, some of the interviewed café customers also experienced temporary laid-off and a decrease in their incomes. Such a situation led to a drop in spending in their daily lives. They changed their purchasing activity and food consumption, for instance, they made fewer purchases overall including online in general. Moreover, they came to drink coffee at home instead of at a café, due to shops closures and the city locked down.

### 3.6.4 Impact of COVID-19 Pandemic by Theme

#### 1) Concerns by COVID-19

In terms of “Risk of infection”, “Financial impact” and “Psychological effect”, concerns caused by COVID-19 were analyzed by referring to the result of the questionnaire survey. As the following table shows, “Risk of infection” is the biggest concern for all stages except for café owners in the coffee VC in Viet Nam. It is probably because that Viet Nam people are afraid of infection of COVID-19 enormously.

**Table 3.6.9 Concerns in the Coffee VC due to COVID-19 by Stage**

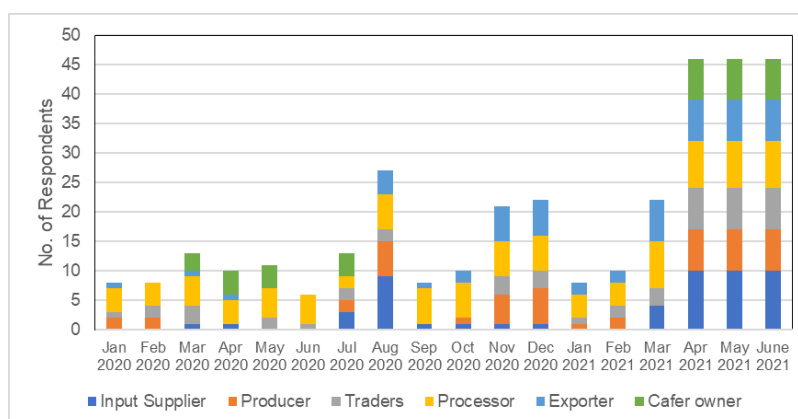
FVC Stakeholder	Risk of Infection	Financial Impact	Psychological Effect
Input Supplier	3.00	2.90	2.60
Producer	2.86	2.86	2.86
Traders	3.00	3.00	2.86
Processor	2.75	2.38	2.38
Exporter	3.00	2.57	2.57
Cafer owner	2.71	3.00	2.57
<b>Average</b>	<b>2.89</b>	<b>2.78</b>	<b>2.64</b>

Remarks : 1.Very much concerned, 2. Slightly Concerned, 3.Not concerned at all (1~3 : the higher, the more concern)

Source: JICA Survey Team

## 2) Impacted Period

Concerning the impacted period by the COVID-19 in terms of business, April-June in 2021 is the most impacted one for all stages as shown in Figure 3.6.7, since the number of infected people was rapidly increased in Viet Nam during the period. Apart from the period, there was no big difference in 2020. It is noted that the café owners were impacted in early 2020, while producers were done in late 2020, which means the impacts by COVID-19 were observed with time lag depending on the stage.



**Figure 3.6.7 Most Impacted Period by COVID-19**

Source: JICA Survey Team

while producers were done in late 2020, which means the impacts by COVID-19 were observed with time lag depending on the stage.

**Table 3.6.10 Most Impacted Period by COVID-19 by Stage**

FVC Stakeholder	Most Impacted Period
Input Supplier	March-May, July–August, November–December in 2020, and March-May in 2021
Producer	January to February, August, and December in 2020, April to May in 2021
Trader	July to August, and November to December in 2020, April to June in 2021
Processor	Through 2020 and April, May and June in 2021
Exporter	August to December in 2020 and January to June in 2021
Café owner	March-May and July in 2020 and April-June in 2021

Source: JICA Survey Team

From 1<sup>st</sup> April 2020, the Government of Viet Nam implemented nationwide isolation for 15 days. On the same day, former Prime Minister Nguyễn Xuân Phúc announced the nationwide outbreak of COVID-19. Due to the city lockdown, most of the shops and restaurants were closed, which caused big impacts on the café and followed “Processors”, who sell coffee directly to the café. On the other hand, producers were impacted lately due to prolongment or suspension of the import of agricultural inputs and increase in the cost of the inputs.

## 3) Labor and Food Safety

Out of all the respondents, one producer, one processor, and two exporters in the coffee VC answered that they hire workers from outside of their places and provide them with dormitory or staying places. In those places, the respondents give some instruction, namely, ventilation of dormitories/houses, social distancing, eating alone, hand washing, wearing masks. Seemingly, the respondents understand the importance of prevention from infection.

Concerning food safety and traceability, in general, around half of respondents of the “Producer”, “Trader” and “Processor” experienced that their buyers started requesting safety and/or traceability of their products. It means that food safety and traceability are paid attention more than before COVID-19 to some extent. On the other hand, all the producers have yet to introduce Good Agricultural Practice (GAP), still, it is noted that they want to do that in near future.

## 4) Impacts by Indicator and Stage

In terms of major points for management and business, all questions are categorized into 12 indicators as shown in Table 3.6.11. The significances of impacts are converted into numerical values regardless of negative or positive impacts, as shown in Table 3.6.12. It is possible to summarize the impacts of COVID-19 on the coffee VC as follows:

- ✓ In terms of stage, “Input supplier” and “Processor” were significantly affected. Regarding the former, it is because agricultural input materials for coffee cultivation rely on imports. Regarding the latter, opportunities to sell coffee and develop new customers are limited due to restriction of meetings and movement, also, main customers, namely, cafes were closed, which resulted in the damage for the “Processor”. Apart from that, “Café owners” were also economically damaged by a sharp decline in both customers and sales due to business suspensions and lockdowns.
- ✓ Given indicators, the most impacted one was “Profitability”, followed by “Cost” and “Handling volume”. On the other hand, “Information” or “Employment” were not impacted very much. It implies “Money” was the most important matter in the coffee value chain related to COVID-19.

**Table 3.6.11 Categorization of Questionnaire (12 Indicators)**

Indicator	Contents
① Handling volume	Supplied commodity, purchase volume, handling volume
② Accessibility	Access to production districts/markets, procurement source, customer, a destination for export
③ Transportation measure	Procurement means, shipment means, transportation routes
④ Profitability	Benefit / revenue / capital / financial condition
⑤ Cost	Expense / input cost / transportation cost / electric cost / rental cost
⑥ Price	Buying price, sales price, market fluctuation
⑦ Finance and capital	Financial support, governmental support, capital turnover
⑧ Labor	Available labor, labor cost
⑨ Information	Market information, communication with buyers and sellers
⑩ Management/Storage	Inventory of storage, loss of commodity
⑪ Customer/Buyer	Demand of buyers/ number of customers
⑫ Competition	Competition with other companies

Source: JICA Survey Team

**Table 3.6.12 Impacts by COVID-19 in terms of Indicator**

Target	Indicator	Input Supplier	Producer	Traders	Processor	Exporter	Cafer owner	Total
Material	① Handling volume	0.60	0.21	1.06	1.38	0.93	1.07	5.25
	② Accessibility	0.18	0.07	0.26	0.15	0.21	0.24	1.12
	③ Transportation measure	0.85	0.00	0.21	0.63	0.39	n/a	2.08
Money	④ Profitability	1.90	0.57	1.50	1.44	1.71	1.64	8.77
	⑤ Cost	1.15	0.96	0.79	0.72	1.17	0.61	5.40
	⑥ Price	0.50	0.33	0.24	0.25	0.43	0.00	1.75
	⑦ Finance and capital	0.25	0.00	0.14	0.54	0.74	0.71	2.39
Labor	⑧ Labor	0.09	0.29	0.14	0.19	0.14	0.43	1.27
	⑨ Information	0.60	0.18	0.00	0.75	0.21	0.64	2.39
	⑩ Management /Inventory	0.50	0.00	0.20	0.14	0.17	0.57	1.58
	⑪ Customer/Buyer	0.52	0.04	0.79	1.00	0.76	1.29	4.39
	⑫ Competition	0.95	n/a	0.57	0.63	0.64	n/a	2.79
	<b>Total</b>	<b>8.09</b>	<b>2.66</b>	<b>5.89</b>	<b>7.81</b>	<b>7.52</b>	<b>7.20</b>	

Source: JICA Survey Team

Remarks : Depending on the impact significance, the answers are categorized into three stages and the scores are divided by the number of effective responses. The more score they present, the more significant their impacts are.

### 3.6.5 Conclusion of the Impacts and Countermeasures Proposed

In the coffee value chain, due to the suspension of imports, exports, and lockdown caused by COVID-19, “Input supplier”, namely, upstream of the VC, was damaged due to price increase, while cafes, namely, in the downstream of VC, had to suspend their business. On the other hand, “Processor” had to dispose of unsold coffee. However, this situation is likely to recover to its original state once COVID-19 is settled down.

Coffee made in Viet Nam has an advantage in its large export volume and low price since before COVID-19, however, its quality has not been evaluated very much so far. Thus, improvement of the quality of coffee, especially promotion of domestic processing has been a big issue. Moreover, as already mentioned, coffee cultivation is not very profitable for small-scale coffee producers. This issue

needs to be addressed even after COVID-19 has converged.

Regarding quality improvement, policies are currently implemented to strengthen the competitiveness of the coffee industry and promote sustainable development. The Ministry of Agriculture and Rural Development of Viet Nam formulated “The Sustainable Coffee Plan till 2020 and Vision to 2030” in 2016<sup>10</sup>. In addition, the Dak Lak province formulated the Guidelines for coffee industry development in 2017, aiming at an increase of the proportion of processed products, instant coffee to 15-20% of the total coffee production in the province by 2030. In addition, it states that the area of certified coffee cultivation is increased to 80% by 2020 and 90% by 2030<sup>11</sup>. In order to increase competitiveness in quality, it is necessary to promote the improvement of coffee beans processing technology, such as drying and roasting methods.

Affiliate with companies is considered effective for the income improvement of coffee producers. Recently, many companies have invested in the production and processing of coffee products, for example, Bon Hiep operates coffee farms with 240ha in Dak Nong province in partnership with more than 120 coffee producers and sells about one ton of instant coffee to the market monthly (JICA survey team, August 2021). The coffee producers surveyed also said that the affiliate with the company is effective for stable sales, and it is important to promote matching between the coffee producer and those companies. Following table shows issues of the coffee VC before/after COVID-19 and measures.

**Table 3.6.13 Issues before/after COVID-19 and Proposed Countermeasures**

Input supplier	Producer	Trader	Processor	Exporter	Café owner	Café customer
<b>Issue</b>						
<ul style="list-style-type: none"> <li>High cost of inputs</li> <li>Decrease in demand and customers</li> <li>Competition with other suppliers</li> </ul>	<ul style="list-style-type: none"> <li>High cost of inputs</li> <li>Low profit due to low quality</li> </ul>	<ul style="list-style-type: none"> <li>Instable market</li> <li>Increase in operation cost</li> </ul>	<ul style="list-style-type: none"> <li>Quality improvement</li> <li>Decrease in demand due to café &amp; restaurant closure and suspension of export</li> <li>Loss of unsold coffee</li> </ul>	<ul style="list-style-type: none"> <li>Decrease in demand</li> <li>Unavailability of containers &amp; increase in freight</li> </ul>	<ul style="list-style-type: none"> <li>Suspension of business due to city lockdown</li> <li>Very limited customers</li> </ul>	<ul style="list-style-type: none"> <li>Decrease in income</li> </ul>
Cross-cutting impacts <ul style="list-style-type: none"> <li>Shortage of materials that depend on imports, soaring prices</li> <li>While the sales amount decreased, the operating expenses (especially transportation expenses) increased, resulting in a decrease in profits.</li> <li>Unstable market and declining demand</li> </ul> Promotion of processing						
<b>Measure</b>						
<ul style="list-style-type: none"> <li>Domestic production of high-quality input materials</li> </ul>	<ul style="list-style-type: none"> <li>High-quality coffee production</li> <li>Contract farming and processing</li> </ul>			None	None	None
Cross-cutting measures <ul style="list-style-type: none"> <li>Quality improvement, for example, production of certified coffee</li> <li>Development of new customers and contracts with companies</li> </ul>						

Source : JICA Survey Team based on a review of documents and results of the survey

<sup>10</sup> Food and Fertilizer Technology Center Platform for the Asian and Pacific countries, “Viet Nam Sustainable Coffee Plan till 2020 and Vision to 2030”, <<https://ap.ffc.org.tw/article/1118>>, downloaded on 15<sup>th</sup> August 2021

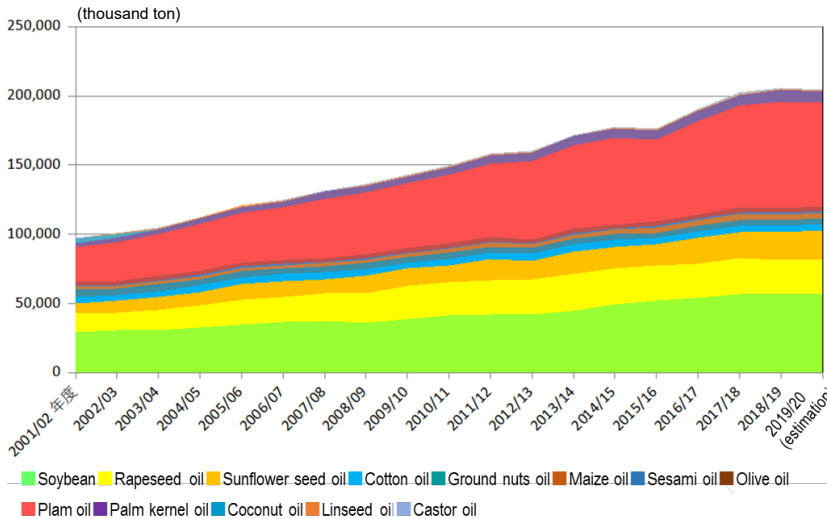
<sup>11</sup> VIETJO, “Challenges and Potentials in Vietnam's Coffee Industry [Part 2] Vietnam Business Creating the Future”, <<https://www.viet-jo.com/news/column/191227124909.html>>, 16<sup>th</sup> April 2021

### 3.7 COVID-19 Impact Survey on Palm (Indonesia)

#### 3.7.1 Outline of Palm Oil VCs in Indonesia

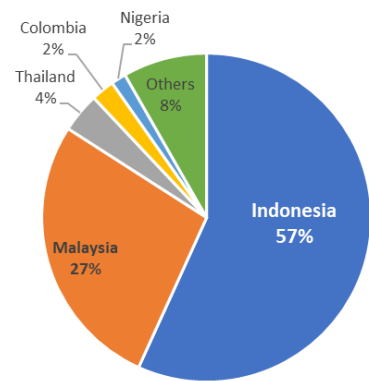
##### 1) Palm Oil<sup>1</sup>

The production of vegetable oils and fats, including palm oil, has been increasing year by year as the world’s population grows, reaching 208.73 million tons as of 2018/19 (see Figure 3.7.1). Of those, palm oil and soybeans productions are 77.34 million tons and 56.57 million tons, respectively. Thus, these two oil types lead the global vegetable oil market. Indonesia and Malaysia account for more than 80% of palm oil production globally (see Figure 3.7.2), 40.57 million tons, and 19.52 million tons in 2018 (Source: FAOSTAT, 2018).



**Figure 3.7.1 Production of Vegetable Oil**

Source: Japan Oilseed Processors Association (“Oil World”, ISTA Mielke, 2020)

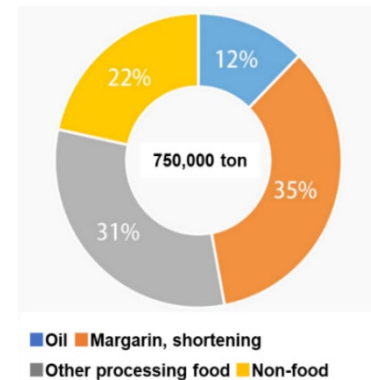


**Figure 3.7.2 Production of Palm Oil (2018)**

Source: FAOSTAT

Palm is a tropical perennial tree native to Africa, and once planted, it is said to maintain high productivity for about 25 to 30 years. In addition, unlike other oil seeds harvested once a year, the productivity of oil per production area is exceptionally high since the fruits can be harvested almost constantly throughout the year. Palm oil production yield arrives at 4.02 tons per ha (Source: FAOSTAT, 2017); however, when the economic production age of about 25 to 30 years has exceeded, the productivity starts declining, so it is necessary to replant palm trees.

Palm oil is an oil obtained from palm nuts, and it includes palm oil obtained from the pulp and palm kernel oil obtained from the seeds. Palm oil is categorized into crude oil, refined oil, and fractionated oil, and it is easy to process as it becomes various forms. In addition, palm oil has multiple uses, such as foods, detergents, cosmetics, and biofuels, with the foods being most consumed. In fact, “palm oil is used in more than half the packed products sold in supermarkets in Japan,” it is also said<sup>2</sup>.



**Figure 3.7.3 Consumption of Palm Oil in Japan (2014)**

Source: Guide for palm oil purchase (Japan Tropical Forest Action Network)

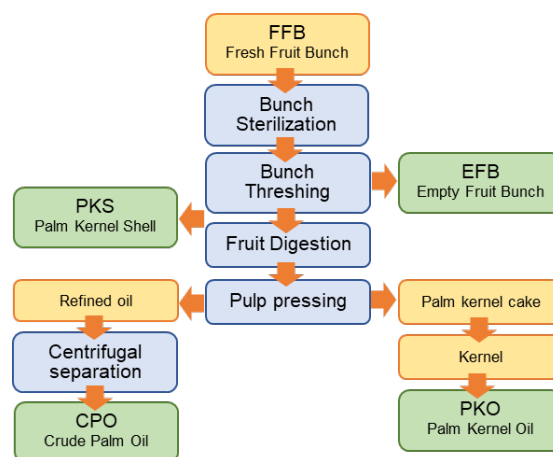
<sup>1</sup> The sub-chapter describes based on the following sources:

1) “Basic knowledge of vegetable oil”, Homepage of Japan Oilseed Processors Association, ([https://www.oil.or.jp/kiso/seisan/seisan02\\_01.html](https://www.oil.or.jp/kiso/seisan/seisan02_01.html))  
 2) “Palm oil 2015”, NPO Borneo Conservation Trust Japan, 2015, (<https://www.bctj.jp/2017/wp-content/uploads/2020/06/palmwp2012.pdf>)  
 3) “Agribusiness transformation in Indonesia by analysis of palm oil value chain”, Yori Shunsuke  
<sup>2</sup> “Palm oil 2015”, NPO Borneo Conservation Trust Japan, 2015

Eighty percent of palm oil imported into Japan is used as food such as instant noodles, frozen foods, snacks, and frying oil in fast food shops and restaurants. In addition, it is also used as a raw material for margarine and shortening and as a raw material for processed foods such as chocolate, ice cream, donuts, biscuits, coffee fresh, curry roux, and powdered milk for babies.

Oil palm can be harvested approximately three years after the planting, and each tree has 10 to 12 fruit clusters weighing 20 to 30 kg per year. The fruit cluster typically has 1,000 to 2,000 fruits. When applying fertilizers and chemicals to the oil palm trees, farmworkers do it manually one by one. Since the oil palm fruit clusters are located at a high position, they are cut off one by one by hand and sent to the oil mills nearby. The pulp must be squeezed within 24-48 hours after the harvest. Otherwise, the quality starts deteriorating. Therefore, oil mills are often attached to the farms, and transportation roads are also required for farm development in new areas.

Fresh Fruit Bunch (FFB) collected at a plantation is transported by truck to an oil mill factory where the fruit bunches are steamed, heat-treated, and emptied. It is then squeezed into oil and nuclei. Crude Palm Oil (CPO) is made from the oil part, and palm kernel oil (PKO) is made from the core part (see Figure 3.7.4). Palm oil refining involves such steps as degumming, deoxidizing, decolorizing, and deodorizing in the process of removing impurities contained in crude oil. Refined oil is called RBD (Refined, Bleached, and Deodorized) palm oil, whose color is orange because it contains carotenoids, but it becomes almost colorless when refined. In Indonesia and Malaysia, this RBD palm oil is edible, but RBD palm oil is often further refined or used through the processing process in Japan. Indonesia or Malaysia usually conducts the refining process, and both countries have lower export tariffs on refined oil than crude oil. Refined oil is generally exported in tankers to various countries such as European countries, China and Japan, etc.



**Figure 3.7.4 Palm Oil Processing**

Source: Edited by Study team based on the "Palm oil 2015", NPO Borneo Conservation Trust Japan, 2015

## 2) Palm oil FVC in Indonesia

Since the Dutch colonial period of the 17th century, plantation development has been a significant sector of Indonesia's economy. It was, however, heavily influenced by the World Bank-led structural adjustment policy implemented in the mid-1980s. Focusing on the agricultural sector as an export industry, the efficiency and scale of management have been improved by introducing private capital to agricultural export crops such as palm oil, natural rubber, coffee, cacao, tea, etc. Previously, the purpose of government policies was to provide a stable supply of domestic cooking oil. However, since the latter half of the 1990s, export tariffs on Crude Palm Oil (CPO) and CPO-related products have been gradually reduced. Then, policies have been promoted to support farm companies in expanding exports.

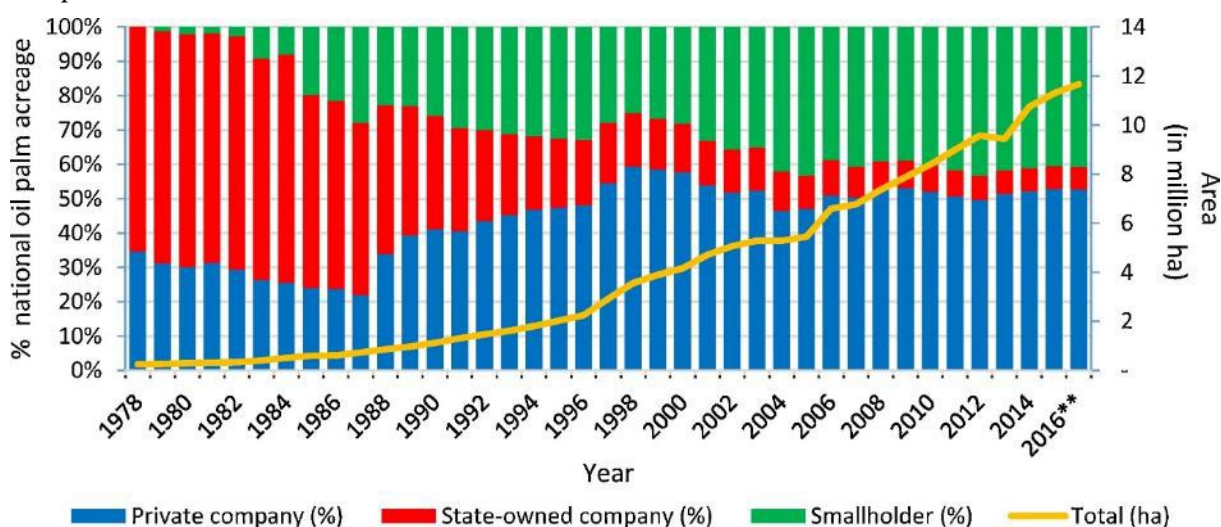
Note: Indonesian government introduced the nuclear/plasm farm system in the 1970s. It was a farm management system between the small farms (Plasma) and the nuclear farm ("Inti"<sup>3</sup>). The large-scale nuclear farms (state-owned or private) are obliged to guide oil palm cultivation techniques and agricultural materials such as seedlings, fertilizers, and chemicals to the surrounding plasma farmers. In addition, the nuclear farm will build an oil squeezing factory to squeeze the oil immediately after harvesting and will buy the palms harvested by the plasm farmers. Initially, the area ratio between the core farm to be developed and the plasma farm was set to be 20:80.

The palm plantations area has expanded rapidly due to the active intervention of the Government of

<sup>3</sup> "Inti" means "core, nuclear" in Indonesian. The nuclear/plasm farm system in palm oil is widely known as "Inti-Plasma farming".



Indonesia, and the plantation development area by the owner has also changed. The following table shows the size of palm plantations from 1978 to 2016 and the ratio by owner. Due to the gradual decrease in export tax of Crude Palm Oil (CPO) and palm kernel oil (PKO) in the latter half of the 1990s, foreign capital's new entry and expansion of palm plantations have continued. On the other hand, the area of small-scale farms has also increased. Most of them are small farms created by introducing a farm system by the government (see box above). At the beginning of the system introduction, the state-owned farm company, which was expected to be the bearer of the nuclear farms, has led the development of palm farms. Yet, the farm area has not expanded since the 1990s, while the farm area ratio of private companies has increased in contrast.



**Figure 3.7.5 Cultivation Area and Ratio of Owner of Palm Oil Plantation in Indonesia**

Source: Direktorat Jenderal Perkebunan, Jakarta, "Statistik Perkebunan Indonesia; kelapa sawit 2014–2016", (2015), "Unpacking Indonesia's independent oil palm smallholders: An actor-disaggregated approach to identifying environmental and social performance challenges," IdsertJelsma, etc. (2017)

There are various stakeholders of palm oil VC in Indonesia, from large to small; the main actors are described below:

**Large scale palm company (state-owned or private)/Nuclear farm ("Inti")**: Large-scale palm companies (state-owned or private) manage nuclear farms using the farm system, support Plasma farms in the vicinity, and purchase crops from the small farmers. During the system introduction period, the state-owned farms were expected to play a role as core farms. However, due to policies such as deregulation, many nuclear farms are now operated by private companies. Since the area of farmland that one company can own is limited, large-scale farm companies have established many subsidiaries and own farms through their respective subsidiaries. Foreign-owned farm development investments are also active, with Malaysian companies particularly prominent. Among private companies, there are palm oil squeezing factories that produce Crude Palm Oil (CPO) and large companies that refine CPO, namely, palm oil refining factory and export after that, and these are called "Integrator."

**Small and medium-sized farms / Plasma farms**: Small and medium-sized farms (Plasma farms) are located around the nuclear farms referring to the above farm system. Since 2007, the area ratio of nuclear farms managed by large palm companies to plasma farms by small and medium-sized farmers has been 80:20. A large-scale company operating a nuclear farm provides plasma farmers with 2 ha of cultivated farmland and 1 ha of land (0.25 ha for housing + 0.75 ha for self-sufficiency production area) for a fee. The nuclear farms use a bank loan to cover the cost, and plasma farms repay over 12 to 15 years in general by deducting from the purchase price of the palm. Upon completion of the repayment, the nuclear farm officially handed over the land to the plasma farmers. A policy by the government in 2004 recommended shifting from independent smallholders to plasma farms. Farmers harvest the palm fruits once or twice a month, depending on the farm size and the year of oil palm planting.

**Cooperatives by small and medium-sized farmers (plasma farms) (Koperasi Unit Desa: KUD):**

The measures introduced in 1995 led to the establishment of cooperatives organized by small farmers. As a role, KUD has come to carry out the operation of nuclear farms and technical support to small farms in cooperation with large-scale enterprises. After that, KUD remained under the jurisdiction of large-scale palm companies and became an independent “Integrator” in charge of sales of input materials to plasma farms, transportation businesses, etc., due to a government policy.

**Independent small-scale farm:** It is a farm of 5ha or less that is independently managed and is not included in the nuclear/plasma farm system. In many cases, they started growing palms after seeing the success of small farmers who participated in the government’s program using the nuclear/plasma farm system. They have few opportunities to receive financial and technical support from the government and private companies, i.e., the nuclear farms. They can hardly use the certified seeds and enough agricultural input, and therefore the quality and yield are lower than those of nuclear and plasma farms. The selling price may be about half the price of the plasma farm. Many independent small-scale farms have not been certified by the Indonesian government. Thus they face many technical issues.

**Agricultural input supplier:** In palm production, high-yielding varieties and fertilizers, chemicals, etc., are expected to increase the yield. Therefore, input suppliers sell input materials to large-scale palm companies and independent small-scale farmers. In some cases, it is sold through the Cooperatives established by small farmers and through unions organized by independent small-scale farmers.

**Processor (1) Palm oil squeezing factory:** A palm oil squeezing factory is a processing factory that collects Fresh Fruit Bunch (FFB) and produces Crude Palm Oil (CPO) by the oil squeezing process. Large palm companies or individuals run the factories.

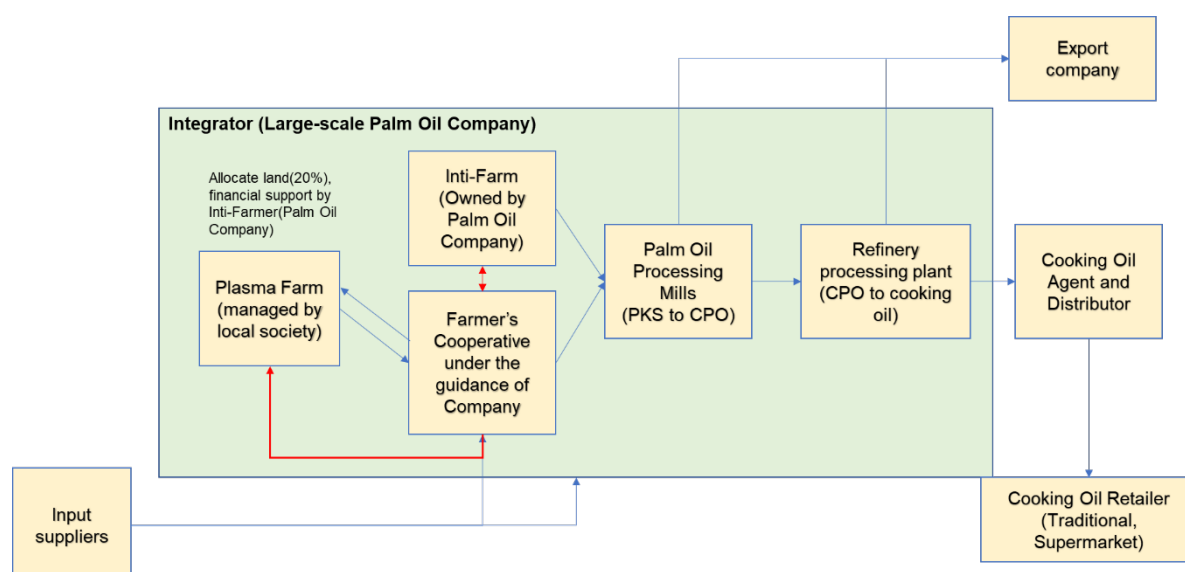
**Processor (2) Palm oil refining factory:** A palm oil refining factory is a factory that refines Crude Palm Oil (CPO) and makes edible palm oil, which a large palm company mainly runs.

**Trader (Wholesaler, Transporter):** There are two types of traders; one who buys/collects Fresh Fruit Bunch (FFB) harvested by farmers and sells/transportes it to a palm oil squeezing factory. The other buys/collects edible palm oil made by the processor and sells/transportes to wholesalers and retailers. Subsidiaries of large-scale palm companies operate some distributors and transporters.

**Retailers:** Edible palm oil is sold at privately-owned retailers in traditional markets and modern supermarkets.

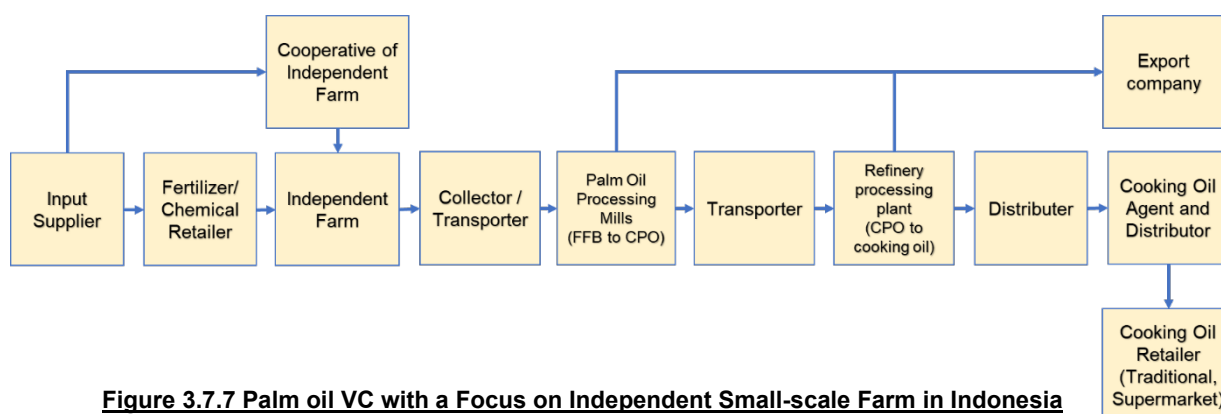
**Exporter:** Exporter is a company that buys Crude Palm Oils (CPOs) and KPOs and exports them to Europe, the United States, China, etc. Large-scale palm companies own plantations and oil refineries and then export the palm oil produced by themselves.

There are two main types of palm oil VCs: the VC centering on large-scale palm companies (nuclear farms) and plasma farms, while the other centers on independent small-scale farmers. The figures below show these two VCs:



**Figure 3.7.6 Palm VC with a Focus on Large-scale Palm Oil Company in Indonesia**

Source: JICA Study Team



**Figure 3.7.7 Palm oil VC with a Focus on Independent Small-scale Farm in Indonesia**

Source: JICA Study Team

### 3) Situation of Palm Oil VC in Indonesia

The Indonesian palm oil VC situation in 2020 is summarized regarding the materials provided by the South Sumatra branch of the Indonesian Palm Oil Industry Federation (GAPKI) and various news articles.

Conglomerates such as Cargill, Wilmar, and Musim Mas<sup>4</sup> dominate the production, processing, and export of palm oil in Indonesia. These conglomerates have their plantations and subsidiaries that act as various VC actors. They also provide technical guidance to small-scale farmers and purchase palm oil raw materials in the surrounding areas. In Indonesia, five leading companies account for 60% of domestic production and 90% of processing and trade<sup>5</sup>. As of September 2020, palm oil exports have contributed USD15 billion to the Indonesian economy and directly or indirectly created 16 million jobs<sup>6</sup>.

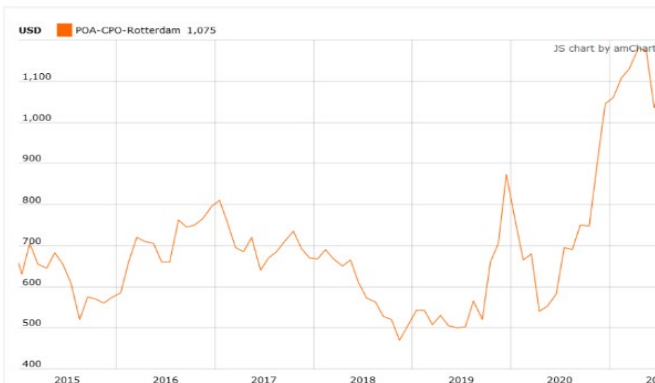
According to an interview with GAPKI's South Sumatra branch, exports of palm oil-related products fell by 9%, from 37.39 million tons in 2019 to 34.00 million tons in 2020. The decrease is due to export

<sup>4</sup> Source: Pablo Pacheco etc., "The palm oil global value chain", (2017)

<sup>5</sup> Source: Pablo Pacheco etc., "The palm oil global value chain", (2017)

<sup>6</sup> Source: GAPKI, "GAPKI Chairman: Palm Oil Contributes Significantly Despite COVID-19", (December 2020), <<https://gapki.id/en/news/19522/gapki-chairman-palm-oil-contributes-significantly-despite-covid-19>>

volume to significant export destinations like China, Europe, Bangladesh, and the Middle East. On the other hand, the CIF Rotterdam market, one of the leading indicators of Crude Palm Oil (CPO), dropped temporarily in the first half of 2020. However, it has turned to rise since then. Although the transaction volume decreased due to price increase, Indonesia's overall export volume increased by 13.6% to USD22.97 billion in 2020, compared to USD202.2 billion in 2019.



**Figure 3.7.8 CIF Rotterdam Price of Palm oil**

Source: Palm Oil Analytics, "Crude Palm Oil – CIF Rotterdam", (<https://palmoilanalytics.com/price/crude-palm-oil-cif-rotterdam/>), (Accessed on July 30, 2021)

As per information of GAPKI, domestic consumption of palm oil products was 17.35 million tons, of which consumption as edible palm oil accounts for about half. The consumption of edible palm oil fell due to PSBB<sup>7</sup>, etc. However, it recovered in the fourth quarter of 2020 with the mitigation of restrictions. Consumption of palm oil used in chemical products such as soap and hand disinfectants has also increased. Furthermore, on January 1, 2020, the government started a mandatory use program of "B30", a mixture of light oil and biodiesel at 30%<sup>8</sup>. The program is also increasing domestic consumption of palm oil for biodiesel.

### 3.7.2 Outline of the Impact Survey on Palm Oil VCs

From May 24 to June 3, 2021, a COVID-19 impact survey was conducted on palm oil VC in South Sumatra province (for the location of South Sumatra province, see the figure below). According to the Indonesian Statistics Bureau, South Sumatra's share of palm oil production in 2019 is the fifth largest province, accounting for 8.6% of the national total.

As a survey method, a team composed of national staff deployed by the JICA team had conducted an interview survey using a structured questionnaire form. The VC stages covered by the survey are shown in the following table and the number of respondents.



**Figure 3.7.9 Target Area of Palm Oil VC Survey (South Sumatra Province)**

Source: Wikipedia

**Table 3.7.1 Number of respondents by stage in Palm oil VC**

No.	FVC Stakeholder	Respondents
1	Agriculture input supplier	6
2	Small-scale farm (Independent, Plasma) Middle-scale farm (Plasma)	10
3	Large-scale farm (Nuclear)	5
4	Processors (Squeezing, Refining)	3
5	Trader (Wholesaler, Transporter)	6
6	Retailers	6
7	Exporters	1
8	Integrators	3
	Total	40

Source: JICA Study Team

### 3.7.3 Impact of COVID-19 Pandemic by Stage of Palm Oil VCs

Questionnaires were prepared to cover each of the FVC stages to investigate the impacts of COVID-19.

<sup>7</sup> Large-scale social restrictions to prevent the spread of COVID-19 by the Indonesian government. Pembatasan Sosial Berskala Besar in Indonesian language.

<sup>8</sup> Source: Reuters, "Indonesia launches B30 biodiesel to cut costs, boost palm oil", 2019.12.23, <<https://www.reuters.com/article/us-indonesia-biodiesel-idUSKBN1YR0D2>>

Since the number of respondents in each stage is limited, some points should be extracted to understand the impacts in each stage. The following table summarizes the significant issues and impacts that occurred in each stage before/after the COVID-19 pandemic, followed by details for each stage:

**Table 3.7.2 Main Issues and Impacts of COVID-19 in Indonesian Palm Oil VC**

FVC Stage	Input	Production	Production	Processing	Distribution	Market
Stakeholders	Agriculture input suppliers	Small-scale farm (Independent, Plasma), Middle-scale farm (Plasma)	Large-scale farm (Nuclear)	Processors (Squeezing, Refining)	Trader (Wholesaler, Transporter)	Retailer, Exporter
Issues before COVID-19	—	<ul style="list-style-type: none"> <li>Plasma: Not enough support by the nuclear farm (land, techniques, input materials, etc.)</li> <li>Independent: Low productivity due to government and companies' lack of support.</li> <li>The unstable price depends on the international price (Palm fruit cannot be kept long).</li> <li>Acquisition of certification (Selling price is half of the certificated farm).</li> <li>The disparity among residents between plasma farms and independent farms.</li> </ul>	<ul style="list-style-type: none"> <li>Securing land suitable for cultivation</li> <li>Maintenance and establishment of the road between the oil mill and farm</li> <li>Conflict with residents regarding land</li> <li>Acquisition of certification</li> <li>Securing workers</li> </ul>	<ul style="list-style-type: none"> <li>Not development of technical part.</li> </ul>	<ul style="list-style-type: none"> <li>Low-quality palm fruit collected by the independent farm.</li> </ul>	<ul style="list-style-type: none"> <li>Revision of government policy to ensure consumption as biofuel.</li> <li>The complexity of requirements to export CPO to the European market.</li> </ul>
Issues between/over the stage before COVID-19	<ul style="list-style-type: none"> <li>Impact on the environment (peatland, forest, ecosystem, etc.)</li> <li>Loss of diverse crop production, regional culture, and regional solidarity due to the spread of monoculture production by palm plantations</li> <li>Child labor, forced labor, etc.</li> </ul>					
Issues due to COVID-19	<ul style="list-style-type: none"> <li>Price increase of agriculture input materials mainly imported items</li> <li>Shortage of stocks</li> </ul>	<ul style="list-style-type: none"> <li>Price increase of agriculture input materials</li> <li>Fluctuation of the selling price</li> <li>Decrease of training by extension officers and financial service</li> </ul>	<ul style="list-style-type: none"> <li>Price increase of agriculture input materials</li> </ul>	<ul style="list-style-type: none"> <li>Rise in the purchase price.</li> <li>Decrease in working days due to PSBB.</li> <li>Increased cost for COVID-19 countermeasures.</li> <li>Reduction of processing amount.</li> <li>Training for employees is no longer possible.</li> </ul>	<ul style="list-style-type: none"> <li>Decrease in transaction volume due to decrease in demand from midmarket/retailers increase of stock amount)</li> <li>Increase of transportation costs for wide-area movement to expand the sales network</li> </ul>	<ul style="list-style-type: none"> <li>Decrease of number of consumers</li> <li>Reduction of sales and profit</li> <li>Shift to the local market</li> </ul>
Issues between/over the stage due to COVID-19	<ul style="list-style-type: none"> <li>The road condition to the farm (plantation) deteriorates, and it is not repaired after COVID-19.</li> <li>Decrease in export volume (especially to China, the first half of 2020)</li> </ul>					

Source: JICA Study Team

## 1) Agriculture Input Suppliers

The table below shows the impact of COVID-19 faced by agricultural input suppliers, along with basic their information. At agriculture input suppliers, the rise in prices of imported items (fertilizers, chemicals, etc.) has had a significant impact. Farmers' intention to purchase the input materials decreased, thus resulting in a decrease in sales volume. Many suppliers said that profits from March 2020 have dropped by about 40% for about four months. In addition, business interruptions and movement restrictions due to PSBB reduced the number of customers and sales volume.

**Table 3.7.3 Impact of COVID-19 on the Agriculture Input Suppliers (plus basic information of respondents)**

Particular	Situation
<b>[Basic Information]</b>	
Main financial institution for borrowing money	<ul style="list-style-type: none"> <li>Private individual/Traders, Commercial banks, Micro-Finance Institutions, etc.</li> </ul>
Main settlement method of payment	<ul style="list-style-type: none"> <li>Most of the input suppliers mainly use only cash, including loan. Some of them can utilize bank transfers digital currency.</li> </ul>

Particular	Situation
Main handling items	• Seed, fertilizer, chemicals (mainly herbicide, agriculture tools, etc.)
<b>【Impact of COVID-19】</b>	
Issues on the purchasing	• Shortage of stock and price increase, mainly for export items
Issues on the selling	• Demand decreases by farm due to price increase
Profit	• Selling amount has decreased due to demand decrease by farm, profit of some suppliers has reduced at around 40%
Purchasing	• Shortage of some export items
Selling	• Price increase of fertilizer at around 25%, pesticide at about 5%
Management, employment	—
Most affected period	• From March to July 2020 and April 2021
Others	—

Note: In the questionnaire, first, the impact of COVID-19 on the procurement and sales was roughly asked, and then the detailed items were asked. Therefore, although there is some overlap in the information, the latter half (after the double ruled line) summarizes the results of detailed interviews (hereinafter the same).

Source: JICA Study Team

## 2) Small-scale farm (Independent, Plasma), Middle-scale farm (Plasma)

The table below provides basic information on small and medium-scale farms that are palm oil producers and the impacts they faced by the COVID-19 pandemic. Amongst the ten farms who responded, two are producers who run independent small-scale farms, while the others run plasma farms belonging to KUD (cooperative).

All farms answered that the cost of input materials increased by about 5 to 15% due to rising agricultural input prices such as fertilizers and chemicals. As a result, some farms answered that the yield decreased by about 25%. As for plasma farms, KUD manages the purchase of agricultural input collectively so that the impact on individual farms was less than that of independent small-scale farms. COVID-19 had only a slight effect on both independent small-scale and plasma farms in sales. Especially in plasma farms, there was almost no impact because they are under the control of KUD in terms of sales.

In palm production, a certain route is secured in terms of sales, and therefore the farms must ensure productivity and quality that affect the selling price. Especially in independent small-scale farms, productivity and quality are low compared to plasma farms managed by KUD. They have not used certified seeds and use fewer fertilizers and chemicals due to a lack of funds. The problem for independent small-scale farms is the selling price of only about half as plasma farms. Therefore, the rise in the price of agricultural input materials due to the impact of COVID-19 had a significant effect on the productivity and quality of the independent small-scale farms, leading to a decrease in profits and a widening gap with plasma farms.

**Table 3.7.4 Impact of COVID-19 on the Small/Middle-scale Farm (Independent or Plasma farm)**

Particular	Situation
<b>【Basic Information】</b>	
Main income source and year of farming	• Only farming and main business is palm oil farming • From 11 to 15 years or more than 15-year experience: 9 respondents, less than five years: 1 respondent
Main financial institution for borrowing money	• Government Finance Institution and Private Individual/Traders
Main settlement method of payment and selling	• Cash or bank transfer
Irrigation facilities	• Not established: 7 respondents, Established: 3 respondents (Plasma farm)
Cooperation activity	• Independent small-scale farm: 2 respondents • Plasma farm joined cooperative (KUD): 8 respondents
<b>【Impact of COVID-19】</b>	
Issues on the purchasing	• Prices of chemicals and fertilizers, mainly imported products, have risen, making it difficult to purchase (Mainly affecting the independent farm).
Issues on the selling	• Not affected
Profit	• Yields and profits decreased due to rising prices of chemicals and fertilizers (especially around March to May 2020 after the expansion of COVID-19). Profit drops to about 25-50%. After

Particular	Situation
	that, it was recovered.
Selling	• Increase in the purchasing price of FFB mainly due to international price increase.
Management, employment	• Not affected
Most affected period	• From March to May 2020 and from July to September 2020

Source: JICA Study Team

### 3) Large-scale farm (Nuclear)

The table below shows basic information on large-scale palm oil farms and the impacts of the COVID-19 pandemic. Since these large-scale farms are managed by a large-scale palm company called 'integrator,' the impact of COVID-19 on the production was hardly seen. The company collectively operates the purchase of agricultural input materials, operation and maintenance of farm machinery and equipment, and selling palms after the harvest.

**Table 3.7.5 Impact of COVID-19 on the Large-scale Farm (Nuclear farm)**

Particular	Situation
<b>【Basic Information】</b>	
Main income source and year of farming	• Only farming or managed by large scale company • More than five years of business
Main financial institution for borrowing money	• Commercial bank
Irrigation facilities	• Established
<b>【Impact of COVID-19】</b>	
Issues on the purchasing	• Not affected (Although the price of agricultural input materials increased, the purchase was made by the companies/integrator, so there was no particular impact on the production on the farm.)
Issues on the selling	• Not affected
Profit	• Not affected
Selling	• Not affected
Management, employment	• Not affected
Most affected period	• From March to April 2020 and July 2020

Source: JICA Study Team

### 4) Traders (Wholesalers, Transporters)

The table below provides basic information on traders related to the palm oil business and the impacts from the COVID-19 pandemic they faced. Traders mainly include three types of business; 1) purchasing and transporting the palm fruit from the farm/plantation and selling to mill factory, 2) purchasing and transporting the milled/processed palm oil from mill factory and selling to wholesalers or retailers, and 3) wholesale of palm oil and other commodities.

Among the traders who purchase and sell palm oil, some respondents said that the purchase price increased due to the rise in international prices. On the other hand, the decrease in demand on the downstream side of FVC was noticed as an issue. Some traders who sold most of the products only to wholesalers had to expand the sales channels to retailers, consumers, and other regions. Therefore, profit decreased due mainly to increased transportation costs. In addition, wholesalers who sell to retailers responded that many retailers demanded an extension of the payment period as the cooking palm oil remained. Some companies have increased their stock by about 30% compared to before COVID-19.

As for transport, transporters were affected by a decrease in demand, especially on the downstream side of FVC, for example, from processors to retailers. On the other hand, as the harvesting at farms has continued and harvested palm fruits need to be transported to the processing plant located nearby immediately, the impact of COVID-19 on the transport operation was not significant on the upstream side of FVC, i.e., at around the production site. In addition, due to the impact of COVID-19, the price of spare parts for trucks such as tires has increased. Therefore, the operating cost increased as well.

**Table 3.7.6 Impact of COVID-19 on the Traders (Including basic information of respondents)**

Particular	Situation
<b>【Basic Information】</b>	
Main income source and year of farming	• Transporter: 3 respondents, wholesalers: 3 respondents
Detail of business	• Purchasing and transporting the palm fruit from the farm/plantation and selling to mill factory • Purchasing and transporting the milled/processed palm oil from mill factory and selling to wholesalers or retailers • Wholesale of palm oil and other commodities
Main financial institution for borrowing money	• Transporter: Private individual/traders • Wholesaler: Commercial bank, cooperative
<b>【Impact of COVID-19】</b>	
Issues on the purchasing	• Increase of purchasing price (it related international price)
Issues on the selling	• Decrease of demand at 20-30% (2 among of 6 respondents) • Expanding the commercial area and increasing the transportation cost
Profit	• Decrease of profit at around 30% (3 of 6 respondents)
Collecting products	• Not affected
Selling	• It is needed to expand the selling area
Management, employment	• Wholesaler: Increase of stock due to decrease of demand by retailers
Most affected period	• From April to June 2020
Others	• Worsening of road condition to the farm/plantation, and it was not repaired after COVID-19.

Source: JICA Study Team

### 5) Processors (Squeezing, Refining)

The table below shows basic information on palm oil processors and the impact they faced by the COVID-19 pandemic. As mentioned above, the processors include 1) an oil mill factory that produces Crude Palm Oil (CPO) from Fresh Fruit Bunch (FFB) collected from farm/plantation, and 2) a refining and processing factory that manufactures processed products such as cooking palm oil and soap from CPO. Most of these processing firms are managed by integrators (including group companies, subsidiaries, etc.).

Processors that employ many workers have reduced their working days under the impact of PSBB. In addition, since the demand for cooking palm oil in the market decreased, the need for Crude Palm Oil (CPO), which is the raw material of cooking palm oil, has also reduced. Accordingly, the production volume by processors decreased. Moreover, regarding management issues, the cost for electricity and measures to prevent the spread of COVID-19 increased. However, there was little effect of COVID-19 on selling prices, which were linked to international prices.

**Table 3.7.7 Impact of COVID-19 on the Processers (Including basic information of respondents)**

Particular	Situation
<b>【Basic Information】</b>	
Main income source and year of farming	• Oil mill factory: 2 respondents, Refining and processing factory: 1 respondent
Detail of business	• Oil mill factory: collect the FFB from farm/plantation and mill them to make CPO • Refining and processing factory: Refine and process CPO to cook palm oil and other processed materials such as soap.
Main financial institution for borrowing money	• Private Individual/Traders • Not available because they are managed by Integrator (Large-scale companies)
<b>【Impact of COVID-19】</b>	
Issues on the purchasing	• Decrease of working day due to PSBB
Issues on the selling	• Decrease of production amount due to the reduction of the working day
Profit	• Increase of the cost for prevention of COVID-19
Handling volume	• Decrease of production amount due to the reduction of the working day • Decrease of production amount due to a reduction of CPO demand
Selling	• Selling was not affected because most of the production has been sold to related companies. • The selling price was fluctuated based on the international price
Management, employment	• Increase of the cost to prevent the COVID-19 within the company labors and electricity • Employment was not affected by COVID-19; however, the training to the labor was decreased.
Most affected period	• From March to June 2020

Source: JICA Study Team



## 6) Retailers

Cooking palm oil made from Crude Palm Oil (CPO) in refining farms and processing plants is sold in supermarkets or traditional markets to the general public. Due to PSBB to prevent the spread of COVID-19, the demand significantly declined due to the closure of supermarkets and markets, closure of various businesses (restaurants, cafeterias, etc.), and reduction of consumption by general consumers. Although it is a food that can be preserved compared to other agricultural products, it is not consumed in large quantities daily, so the decrease in demand had a significant impact.

On the other hand, both the procurement price and the selling price of cooking palm oil increased, resulting in a further decline in demand by consumers. According to data from GAPKI's South Sumatra branch, consumption of cooking palm oil had declined till the third quarter of 2020 (in the fourth quarter, the consumption recovered from the effects of the removal of PSBB). Price increases were seen not only in cooking palm oil but also in sugar and other foods. In addition, retailers in the traditional market are affected by COVID-19 regardless of whether they handle cooking palm oil. Some retailers change their business to street vendors facing market closure and PSBB. The business conditions of retailers have thus deteriorated significantly.

**Table 3.7.8 Impact of COVID-19 on the Retailers (Including basic information of respondents)**

Particular	Situation
<b>【Basic Information】</b>	
Main income source and year of farming	<ul style="list-style-type: none"> <li>Selling the cooking palm oil</li> <li>8~22 years</li> </ul>
Customers	<ul style="list-style-type: none"> <li>Middle-income earners (4 among of 6 respondents)</li> </ul>
Main financial institution for borrowing money	<ul style="list-style-type: none"> <li>Government Finance Institution and commercial bank</li> </ul>
<b>【Impact of COVID-19】</b>	
Issues on the purchasing	<ul style="list-style-type: none"> <li>Price increase for purchasing (3 among of 6 respondents)</li> </ul>
Issues on the selling	<ul style="list-style-type: none"> <li>Decrease of the number of customers and the average expense of the customer</li> </ul>
Profit	<ul style="list-style-type: none"> <li>Decrease of profit due to cost increase and decrease of the customer (4 among or six respondents)</li> </ul>
Selling	<ul style="list-style-type: none"> <li>Decrease of the number of customers</li> <li>Lowering of the average expense of the customer</li> <li>Increase of selling price</li> </ul>
Management, employment	<ul style="list-style-type: none"> <li>The business has deteriorated. (5 among of 6 respondents)</li> </ul>
Most affected period	<ul style="list-style-type: none"> <li>March and from June to August 2020</li> </ul>

Source: JICA Study Team

## 7) Integrator (Large-scale Palm Company, KUD: Cooperative associated by Small or Middle-scale Farms (Plasma farms))

As mentioned above, there are two types of integrators: large-scale palm companies by the private sector and cooperatives called KUD, which was associated with small- or medium-sized plasma farms. The former integrator operates nuclear farms, oil mills, refineries, etc., provides land to small and medium-sized farmers, and operates plasma farms. On the other hand, in the latter case, due to the policy of the Indonesian Government, KUD became an independent integrator, providing support for input materials to plasma farms, providing land, and transportation business, etc.

Although the impact of COVID-19 on the integrator's business was not significant, the integrators delayed the business of providing input materials to farmers in some cases due to PSBB. In addition, the number of opportunities to solicit donations from the government, local government, NGOs, etc.

## 8) Exporters

Most palm oil exporters are based in Jakarta; however, many companies hesitate to disclose their management details to the outside, and only one company answered the survey questionnaire. Most of

the questions could not be answered with specific figures for that company. The company exporting Crude Palm Oil (CPO) and palm kernel oil (PKO) mainly to Europe replied that there was almost no impact of COVID-19.

### 3.7.4 Impact of COVID-19 Pandemic by Theme

#### 1) Concern for the impact of COVID-19

Regarding the impact of COVID-19, respondents in each FVC stage were asked their concerns regarding the three items of “risk of infection,” “financial impact,” and “psychological impact” of COVID-19. Most of the stages were very concerned about financial impact (see Table 3.7.8): However, some stakeholders have little or no change in concerns with other items. These answers are inferred because palm oil is used for various purposes, including biofuels other than food, and demand is secured.

**Table 3.7.9 Concern Level for the Impact of COVID-19**

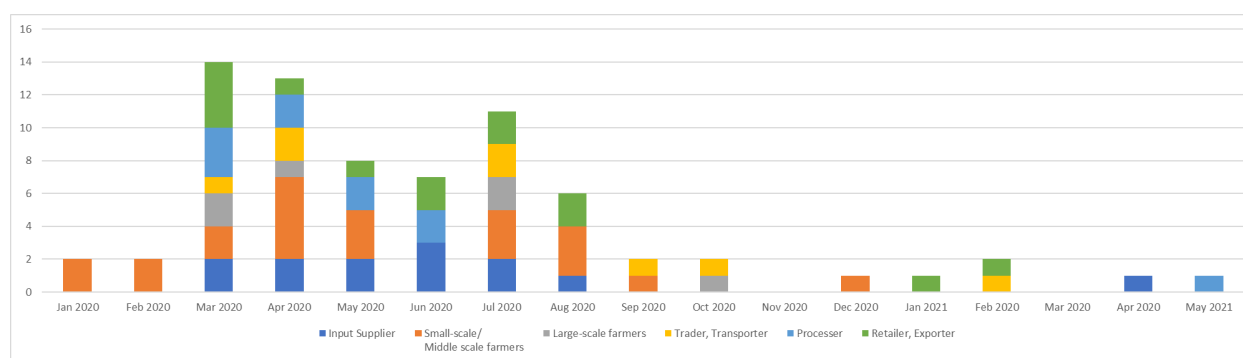
FVC Stakeholder	Risk of Infection	Financial Impact	Phycological Effect
Input Supplier	1.67	2.67	1.83
Small-scale farm (Independent, Plasma, Middle-scale farm (Plasma)	2.20	2.20	2.20
Large-scale farm (Nuclear)	3.00	2.60	3.00
Trader (Wholesaler, Transporter)	2.50	2.50	2.50
Processors (Squeezing, Refining)	2.50	2.50	2.50
Retailer, Exporter	2.29	2.29	2.29
<b>Total</b>	<b>2.33</b>	<b>2.43</b>	<b>2.35</b>

Note : 3. Very much concerned, 2. Slightly Concerned, 1. Not concerned at all (1~3 : The higher the number, the stronger the concern)

Source: JICA Study Team

#### 2) Most affected Period of COVID-19

Each stage group was interviewed about the period between January 2020 and May 2021 that had the most significant impact on their activities. The following figure shows the summarized answer. As a result, many respondents were affected by the COVID-19 from March to August 2020. The first infected person of COVID-19 was confirmed in Indonesia in early March 2020, and after that, sales and business operations were strictly restricted nationwide under PSBB and associated countermeasures. Therefore, among palm oil VCs, the substantial influence took place on the businesses of processors and retailers.



**Figure 3.7.10 Most Affected Period of COVID-19**

Source: JICA Study Team

#### 3) Labor Management and Food Safety

Under this survey, each stage’s labor management and food safety were also interviewed. Large-scale palm companies and some processors employ workers who could not commute, and in some cases, they have dormitories for those workers. These companies have taken measures to prevent the spread of COVID-19, such as wearing masks, hand-washing practices, securing social distance, etc., in

workplaces and workers' residences.

In addition, large-scale palm companies and processors had already obtained HACCP certification (processors: all three companies, integrators: all three companies). Some farms have already received GAP certification too. In addition, small farms (including independent), large-scale palm companies, and retailers responded that after COVID-19, a certain number of customers demanded food safety and traceability.

#### 4) Degree of COVID-19 Impacts on Each Index and Each Stage

Questionnaire items are classified into 12 indices based on the main points of organizational operation. Table 3.7.9 shows the degree of COVID-19 impacts on each index and stage (irrespective of positive impact and negative impact), from which the following are raised:

- ✓ Overall, the impact on the downstream side of VC is relatively high. For example, the decrease in demand for palm oil as domestic edible use and the reduction in export have impacted the downstream stages more. On the other hand, the large-scale farms with good funds and labor located at the upstream side of VC showed almost no impact by COVID-19. However, the small and medium-sized farms with scarce funds and less technical capabilities have been affected by COVID-19, and thus those farms must be financially supported.
- ✓ Overall, the impact on “money” such as “money-profit” and the effect on “goods-handling volume” was high. The stagnation of logistics and the decrease in demand had a significant impact on the overall VC of palm oil. As palm oil can be used for various products other than food, the impact of COVID-19 related regulations was not significant on the business operation and management of the production and processing of palm VC.

**Table 3.7.10 Degree of COVID-19 impacts on each index and each stage**

Target	Indicator	Agriculture input suppliers	Small-scale farm (Independent, Plasma), Middle-scale farm (Plasma)	Large-scale farm (Nuclear)	Processors (Squeezing, Refining)	Trader (Wholesaler, Transporter)	Retailer, Exporter	Total
Goods	① Handling volume	0.08	0.24	0.08	0.30	0.09	0.00	0.79
	② Accessibility	0.00	0.26	0.08	0.17	0.00	0.00	0.51
	③ Transportation measure	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Money	④ Profitability	0.33	0.30	0.00	0.29	0.00	0.44	1.37
	⑤ Cost	0.03	0.33	0.07	0.13	0.28	0.08	0.92
	⑥ Price	0.00	0.02	0.00	0.17	0.25	0.39	0.82
	⑦ Others	0.00	0.10	0.00	0.00	0.00	0.00	0.10
Labor	⑧ Labor	0.07	0.05	0.10	0.03	0.06	0.00	0.30
	⑨ Information	0.00	0.05	0.00	0.00	0.25	0.00	0.30
	⑩ Operation/Management	0.00	0.03	0.00	0.00	0.05	0.45	0.54
	⑪ Environment	0.11	0.05	0.00	0.00	0.00	0.00	0.16
	⑫ Input	0.00	0	0	0	0	0	0.00
	Total	0.62	1.43	0.33	1.08	0.98	1.37	

\*It includes some items that have no direct impacts by COVID-19, such as environment-related question items

Source: JICA survey team

### 3.7.5 Conclusion of the Impacts and Countermeasures Proposed

Palm oil VC was affected by the spread of COVID-19, taking such forms as rising prices of agricultural input materials, suspension of distribution and business by PSBB, and decreased demand for cooking palm oil in Indonesia. On the other hand, since palm oil can be kept for a long time and has various uses other than food, the impact of COVID-19 on VC from production to export was smaller than that of other agricultural products. The situation by COVID-19 is summarized as follows, and the countermeasures are presented in the lower part of the following table to strengthen the palm oil VC.

Small and medium-sized palm plantations suffered lower yields and lower profits due to rising prices for agricultural inputs. On the other hand, it was also more required to obtain a sustainable palm oil production certification before the COVID-19 pandemic. Therefore, it can be considered a countermeasure that supports improving productivity and quality by introducing a field monitoring system with ICT. In addition, the acquisition of certification for small and medium-scale farms should also be supported, e.g., by linking with a traceability system. If certified farmer's products are sold in the markets further, it will lead to an income increase for the farmer.

Since many workers are engaged in the processing factory, the cost to prevent the spread of COVID-19 has increased. In this regard, it is also possible to consider financial support for labor hygiene and implement training for workers to improve labor hygiene. In addition, for distributors who need to expand their marketing places coping with the fragmentation of VC by the impact of COVID-19, it can also be recommended to develop matching application software with wholesalers, retailers, etc., who are in demand. It seems that it can contribute to establishing an efficient distribution channel.

**Table 3.7.11 Issues and Countermeasures for Indonesian Palm Oil VC before/after COVID-19**

Input	Production (Small/Middle)	Production (Large)	Processing	Trader	Market
Agriculture input suppliers	Small-scale farm (Independent, Plasma), Middle-scale farm (Plasma)	Large-scale farm (Nuclear)	Processors (Squeezing, Refining)	Trader (Wholesaler, Transporter)	Retailer, Exporter
<b>Issues</b>					
<ul style="list-style-type: none"> <li>Price increase and shortage of agriculture input materials, mainly import items</li> <li>Shortage of stock</li> </ul>	<ul style="list-style-type: none"> <li>Price increase of agriculture input materials</li> <li>Decrease of quality and yield due to less use of input materials</li> <li>Less access to extension officers and financial support</li> </ul>	<ul style="list-style-type: none"> <li>Price increase of agriculture input materials</li> </ul>	<ul style="list-style-type: none"> <li>Increase of the purchasing price of palm fruit</li> <li>Decrease of working days due to PSBB</li> <li>Cost increase for prevention of COVID-19</li> <li>Decrease of production for cooking oil</li> <li>Less opportunities for providing training to workers</li> </ul>	<ul style="list-style-type: none"> <li>Decrease of selling amount due to less demand of market or retailers for cooking oil (then increase of stock.)</li> <li>Increase of transportation cost to expand the sales area</li> <li>Increase of the purchasing price of palm oil</li> </ul>	<ul style="list-style-type: none"> <li>Decrease of customers number and expenses per customer</li> <li>Decrease of selling amount and shifting their business to roadside vendor due to PSBB</li> </ul>
<b>【Cross-cutting issues and impact at distribution hub】</b> <ul style="list-style-type: none"> <li>Worsening of road condition in the farm, also the road was not repaired after COVID-19</li> <li>Decrease of export amount (especially to China during the first half of 2020)</li> </ul>					
<b>Countermeasures</b>					
-	<ul style="list-style-type: none"> <li>Introduction of ICT field monitoring system for proper use of chemicals</li> <li>Support for the acquisition of certification</li> </ul>	-	<ul style="list-style-type: none"> <li>Support for labor hygiene</li> </ul>	<ul style="list-style-type: none"> <li>Development of matching application between traders and retailers to establish an efficient distribution</li> </ul>	-
<b>【Cross-cutting issues and impact at distribution hub】</b> <ul style="list-style-type: none"> <li>Support for the reconstruction of the road in the farm</li> <li>Introduction of combination system between GAP or ISPO<sup>9</sup> certification system and traceability system</li> </ul>					

Source: JICA Study Team

<sup>9</sup> ISPO: ISPO, Indonesia Sustainable Palm Oil, is a certification system in Indonesia. There were various issues surrounding palm oil cultivation (environmental impact, labor issues, etc.), then, in 2004, "Roundtable on Sustainable Palm Oil; RSPO" was launched as an international non-profit organization aiming for sustainable palm oil production and utilization. RSPO sets standards for palm cultivation and palm oil production processes and certifies companies that produce palm oil sustainably. On the other hand, small and medium-sized farms in Malaysia and Indonesia had a difficulty to acquire the certification, so that there are certification systems for sustainable palm oil production established in each country (called MSPO and ISPO, respectively). In Indonesia, a third-party organization grants ISPO certification to farms that meet standards in terms of legal compliance and Good Agriculture Practice. (Reference: "RSPO (Roundtable on Sustainable Palm Oil) Certification", from the WWF JAPAN website <<https://www.wwf.or.jp/activities/basicinfo/3520.html>>)

### 3.8 COVID-19 Impact Survey on Poultry (Indonesia)

#### 3.8.1 Outline of Poultry VCs in Indonesia

##### 1) Poultry Sector in Indonesia

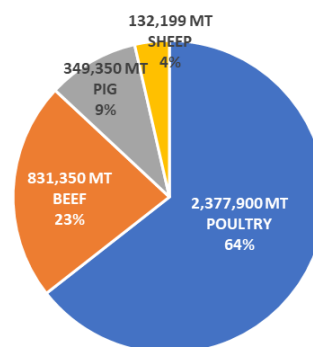
In Indonesia, factors able to accelerate meat consumption, such as population growth and increase in disposable income, is remarkable, and the development potential of the livestock sector is great.

Poultry and beef<sup>1</sup> are the most consumed meats in the country, where about 90% of the population is Islamic, because there are few religious repellents, and poultry is cheaper to buy than beef. It accounts for 64% of consumption in 2019 (Figure 3.8.1).

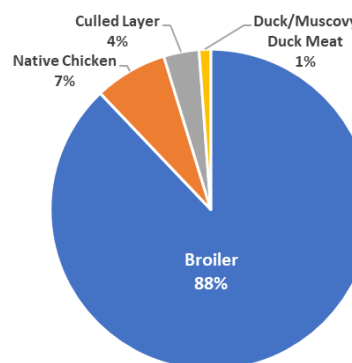
Poultry production in Indonesia is expanding mainly among integrators whose origin is commercial feed companies in response to the expansion of domestic demand and population growth accompanying economic development (Figure 3.8.3). Integrating the livestock industry as a business and building a consistent management system for everything from upstream to downstream of the livestock industry, from feed raw material supply, feeding to production processing, sales, and distribution, is called integration<sup>2</sup>. The business body is called an integrator.

In Indonesian poultry sector, integrators often outsource the breeding/production to contract farmers. The breeding/production is done by three patterns: integrator's own farm production, integrator's contract farmer's production, and integrator-independent farmer's production. The contract farmer's production accounts for 70% of the total production in Indonesia.

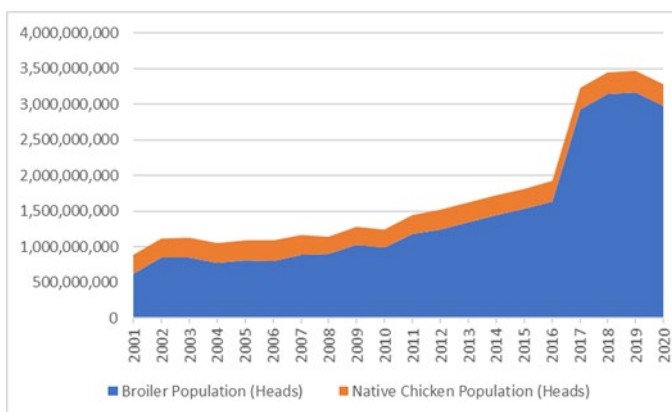
Looking at poultry meat production in 2019, broilers accounted for 88% and local chickens 7% (Figure 3.8.1). In the same year, the annual production and number of poultry of broilers was about 3.5 million tons, and the number of stocks produced was about 3.2 billion. According to FAOSTAT<sup>3</sup>, Indonesia's chicken imports in 2019 were 0 tons and exports were 332 tons, with little trade. In addition, since the number of stock transactions is also small, Indonesian poultry VC targets domestic consumers, and basically domestic poultry meat production covers domestic demand.



**Figure 3.8.1 Amount and Percentage of Meat Consumption in Indonesia**  
Source: OECD Data  
Remarks: MT shows "tons"



**Figure 3.8.2 Percentage of Poultry Meat in Indonesia**  
Source: BPS



**Figure 3.8.3 Poultry Stocks in Indonesia**  
Source: BPS

<sup>1</sup> Agriculture & Livestock Industries Corporation (Alic), Livestock industries information “Trends in Indonesia's broiler industry-Potential for export to Japan”, June 2018, <<https://lin.alic.go.jp/alic/month/domefore/2018/jun/wrepo02.htm>> (Access on August 30, 2021, Original Japanese Version)

<sup>2</sup> <https://www.foodlink.co.jp/meat-and-livestock/index.html>

<sup>3</sup> FAOSTAT (Access on March 30, 2021)

The production of commercial poultry feed is increasing year by year in response to the increase in demand for chicken<sup>1</sup>. The production of commercial feed in 2016 was 17.22 million tons (8.3% up from the previous year). By type of livestock, poultry feed accounts for more than 90% of the total, and broiler feed accounts for 46% of the total. According to the USDA<sup>4</sup>, there are 97 commercial feed factories nationwide with an installed capacity of 25.5 million tons, an increase of 3.2% from 24.7 million tons in 2018. Eighty percentages of the installed capacity of the feed mill are in operation. There are about 69 factories on Java Island.

According to the Feed Association<sup>1</sup>, the raw material ratio of general broiler feed is 50% of maize, 15% of soybean cake, 15% of rice bran, 5% beef bone meal, 5% of fish meal, and 10% of others (vitamins, minerals, etc.). The percentage of maize, a main ingredient of the feed, is almost the same as in Japan, but the percentage of soybean cake is rather low, and the percentage of rice bran, beef bone meal, and fish meal is high.

Almost all the maize is domestically produced. Imports of soybean cake are increasing in proportion to the increase in production of commercial feed. In 2017, the import volume was 4.33 million tons, and almost all of it was imported from both Argentina and Brazil. As for rice bran, the companies use the one that is produced at the rice milling factory since Indonesia is one of the world's leading rice producing countries. Besides, it is easy to procure fish meal at a relatively low price in Indonesia because the fishery sector is developed.

## 2) Stakeholders in the Poultry VC

Major stakeholders involved in the poultry VC are integrators, grandparents' farms, parents stock farms, feed factories, poultry farmers, contractors, processors, slaughterhouses, retailers, and livestock veterinary material /equipment suppliers.

**Integrators:** Integrators are involved in almost all the broiler production. Major Indonesian integrators include CPI (Charoen Pokphand Indonesia), JAPFA, and MALINDO<sup>5</sup>. The origin of these companies is commercial feed companies. Integrator companies are actively investing in grandparents' farms, parents' stock farms, poultry slaughterhouses, chicken processing plants, etc. to expand their business scale and support the development of the broiler industry.

According to the Ministry of Agriculture, the ratio of broiler production by management is 10% for own farms of integrators, 70% for contract farmers for integrators, and 20% for independent farmers who do not have contracts with integrators.

The low percentage of integrators' own farms is attributed to reduction of investment and risks in the disease epidemic. For a farmer to sign a contract with an integrator, certain conditions must be met. For example, to conclude a contract with a major integrator, CPI, it is necessary to have land that can raise at least 20,000 birds, a poultry house (11 x 120 meters), and sufficient clean water and electricity.

**Grandparents stock farms and parents stock farms:** Indonesian broiler breeding start with grandparent stock imported from Europe and the United States<sup>6</sup>. Grandparents stock farms supply breeding chicks to parents' stock farms throughout Indonesia. And then, the parents' stock farms produce day-old chicks.

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<sup>4</sup> USDA, "Grain and Feed Annual", April 2020,

<[https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Grain%20and%20Feed%20Annual\\_Jakarta\\_Indonesia\\_03-27-2020](https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Grain%20and%20Feed%20Annual_Jakarta_Indonesia_03-27-2020)>,

<sup>5</sup> Agriculture & Livestock Industries Corporation (Alic), Livestock industries information "Trends in Indonesia's broiler industry-Potential for export to Japan", June 2018, <<https://lin.alic.go.jp/alice/month/domefore/2018/jun/wrepo02.htm>> (Access on August 30, 2021, Original Japanese Version)

<sup>5</sup> FAOSTAT (Access on March 30, 2021)

<sup>6</sup> USAID, Indonesia's Poultry Value Chain, 2013

The cycle of both grandparents' stock and parents' stock is more than one year. The parents' stock, which are descendants of the imported original grandparents' stocks starts production of broiler day old chicks after 2.5 years.

The supply of broiler day-old chicks for commercial broilers is limited by the amount of original grandparents' stock imported (controlled by the Ministry of Trade). On the other hand, the shortage of parents' stocks is supplemented by the import of parents' stock chicks (controlled by the Ministry of Agriculture).

**Feed Mills:** Indonesia has 68 feed mills with capacities up to 18.5 million tons<sup>5</sup>. Seventy-five percent of feed ingredients are imported, especially 100% of soybean meal.

**Poultry farmers:** Many poultry farmers have contracts with integrators who comprehensively handle feed, breeding chickens, chemicals, livestock materials, etc. Chickens are produced under the prescribed feeding management and hygiene management using the feed originally designed by the integrator and the day-old chicks and supplied to the integrator.

Many independent farmers are small-scale farmers who have only a breeding facility of 5,000 to 20,000 birds. After purchasing production materials, day-old chicks, etc. from retail stores called integrators and poultry shops and fattening them for a certain period, they transported them to traditional markets. According to the Poultry Farmers Association (GOPAN), many of these farmers lack financial resources, so they cannot manage hygiene adequately and it is difficult to expand their operation scale.

**Distributors/wholesalers:** Distributors/wholesalers buy broilers from integrators and independent farmers.

**Processors and slaughterhouses:** The number of modern slaughterhouses and processing plants is increasing, and integrators are expanding nationwide. Small-scale slaughterhouses in the backyard supply processed chicken to fresh market traders. According to data from the Ministry of Agriculture, 15% of broiler is processed at the integrator's poultry processing plant, and 85% is processed at public poultry processing plants via distributors or directly transported to traditional markets as it is.

**Retailers:** Most broilers are sold in traditional wet markets. Broilers are slaughtered and brought to the market with their heads and legs attached, without refrigeration or ice. Retailers usually sell 50 kg of chicken per day, and there are typically 50 to 100 retailers in a market.

**Consumers:** Estimating from data from the Ministry of Agriculture, about 80% of broilers produced by integrators are shipped to traditional markets. Consumers seem to buy chicken more often in traditional markets than in modern retail stores such as mass retailers. In Southeast Asian countries, consumers have traditionally strongly recognized that warm meat is fresh and chilled and frozen products are not fresh, so they tend to prefer warm meat at the traditional market. In traditional wet markets, consumers choose their favorite chicken in a cage and have them processed there.

### 3.8.2 Outline of the Impact Survey on Poultry VCs

From April 19 to 21, 2021, JICA survey team conducted a COVID-19 impact survey on Poultry VCs in Ciamis and Bogor Districts in West Java Province, as shown in the following figure. According to the BPS, West Java's share of broiler production in 2019 accounts for 26% of the national total, making it the largest broiler



**Figure 3.8.4 Target Area of Poultry FV survey in Indonesia**  
Source: JICA Survey Team

producing province in the country, and thus it is suitable as the target area for this survey.

Assistants employed by the JICA survey team interviewed stakeholders on the VC by using a questionnaire form. The target of the survey is those involved in the poultry VC, which are shown in the value chain map in the following figure and the following table.

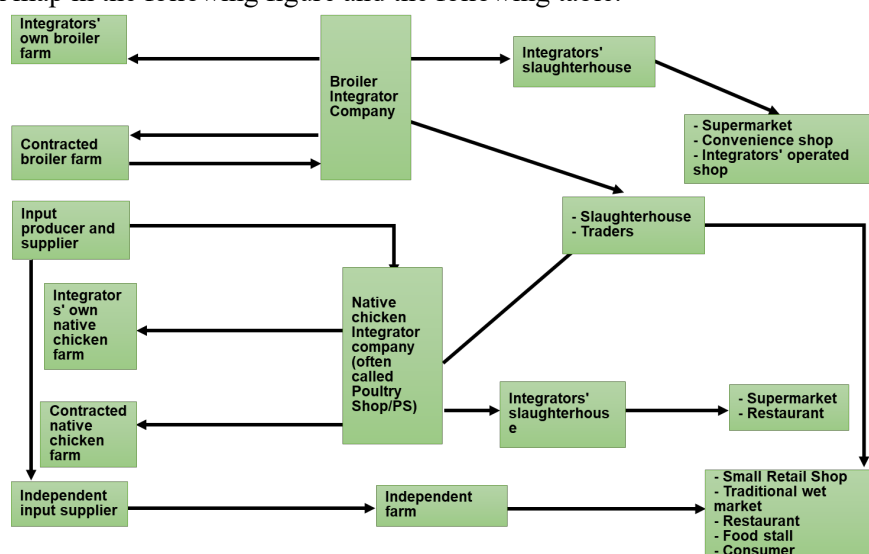


Figure 3.8.5 Poultry VC map in the Survey Area

Source : JICA Survey Team

Table 3.8.1 Number of Respondents in the Poultry VC survey

Location (District)	Date of survey	FVC Stakeholder								Total
		Integrator	Input Supplier	Poultry Farmer	Distributor /Wholesaler	Slaughterhouse	Retailer	HoReCa	Consumer	
Bogor	19-21 Apr 2021	1	3	4	3	3	3	2	1	20
Ciamis	19-21 Apr 2021	2	3	6	3	3	3	1	2	23
	Total	3	6	10	6	6	6	3	3	43

Source: JICA Survey Team

### 3.8.3 Impact of COVID-19 Pandemic by Stage of Poultry VCs

A questionnaire was prepared for each FVC stage to investigate the impacts of the COVID-19 pandemic. Table 3.8.2 summarizes the key challenges in each stage and the impact of the COVID-19 pandemic. Notable impacts of the COVID-19 on poultry VCs are 1) the shrinking chicken market due to reduced demand in the wedding and tourism sectors, affecting all the stages from input to retail, 2) due to the government's restrictions on movement amid the COVID-19 and the conventional regulations on feed ingredients and day-old chicks<sup>7</sup>, the supply of input materials was affected.

Table 3.8.2 Conventional Challenges and the Impact of the COVID-19 Pandemic on Poultry VC in Indonesia

FVC Stage	Input Supply	Production	Distribution
Main stakeholder	Integrator Input supplier	Integrator Poultry farmer	Integrator Distributor/ Wholesaler
Challenges before COVID-19	<ul style="list-style-type: none"> <li>Maize procurement price of feed companies is high due to the protection policy of domestic maize farmers</li> <li>Private companies cannot freely import day-old chicks</li> </ul> <b>(Integrator)</b> No challenges <b>(Input suppliers)</b> <ul style="list-style-type: none"> <li>Competition with other companies/ price competition</li> </ul>	<ul style="list-style-type: none"> <li>Many independent poultry farmers lack financial resources, so it is difficult to manage hygiene sufficiently and expand the scale of operation</li> <li>Although the broiler business requires an initial investment, there are many new entrants because the production cycle is shorter</li> </ul>	<b>(Integrator)</b> Insufficient access to foreign markets <b>(Distributor/ Wholesaler)</b> <ul style="list-style-type: none"> <li>Competition with other companies/ price competition</li> <li>Insufficient access to foreign markets</li> </ul>

<sup>7</sup> Supply of first-born chicks (MOT regulation No. 7/2020) and import of corn (MOT regulation No. 20/2016)



	<ul style="list-style-type: none"> <li>Lack of refrigeration/ freezer facilities</li> </ul>	and the breeding is easier than beef cattle production	
Cross-cutting issues	<ul style="list-style-type: none"> <li>Avian flu</li> <li>Import of maize and day-old chicks are regulated by the government, so production, marketing and prices are affected.</li> </ul>		
Impact of COVID-19	<p><b>(Integrator)</b></p> <ul style="list-style-type: none"> <li>Decrease in revenue and services</li> <li>Soaring prices of products such as day-old chickens, veterinary medicine products, and feed</li> <li>Decrease in products and services due to restricted access to the market</li> <li>Decrease in product and service volume due to decreased demand</li> <li>Decrease/fluctuation of the selling price</li> <li>Decrease in traders and customers</li> <li>Shortage of markets and buyers</li> </ul> <p><b>(Input supplier)</b></p> <ul style="list-style-type: none"> <li>Decrease in revenue and services</li> <li>Decrease in product and service volume due to decreased demand</li> <li>Decrease in traders and customers</li> <li>Wholesale price of products is high</li> </ul>	<p><b>(Integrator)</b></p> <ul style="list-style-type: none"> <li>Reduction of production</li> <li>Decrease in profits</li> <li>Decrease in product and service volume due to decreased demand</li> </ul> <p><b>(Poultry farmer)</b></p> <ul style="list-style-type: none"> <li>Reduction of production</li> <li>Decrease in profits</li> <li>Decrease in product and service volume due to decreased demand</li> </ul>	<p><b>(Integrator)</b></p> <ul style="list-style-type: none"> <li>Decrease in revenue and services</li> <li>Decrease in product and service volume due to decreased demand</li> <li>Reduction of chicken price</li> <li>Decrease in trader and customers</li> </ul> <p><b>(Distributor/ Wholesaler)</b></p> <ul style="list-style-type: none"> <li>Decrease in revenue and services</li> <li>Reduction of chicken handling volume due to movement restrictions</li> <li>Decrease in chicken handling volume due to decreased demand</li> <li>Reduction of chicken price</li> <li>Decrease in traders and customers</li> </ul>
Cross-cutting issues	<ul style="list-style-type: none"> <li>The chicken market is shrinking as a result of oversupply due to reduced demand in the wedding and tourism sectors, affecting all stages from input to retail.</li> <li>Due to government restrictions on movement and conventional regulation on feed ingredients and chicks, the supply of input was affected amid the COVID-19 pandemic</li> </ul>		

FVC Stage	Processing	Retail	Consumption
Main stakeholder	Integrator Slaughterhouse	Retailer (Traditional wet market) HoReCa	Consumer
Challenges before COVID-19	<p><b>(Integrator)</b></p> <ul style="list-style-type: none"> <li>Insufficient support from the government</li> <li>Insufficient access to foreign markets</li> </ul> <p><b>(Processor/Slaughterhouse)</b></p> <ul style="list-style-type: none"> <li>Insufficient government support</li> <li>Price competition with other companies</li> <li>Insufficient access to foreign markets</li> </ul>	<ul style="list-style-type: none"> <li>Exports do not proceed due to high production costs, high feed prices and high chicken prices</li> <li>Chicken sold in traditional wet markets is often distributed at room temperature and is not always hygienic.</li> <li>Oversupply of broilers</li> <li>It was planned to export processed chicken products to Japan in 2015 (in return for exporting Japanese beef to Indonesia), but it was postponed due to quality concerns and price constraints.</li> <li>Buyer's seasonality</li> </ul>	<ul style="list-style-type: none"> <li>Broiler price is high (due to high production price)</li> <li>Chicken is considered inferior to beef</li> </ul>
Impact of COVID-19	<p><b>(Processor)</b></p> <ul style="list-style-type: none"> <li>Decrease in profits</li> <li>Reduced handling volume of products (chicken) due to movement restrictions</li> <li>Reduced handling volume of products (chicken) due to decreased demand</li> <li>Reduction of the product price (chicken)</li> <li>Decrease in traders and customers</li> </ul>	<ul style="list-style-type: none"> <li>Decrease in chicken prices in the market due to oversupply</li> <li>Demand from HoReCa and the tourism sector is decreasing. In addition, demand from events such as weddings where many people gather decreases.</li> <li>Market closure due to PSBB policy</li> </ul> <p><b>(Retailer, traditional market)</b></p> <ul style="list-style-type: none"> <li>Decrease in service revenue</li> <li>Decrease in the average number of customers per day</li> <li>Decrease the average expense of customers per day</li> <li>Deterioration of business conditions</li> </ul> <p><b>(HoReCa)</b></p> <ul style="list-style-type: none"> <li>Decrease in revenue from the service</li> <li>Decrease in the average number of customers per day</li> <li>Decrease the average expense of</li> </ul>	<ul style="list-style-type: none"> <li>Decrease in household income</li> <li>Changes in lifestyle and work style</li> <li>Increased expenses include communication expenses, daily necessities, medicines</li> <li>Decreased expenses include social expenses, entertainment expenses, and transportation expenses</li> <li>COVID-19 points out an increasing introverted behavior</li> </ul>

		customers per day • Soaring total expenditure and operating costs • Soaring cost of purchasing daily necessities • Deterioration of business conditions • Stop business and shorten business hours with PSBB	
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Source: JICA Survey Team based on literature review and survey results

Agriculture & Livestock Industries Corporation (Alic), Livestock industries information "Trends in Indonesia's broiler industry-Potential for export to Japan", June 2018, <<https://lin.alic.go.jp/alic/month/domefore/2018/jun/wrepo02.htm>> (Access on August 30, 2021, Original Japanese Version)

B A Nugroho, Indonesia's Broilers Business Facing Oversupply Difficulties, October 2019

Thom Wright, Baso Darmawan, Voluntary Poultry Report (USDA), January 2017

Surni, Doppy Roy Nendissa, Muhaimin Abdul Wahib, et al. "Socio-economic impact of the Covid-19 pandemic: Empirical study on the supply of chicken meat in Indonesia", December 2020

## 1) Integrator

Integrators had a major impact on their management, such as a sharp drop in farm gate prices, a shortage of markets and buyers, a sharp decrease in shipments, and a decrease in the number of broilers and processed chickens due to a decrease in demand. For example, in the integrator poultry farm, the farm price plummeted from 24,833 IDR/chicken to 8,333 IDR/chicken at the hardest time, decreasing to one-thirds of the before COVID-19 level. In addition, due to the decrease in demand, the number of chickens produced per batch was halved from about 380,000 to 210,000, and the number of chickens produced per year was halved from 1.45 million to 790,000. While management shrank further, management operations such as employment are not changed.

**Table 3.8.3 Impacts of COVID-19 on Integrator (Poultry VC in Indonesia)**

Item	Situation
<b>【Basic Information】</b>	
Main financial institution	• Commercial Bank, Private Individual/Traders
Business	<ul style="list-style-type: none"> <li>• Input supply</li> <li>• Broiler production at own farm</li> <li>• Broiler production at contracted farms</li> <li>• Slaughter and processing</li> <li>• Trading and wholesale</li> </ul>
<b>【Impact of COVID-19】</b>	
Impact on procurement	• After the COVID-19 pandemic, the operating cost of input materials has increased due to the rise in the price of imported products.
Impact on sales	• The government does not buy chickens. Therefore, chicken prices are very vulnerable as they are highly market dependent and manipulated by large capital owners and market participants. Especially amid the COVID-19 disaster, prices of broilers and native chickens quickly fell dramatically in the market, coupled with months of movement restrictions and negative information on stay homes and online social media. Some businesses have gone bankrupt, but there is no government support.
Increase/decrease of profit	• The annual number of broilers per batch is halved. Prices also fell to one-third during the toughest times. Some companies have mentioned that processed production has fallen to 1/10.
Shipping of products	• As mentioned above, the shipment volume has dropped sharply.
Handing and sales volume	• As mentioned above, the sales volume and amount have dropped sharply. Retail prices plummeted.
Business operation and employment	• While the business operation is not changed, there are many cases where the number of products (chicken and chicken meat) handled is reduced. There is no change in employment. When inquiring about the measures to prevent the spread of infection, the instructions for washing hands and wearing masks ranked high. On the other hand, some companies did not take any preventive measures.
Most impacted period	• Around April and August 2020

Source: JICA Survey Team

## 2) Input Supplier

Since input suppliers depend on imports for feed and veterinary medicine products, they are affected by the rise in transportation costs and wholesale prices due to the depreciation of the rupiah and

COVID-19. The input suppliers are also affected by the reduction in use of input materials due to the decrease of chickens raised by poultry farmers and integrators.

**Table 3.8.4 Impacts of COVID-19 on Input Supplier (Poultry VC in Indonesia)**

Item	Situation
<b>【Basic Information】</b>	
Products	<ul style="list-style-type: none"> <li>• Poultry feed: 100%</li> <li>• Day-old chicks: 17%</li> <li>• Veterinary medicine products, Livestock hygiene products: 17%</li> <li>• Other equipment: 83%</li> </ul>
Main financial institution	• Commercial Bank, Private Individual/Traders
<b>【Impact of COVID-19】</b>	
Impact on procurement	• Some of the feed and pharmaceutical manufacturing materials are imported from overseas. Prices can easily fluctuate due to several factors, including rising dollar/rupee rates and import process problems that cause higher shipping costs.
Impact on sales	<ul style="list-style-type: none"> <li>• Poultry farmers reduced the number of chickens raised due to the pandemic of COVID-19, so they reduced the purchase of production inputs such as feed and primary chicks</li> <li>• To prevent the spread of COVID-19, the government has closed some access roads and poultry farmers are facing problems with the delivery of poultry feed. Delivery is carried out only when the road closure is lifted. As a result, feed delivery from feed factories to poultry farmers is delayed.</li> <li>• If the delivery of feed is delayed, the feeding of chickens in the poultry farm is delayed or stopped, and many chickens become ill and may die. This is a great loss to poultry farmers.</li> </ul>
Increase/decrease of profit	• Decrease in product and service volume due to decreased demand
Shipping of products	• Shipments decreased
Handing and sales volume	• Sales volume decreased due to a decrease in demand. Retail prices plummeted
Most impacted period	• March, April, August, November 2020

Source: JICA Survey Team

### 3) Poultry Farmer

Poultry farmers suffered a decline in production because of a decline in the supply of day-old chicks from integrators at the beginning of the global spread of the COVID-19, from March 2020. However, this is due to the short-term turmoil seen early and is now calming.

**Table 3.8.5 Impacts of COVID-19 on Poultry farmer (Poultry VC in Indonesia)**

Item	Situation
<b>【Basic Information】</b>	
Types of farm	<ul style="list-style-type: none"> <li>• Integrators' own poultry farm: 30%</li> <li>• Contracted poultry farm with integrators: 60%</li> <li>• Independent poultry farm: 10%</li> </ul>
No of broilers	• 3,108 on average, usually shipping 3 to 12 batches per year
Main financial institution	• Company/Corporation, Private Individual/Traders, Government Finance Institution
<b>【Impact of COVID-19】</b>	
Impact on procurement	• The supply of day-old chicks of native chickens by integrators decreased, resulting in a decrease in production and farmers' income.
Impact on sales	<ul style="list-style-type: none"> <li>• Lack of government protection for poultry farmers. If the integrator makes a loss, it is the farmer who is directly affected by the loss.</li> <li>• Many independent poultry farmers contracted with integrators because it was difficult for poultry farmers to obtain loans from banks without collateral.</li> </ul>
Increase/decrease of profit	• Decrease in product and service volume due to decreased demand
Shipping of products	• Shipment volume decreased
Handing and sales volume	• Sales volume decreased due to a decrease in demand. Retail prices plummeted
Most impacted period	• From March to May 2020 and from July to August 2020

Source: JICA Survey Team

### 4) Distributer/ wholesaler

Distributer/ wholesaler were affected by decrease in shipments due to lower demand, a sharp drop in retail prices, and a shortage of buyers. In addition, competition with other companies has intensified. For example, before the COVID-19 pandemic, the average transaction volume was 32,850 kg/month, but after the COVID-19 pandemic, the average transaction volume was 22,458 kg/month, which has fallen to the level of two-thirds of the before COVID-19. In addition, the use of storage facilities has

dropped sharply from 8.9 tons/month to 0.9 tons/month, which clearly shows that transactions have decreased significantly.

**Table 3.8.6 Impacts of COVID-19 on Distributer/ wholesaler (Poultry VC in Indonesia)**

Item	Situation
<b>【Basic Information】</b>	
Total Capitalization	436,400,000 IDR
Products	Live chicken: 33% Whole chicken: 100% Frozen whole chicken: 17% Cuts of raw chicken: 67% Frozen cut of raw chicken: 33% Processed chicken (sausage, ham, etc.): 0%
Main financial institution	• Private Individual/Traders, Government Finance Institution, commercial bank
<b>【Impact of COVID-19】</b>	
Impact on procurement	• Nothing in particular
Impact on sales	• Some farmers, who were rarely given chicks by the integrator, earned money by starting chicken retailing and slaughter. This intensified competition among chicken retailers and fluctuated selling prices at the consumer level.
Increase/decrease of profit	• Decrease in product and service volume due to decreased demand
Shipping of products	• Shipments decreased
Handing and sales volume	• Retail prices plummeted • Shortage of market and buyer shortage
Most impacted period	• March, April, August, November 2020

Source: JICA Survey Team

## 5) Slaughterhouse

Slaughterhouses same as distributer/ wholesaler, were affected by lower shipments due to lower demand, sharp drop in retail prices, and a shortage of buyers. In addition, competition with other companies has intensified. Before the COVID-19 pandemic, the average daily processing amount was 1,922 kg, but after the COVID-19 pandemic, it was 1,144 kg, a decrease of about 40%.

**Table 3.8.7 Impacts of COVID-19 on Slaughterhouse (Poultry VC in Indonesia)**

Item	Situation
<b>【Basic Information】</b>	
Total Capitalization	372,700,000 IDR
Monthly sales	Average 57.6 ton/month
Main financial institution	• Private Individual/Traders, Government Finance Institution, commercial bank, MFIs
<b>【Impact of COVID-19】</b>	
Impact on procurement	• Nothing in particular
Impact on sales	• Some farmers, who were rarely given chicks by the integrator, earned money by starting chicken retailing and slaughter. This intensified competition among chicken retailers and fluctuated selling prices at the consumer level.
Increase/decrease of profit	• Decrease of profit
Shipping of products	• Decrease in product and service volume due to decreased demand and restriction of movement
Handing and sales volume	• Retail prices plummeted • Shortage of market and buyer shortage
Most impacted period	• March, April, May, November 2020

Source: JICA Survey Team

## 6) Retailer

Retailers had impacts of a decrease in the number of customers and the average expense of customers because of the COVID-19. In addition, the trading volume of chicken has dropped from about 3,000 kg to about 1,000 kg, which is one-third the level before COVID-19. In addition, competition among chicken retailers is intensifying.

**Table 3.8.8 Impacts of COVID-19 on Retailer (Poultry VC in Indonesia)**

Item	Situation
<b>【Basic Information】</b>	
Type business	Permanent retail markets: 50%

Item	Situation
	Traditional temporary outlets: 33% Modern outlets like supermarkets: 17%
Total Capitalization	Average 23,333,333 IDR
Main financial institution	• Private Individual/Traders, commercial bank, other
<b>【Impact of COVID-19】</b>	
Impact on procurement	• Nothing in particular
Impact on sales	• Competition among chicken retailers intensified as many of them worked in big cities and were dismissed for COVID-19 and returned to their hometowns to become chicken retailers.
Increase/decrease of profit	• Decrease of profit
Handing and sales volume	• Decrease the average number of customers per day • Decrease the average expense of customers per day
Most impacted period	• March, August, October 2020

Source: JICA Survey Team

## 7) HoReCa

HoReCa was significantly affected by the COVID-19, such as a decrease in profits due to a decrease in the number of customers and the average expense of customers, and a total expenditure due to an increase in operating costs and purchase prices. It has a large impact on restaurants that have not been sold online since COVID-19 and stores with relatively poor location conditions. The amount of chicken used in restaurants has been halved.

**Table 3.8.9 Impacts of COVID-19 on HoReCa (Poultry VC in Indonesia)**

Item	Situation
<b>【Basic Information】</b>	
Type business	Restaurant and catering service
Total Capitalization	Average 60,666,667 IDR
Main financial institution	• Private Individual/Traders, other
<b>【Impact of COVID-19】</b>	
Impact on procurement	• Increase in total cost, operating cost, and purchase price
Impact on sales	• The government's restrictions and "stay home" campaigns have dramatically reduced restaurant customers and significantly reduced demand for native chicken. Many consumers have come to prefer buying food online. • Restaurants that have been selling online for some time increased their sales. On the other hand, restaurants that have just learned to sell online after the COVID-19 pandemic are not making many sales due to the fierce competition for online sales. • Only restaurants with good talent and management quickly adopted the online sales method, which allows them to sell large quantities of goods. Furthermore, a restaurant with a good location that visitors can easily visit can continue its business even amid the COVID-19, compared to a restaurant that is a little difficult for visitors to access.
Increase/decrease of profit	• Decrease in profit
Handing and sales volume	• Decrease in number of customers • Decrease in the average expense of customers per day
Most impacted period	• March, April 2020

Source: JICA Survey Team

## 8) Consumer

The analysis so far has shown that businesses, which are non-consumer stages, have hardly changed operation on their businesses, but consumers have changed their behavior. Lifestyle changes include changes in the work environment, entertainment, and hygiene. While income has decreased, spending can be divided into increased items and decreased items. Communication costs, daily necessities, medicines have increased, and social costs, entertainment costs, and transportation costs have decreased. The COVID-19 points out an increasing inward tendency of behavior.

Consumption behavior decreased, but food purchases were divided into those that decreased and those that increased. The increase was protein sources such as meat, fish, eggs, milk and dairy products, while the decrease was in luxury foods such as ready-to-eat foods, confectionery and sugar. Furthermore, many consumers believe that COVID-19 is transmitted through food, and the pandemic raises awareness of food safety.

**Table 3.8.10 Impacts of COVID-19 on Consumers (Poultry VC in Indonesia)**

Item	Situation
Changes in work style	Yes: 100%
Changes in a working environment	Yes: 100%
Decrease of household income	Yes: 100%
Percentages of reduction of income	0-20%: 67% 61-80%: 33%
Categories which expense was increased	Daily necessities: 25% Telecommunications: 25% Medical: 50%
Categories which expense was decreased	Social expenses: 43% Entertainment: 43% Transportation: 14%
Change of purchasing behavior	Yes: 100%
Change of behavior	Visited fewer brick-and-mortar stores: 67% Increase an opportunity of using online/delivery service: 0% Made fewer purchases overall (online and in-store): 33% Increase an opportunity of using local business: 0% Others: 0%
Increase or decrease the volume of purchasing the food since the COVID-19 pandemic	Increase: 67% Decrease: 33% No change: 0%
Categories of which food are increased	Meat, fish, egg, milk, and dairy products: 100%
Categories of which food are decreased	Instant food, sweets, and sugar: 100%
Fear of contamination of transmitted pathogen such as COVID-19 in foods	Very much fear: 67% Slightly fear: 33% Not fear at all: 0%
Do think COVID-19 can transmit through food items?	Yes: 100%, No: 0%, Don't know: 0%
The level of concern on food safety increased since the onset of the COVID-19 pandemic	Yes: 100% No: 0%
Change the eating habit after the COVID-19 pandemic	Increase an opportunity of cooking at home: 67% Increase an opportunity to buy a prepared meal (eating at home): 0% Increase an opportunity of eating outside: 0% Decrease an opportunity of eating outside: 33% Consider nutrition balance: 0% Consider food safety: 0%
Did you increase the frequency to take specific food after the COVID-19 pandemic?	Yes: 67%, No: 33%
Name of food increased	Supplement, Fruit, Protein, vegetables, meat
Reason why increased	To make a good immunity and good health

Source: JICA Survey Team

### 3.8.4 Impact of COVID-19 Pandemic by Theme

#### 1) Concerns about the impact of COVID-19

Table 3.8.11 shows the levels of concerns about the effects of COVID-19 in each stage regarding the three items of “risk of infection”, “financial impact”, and “psychological effect”. Overall, the score of “financial impact” is high and the decrease in demand for chicken is affecting many stages.

**Table 3.8.11 Concerns about the impact of COVID-19 on Poultry VC in Indonesia**

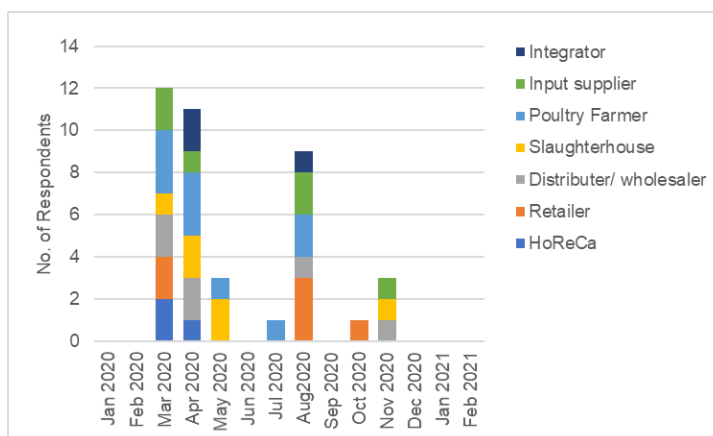
FVC Stakeholder	Risk of Infection	Financial Impact	Phycological Effect
Integrator	2.00	3.00	2.00
Input supplier	2.50	2.83	2.67
Poultry Farmer	2.80	3.00	2.78
Slaughterhouse	2.00	3.00	2.00
Distributor/ wholesaler	2.67	2.67	2.67
Retailer	2.33	3.00	2.67
Consumer	2.67	3.00	2.67
HoReCa	2.67	2.67	2.33
<b>Total</b>	<b>2.45</b>	<b>2.90</b>	<b>2.47</b>

Remarks : 1.Very much concerned, 2. Slightly Concerned, 3.Not concerned at all (1~3 : the higher, the more concern)

Source: JICA Survey Team

## 2) Impacted Period

The JICA survey team also interviewed each respondent about the period between January 2020 and February 2021 that had the greatest impact on business activities. The results are shown in the figure on the right. Many responses were concentrated from March to August 2020. The first infected person was confirmed in Indonesia in early March, and various measures against the COVID-19 including the large-scale social restriction (Pembatasan Sosial Berskala Besar) were implemented thereafter. March to April 2020 was the time when strict movement and business restrictions were taken nationwide, and this seemed to have a lot of impact on the agricultural sector.



**Figure 3.8.6 The Most Impacted Business Period by COVID-19**  
Source: JICA Survey Team

## 3) Labor and Food Safety

In this survey, the JICA survey team interviewed each respondent regarding occupational health and food safety. Literature reviews have shown that foreign workers living in unsanitary dormitories, where social distance is nearly impossible, are at high risk of infection. Therefore, the team asked whether the respondent employs workers who could not commute to work or not. But in this survey, nobody answered that she/he employs such workers at any stages.

In addition, when asking for measures to prevent the spread of infection in the production and processing stage, most of the respondents encourages their employee to wash their hand and wear masks. On the other hand, three out of 6 slaughterhouses and 4 out of 10 poultry farmers have not taken any preventive measures.

Besides, integrators' slaughterhouses, poultry farmers, and slaughterhouses have introduced GAP and HACCP related to occupational health and food safety. Ninety percent of the poultry farmers interviewed have introduced GAP. In addition, one out of six slaughterhouses, three out of six distributors/ wholesalers, and one out of six retailers answered that food safety and traceability are required by customers amid the COVID-19.

## 4) Impacts by Indicator and Stage

In terms of management and business, all questions are categorized into 12 indicators as shown in Table 3.8.12. The significance of impacts was converted into numerical values regardless of negative or positive impacts.

- ✓ Looking at the impact by stage, the impact on slaughterhouses, distributors/ wholesalers and HoReCa in the downstream stage is large. It is presumed that the cause was a sharp drop in demand from events such as the closure of hotels and restaurants and weddings where the masses gathered. The impact on retailers is limited, and consumers' daily demand for chicken is not likely to diminish.
- ✓ Looking at the degree of influence by index, there is a strong influence on "products-handling volume" and "money-profitability/price". Social isolation policies across the FVC make it difficult to access products. Access to products refers to access to input materials for each stage

and access to customers. Difficulty in accessing customers includes a decrease in customers due to a decrease in demand and physical difficulty in access due to movement restrictions. The market shrank due to the impact of the COVID-19 from the upstream and downstream of FVC, such as the reduction of production, processing and distribution volume due to inaccessibility to the market and customers, or the decrease in production volume as a result of lack of access to the input.

- ✓ Poultry VCs are more affected by long-term COVID-19, such as a decrease in customers, than by short-term COVID-19, such as difficulty in accessing input materials. The damage seems to be very serious.

**Table 3.8.12 Impacts of the COVID-19 on Poultry VC in Indonesia by Indicator**

Target	Indicator	Integrator	Input supplier	Poultry Farmer	Slaughterhouse	Distributor/wholesaler	Retailer	HoReCa	Total
Products	Handling volume	0.69	0.50	0.85	0.86	1.08	0.00	0.00	3.98
	Accessibility	0.48	0.00	0.13	1.00	1.00	0.00	#N/A	2.61
	Transportation measure	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Money	Profitability	1.00	2.00	1.00	1.00	2.00	0.92	1.67	9.58
	Cost	0.15	0.00	0.00	0.11	0.08	0.00	1.33	1.68
	Price	0.59	0.00	0.00	0.00	1.33	0.58	2.00	4.51
	Finance and capital	0.00	0.11	0.00	0.17	0.33	0.19	0.22	1.02
Labor	Labor	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.67
Information		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Management /Inventory		0.18	0.33	0.00	0.00	0.00	0.21	0.89	1.61
Customer/Buyer		0.00	0.00	0.00	0.00	0.00	0.17	#N/A	0.17
Competition		#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0.00
	Total	3.09	2.94	1.98	3.14	5.83	2.07	6.78	

Source: JICA Survey Team

Remarks : Depending on the impact significance, the answers are categorized into three stages and the scores are divided by the number of effective responses. The more score they present, the more significant their impacts are.

### 3.8.5 Conclusion of the Impacts and Countermeasures Proposed

The situation caused by the COVID-19 pandemic is summarized as follows, and the countermeasures for strengthening poultry VC are shown in the lower part of the following table. Notable impacts of the COVID-19 on poultry VC are, 1) the shrinking chicken market due to reduced demand in the wedding and tourism industries, affecting all stages from input to retail, 2) the government's restrictions on movement and the conventional restrictions on feed ingredients and day-old chicks have hindered the supply of input materials in the COVID-19 pandemic.

In addition, the JICA survey team interviewed the changes in the management of each stage concerned before and after the COVID-19 pandemic. The survey revealed that while each stage has hardly changed their business operation, they are often reducing the number of products (chicken and chicken meat) handled. In addition, transaction prices have fluctuated significantly due to market instability caused by the COVID-19.

The team interviewed about the changes in problems and challenges on the management in each stage concerned before and after the COVID-19 epidemic. To summarize the problems and the challenges pointed out at each stage, "insufficient support from the government", "insufficient access to foreign markets", "price competition with other companies", "insufficiency of refrigerating/freezing facilities" has been pointed out before the COVID-19 epidemic.

On the other hand, "shortage of markets and buyers", "fluctuations in market prices", "high/low wholesale prices of goods" and "seasonality of buyers" have become apparent in the COVID-19 pandemic due to the movement restrictions of people and products. They are related to marketing and



distribution in each stage and gaps between the stages. These tendencies were more pronounced in the distribution stages than in the upstream stages, with no significant issues or impact of the COVID-19 from poultry farmers.

The decline in demand from events and tourism may be prolonged, as there is currently no prospect of an end to the COVID-19 pandemic. Therefore, as a countermeasure to respond to the decrease in demand, the JICA survey team proposes development of new processed chicken foods in collaboration with private food companies. For example, in Japan, salad chicken was developed by Amatake Co., Ltd. in Iwate Prefecture in 2001, and has gained popularity as a healthy food with low calories and high protein. Now it can be purchased at convenience stores and supermarkets, everywhere in Japan, and it has become generally accepted as a Japanese food culture. In addition, some products can be stored for a long time at room temperature, making it possible to respond to fluctuations in demand for the poultry VC. It is necessary to discover new consumer needs and respond to the decline in demand by developing new chicken products.

Furthermore, to develop the export market, the public and private sectors should work together to strengthen overseas sales capabilities and promote efforts toward deregulation and abolition of export destination countries. For example, for chicken exports, it is important to expand GAP and HACCP certifications and halal certifications targeting Muslims living abroad.

In addition, many of the input materials are regulated by the Indonesian government, and it is necessary for the government to properly grasp the demand. For example, promotion of research and development of Artificial Intelligence (AI) utilization can be one option for forecasting demand for input materials (e.g., feed and day-old chicks). This includes data collection and maintenance, learning by AI, and information sharing among the VC stakeholders.

**Table 3.8.13 Challenges before/after the COVID-19 and Expected Measures on Poultry VC**

Input supply	Production	Processing	Distribution	Retail	Consumption
<b>Challenges</b>					
-Expensive feed ingredients -Private companies cannot freely import day-old chicks -Input supply was interrupted (day old chicks) -Soaring product prices -Decrease in demand for input supply -Shortage of markets and buyers -Competition with other companies -Lack of refrigeration / freezing facilities	-Independent poultry farmers are difficult to run the business -Intensifying competition for broiler production -Production decreased -Decrease in production /decrease in profit due to decrease in demand	-Turmoil of distribution -Insufficient government support -Insufficient access to foreign markets -Competition with other companies -Decreased profit -Reduced handling volume due to movement restrictions and reduced demand -Decrease in traders and customers	-Insufficient access to foreign markets -Price competition -Reduced handling volume due to movement restrictions and reduced demand -Reduction of the product price	-Chicken production price is high, and exports are not progressing -Not hygienic/quality concerns -Oversupply of broilers -Buyer's seasonality -Decrease in the average number of customers and the average expense of the customer - Increased expenditure and operating costs -Deterioration of business conditions -Business suspension and shortening of business hours	-Broiler price is high -People think chicken is inferior to beef -Strengthening inward tendency of behavior -Increased awareness of food safety
Cross-cutting issues and impacts between the stages -Avian flu -Price depends on government regulations on input supply such as feed and day-old chicks					
<b>Countermeasures</b>					
-Optimization of demand forecast for feed and	-Strengthened Government-led beef cattle	-Development of export market by further introducing GAP and HACCP and strengthening certification system		-Improvement of traditional market hygiene	-Understanding consumer needs after the

day-old chicks by AI -Stabilization of maize production and price	production (chicken production is saturated)	(including halal certification) -Development of export market by the government (holding of online forums for domestic and foreign importers and exporters) -Search and development of new processed meat products, stimulating demand (salad chicken, chicken ham, etc.) with private sectors	-Strengthen native chicken production for local consumers -Support for events such as weddings and tourism (after the COVID-19) -Enhancement of take-out and delivery services at hotels and restaurants	COVID-19
Cross-cutting issues and impacts between the stages -Reconstruction insurance against Avian influenza -Disease control -Development of data linkage platform				

Source : JICA Survey Team based on literature review and survey results

### 3.9 COVID-19 Impact Survey on Pig (Viet Nam)

#### 3.9.1 Outline of Pig VCs in Viet Nam

This section explains an overview of Vietnam's pig value chain (VC), challenges on pig VCs before the COVID-19, and the impact of the COVID-19 on pig VCs.

##### 1) Pig Sector in Viet Nam

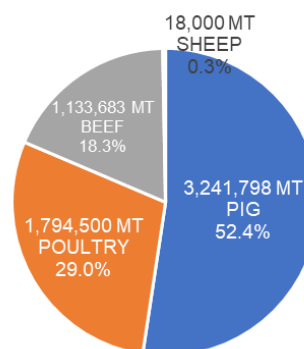
Increasing population and income and urbanization in Southeast Asia will raise meat consumption and continue to contribute to the development of the livestock sector, especially chicken and pork production. USDA<sup>1</sup> predicts that all the Southeast Asian countries will increase their consumption and production of pork and chicken over the next decade.

Southeast Asian countries have different meat preferences, as reflected in the level of consumption and production. Beef and dairy products are generally very low in Southeast Asia. On the other hand, some countries like Indonesia, Malaysia and Thailand prefer chicken, while Vietnam and the Philippines like pork.

In recent years, the Vietnamese government has focused on improving the competitiveness of the agricultural sector in both export-oriented products (rice, coffee, fish, etc.) and the domestic market (meat, etc.). Intensifying competition for agricultural products in both the global and domestic markets, outbreaks of illness, rising input prices, and food safety and quality issues are barriers to the development of Vietnam's food and agricultural sectors.

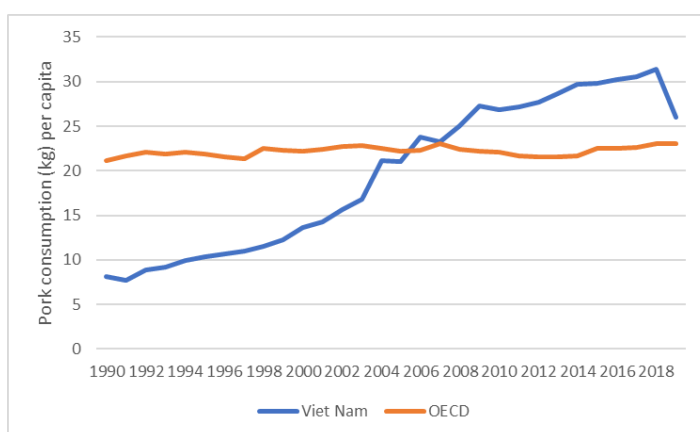
Especially in the livestock sector, Vietnam is the second-largest pork producer and consumer in Asia after China, and the sixth-largest pork producer in the world. According to USDA, Vietnam's pork production is growing fastest compared to other regions, and Vietnam will continue to be the largest pork producer in Southeast Asia for the next decade and is projected to reach 3.3 million tons by 2028.

Pork is the most popular meat in Vietnam, accounting for 52.4% of the meat supply (Figure 3.9.1). Per capita pork consumption increased from 8.15kg/person in 1990 to 31.4kg/person in 2018 (Figure 3.9.2). In 2019, annual pork consumption fell to 26.0kg/person because of African swine fever. During the same period, the number of pigs raised increased from 12.26 million in 1990 to 28.15 million in 2018 and 19.61 million in 2019 (FAOSTAT 2020).



**Figure 3.9.1 Meat consumption in Viet Nam**

Source: OECD Data  
Remarks: MT shows "tons"



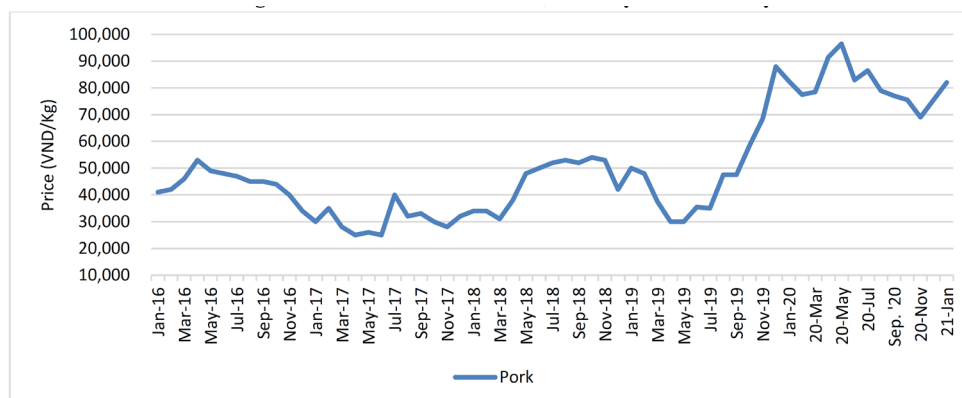
**Figure 3.9.2 Pork Consumption per capita in Viet Nam and OECD**

Source: OECD Data

1 USDA "Southeast Asia's Growing Meat Demand and Its Implications for Feedstuffs Imports, April 1, 2019, <<https://www.ers.usda.gov/amber-waves/2019/april/southeast-asia-s-growing-meat-demand-and-its-implications-for-feedstuffs-imports/>>

The average pork production from 2010 to 2019 was 3.39 million tons, and the export volume was 13,000 tons, which is less than 1% of the production. Imports in 2019 were small (6,000 tons) and there were few pig transactions. Imports of pork and pigs surged in 2020, because of African swine fever, which is described in more detail later. From the above, Vietnam's pig FVC is for the domestic market, and basically domestic pig production covers domestic demand.

Figure 3.9.3 shows changes in the retail price of pork in Vietnam. Due to the influence of AFS, the retail price of pork in May 2020 tripled compared to May 2017. According to the GSO (General Statistics Office), the rise in pork prices due to the prolonged African swine fever had a profound effect on Vietnam's inflation. Since then, the supply of pork has stabilized and the price of pork in the market has been declining gradually<sup>2</sup>.



**Figure 3.9.3 Retail Price of Pork in Viet Nam (VND/kg)**

Source: USDA

According to the 2011 census<sup>3</sup> conducted by GSO, as of July 1, 2011, there were more than 4.13 million pig farm households nationwide. More than 80% of pig-rearing households are concentrated in the three regions of northern and central Vietnam, of which NCCCA (North Central and Central Coastal Areas) is 30%, NMMA (Northern Midlands and Mountainous Areas) is 29.1%, and RRD (Red River Delta) was 21.1%. The number of pig farms in the 2006 census was 6.33 million<sup>4</sup>, while the number of pig farms decreased by 2.2 million (about 35%) in the 2011 census.

The number of pig farmers is declining, mainly in small households with less than 10 pigs. There are 3.6 million pig farm households with less than 10 pigs, accounting for 87% of the total, a decrease of 2.2 million from 2006. The number of households raising 10 to 49 pigs increased by 3.4%, and the number of households raising 50 or more pigs was 32,000, an increase of nearly 80% compared to 2006. The pig farming industry seems to be gradually shifting to a large scale.

## 2) Main Stakeholders on the Pig VC in Viet Nam

The following are the stakeholders involved in the Vietnamese pig FVC compiled by Man Nguyen Thi Thuy et al. (2020)<sup>5</sup>.

**Input suppliers:** Input suppliers include feed suppliers, piglet suppliers, and veterinary medicine input suppliers. Feed suppliers are small private shops in villages/communes, agent shops of feed, or feed producers who sell directly to farmers. Piglet suppliers are piglet traders or piglet producers, and veterinary medicine input suppliers range from small village/commune stores to large town/city stores,

<sup>2</sup> GSO, "LIVESTOCK OF PIG HAS RECOVERED", April 8, 2021, <https://www.gso.gov.vn/en/data-and-statistics/2021/04/livestock-of-pig-has-recovered/>

<sup>3</sup> GSO, "Results of the 2011 Rural, Agricultural and Fishery Census", 2012

<sup>4</sup> GSO, "Results of the 2006 Rural, Agricultural and Fishery Census", 2008

<sup>5</sup> Man Nguyen Thi Thuy et al., "Mapping the pork value chain in Vietnam: a systematic review", 2020

as well as trading companies and producers.

**Pig Farmers:** Vietnam's pig production ranges from small farms to semi-commercial and commercial farms. It is estimated that at least 80% of total pork production is supplied by small pig farmers<sup>6</sup>.

Many farmers buy piglets from other farmers or raise their own sows to raise piglets. Smallholders typically feed their pigs with commercial feed, crop residues, food residues from grocery stores and restaurants, and their own feed. In addition, pig farmers purchase vaccines and antibiotics and receive technical advice from experts at veterinary service companies.

**Distributers:** Distributers include brokers and traders. Brokers collect pigs from various farms and sell them to slaughterhouses. Brokers and traders play a major role in setting pig prices and distributing pigs to neighboring districts and provinces for slaughter and distribution, resulting in the expansion of the supply chain. Transactions between brokers, pig producers, traders and slaughterhouses are usually done by cash transfers, most of which are based on verbal agreements.

**Slaughterhouses:** Vietnam's slaughterhouses are divided into three types: small-scale slaughterhouses, multi-compartment slaughterhouses, and semi-commercial slaughterhouses. Small-scale slaughterhouses are family-owned and buy and slaughter pigs. Such slaughterers sell pork and offal directly to consumers and retailers. A multi-compartment slaughterhouse purchases pigs from brokers or semi-commercial farms and sells them to pork traders, retailers, processors, etc. The semi-commercial slaughterhouse is run by a large company and sells pork and offal to pork traders, convenience stores, supermarkets, processing plants and exporters.

**Distributors and retailers:** Retailers and distributors buy carcasses from slaughterhouses and divide them into cut meats. Pig distributors operate in a large geographical area, forming a link between slaughterhouses and retailers. Retailers buy pork and sell carcasses through slaughterhouses and pork dealers. There are distributors that transport live pigs to slaughterhouses, those that transport carcasses to retailers, and those that do both.

**Consumers:** Consumers often buy pork and offal from familiar retailers because they consider such retailers' products are safe and affordable. Vietnamese consume most of the pig, including meat, legs, ears, and head, brain and offal. Consumer demand increases around January and February each year in preparation for the Chinese New Year. Most consumers buy pork for self-consumption at permanent retailers and traditional temporary retailers, rather than at modern retailers such as supermarkets.

### 3) Impact of African Swine Fever in Pig VC in Viet Nam

In addition to the spread of the COVID-19, African swine fever (ASF) has a significant impact on pig VC in Asian countries. This survey also identifies the effects of the COVID-19 on pig VC, considering the effects of ASF.

ASF is a highly lethal infectious disease characterized by fever and systemic hemorrhagic lesions caused by infection of pigs and wild boars with the ASF virus. In domestic pigs, ASF is transmitted primarily by direct contact with infected pigs or by ingestion of contaminating substances, including viruses such as infected pork, leftovers, manure, and carcasses. In addition, it is transmitted by indirect contact through farm and veterinary equipment, pig transport vehicles, tools, shoes, and other contaminated mediators. ASF does not infect humans and other livestock species.

The first ASF was reported in Asia on August 3, 2018 in the People's Republic of China<sup>7</sup>. Since then, ASF has occurred in Myanmar, Laos, Cambodia, Viet Nam, Malaysia, Indonesia, East Timor, and the

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<sup>6</sup> ILRI, "Smallholder pig value chain development in Vietnam: Situation analysis and trends", 2014

<sup>7</sup> FAO, Report on African Swine Fever (ASF) in Asia and the Pacific, February 2020

## Philippines in Southeast Asia.

ASF was first detected in Vietnam in early 2019 and spread to all the sixty-three provinces throughout the year. By December 2019, more than 5.9 million pigs had been disposed of, accounting for about 23 percent of raised pigs<sup>8</sup>. In 2020, a total of 1,008 ASF outbreaks were reported by the Ministry of Agriculture and Rural Development (MARD) from January 1st to August 31st. Small-scale outbreaks continue in 44 cities and provinces, killing 43,150 pigs and culling since January. It corresponds to a total weight of about 2,157 tons. In 2020, ASF outbreaks occurred primarily in the northern mountainous regions and were limited to family-owned agricultural activities for which adequate breeding conditions and biosecurity measures could not be taken.

The outbreak of ASF had a major impact on Vietnam's livestock sector, leading to a decline in pig numbers and an unprecedented pig price crisis. The Vietnamese government is promoting pork imports and helping rebuild the pig farming industry to address domestic pork supply and price issues. On July 7, 2020, Vietnam launched the National Plan 2020-2025 on ASF Prevention and Management. The plan sets the goal of eliminating ASF in more than 90% of commune and wards by 2022 and eradicating ASF by 2025.

**Table 3.9.1 Impact of African Swine Fever in Pig VC in Viet Nam**

Input Supply	Production	Distribution	Processing	Retail	Consumption
-	-Production decreased due to pig death and culling -Decrease in small-scale pig farms	-Decrease in pig supply -Reduction of tariffs on imported pigs	- Decrease in pig supply	-Soaring pork prices -Increase in imported pigs -Implementation of a sales promotion campaign for imported pork	-Reduced pig consumption and increased intake of other animal proteins due to fear of ASF -Changes in preference of fresh pork slaughtered at the market to imported meat
Cross-cutting issues and impacts between the stages of the FVC -Change of pig FVC in the post ASF -Increase in imported meat					

Source: USDA

In 2021, the world's first vaccine against ASF was developed in Vietnam. Given the time for the spread of vaccines and the lack of treatment at this moment, stakeholders should prevent ASF virus invasion through improved border control, better awareness creation and improved biosecurity. Some countries suppressed the occurrence of ASF by selection and disposal of infected or contacted pigs, prohibition, or restriction of movement of live pigs and pig products, cleaning of infected farms and equipment, and disinfecting of vehicles entering and exiting the affected areas.

### 3.9.2 Outline of the Impact Survey on Pig VCs

From May 3 to 12, 2021, the JICA survey team conducted a pig VC survey and interviewed 47 stakeholders in 8 stages in Vinh City, Thanh Chuong District, Hung Nguyen District, Do Luong District, Quynh Luu District, Thanh Chuong District in Nghe An Province (Figure 3.9.4).



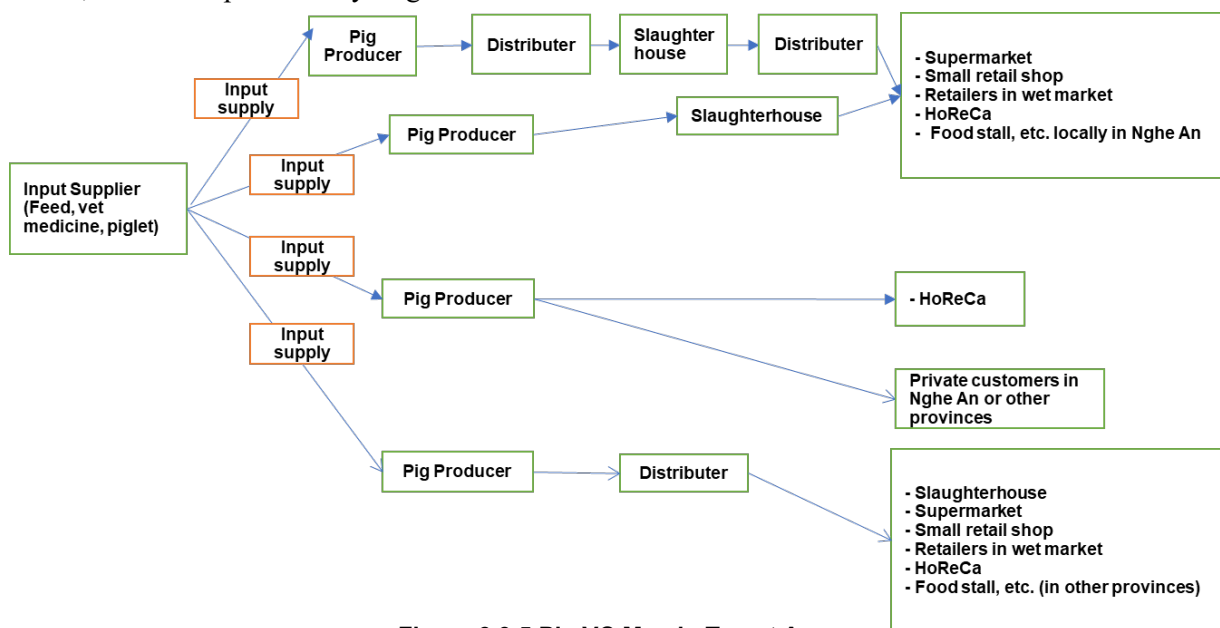
**Figure 3.9.4 Target Area of Pig VC survey in Viet Nam**

Source: JICA Survey Team

<sup>8</sup> Viet Nam News, "Animal feed prices rise sharply, farmers hit hard", March 18, 2021, <<https://vietnamnews.vn/economy/906178/animal-feed-prices-rise-sharply-farmers-hit-hard.html>>

According to the 2011 census conducted by the GSO (General Statistics Office), the number of pig farms nationwide was 4.13 million, of which the North Central and Central coastal areas were the largest at 1.23 million. Nghe An Province has 260,000 households in the region, the second largest number of pig farmers after Thanh Hoa Province. In addition, Nghe An Province has the second largest number of pig farmers in the country. Therefore, the province is appropriate for the pig VC survey.

Interviewers employed by the JICA survey team surveyed by using a questionnaire. The questionnaire was prepared based on the results of the literature review, and they interviewed the stakeholders about impacts of the COVID-19 and ASF on the pig VC in the target area. The pig VC is shown in the figure below, and the respondents by stage on the VC are shown in the table below.



**Figure 3.9.5 Pig VC Map in Target Area**

Source: JICA Survey Team

**Table 3.9.2 Number of Respondents in the Pig VC survey in Nghe An Province, Viet Nam**

Input Supplier	Pig Farmer	Distributer	Slaughterhouse	Retailer	Supermarket	Consumer	HoReCa	Total
5	10	5	5	5	2	5	10	47

Source: JICA Survey Team

### 3.9.3 Impact of COVID-19 Pandemic by Stage of Pig VCs

A questionnaire was prepared for each VC stage to investigate the impacts of the COVID-19 pandemic. Table 3.9.3 summarizes the key challenges in each stage and the impact of the COVID-19 pandemic. Notable impacts of the COVID-19 on pig VC are 1) decrease in demand for pork at HoReCa, and 2) soaring prices of livestock feed, mainly imported one. In addition to COVID-19, ASF is affecting consumer sentiment, spurring a decline in pork demand.

**Table 3.9.3 Conventional Challenges and the Impact of the COVID-19 Pandemic on Pig VC in Viet Nam**

FVC Stage	Input Supply	Production	Distribution
Main stakeholder	Input supplier	Pig farmer	Distribution
Challenges before COVID-19	<ul style="list-style-type: none"> <li>-High dependence on imported feed ingredients</li> <li>-Feed prices are higher than in other countries</li> <li>-Lack of premix manufacturing technology of Vietnamese companies</li> <li>-Small farmers do not have</li> </ul>	<ul style="list-style-type: none"> <li>-Farmers do not record pig information</li> <li>-Improper treatment of pig manure</li> <li>-Outbreak of diseases such as FMD (Foot and mouth disease), PRRS (porcine reproductive and respiratory syndrome), ASF</li> </ul>	<ul style="list-style-type: none"> <li>-Collecting unrecorded pigs from various farmers makes tracking impossible.</li> <li>-Stock transaction causes a risk of disease outbreak.</li> </ul>

FVC Stage	Input Supply	Production	Distribution
	<ul style="list-style-type: none"> <li>access to loans</li> <li>-The number of native pig varieties has decreased sharply</li> </ul>	<ul style="list-style-type: none"> <li>-Meat quality is unknown due to lack of traceability</li> <li>-Although MARD discloses the market price, it is sometimes worthless due to the difference between farm gate prices. There is no choice of sales destination</li> </ul>	
Cross-cutting issues	<ul style="list-style-type: none"> <li>-Traceability of pork and pork products has become a major issue due to many pork sources and complex value chains without proper records of pork sources</li> <li>-Connections between stakeholders are not documented and there is little or no official contract between traditional stakeholders.</li> <li>-Transactions with producers, brokers, traders, and slaughterhouses are mostly based on verbal agreements.</li> <li>-The safety of pork has become a major concern due to the outbreak of food poisoning.</li> <li>-Pig transport has the potential to spread animal diseases such as African swine fever and foot-and-mouth disease, with significant economic implications.</li> </ul>		
Impact of COVID-19	<ul style="list-style-type: none"> <li>-Costs of trading materials such as feed, veterinary medicine products, parent pigs, and export raw materials soared</li> <li>-Access to feed producers, veterinary medicine products companies, and piglet producers become difficult</li> </ul>	<ul style="list-style-type: none"> <li>-Soaring input materials</li> <li>-Soaring production/operation costs</li> <li>-Shortage of markets/buyers</li> <li>-Food safety and traceability are now required</li> </ul>	<ul style="list-style-type: none"> <li>-Decrease in product/service profit</li> <li>-Shortage of markets/buyers</li> <li>-Food safety and traceability are now required</li> </ul>
Cross-cutting issues			
Remarks	<p>Stakeholders in every stage have strong concerns about ASF. Depending on the stakeholder, the influence of ASF is greater than that of the COVID-19 and has been prolonged. The impact of ASF is as follows.</p> <ul style="list-style-type: none"> <li>-Decrease in transaction volume due to decrease in demand</li> <li>-Lack of market/customer</li> <li>-Decrease in product/service profit</li> <li>-Costs of trading materials such as feed, veterinary medicine products, parent pigs, and export raw materials soared</li> </ul>		

FVC Stage	Processing	Retail	Consumption
Main stakeholder	Slaughterhouse	Retail Supermarket HoReCa	Consumer
Challenges before COVID-19	<ul style="list-style-type: none"> <li>-Pigs are slaughtered on poorly sanitized concrete floors at a small slaughterhouse</li> </ul>	<ul style="list-style-type: none"> <li>-Selling carcasses without record</li> <li>-Transport by motorcycle without packing carcasses</li> <li>-Pork is placed on a wooden table, which leads to bacterial contamination</li> <li>-The government is promoting the purchase of pigs directly from farmers (contracts) by large-scale companies, but this has not progressed due to the high cost</li> </ul>	<ul style="list-style-type: none"> <li>-There is a habit of eating raw pork and poorly cooked pork, and there is a high risk of food poisoning.</li> <li>-Low awareness of food safety</li> </ul>
Cross-cutting issues			
Impact of COVID-19	<ul style="list-style-type: none"> <li>-Decrease in product/service profit</li> <li>-Decreased price of products (carcass and pork)</li> <li>-Shortage of markets/buyers</li> <li>-Average production sales halved from 12 tons/month to 7 tons/month</li> <li>-Food safety and traceability are now required.</li> </ul>	<ul style="list-style-type: none"> <li>-Decrease in the average number of customers per day</li> <li>-Soaring purchase price of products</li> <li>-Increased communication with customers through contactless communication</li> <li>-Increased competition with others (HoReCa)</li> <li>-Decrease in the service profit</li> <li>-Daily average number of customers decreased</li> <li>-Decrease in the average expense of customers per day</li> <li>-Pork consumption (kg/month) has been halved, or orders have</li> </ul>	<ul style="list-style-type: none"> <li>-Reduced number of visits to brick-and-mortar shops, increased online usage, reduced frequency of shopping</li> <li>-Decrease in household income</li> <li>-Since the COVID-19 pandemic, the level of concern about food safety has increased</li> </ul>



FVC Stage	Processing	Retail	Consumption
		been stopped. -Food safety and traceability are now required	
Cross-cutting issues			
Remarks	-Decrease of production -Decrease of profit -Soaring production/ operation costs -Price reduction of products (carcass and pork) -Shortage of markets/buyers		

Source: JICA Survey Team based on literature review and survey results

## 1) Input Supplier

Soaring costs of trading materials such as feed, veterinary medicine products, parent pigs and export raw materials have a significant impact on input suppliers. As of March 2021, livestock feed prices in Vietnam have risen 15-30% in the last five months since October 2020, and livestock farmers are facing significant losses. The soaring price of livestock feed is attributed to the rise in import prices of livestock feed raw materials such as soybeans and maize overseas due to the shortage of empty containers as the influence of the COVID-19, and China strengthening grain procurement<sup>9</sup>. The impact in Vietnam, which is highly dependent on imported feed, is very serious. According to USDA<sup>10</sup>, about 65-70 percent of Vietnam's feed or feed ingredients are imported.

Regarding the Input Supplier in Viet Nam's pig VC, the second follow-up survey (fixed-point observation) was conducted from October 11 to 22, 2021 because the impact of the input supplier was particularly large in the first FVC survey. Besides, the third follow-up survey was conducted from January 6 to 21, 2022. In Viet Nam, the impact of the 4th wave, which started around July 2021, was very large, and the input supplier was more affected by COVID-19 at the time of the follow-up survey than at the time of the first FVC survey. The main problems were soaring feed prices, refraining from buying input materials by farmers due to falling pork prices, and difficulty in transportation due to government regulations.

Changes from the 2nd survey to the 3rd survey are following. It was also found that the influence of COVID-19 was the largest at the time of the second survey.

- ✓ Prices of inputs have not changed. Prices of feed and veterinary medicine products have remained high,
- ✓ The government has relaxed regulations to the COVID-19 prevention and therefore input supply has become easier to access. Transportation and trading have returned to normal,
- ✓ Pig prices are sluggish, and sales are declining as farmers are reducing their numbers and investment in pigs,
- ✓ As the sales decline, the profits are declining,
- ✓ Working hours and wages are decreasing due to the decrease in sales volume,
- ✓ There is no change in business operations,
- ✓ Input demand is decreasing.

<sup>9</sup> Viet Nam News, "Animal feed prices rise sharply, farmers hit hard", March 18, 2021, <<https://vietnamnews.vn/economy/906178/animal-feed-prices-rise-sharply-farmers-hit-hard.html>>

<sup>10</sup> USDA, "Grain and Feed Annual 2019", August 2019

**Table 3.9.4 Impacts of COVID-19 on Input Supplier (Pig VC in Viet Nam)**

Item	Situation
<b>【Basic Information】</b>	
Main financial institution	• MFIs: 20%, Other: 80%
Total capitalization	• 475,000,000 VND
Products	• Livestock feed, veterinary medicine products
<b>【Impact of COVID-19】</b>	
Impact on procurement	<ul style="list-style-type: none"> <li>• Soaring costs of trading materials such as feed, veterinary medicine products, parent pigs, and export raw materials</li> <li>• Difficulties in access to feed producers, veterinary medicine products and breeding producers</li> <li>• In the follow-up survey, 80% of respondents pointed out the soaring prices of materials since the first FVC survey. Soaring prices for livestock medicines are rising moderately, while feed prices are skyrocketing.</li> </ul>
Impact on sales	<ul style="list-style-type: none"> <li>• Pig farmers often receive materials in advance, sell the pigs, and then pay. Recently, due to the influence of COVID-19, the price of livestock feed has risen and the profit has decreased, and some contracts have been negative.</li> <li>• In the follow-up survey, all respondents pointed out a decrease in sales volume since the first FVC survey. In particular, the rate of decrease after July 2021 is large. Since the first FVC survey, farmers have reduced their input to pigs (especially medicines and vitamins) as pork prices have fallen.</li> </ul>
Increase/decrease of profit	<ul style="list-style-type: none"> <li>• Profit is declining because of both COVID-19 and AFS</li> <li>• In the follow-up survey, all respondents pointed out a decrease in profits since the first FVC survey. This is mainly due to the refraining from buying by farmers due to the fall in pork prices and the soaring feed purchase prices.</li> </ul>
Handing and sales volume	<ul style="list-style-type: none"> <li>• There is a decrease in transaction volume due to a decrease in demand rather than a movement restriction (effect of COVID-19 and ASF)</li> <li>• In the follow-up survey, all respondents pointed out that the sales volume and amount have decreased since the first FVC survey. Both sales volume and revenue are declining. In particular, the impact after July 2021 is remarkable.</li> </ul>
Operation management/ employment	<ul style="list-style-type: none"> <li>• No major changes in employment or management</li> <li>• In a follow-up survey, 60% of respondents pointed out that management was more difficult than in the first FVC survey. Respondents said that employees did not enter Vinh and come to work and hired more deliverers</li> <li>• In a follow-up survey, 80% of respondents noted that delivery was more difficult than during the first FVC survey. PCR negative certification within 72 hours and government regulations such as stay home and social distance were required.</li> </ul>
Most impacted period	<ul style="list-style-type: none"> <li>• Around April 2020, after January 2021</li> <li>• According to the follow-up survey, the impact from August to October 2021 was the largest.</li> </ul>
Other	<ul style="list-style-type: none"> <li>• Not only COVID-19 but also ASF has a big influence</li> <li>• Follow-up surveys pointed out that farmers did not pay for materials and paid late.</li> </ul>

Source: JICA Survey Team

## 2) Pig Farmer

The impact of COVID-19 was significant on pig farmers who procured commercial feed from material suppliers instead of self-mixed feed. On the other hand, the effects of COVID-19 were limited on local farmers who raised local pigs using self-mixed feed (see table below).

The second follow-up survey (fixed-point observation) was conducted from October 11 to 22, 2021 for pig farms in Viet Nam. Besides, the third follow-up survey was conducted from January 6 to 21, 2022. Like input suppliers, pig farmers were affected by COVID-19 around August to October 2021. The correlation with the effects of COVID-19 is unclear, but pork prices were particularly declining. According to GSO<sup>11</sup>, the suppression of ASF restored the supply of live pigs and the competition with imported pigs was observed. Most farmers were affected by COVID-19, but the operation of pig farming was not changed.

The changes from the 2nd survey to the 3rd survey are as follows. It was also found that the influence of COVID-19 was the largest at the time of the second survey.

<sup>11</sup> GSO, "Prices of pork fell, price of animal feed increased, farmers are at risk of loss", August 5, 2021  
<https://www.gso.gov.vn/en/data-and-statistics/2021/08/prices-of-pork-fell-price-of-animal-feed-increased-farmer-are-at-risk-of-loss/>

- ✓ There is no change in the price of input materials compared to the time of the 2nd survey. On the other hand, some respondents pointed out that piglet prices and transportation costs have fallen,
- ✓ There is no problem with procurement because farmers procure inputs from local companies and make their own feed,
- ✓ From the time of the 2nd survey, pig prices have risen (some respondents pointed out that the price rose by about 20%), but the price is still low compared to before the COVID-19,
- ✓ Regarding the number of pigs raised and sold, five respondents increased from the time of the second survey, three respondents decreased, and two respondents did not change,
- ✓ there was no change in operations,
- ✓ transportation returned to normal.

At the time of the 3rd survey, it was found that pig prices and trading volume were generally recovering, but the team recognized changes in farmers' action like 1) farmers continue to reduce the input and breeding of pigs due to the unstable market, 2) Considering that pig production is high risk due to COVID-19 and African swine fever, farmers continue to reduce the input to pigs and the number of pigs raised, 3) farmers increase the number of pigs raised because the market has recovered. This survey highlights changes in operations depending on how each farmer views the markets.

**Table 3.9.5 Impacts of COVID-19 on Pig farmer (Pig VC in Viet Nam)**

Item	Situation
<b>【Basic Information】</b>	
Main financial institution	Rural Bank: 30%, MFIs: 10%, Other: 60%
No. of pigs	• On average 115
<b>【Impact of COVID-19】</b>	
Impact on procurement	<ul style="list-style-type: none"> <li>• Soaring input material</li> <li>• <b>For local pigs:</b> Animal feed without growth stimulants, long growing time (6-12 months compared to only 3-4 months for super lean pigs), raising areas are often far from residential areas. Pigs are usually local breeds, at the time of harvest, pigs' weight is 25-30 kg. The cost of feed is not high, consumed by regular customers, so the impact of COVID-19 on this pig farmer is not large. However, African swine fever caused some pigs to die up to 1/3 of the herd.</li> <li>• <b>For pigs raised with industrial feed:</b> COVID-19 affects animal feed, so households with pigs harvested at a time of falling prices are heavily affected, African swine fever has a great impact on the prices of breeding pigs (price ranges from 1.2 million VND to 3.5 million VND).</li> <li>• In the follow-up survey, 70% of respondents pointed out the soaring prices of materials since the first FVC survey. It was reported that while livestock medicine and feed prices continued to rise, piglet prices remained unchanged, rather fell.</li> <li>• On the other hand, most farmers answered that the status of access to material suppliers has not changed since the first FVC survey.</li> </ul>
Impact on sales	• Food safety and traceability are now required
Increase/decrease of profit	<ul style="list-style-type: none"> <li>• Soaring production / operating costs</li> <li>• ASF has a greater impact than COVID-19 on production declines, profit declines, and soaring production/operating costs.</li> <li>• In the follow-up survey, all respondents pointed out a decrease in profits since the first FVC survey. The correlation with COVID-19 is unknown, but mainly due to the decline in pork prices, respondents reported a price decrease of about 40-50%. On the other hand, there was no significant change in the number of pigs sold.</li> </ul>
Shipping of products	<ul style="list-style-type: none"> <li>• Shortage of markets and buyers</li> <li>• In a follow-up survey, half of the respondents pointed out that shipping was more difficult than in the first FVC survey. Especially after August 2021, social distance and movement restrictions became stricter, and it happened that buyers could not come to the farm to buy pigs.</li> </ul>
Most impacted period	<ul style="list-style-type: none"> <li>• February to April 2020, after February 2021</li> <li>• According to the follow-up survey, the impact from August to October 2021 was the largest.</li> </ul>

Source: JICA Survey Team

### 3) Distributer

Distributers are mainly responsible for purchasing live pigs from pig farmers and transporting them to slaughterhouses, but there is almost no effect of the soaring feed price due to the COVID-19 from the upstream of the VC that has been seen so far. On the other hand, the volume of transactions has decreased slightly due to movement restrictions and a decrease in demand, and the influence from the downstream

of FVC has gradually been seen.

**Table 3.9.6 Impacts of COVID-19 on Distributers (Pig VC in Viet Nam)**

Item	Situation
<b>【Basic Information】</b>	
Products	• Live pig: 67%, Carcass: 33%
<b>【Impact of COVID-19】</b>	
Impact on procurement	• Nothing special
Impact on sales	• Shrink and decrease of market and buyer
Increase/decrease of profit	• Decrease in profit
Handing and sales volume	• There is a slight decrease in transaction volume due to movement restrictions and reduced demand.
Operation Management and Employment	• Some companies have reduced the number of part-time employees and salaries
Most impacted period	• March-May 2020, March-May 2021
Other	• Not only COVID-19 but also ASF has a big influence • Pigs come from a wide range of sources, including large farms and small households in most districts in Nghe An province. Live pig prices fluctuate rapidly and are affected by ASF. ASF and COVID-19 have reduced demand from restaurants, hotels and cafeterias. Small traders were able to continue to operate due to low investment and operating costs, but traders are generally in a difficult situation.

Source: JICA Survey Team

#### 4) Slaughterhouse

The impact of the decrease in demand from the downstream of FVC is large for the slaughterhouse, and the number of pigs slaughtered is halved compared to before COVID-19. The impact of the decline in demand due to ASF, which has become a problem at the same time, is also significant. Since ASF is not a zoonotic disease, it has not been found to infect humans, but this has led to a decrease in demand for pork from the perspective of consumer sentiment.

**Table 3.9.7 Impacts of COVID-19 on Slaughterhouse (Pig VC in Viet Nam)**

Item	Situation
<b>【Basic Information】</b>	
Main financial institution	• Bank: 20%, Nothing: 80%
Total Capitalization	• 225,000,000 VND
Products	• Cut pork
<b>【Impact of COVID-19】</b>	
Impact on procurement	• Nothing special
Impact on sales	• Decrease in markets and buyers
Increase/decrease of profit	• Profit is declining due to the impacts of both COVID-19 and AFS
Handing and sales volume	• Sales volume decreased significantly from 12 tons/month to 7 tons/month • The number of pigs slaughtered decreased significantly from 13 tons/month to 8 tons/month. • Many restaurants and cafeterias stopped ordering due to COVID-19, which had a great impact on profits
Operation Management and Employment	• Nothing special
Most impacted period	• March to April, 2020
Other	• Small slaughterhouses that use manual equipment are common. Some slaughterhouses are trusted by consumers because they supply clean pork. However, the impact of ASF has reduced most of production and revenue. Slaughterhouses are primarily responsible for slaughtering and distribution to retail stores, without refrigeration facilities or large-scale food preservation technology.

Source: JICA Survey Team

#### 5) Retailer/ Supermarket

For retailers and supermarkets, demand for pork from customers decreased and purchase prices for commodities soared, but this did not directly lead to a decrease in profits. Contactless communication with customers is increasing, and changes in management operations, which are rarely seen on the upstream of the VC, are appearing.

**Table 3.9.8 Impacts of COVID-19 on Retailer/ Supermarket (Pig VC in Viet Nam)**

Item	Situation
<b>【Basic Information】</b>	
Type business	Permanent retail markets : 40%, Traditional temporary outlets:30%, Modern outlets like supermarkets: 40%
Total Capitalization	• 425,000,000 VND
Main financial institution	• Company/Corporation, Other
Main Customer	• High-income earners: 44% • Middle-income earners: 56%
The average annual number of customers (Before the COVID-19)	• 15,300 per year
<b>【Impact of COVID-19】</b>	
Impact on procurement	• Soaring purchase prices of products
Impact on sales	• Decrease in customer and demand
Increase/decrease of profit	• Does not change much
Handing and sales volume	• The number of customers per day decreased sharply due to the influence of COVID-19 • Pork selling price increased from an average 141,875 VND/kg to 158,333 VND/kg
Operation Management and Employment	• Increased contactless communication with customers
Most impacted period	• March to April 2020, February 2020
Other	• ASF has significantly reduced the demand for pork purchases. In addition, the amount of pork purchased has decreased significantly compared to before the epidemic. • The impact of both COVID-19 and ASF on pork consumption is obvious in the decline in customer numbers and buyers' demand. In addition, supermarket prices are higher than those of typical retailers, resulting in a significant reduction in pork consumption.

Source: JICA Survey Team

## 6) HoReCa

Compared to retailers, the COVID-19 at HoReCa has a significant impact on reduced profits and financial deterioration. This was due to a decrease in the number of customers and decrease in the average expense of the customers, the suspension of business by the government, and the shortening of business hours. In addition, since ASF has a great influence on the psychology of pork consumers, the safety of pork is strongly demanded by consumers.

**Table 3.9.9 Impacts of COVID-19 on HoReCa (Pig VC in Viet Nam)**

Item	Situation
<b>【Basic Information】</b>	
Type business	Restaurant, hotel, catering, guest house
Total Capitalization	Average 6,011,111,111 VND
Main financial institution	• Private Individual/Traders, commercial bank, other
<b>【Impact of COVID-19】</b>	
Impact on procurement	• Hard to get fresh food
Impact on sales	• Business suspension due to movement restrictions, shortening of business hours
Increase/decrease of profit	• Decrease in profits, deterioration of finances
Handing and sales volume	• Decrease in number of customers and unit price
Most impacted period	• Long-term impact from February 2020 to May 2021
Others	• Increased contactless communication with traders and customers • Employees are afraid to lose their jobs • After the third wave of the COVID-19, restaurants were greatly affected by the COVID-19. It stopped their business due to a significant decrease in the number of customers (daily number of customers, cancellation of weddings, etc.). It has a great impact on restaurant profits. • ASF also had a major impact on the psychology of pork consumers. As a result, restaurants changed to fish and other meats, and used hygienic pork and wild boar, which are still trusted by consumers.

Source: JICA Survey Team

## 7) Consumer

Consumers have changed their behavior. Lifestyle changes include those in the work environment, entertainment, and hygiene practices. While income has decreased, expenditure can be divided into

increased items and decreased items. Communication costs and daily necessities have increased, and entertainment costs, entertainment costs, and transportation costs have decreased. In other words, it is pointed out that the COVID-19 strengthens the inward behavior of the consumers. In addition, while consumption behavior has changed and the number of actual stores visited has decreased, opportunities to use online delivery services have increased.

**Table 3.9.10 Impacts of COVID-19 on Consumers (Pig VC in Viet Nam)**

Item	Situation
Changes in work style	Yes: 100%
Changes in working environment	Yes: 100%
Decrease of household income	Yes: 80%
Percentages of reduction of income	0-20%: 25% 21-40%: 50% 61-80%: 25%
Categories which expense was increased	Food: 18% Fuel & light: 18% Daily necessities: 27% Telecommunications: 36%
Categories which expense was decreased	Food: 13%, Fuel & light: 7%, Daily necessities: 7%, Social expenses: 13%, Entertainment: 27%, Transportation: 27%, Education: 7%
Change of purchasing behavior	Yes: 100%
Change of behavior	Visited fewer brick-and-mortar stores: 33% Increase an opportunity of using online/delivery service: 33% Made fewer purchases overall (online and in-store): 33%
Increase or decrease the volume of purchasing the food since the COVID-19 pandemic	Increase: 40% Decrease: 40% No change: 0%
Categories of which food are increased	Rice, Root crops, Bread, Beans and other cereals: 33% Meat, fish, egg, milk and dairy products: 33% Instant food, sweets and sugar: 33%
Categories of which food are decreased	Meat, fish, egg, milk and dairy products: 25% Oil and fats: 25% Instant food, sweets and sugar: 50%
Fear of contamination of transmitted pathogen such as COVID-19 in foods	Very much fear: 40% Slightly fear: 40% Not fear at all: 20%
Do think COVID-19 can transmit through food items?	Yes: 60%, No: 20% Don't know: 20%
The level of concern on food safety increased since the onset of the COVID-19 pandemic	Yes: 80% No: 20%
Change the eating habit after the COVID-19 pandemic	Increase an opportunity of cooking at home: 50% Increase an opportunity to buy a prepared meal (eating at home): 10% Increase an opportunity of eating outside: 0% Decrease an opportunity of eating outside: 0% Consider nutrition balance: 10% Consider food safety: 30%
Did you increase the frequency to take specific food after the COVID-19 pandemic?	Yes: 40%, No: 60%
Name of food increased	Leaf vegetables, food providing vitamins

Source: JICA Survey Team

### 3.9.4 Impact of COVID-19 Pandemic by Theme

#### 1) Concerns about the impact of COVID-19

Regarding concerns about the effects of COVID-19, Table 3.9.11 shows the levels of concern of the survey subjects in each stage regarding the three items of "Risk of infection," "financial impact" and "psychological effect." Overall, the "financial impact" is high, especially for input suppliers and pig farmers.

**Table 3.9.11 Concerns about the impact of COVID-19 on Pig VC in Viet Nam**

FVC Stakeholder	Risk of Infection	Financial Impact	Phycological Effect
Input supplier	2.60	3.00	2.80
Pig Farmer	2.90	2.90	2.60
Slaughterhouse	2.20	2.40	2.83
Distributor	2.83	2.83	1.80

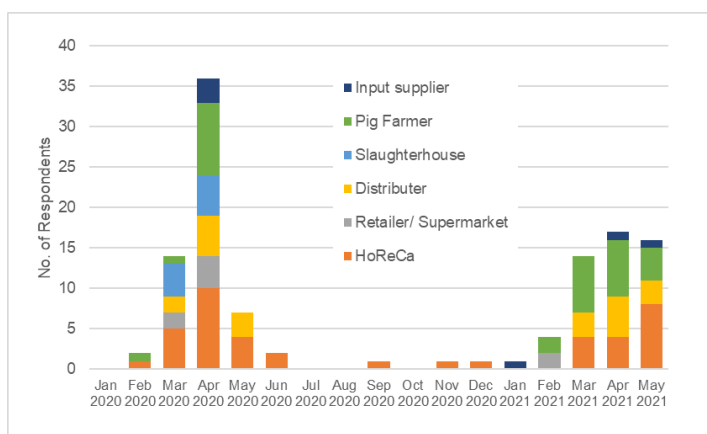
Retailer/ Supermarket	1.80	2.20	2.00
Consumer	2.80	2.40	2.80
<b>Total</b>	<b>2.52</b>	<b>2.62</b>	<b>2.47</b>

Remarks : 1.Very much concerned、 2.Slightly Concerned、 3.Not concerned at all (1~3 : the higher, the more concern)

Source: JICA Survey Team

## 2) Impacted Period

The JICA survey team interviewed each respondent about the period between January 2020 and May 2021 that had the greatest impact on business activities. The results are shown in the figure on the right. Many responses were concentrated from March to May 2020 and from March to May 2021 for all the stages. In Vietnam, the infection of COVID-19 has spread rapidly since May 2021, and each city is implementing stronger social isolation than ever before, and there is concern that it will have a significant impact on the agricultural sector in the future.



**Figure 3.9.6 The Most Impacted Business Period by COVID-19**

Source: JICA Survey Team

## 3) Labor and Food Safety

In this survey, the JICA survey team interviewed each respondent regarding occupational health and food safety. In the production and processing stage, most of the respondents encourage their employee to do hand washing, instruction on wearing masks, and use disinfectant sprays as measures to prevent the spread of infection. In addition, there was a business operator that secured a social distance in the processing stage. Unlike Indonesian poultry meat VC producers and processors, all of them took preventive measures against the COVID-19.

In addition, when confirming the efforts of GAP and HACCP related to occupational health and food safety, 20% of pig farmers answered that they have already introduced GAP, and 33% said that they would like to introduce GAP in the future. In this survey, we could not confirm the meat processing respondents that introduced HACCAP.

More stakeholders responded that customers began to demand food safety and traceability in COVID-19 (Table 3.9.12).

**Table 3.9.12 Food safety and traceability amid the COVID-19**

FVC Stakeholder	Percentage of respondents who are now required to have food safety	Percentage of respondents who are now required to have traceability
Input supplier	100%	100%
Pig Farmer	100%	80%
Slaughterhouse	100%	67%
Distributor	100%	80%
HoReCa	100%	100%
<b>Average</b>	100%	85%

Source: JICA Survey Team

## 4) Impacts by Indicator and Stage

Questionnaire items for all the stages were classified into 12 indicators about the main viewpoints of business management. Table 3.9.13 shows the level of the impact of COVID-19 by indicators and stages

(whatever the impacts are positive or negative). The results are summarized below.

- ✓ Looking at the impact by stage, HoReCa was the most affected. The cause was a sharp drop in demand from events such as the closure of hotels and restaurants and weddings where the masses gathered. In addition, the value of “information” is high because contactless communication is required by its traders and customers in the COVID-19.
- ✓ For input suppliers, the influence of "products" and "money" is large.
- ✓ Looking at the level of the impact by indicator, there is a strong impact on "products-handling volume/accessibility" and "money-profitability/price".

**Table 3.9.13 Impacts of the COVID-19 on Pig VC in Viet Nam by Indicator**

Target	Indicator	Input supplier	Pig Farmer	Slaughter house	Distributor	Retailer/ Supermarket	HoReCa	Total
Products	Handling volume	0.49	0.60	0.31	0.46	0.50	1.20	3.56
	Accessibility	1.24	0.44	0.70	1.08	0.28	0.90	4.65
	Transportation measure	0.00	0.07	0.20	0.17	0.20	0.00	0.63
Money	Profitability	1.20	0.75	0.80	1.17	0.75	1.90	6.57
	Cost	1.10	0.60	0.20	0.06	0.25	0.45	2.66
	Price	0.43	0.83	0.90	0.50	0.47	0.85	3.98
	Finance and capital	0.49	0.05	0.15	0.19	0.29	0.70	1.87
Labor	Labor	0.18	0.00	0.10	0.00	0.31	1.05	1.63
Information		0.00	0.00	0.20	0.17	0.70	1.70	2.77
Management /Inventory		0.10	0.00	0.07	0.00	0.00	1.15	1.32
Customer/Buyer		0.20	0.05	0.00	0.00	0.11	#N/A	0.36
Competition		#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0.00
Total		5.42	3.39	3.63	3.79	3.86	9.90	

Source: JICA Survey Team

Remarks : Depending on the impact significance, the answers are categorized into three stages and the scores are divided by the number of effective responses. The more score they present, the more significant their impacts are.

### 3.9.5 Conclusion of the Impacts and Countermeasures Proposed

The challenges caused by the COVID-19 pandemic are summarized as follows, and the countermeasures are shown in the lower part of the following table to strengthen pig VC. The notable impact of COVID-19 on pig VCs is due to soaring prices of imported livestock feed due to a shortage of empty containers, and mainly due to a decrease in demand for pork at HoReCa. Furthermore, the spread of ASF infection has complicated and exacerbated the conventional issues in pig VC and the impact of the COVID-19.

**Table 3.9.14 Challenges before/after the COVID-19 and Expected Measures on Pig VC**

Input supply	Production	Distribution	Processing	Retail	Consumption
<b>Challenges</b>					
-Soaring costs of trading materials such as feed, veterinary medicine products, parent pigs, and export raw materials -Difficult access to feed producers, veterinary medicine producers and breeding producers	-Soaring input material -Soaring production / operating costs -Shortage of markets/buyers -Food safety and traceability are now required	-Reduced product/service profits -Shortage of markets/buyers -Food safety and traceability are now required	-Reduced product/service profits -Price reduction of products (carcass and pork) -Shortage of markets/buyers -Average production sales halved from 12 tons/month to 7 tons/month -Food safety and traceability are now required	-Decrease of the average number of customers per day -Soaring purchase price of goods -Increased communication with customers through the contactless way -Increased competition with others -Pork consumption (kg/month) has been halved or orders have been stopped -Food safety and traceability are	- Reduced number of visits to physical stores, increased online usage, reduced frequency of shopping -Decrease in household income -Since the COVID-19 pandemic, the level of concern about food safety has increased.



				now required	
Cross-cutting issues and impacts between the stages -Stakeholders in every stage have strong concerns about ASF. Depending on the stakeholder, the influence of ASF is greater than COVID-19 and has been prolonged. The impact of ASF is as follows. Decrease in transaction volume due to decrease in demand Lack of market/customer Decrease in product/service profit Costs of trading materials such as feed, veterinary medicine products, parent pigs, and export raw materials soared					
<b>Countermeasures</b>					
-Measures to alleviate import dependence of feed, increased production of feed rice, maize and soybeans -Domestic manufacturing such as vaccines	-Support for making self-mixed feed (small crusher, etc.)	-Further introduction of GAP and HACCP -Responding to fluctuations in demand due to the introduction of new processing technologies (ham, sausage, etc.)	-Improving traditional market hygiene -Support for events such as weddings and tourism (post COVID-19) -Enhancement of take-out and delivery services at hotels and restaurants -Online service support for each stage	-Promote consumers' understanding of correct food safety (do not be overly afraid of ASF and COVID-19 food contamination) -Dissemination and expansion of approval system that guarantees food safety to consumers -Consumer support (voucher, etc.)	
Cross-cutting issues and impacts between the stages --AFS reconstruction financial support --Disease control --Development of data linkage platform					

Source : JICA Survey Team based on literature review and survey results

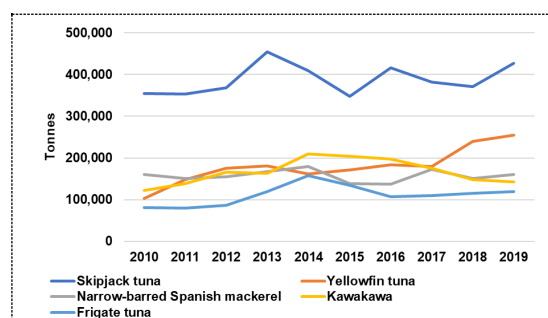
### 3.10 COVID-19 Impact Survey on Skipjack & Tunas (Indonesia)

#### 3.10.1 Outline of Skipjack & Tunas VCs in Indonesia

The fishery industry has been flourishing in Indonesia endorsed with the third-longest coastline in the world and a large EEZ (541 km<sup>2</sup>). Fish-eating culture is deeply rooted in Indonesia, and the supply amount of fishery products per person arrives at 44.7 kg/year<sup>1</sup> (2017), largely exceeding the global average. “Tunas, bonitos, billfishes” (classified by ISSCAAP group) is one of the main fish groups, that account for 18%<sup>2</sup> (2019) of total catch volume in Indonesia. In particular, the production volume of Skipjack tuna, Yellowfin tuna, and Kawakawa is high. Although there is a yearly fluctuation, the production volume of Skipjack has kept a high level for the last 10 years, and that of Yellowfin tuna has increased slightly in recent years.

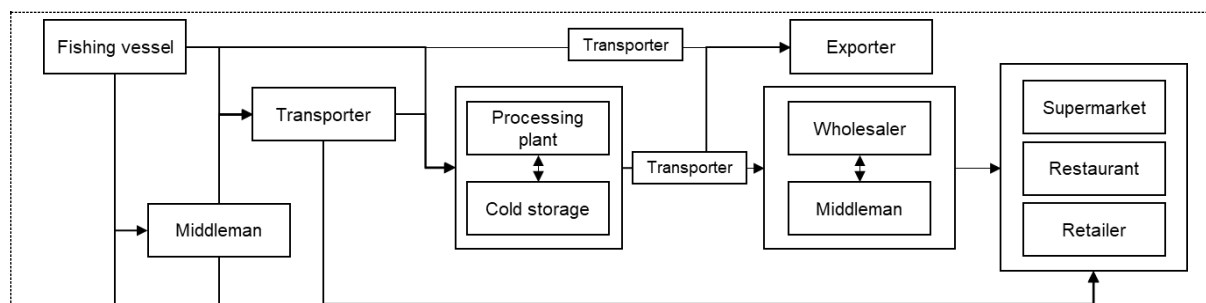
In terms of export, “Tunas, bonitos, billfishes” accounts for 16% (2019) of total fishery export value following “Shrimps, prawns” which accounts for 37%<sup>3</sup>. The main export counterpart countries are the USA, Japan, and ASEAN countries. The volume of raw material for canned products is also large, which is mainly exported to Thailand

The VC of skipjack & tunas in Indonesia shows a very complicated structure. Various types of fishing vessels from artisanal fishing boats to large commercial fishing vessels operate in broad fishing areas. In addition, there are various fish distribution channels, e.g., for export, towards large cities in Indonesia, and to the local domestic markets. Figure 3.10.2 shows the outline of the skipjack & tunas VC, followed by the explanation of major stages of the chain:



**Figure 3.10.1 Production volume of main species of “Tunas, bonitos, billfishes”**

Source: FAO FishstatJ (accessed on January 11, 2022)



**Figure 3.10.2 Outline of Skipjack & Tunas VC**

Source: JICA survey team

**Fishing Stage:** Size of fishing vessels and fishing methods vary widely ranging from long-line commercial fishing vessels which exceed 200 GT to hand-line small-scale fishing vessels, which are less than 5GT. Purse seine fisheries and pole and line fishing are also the main fishing methods in Indonesia. Fishing methods are selected according to the target species and target markets. The fishing ground extends over a wide range. In terms of production volume of skipjack & tunas in each WPP (Wilayah Pengelolaan Perikanan) inside EEZ, the catch amount in WPP 714 (Tolo Bay and Banda Sea), WPP572 (Indian Ocean of Western Sumatera and Sunda Strait), and WPP715 (Tomini Bay, Maluku Sea, Halmahera Sea, Seram Sea and Berau Bay) are relatively high.

**Distribution stage:** Although it is common to transport tunas by fishing vessels and land them at fishing ports, the transport by fish carriers is increasing in recent years. In the case of Jakarta fishing port (JFP),

<sup>1</sup> Source: FAO, FAO yearbook 2018 Fishery and Aquaculture Statistics, 2020

<sup>2</sup> Source: FAO FishstatJ (accessed on January 11, 2022)

<sup>3</sup> Source: FAO FishstatJ (accessed on January 11, 2022)

30.1%<sup>4</sup> of the total transaction volume is transported by fish carriers. In terms of transportation of skipjack & Tunas, it is thought that large amounts of fish are transported by fish carriers, especially from Maluku and West Java. Regarding the domestic transportation of processed tuna products, there are various means and channels. Followings are the examples of distribution channels of tunas from regional collection points;

- 1) Fresh tuna (high-quality tuna): from regional airports to Japan via Jakarta or Singapore (or regional airports to Japan by airplanes),
- 2) Fresh tuna (for Jakarta market): from regional airports to Jakarta by airplanes,
- 3) Frozen tuna (slice for sushi, etc.): from regional ports to Japan by freezer containers, and
- 4) Frozen tuna (fillet and loin, etc.): from regional ports to the USA by freezer containers.

There are various distribution routes according to the usages and destinations. In addition to that, there are fish products that are distributed to local markets, fish materials for canning processing, etc.

**Processing/ Cold Storage Stage:** There are various types of processing according to the usage and grade of tunas, such as raw materials for canning (frozen skipjack, yellowfin tuna), frozen loin and steak (frozen skipjack, yellowfin tuna, bigeye tuna), fresh tunas for raw consumption, etc. In the large-scale processing plants at such collection points as Bitung, the processing for loin, fillet, etc. is operated under well-managed hygiene control. However, except for some processing plants, the hygiene management level in Indonesia is recognized as low standard. In recent years, the efforts for traceability are strengthened, and a QR code that decodes the information of tag on each fish (production area, supplier, identification number, weight, etc.) is attached to shipping goods, and the data is provided to the Ministry of Marine Affairs and Fisheries.

**Export Stage:** There are various types of export according to the usage and quality, from raw materials for canning products to *sashimi* grade. The main export counterparts are the USA, Japan, European countries, and Asian countries. In particular, Thailand is the main export counterpart for the raw materials of canning products. On the other hand, the USA and Japan are the main export counterparts of high-quality tuna products. In general, Japan is an export counterpart of fresh tuna and frozen tuna for *sashimi* and *sushi*, and the USA is the main export counterpart for frozen loin and frozen fillet products.

**Brokering Stage:** There is a complicated distribution form according to the region and the scale of operators. As an example of different distribution channels according to the size of fishes, there are regionally operating specific middlemen in the fish distribution channel of small-scale fishery in Sabang, and the yellowfin tunas less than 20kg are distributed to consumers on the island. On the other hand, more than 20kg of tunas is distributed to other markets out of the islands such as Aceh and Medan. In the case of large-scale fishery companies in Bitung, there are 2 main routes to procure fish; namely, 1) purchase fish directly from the fishermen, and 2) purchase fish from the middlemen called coordinators. The trading price is decided according to the grade and size of the fish.

**Retail/ Restaurant Business Stage:** Although skipjack & tunas, which are not for export, are distributed to domestic markets in general, a spotlight on domestic markets is now thrown according to the Japanese food boom and expansion of medium and high-income class people. In these years, fresh tunas are distributed to supermarkets and restaurants for medium and high-income class people. Fishery business targeted to such customers who have high health-conscious and financial leeway is developing in large cities, especially in Jakarta.

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<sup>4</sup> Source: JICA. Final report of “Data collection survey on improvement and rehabilitation of the Jakarta fishing port and local fishing ports in Indonesia”

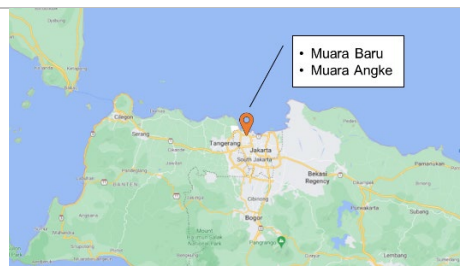
### 3.10.2 Outline of the Impact Survey on Skipjack & Tunas VCs

COVID-19 impact questionnaire survey on skipjack & tunas was conducted in the neighboring area of Jakarta fishing port from April 26 – 28, 2021. As table 3.10.1 shows, the questionnaire survey targeted 35 respondents of 6 stages of the VC. The neighboring area of Jakarta fishing port was selected as the survey area based on the following two criteria; 1) in light of the domestic movement restriction under COVID-19, the survey area should be around West Java province, 2) the survey area should be an important point on processing and distribution of skipjack & tunas as well as large handling volume of fishes. In case an integrated operator responded to questionnaires of multiple stages, the operator is counted as a respondent in each stage.

**Table 3.10.1 Number of Respondents (Skipjack & Tunas)**

Stage of FVC	Number of respondents
Fishery company	6
Transporter	5
Processor/Cold storage operator	6
Exporter	6
Middleman/ Wholesaler	6
Retailer/Restaurant	6
<b>Total</b>	<b>35</b>

Source: JICA survey team



**Figure 3.10.3 Target Area of the Survey on Skipjack & Tunas**

Source: Google map as the base, and JICA Survey Team

### 3.10.3 Impact of COVID-19 Pandemic by Stage of Skipjack & Tunas VCs

In the survey, questionnaires were prepared for each stage of the VC to examine the impacts of COVID-19. Table 3.10.2 shows the summary of the main issues on each stage and the impacts of COVID-19. Skipjack & tunas are highly valuable commodities for export so exporters received large impacts caused by the disorder of the export market. Also, retailers and restaurants which are located at downstream stages in the domestic market received impacts caused by shortened business hours and suspension of business operation.

As an overview of impacts on COVID-19 in skipjack & tunas VC, it is suggested that there should be influence from the downstream spread to the upper stream. On the other hand, the impacts that upper stages such as fishery operations received were relatively weaker than that of downstream stages at the time of the survey.

**Table 3.10.2 Main Issues and Impacts of COVID-19 on Skipjack & Tunas VCs in Indonesia**

FVC Stage	Fishery	Transport	Processing/ Cold storage	Export
Stakeholder	Fishery company, Fisherman	Transporter (Sea transporter, Land transporter)	Processor, Cold storage operator	Exporter
Key Point for skipjack & tunas value chain since before	<ul style="list-style-type: none"> <li>Undeveloped proper post-harvest processing technology</li> <li>Lack of credibility of catch amount data</li> <li>Undeveloped fishing port facilities (lack of supply of ice)</li> <li>Necessity of reinforcement of measures against IUU</li> </ul>	<ul style="list-style-type: none"> <li>Low efficiency of fish landing by the measures of "no transshipment of marine products at sea" (mainly commercial fishery)</li> <li>Port congestion</li> <li>Difficulties in quantitative analysis of the distribution volume of fishery products</li> </ul>	<ul style="list-style-type: none"> <li>Undeveloped proper processing technology</li> <li>Undeveloped proper freshness retaining and quality management technology</li> <li>Instability of procurement volume of raw fish material</li> <li>Necessity of improvement and reinforcement to develop value-added products</li> </ul>	<ul style="list-style-type: none"> <li>Difficulties of quantitative analysis of export statistics data</li> <li>Undeveloped proper freshness retaining technology (especially for the high-value market)</li> <li>Necessity of improvement and reinforcement to diversify the distribution channels</li> </ul>
Cross-cutting issue	<ul style="list-style-type: none"> <li>Undeveloped of proper freshness preserving and quality management</li> <li>Necessity of improvement on traceability management (distribution data)</li> </ul>			
The major impact of COVID-19	<ul style="list-style-type: none"> <li>Lack of buyers (decrease of consumption and distribution, a slump of exports, etc. which are influenced by downstream)</li> <li>Instability of transaction price</li> </ul>	<ul style="list-style-type: none"> <li>Decrease of handling volume due to a reduction of distribution amount and demand decline (influence from downstream)</li> <li>Maintenance costs for unoperated vessels, costs of PCR test for crews</li> </ul>	<ul style="list-style-type: none"> <li>Decrease of profit</li> <li>Lack of buyers and demand decline (influence from downstream)</li> <li>Lack of supply of raw fish material (influence from upper stream)</li> <li>Increase of cost due to a prolonged storage period</li> </ul>	<ul style="list-style-type: none"> <li>Decrease of profit</li> <li>Decrease of handling volume (influence from downstream)</li> <li>Rise of transportation cost, accumulation of various costs due to a prolonged transportation period</li> <li>Stagnation of international distribution</li> </ul>

FVC Stage	Fishery	Transport	Processing/ Cold storage	Export
Cross-cutting issue	• Issues such as slump of exports, a decrease in domestic demand, etc. which occurred in downstream stages spread to the upper stream			
Remark	• Fishing operation is available as usual under the COVID-19 situation	•	•	•

FVC Stage	Brokering/ Wholesale	Retail	Modern market (Hotel, Restaurant, Supermarket, etc.)
Stakeholder	Middleman/ Wholesaler	Retailer (Market, etc.)	Restaurant, Supermarket, etc.
Key Point for skipjack & tunas value chain since before	<ul style="list-style-type: none"> <li>Difficulties in quantitative analysis of the distribution volume of fishery products</li> <li>Operation by unregistered operators is common</li> <li>Price cutting at the procurement (depend on regions)</li> </ul>	<ul style="list-style-type: none"> <li>Low awareness level on freshness retention</li> <li>Undeveloped proper freshness retention and quality management technology</li> </ul>	<ul style="list-style-type: none"> <li>Necessity of improvement and reinforcement to diversify the distribution channels to upper-income earners.</li> <li>Necessity of improvement and reinforcement to develop value-added products</li> </ul>
Cross-cutting issue	<ul style="list-style-type: none"> <li>Undeveloped of proper freshness preserving and quality management</li> <li>Necessity of improvement on traceability management (distribution data)</li> </ul>		
The major impact of COVID-19	<ul style="list-style-type: none"> <li>Closure of restaurants, Decrease of demand from events (influence from downstream)</li> <li>Decrease of profit due to a slump of shipment, etc. (influence from downstream)</li> <li>Reduction of the number of labors</li> </ul>	<ul style="list-style-type: none"> <li>Decrease of profit</li> <li>Shortened business hours and suspension of business operation</li> <li>Lack of labor due to restriction of movement, etc.</li> <li>Decrease of number of customers</li> <li>Decrease of expenditure per customer</li> </ul>	<ul style="list-style-type: none"> <li>Decrease of profit</li> <li>Decrease of customers</li> <li>Decrease of expenditure per customer</li> <li>Difficulty in access to financial support</li> </ul>
Cross-cutting issue	• Issues such as slump of exports, a decrease in domestic demand, etc. which occurred in downstream stages spread to the upper stream		
Remark	•	•	•

Source: JICA Survey Team

## 1) Fishery Companies

The number of respondents is 6. Table 3.10.3 shows the basic information of the fishery companies and the influence of COVID-19 on this FV stage. Respondents are engaged in either or both long-line fishery and purse seine fishery. Their main fishing grounds are the Indian Ocean, WPP572 (Indian Ocean of Western Sumatera and Sunda Strait), and WPP 573 (Indian Ocean of Southern Java, Southern Nusa Tenggara, Suwu Sea).

The degree of COVID-19 impacts on the fishery stage is relatively small as compared to those of other stages, yet there are some impacts such as lack of buyers, fluctuation of market price, etc. It is assumed that the origin of these impacts is the decrease of consumption, a decrease in export, a decrease in distribution, etc. which have occurred downstream of the VC, and the influence spread to the upper stream. On the other hand, some issues occurred inside and around the stage, such as disorder of logistics and difficulty of securing crews due to the restriction measures enforced by the Government.

As mentioned above, the degree of overall impacts on fishery operation is low, and thus the fishing operation is available as almost usual. Therefore, it is assumed that the main factors of COVID-19 impact on the fishery stage are indirect influences from the downstream stages.

**Table 3.10.3 Influence of COVID-19 on Fishery Companies (including the basic information)**

Items	Situation
<b>[Basic information]</b>	
Organization type	• Group company (4 operators), Individual company (1 operator), Cooperative/ Association (1 operator)
Product item	• Skipjack, Yellowfin tuna, Bigeye tuna, etc.
Capital source	• Private individual/Traders (2 operators), Commercial Bank (2 operators), Unanswered (2 operators)
Method of settlement (purchase/ sale)	• <b>[purchase]</b> Bank transfer (5 operators), Unanswered 1 • <b>[sale]</b> Bank transfer (6 operators)
Participation in union organization	• Non-member (4 operators), Unanswered 1, *1 operator: union organization itself
<b>[Influence of COVID-19]</b>	
Issues on procurement	• Rise of the price of spare parts
Issues on sale	• Rise of sales price due to the increase of fuel price/ decrease of sales/ decline of the sales price
Rise and fall of profit	• Decrease of profit due to such as accumulation of stock by lack of buyers (2 operators *1 operator reported 50% decrease of profit)
Transaction volume/	• Decrease of catch amount

Items	Situation
value	• 50% decline in fish landing price
Business management/ employ	• Rise of production cost (3 operators)/ fluctuation of the market price (3 operators)/ increase of input cost such as the rise of fuel price of fishing vessels (2 operators) • Decrease of export counterparts/ lack of buyers and markets (3 operators)/ lack of buyers due to movement restriction/ prolonged necessary period to sell due to demand decline and movement restriction/ (no change of the frequency of fishing operation (3 operators))
Others	• Occurrence of food loss/ decline of resource

Source: JICA Survey Team

## 2) Transporters

The number of respondents is 5. Table 3.10.4 shows the basic information of transporters and the influence of COVID-19 on this stage of the VC. Substantial quantities of skipjack & tunas, which are landed in other regions, are transported to Jakarta fishing port by transport vessels and vehicles. Also, there are operators which transport fish from Jakarta fishing port to other buyers. This survey mainly targeted transporters who operate on the distribution at an upper stream part of the VC.

There is no major issue on procurement, while there are some issues on sales such as reduction of demand and drop of the selling price. It is assumed that the reduction of handling volume and demand is a result that occurred on the downstream side, affecting this stage. While the operators had to cut operating rates of transport vessels due to the reduction of demand, they had to burden the cost of maintaining their vessels. Therefore, it is supposed that the business environment of some operators must have become harsh. Also, there are other issues related to COVID-19 such as the cost of PCR tests for crews, which could be one of the negative implications for the business environment.

**Table 3.10.4 Influence of COVID-19 on transporters (including the basic information)**

Items	Situation
<b>[Basic information]</b>	
Product item	• Skipjack (frozen), Yellowfin tuna (frozen/ fresh or chilled), Bigeye tuna (frozen/ fresh or chilled), etc.
Capital source	• Government Finance Institution (1 operator), Commercial Bank (2 operators), Company/Corporation (1 operator), Unanswered (1 operator)
<b>[Influence of COVID-19]</b>	
Issues on procurement	• n/a
Issues on sale	• Demand decline/ decline of the sales price
Rise and fall of profit	• Decrease of profit (80%)/ (decrease of average procurement price of skipjack)
Transaction volume/ value	• Decrease of handling volume (3 operators)/ unutilized state of transportation vessels due to demand decline • Decline of the selling price
Business management/ employ	• Increase of operation cost (4 operators)/ maintenance cost of un-operational transportation vessels/ PCR inspection cost for crews/ rise of transportation cost due to rise of fuel price • Lack of buyers
Others	• Occurrence of food loss due to accumulation of stock in cold storage

Source: JICA Survey Team

## 3) Processors/ Cold Storage Operators

The number of respondents is 6, which includes 2 processors and 4 cold storage operators. Table 3.10.5 shows the basic information of processors and cold storage operators and the influence of COVID-19 on this stage. Processing and cold storage operation is a key part of the fishery VC, which handles commodities with rapid freshness deterioration (this may not be the case for some local distribution).

Influence has appeared prominently in an aspect of profit, and more than 80% of respondents (5 of 6 operators) faced a “decrease of profit”. The factors that may explain the decrease of profit are issues on procurement such as lack of supply amount, issues on sale such as lack of demand and buyers, cost increase, lack of labor, etc. While some cases work in the operator’s favor such as “reduction of procurement cost” and “rise of unit selling price”, there is a voice that asks for financial support, and there is also a business operator, which attempts business stabilization by utilizing a loan.

It is assumed that such operators have not found an effective solution as the market disruption by COVID-19 has a lasting impact on and the market situation is still changing. In particular, in this VC stage having features to carry stock, the disruption of distribution leads to an economic loss such as a decrease in profit and cost increase. As a result, it is thought that business operators have an adverse impact.

Compared to the fishery and transporter's stages, which faced issues that originated in the downstream parts, the influences on this stage have come from both the upper stream and also from the downstream part as well as occurred by internal factors.

**Table 3.10.5 Influence of COVID-19 on Processors/ Cold storage Operators (plus the basic information)**

Items	Situation
<b>[Basic information]</b>	
Capital source	[Col] Commercial Bank (2 operators), Private Individual/Traders (1 operator), Unanswered (1 operator)
<b>[Influence of COVID-19]</b>	
Issues on procurement	<ul style="list-style-type: none"> <li>[Pro] decrease of procurement volume due to financial difficulty</li> <li>[Col] escalation of lack of supply</li> </ul>
Issues on sale	<ul style="list-style-type: none"> <li>[Pro] demand decline/ decline of purchasing power of trading partners</li> <li>[Col] decline of consumption and demand</li> </ul>
Rise and fall of profit	<ul style="list-style-type: none"> <li>[Pro] decrease of profit (2 operators)</li> <li>[Col] decrease of profit (3 operators)</li> </ul>
Transaction volume/ value	<ul style="list-style-type: none"> <li>[Pro] decrease of procurement volume due to movement restriction and financial difficulty/ change of handling fish species</li> <li>[Pro] (rise of sales price)/ (decline of procurement price)</li> <li>[Col] decrease of handling volume due to movement restriction (2 operators)/ decrease of supply volume of raw fish</li> <li>[Col] price decline of the products</li> </ul>
Business management/ employ	<ul style="list-style-type: none"> <li>[Pro] (support on electricity expense by national Electricity Company)/ twofold increase of transport cost/ difficulty in access to financial support</li> <li>[Pro] lack of labor due to movement restriction</li> <li>[Col] introduction of shift system/ reduction of the number of part-time staff</li> <li>[Col] cost increase due to prolonged storage period/ business stabilization is dependent on the loan/ lack of buyers due to closures of restaurants</li> </ul>
Others	<ul style="list-style-type: none"> <li>[Pro] lack of linkage with the foreign market (2 operators)/ necessity of issuance of additional documents for export products</li> </ul>

Source: JICA Survey Team

#### 4) Exporters

The number of respondents is 6. Table 3.10.6 shows the basic information of exporters and the influence of COVID-19 on this stage. The export stage is located the most downstream so this stage is most susceptible to the influence of the demand and purchasing power of export counterparts and the status of international distribution.

In common with the stage of processing/ Cold storage operation, influence has appeared prominently in the aspect of profit, and more than 80% of respondents (5 of 6 operators) faced a "decrease of profit". As factors of decrease of profit, multiple issues were pointed out such as decrease of transaction volume due to movement restriction and demand decline, and increase of storage fees of containers and transportation cost due to the prolonged transportation. Also, there is an aspect that the reduced circulation rate of export commodities affected the decrease of profit, for instance, there is an exporter which did not have enough space to accept new delivery since the volume of a stock in warehouses and cold storage increased or reached full due to the slump of export.

The degree of impact on this stage is higher than that on other stages. As a whole, a large portion of the impacts that exporters faced have occurred in export counterparts and the international export market, and it is considered that the impacts spread to middle and upper stream stages in the Country.

**Table 3.10.6 Influence of COVID-19 on exporters (including the basic information)**

Items	Situation
<b>[Basic information]</b>	
Organization type	• Group company (1 operator), Individual company (4 operators), Unanswered (1 operator)
Product item	• Skipjack (frozen/ fresh or chilled), Yellowfin tuna (frozen/ fresh or chilled), Bigeye tuna (frozen), etc.
Capital source	• Commercial Bank (2 operators), Unanswered (4 operators)
<b>[Influence of COVID-19]</b>	
Issues on procurement	• Lack of supply amount
Issues on sale	• Decrease of handling volume (30-40%)/ demand decline by USA and decline of unit price/ instability of price/ difficulty in market access due to PSBB
Rise and fall of profit	• Decrease of profit (5 operators)
Transaction volume/ value	• Decrease of handling volume due to movement restriction (6 operators)/ decrease of handling volume due to demand decline (4 operators)/ decrease of acceptable volume or impossible of acceptance for warehouse and cold storage • Decline of the price of goods (3 operators)/ both of rising and decline of procurement price
Business management/ employ	• Change of export counterparts (3 operators) • Increase of operation cost (4 operators)/ cost increase due to prolonged transportation period/ increase of transportation cost/ increase of cost due to prolonged detention period of containers (to China) • Increase of personnel cost of full-time staff/ dismissal of part-time staff
Others	• PCR inspection cost for employees/ (supports on electricity cost by the government)

Source: JICA Survey Team

### 5) Middlemen/ Wholesalers

The number of respondents was 6. Table 3.10.7 shows the basic information of middlemen/ wholesalers and the influence of the COVID-19 pandemic on this VC stage. This stage was enormously affected because more than 80% of respondents (5 of 6 operators) faced a “decrease of profit”. One of the main factors is demand decline due to the closure of restaurants and cancellations of events. In addition, the increase of storage costs for unsold stocks is considered as a factor to squeeze the business.

Some operators implemented efforts for maintaining their business by borrowing loans, adjustment of the number of laborers, reduction of labor costs, etc. Besides, half the operators experienced a decline in procurement unit price (including a 30% decline). Nevertheless, fishing operations were more or less normal at the upper stream, and therefore disruption of distribution and demand decline at the middle and downstream parts led to the excess of fish supply and also caused the decline of fish unit price.

The impact appeared relatively prompt at this stage compared to other stages because many respondents indicated that the most affected period was March 2020 corresponding to the onset of the pandemic. It is assumed that the behavior changes of consumers affected quickly and strongly to this stage because this stage is close to the consumers.

**Table 3.10.7 Influence of COVID-19 on Middlemen/ Wholesalers (including the basic information)**

Items	Situation
<b>[Basic information]</b>	
Organization type	• Individual (6 operators)
Product item	• Skipjack (frozen/ fresh or chilled), Yellowfin tuna (fresh or chilled), Kawakawa (frozen/ fresh or chilled)
Capital source	• Private Individual/Traders (1 operator), Commercial Bank (1 operator), Unanswered (4 operators)
<b>[Influence of COVID-19]</b>	
Issues on procurement	• Rise of procurement price
Issues on sale	• Demand declines due to closure of restaurants/ decline of the sales price
Rise and fall of profit	• Decrease of profit (5 operators)
Transaction volume/ value	• Decrease of handling volume (6 operators)/ decrease of handling volume due to demand decline (3 operators)/ decrease of handling volume, due to closure of restaurants and demand decline from various events • (Decline of procurement unit price (3 operators))
Business management/ employ	• Use of loan due to lack of capital/ increase of storage cost of goods left • Decrease of full-time staff (more than 4 operators)/ reduction of the salary of full-time staff

Source: JICA Survey Team



## 6) Retailers/ Restaurant Business Operators

The number of respondents is 6, including 3 retailers and 3 restaurants. Table 3.10.8 shows the basic information of retailers and restaurants and the influence of COVID-19 on this stage. As indicated, all of the operators experienced a “decrease of profit”, and they all reported more than 41% diminution. The main factors are “reduction of the number of customers” and “decrease of expense for purchase and consume by each customer”. More than 80% of respondents reported the impacts on these points, and restaurants received bigger impacts in particular.

It is assumed that there are some background factors of the “reduction of the number of customers” such as behavior change due to movement restriction and business suspension/ shortened business hours by operators. On the other hand, it is inferred that the change of purchasing behavior by consumers due to movement restriction and recommendation of stay-home should be one of the factors of “decrease of expense for purchase and consume by each customer”, though it may be hard to clarify the specific element by this survey.

Many respondents indicated that the most affected period was March-May 2020. Same as the stage of middleman/ wholesaler, it is assumed that behavior change of consumers affected quickly this stage as the stage is close to the consumers.

**Table 3.10.8 Influence of COVID-19 on Retailers/ Restaurant Business Operators with Basic Information**

Items	Situation
<b>[Basic information]</b>	
Product item	<ul style="list-style-type: none"> <li>[Ret] Skipjack (frozen/ fresh or chilled), Albacore (fresh or chilled)</li> <li>[Res] Skipjack (frozen/ fresh or chilled), Yellowfin tuna (frozen), Kawakawa (frozen/ fresh or chilled)</li> </ul>
Capital source	<ul style="list-style-type: none"> <li>[Res] Private Individual/Traders (1 operator), Commercial Bank (1 operator), Other (1 operator)</li> </ul>
Type of business	<ul style="list-style-type: none"> <li>[Res] Indonesia food (2 operators), Other Asian food (1 operator)</li> </ul>
Customer	<ul style="list-style-type: none"> <li>[Res] Tourists (1 operator), Family (middle-income earners) (1 operator), Unanswered (1 operator)</li> </ul>
<b>[Influence of COVID-19]</b>	
Issues on procurement	<ul style="list-style-type: none"> <li>n/a</li> </ul>
Issues on sale	<ul style="list-style-type: none"> <li>[Ret] competition with other operators/ decline of consumption demand/ lack of buyers</li> <li>[Res] demand decline from events/ decrease of customers/ decrease of sales</li> </ul>
Rise and fall of profit	<ul style="list-style-type: none"> <li>[Ret] decrease of profit (3 operators *41-60% decline on April – June 2020)</li> <li>[Res] decrease of profit (3 operators *2 operators: 61-80% decrease, 1 operator: 41-60% decrease)</li> </ul>
Transaction volume/ value	<ul style="list-style-type: none"> <li>[Ret] decrease of handling volume</li> <li>[Ret] rise of the purchasing unit price/ decrease of purchasing price per customer (2 operators *41-60% decrease)</li> <li>[Res] decrease of expenditure per customer (3 operators * 2 operators: 61-80% decrease, 1 operator: 41-60% decrease)</li> </ul>
Business management/ employ	<ul style="list-style-type: none"> <li>[Ret] financial deterioration (2 operators)/ increase of operation cost due to the rise of transportation cost</li> <li>[Ret] lack of labor due to movement restriction, etc. (2 operators)/ business suspension (2 operators)/ shortened business hours (2 operators)/ decrease of customers (2 operators *41-60% decrease)</li> <li>[Res] increase of operation cost (2 operators)/ difficulty in access to financial supports (3 operators)</li> <li>[Res] decrease of customers (3 operators *2 operators: 61-80% decrease, 1 operator: 41-60% decrease)</li> </ul>
Others	<ul style="list-style-type: none"> <li>[Ret] Difficulty in the procurement of masks</li> </ul>

Source: JICA Survey Team

### 3.10.4 Impact of COVID-19 Pandemic by Theme

#### 1) Concern for the Impact of COVID-19

Table 3.10.9 shows the degree of concern on “Risk of Infection”, “Financial Impact”, and “Psychological Effect” by the respondents of each stage. In the upper stream of the VC such as fishery

and transport, concern for “Risk of Infection” surpasses other concern items. On the other hand, in the middle and downstream stages, concern for “Financial Impact” surpasses other concern items.

Fishing vessels and transport vessels are the main infrastructures in the upper stream of the VC, and therefore the infection spreading among crews may have a greater influence on the business operation. This is probably the reason that the degree of concern for “Risk of Infection” is higher than other concern items. On the other hand, operators of middle and downstream stages already received financial impacts, and also had a high degree of concern for the further deterioration of the infection status and also the murky situation on the export/ domestic markets.

**Table 3.10.9 Degree of Concerns for Impact by COVID-19**

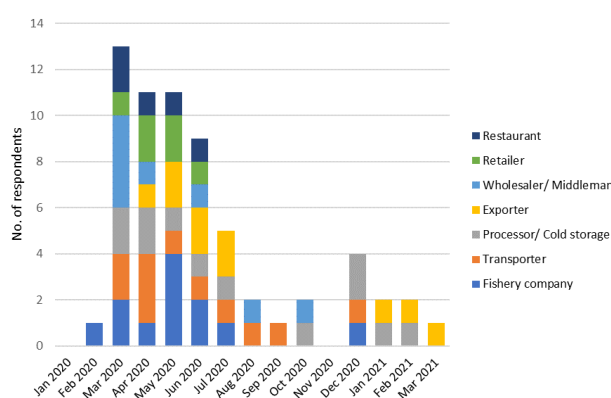
FVC Stage	Risk of Infection	Financial Impact	Psychological Effect
Fishery company	3.00	2.67	2.83
Transporter	2.80	2.60	2.60
Processor/ Cold storage operator	2.83	3.00	2.67
Exporter	3.00	3.00	3.00
Middleman/ Wholesaler	2.33	2.83	2.67
Retailer	2.33	3.00	2.67
Restaurant business operator	1.33	3.00	2.67
<b>Total</b>	<b>2.63</b>	<b>2.86</b>	<b>2.74</b>

Source: JICA Survey Team

## 2) Most affected Period of COVID-19

Figure 3.10.4 shows the period when the operators of various business types have received strong impacts by COVID-19 from January 2020 to March 2021 (multiple answers allowed). The classification of business types is such 7 stages as “Fishery company”, “Transporter”, “Processor/ Cold storage”, “Exporter”, “Middleman/ Wholesaler”, “Retailer” and “Restaurant”.

In general, after it showed a major impact from March to June 2020, the impact has decreased gradually, and the impact started appearing again from December 2020. The peak of impact on “Middleman/ Wholesaler”, “Retailer” and “Restaurant” appeared in a relatively early stage. On the other hand, the impact on “Processor/ Cold storage” and “Exporter” has been continuing into 2021. It seems that this trend reflects the instability of the export market.



**Figure 3.10.4 Most affected period by COVID-19**

Source: JICA survey team

## 3) Labor Management and Food Safety

In this survey, a hearing was made about labor hygiene for fishery companies and processors. All operators have demanded their employees comply with measures for infection control such as “wearing masks”, “washing hands” and “social distancing”. There are some operators which conducted other measures such as an antigen test before fishing operation and a monthly PCR test. Also, operators which own accommodation facilities have taken health management measures in the facilities.

Concerning the safety of food, 3 of 6 fishery companies have certifications related to eco-label, 3 of 4 cold storage operators obtained HACCP, and 1 of 2 processors obtained HACCP. One cold storage operator with HACCP and one processor with HACCP belong to the same integrated company. Although quality management is one of the cross-cutting issues in Indonesia, it is assumed that efforts on quality control are steadily flowing into the industry because more than half of operators have already obtained

such certifications.

Regarding the change in consciousness of trading partners of each stage about demand on food safety and traceability, the consciousness of trading partners of downstream stages seems low. Consciousness on the importance of food safety may have not been well diffused, especially in domestic markets. On the other hand, there was a report that the reason for “no change” was “the trading partner already knows the company has the certification”. It is suggested that obtaining certification is one of the tools to provide a sense of assurance for trading partners.

**Table 3.10.10 Consciousness on Food Safety and Traceability by Trading Partners**

Particulars	Fishery company	Transporter	Processor/ Cold storage operator	Exporter	Middleman/ Wholesaler	Retailer	Restaurant business operator
Food safety	33%	40%	50%	33%	0%	0%	0%
Traceability	33%	40%	50%	33%	0%	0%	0%

\*It indicates the percentage of the respondents who answered “trading partners started to demand management on food safety and traceability”

Source: JICA survey team

#### 4) Degree of COVID-19 Impacts on Each Index and Each Stage

Question items are classified into 12 indices based on the main points of organizational operation. Table 3.10.11 shows the degree of COVID-19 impacts by each index and each stage (irrespective of positive impact and negative impact), from which the following are raised;

- ✓ Overall, people in the downstream stages received stronger impacts than the upper stream stages. In particular, the influences by an obstacle on export markets are severe because the degree of impacts on broad indices of the “exporter” is high. Also, it is suggested that there are strong impacts on downstream stages by behavior change of consumers and due to various regulations. On the other hand, the impact on the “fishery” located at the upper stream was relatively low.
- ✓ Overall, there are strong impacts on the “money” index such as “money - profit”. Behind the large impact on “money”, it is assumed that there are some factors such as distribution stagnancy and decrease of consumptive demand. The high degree of impact on “goods – transaction volume” also supports the above findings. Moreover, various COVID-19 related regulations affected the business environment, and negative influences on the financial aspect have occurred.

**Table 3.10.11 Degree of COVID-19 impacts on each index and each stage**

	Sub group	Fishery company	Transporter	Cold storage operator	Processor	Exporter	Middleman/ Wholesaler	Retailer	Restaurant business operator
goods	①goods – handling volume	0.17	0.54	0.28	0.25	1.11	0.73	0.17	0.00
	②goods - access	0.14	0.20	0.10	0.00	0.27	0.00	0.11	0.00
	③goods – transportation means	0.00	0.03	0.00	0.00	0.00	0.00	0.00	n/a
money	④money - profit	0.25	0.30	0.67	0.67	0.59	1.28	0.78	1.56
	⑤money - cost	0.31	0.53	0.13	0.25	0.59	0.11	0.17	0.83
	⑥money - price	0.56	0.30	0.33	0.38	0.88	0.28	0.06	0.00
	⑦money - others	0.00	0.00	0.00	0.33	0.19	0.00	0.00	1.33
pe	⑧people – labor, expense	0.00	0.06	0.17	0.17	0.14	0.33	0.56	0.00
	⑨information	0.00	0.00	0.00	0.50	0.06	0.00	0.00	0.00
	⑩operation/ management	0.00	0.00	0.00	0.13	0.14	0.00	0.33	0.50
	⑪environment	0.06	0.00	0.00	0.00	0.00	0.00	0.00	n/a
	⑫input	0.00	n/a	n/a	n/a	n/a	n/a	n/a	n/a

\*It includes some items that have no direct impacts by COVID-19 such as environment-related question items

Source: JICA survey team

### 3.10.5 Conclusion of the Impacts and Countermeasures Proposed

COVID-19 impacts were analyzed item by item in the above sections of 3.10.3 and 3.10.4. Followings are summary of impact overview, measures, and relations with existing issues.

- ✓ Common issues of COVID-19 among the VC stages are mainly negative impacts on business conditions such as the decrease in profit and increase in cost. Various factors such as distribution obstacles, disruption of export markets, and demand decline have worsened the business environment of each stage. Especially, there are strong impacts on the downstream stages including export business. Although there is a trend that the effects showing up on the downstream stages such as demand decline have spread to the upper stream, the degree of impacts on upper stream stages is relatively low since there has been an environment for the upper stream sites able to maintain the business operation.
- ✓ In terms of the consciousness through COVID-19 about food safety and traceability, that of trading partners related to domestic markets was low, compared to that of stages which relate to international markets. It is suggested that the low consciousness of quality management which has been an issue even before COVID-19 persists around the domestic market. On the other hand, there is a need for the safety and security of food from the consumers due to the rising health concerns.
- ✓ Concerns for the financial impacts of the COVID-19 pandemic are strong through all the stages. It is thought that each operator concentrates on the stabilization of business under severe conditions. It is assumed that the consumers' consciousness would increase on the freshness and quality.
- ✓ From those above-mentioned, it is important to focus on the following 2 points; 1) "diffusion of knowledge and technology on freshness and quality" at sites, and 2) establishment of a mechanism for "selling good quality products at a high price" supported by the Government. In addition to these, various activities with the introduction of DX technology such as cost reduction by the mechanization of operations, dispersion of risks by diversifying the sales channels, and securing the safety of food by strengthening the traceability system should be promoted to enhance the capacity to adapt to the requirements in the post-COVID-19 society.

**Table 3.10.12 Summary of COVID-19 Impacts and Examples of Countermeasures**

Fishery	Transport	Processing/ Cold storage	Export	Brokering/ Wholesale	Retail/ Restaurant
<b>Summary of COVID-19 impacts</b>					
<ul style="list-style-type: none"> <li>• Lack of buyers (decrease of consumption and distribution, a slump of exports, etc. which are impacts from downstream)</li> <li>• Instability of transaction price</li> </ul>	<ul style="list-style-type: none"> <li>• Decrease of handling volume due to a reduction of distribution amount and demand decline (influence from downstream)</li> <li>• Maintenance costs for unoperated vessels, costs of PCR test for crews</li> </ul>	<ul style="list-style-type: none"> <li>• Decrease of profit</li> <li>• Lack of buyers and demand decline (influence from downstream)</li> <li>• Lack of supply of raw fish material (influence from upper stream)</li> <li>• Increase of cost due to a prolonged storage period</li> </ul>	<ul style="list-style-type: none"> <li>• Decrease of profit</li> <li>• Decrease of handling volume (influence from downstream)</li> <li>• Rise of transportation cost, accumulation of various costs due to a prolonged transportation period</li> <li>• Stagnation of international distribution</li> </ul>	<ul style="list-style-type: none"> <li>• Closure of restaurants, Decrease of demand from events (influence from downstream)</li> <li>• Decrease of profit due to a slump of shipment, etc. (influence from downstream)</li> <li>• Reduction of the number of labors</li> </ul>	<retailer> <ul style="list-style-type: none"> <li>• Decrease of profit</li> <li>• Shortened business hours and suspension of business operation</li> <li>• Lack of labor due to restriction of movement, etc.</li> <li>• Decrease of number of customers</li> <li>• Decrease of expenditure per customer</li> </ul> <restaurant> <ul style="list-style-type: none"> <li>• Decrease of profit</li> <li>• Decrease of customers</li> <li>• Decrease of expenditure per customer</li> <li>• Difficulty in access to financial support</li> </ul>
<b>Cross-cutting issue</b>					
✓ Issues such as slump of exports, a decrease in domestic demand, etc. which occurred in downstream stages spread to the upper stream					
<b>examples of countermeasures</b>					
<ul style="list-style-type: none"> <li>• Expanding the sales channels by utilizing online, etc.</li> <li>• Price adjustment by the government</li> <li>• Diffusion of technology on</li> </ul>	<ul style="list-style-type: none"> <li>• Adjustment and streamlining of shipment volume by utilizing DX technology</li> <li>• Expanding the sales channels by utilizing</li> </ul>	<ul style="list-style-type: none"> <li>• Adjustment and streamlining of shipment volume by utilizing DX technology</li> <li>• Diffusion of technology on</li> </ul>	<ul style="list-style-type: none"> <li>• Adjustment and streamlining of shipment volume by utilizing DX technology</li> <li>• Promoting the streamlining of the</li> </ul>	<ul style="list-style-type: none"> <li>• Promoting tuna consumption for local people</li> <li>• Diffusion of technology on freshness retention and quality</li> </ul>	<ul style="list-style-type: none"> <li>• Diffusion of technology on freshness retention and quality management</li> <li>• Expanding the sales channels by utilizing</li> </ul>

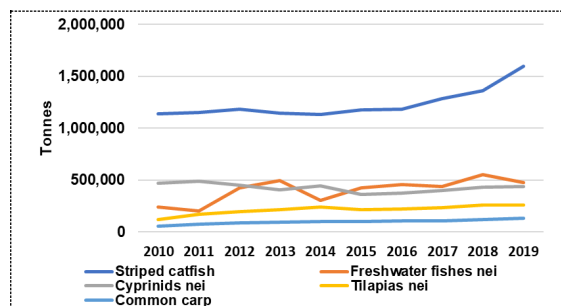
freshness retention and quality management • Acceleration of obtaining ecolabel certificates	online, etc.	freshness retention and quality management • Acceleration of obtaining food safety-related certificates • Expanding the sales channels by utilizing online, etc.	export process by utilizing DX technology • Information sharing of export counterparts (regulations and standards)	management • Expanding the sales channels by utilizing online, etc.	online, etc. • Acceleration of obtaining food safety-related certificates
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Source: JICA Survey Team

### 3.11 COVID-19 Impact Survey on Pangasius (Viet Nam)

#### 3.11.1 Outline of Pangasius VCs in Viet Nam

Pangasius is a general name of the catfishes that belong to the family Pangasiidae in order Siluriformes. *Pangasianodon hypophthalmus* (Tra, Tha) and *Pangasius bocourti* (Basa) are known species. Distinguishing these catfishes is difficult for even experts. The fishery products of these species distribute in Japan as “Basa” and “Pangasius.” Frozen fillet products and ready-to-cook products of Pangasius distributes, and people use these products to prepare fried white-meat fish, etc. In Japan, AEON TOPVALU sells Pangasius products certificated by Aquaculture Stewardship Council.



**Figure 3.11.1 Production of Main Inland Aquaculture Species in Vietnam**

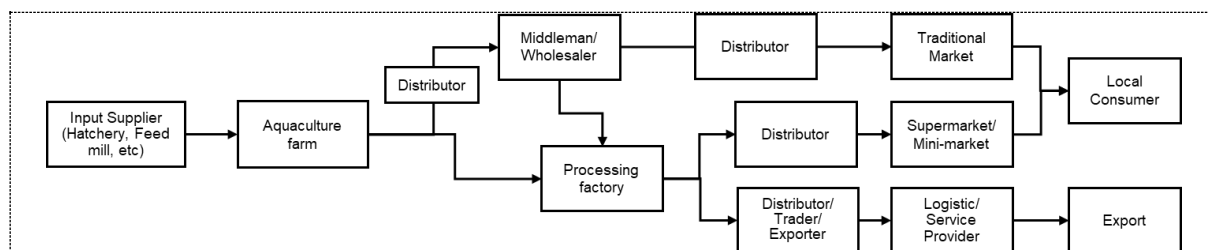
Source: FishStatJ (accessed on January 11, 2022)

Inland aquaculture is the main industry in the fishery sector in Viet Nam. In particular, Viet Nam is a leading producer of pangasius in the world. The production volume of pangasius since 2009 has been broadly flat or slightly increased, and the production volume in 2019 was 1.6 million tons<sup>1</sup> in total.

The export value of pangasius in 2019 is estimated at 2.03 USD<sup>2</sup>, which is a 10% decrease from 2018 due to various regulations in the export market in the USA and a price decline. In these few years, the Chinese market has become increasingly important for the pangasius industry in Viet Nam. The export value of pangasius to China and Hong Kong in 2019 accounted for 36% of the total export value of pangasius, and to the USA it accounted only for 13%, to EU was 12%, and to ASEAN countries was 11%<sup>3</sup>.

The main competitors of Viet Nam in the pangasius industry are China, India, Bangladesh, etc. Even though China has a large market in the country, the technology of broodstock production and farming technology in China lags behind Viet Nam. Although the production volume in India and Bangladesh has been increasing stably, the importance of these countries in exporting market is low compared to Viet Nam.

The VC of pangasius in Viet Nam is divided into some stages such as “Input stage”, “Production stage”, “Distribution stage” and “Processing/ export stage”. However, in the pangasius industry of recent years, there is a trend of increase in vertical integration by large-scale enterprises. Figure 3.11.2 illustrates the outline of the pangasius VC, and the major FV stages are explained in detail below:



**Figure 3.11.2 Outline of Pangasius VC**

Source: JICA survey team

<sup>1</sup> Source: FAO FishstatJ (accessed on January 11, 2022)

<sup>2</sup> Source: GLOBEFISH (FAO), “Pangasius prices hit bottom as COVID-19 shuts down core markets” <<http://www.fao.org/in-action/globefish/market-reports/resource-detail/en/c/1296664/>>, July 8, 2020

<sup>3</sup> Source: GLOBEFISH (FAO), “Pangasius prices hit bottom as COVID-19 shuts down core markets” <<http://www.fao.org/in-action/globefish/market-reports/resource-detail/en/c/1296664/>>, July 8, 2020

**Input Stage:** Main operator types are hatcheries and feed suppliers. In addition to that, there are operators, which handle medicinal products and chemical medicines, nursery operators, etc.

- ✓ Hatchery: Various scale operators are engaged in this VC stage. Large-scale integrated companies possess their hatchery facilities and produce high-quality fish seeds. On the other hand, small-scale private hatcheries also produce fish seeds. However, the quality of seeds is low, and it is pointed out as the main cause of the high mortality rate in the aquaculture stage by those small-scale hatcheries<sup>4</sup>.
- ✓ Feed supplier: The usage rate of commercial feed by aquaculture operators is increasing yearly. It is considered that a shift toward the usage of commercial feed goes forwards because productivity is generally enhanced by using commercial feed with stable quality. Large-scale aquaculture operators procure feed from feed companies, while small-scale operators usually buy it from local distributors.

**Production Stage:** An integration of the pangasius industry has been progressing in recent years, and there is a trend that large-scale vertical integrated companies engage themselves in several stages on the VC. There is a report that although a large number of small-scale aquaculture farmers used to engage, most of them went out of business<sup>5</sup>. There is a case where aquaculture farmers and producer's associations make a business contract with large-scale companies, and receive support on input costs. On the other hand, aquaculture operators, which don't have a contract with processing/ export operators receive strong effects from external factors such as the rise of feed prices.

**Distribution Stage:** Due to the promotion of vertical integration, the roles of brokers have shrunken, and the sales channels through traders are now minimal. There is a report that more than 90% of production is directly supplied to processors from aquaculture farmers<sup>6</sup>. Approximately 10% of the total production volume is handled by brokers, and most of them are distributed to wholesalers and retailers in domestic markets. Only small amounts of processed products are distributed to domestic markets, and it is said that local people prefer to eat other freshwater fishes and marine fishes than pangasius.

**Processing/ Export Stage:** There are about 100 pangasius processing/ export companies<sup>7</sup>, and production management that complies with HACCP is conducted at a well-equipped facility. The great majority of processing companies are mainly operated in An Giang province, Dong Thap province, Tien Giang province, Can Tho city, and Ho Chi Minh city. Vertically integrated companies secure minimum supply volume by producing at their aquaculture farms and also procure raw fish from partner aquaculture operators as complements. Also, many large-scale companies produce products that are in line with the market preference such as pangasius fillets, ready-to-cook products, surimi products, etc. Pangasius produced in Viet Nam is exported to 132 countries<sup>8</sup> (2018), and the main markets are the USA, China, EU, ASEAN, Mexico, Brazil, etc. The export to the USA and Europe is decreasing while the importance of China market is increasing nowadays.

### 3.11.2 Outline of the Impact Survey on Pangasius VCs

Due to the movement restriction under the COVID-19 situation, surveyors were not able to visit target areas. Therefore, an interview survey was conducted by DARD officers by establishing a cooperative relationship with DARD. The survey areas are Dong Thap province, An Giang province, and Can Tho city, and the survey was conducted from June 2 to 11, 2021 in Dong Thap province, June 7-14, 2021 in An Giang province, and June 14-17, 2021 in Can Tho city. As shown in Table 3.11.1, the survey was

<sup>4</sup> Source: CBI, "The Vietnamese seafood sector A value chain analysis", March 2012

<sup>5</sup> Source: SEAFOOD TIP (Web site) < <https://seafood-tip.com/sourcing-intelligence/countries/vietnam/pangasius/farming/> >

<sup>6</sup> Source: CBI, "The Vietnamese seafood sector A value chain analysis", March 2012


<sup>7</sup> Source: SEAFOOD TIP (Web site) < <https://seafood-tip.com/sourcing-intelligence/countries/vietnam/pangasius/farming/> >

<sup>8</sup> Source: VASEP (Web site) < <http://seafood.vasep.com.vn/key-seafood-sectors/pangasius/sector-profile> >

conducted for 7 VC stages, and the total number of respondents was 67. In case an operator engaged in several stages responded to the questionnaires of the corresponding stage, the operator is counted as a respondent in each VC stage.

Stages of FVC	Number of respondents
Input supplier (hatchery, feed supplier)	15
Aquaculture operator	13
Middleman/ Wholesaler	6
Processor	8
Exporter	5
Distributor	8
Retailer (traditional market, mini-market)	12
<b>Total</b>	<b>67</b>

Source: JICA survey team



**Figure 3.11.3 Target Areas of the survey on Pangasius**  
Source: Google map as the base, and JICA Survey Team

### 3.11.3 Impact of COVID-19 Pandemic by Stage of Pangasius VCs

In the survey, questionnaires were prepared for each stage to evaluate the impact that COVID-19 affected each VC stage. Table 3.11.2 shows the summary of the main issues on each stage and the impacts of COVID-19. Pangasius VC which has importance as an export commodity received a huge impact by obstacles of the export market. In addition to that, there is a strong impact caused by the soaring import feed price, although a causal relationship with COVID-19 is unknown. Regarding the comparison of impacts among stages, the influences on such operators mainly handling the domestic market as middlemen/ wholesalers, distributors, retailers (traditional market) received are relatively low.

**Table 3.11.2 Main issues and impacts by COVID-19 on pangasius VCs in Viet Nam**

FVC Stage	Input	Aquaculture	Brokering/ Wholesale	Processing
Stakeholder	Hatchery, Feed supplier	Aquaculture operator	Middleman, Wholesaler	Processor
Key Point for pangasius value chain since before	<ul style="list-style-type: none"> <li>Low quality of seeds produced by small scale hatcheries</li> <li>Business competition among operators (hatcheries, feed suppliers)</li> </ul>	<ul style="list-style-type: none"> <li>Unstable production volume depending on the export market</li> <li>Difficulty in responding to market change for aquaculture operators which don't have a contract with processing/ export companies</li> </ul>	<ul style="list-style-type: none"> <li>Shrinkage tendency of the role of middlemen due to promotion of vertical integration of pangasius industry</li> </ul>	<ul style="list-style-type: none"> <li>Great effects by situations of export because pangasius is processed mainly as export products</li> </ul>
Cross-cutting issue	<ul style="list-style-type: none"> <li>Water contamination problems around aquaculture sites and pollution by aquatic medicines</li> <li>(Relatively easy to conduct the traceability management due to the promotion of integration among stages)</li> </ul>			
The major impact of COVID-19	<ul style="list-style-type: none"> <li>Decrease of profit due to the rise of input prices, etc. (feed suppliers)</li> <li>Lack of buyers and decrease of handling volume due to temporal closures of aquaculture operation (feed suppliers) (effects from aquaculture stage)</li> <li>Low sales of seeds due to the delay of harvesting period by farmers (effects from aquaculture stage)</li> </ul>	<ul style="list-style-type: none"> <li>Rise of input cost due to rise of feed prices (effects from upper stream)</li> <li>Cost increase by prolonged feeding period due to slump in sales</li> <li>Sale below break-even</li> <li>Decrease of handling volume due to suspended export and demand decline (effects from downstream stage)</li> <li>Unstable market prices</li> </ul>	<ul style="list-style-type: none"> <li>Tendency of excluding this stage on VC</li> <li>Decrease of sales volume due to low orders by processors</li> </ul>	<ul style="list-style-type: none"> <li>Lack of raw fish materials due to the temporal closures of aquaculture operation (effects from aquaculture stage)</li> <li>Great decrease of procurement volume of raw materials due to demand decline caused by border closure and lock-down of export counterparts (effects from export stage).</li> </ul>
Cross-cutting issue	<ul style="list-style-type: none"> <li>Effects caused by disruption on export business spread to upper stream stages</li> <li>Effects by the rise of input cost (especially imported feed) mainly on upper stream stages</li> </ul>			
Remark			<ul style="list-style-type: none"> <li>There is a case where retailer used wholesaler which enables to sell large amounts of fish, considering the infection situation</li> </ul>	<ul style="list-style-type: none"> <li>Low effects on procurement of raw materials for integrated companies which have their aquaculture farms</li> </ul>
<b>FVC Stage</b>	<b>Export</b>	<b>Distribution</b>	<b>Traditional market</b>	<b>Modern market (Hotel, Restaurant, Supermarket, etc.)</b>
Stakeholder	Exporter	Distributor	Retailer	Mini-market, Supermarket



FVC Stage	Export	Distribution	Traditional market	Modern market (Hotel, Restaurant, Supermarket, etc.)
Key Point for pangasius value chain since before	<ul style="list-style-type: none"> <li>Unstable export market</li> <li>Competition with foreign companies</li> <li>Needs for responding to correspondence with various regulations (reinforcement and improvement)</li> </ul>	<ul style="list-style-type: none"> <li>The quality of pangasius which distributes to the domestic market is relatively low compared to that of export</li> </ul>	<ul style="list-style-type: none"> <li>Local people prefer to eat other freshwater fishes and marine fishes than pangasius</li> </ul>	
Cross-cutting issue	<ul style="list-style-type: none"> <li>Water contamination problems around aquaculture sites and pollution by aquatic medicines</li> <li>(Relatively easy to conduct the traceability management due to the promotion of integration among stages)</li> </ul>			
The major impact of COVID-19	<ul style="list-style-type: none"> <li>Increase in transportation cost due to rise of sea transportation expense</li> <li>Demand declines due to lock-down of export counterparts (effects from downstream stages)</li> <li>Slump of export to China</li> <li>Occurrences of additional storage costs due to the stagnancy of export</li> </ul>	<ul style="list-style-type: none"> <li>Movement restriction to an endemic region</li> <li>Rise of transportation fuel cost</li> </ul>	<ul style="list-style-type: none"> <li>Slightly decrease of customers due to the avoidance behavior by customers against traditional markets which don't have thorough measures against infection</li> <li>Instability of supply of raw fish and rise of purchasing prices</li> <li>Decrease of number of customers, and decrease of purchasing expenses per customer</li> </ul>	<ul style="list-style-type: none"> <li>Low sales due to a decrease in the number of customers</li> </ul>
Cross-cutting issue	<ul style="list-style-type: none"> <li>Effects caused by disruption on export business spread to upper stream stages</li> <li>Effects by the rise of input cost (especially imported feed) mainly on upper stream stages</li> </ul>			
Remark				<ul style="list-style-type: none"> <li>Less impact compared to traditional markets</li> </ul>

Source: JICA survey team

### 1) Input supplier (Feed supplier, Hatchery)

This stage (and players) mainly consists of feed suppliers and hatcheries. The number of respondents is 15, and the regional breakdown is; 6 operators in Dong Thap province, 3 operators in An Giang province, and 6 operators in Can Tho city (6 feed suppliers<sup>9</sup> and 9 hatcheries). Table 3.11.3 shows the basic information of feed suppliers/ hatcheries interviewed and the influence of COVID-19 on this stage. The main operation of the target feed operators is the distribution and selling of feed.

The issues that feed suppliers face are broadly divided into two categories; 1) increase of procurement cost of input material, and 2) influences from the aquaculture stage. Regarding the input material, according to the DARD in An Giang province, the price of aquaculture feed in the first half of 2021 increased by 20-30% over the previous year. Further, the fact that the cost of international sea transport raises 2-3 times compared to ordinary times due to the lack of transport vessels and shipping containers is also a part of the reasons behind the escalation of the procurement cost.

The impacts that hatcheries faced have similarities with that of feed suppliers. For one, there is an increase in production cost due to the rise of the feed price. Also, farmers tend to extend the feeding period and delay the harvest to prevent losses that occur by selling raw fish at a low price. In that case, hatcheries miss the sales opportunities. In addition to that, there is a case that hatcheries have to sell their items below break-even. As a potential need, it is assumed that there is a necessity for financial support because over half of respondents indicated a “lack of financial support”.

**Table 3.11.3 Influence of COVID-19 on Suppliers (feed supplier, hatchery) (including the basic information)**

Items	Situation
<b>[Basic information]</b>	
Location	<ul style="list-style-type: none"> <li>[feed supplier] Dong Thap (3 operators), An Giang (1 operator), Can Tho (2 operators)</li> <li>[hatchery] Dong Thap (3 operators), An Giang (2 operators), Can Tho (4 operators)</li> </ul>
Organization type	<ul style="list-style-type: none"> <li>[feed supplier] Corporation (more than 5 persons) (3 operators), Others (3 operators)</li> </ul>
Method of settlement (sale)	<ul style="list-style-type: none"> <li>[feed supplier] Bank transfer (2 operators), Check (1 operator), Unanswered (3 operators)</li> </ul>
<b>[Influence of COVID-19]</b>	

<sup>9</sup> Some operators concurrently serve as suppliers of aquaculture medicines

Items	Situation
Issues on procurement	<ul style="list-style-type: none"> <li>[feed supplier] rise of input prices/ rise of cost</li> <li>[hatchery] rise and instability of input costs such as feed and medicines</li> </ul>
Issues on sale	<ul style="list-style-type: none"> <li>[feed supplier] decrease of sales volume due to temporal closure of aquaculture operation and shrinking of production (demand decline)/ rise of sales price due to increase of input cost</li> <li>[hatchery] demand decline due to temporal closure of aquaculture operation, etc./ decline of the sales price, and increase of sales prices due to rise of cost, etc. (there are opposite cases at the same time)</li> </ul>
Rise and fall of profit	<ul style="list-style-type: none"> <li>[feed supplier] decrease of profit (5 operators)/ increase of operation cost (5 operators)/ increase of transportation cost (3 operators)</li> <li>[hatchery] decrease of profit (9 operators)/ low profit and running a deficit due to a rise of cost, a decrease of sales volume, etc.</li> </ul>
Transaction volume/ value	<ul style="list-style-type: none"> <li>[feed supplier] decrease of transaction volume due to movement restriction (5 operators)/ decrease of transaction volume due to demand decline (6 operators)</li> <li>[feed supplier] decline of the sales price (4 operators)</li> <li>[hatchery] decrease of transaction volume due to movement restriction (5 operators)/ decrease of transaction volume due to demand decline (8 operators)/ decrease of sales volume due to a decrease in the number of customers/ slump of sales of seeds due to the delay of the start of production cycle because farmers tend to delay harvesting period to avoid the loss</li> <li>[hatchery] decline of the sales price (9 operators)</li> </ul>
Business management/ employ	<ul style="list-style-type: none"> <li>[feed supplier] lack of buyers due to temporal closure of aquaculture operation, etc. (6 operators)/ fewer opportunities of exchanging opinions with farmers/ difficulty of market access (4 operators)/ change of suppliers/ rise of procurement price (6 operators)/ lack of cash due to increase of debt of farmers (unpaid)</li> <li>[hatchery] increase of production cost due to rise of feed price, etc. (7 operators)/ increase of transportation cost (5 operators)/ sale at below break-even/ limited financial supports (5 operators)/ lack of buyers and customers (8 operators)</li> </ul>
Others	<ul style="list-style-type: none"> <li>[hatchery] lack of opportunities to communicate with customers/ oversupply</li> </ul>

Source: JICA survey team

## 2) Aquaculture Operator

The number of respondents is 13, and the regional breakdown is; 6 operators in Dong Thap province, 3 operators in An Giang province, and 4 operators in Can Tho city. Table 3.11.4 shows the basic information of aquaculture farmers interviewed and the influence of COVID-19 on this stage.

Two main influences that this stage received from other stages are; 1) rise of feed price, and 2) demand decline and lack of sale destination. As mentioned in the input stage, the influence of rising feed prices has an enormous impact on aquaculture farmers, as evidenced by the fact that almost all of the operators faced this issue. It is thought that the demand decline relates to a decrease in shipment due to the slump in export, and a decrease in orders from processing plants.

Even though the price of raw fish recovered compared to that of the previous year in some regions, the gate price of fish in all survey areas in the first half of 2021 was still below the break-even point<sup>10</sup>. Some operators take a dislike to selling fish at a low price and extend the feeding period in anticipation of price recovery, even though there is an aspect that the additional feed cost strains the business. Besides, there is a report that the delay of the harvesting period by farmers provoked a temporal lack of supply, and it casts a negative impact on the market of processors. On the other hand, there is another report that the supply is enough in Can Tho city, and therefore it is considered that regional and seasonal imbalanced supply has occurred.

**Table 3.11.4 Influence of COVID-19 on Aquaculture Operators (including the basic information)**

Items	Situation
<b>[Basic information]</b>	
Location	• Dong Thap (6 operators), An Giang (3 operators), Can Tho (4 operators)
Type of business	• Only aquaculture (3 operators), Mainly aquaculture (8 operators), Mainly non-aquaculture work (1 operator), Unanswered (1 operator)
Method of settlement (purchase/ sale)	• [purchase] Bank transfer (7 operators), Check (5 operators), Unanswered (1 operator) • [sale] Bank transfer (10 operators), Check (2 operators), Unanswered (1 operator)

<sup>10</sup> Source: supplemental information by DARD (3 target places)

Items	Situation
Electricity power supply	• By power distribution (12 operators), Unanswered (1 operator)
Participation in union organization	• Member (2 operators), Non-member (11 operators)
<b>[Influence of COVID-19]</b>	
Issues on procurement	• rise of feed price (13 operators)/ rise of other input costs (materials, medicines, transportation, labor)
Issues on sale	• lack of buyers/ cost increases due to prolonged feeding period because of the slump of selling of regular size fishes/ fewer orders from export companies
Rise and fall of profit	• decrease of profit due to cost increase, a decline of sales price, etc. (13 operators)
Transaction volume/ value	• decrease of production due to less export/ decrease of transaction volume due to demand decline (6 operators *0 operators in Can Tho city)/ limited procurement by processing plants • decline of selling price/ change of gate price (8 operators *most operators reported the decline of the selling price, but the rise of selling price also occurred)
Business management/ employ	• Lack of buyers due to a slump of export, etc. (8 operators)/ increase of production cost (6 operators *opposite case also occurred)/ increase of input cost (13 operators)/ lack of financial support such as difficulties in obtaining a loan, etc. (5 operators) • Prolonged feeding period
Others	• occurrence of waste and food loss (6 operators)

Source: JICA survey team

### 3) Middlemen/ Wholesalers

The number of respondents is 6, and the regional breakdown is; 2 operators in Dong Thap province, 1 operator in An Giang province, and 3 operators in Can Tho city. Table 3.11.5 shows the basic information of middlemen/ Wholesalers interviewed, and the influence of COVID-19 on this stage.

The operators of this stage procure raw fish from farmers and sell them to processing plants, and also some operators take roles of distribution between farmers and wholesalers (there are some operators which connect processing plants with distributors). As mentioned above, there is an obstacle to procurement because aquaculture farmers show a reluctant attitude to supply. On the other hand, buyers also display an attitude to wait for the price drop of fish. It can be said that this stage receives pressure from both sides of the stage, from upstream and from downstream.

Moreover, getting rid of a middleman has taken place on the VC of pangasius based on a government policy. In Can Tho city, direct distribution of raw fish from farmers to processing/ export operators without middlemen/ wholesalers is now ongoing. On the vertically integrated VC of pangasius, there is a possibility that the meaning of the existence of the operators on this stage may be unstable if the movement of getting rid of middlemen accelerates. However, it cannot be claimed that the importance of the existence of this stage should be fully reduced because there is an example that a retailer utilizes a wholesaler during the pandemic (as described in section 7) Retailer).

**Table 3.11.5 Influence of COVID-19 on Middlemen/ Wholesalers (including the basic information)**

Items	Situation
<b>[Basic information]</b>	
Location	• Dong Thap (2 operators), An Giang (1 operator), Can Tho (3 operators)
Product item	• Whole (fresh or chilled), Fillet (fresh or chilled)
Capital source	• Rural Banks (2 operators), Commercial Bank (1 operator), Unanswered (3 operators)
<b>[Influence of COVID-19]</b>	
Issues on procurement	• reluctance of selling at low price by farmers due to rise of feed cost/ rise and instability of procurement price/ lack of supply volume
Issues on sale	• decrease of selling volume due to fewer orders by processors/ low selling volume caused by the movement restriction and the avoidance of purchasing by trading partners (intention to wait for a decline of price)/ low sales price (there is also a report which indicates the rise of sales price)
Rise and fall of profit	• decrease of profit due to the rise of procurement price, despite the low sales price, etc. (6 operators)
Transaction volume/ value	• decrease of transaction volume due to movement restriction (3 operators)/ decrease of transaction volume due to demand decline (4 operators) • decline of the sales price (4 operators)
Business management/ employ	• lack of markets and customers (4 operators)/ decrease of capital due to accumulation of unpaid by customers, etc. (4 operators)/ increase of operation cost (4 operators)/ increase of

Items	Situation
	transportation cost (3 operators)/ limited opportunities for financial supports (3 operators)
Others	• increase of competition with other companies

Source: JICA survey team

#### 4) Processors

The number of respondents is 8, and the regional breakdown is; 2 operators in Dong Thap province, 3 operators in An Giang province, and 3 operators in Can Tho city. Table 3.11.6 shows the basic information of processors interviewed and the influence of COVID-19 on this stage. Some processors have a role in the export business as well, therefore the information in this stage includes some content related to export.

In the pangasius VC, the processing/ export stage is located at the most downstream. This stage was strongly affected by border closure/ lockdown of the export counterparts, and the procurement volume has decreased considerably. In addition to the factor caused by demand decline, the lack of raw fish caused by the reducing production by aquaculture farmers is also one of the factors that the procurement volume has decreased.

From the standpoint view of farmers, there is an aspect that the demand decline from the processing/ export stage leads to the reduction of production. Therefore, it is considered that both stages have harmful effects on each other. Besides, in terms of the issues on procurement, it can be suggested that integrated companies were relatively able to absorb such issues between the stages as there is a report that a processor indicates “No procurement issue because they have own aquaculture farms”

Also, it is assumed that there are a lot of processors, which are in a tough financial situation due to cost increases related to additional procedures and also keeping protocols such as PCR tests, and the cost for maintenance and operation of existing facilities despite the low operational rate of processing plants. The fact of the temporary shutdown of processing plants and personnel curtail also indicates the difficult circumstances of the processors.

[Result of the follow-up survey in October and November 2021]

Among eight operators, one got out of business. Three operators have been temporarily closing the operation. The reason for the temporal closing is the financial trouble due to COVID-19. Four companies that maintain the business also suffer from persistent and negative impacts of the selling volume, buying volume of raw fish, transportation cost, production/ operation cost, and profit. Weakened operation capacity caused by the response to the request for complying with the social distancing and the additional expenses for the measures against the infection prevention such as “3 at site” may impose burdens on the business management. The most impacted period for all operators includes August and September 2021. The negative impacts have been prolonged and worsening.

**Table 3.11.6 Influence of COVID-19 on Processors (including the basic information)**

Items	Situation
<b>[Basic information]</b>	
Location	• Dong Thap (2 operators), An Giang (3 operators), Can Tho (3 operators)
Organization type	• Individual company (7 operators), Cooperative/Association (1 operator)
Final products	• Fillet, Steak, Whole, etc.
Capital source	• Commercial Bank (6 operators), Rural Bank (1 operator), Unanswered (1 operator)
<b>[Influence of COVID-19]</b>	
Issues on procurement	• Increase of transportation cost/ rise of the price of raw materials and input goods/ decrease of procurement volume of materials due to inhibition of production by farmers/ difficulties of procurement of raw fish due to financial issues
Issues on sale	• rise of transportation cost of frozen products for export/ demand decline from markets/ increase of stock due to suspension of export/ cost increase due to slow export process/ lack of customers due to closure of restaurants and canteens
Rise and fall of profit	• decrease of profit due to stable sales price, despite the increase of input cost, etc. (8 operators)

Items	Situation
Transaction volume/ value	<ul style="list-style-type: none"> <li>lack of raw material fishes due to temporal closure of aquaculture operation, etc. (6 operators)/ decrease of transaction volume due to movement restriction (5 operators)/ decrease of transaction volume due to demand decline (7 operators)/ decrease of production volume (more than 5 operators)/ decrease of sales volume (more than 4 operators)</li> <li>decline of the selling price (5 operators *there is a case of a rise of the selling price)</li> </ul>
Business management/ employ	<ul style="list-style-type: none"> <li>lack of capital (7 operators)/ increase of operation cost (7 operators)/ rise of transportation cost (6 operators)/ limited financial supports (5 operators)</li> <li>lack of buyers (7 operators)/ lack of transportation means (4 operators)</li> <li>reduction of the workforce (more than 100 people) due to low operation (3 operators)</li> </ul>
Others	<ul style="list-style-type: none"> <li>additional transportation cost caused by standby time for COVID inspection of containers for export</li> <li>occurrence of waste and food loss (5 operators)/ limited access to foreign markets and market information (more than 4 operators)</li> </ul>
<b>【Result of the follow-up survey in October and November 2021 (comparison with the situation at the previous survey)】</b>	
Business condition	<ul style="list-style-type: none"> <li>One of eight companies got out of business.</li> <li>Three of eight companies have been closing their operation temporarily since July 2021.</li> </ul>
Changes in the number of markets/buyers (number of valid responses: 4)	<ul style="list-style-type: none"> <li>Decreased (2 operators) →[detailed information] There is no recovery. The situation is getting serious. Many provinces take lockdown measures.</li> <li>No change (2 operators)</li> </ul>
Changes in selling volume (number of valid responses: 4)	<ul style="list-style-type: none"> <li>Decreased (4 operators) →[detailed information] Whereas the markets still have demand, the selling volume decreased heavily due to the shortage of workforce/ workers. The shutdown of the workers to secure the social distancing and to arrange "3 at the site" and the negative attitude to working by workers who have concerns about the infection risks have impacts on the production decline. →[detailed information] The selling volume decreased 30-50% due to measures to secure social distancing.</li> </ul>
Changes in the buying volume of raw fish (number of valid responses: 4)	<ul style="list-style-type: none"> <li>Decreased (4 operators) [detailed information] The purchasing of material fish declined due to the lack of workers. Companies cannot assemble workers to secure the social distancing on the lines of the government request, and workers tend to refrain from working to avoid infection risks. [detailed information] 30-50% decreased. Although the average purchasing volume in the first six months of 2021 was around 90ton/day, that in July-October was 35ton/day, and the current one is around 45ton/day.</li> </ul>
Changes in the transportation cost (number of valid responses: 4)	<ul style="list-style-type: none"> <li>Increased (4 operators) [detailed information] The cost increase results from the COVID-19 tests for drivers and the "green line" registration fees to the Department of Transportation. * "green line" permission is valid for movement during the lockdown period. [detailed information] The increase of stock volume due to the lack of containers for export affected storage conditions and transportation costs.</li> </ul>
Impact on production/ operation cost (number of valid responses: 4)	<ul style="list-style-type: none"> <li>Increased (4 operators) [detailed information] 200-300% increased. [detailed information] 150-200% increased due to the occurrence of fees for COVID-19 measures. [detailed information] 30-40% increased due to the occurrence of the arrangement fees of "3 at site".</li> </ul>
Impact on profit (number of valid responses: 4)	<ul style="list-style-type: none"> <li>Decreased (4 operators) [detailed information] The profit decreased heavily because the operational and transportation costs increased while revenue decreased. →[detailed information] The profit decreased due to the reduction of selling volume since June 2021 and increased costs.</li> </ul>
Other issues (number of valid responses: 6)	<ul style="list-style-type: none"> <li>The situation became more difficult. (6 operators) [detailed information] Control checkpoints of COVID-19 on the routes and different rules in each province/ area are restriction factors on movement. Drivers need to put themselves in quarantine on every travel beyond their living/ working zones. [detailed information] Shortage of space for "3 at site" in the factory for the hundreds of workers are the obstructive factors of operation and production.</li> </ul>
Most impacted month from January 2020 until now (number of valid responses: 6)	<ul style="list-style-type: none"> <li>August- September 2021</li> <li>August - October 2021</li> <li>July – mid-October 2021</li> <li>July - September 2021</li> <li>July - September 2021</li> <li>July - September 2021</li> </ul>

Source: JICA survey team

## 5) Exporters

The number of respondents is 5, and the regional breakdown is; 1 operator in Dong Thap province, 1 operator in An Giang province, and 3 operators in Can Tho city. Table 3.11.7 shows the basic information of exporters interviewed and the influence of COVID-19 on this stage.

It is indicated that the source of the influence of COVID-19 on the pangasius VC is the slumped export due to border closures. In other words, the influence that this stage received extended towards the upper stream on the VC. The impacts that exporters faced include the decrease of profit caused by the rise of sea transport costs, the occurrence of additional costs for COVID-19 control and its measures, etc. Besides, there is a report from Dong Thap province that export transaction prices fell below the break-even point with the various additional cost related to strict export regulation, prolonged export procedure, responses to COVID-19 measures enforced by the Government.

[Result of the follow-up survey in October and November 2021]

Among five operators, two operators had been temporarily closing the operation on the grounds of financial trouble due to COVID-19. Lockdown in Viet Nam and the sluggish export generated a harmful effect on this stage. The rise of sea transportation due to the lack of containers remained one of the issues in the stage of export. On the other hand, there was an expectation that the demand would recover in the Christmas season and New year. The most impacted period for all operators includes August and September 2021, as with the case of the processing stage. The negative impacts had been prolonged and worsening.

**Table 3.11.7 Influence of COVID-19 on exporters (including the basic information)**

Items	Situation
<b>[Basic information]</b>	
Location	• Dong Thap (1 operator), An Giang (1 operator), Can Tho (3 operators)
Organization type	• Individual company (3 operators), Group company (1 operator), Unanswered (1 operator)
Product item	• Whole (frozen), Fillet (frozen), Steak (frozen, fresh or chilled), Prepared or preserved (frozen), etc.
Capital source	• Commercial bank (2 operators), Unanswered (3 operators)
<b>[Influence of COVID-19]</b>	
Issues on procurement	• instability of supply volume
Issues on sale	• increase of transportation cost due to rise of sea transportation expense/ demand decline due to lock-down in export counterpart/ slump of export to China
Rise and fall of profit	• decrease of profit due to the rise of transportation cost, the unchanged sales price, despite the increases of procurement cost, etc. (5 operators)
Transaction volume/ value	• decrease of transaction volume due to movement restriction (4 operators)/ decrease of transaction volume due to demand decline (5 operators) • decline of the sales price (5 operators)/ both cases of decline and rise of the price of procurement
Business management/ employ	• lack of markets and buyers (5 operators) • increase of operation cost due to cost for COVID measures, protection of workers, the rise of transportation cost, etc. (5 operators)/ twofold rise of transportation cost per container/ lack of financial support (4 operators)/ increase of cost for countermeasures on COVID-19 in industrial areas/ occurrence of storage cost due to export stagnancy • lack of labor due to movement restriction (4 operators)/ reduction of workers and reduction of personnel expenses (per person) (more than 2 operators)
Others	• increase of competition with others
<b>【Result of the follow-up survey in October and November 2021 (comparison with the situation at the previous survey)】</b>	
Business condition	• Two of five companies have been closing the operation temporarily since July 2021.
Changes in the number of markets/buyers (number of valid responses: 5)	• Decreased (4 operators) [detailed information] There are some issues such as decreased demand of markets, movement restriction, difficulties in export procedures, high cost. • Increased (1 operator)
Impact on selling volume (number of valid responses: 5)	• Decreased (5 operators) [detailed information] Although the selling volume recovered slightly in May 2021, it decreased seriously from July 2021 due to the lockdown in Viet Nam. The export demand seems to increase because each country tends to lift the movement restriction and reopen borders. The export demand may increase significantly toward Christmas and New Year.

Items	Situation
Impact on operation/ transportation cost (exportation) cost (number of valid responses: 5)	<ul style="list-style-type: none"> <li>Increased (5 operators) [detailed information] The fee for sea transportation increased 300-500% due to the lack of containers.</li> <li>[detailed information] The transportation cost for export has been continuously increasing due to the lack of containers, and the cost is 5-6 times compared with the normal situation. The rise of gasoline prices also affects it.</li> </ul>
Impact on profit (number of valid responses: 5)	<ul style="list-style-type: none"> <li>Decreased (5 operators) [detailed information] Profit fall occurred due to the drastic drop in production since June 2021 and increased operational costs during the lockdown.</li> <li>[detailed information] Profit decreased due to the sluggish export and cost increases.</li> </ul>
Status of human resource management (number of valid responses: 5)	<ul style="list-style-type: none"> <li>More difficult (5 operators) [detailed information] The company has to arrange "3 at site" to maintain the production and avoid dismissal and resignation. Managing the daily life of the hundreds to thousands of workers is arduous.</li> </ul>
Other issues (number of valid responses: 5)	<ul style="list-style-type: none"> <li>More difficult (5 operators) [detailed information] Different rules in each province and city caused difficulties in movement and goods transportation.</li> </ul>
Most impacted month from January 2020 until now (number of valid responses: 5)	<ul style="list-style-type: none"> <li>August - September 2021</li> <li>June - September 2021</li> <li>July - September 2021</li> <li>July - September 2021</li> <li>July - September 2021</li> <li>July - September 2021</li> </ul>

Source: JICA survey team

## 6) Distributors

The number of respondents is 8, and the regional breakdown is; 2 operators in Dong Thap province, 3 operators in An Giang province, and 3 operators in Can Tho city. Table 3.11.8 shows the basic information of distributors interviewed and the influence of COVID-19 on this stage.

Distributors are engaged in various distribution chains as a node among operators. There are influences from the downstream side such as demand decline. There are also issues on procurement such as reduced production and production halt by aquaculture farmers. Besides, there is an operator which takes action to mitigate the degree of impact through adjustment of supply to demand from the customers. Overall, although this stage has received influences from both upper stream and downstream, the degree of impact could be said to be relatively low compared to that of other stages.

**Table 3.11.8 Influence of COVID-19 on distributors (including the basic information)**

Items	Situation
<b>[Basic information]</b>	
Location	• Dong Thap (2 operators), An Giang (3 operators), Can Tho (3 operators)
Distribution channels	• Aquaculture operators → Wholesalers, Retailers, Supermarkets/ Processors → Markets, Customers, etc.
Product item	• Whole (fresh or chilled), Frozen prepared products, etc.
<b>[Influence of COVID-19]</b>	
Issues on procurement	• rise of procurement price of raw fishes due to inhibition of production and suspension of production/ movement restriction to epidemic areas/ rise of transportation fuel
Issues on sale	• demand decline/ drop of selling price/ decrease of selling volume/ movement restriction to epidemic areas/ increase of transportation cost
Rise and fall of profit	• decrease of profit (8 operators)
Transaction volume/ value	<ul style="list-style-type: none"> <li>decrease of transaction volume due to movement restriction (7 operators)/ decrease of transaction volume due to demand decline (7 operators)</li> <li>decrease of product pricing (6 operators)</li> </ul>
Business management/ employ	<ul style="list-style-type: none"> <li>lack of markets and buyers (6 operators)/ avoidance of lack of labor with movement restriction by hiring local drivers/ changing shipping destinations</li> <li>increase of operation cost (5 operators)/ increase of transportation cost on selling (more than 4 operators)</li> </ul>
Others	•

Source: JICA survey team

## 7) Retailers (Traditional Market, Mini-market)

The number of respondents is 12, and the regional breakdown is; 4 operators in Dong Thap province, 3 operators in An Giang province, and 5 operators in Can Tho city (9 traditional market retailers and 3 mini-markets). Table 3.11.9 shows the basic information of traditional market retailers and mini-markets interviewed and the influence of COVID-19 on this stage.

Pangasius is an important export commodity, and at the same time, some are distributed to local markets. In the traditional markets, the number of customers has decreased under the COVID-19 pandemic. It is considered that one of the factors is a behavior change of customers who try to evade infection risks because the infection control in traditional markets is not thorough compared to that of mini-markets.

Besides, as a behavior change of a retailer in the traditional market, there is a case that a retailer changed the procurement ways from purchasing fish from several aquaculture farmers to purchasing large volumes from a wholesaler at one time to decrease infection risks. It is suggested that the impacts took place within this stage and impacts have been mainly caused by behavior change of customers. It means that the impacts from other stages are relatively low as compared to other stages.

**Table 3.11.9 Influence of COVID-19 on Retailers (Traditional Market/ Mini-market)**

Items	Situation
<b>[Basic information]</b>	※Tr: Traditional Market, Mi: Mini-market
Location	<ul style="list-style-type: none"> <li>[Tr] Dong Thap (3 operators), An Giang (3 operators), Can Tho (3 operators)</li> <li>[Mi] Dong Thap (1 operator), Can Tho (2 operators)</li> </ul>
Product item	<ul style="list-style-type: none"> <li>[Tr] Whole (frozen, fresh or chilled), Fillet (fresh or chilled), Steak (fresh or chilled)</li> <li>[Mi] Whole (frozen, fresh or chilled), Steak (frozen, fresh or chilled), Fillet (frozen, fresh or chilled), Prepared or preserved (frozen)</li> </ul>
Capital source	<ul style="list-style-type: none"> <li>[Tr] Rural Bank (2 operators), No (6 operators), Unanswered (1 operator)</li> </ul>
Customer	<ul style="list-style-type: none"> <li>[Mi] Middle-income earners (2 operators), Low-income earners (1 operator)</li> </ul>
<b>[Influence of COVID-19]</b>	
Issues on procurement	<ul style="list-style-type: none"> <li>[Tr] increase of procurement cost due to the change of supplier from each farmer to wholesaler (to reduce the infection risks, the operator stopped visiting each farmer to collect fish, but procures fish from a wholesaler at one place)/ instability of supply of raw fish materials/ rise of the purchasing price</li> <li>[Mi] (there are no issues because it is possible to procure within the province)/ rise of the price of raw fish/ movement restriction</li> </ul>
Issues on sale	<ul style="list-style-type: none"> <li>[Tr] a slight decrease of the number of customers due to the behavior change that customers avoid the traditional markets where don't have thorough measures on the infection (supermarket are more suitable for customers because there are strict infection measures, high rotation rate, and good product variety)/ decrease of the number of the customers</li> <li>[Mi] low sales due to a decrease in the number of customers/ decrease of selling volume due to rise of the selling price</li> </ul>
Rise and fall of profit	<ul style="list-style-type: none"> <li>[Tr] decrease of profit (9 operators *diminution is few % to 80%)</li> <li>[Mi] decrease of profit (2 operators)</li> </ul>
Transaction volume/ value	<ul style="list-style-type: none"> <li>[Tr] decrease of handling volume (more than 6 operators)</li> <li>[Tr] decline of the price of products (6 operators *there is a report which indicates the rise of price)</li> <li>[Mi] decrease of handling volume (2 operators)</li> <li>[Mi] decline of the sales price (3 operators *1 operator experienced the rise of price)</li> </ul>
Business management/ employ	<ul style="list-style-type: none"> <li>[Tr] aggravation of financial situations due to the slump of selling, unpaid by customers, etc. (5 operators)/ decrease of purchasing value per customer (the main diminution is 21-40%) (8 operators)/ decrease of the number of customers (diminution is varied from few % to less than 60%) (9 operators *1 operator experienced an increase of that)/ change of supplier from farmers to wholesaler</li> <li>[Mi] rise of operation cost (2 operators)/ failure on loan examination</li> <li>[Mi] decrease of purchasing values per customer (diminution are 21-40%, 61-80%) (2 operators *1 operator experienced a rise of that)/ decrease of the number of customers (diminution is 21-60%) (2 operators *1 operator experienced an increase of that)</li> </ul>
Others	<ul style="list-style-type: none"> <li>[Tr] occurrence of waste and food loss due to a decrease in the number of customers</li> <li>[Mi] increase of waste and food loss (2 operators)</li> </ul>

Source: JICA survey team



### 3.11.4 Impact of COVID-19 Pandemic by Theme

#### 1) Concern for the Impact of COVID-19

Table 3.11.10 shows the degree of concerns for “Risk of Infection”, “Financial Impact”, and “Psychological Effect” by respondents of each stage. As a whole, the concern for “Risk of Infection” is high. It is considered that the results reflect the concern of society that there are a variety of measures strictly enforced by the Government such as movement restrictions. Regarding the high concern for “Financial Impact” by processors/ exporters, it is suggested that these stages received a large influence from the export market because pangasius is an important export commodity.

**Table 3.11.10 Degree of Concerns for Impact by COVID-19**

FVC Stage	Risk of Infection	Financial Impact	Psychological Effect
Input supplier	2.53	2.80	2.40
Aquaculture operator	2.85	2.69	2.69
Middleman/ Wholesaler	3.00	2.67	2.67
Processor	3.00	2.88	2.63
Exporter	3.00	3.00	3.00
Distributor	2.88	2.63	2.63
Traditional market	3.00	2.44	2.67
Mini-market	2.67	2.33	3.00
<b>Total</b>	<b>2.84</b>	<b>2.70</b>	<b>2.64</b>

Source: JICA survey team

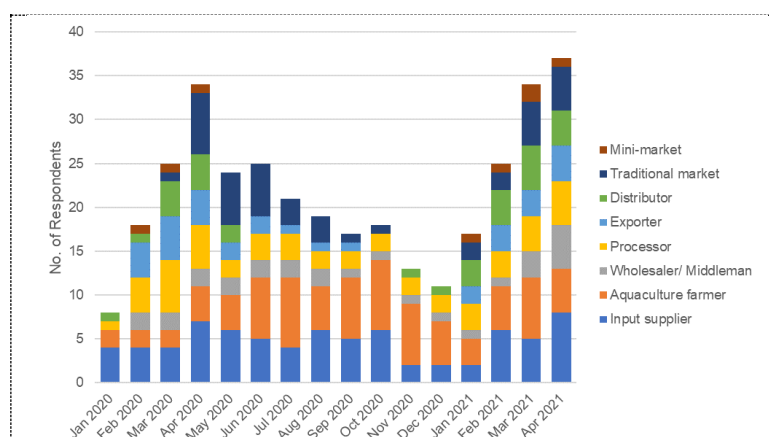
#### 2) Most affected Period of COVID-19

Figure 3.11.4 shows the period when operators of various business types received strong impacts by COVID-19 from January 2020 to April 2021 (multiple answers allowed). There is the first peak of impact in April 2020 when the export markets received a huge influence as well as disruption in the market. After that, it indicates a declining trend, but it changed to increase again in 2021. The degree of the impact in April 2021 surpasses the first peak.

In terms of the relationship between the affected period and degree of impact, there is a possibility that the production period of pangasius has a relation to this. Production and harvesting of pangasius are

available throughout the year, yet the peak season of harvesting is from April to September. It seems

that the second peak of impact and harvesting season is somewhat overlapped. Therefore, it is suggested that the second peak has taken place from such cumulative effects as the infection status of COVID-19 in the Country, various measures enforced by the Government, and also the harvest season.



**Figure 3.11.4 Most affected period by COVID-19**

Source: JICA survey team

#### 3) Labor Management and Food Safety

In this survey, an investigation about labor hygiene was conducted for aquaculture farmers and processors. All 13 aquaculture farmers instructed their employees to comply with measures on infection control. The main measures are “wearing masks”, “washing hands” and “social distancing”. Processors also have taken similar measures as aquaculture farmers have applied. 8 aquaculture farmers own

accommodation facilities and took measures such as “wearing masks” and “washing hands” as well as “air ventilation” and “social distancing” in there.

Eight of 13 aquaculture farmers have obtained certifications such as ASC and Good Aquaculture Practices (GAqP). Three of the 5 operators without it have an intention to acquire the certification, while the rest 2 operators do not have the intention. As the purpose of obtaining certification, “environmental awareness” and “food safety” were pointed out. On the other hand, 3 of 8 processors already have obtained HACCP, but 4 processors do not have it (1: unanswered). Although there is a possibility that the number of valid responses was few due to confidentiality requirements, it is indicated that obtaining HACCP is becoming a common practice among pangasius processing plants.

Regarding the change in consciousness on food safety and traceability, the consciousness level tends to be low for such trading partners as middlemen/ wholesalers, distributors, and retailers. On the other hand, trading partners of processors/ exporters who are engaged in export markets and aquaculture farmers have relatively high consciousness. Thus, it is suggested that although there is a high demand and consciousness of food safety and traceability from export markets, the consciousness in domestic markets is somewhat still low.

**Table 3.11.11 Consciousness on Food Safety and Traceability by Trading Partners**

Particulars	Input supplier	Aquaculture operator	Middlemen/ Wholesalers	Processor	Exporter	Distributor	Retailer
Food safety	n/a	62%	17%	50%	80%	25%	25%
Traceability	n/a	62%	17%	50%	80%	25%	22%

\*It indicates the percentage of the respondents who answered “trading partners started to demand management on food safety and traceability”

Source: JICA survey team

#### 4) Degree of COVID-19 Impacts on Each Index and Each Stage

Question items are classified into 12 indices based on the main points of organizational operation. Table 3.11.12 shows the degree of COVID-19 impacts on each index and each stage (irrespective of positive impact and negative impact), from which the following are raised;

- ✓ Overall, the impacts are strong for the input suppliers and aquaculture farmers which operate in the upper stream stages, and also for the processors and exporters who relate to export markets. The former has been impacted by a ripple effect from the restricted export markets and also by the hike in feed price. The latter was influenced by the direct effects of the dormant export markets. The mini-market also received strong effects, though it is difficult to state a general view because the number of respondents is only 3. Yet, it may be assumed that the increase in food waste amount and decrease in the number of customers has led to a high degree of impact.
- ✓ There are strong impacts on “goods – transaction volume” and “money – profit/ cost/ price”. Behind the high degree of impact on “money” related indices, there may be due to the characteristics of the pangasius industry, which was developed as a commodity for the export market. That is because there is less room and alternatives in domestic markets to mitigate and absorb the impacts. It is therefore indicated that negative impacts related to “goods” and “money” have occurred strongly and have been continuing as long as the export market is slowed down.

**Table 3.11.12 Degree of COVID-19 impacts on each index and each stage**

	Sub group	Input supplier	Aquaculture operator	Middleman/ Wholesaler	Processor	Exporter	Distributor	Traditional market	Mini-market
goods	① goods – handling volume	0.84	0.69	0.80	1.24	0.96	1.10	0.73	1.33
	② goods - access	1.25	0.48	0.58	0.84	0.52	0.49	0.27	0.33
	③ goods – transportation means	0.37	0.11	0.10	0.54	0.59	0.13	0.00	n/a
money	④ money - profit	1.10	1.36	1.12	1.58	1.13	1.17	0.67	0.92
	⑤ money - cost	0.93	1.05	0.35	0.94	1.17	0.72	0.39	1.00

	⑥money - price	1.37	1.29	0.65	0.86	0.85	0.70	0.56	0.69
	⑦money - others	0.62	0.52	0.55	0.70	0.63	0.31	0.27	1.00
⑧	⑧people – labor, expense	0.25	0.13	0.09	0.56	0.48	0.05	0.00	0.67
⑨	⑨information	0.53	0.06	0.27	0.63	0.15	0.38	0.26	0.86
⑩	⑩operation/ management	0.23	0.16	0.18	0.17	0.05	0.21	0.40	0.54
⑪	⑪environment*	2.00 (valid response:1)	0.56	0.00	0.50	0.00	0.00	0.00	n/a
⑫	⑫input	0.38	0.25	n/a	n/a	n/a	n/a	n/a	n/a

Source: JICA survey team

### 3.11.5 Conclusion of the Impacts and Countermeasures Proposed

COVID-19 impacts were analyzed item by item in the aforementioned 3.11.3 and 3.11.4. Following is a summary of the impact overview, measures, and also relations with existing issues:

- ✓ Common issues of COVID-19 among stages of the VC are “decrease in profit” due to stagnancy and disruption on export markets. Besides, though the connection with COVID-19 is not confirmed, the influence of the rise of feed prices was also strong. The obstacles that occurred at the inlet (supplier) and outlet (export) impose a strain at each point of the VC. It is therefore thought that there are fewer alternatives to mitigate and absorb influences as long as the VC depends heavily on the trend of the export market.
- ✓ Considering the efforts on labor hygiene and the acquisition status of the certificate, it is inferred that each operator in the pangasius industry manages the hygiene and production controls with high consciousness. In terms of the change in consciousness through COVID-19 about food safety and traceability, it is assumed that there is high consciousness mainly in export-related stages. Although the establishment of a management system that complies with demand from the export market has proceeded, further improvement on quality retention and hygiene management is required in a with/post-COVID society. Therefore, it is suggested that further efforts for the improvement of labor hygiene and quality management will lead to the acquisition of international credit in a with/post-COVID society.
- ✓ The pangasius industry is extremely dependent on export. The industry has received a strong impact due to the stagnancy of export business by COVID-19 as afore-mentioned. From the aspect of mitigation of risks, domestic market development is considered as one of the countermeasures. It is important to enhance the adaptability to with/post-COVID society by using countermeasures such as the development of high-value-added products, which respond to the living habit of Vietnamese e.g., ready-to-cook products, online sale/ expansion of the market using DX technology, etc.

**Table 3.11.13 Summary of COVID-19 impacts and Examples of countermeasures**

Input	Aquaculture	Brokering/ Wholesale/ Distribution	Processing	Export	Retail
<b>Summary of COVID-19 impacts</b>					
<ul style="list-style-type: none"> <li>• Decrease of profit due to the rise of input prices, etc. (feed suppliers)</li> <li>• Lack of buyers and decrease of handling volume due to temporal closures of aquaculture operation (feed suppliers) (effects from aquaculture stage)</li> </ul>	<ul style="list-style-type: none"> <li>• Rise of input cost due to rise of feed prices (effects from upper stream)</li> <li>• Cost increase by prolonged feeding period due to slump in sales</li> <li>• Sale below break-even</li> <li>• Decrease of handling volume due to suspended</li> </ul>	<ul style="list-style-type: none"> <li>[middlemen/ wholesaler]</li> <li>• Tendency of excluding this stage on VC</li> <li>• Decrease of sales volume due to low orders by processors [distributor]</li> <li>• Movement restriction to an endemic region</li> <li>• Rise of transportation</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of raw fish materials due to the temporal closures of aquaculture operation (effects from aquaculture stage)</li> <li>• Great decrease of procurement volume of raw materials due to demand decline caused by border closure</li> </ul>	<ul style="list-style-type: none"> <li>• Increase in transportation cost due to rise of sea transportation expense</li> <li>• Demand declines due to lock-down of export counterparts (effects from downstream stages)</li> <li>• Slump of export to China</li> </ul>	<ul style="list-style-type: none"> <li>[traditional market]</li> <li>• Slightly decrease of customers due to the avoidance behavior by customers against traditional markets which don't have thorough measures against infection</li> <li>• Instability of supply of raw</li> </ul>

<ul style="list-style-type: none"> <li>Low sales of seeds due to the delay of harvesting period by farmers (effects from aquaculture stage)</li> </ul>	<ul style="list-style-type: none"> <li>export and demand decline (effects from downstream stage)</li> <li>Unstable market prices</li> </ul>	<ul style="list-style-type: none"> <li>fuel cost</li> </ul>	<ul style="list-style-type: none"> <li>and lock-down of export counterparts (effects from export stage).</li> </ul>	<ul style="list-style-type: none"> <li>Occurrences of additional storage costs due to the stagnancy of export</li> </ul>	<ul style="list-style-type: none"> <li>fish and rise of purchasing prices</li> <li>Decrease of number of customers, and decrease of purchasing expenses per customer [mini-market]</li> <li>Low sales due to a decrease in the number of customers</li> </ul>
<b>Cross-cutting issue</b> <ul style="list-style-type: none"> <li>✓ Effects caused by disruption on export business spread to upper stream stages</li> <li>✓ Effects by the rise of input cost (especially imported feed) mainly on upper stream stages</li> </ul>					
<b>Examples of countermeasures</b>					
<ul style="list-style-type: none"> <li>Reduction of production cost and labor expenses by utilizing DX technology</li> <li>Expanding the sales channels by utilizing online, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Reduction of production cost and labor expenses by utilizing DX technology</li> <li>Promoting the streamlining of production by utilizing DX technology</li> <li>Expanding the sales channels in the domestic market</li> </ul>	<ul style="list-style-type: none"> <li>Promoting the streamlining of shipment by pre-adjustment of incoming and outgoing deliveries</li> <li>Expanding the sales channels in the domestic market</li> </ul>	<ul style="list-style-type: none"> <li>Improvement and reinforcement of hygiene environment in processing plants</li> <li>Development of high-value addition products for the domestic market</li> </ul>	<ul style="list-style-type: none"> <li>Expanding the export counterparts</li> <li>Promoting the streamlining of the export process by utilizing DX technology</li> </ul>	<ul style="list-style-type: none"> <li>Expanding the sales channels by utilizing online, etc.</li> <li>Promoting the pangasius consumption for local people (domestic market)</li> </ul>

Source: JICA survey team

### 3.12 COVID-19 Impact Survey on Shrimp (Thailand)

#### 3.12.1 Outline of Shrimp VCs in Thailand

Whiteleg shrimp (*vannamei*) produced in brackish water accounts for approximately 82%<sup>1</sup> (2019) of all the production volume of “Shrimps, prawns” (classification of ISSCAAP group). In terms of the annual trend of production volume of each shrimp species, the production volume of Whiteleg shrimp had decreased sharply from 2012 to 2013, and there is a trend of a slight increase these few years. The reduction of production volume is due to the Early Mortality Syndrome (EMS) which had occurred in 2011.

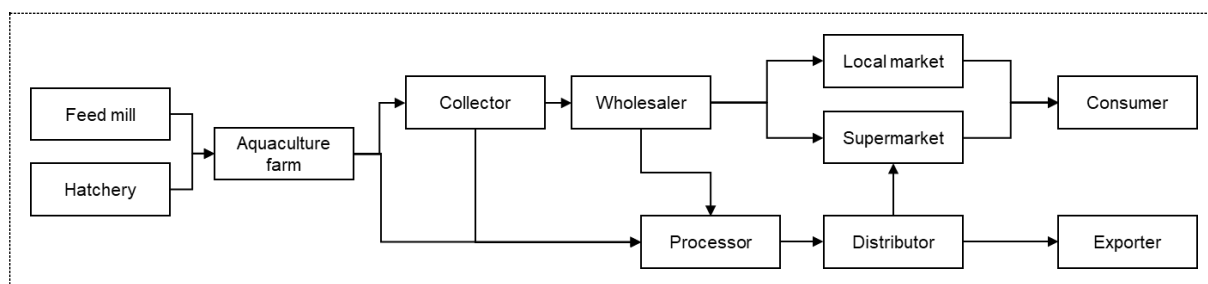
In terms of export, the main destination is the USA market, and the demand from the Asian markets such as Japan, China, Viet Nam, etc. has also been increasing in recent years<sup>2</sup>. Thailand used to be the main producer of shrimp, but other countries such as India and Indonesia have been increasing their production.

The shrimp industry of Thailand is broadly divided into such categories as; “Input stage”, “Aquaculture stage”, “Distribution stage” and “Processing/ Export stage”, as indicated in the following chart and also described in detail below:

**Table 3.12.1 Shrimp Production Volume (2019)**

species	production source	Tonnes (sub-total)	Tonnes (total)
Whiteleg shrimp	Aquaculture	365,503	365,503
Sergestid shrimps nei	Capture	26,901	26,901
Giant tiger prawn	Aquaculture	17,364	17,825
	Capture	461	
Penaeus shrimps nei	Aquaculture	39	13,937
	Capture	13,898	
Metapenaeus shrimps nei	Aquaculture	121	10,037
	Capture	9,916	
Banana prawn	Aquaculture	143	7,424
	Capture	7,281	
Green tiger prawn	Capture	1,699	1,699
Western king prawn	Capture	799	799
total			444,125

Source: FAO FishstatJ (accessed on January 11, 2022)



**Figure 3.12.1 Outline of Shrimp VC**  
Source: JICA Survey Team

**Input Stage:** Main operator types are hatcheries and feed mills. In addition, there are operators which handle medicinal products and chemical medicines:

- ✓ Hatchery: The number of hatcheries registered by DOF is around 1,500, while it is thought that there are also hundreds of unregistered operators. Most operators are engaged in only the intermediate culture period, and less than 100 operators are involved in the seed production. In general, it is recognized that the quality of shrimp seeds produced by the Charoen Pokphand (CP) group, whose market share is more than 60%, is high, and the price of them is expensive. On the other hand, although the price of shrimp seeds produced by medium and small-scale hatcheries is cheap, the quality is low.
- ✓ Feed mill & Operators: A few leading companies, such as CP and Thai Union, which have feed mills in the whole country account for a substantial part of the total share, and also there are around 50 medium or small-scale feed operators. In addition, there are business operators which are engaged in sales of chemical medicines and water quality inspection.

<sup>1</sup> Source: FAO FishstatJ (accessed on January 11, 2022)

<sup>2</sup> Source: SEAFOOD TIP (Web site) < <https://seafood-tip.com/sourcing-intelligence/countries/thailand/shrimp/> >

**Production Stage:** Shrimp aquaculture is operated at a broad range of coastal areas in Thailand, and the main production areas are Surat Thani province, Chanthaburi province, Trat province, etc. There are various scale operators including more than 10,000 small-scale operators, and producer's associations are organized. Small scale operators have around 60% market share of the total production. On the other hand, CP group which is a large-scale vertical integrated company has a 30-40% market share on domestic production, and the Thai Union accounts for around 10% of the total share.

**Distribution Stage:** The range of activities by middlemen is subdivided by the region where they operate, and it is said that brokers are engaged in 90% of products traded between aquaculture operators and processing companies<sup>3</sup>. The main operator types are the agents who are granted their license by vertically integrated companies and also the middlemen called local collectors or national collectors.

Except for the direct distribution to processing plants, the local collector is involved in a major part of the distribution. The main trading partner of local collectors is national collectors who have a base in central markets. National collector normally purchases cultured shrimps from some local collectors and sells them in the central markets. In general, national collectors can receive a big order. It is therefore considered that the role of national collectors is like wholesalers. Besides, there are cases where local collector sells products directly to retailers, processing plants, and customers. It is indicated that the distribution channels of the shrimp VC are complicated.

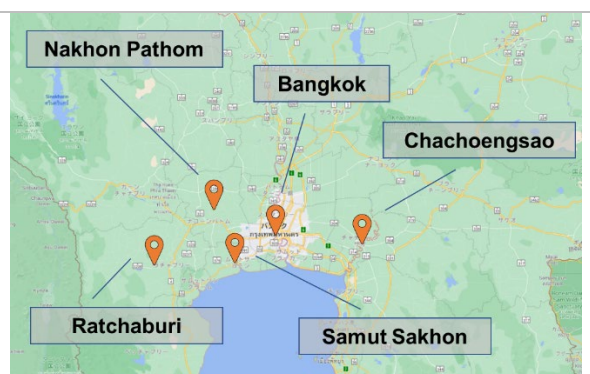
**Processing/ Export Stage:** It is assumed that there are more than 150 processing plants, and the main processing areas are Samut Sakhon province, Trat province, Surat Thani province, Samut Songkhram province, etc<sup>4</sup>. Many companies are engaged in both processing business and export business, and the main 5 companies have 80% of the total share<sup>5</sup>. Processing plants utilize multiple procurement channels according to demand volumes such as direct procurement from aquaculture operators through agents, procurement from local collectors, and complementary purchase from national collectors at markets. Also, 20% of total shrimp production in Thailand is for domestic markets, while 80% is for export. The main export counterparts are the USA, Japan, China, Korea, ASEAN, etc.

### 3.12.2 Outline of the Impact Survey on Shrimp VCs

The target species of this survey is the Whiteleg shrimp, the main species in the shrimp aquaculture industry in Thailand. The questionnaire survey was conducted in 5 provinces (see Figure 3.12.2) from June 2, 2021 to July 15, 2021. As shown in Table 3.12.2, the survey covered 7 groups, and the total number of respondents was 28. In case an operator engaged in several stages responded to the questionnaires of the corresponding stage, the operator is counted as a respondent in each stage.

Stages of FVC	Number of respondents
Input supplier	6
Aquaculture operator	5
Local collector/ National collector	6
Processor	3
Exporter	3
Local market	3
Supermarket	2
<b>Total</b>	<b>28</b>

Source: JICA Survey Team



**Figure 3.12.2 Target areas of the survey on Shrimp**  
Source: Google map as the base, and JICA Survey Team

<sup>3</sup> Source: Boston Consulting Group, "A Strategic Approach to Sustainable Shrimp Production in Thailand", July 2019

<sup>4</sup> Source: SEAFOOD TIP (Web site) < <https://seafood-tip.com/sourcing-intelligence/countries/thailand/shrimp/> >

<sup>5</sup> Source: Boston Consulting Group, "A Strategic Approach to Sustainable Shrimp Production in Thailand", July 2019

### 3.12.3 Impact of COVID-19 Pandemic by Stage of Shrimp VCs

In the survey, questionnaires were prepared for each VC stage to evaluate the impact of COVID-19. Table 3.12.3 shows the summary of the main issues on each stage and the impacts of COVID-19. The shrimp VC has received a huge impact by the effects on the export market. Also, each stage received direct negative impacts by multiple factors such as disruption by large-scale infection in the central market<sup>6</sup>, the stagnancy of the HoReCa sector due to the decline of tourism, etc. As an impact overview on the shrimp VC, it is suggested that there are 2 types of impacts, 1) direct negative effects by various impacts that occurred at middle and downstream stages as mentioned above, and 2) impacts that spread from the middle and downstream stages.

**Table 3.12.3 Main issues and impacts of COVID-19 on shrimp VCs in Thailand**

FVC Stage	Input	Aquaculture	Brokering/ Wholesale/ Distribution	Processing
Stakeholder	Hatchery, Feed mill	Aquaculture operator	Local collector, National collector	Processor
Key Point for shrimp value chain since before	<ul style="list-style-type: none"> <li>Shrimp seeds produced by small scale hatcheries are cheap price but the quality is low</li> </ul>	<ul style="list-style-type: none"> <li>Epidemic of aquatic disease</li> <li>Environmental disruption (water pollution, development on coastal regions), water challenge on aquaculture sites by factory wastage</li> <li>High production cost</li> </ul>	<ul style="list-style-type: none"> <li>Record retention related to transactions is not enough</li> <li>Control and measures for the middlemen stage is necessary for thorough traceability</li> </ul>	<ul style="list-style-type: none"> <li>Human rights issues are pointed out on foreign labor.</li> <li>High requirement from import countries for efforts on environment and human rights</li> </ul>
Cross-cutting issue	<ul style="list-style-type: none"> <li>Risks on industry decline caused by an epidemic of aquatic disease</li> <li>Competitions with producers which can operate with low labor cost</li> </ul>			
The major impact of COVID-19	<ul style="list-style-type: none"> <li>Decrease of handling volume caused by demand decline due to inhibition of production by farmers (influence from downstream)</li> </ul>	<ul style="list-style-type: none"> <li>Demand decline and decrease of profit caused by a decline of tourism, temporal closure of restaurant business, closure of central markets (influence from downstream)</li> <li>Direct sales on roads which has low sales efficiency</li> </ul>	<ul style="list-style-type: none"> <li>Large scale infection in the central market on December 2020</li> <li>Decrease of supply volume to national collectors due to the closure of the central market</li> <li>Effects on the business environment due to labor costs and management costs during the closure of the central market</li> </ul>	<ul style="list-style-type: none"> <li>Obstruction on procurement of raw materials due to the lock-down measures by the government and the serious infection status in the country</li> </ul>
Cross-cutting issue	<ul style="list-style-type: none"> <li>COVID-19 aggravates the unstable industry which holds international competition, human rights issues, aquatic disease, etc.</li> <li>Effects of the large-scale infection in the market spread to upper stream stages.</li> </ul>			
Remark	<ul style="list-style-type: none"> <li>There is a report of demand recovery of shrimp seeds in June 2021</li> </ul>		<ul style="list-style-type: none"> <li>Measures on strict hygiene management at markets</li> </ul>	

FVC Stage	Export	Local Market	Modern market (Hotel, Restaurant, Supermarket, etc.)
Stakeholder	Exporter	Retailer	Supermarket, Restaurant
Key Point for shrimp value chain since before	<ul style="list-style-type: none"> <li>Thailand was excluded from the GSP (Generalized System of Preferences) of the EU in 2015</li> <li>Issuance of a yellow card by the EU in 2015 caused by the lack of measures against IUU (removed in 2019)</li> <li>Requirement on traceability by import countries</li> </ul>	<ul style="list-style-type: none"> <li>Consumption volume is strongly affected by consumption behaviors of local people and situations of the tourism industry</li> </ul>	
Cross-cutting issue	<ul style="list-style-type: none"> <li>Risks on industry decline caused by an epidemic of aquatic disease</li> <li>Competitions with producers which can operate with low labor cost</li> </ul>		
The major impact of COVID-19	<ul style="list-style-type: none"> <li>Rise of sea transportation cost</li> <li>Decrease of export volume due to cancellation and decrease of the number of flights</li> <li>Difficulties of securing transportation means (transport vessels, containers, drivers)</li> <li>Measures on the prohibition of import by neighboring country (due to the large-scale infection)</li> </ul>	<ul style="list-style-type: none"> <li>Decrease of profit mainly a period of the large-scale infection in Samut Sakhon occurred</li> <li>Rise of transportation cost</li> <li>Rise of procurement unit price</li> </ul>	<ul style="list-style-type: none"> <li>Avoidance of purchasing aquaculture shrimps by general consumers after large-scale infection in Samut Sakhon</li> </ul>
Cross-cutting issue	<ul style="list-style-type: none"> <li>COVID-19 aggravates the unstable industry which holds international competition, human rights issues, aquatic disease, etc.</li> <li>Effects of the large-scale infection in the market spread to upper stream stages.</li> </ul>		
Remark			<ul style="list-style-type: none"> <li>Government encourages retailers and restaurant business operators to purchase aquaculture shrimps directly from farmers</li> </ul>

Source: JICA Survey Team

<sup>6</sup> Large-scale infection occurred in the fishery market in Samut Sakhon province in mid-late December 2020.

## 1) Input supplier (Hatchery, Feed Mill)

The targets of the survey on this stage are hatcheries and feed mills. The number of respondents is 6, and the regional breakdown is; 4 operators in Chachoengsao province (hatcheries), 2 operators in Nakhon Pathom province (feed mills). Table 3.12.4 shows the basic information of hatcheries/ feed mills interviewed and the influence of COVID-19 on this stage.

The issues that input suppliers (both hatcheries and feed mills) faced are impacts that mainly came from the aquaculture stage. It is suggested that the influences such as demand decline in downstream stages lead to the reduction of production by aquaculture farmers, and also the influences that the farmers received spread to input suppliers. In terms of differences between the type of business, hatcheries have received larger impacts. Especially, all hatchery operators faced a “lack of buyers”.

It is considered that lack of sales destination raises not only a decrease of profit but also a tough decision about the handling of cultured seeds because the operators who handle live animals cannot stop the culture process. There is a report that the demand for aquaculture seeds started to recover from June 2021, but simultaneously with the recovery, the situation of COVID-19 in Thailand also started getting worse. Therefore, the unstableness of the business environment of input suppliers may continue as of the days the survey was conducted.

**Table 3.12.4 Influence of COVID-19 on suppliers (hatchery, feed mill) (including the basic information)**

Items	Situation
<b>[Basic information]</b>	
Location	<ul style="list-style-type: none"> <li>• [hatchery] Chachoengsao province (4 operators)</li> <li>• [feed mill] Nakhon Pathom province (2 operators)</li> </ul>
Organization type	<ul style="list-style-type: none"> <li>• [feed mill] Partnership (2-5 persons) (2 operators)</li> </ul>
Capital source	<ul style="list-style-type: none"> <li>• [feed mill] Company/ Corporation (2 operators)</li> </ul>
Method of settlement (sale)	<ul style="list-style-type: none"> <li>• [feed mill] Cash (2 operators)</li> </ul>
<b>[Influence of COVID-19]</b>	
Issues on procurement	<ul style="list-style-type: none"> <li>• n/a</li> </ul>
Issues on sale	<ul style="list-style-type: none"> <li>• [hatchery] procurement volume of shrimp seeds by aquaculture farmers decreased due to the effects of inhibition of production, caused by the market closure and the decrease of consumption demand from restaurants/ (there is a report that indicates the trend of demand recovery of shrimp seeds from June 2021)</li> <li>• [feed mill] low production volume by aquaculture operators</li> </ul>
Rise and fall of profit	<ul style="list-style-type: none"> <li>• [hatchery] decrease of profit (3 operators)</li> <li>• [feed mill] increase of transportation cost (1 operator)</li> </ul>
Transaction volume/ value	<ul style="list-style-type: none"> <li>• [hatchery] decrease of handling volume due to demand decline from aquaculture operators (farmers reduce the number of active ponds and inhibit the production) (4 operators)/ decline of the price of shrimp seeds (4 operators)</li> <li>• [feed mill] decrease of handling volume due to demand decline (1 operator)</li> </ul>
Business management/ employ	<ul style="list-style-type: none"> <li>• [hatchery] lack of buyers due to demand decline by the closure of restaurants, etc. (4 operators)/ difficulty in access to financial supports (2 operators)</li> </ul>
Others	<ul style="list-style-type: none"> <li>• [feed mill] seasonal effect on the number of customers (2 operators)</li> </ul>

Source: JICA Survey Team

## 2) Aquaculture Operator

The number of respondents is 5, and the regional breakdown is 3; Samut Sakhon province and 2 operators in Ratchaburi province. Table 3.12.5 shows the basic information of aquaculture farmers interviewed and the influence of COVID-19 on this stage.

All respondents faced a “decrease of profit”. As factors, demand decline and also lack of sales destinations were mainly pointed out. Behind the “demand decline”, there are some factors such as the decline in tourism, suspension of the restaurant business, the closure of markets, etc. In addition to that, demand decline caused by disruption of the export market is also considered as a factor. These various factors have been accumulated, and thus whole shrimp demand has decreased.

It is assumed that the large-scale infection in the central market had a big impact on the “lack of sale



destinations". When the market closed, some aquaculture farmers lost their sales destinations and were forced to sell their products on the road over a long period. Compared to normal ways that farmers sell a large number of products to middlemen at one time, this way of selling is a non-cost-effective approach. On the other hand, this sales method can provide a sense of safety for consumers, who do not like to purchase cultured shrimps in a congested market.

Some aquaculture farmers already have taken countermeasures against the decrease in profit. For example, 1) a farmer excludes local collector and sell them directly to the national collector, even though local collectors normally distribute shrimps from the farmers to national collectors, 2) diversifying target species to disperse the risks, and 3) launching online sales though the scale is still small.

**Table 3.12.5 Influence of COVID-19 on Aquaculture Operators (including the basic information)**

Items	Situation
<b>[Basic information]</b>	
Location	• Samut Sakhon province (3 operators), Ratchaburi province (2 operators)
Type of business	• Only aquaculture (4 operators), Mainly aquaculture (1 operator)
Capital source	• Commercial Bank (4 operators), Others (1 operator)
Method of settlement (purchase/ sale)	• [purchase] Bank transfer (4 operators), Cash (1 operator) • [selling] Bank transfer (2 operators), Cash (3 operators)
Electricity power supply	• Powe distribution (5 operators)
Participation in union organization	• Member (2 operators), Non-member (3 operators)
<b>[Influence of COVID-19]</b>	
Issues on procurement	• Rise of the price of materials (iron, pipe), fuel price, electricity cost
Issues on sale	• Some freezing operators (Chinese company) in Samut Sakhon moved to Viet Nam so that profit of aquaculture operators decreased caused by the decline of purchasing power of them • Drop of the sales price (decline 30-60baht per kilo)
Rise and fall of profit	• Decrease of profit (5 operators) • Various actions responding to decrease in profit (exclusion of local collectors, diversification of aquaculture target species, selection of high-quality feed and seeds)
Transaction volume/ value	• Low gate price (4 operators)/ instability of market price (5 operators)/ low competition among sales partners • Decrease of handling volume due to demand decline (5 operators)
Business management/ employ	• Lack of buyers (5 operators)/ increase of production cost (3 operators)/ increase of input cost (5 operators) • Lack of labor due to the return home of Laotian workers • Need for support by the government/ case of online sale by farmers
Others	• Effects by aquatic disease (3 operators) • Occurrence of food loss due to lack of sales destination

Source: JICA Survey Team

### 3) Middleman/ Wholesaler (Local Collector, National Collector)

The targets of the survey on this stage (player) are local collectors and national collectors. The number of respondents is 6, and the regional breakdown is; 5 operators in Samut Sakhon province, 1 operator in Nakhon Pathom province. Table 3.12.6 shows the basic information of local collectors/ national collectors interviewed and the influence of COVID-19 on this stage.

The impacts on procurement that local collectors received are stronger than those on selling. Especially, the reduction of procurement volume caused by limited access to aquaculture farms due to the movement restriction is the main reason. It is assumed that the business situation of local collectors is severer as there are reports related to issues on profit such as decrease of profit and cost increase. Though the main transaction counterpart of local collectors is the national collectors, they have various distribution channels to processing plants, restaurants, etc. The existence of several distribution channels may have mitigated the impacts. As an example, there is a local collector who selects large size shrimps among procured shrimps and sells them directly to restaurants, because larger size shrimps are traded at a high price.

National collectors directly received the influences by the occurrence of large-scale infection in the

markets and the following market closures because, generally, national collectors put their base at the market. All respondents indicated that the most affected period was December 2020 to January 2021, therefore it is obvious that the large-scale infection had a big influence on the national collectors.

The Samut Sakhon central shrimp market was closed for 2 months. During this period, national collectors had to continue to pay labor charges, rent fees, electricity and water expense, etc. There is a report that a national collector faced a profit decline. It is suggested that national collectors experienced severe business situations by the low procurement volume due to the market closure as well as low transaction volume due to the decreased demand. Besides, there is a report that a national collector who possesses his/her warehouse was able to continue the business during the market closure.

**Table 3.12.6 Influence of COVID-19 on Local Collectors/ National Collectors (including the basic information)**

Items	Situation
<b>[Basic information]</b>	Lo: Local Collector, Na: National Collector
Location	<ul style="list-style-type: none"> <li>[Lo] Samut Sakhon province (2 operators), Nakhon Pathom province (1 operator)</li> <li>[Na] Samut Sakhon province (3 operators)</li> </ul>
Organization type	<ul style="list-style-type: none"> <li>[Na] family business, etc.</li> </ul>
Capital source	<ul style="list-style-type: none"> <li>[Lo] own fund (3 operators)</li> </ul>
Product item	<ul style="list-style-type: none"> <li>[Lo] live shrimp (3 operators)</li> <li>[Na] mainly live shrimp</li> </ul>
<b>[Influence of COVID-19]</b>	
Issues on procurement	<ul style="list-style-type: none"> <li>[Lo] decrease of handling volume caused by difficulty in access to other provinces at night for procuring shrimps due to lock-down measures</li> <li>[Na] decrease of delivering volume to the markets</li> </ul>
Issues on sale	<ul style="list-style-type: none"> <li>[Lo] n/a</li> <li>[Na] decrease of profit due to decrease of handling volume</li> </ul>
Rise and fall of profit	<ul style="list-style-type: none"> <li>[Lo] decrease of profit (2 operators)/ (demand exists from restaurants and processing plants, etc. (2 operators))</li> <li>[Na] decrease of profit (2 operators)</li> </ul>
Transaction volume/ value	<ul style="list-style-type: none"> <li>[Lo] decrease of handling volume due to such as difficulty in procurement caused by movement restriction (2 operators)</li> <li>[Na] decline of the sales price (3 operators)/ low supply amount (3 operators)/ decrease of handling volume due to demand decline (2 operators)/ decrease of procurement volume caused by selling on roads by farmers due to the closure of the central market</li> </ul>
Business management/ employ	<ul style="list-style-type: none"> <li>[Lo] increase of operation cost (3 operators)/ lack of buyers (1 operator)/ lack of labor (1 operator *there is a report that indicates the increase of labor)/ rise of gasoline price (2 operators)</li> </ul>
Others	<ul style="list-style-type: none"> <li>[Lo] difficulty in access to financial supports/ direct selling to frozen/ boil company during market closure/ impacts by a seasonal fluctuation of production (2 operators)</li> </ul>

Source: JICA Survey Team

#### 4) Processor/ Exporter

The targets of the survey on this stage (player) are processors and exporters. The number of total respondents is 6. The survey covered 3 business operators engaged in both processing and export. Table 3.12.7 shows the basic information of processors/ exporters interviewed and the influence of COVID-19 on this stage.

The main issues for this stage are; 1) obstacle on export means, and 2) rise in transport cost. There are reports on difficulties in securing containers and transport vessels. It is considered that these facts are related to the lack of containers globally due to the slump in export in each country. Also, related to the rise of maritime cargo transport costs, all 3 business operators indicated the experience of the rise of transport costs. It is also considered that the low demand from export counterpart countries has given a large impact on the shrimp export industry. According to the statistics from January to October 2020, the export value to the Asian market including (Japan and China) and Europe had declined sharply<sup>7</sup>.

<sup>7</sup> Source: Bangkok Post, < <https://www.bangkokpost.com/business/2036651/shrimp-exports-expected-to-decline-14-> >, December 17, 2020

In terms of the domestic market, there is a case that the supply has become unstable by the influence of domestic infection status, for example, there was difficulty in the procurement of raw materials for processing during lock-down measures enforced. Also, there are other issues such as additional cost for health management of laborers, difficulty in securing backup personnel of foreign laborers who went back to their countries under the COVID-19 situation, etc.

**Table 3.12.7 Influence of COVID-19 on Processors/ Exporters (including the basic information)**

Items	Situation
<b>[Basic information]</b>	
Location	• Samut Sakhon province (3 operators)
Organization type	• Group company (2 operators), Individual company (1 operator)
Product item	• Frozen products (3 operators)
Capital source	• Commercial Bank (1 operator), Private Individual/ Traders (1 operator), Others (1 operator)
<b>[Influence of COVID-19]</b>	
Issues on procurement	• [Pro] great impact on material transport from farmers to processing plants under mainly in the lock-down circumstances • [Exp] instability of supply due to the domestic infection situations
Issues on sale	• [Exp] lack of containers and transportation vessels/ stagnancy of the trading situation in the world
Rise and fall of profit	• [Exp] decrease of profit (2 operators)/ (3-5% decrease of procurement price due to price competition among operators on upper stream stages)
Transaction volume/ value	• [Exp] decrease of handling volume due to movement restriction (3 operators)/ decrease of handling volume due to demand decline (2 operators)/ (there is a report of an increase in handling volume)
Business management/ employ	• [Exp] lack of buyers such as demand decline from Japan (2 operators)/ (no impact (1 operator))/ business oppression by various expenses due to decrease in sales • [Exp] increase of transportation cost due to rise of sea transportation charge, etc. (3 operators)/ difficulty in securing transportation means (vessels, containers, drivers) (3 operators)/ increase of operation cost (3 operators)/ rescheduling of shipping cycle due to 14 days quarantine period for crews of transportation vessels • [Exp] lack of labor (2 operators)/ institutional difficulty in securing backup personnel of foreign laborers who went back to their countries under COVID-19 situation (especially Burmese) • [Exp] (large-scale companies secure transportation means according to a market situation)
Others	• [Pro] expense for health management of employees • [Exp] delay of demand recovery from Japan

Source: JICA Survey Team

### 5) Retailer (Local Market, Supermarket)

The targets of the survey on this stage (player) are local markets and supermarkets. The number of respondents is 5, and the regional breakdown is; 4 operators in Samut Sakhon province, 1 operator in Bangkok. Table 3.12.8 shows the basic information of local markets/ supermarkets interviewed and the influence of COVID-19 on this stage.

On the procurement, both local markets and supermarkets show no significant effect. On the other hand, there are some influences on sales such as a decrease in the number of customers, temporal closures, shortened business hours, etc. It is suggested that the price fluctuation and the behavior change of customers have occurred at random times because one operator experienced both rise and fall of profit and sales price.

Local markets received stronger impacts than supermarkets; for instance, retailers of local markets faced a larger reduction of profit than supermarkets. There is a report that unit selling price fell off despite the rise of procurement unit price. As a factor that the retailers of local markets received stronger impacts, the sales item is different, namely, the main sales item at local markets is live shrimp which has a poor shelf-life. On the other hand, supermarkets have a competitive advantage because they handle frozen shrimp which have good keeping. The retailers of local markets indicated that the most affected period was the almost same period as the large-scale infection occurred in the Samut Sakhon market. There is a possibility that consumers refrained from buying shrimps in such local markets.

**Table 3.12.8 Influence of COVID-19 on Retailers (local market, supermarket) (including the basic information)**

Items	Situation
<b>[Basic information]</b>	Lo: local market, Su: supermarket
Location	<ul style="list-style-type: none"> <li>[Lo] Samut Sakhon province (3 operators)</li> <li>[Su] Samut Sakhon province (1 operator), Bangkok (1 operator)</li> </ul>
Product item	<ul style="list-style-type: none"> <li>[Lo] live shrimp (3 operators)</li> <li>[Su] only frozen shrimp (1 operator), frozen and live shrimp (1 operator)</li> </ul>
<b>[Influence of COVID-19]</b>	
Issues on procurement	<ul style="list-style-type: none"> <li>n/a</li> </ul>
Issues on sale	<ul style="list-style-type: none"> <li>[Lo] decrease of customers and buyers</li> <li>[Su] decrease of customers (2 operators)</li> </ul>
Rise and fall of profit	<ul style="list-style-type: none"> <li>[Lo] decrease of profit (41-60%) (3 operators) *Jan-Mar 2020 (1 operator), Jan-Mar 2021 (2 operators) / there is a report that there are periods when 1 operator experienced an increase in profit)</li> <li>[Su] decrease of profit (0-20%) (1 operator)/ there are both reports that the average expenditure by customers increased, and decreased → fluctuation</li> </ul>
Transaction volume/ value	<ul style="list-style-type: none"> <li>[Lo] drop of the selling price (3 operators)/ there is a report that the selling price slightly increased (1 operator)</li> <li>[Lo] increase of procurement price of products (0-20%) (2 operators)</li> <li>[Lo] handling volume reduced to one-third</li> <li>[Su] drop of the selling price (0-20%) (1 operator)</li> </ul>
Business management/ employ	<ul style="list-style-type: none"> <li>[Lo] increase of transportation cost (3 operators)/ increase of operating costs such as rent fee of selling area and labor expenses (2 operators)</li> <li>[Lo] suspension of business (2 operators)/ shortened business hours (2 operators)/ decrease of customers on busy season</li> <li>[Su] suspension of business (1 operator)/ shortened business hours (1 operator)/ increase of operation cost (1 operator)</li> </ul>
Others	<ul style="list-style-type: none"> <li>[Lo] difficulty in access to support by the government (2 operators)</li> </ul>

Source: JICA Survey Team

### 3.12.4 Impact of COVID-19 Pandemic by Theme

#### 1) Concern for the Impact of COVID-19

Table 3.12.9 shows the degree of concerns for “Risk of Infection”, “Financial Impact”, and “Psychological Effect” by respondents of each stage. As a whole, the concern for “Risk of Infection” is high. On the other hand, the degree of concerns for “Financial Impact” by export-related stages is medium, while the degree of concerns by the stages which handle shrimps for the domestic market tends lower. Three factors can be pointed out as the reasons for the differences among stages as;

- ✓ Shrimps are produced mainly for export purposes, but it is assumed that there is also a big demand in the domestic market. Therefore, the stages which handle shrimps for the domestic market can flexibly change the sales channels,
- ✓ Some aquaculture farmers show the behavior changes such as selling products on the road, online sales, disintermediation of middlemen, diversifying of aquaculture target species, etc. to avoid losses, and
- ✓ There are also some supports by the Government such as opening a temporal market for securing the selling places, measures for stimulating consumption, etc.

The degree of concern for “Psychological Effect” is low. The shrimp industry in Thailand experienced a sharp drop in production volume in the 2010s due to an epidemic of aquatic disease. It could be possible to form an assumption that the low degree of concerns on “Psychological Effect” by the operators in each stage may have been caused by a sense of COVID-19 being within acceptable range compared to the impacts of the epidemic of aquatic disease.

On the other hand, retailers of local markets showed “Psychological Effect” is high, though the degree of concern for “Financial Impact” is not high. As the reason for this, it is suggested that there may be

reputation damages caused by the large-scale infection in the shrimp market and demand decline from the tourism-related business industry, leading to high psychological uncertainty compared to upper stream stages.

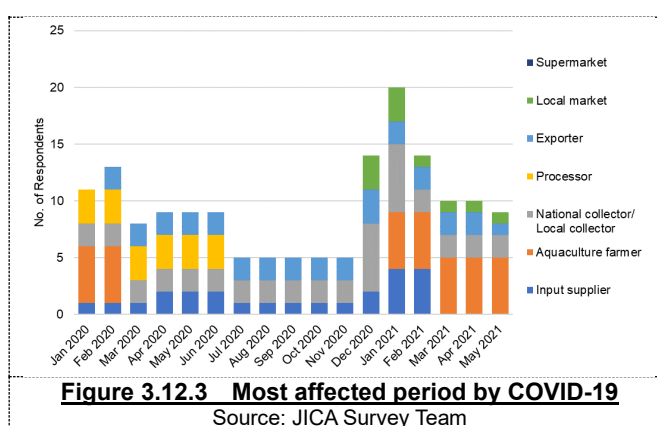
**Table 3.12.9 Degree of Concerns for impact by COVID-19**

FVC Stage	Risk of Infection	Financial Impact	Psychological Effect
Input supplier	3.00	2.00	2.50
Aquaculture operator	2.40	1.80	1.40
Local collector/ National collector	3.00	1.33	1.67
Processor	3.00	2.33	2.33
Exporter	2.67	2.33	2.33
Local market	3.00	1.33	3.00
Supermarket	2.50	1.00	2.50
<b>Total</b>	<b>2.82</b>	<b>1.75</b>	<b>2.14</b>

Source: JICA Survey Team

## 2) Most affected Period of COVID-19

Figure 3.12.3 shows the period when operators of various business types received strong impacts by COVID-19 from January 2020 to April 2021 (multiple answers allowed). There is a wave of influence in the first half of 2020 when COVID-19 brought confusion to the world market. The degree of impact in the second half of 2020 had settled down because Thailand succeeded to contain the spread of infection compared to other countries.



However, in December 2020, a large-scale infection had occurred in Samut Sakhon province, and the fishery markets were forced to close temporarily. The impact of market closure created a huge mess on the shrimp VC. Around the same time as the above event, the degree of impact has increased from December 2020, and it shows the peak in January 2021 when the market closures continued. Besides, the infection status in Thailand has become serious since June 2021. Some business operators engaged in the shrimp industry indicated their recognition that the situation is still severe as of July 2021.

## 3) Labor Management and Food Safety

In this survey, an investigation about labor hygiene was conducted for aquaculture farmers and processors. All 8 operators have instructed their employees to comply with measures on infection control. The main measures are “wearing masks” and “washing hands”.

Concerning food safety, only 1 operator out of 5 aquaculture farmers has certificates such as ASC, Good Aquaculture Practices (GAqP), etc. Two of the 4 operators which do not have it have an intention to acquire the certification, while the other 2 operators did not show their intention to acquire. On the other hand, all 3 processors have obtained HACCP. It may be difficult to make a general description as the number of samples is low, yet there is a possibility that the awareness of food safety by upper stream stages is still low.

Regarding the change in consciousness of trading partners of each stage about demand on food safety and traceability, the consciousness level of trading partners of all stages is high. The shrimp industry in Thailand has come under public scrutiny, and there were experiences exposed to severe criticism from the world. Under these situations, there have been various efforts such as regulatory measures and controls by DOF, and there is increasing recognition of food safety. It is indicated that further good

change in consciousness has occurred with COVID-19.

**Table 3.12.10 Consciousness on Food Safety and Traceability by Trading Partners**

Particulars	Input supplier	Aquaculture operator	Local collector/ National collector	Processor	Exporter	Retailer
Food safety	83%	100%	100%	100%	100%	100%
Traceability	83%	67%	100%	100%	67%	100%

\*It indicates the percentage of the respondents who answered "trading partners started to demand management on food safety and traceability"

Source: JICA Survey Team

#### 4) Degree of COVID-19 Impacts on Each Index and Each Stage

Question items are classified into 12 indices based on the main points of organizational operation. Table 3.12.11 shows the degree of COVID-19 impacts on each index and each VC stage (irrespective of positive impact and negative impact). The findings are as follows:

- ✓ The impact on the aquaculture stage and export stage is strongly felt. The impact that the aquaculture stage received has mainly resulted from the cumulative impacts that spread from the downstream stages. On the other hand, it is considered that the impact that the export stage received has mainly resulted from the export slump for various countries and obstacles in terms of transport means such as lack of containers, a rise in transportation cost, etc.
- ✓ The impact on "money" related indices such as "money - profit" and "money - price" is strong. In particular, the degree of impact on the "money - profit" of the aquaculture stage is extremely high. As mentioned in the above-mentioned 3.12.3, it is suggested that multiple influences related to COVID-19 have accumulated on the aspect of profit of the aquaculture stage. Assuming that the shrimp industry in Thailand is somewhat like one integrated business entity, it can be suggested that the disruption of shrimp commodity flow and thus the disruption of money circulation had been caused mainly by the slump of export, which is the main sales destination.

**Table 3.12.11 Degree of COVID-19 impacts on each index and each stage**

	Sub group	Input supplier	Aquaculture operator	Local collector	National collector	Processor	Exporter	Local Market	Supermarket
goods	①goods – handling volume	0.30	0.79	0.47	0.87	0.11	0.93	0.33	0.00
	②goods - access	0.67	0.73	0.11	0.12	0.00	0.38	0.11	0.00
	③goods – transportation means	0.00	0.00	0.00	0.08	0.00	0.83	0.00	n/a
money	④money - profit	0.35	1.44	0.44	0.44	0.22	0.33	0.75	0.40
	⑤money - cost	0.17	0.54	0.63	0.00	0.13	1.20	0.58	0.25
	⑥money - price	0.33	1.13	0.11	1.11	0.00	0.71	0.89	0.10
	⑦money - others	0.17	0.20	0.17	0.08	0.00	0.50	0.08	0.00
peo	⑧people – labor, expense	0.02	0.06	0.14	0.00	0.00	0.94	0.00	0.00
	⑨information	0.00	0.00	0.00	0.00	0.00	0.22	0.44	0.00
	⑩operation/ management	0.08	0.16	0.00	0.00	0.00	0.23	0.67	0.43
	⑪environment	0.25	0.21	0.67	0.33	0.00	0.67	0.00	n/a
	⑫input	0.00	0.18	n/a	n/a	n/a	n/a	n/a	n/a

\*It includes some items that have no direct impacts by COVID-19 such as environment-related question items

Source: JICA Survey Team

#### 3.12.5 Conclusion of the Impacts and Countermeasures Proposed

COVID-19 impacts were analyzed item by item in the above-mentioned 3.12.3 and 3.12.4. Following are the summary of impact overview, countermeasures, etc.:

- ✓ Common issues of COVID-19 among VC stages are profit decrease caused by demand decline due to stagnancy and disruption on export/ domestic markets. The main impact groups are; 1) direct effects to the export stage caused by the disruption of the export market, and 2) effects that spread from downstream stages such as demand decline in the country by the stagnancy of the

tourism industry and the large-scale infection at shrimp central market.

- ✓ In terms of the change in consciousness through COVID-19 about food safety and traceability, the trading partners of all stages have increased their consciousness on food safety in particular. Also, in terms of labor hygiene, all aquaculture operators and processors have taken measures for the safety of employees. Behind this behavior by operators, it is thought that there is an effect of the large-scale infection that occurred at the shrimp market, which was worldwide published. With this, the awareness of food safety and hygiene has increased in the domestic market. Concerning the international markets, the production environment and labor environment of the shrimp industry in Thailand have been put under public scrutiny even before the COVID-19, and accordingly, such a trend is expected to continue.
- ✓ As reviewed in “Concern for impact”, the shrimp industry in Thailand experienced tremendous damage and impact by the past epidemic of aquatic disease. Therefore, there is a possibility that the degree of concerns for financial impact and psychological effect of COVID-19 was expressed as somewhat low. However, under current circumstances, many operators face a decrease in profit due to an unstable demand situation. The “cost reduction” in each stage is considered one of the measures to mitigate the decrease of profit in the shrimp aquaculture VC, which consists of complicated distribution channels with various types of operators. In particular, it is assumed that aquaculture operators which bear various risks such as aquatic disease, unpredictable demand at the time of harvest, etc. may be able to enhance the adaptabilities for post-COVID society by adopting countermeasures using IoT, ICT, and AI for cost reduction (see the lower part of the table below).

**Table 3.12.12 Summary of COVID-19 Impacts and Examples of Countermeasures**

Input	Aquaculture	Brokering/ Wholesale/ Distribution	Processing	Export	Retail
<b>Summary of COVID-19 impacts</b>					
<ul style="list-style-type: none"> <li>• Decrease of handling volume caused by demand decline due to inhibition of production by farmers (influence from downstream)</li> </ul>	<ul style="list-style-type: none"> <li>• Demand decline and decrease of profit caused by a decline of tourism, temporal closure of restaurant business, closure of central markets (influence from downstream)</li> <li>• Direct sales on roads which has low sales efficiency</li> </ul>	<ul style="list-style-type: none"> <li>• Large scale infection in the central market on December 2020</li> <li>• Decrease of supply volume to national collectors due to the closure of the central market</li> <li>• Effects on the business environment due to labor costs and management costs during the closure of the central market</li> </ul>	<ul style="list-style-type: none"> <li>• Obstruction on procurement of raw materials due to the lock-down measures by the government and the serious infection status in the country</li> </ul>	<ul style="list-style-type: none"> <li>• Rise of sea transportation cost</li> <li>• Decrease of export volume due to cancellation and decrease of the number of flights</li> <li>• Difficulties of securing transportation means (transport vessels, containers, drivers)</li> <li>• Measures on the prohibition of import by neighboring country (due to the large-scale infection)</li> </ul>	<ul style="list-style-type: none"> <li>• Decrease of profit mainly a period of the large-scale infection in Samut Sakhon occurred</li> <li>• Rise of transportation cost</li> <li>• Rise of procurement unit price</li> <li>• Avoidance of purchasing aquaculture shrimps by general consumers after large-scale infection in Samut Sakhon</li> </ul>
<b>Cross-cutting issue</b>					
<ul style="list-style-type: none"> <li>✓ COVID-19 aggravates the unstable industry which holds international competition, human rights issues, aquatic disease, etc.</li> <li>✓ Effects of the large-scale infection in the market spread to upper stream stages.</li> </ul>					
<b>Examples of countermeasures</b>					
<ul style="list-style-type: none"> <li>• Reduction of production cost and labor expenses by utilizing DX technology</li> <li>• Expanding the sales channels by utilizing online, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Reduction of production cost and labor expenses by utilizing DX technology</li> <li>• Promoting the streamlining of production by utilizing DX technology</li> <li>• Expanding the sales channels by utilizing online, etc.</li> <li>• Diversification of aquaculture target species</li> </ul>	<ul style="list-style-type: none"> <li>• Promoting the streamlining of shipment by pre-adjustment of incoming and outgoing deliveries</li> <li>• Improvement and reinforcement of hygiene environment</li> <li>• Cost reduction by efficient transportation (means, route)</li> <li>• Expanding the sales channels by utilizing online, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Improvement and reinforcement of working environment and hygiene environment</li> <li>• Promoting the streamlining of shipment by pre-adjustment of incoming and outgoing deliveries</li> <li>• Expanding the sales channels by utilizing online, etc.</li> <li>• Promotion of shrimp consumption for the local market</li> </ul>	<ul style="list-style-type: none"> <li>• Expanding the sales channels by utilizing online, etc.</li> <li>• Promotion of shrimp consumption for the local market</li> </ul>	

Source: JICA Survey Team

### 3.13 Summary of the Impacts and Direction of the FVC With/Post COVID-19

In earlier part of Chapter 3 of this report, results of the questionnaire impact survey conducted on 16 commodities in five countries were described by item. Based on these results, this section summarizes the impacts of COVID-19 pandemic on each stage of FVC.

#### 3.13.1 Summary of the Survey Results

##### (1) Issues by Commodity and by Stage

Table 3.13.1 shows the impacts of COVID-19 pandemic and associated social constraints on FVC by commodity and FVC stage. From the order of the large impact, it was shown in four stages of “● significantly impacting”, “◉ fairly impacting”, “○ slightly impacting”, “△ almost not, or not ever impacting”, and if the matter did not apply, it was shown in “X”. This evaluation was extracted from the FVC stages and matters that have been more affected in its commodity but is not necessarily based on the same quantitative criteria for all commodities. It was prepared to outline types and levels of problems in each commodity.

At the same time, issues created by the upstream influence of FVC is shown as “▲” and what is by the influence from the downstream of FVC is shown as “▼”. The former mainly includes declines in supply, price increases, shortages of input and raw materials, and the latter mainly includes a decrease in demand.

About agricultural products, problem was initiated by the increase of procurement price of input materials as well as the delay of delivery, hindering the farm management in the way farmers had been doing since before. As a result, farmers were forced to manage under the pressure of high input costs. Then, the increase in prices and decrease in the accessibility to agricultural products affected the downstream side of FVC.

In particular, export items such as pineapples and bananas had common problems such as increased operating costs, intensified competition, and increased waste volume. On the other hand, coffee in Viet Nam, which is also for export and has a considerable amount of domestic consumption, the decline in demand had consistently affected FVC from downstream to upstream. In particular, the seriousness of the problem in cafes directly affected by movement restrictions was highlighted.

A similar trend can be seen in livestock sector, especially for pigs, where the rise in input prices had strongly affected. For the livestock industry, where daily feeding is essential, it had been shown that the rising cost of input, especially imported goods, directly leads to management problems. In addition, as a common feature of chickens and pigs, the decrease in final demand was appearing as a statement of “decrease in demand” in each stage of the value chain.

Finally, in view of marine products, the decline in demand associated with the decline in consumption had spread to all stages. In addition, due to an increase in the price of imported inputs, increase in costs, particularly in the processing and export industries was pronouncedly claimed. In the fishery sector, which uses ice and refrigeration facilities to maintain freshness, stagnation of transactions due to restrictions on movement, leads to a significant cost increase more than other commodities.

##### (2) Chain of Problems along the Food Value Chain

Right after Table 3.13.1, Figure 3.13.1 shows a problem tree, a conceptual diagram of cause-and-effect relationships, and the chain of problems that occurred throughout the FVC.



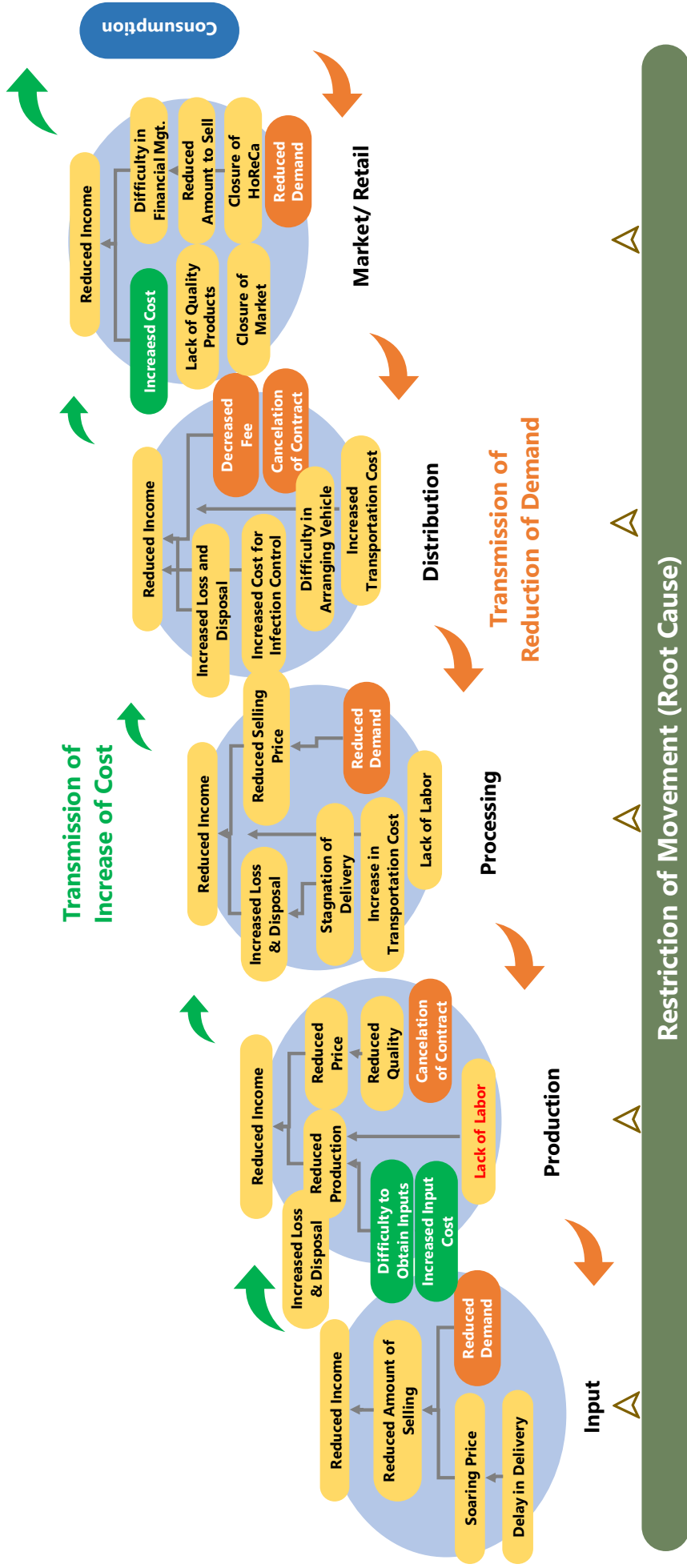
Table 3.13.1 Issues by Commodity and by Stage

FVC Stage	Problem/ Issue	Direction of the Cause	Vegetable	Pineapple	Banana	Rice	Cassava	Coffee	Palm	Chicken	Pig	Tuna	Pangasius	Shrimp
Input	Soaring import prices	▲	◎	△	△	x	○	◎	●	○	●	x	◎	x
	Delayed delivery of goods	▲	○	◎	◎	○	○	○	△	○	○	x	△	△
	Unequal distribution of subsidized fertilizers	▲	○	x	x	x	x	x	x	x	x	x	x	x
	Low demand	▼	◎	○	○	△	◎	◎	○	◎	◎	x	●	◎
Production	Increase in input prices	▲	◎	○	△	◎	●	○	◎	○	●	○	●	○
	Difficulties in obtaining subsidized fertilizers	▲	○	x	x	x	x	x	x	x	x	x	x	x
	Quality degradation due to lack of input	▲	○	△	△	△	△	△	○	△	△	○	△	△
	Decrease in production due to lack of input	▲	○	△	◎	△	△	△	○	○	△	x	x	△
	Decrease in sales price	▼	◎	x	x	x	x	△	△	○	○	◎	◎	◎
	Termination of the contract	▼	○	△	x	x	x	x	x	△	x	○	△	△
	Increased cost of selling directly to consumers		○	x	x	x	x	x	x	x	x	x	x	◎
	Lack of labors		○	○	x	△	○	○	△	△	△	△	○	○
	Lower demand	▼	◎			△	△	◎	◎			◎	◎	●
	Decrease in buyer/ demand volume	▼	◎	x	x	△	◎	●	○	○	●	○	●	△
Rising electricity, labor, and transportation costs		○	○	x	○	○	○	○	○	○	○	○	◎	
Processing	Lack of transportation	▲	◎	△	x	△	◎	○	△	△	△	△	○	△
	Increase in loss and disposal		●	△	x	x	△	○	△	△	△	△	◎	△
	Decrease in customers	▼	◎	◎	x	△	○	●	x	◎	○	x	x	x
	Decrease in sales price	▼	△	x	x	△	△	△	x	○	△	△	◎	△
	Decrease in purchase volume	▲	◎	x	x	△	△	△	x	○	△	◎	◎	○
	Increased costs due to longer storage periods	▲	○	△	x	x	△	△	△			○	◎	○
	Lack of labors		○	△	x	△	◎	○	△			◎	△	△
	Lower demand	▼	◎	◎	x	△	◎	●	△			◎	◎	△
	Reduction of fees requested by farmers	▲	○	x	x	x	x	x	x	x	x	x	x	x
	Cancellation of contract with restaurants, etc.	▼	○	x	x	x	x	x	x	x	x	x	x	x
Distribution	Difficulty in arranging transport vehicles		○	△	x	△	x	△	△	x	△	△	△	△
	Increased costs to avoid direct contact		○	◎	△	x	x	x	x	x	x	◎	◎	◎
	Rising transportation costs	▲	◎	○	○	○	○	○	○	△	△	○	◎	○
	Decrease in demand volume	▼	●	◎	◎	◎	x	●	●	●	○	◎	◎	○
	Increase in loss and disposal		○	○	○	x	x	△	△	△	△	○	△	△
	Rising electricity and warehouse costs		△	△	△	x	x	x	△	△	△	△	△	△
Market	Difficulty in getting financial management		●	x	x	△	x	x	x	x	x	◎	○	△
	Lack of high-quality vegetables	▲	○	x	x	x	x	x	x	x	x	x	x	x
	Decrease in customers	▼	◎	x	x	△	x	x	x	x	x	◎	◎	◎
	Shortening market opening time		○	x	x	○	x	x	x	x	x	x	x	x
	Lower demand	▼	◎	x	x	△	x	x	x	x	x	◎	◎	△

FVC Stage	Problem/ Issue	Direction of the Cause	Vegetable	Pineapple	Banana	Rice	Cassava	Coffee	Palm	Chicken	Pig	Tuna	Pangasius	Shrimp
Retail	Poor food quality	▲	x	x	x	△	x	x	△	x	x	△	△	△
	Soaring and fluctuating food prices	▲	x	x	x	△	x	x	○	x	x	○	○	○
	Increase in purchases of ingredients for home-cooking	▲	x	x	x	△	x	x	△	x	x	△	△	△
	Increased purchase volume to reduce frequency of purchases by customers		x	x	x	△	x	x	△	△	△	△	△	△
	Decrease in customers	▼	x	x	x	○	x	x	●	○	○	◎	◎	○
	Decrease in purchase volume per customer	▼	x	x	x	◎	x	x	◎	○	○	◎	◎	○
	Restaurant closures due to lockdown		x	x	x	◎	x	x	x	●	●	◎	△	○
	Decrease in customers	▼	x	△	○	○	x	x	△	x	x	x	x	x
	Increased operating costs		x	◎	◎	◎	x	x	△	x	x	x	◎	◎
	Labor shortage		x	x	△	○	x	x	△	x	x	x	◎	◎
Export	Increased waste		x	◎	△	△	x	○	△	x	x	△	○	△
	Change of trading route		x	◎	△	△	x	○	△	x	x	△	○	△
	Suspension of export operations	▼	x	△	x	△	x	◎	x	x	x	x	x	x
	Fierce competition from peers	▼	x	x	x	△	x	x	△	x	x	○	○	○
	Decrease in volume of handling (exports)	▼	x	△	△	○	○	◎	△	x	x	●	◎	○
	Changes in the unit price of procurement	▲	x	x	○	x	x	△	△	x	x	◎	△	○
	Increase in costs due to prolonged transportation periods and soaring transportation costs, etc.		x	△	△	○	○	◎				◎	●	◎
	Change of export destination		x	△	△	△	x	△				◎	△	△
	Lower demand	▼	x	△	○	x	x	○				◎	◎	◎
	Reduced revenue by lockdown	▼	x	x	x	x	x	●	x	x	x	x	x	x
Cafe	Increase in operating costs (shop rent, staff fee)		x	x	x	x	x	○	x	x	x	x	x	x
	Increased cost of buying coffee	▲	x	x	x	x	x	△	x	x	x	x	x	x
	Decrease in number of staff		x	x	x	x	x	◎	x	x	x	x	x	x
	Coffee disposal		x	x	x	x	x	○	x	x	x	x	x	x
Consumer	Decrease in income	▲	◎	○	○	x	x	●	x	●	●	x	x	x
	Increased food, light and fuel costs		x	○	●	x	x	●	x	○	○	x	x	x
	Increase in online food purchases		x	△	○	x	x	△	x	○	○	x	x	x
	Fewer times to go to cafes		x	x	x	x	x	●	x	x	x	x	x	x

Source: JICA Survey Team

● : significantly impacting, ◎ : fairly impacting, ○ : slightly impacting, △ : almost not, or not ever impacting, and X: matter did not apply  
 ▲ : issues created by the upstream influence of FVC, and ▼ : what is by the influence from the downstream of FVC.  
 Processing: Only one respondent for pineapple, Distribution: "Trader" for coffee and consolidator for banana.



**Figure 3.13.1 Chain of Problems along the Food Value Chain**

Source: JICA Survey Team (Export goods are not applicable)

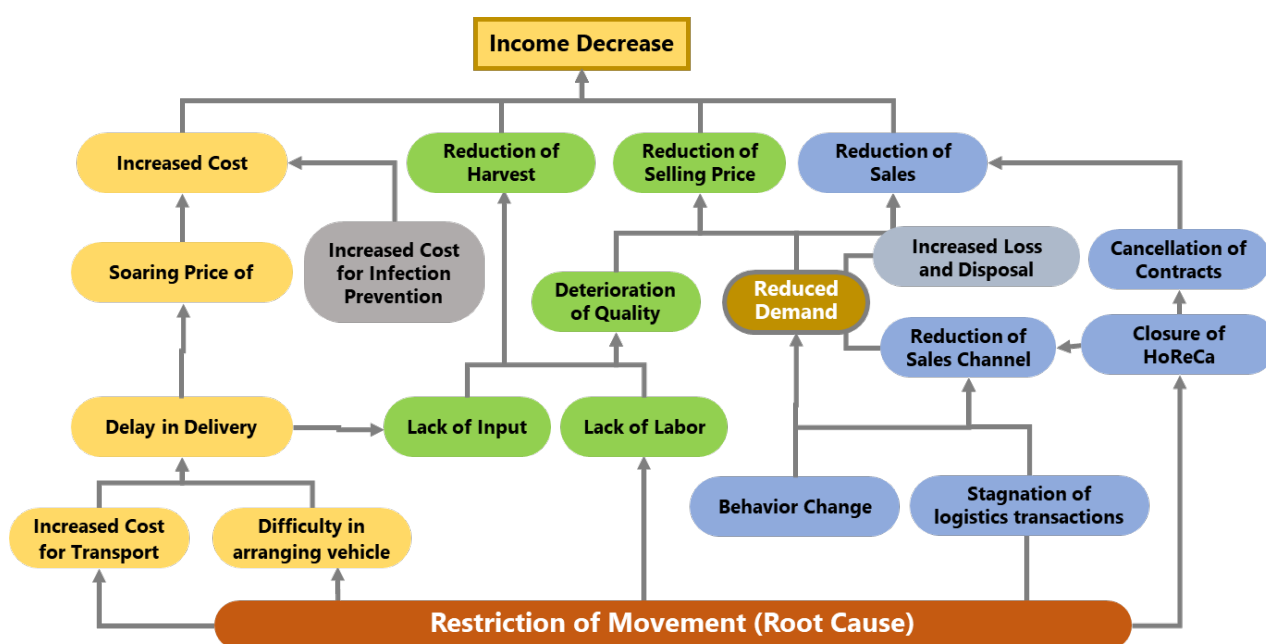
As shown in the figure, various restrictions on the occurrence of COVID-19, especially movement restrictions, had caused problems in each stage from input to consumption. To all stages, delays in delivery and labor shortages were the root causes of the problems in each stage, leading to a decrease in income for actors involved in the stage through increased costs and increased loss and disposal (see problem tree for each stage surrounded by a blue circle background).

Similarly, changes in consumer behavior with various government restrictions and COVID-19 infection, i.e., a decrease in income due to a decrease in work volume and unemployment; a decrease in eating out due to restrictions on movement; a shift from traditional to modern markets; health consciousness; changes in eating habits, etc., had resulted in a temporary decrease in demand. It was observed that decrease in demand propagates from stage to stage through highly developed FVC and led to a decrease in income in each stage (indicated by an orange arrow).

On the other hand, the cost increase, especially due to the soaring price of imported goods, led to a surge in the price of products. Yet, in a situation where strong pressure from the reduced demand is propagating from the downstream side, there had been situations where cost increases cannot be sufficiently added to the commodity prices. This trend seemed to be strong at the production sector (farmer). In principle, it is possible to adjust the amount of procurement according to the decrease in demand in the stages of traders/ wholesalers, but producers cannot cancel it once they started production, and must sell even at low prices or dispose it when demand is too small. This is one of the problem-propagation mechanisms that occurred in COVID-19 pandemic at least for a certain period of time.

### (3) Problem Structure at the Production Stage

Here, detail of the problem structure is discussed for the “production” stage, which is said to be unable to sufficiently add cost increases to commodity prices despite being hit by a decline in demand. As shown in Figure 3.13.2, the restrictions on movement in the COVID-19 pandemic had a negative impact on production activities. For example, an increase in transportation costs for input and difficulties in arranging vehicles had led to an increase in production costs (far left of the figure), and a shortage of workers had led to a decline in production activities. Coupled with a shortage of input, it had led to a decrease in quality and production volume (center).



**Figure 3.13.2 Problem Structure Centering on Production Sector**

Source: JICA Survey Team (Export goods are not applicable)

In addition, on the marketing side, a decrease in demand due to changes in consumer behavior had led to a decrease in sales volume through i) decrease in transactions in existing value chain, ii) reduction in sales channels, and iii) the cancellation of contracts. In this way, farmers income had been negatively affected in the form of “higher costs”, “lower production volumes”, “lower unit sales prices”, and “lower sales volumes.” These issues always exist even in ordinary times. However, in the COVID-19 pandemic, the strength of the impact is significant (e.g., store closures, and road blockades); it is a problem at a different level than normal.

### 3.13.2 Implications towards With/Post-COVID-19 Society

In this section, major FVC issues are extracted from the discussion above and some implications are suggested toward with/ post COVID-19 society.

#### (1) Stagnation of farm management due to labor shortages

Labor-intensive agriculture is still dominating the Southeast Asian countries. On the other hand, Thailand and Myanmar had been told of the aging population and the resulting shortage of young workers especially in rural areas. Under such circumstances, the shortage of workers would be a major problem if extreme movement restrictions are to be carried out, like the one under COVID-19 pandemic. Yet, there are two sides to this matter; in Thailand, where migrant workers gather from the neighboring countries, the shortage of casual workers became a big problem, especially in the fishery industry as had been discussed earlier, while in Lao PDR, etc., where such workers were from, the shortage of workers was solved by the return of workers.

In any case, in the with/post COVID-19 society, the direction shall be to promote a system that does not rely excessively on the labor force that is insufficient in both normal and emergency situations, that is, automation and mechanization of production management. To further elaborate, the development of new crop varieties suitable for such mechanized systems and the introduction of new technologies (e.g., genome engineering for breeding) to accelerate the research and development would also be effective.

However, when introducing agricultural machinery, for example, it may be difficult to introduce it unless agricultural infrastructure is developed. There are also differences in the level of research in each country and available research equipment in the R&D sector. Thus, efforts should be made according to the stage of development of each country.

*Implication: Automation and mechanization of production management*

#### (2) Introduction of E-Commerce (EC) and response to different needs for it

The most notable FVC problem in COVID-19 was the loss of demand especially along the established sales routes. In many cases, this was temporary, but many actors involved in existing FVC were hit hard by this, and consumers were also required to change their behavior, such as the shift from eating-out to cooking home. Under these circumstances, the revitalization of sales channels utilizing EC, mainly in urban areas where several platforms and services already exist, is considered to have a potential in the Southeast Asia today.

For this reason, it is considered that diversifying sales channels, by adding E-Commerce to existing FVC and attempting direct sales, is an appropriate direction of development in a with/post COVID-19 society that can respond to both normal and emergency situations. However, it was also pointed out that it is necessary to respond to different specifications in sales through EC, i.e., shipments at high frequency in small lots, correspondence at different times, etc. For this reason, any supporting initiatives are required to develop capabilities of farmer groups that can meet these new specifications.

*Implication: Diversification of sales channels and response to new issues (specifications)*

### (3) Occurrence of disposal of commodities

In the COVID-19 pandemic, due to restrictions on movement, agricultural and fishery products that had lost their sales destinations were not harvested or disposed. One possible direction of development might be to establish a system that can respond to these unforeseen circumstances by strengthening resilience in Post/with COVID-19 society. For this reason, in addition to responding with a strategy of diversification of sales channels, a strategy of ensuring existing sales channels or establishing a system that can respond to stagnation in agricultural products transactions shall be considered.

Specifically, addition and/or strengthening of storage, cooling, and processing functions, or the promotion of local production and consumption, which is close to the idea of so-called “sixth industrialization” in Japan. However, since additional investment is required for agricultural producers, it will be difficult for individual farmers to conduct. Therefore, it is necessary to be examined together with the initiative by the farmer organization with a support from the public sector especially for the organization set-up and/or organization strengthening.

***Implication:*** *Addition of storage, cooling, and processing functions, and promotion of local production and consumption*

### (4) Effects of problems before coronal disaster (African swine fever, insect damage, etc.)

In the questionnaire survey in each country, many answers were obtained that the influence of the problem from the previous one was stronger than the influence of corona disaster. For example, the spread of African swine fever in pig farms (Vietnam) and viral diseases in cassava (Thailand).

In response to this, the authorities in charge of each country are continuously working on these issues, and JICA is also implementing projects to address such themes (e.g., implementation of SETREPS, including measures to combat cassava disease). As with the case where demand was lost at once due to movement restrictions in the COVID-19 pandemic, the loss of products at once due to these problems is a significant risk, especially for producers, and this is true in Post/with COVID-19 society. In other words, it is required to continue to address these issues.

***Implication:*** *Responding to previous issues (continuing and deepening)*

### (5) Decrease in use of traditional markets

In COVID-19 pandemic, the outbreak of clusters in a fisheries market in Thailand and the closure of the market had raised concerns about the spread of infection in traditional markets where many people gather, and people tend to start avoiding its use. A similar trend may continue in post/with COVID-19 society, and to do so, it will be necessary to diversify the sales channels as mentioned above. Yet, the traditional markets that exist in various regions and towns are easily accessible by citizens, highly convenient, and serve as hubs for intra-regional distribution. Therefore, the need for the use of traditional market is expected to continue.

For this reason, it is also necessary to seek to build a hygienic environment through the modernization of facilities in traditional markets. The questionnaire survey had revealed that awareness of food safety is increasing in line with COVID-19 pandemic, and it is inevitable that more consumers will be interested in purchasing in a more hygienic environment, which will also be a hallmark of the post/with

COVID-19 society. Thus, it is believed that modernization of traditional market facilities, mainly for the purpose of hygiene management, should also be promoted in the future.

*Implication: Modernization of traditional markets*

(6) Use of Information Platform for small-scale farmers

In the COVID-19 pandemic, export sector was severely affected by the restriction of cross-regional logistics among others. It had made producers and distributors to hold a lot of deadstock. Yet, with a limited population, it is difficult to consume most of such stocks in the domestic market, especially in the case of raw agricultural products. Efforts to develop domestic markets and reduce distribution inventory at each stage of the supply chain will be effective in mitigating the impact of logistical restrictions. However, it is not an option for small-scale farmers.

In the meantime, many private companies address the issues in each stage of FVC. In Japan, for example, the standardization of information across production and distribution is already been promoted as a platform for agricultural product information, and it can be useful for small-scale farmers if the information platform is prepared and used in a form of B2B2C. On the other hand, such an information platform requires the collaboration of private companies in each sector of the FVC. It means that the standardization of data through such a platform will attract many private companies to enter the agricultural sector.

*Implication: Use of Information Platform*

These are the suggestions for post/with COVID-19 society so far recognized through the impact survey. Based on the implications extended here, plan of pilot projects had been already made for the survey and the projects are now at the implementing stage. The implementation approach and plan of the pilot project are described in Chapter 1 of the Section-2. Based on the lessons to be learned in the pilot projects, hypotheses that have been drawn so far will be confirmed.





## CHAPTER 4 EXPLORATION ON CROSS-CUTTING ISSUES UNDER COVID-19

This Chapter discusses cross-cutting issues concerning all types of food value chains. Sub-Chapter 4.1 reviews the emergence of the middle-class before the COVID-19 pandemic as well as food market modernization. Sub-Chapter 4.2 analyzes impacts on the demand side, based on the consumer survey conducted by the Survey Team. Sub-Chapter 4.3 analyzes impacts on the supply side, especially impacts on farmers with different cultivation scales (e.g., small-scale, medium-scale, and large scale). Then, sub-Chapter 4.4 summarizes the impacts in the context of regulatory set-up, etc.

### 4.1 The Rise of Middle Class since before the COVID-19 Pandemic and the Modernization of the Food Market

In this section, we review the trend of the food market's modernization since before the outbreak of the COVID-19 pandemic, the rise of the middle class, and the characteristics of the middle class and lower-income class as consumers. They will formulate the basic understandings for the analysis of the consumers' survey conducted by the survey team, which will be shown in the next section.

#### 4.1.1 The Households Distribution by Income Strata

One of the important trends since before the COVID-19 pandemic is the rise of the middle-class population across Southeast Asian countries. The economies of Southeast Asian countries had continued to grow in the 2000s, though there was a temporary stagnation in the latter half of the 1990s due to the occurrence of the Asian Financial Crisis. The middle-class households in the ASEAN region had been grown up with the backgrounds of such long-term economic growth and population growth.

Table 4.1.1 shows the number of households by income class in the actual and predicted values. The income class can be categorized as a lower-income class, middle class, and higher-income class. In the total of the six countries, the proportion of the middle class was about 22% in 2005, but it was expected to reach 56% in 2015 and is expected to increase to 72% in 2030.

**Table 4.1.1 The Numbers of Households by Income Class and Year in Six Countries of Southeast Asia Region. (Unit: thousands of households)**

Countries	2005			2015 (Estimation)			2030 (Forecasted)		
	Lower Income	Middle Income	Higher Income	Lower Income	Middle Income	Higher Income	Lower Income	Middle Income	Higher Income
Singapore	27	461	705	14	358	1,285	10	266	1,797
(Proportion)	2%	39%	59%	1%	22%	78%	0%	13%	87%
Malaysia	1,664	3,757	225	644	4,622	1,910	118	2,624	6,769
(Proportion)	29%	67%	4%	9%	64%	27%	1%	28%	71%
Thailand	10,314	7,189	246	7,050	14,561	915	1,959	19,491	4,097
(Proportion)	58%	41%	1%	31%	65%	4%	8%	76%	16%
Philippines	12,475	4,936	146	7,607	14,351	953	1,595	21,621	8,495
(Proportion)	71%	28%	1%	33%	63%	4%	5%	68%	27%
Indonesia	47,732	9,258	298	24,707	38,038	1,825	4,284	58,518	12,476
(Proportion)	83%	16%	1%	38%	59%	1%	6%	78%	17%
Vietnam	18,397	1,138	74	16,820	9,343	353	6,255	23,940	1,615
(Proportion)	94%	6%	0%	63%	35%	1%	20%	75%	5%
Six Countries	90,610	26,740	1,695	56,841	81,273	7,241	14,220	126,460	35,249
(Proportion)	76%	22%	1%	39%	56%	5%	8%	72%	20%

Source: Citation from a Japanese report, Nomura Research Institute (2015) "Special Edition: Review of Consumer Market in ASIA: Viewpoints to understand the changes of ASEAN consumers: two waves of aggressive intention for spending and focusing on "New Middle Class", translated from Japanese publication, the original data is sourced from Euromonitor.

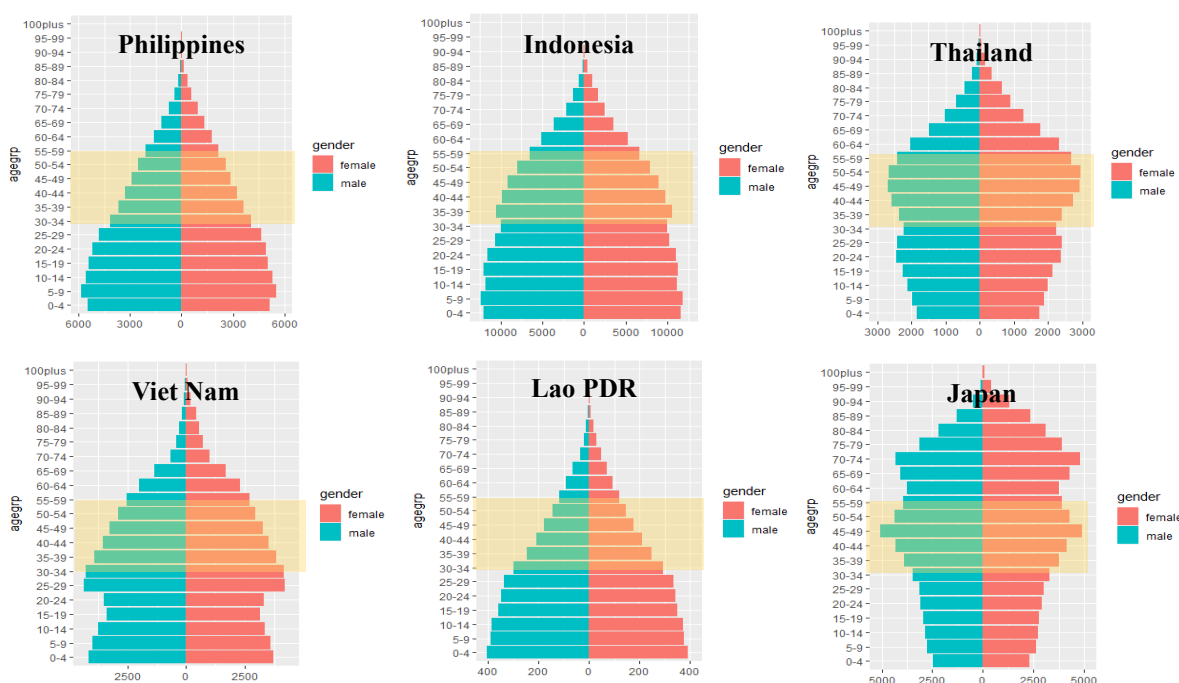
#### 4.1.2 Definition and Characteristics of Middle Class

The white paper (2009) issued by the Ministry of Economy, Trade, and Industry of Japan (METI) defined the emerging middle class in ASEAN countries as "a household with annual disposable income between 5,000 USD and 34,999 USD per household". Likewise, a household with annual disposable income

equal to or more than 35,000 USD is classified as a wealthy class and a household with annual disposable equal to or less than 5,000 USD is classified as a low-income class.

Euromonitor (2020) stated in the article “The Rise of Upper income Middle Class in Emerging Markets” that “there are no universal definitions of the middle class because the costs of living vary across countries”. Yet, it proposed a definition that is applicable in developed economies, “a household with an annual disposable income of USD 15,000 – 45,000 (in constant, PPP terms) as belonging to the middle class.”

When it comes to the expansion of the middle-class in Southeast Asia, it is usually characterized as active attitudes for consumption among working-age (30 years old and 59 years) and can capture the trends and information from multimedia such as TV, newspapers, magazines, SNS, and the internet. Except for some countries with aging populations such as Singapore, Thailand, Viet Nam, and Myanmar, the majorities of ASEAN countries have a high proportion of the young generation. It is expected that the middle-class population will continue to increase, and the expansion of the middle class is regarded to be a driving force for agriculture and the food market as well (Figure 4.1.1).



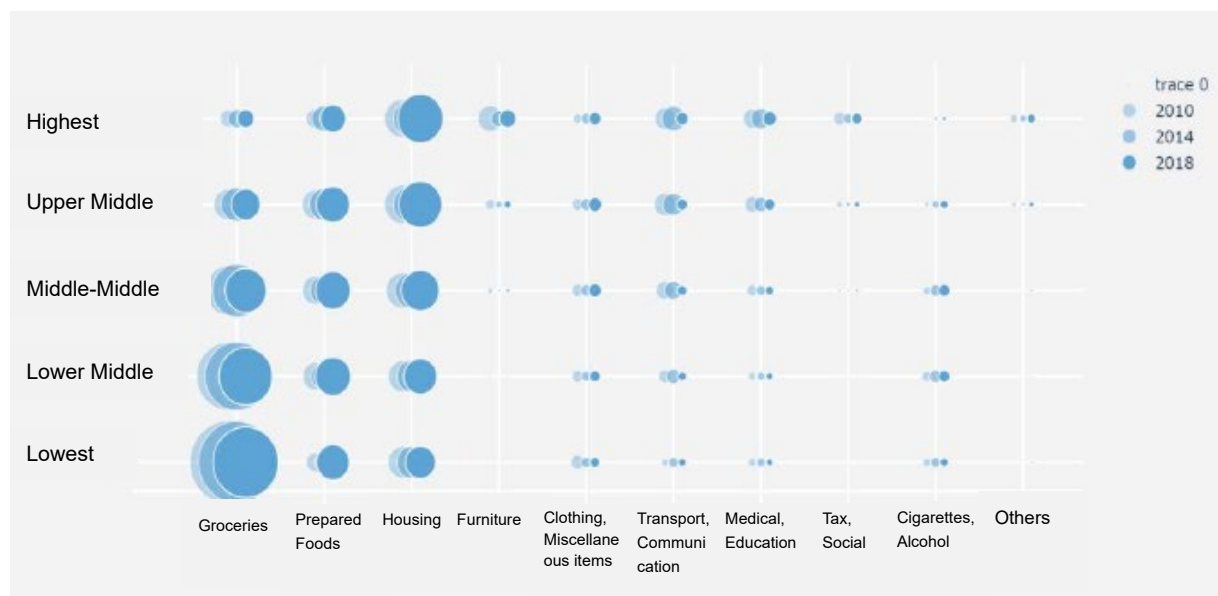
**Figure 4.1.1 Population Pyramids of Five (5) Target Countries and Japan (2020)**

Source : JICA Survey Team using data sourced from United Nations, Department of Economic and Social Affairs, Population Division (2019). World Population Prospects 2019, Online Edition. Rev. 1.

Note: Reference values are estimated as of 2020. The vertical axis represents age groups (every 5 years) and the horizontal axis represents the numbers of populations in the age groups (thousands of populations). Age groups between 30-59 years old are highlighted in yellow.

#### 4) Consumer’s Characteristics by Income / Expenditure Class (Indonesia, and Viet Nam)

Figure 4.1.2 shows the consumption patterns by expenditure level classification. The lower expenditure class tends to have a higher proportion of expenditures on food commodities. It is a general tendency observed in many countries known as Engel’s Law. Food expenditures are composed of the largest category among all expenditure items for the lowest class and the lower middle class. On the contrary, the expenditures on housing are composed of the largest category as for the upper-middle class and highest class, which attribute to the higher land prices and real estate prices in the residential areas. The higher expenditure class tends to have a higher proportion of expenditure on transport, communication, medical, and education.



**Figure 4.1.2 Expenditure Composition of Urban Household by Expenditure Classification**

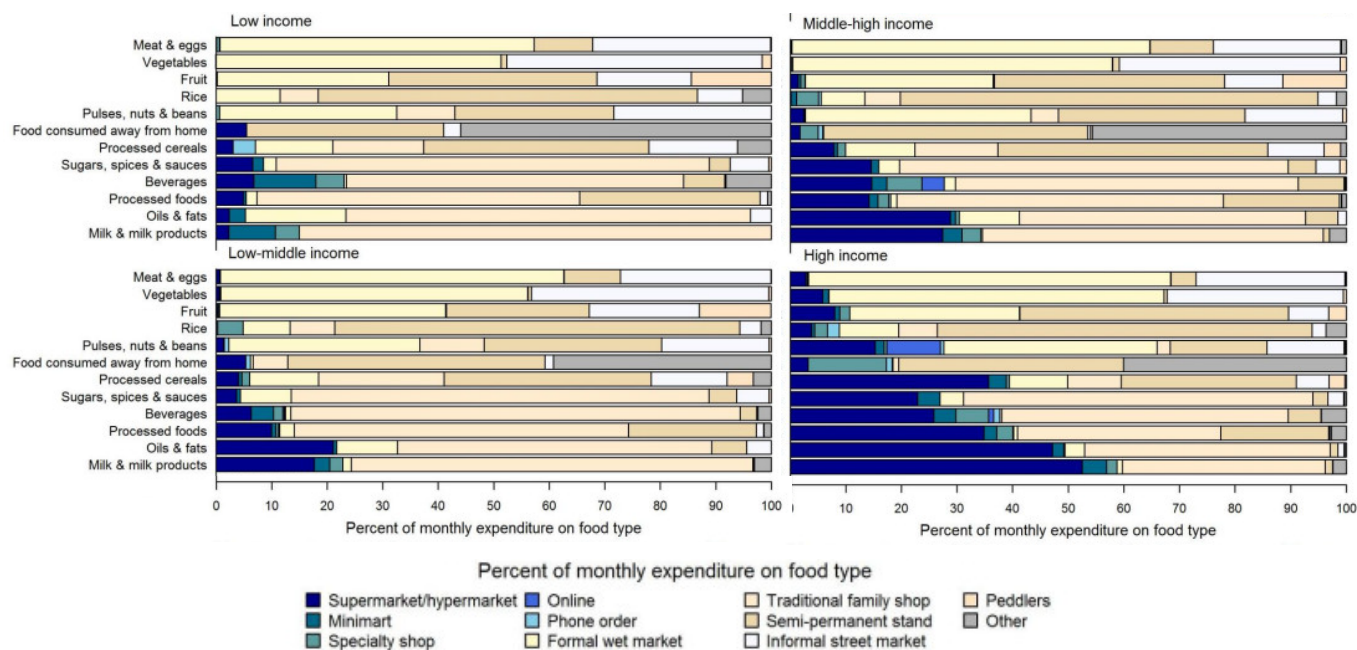
Source: Eko et al (2020) "Pola Konsumsi dan Began PPN Kelas Menengah Indonesia", *Kajian Ekonomi Keuangan* 4 Nomor 1 Tahun 2020

Note: the classification is based on the following criteria; lowest class (per capita expenditure is less than 2 PPP USD per day); lower middle class (per capita expenditure is equal or more than 2 PPP USD per day and less than 4 PPP USD per day); middle-middle class (per capita expenditure is equal or more than 4 PPP USD per day and less than 10 PPP USD per day); upper-middle-class (per capita expenditure is equal or more than 10 PPP USD per day and less than 20 PPP USD per day); and highest class (per capita expenditure is equal or more than 20 PPP USD per day).

Figure 4.1.3 shows the average proportion of monthly food expenditure on different food types by market and income class in Hanoi, Viet Nam. Consumers in all income classes tend to use modern markets for the purchase of milk and milk products, beverages, sugar, spices and sources, oils, and fats. On the other hand, meat and eggs, vegetables, fruits, and rice are largely purchased from traditional markets regardless of income class<sup>1</sup>.

When comparing the utilization of the markets classified into the modern market (blue colors) and another type of market classified the traditional market (gray colors) among the income classes, the upper-income class tends to use the modern market more than the lower-income class. In Viet Nam, it is said that the number of supermarkets surged after the liberalization of the retail market in 2009, by the pledge for the membership of WHO. As a consequence, urban salaried workers, especially the young generation who have been working outside on weekdays, increased to go to supermarkets on weekends to buy necessary goods and foods altogether.

<sup>1</sup> In this context, modern market includes supermarkets, hypermarket, minimart, specialty shop, online, and phone order. While, traditional market includes formal wet market, traditional family shopper, semi-permanent stand, informal street market, and peddlers.



**Figure 4.1.3 The Average Proportion of Monthly Food Expenditure on Different Food Types by Market and Income Class in Hanoi, Viet Nam**

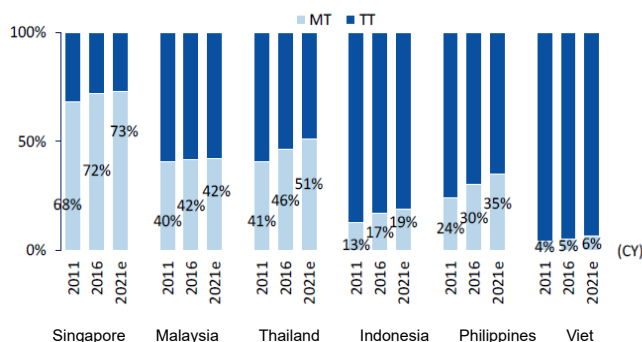
Source: The University of Adelaide, The Center for Global Food and Resource “The Viet Nam urban food consumption and expenditure study” <The Centre for Global Food and Resources | University of Adelaide> (Accessed in August 2021)

Note1: Blue shading is used to indicate modern retail outlets and traditional retail outlets are indicated by neutral shading. The ‘Other’ category includes restaurants, hotels, cafes, bars, etc.

Note2: Following criteria is used for income classification: low income (household gross income is less than 4.5 million VND), low-middle income (household gross income is equal or more than 4.5 million VND and less than 7.5 million VND), high-middle income (household gross income is equal or more than 7.5 million VND and less than 15 million VND), and high income (household gross income is equal or more than 15 million VND).

### 4.1.3 Share of Modern Market in Nowadays Food Market

Figure 4.1.1 shows the shares of traditional trade (TT, e.g., traditional family shop and local market) and modern trade (MT, e.g., supermarket, hypermarket, and convenience store) in the retail market as a whole. Since the available data are limited, only markets in six countries are summarized.



**Figure 4.1.4 The Market Shares of Traditional and Modern Market and the Transition**

Source : Citation from a report written in Japanese Mizuho Corporate Bank, Ltd. (2017), translated from Japanese publishment “IV Emerges of Local Conglomerate in ASEAN and how we can face with them” (Original data is sourced from Euromonitor), the values in year 2021 are estimated.

The retail market of Singapore has been modernized enough that modern trade accounts for 73% of the total. Malaysia and Thailand are following it; it accounts for 42% and 51% respectively. The traditional trades still occupy the majority of the retail industries in Indonesia (modern trade: 19%) and the Philippines (35%). In Viet Nam, the traditional market almost dominates the retail market, as the share exceeds 90% of the total.

### 4.2 Awareness and Behavior Change by Income Strata Based on Consumer Household Survey

Through the implementation of consumer surveys, the sub-chapter examines the impact of the COVID-19 pandemic on each income class. The purpose of the survey is to identify the economic impacts and impacts on the lifestyle for the middle class and low-income class (as the potential segment of the future

middle class) to extract suggestions and implications for Food Value Chain development with/after COVID-19.

#### 4.2.1 Designing of Consumer Household Survey

##### 1) Sample Size and The Survey Areas

A series of consumer surveys were conducted from August to September 2021 in three (3) countries (the Philippines, Indonesia, and Viet Nam) in the form of structured questionnaire surveys. The surveyed cities and sample sizes in each country (city) are shown in Table 4.2.1. Initially, it was supposed to be done by face-to-face survey. However, after the surge increase of COVID-19 cases in the countries, the Survey Team decided to conduct online interviewing.

**Table 4.2.1 The Numbers of Respondents (The Philippines, Indonesia, and Viet Nam)**

Countries	Cities	Duration	Size	Form of Interview
The Philippines	Metro Manila (Quezon City)	Aug-Sep	60	Face to Face or Online
	Davao City		60	Face to Face or Online
Indonesia	The Greater Jakarta (Bogor City)	Aug	50	Online
	Bandung City		50	Online
Viet Nam	Hanoi City	July	50	Face to Face or Online
	Ho Chi Minh City		50	Online
Total			320	

Source: JICA Survey Team

The surveyed cities of each country are shown in Figure 4.2.1. To cover the middle class in the survey, major cities and their suburbs were selected in each country.

In the Philippines, Quezon City in Metro Manila and Davao City, the capital city of Mindanao Island, was selected. In Indonesia, Bogor City located in the greater Jakarta, and Bandung city, the capital of West Java, were selected. In Viet Nam, the suburb of Hanoi city and Ho Chi Minh city was selected. Note that there is a technical cooperation project in the northern region near Hanoi. Hanoi city and its suburb are the important markets of safe crops promoted in the project.

##### 2) The Survey Period

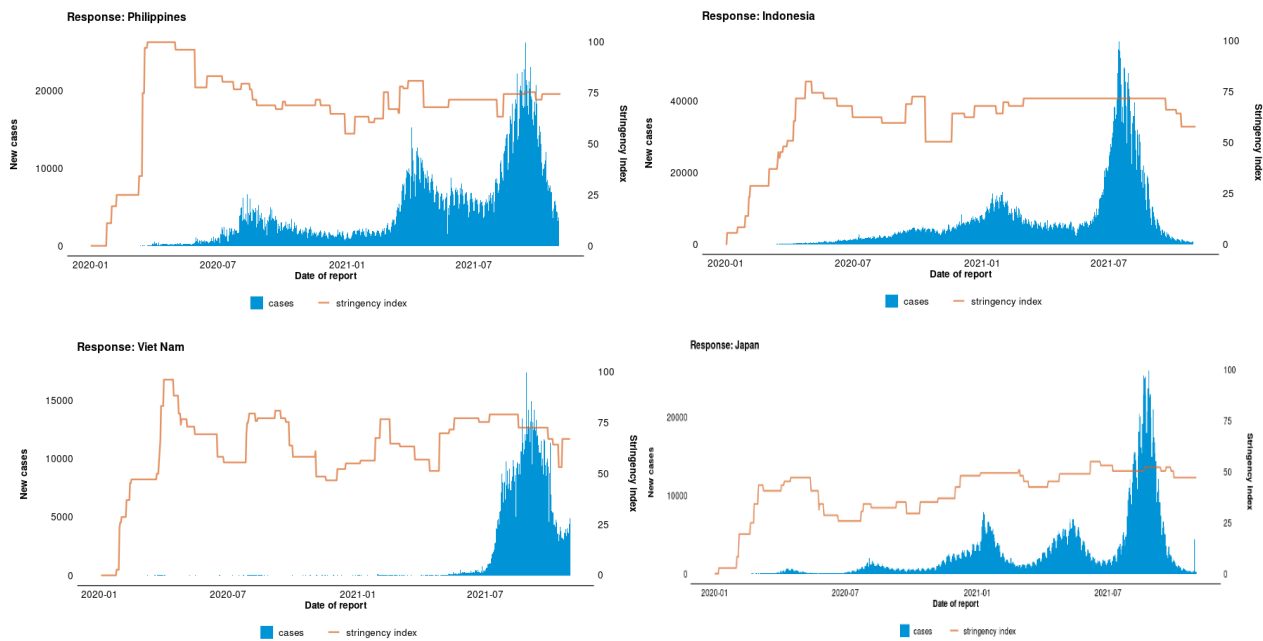
The sharp spread of mutated delta variants of COVID-19 (B.1.617.2) in Southeast Asia from June to August 2021 caused strict restrictions by the governments.

Figure 4.2.2 indicates the number of new cases and the government's stringency index, which is an index to summarize the stringency of the regulations by the government, by every three countries and Japan. The survey period from July to September was at the peak of spreading in each country. In other words, people in each country became more aware of the risk of infection. On the other hand, it passed more than one year since the COVID-19 pandemic had begun, so people became more accustomed to the new lifestyle under the COVID-19 pandemic.



**Figure 4.2.1 Survey Areas for Consumer Survey**

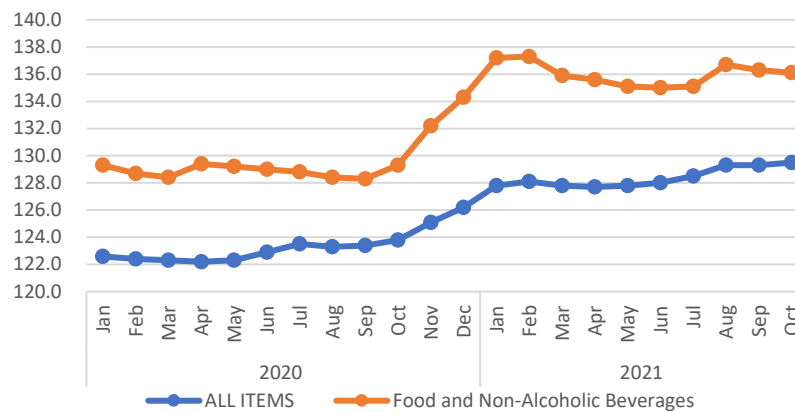
Source: JICA Survey Team, the pointed areas are target cities of the survey



**Figure 4.2.2 The New Cases in Four Countries and Government Stringency Index**

Source: WHO, COVID-19 Dashboard

Changes in consumer prices during this period show upward trends in Southeast Asia countries since economic resumption began around the world. Yet, according to the ADB Outlook Update (September 2021), inflations in the Philippines and Viet Nam in July were in the range of the inflation target by the central banks, and in Indonesia, it was lower than the central bank’s target. As an example, Figure 4.2.3 shows the transition of the consumer price indices in the Philippines from January 2020 to October 2021.



**Figure 4.2.3 The Transition of Consumer Price Indices in the Philippines (National, from January 2020 until October 2021, 2012 = 100)**

Source: Philippines Statistic Authority

### 3) Classification of Respondent Households

The purpose of the study is to know the situation of the middle-class households which are the key segment for the modernization of the food market and that of the lower-income class households which are expected to grow into the middle class in the future.

At the begging of the analysis, the income distribution of surveyed households was confirmed. For international comparison, the price level should be adjusted by using purchasing power parity (PPP) index sourced by the world bank (2020, based on private consumption). Referring to the JICA official exchange rate (August 2021), the purchasing powers against the USD were calculated as follows (USD

= 1.0). (Table 4.2.2)

**Table 4.2.2 PPP Conversion Factor and Purchasing Power Parity Calculation**

Countries	(1) PPP Conversion Factor (2020)	(2) JICA Rate (Aug 21, 1LCU=1JPY)	(3) JICA Rate (Aug 21, 1LCU=1USD)	(4) Exchange Rate 1USD=LCU ((3)/(2))	(5) Purchasing Power Parity (USD=1.0) ((4) / (1))
The Philippines	20.325	2.18377	109.682	50.226	2.47
Indonesia	5,223.80	0.00759	109.682	14450.9	2.77
Viet Nam	8,123.90	0.00479	109.682	22898.1	2.82

Source: The World Bank "World Development Indicator Database" and JICA official currency rate (2021 Aug)

Based on the calculated PPP, the Survey Team applied the definition of the middle class which is suggested by Euromonitor (2020) with an annual disposable income of 15,000 PPP in USD or more but not more than 44,999 PPP in USD. In this definition, the lower bounds of nominal disposable incomes that meet this standard were calculated at approximately USD6,072 in the Philippines, USD5,415 in Indonesia, and USD5,319 in Viet Nam.

However, the survey asked respondents to answer their household income in ranges (in increment of 2,500 USD) and cannot be applied to conversions in real values. Due to this limitation, the Survey Team decided to apply 5,000 USD in nominal value as the lower bound of upper-income households (this category is roughly corresponding to middle-class). Then, the households with annual disposable income less than 5,000 USD in nominal value were classified as lower-income households.

**Table 4.2.3 Distribution of Income Among Survey Respondents**

Household Income	Indonesia		The Philippines		Viet Nam		Three Countries Total
	Bogor City	Bandung City	Quezon City	Davao City	Hanoi Suburb	HCM City	
(Valid Answers)	50	50	60	60	49	0	269
(Refusal and No Answering)	0	0	0	0	1	50	51
Less than 2,499 USD	26%	4%	18%	43%	16%	N.A.	22%
2,500 USD – 4,999 USD	52%	48%	30%	6%	32%	N.A.	33%
5,000 USD – 7,499 USD	20%	26%	13%	18%	16%	N.A.	19%
7,499USD – 9,999 USD	2%	20%	7%	5%	6%	N.A.	8%
10,000 USD – 14,999 USD	0%	2%	20%	18%	18%	N.A.	12%
15,000 USD – 19,999 USD	0%	0%	11%	8%	8%	N.A.	6%
20,000 USD – 24,999 USD	0%	0%	0%	0%	0%	N.A.	0%
25,000 USD – 29,999 USD	0%	0%	0%	0%	2%	N.A.	0%
30,000 USD – 34,999 USD	0%	0%	0%	0%	0%	N.A.	0%
More than 35,000 USD	0%	0%	0%	0%	0%	N.A.	0%
Lower Income (4,999 USD or less)	78%	52%	48%	50%	48%	N.A.	55%
Upper Income (5,000 USD or more)	22%	48%	52%	50%	52%	N.A.	45%

Source: JICA Survey Team, Note1: the values are rounded at the first dismal point; therefore, the sum of percentages may not be 100%.

#### 4.2.2 Economic Impact on Consumer Households

To identify the impact of the COVID-19 pandemic on employment, income, and expenditure, the Survey Team established the criteria shown in Table 4.2.4. The respondents were asked whether they were affected or not, and the degrees if affected.

In addition, to evaluate whether the proportions of households that were affected by COVID-19 impact are the same by comparing two income groups (upper vs lower income group), proportional statistical tests, namely Chi-squared test and Fisher's exact tests were examined<sup>2</sup>. With 5% significance level, if the calculated p-value would be less than 0.05, the Team regarded "the COVID-19 impact is different between income groups"

<sup>2</sup> Fishers Exact Test is typically used as an alternative to the Chi-Square Test of Independence when one or more of the cell counts in a 2x2 table is less than 5.

**Table 4.2.4 Binary Indicators to Identify the COVID-19 Impacts**

Indicators	Related Questions	Definition of Affected Households <sup>1)</sup>	Hypothesis
Income Increase	c3-1 Has your family increased/decreased annual income compared to the pre-COVID-19 period (Jan – Dec 2019)?	Households with Income Increase	The proportions of the households which have experienced <i>income increase (decrease)</i> are not the same between income groups.
Income Decrease		Households with Income Decrease	
Increase in Food Expenditure	a3a_2: Did your family increase or decrease food expenditure compared to the pre-COVID-19 period (2019)?	Answering "Increased" in a3a_2	The proportions of the households which have experienced an <i>increase (decrease) in food expenditure</i> are not the same between income groups.
Decrease of Food Expenditure	A3a_3: By what percentage did your family decrease / increase the expenditure?	Answering "Decreased" in a3a_2	
Increase in Food Expenditure	a3b_2: Did your family increase or decrease non-food expenditure compared to the pre-COVID-19 period (2019)?	Answering "Increased" in a3b_2	The proportions of the households which have experienced) <i>increase (decrease) of non-food expenditure</i> is not the same between income groups.
Decrease of Non-Food Expenditure	A3b_3: By what percentage did your family decrease / increase the expenditure?	Answering "Decreased" in a3b_2	
Experience of Reduced Working Time / Days and Temporary / Permanent Lay-Off	c3. Did you face any changes in the working situation in your workplace? c3_3 What type of situation changes did you face?	Answering "Yes" in c3 and raising any changes among "reduced working time", "reduced working days", "temporary layoff", and "permanent layoff".	The proportions of the households which have experienced <i>changes in working situation</i> are not the same between income groups.

Source: JICA Survey Team

In Table 4.2.5, the highlighted indicators have differences in the impact of COVID-19 between the two income groups. In sum, the economic impacts of the COVID-19 pandemic had been widely observed in all three countries. Both income groups seemed to be equally affected and there was no significant difference in the economic impact in terms of employment, income, and expenditure with only an exception of the Philippines, where was observed some difference in terms of employment and income by the income categories.

**Table 4.2.5 The Summary of Proportional Test Results**

Countries	Indicators	Valid Sample N	Proportion of Affected Households		Difference btw income group	Affected Group
			Lower	Upper		
Philippines	Income Increase	120	3%	28%	***	Upper Class
	Income Decrease	120	76%	36%	***	Lower Class
	Food Expenditure Increase	119	39%	53%	-	-
	Food Expenditure Decrease	119	49%	20%	**	Lower Class
	Non-Food Expenditure Increase	120	47%	64%	-	-
	Non-Food Expenditure Decrease	120	17%	13%	-	-
	Any Employment Impact	120	75%	56%	*	Lower Class
Indonesia	Income Increase	100	0%	0%	Incomparable	Incomparable
	Income Decrease	100	43%	19%	-	-
	Food Expenditure Increase	100	49%	63%	-	-
	Food Expenditure Decrease	100	5%	3%	-	-
	Non-Food Expenditure Increase	100	40%	34%	-	-
	Non-Food Expenditure Decrease	100	25%	29%	-	-
	Any Employment Impact	100	34%	40%	-	-
Viet Nam	Income Increase	49	0%	4%	-	-
	Income Decrease	49	75%	68%	-	-
	Food Expenditure Increase	49	13%	28%	-	-
	Food Expenditure Decrease	49	50%	16%	*	Lower Class
	Non-Food Expenditure Increase	49	4%	16%	-	-
	Non-Food Expenditure Decrease	49	54%	24%	-	-
	Any Employment Impact	49	54%	60%	-	-

Source: JICA Survey Team

Note1: The columns show the results of the chi-squared test or Fisher's exact test. \*\*\* significant at the 0.1% level; \*\* significant at the 1% level; \* significant at 5% level; - No significant difference.

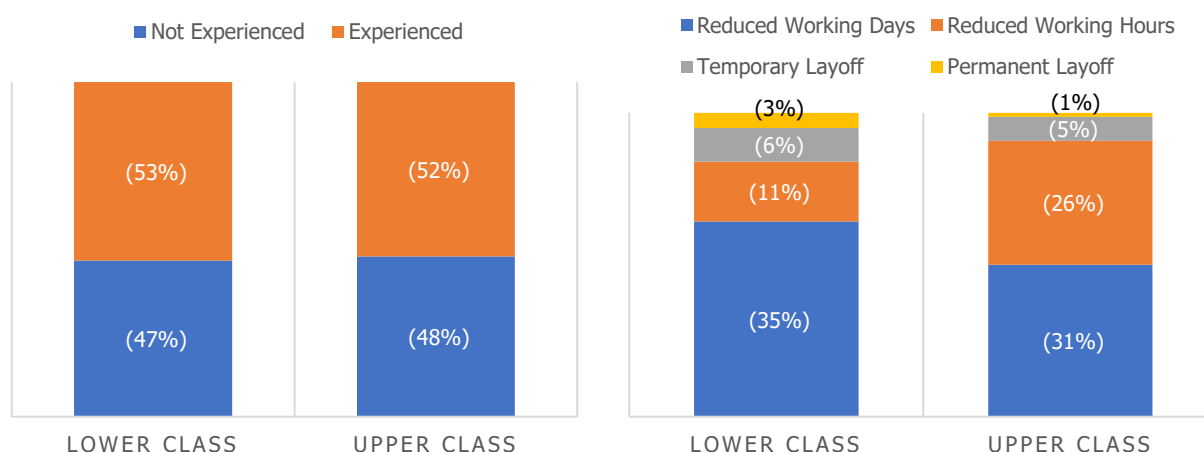
Note2: "Affected group" indicates the group with a high ratio of respondents who answered affected with respect to "not-affected".

Note3: "Any employment impact" shows households were affected by a change in the working situation that's any combination of "reduction of working days", "reduction of working hours", "temporary layoff" and "permanent layoff".



## 1) Impacts on Employment

Due to the COVID-19 pandemic, governments in many countries announced the closure of the offices, factories, etc., and advised to do working rotation and teleworking. In the three countries, 47% of the lower-income group and 48% of the upper-income group reported that they had some changes in the working situation. The typical impacts were the shortening of working days and the shortening of working hours.



**Figure 4.2.4 Employment Impacts in Consumer Survey for the Three Countries**

Source: JICA Survey Team

In the Philippines, the proportion of households that experienced any employment impact was 75% in the lower-income group and 56% in the upper-income group. The lower-income group has a higher percentage of households affected in the form of “reduced working days”, and the upper-income group has a high proportion of households affected in the form of “reduced working hours”.

**Table 4.2.6 Summary of Indicators that show Changes in Working Situation in the Philippines**

Changes on Working Situation		Lower Income	Upper Income	Total	Odds Ratio (p-value) <sup>1)</sup>
Reduced Working Days	Not Impacted	21 (36 %)	43 (70 %)	64 (53 %)	4.32 (***)
	Impacted	38 (64 %)	18 (30 %)	56 (47 %)	
Reduced Working Hours	Not Impacted	55 (93 %)	38 (62 %)	93 (78 %)	0.12 (***)
	Impacted	4 (7 %)	23 (38 %)	27 (23 %)	
Temporary Layoff	Not Impacted	57 (97 %)	59 (97 %)	116 (97 %)	1.04 (-)
	Impacted	2 (3 %)	2 (3 %)	4 (3 %)	
Permanent Layoff	Not Impacted	55 (93 %)	60 (98 %)	115 (96 %)	4.36 (-)
	Impacted	4 (7 %)	1 (2 %)	5 (4 %)	
Affected by Either of Above	Not Impacted	15 (25 %)	27 (44 %)	42 (35 %)	2.15 (*)
	Impacted	44 (75 %)	34 (56 %)	78 (65 %)	

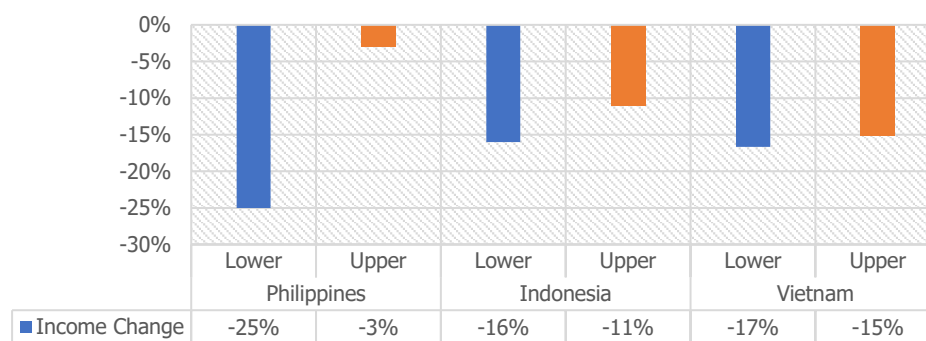
Source: JICA Survey Team

Note1: The columns show the results of the chi-squared test or Fisher's exact test. \*\*\* significant at the 0.1% level; \*\* significant at the 1% level; \* significant at 5% level; - No significant difference. The odds ratio is calculated as follows:  $\{p1 / (1-p1)\} / \{p2 / (1-p2)\}$  where p1 is the percentage of households who answered “impacted” in the upper-income group, and p2 is the percentage of households who answered “impacted” in the lower-income group.

Note2: Since the percentage in the parentheses are rounded to the first decimal point, the Odds Ratio to be calculated based on the rounded values written in the above table may not be the same as the odd ratios shown.

## 2) Impacts on Income

Income reduction was widely seen among the surveyed households of each country. On average, 15% points of reduction were reported in the three countries (Figure 4.2.3). Negative impacts on income were also reported in a survey conducted by UNICEF<sup>3</sup> and its partner agencies (2020). In Indonesia, mentioning that negative impacts were confirmed regardless of income level. On average, it was reported 40-45% drops in income.



**Figure 4.2.5 Changes on Income-by-Income Group in the Three Countries**

Source: JICA Survey Team

In the Philippines, the impact on income differs between the two income groups. The Lower-income groups experienced a reduction of their income by 25% on average, while the upper-income group slightly decreased by 3%.

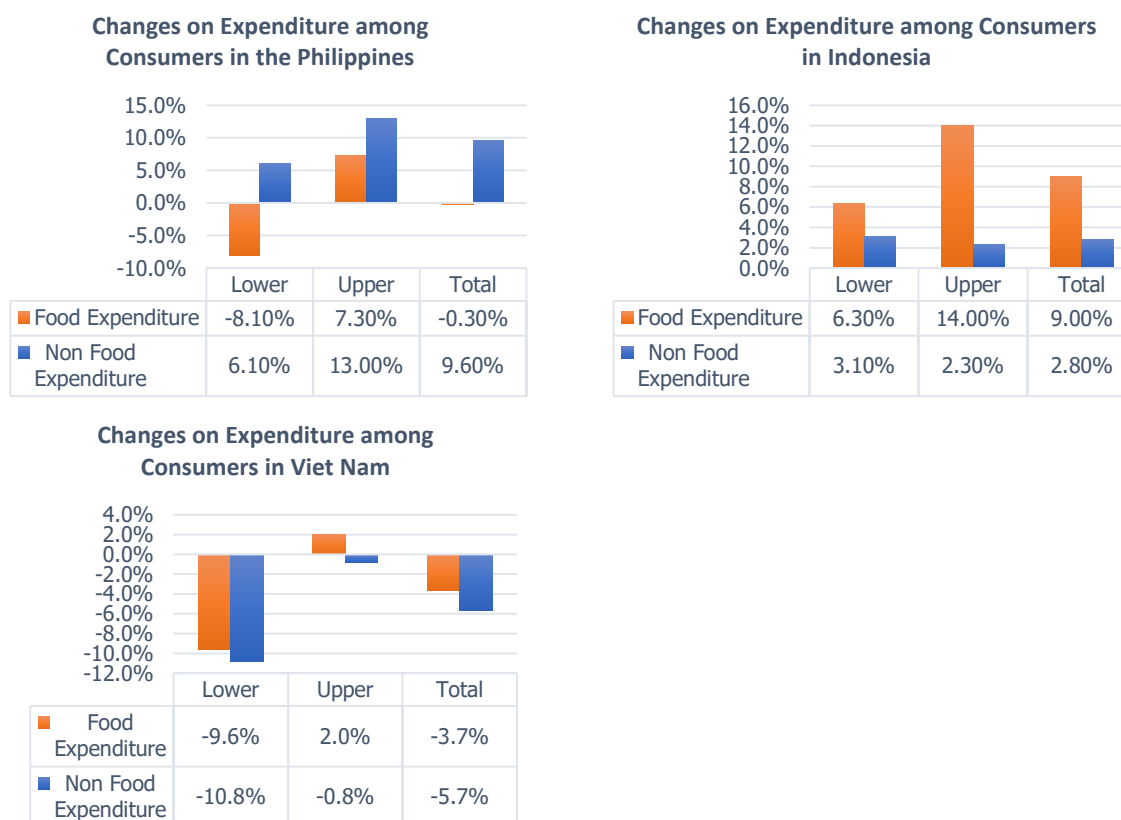
## 3) Impacts on Expenditure

Regarding expenditure, there was no common trend among survey countries. Food and non-food expenditures were increased, decreased, or did not change depending on surveyed countries and income groups.

According to the results of the Family Income and Expenditure Survey implemented by the Philippines Statistic Authority, which has continuously monitored typical household's expenditure patterns every quarter, a slight increase (0.2%) was seen in the expenditures during the 1<sup>st</sup> quarter of 2020 with respect to the same period in the previous year. While the household's expenditure during the 2<sup>nd</sup> quarter of 2020 decreased by 15.3% with respect to the same period in the previous year. It may have reflected the consumer's passive attitude on consumption since the COVID-19 pandemic was forecasted to last long.

Expenditure items decreased significantly include Alcoholic beverages (-41.2%), clothing & footwear (-40.2%), transport (-60.1%), recreation & culture (-66.8%), and restaurants & hotels (-65.7%). On the contrary, expenditure items increased during with-COVID-19 pandemic period including utilities cost (7.4%) and communication fees (8.6%).

<sup>3</sup> UNICEF, UNDP, Prospera, and SMERU (2021), "Analysis of the Social and Economic Impacts of COVID-19 on Households and Strategic Policy Recommendations for Indonesia", Jakarta



**Figure 4.2.6 Changes in Expenditure in the Three Countries**

Source: JICA Survey Team

In the above discussions, economic impacts such as employment, income, and expenditure in each of the three countries were analyzed. Although it was based on self-assessment by the respondents rather than strict quantitative analysis, the proportional tests comparing two income groups (lower vs upper) found no clear difference in income with only an exception of the Philippines' case.

IMF (2021) stated that the income gaps between countries should be falling as richer countries experience larger economic contractions than poorer countries in 2020. On the other hand, the report said it is hard to know the effect of the pandemic on income inequality within countries due to the lack of reliable administrative and household survey data. However, it argued that the income gap within countries is likely to rise in general, given the inequalities in educational and labor markets<sup>4</sup>. Our survey results are not necessarily supporting the rise of the income gap between countries. Rather, it can be said that the economic impacts of the COVID-19 pandemic on households are characterized as broad effects regardless of income level. Further study should be done with covering other countries and regions

### 4.2.3 Impact on Food Market and Changes in Consumer Awareness and Behaviors

In the previous sub-chapter, it was confirmed that the economic impacts were widespread regardless of income class. Now, the discussion is focusing on consumers' awareness and behavior related to food purchases among middle-class and lower-income class households.

#### 1) Changes in Consumer Awareness on Food

It is said that the differences in consumers awareness between the middle class and lower-income class had become clearer due to lifestyle changes. For example, workers in the middle class usually have more

<sup>4</sup> IMF (2021) "Inequality in the time of COVID19" <<https://www.imf.org/external/pubs/ft/fandd/2021/06/inequality-and-covid-19-ferreira.htm>>(accessed on December 2021)

opportunities to swift remote work at home than workers in the lower-income class. Therefore, the Team also set indicators about consumer's awareness and the results are shown in Table 4.2.6.

**Table 4.2.7 Indicators about Changes in Consumer Awareness**

Indicator	Questionnaires	Definition of Affected Households	Income Strata	Percentage of Affected Respondents (%)		
				The Philippines (n=120)	Indonesia (n=100)	Viet Nam (n=49)
Increase in the consumption of foods commodities locally produced	b4b. Have you increased the consumption of food commodities which are locally produced than the pre-COVID19 period (2019)?	Households answering "Yes" in b4_b	Lower Income	24%	51%	29%
			Upper Income	43%	66%	36%
			Total	33%	56%	33%
Increase in Purchasing Organic / Pesticides free Products	b5_2. Has it changed the quantity of purchase organic or pesticide-free products compared to the pre-COVID-19 period (2019)?	Households answering "Increased" in b5_2	Lower Income	5%	0%	0%
			Upper Income	16%	0%	24%
			Total	11%	0%	12%
Decrease in Purchasing Organic / Pesticides free Products	b5_2. Has it changed the quantity of purchase organic or pesticide-free products compared to the pre-COVID-19 period (2019)?	Households answering "Decreased" in b5_2	Lower Income	3%	0%	13%
			Upper Income	0%	0%	4%
			Total	2%	0%	8%

Source: JICA Survey Team

At an interview with stakeholders in Viet Nam, the Team heard that some consumers increased the purchase of local agriculture products aiming at assistance for local farmers because these consumers knew their difficult situation through multimedia. Therefore, we examined whether the increased consumptions of local agricultural products are commonly observed. The result shows that around 33-56% of respondents answered they increased to buy local agriculture products. It was a somewhat common trend for all three countries.

There was another comment provided by a stakeholder in Viet Nam that the demand for "safe vegetables" had increased with the rise of awareness of healthcare and public hygiene. About this, we asked whether the purchase of organic and pesticide-free products was increased or not. The result shows that 16% and 24% of respondents from the upper-income class in the Philippines and Viet Nam increased their purchases. While a very small percentage of respondents in the lower-income class increased the purchase (0-5%). It may be because the price gap between organic / non-chemical products and normal agriculture products is hard to accept for the lower-income group households.

## 2) Changes in Purchase Place

The places where consumers buy agricultural commodities vary depending on income level (see Sub-Chapter 4.1). As one of the consumers' behavioral patterns about the food market, where we would like to discuss the changes about purchasing place. Through literature review and consumer survey, the consumer's purchase places were investigated. The results were summarized below.

### (1) Traditional Market (e.g., Kiosk and Family Shopper)

#### a) Literature Review

Many works of literature reported that traditional markets have been negatively affected by the COVID-19 pandemic. Despite measures to reduce congestion were taken, such as limiting the number of visitors and implementing necessary regulations for public health, clusters of COVID-19 have emerged among stakeholders of the traditional market.

The vendors in traditional markets were affected by the COVID-19 pandemic in terms of four points:

firstly, the declining purchasing power of consumers due to loss or decrease in income led by office closures and shorter working hours; secondly, the outflowing of consumers to other markets due to negative images came from the news of positive cases of COVID-19 in traditional markets, and due to reputational damage about the hygiene conditions; thirdly, declined to handle capacities for vendors selling on the roadside (kiosk) due to quarantine regulations, such as social distancing among vendors and rotation sales; lastly, lack of running capitals and difficulty of funding.

The Central Board of the Indonesian Market Traders Association (Ikappi) released on June 24, 2021, that during the more than a year of pandemic, the average income of traditional market traders or people is increasingly eroded. In 2020, the average income of market traders fell by about 50 percent<sup>5</sup>.

The board also mentioned, many traditional market traders closed stalls, either temporarily or permanently. In 2020, the number of traders who did so amounted to 29% of the total 12.6 million traditional market traders. Since the first case of COVID-19 was announced in Indonesia on March 2, 2020, the total number of positive cases of COVID-19 in 321 traditional markets in Indonesia had been 1,934 cases and 89 of them had died<sup>6</sup>.

## b) Survey Results

Despite the many negative states in the literature review, many respondents in particular lower-income groups continued to use traditional markets such as kiosks and small shops on roadsides, even they recognized the increased risks of infection. In the Philippine case, about 42.4% of the lower-income group increased the use of kiosks and traditional family vendors and more than 90% of respondents in the group continued to use these vendors in the last 30 days (Table 4.2.9). In particular, for lower-income households who have been affected by income decline, street vendors and kiosks are still useful because they are normally located nearby their houses, and they can easily visit there to buy fresh products at reasonable prices every day.

**Table 4.2.8 Indicators about Changes in Purchase Places for Agriculture Commodities**

Market, Income Strata	Changes in Purchasing Amount Compared to before COVID-19 (Proportion of Respondents, %)											
	The Philippines				Indonesia				Viet Nam			
	Increase	Decrease	No Change	Never	Increase	Decrease	No Change	Never	Increase	Decrease	No Change	Never
<b>Traditional Markets</b>												
<b>Kiosk, and Traditional family vendor</b>												
Lower Income	42.4	16.9	35.6	5.1	18.5	23.1	47.7	10.8	0.0	20.8	20.8	58.3
Upper Income	19.7	13.1	52.5	14.8	14.3	17.1	62.9	5.7	0.0	16.0	20.0	64.0
Total	30.8	15.0	44.2	10.0	17.0	21.0	53.0	9.0	0.0	18.4	20.4	61.2
<b>Local Market</b>												
Lower Income	32.2	42.4	16.9	8.5	3.1	15.4	40.0	41.5	25.0	45.8	20.8	8.3
Upper Income	32.8	21.3	21.3	24.6	0.0	28.6	34.3	37.1	16.0	20.0	60.0	4.0
Total	32.5	31.7	19.2	16.7	2.0	20.0	38.0	40.0	20.4	32.7	40.8	6.1
<b>Central Market in the Area</b>												
Lower Income	10.2	5.1	10.2	74.6	1.5	0.0	1.5	96.9	0.0	4.2	0.0	95.8
Upper Income	8.2	13.1	14.8	63.9	0.0	0.0	2.9	97.1	0.0	4.0	0.0	96.0
Total	9.2	9.2	12.5	69.2	1.0	0.0	2.0	97.0	0.0	4.1	0.0	95.9

Note1: Items that account for 40% to Source: JICA Survey Team

49.9 of the respondents were highlighted in gold, and items that account for 50% or more were highlighted in red.

<sup>5</sup> Kompas TV, "Covid-19 Prolonged, Income of Traditional Market Traders is Predicted to Drop by 60 Percent" <<https://www.kompas.tv/article/186542/covid-19-berkepanjangan-pendapatan-pedagang-pasar-tradisional-diprediksi-turun-hingga-60-persen?page=all>> (26 June 2021, translated from Bahasa)

<sup>6</sup> Kompas TV, "Traditional Markets, More Than a Year Into the Pandemic", <<https://www.kompas.id/baca/ekonomi/2021/07/01/pasar-tradisional-setahun-lebih-mengarungi-pandemi>> (1 July 2021, translated from Bahasa)

## (2) Modern Market (e.g., Supermarket, HoReCa)

### a) Literature Review

Modern markets had also been affected by the COVID-19 pandemic in the declining frequency of visitations by consumers. However, supermarkets/hypermarkets that could capture the business opportunity could increase the sales. The opportunities include behavioral changes of customers such as preferring bulk buying and choosing stores with a wide variety of commodities to reduce the frequency of visits.

The impacts of the COVID-19 pandemic on modern markets include the declining consumer's purchasing power due to loss or decrease in income, led by office closures and shorter working hours, and the shortage of working capital in small and medium-sized retailers. In addition, there is a view that mergers and acquisitions by foreign enterprises had been accelerated as a consequence of the above losses<sup>7</sup>. As a specific impact on supermarkets attached to the complex, the number of visitors may have decreased significantly due to business closures and shorter working hours at the facilities attached to the compounds such as movie theaters, amusement facilities, cafes, and restaurants<sup>8</sup>.

The consumer's reputation of supermarkets, hypermarkets, and other forms of modern markets had been enhanced, thanks to the fact that they can always supply products stably with reasonable prices even under the situation of supply chain disruption caused by the COVID-19 pandemic, which seems to lead the increase of the sales in modern markets. As an example of Viet Nam, supply shortage was reported after long lunar-new-year holidays associated with bad weather conditions (icy rain) in traditional and wet markets, while products sold by supermarkets remained stable in both supply and prices.

### b) Survey Results

In all countries, the percentage of the low-income groups which increased their purchase in supermarkets was very low (Philippines: 11.9%, Indonesia: 0%, Viet Nam: 8.3%). In the interview with Japanese supermarkets in Indonesia, it was said that the number of visitors from the lower middle class had increased since the pandemic. The percentage of households in which they increased their purchases in supermarkets was higher in an upper-income group than that in the lower-income group.

The results about the use of HoReCa (Hotel, Restaurant, Café, or Catering) suggests that a vast majority of respondents reduced the purchases, which was commonly seen in the three countries. Although some of them continued the operation by switching to food delivery services, dines in-the store were devastating as around 90% of respondents in Indonesia and Viet Nam had never used them in the last 30 days or reduced the usage (around 70% of respondents in the Philippines) (Table 4.2.10).

**Table 4.2.9 Indicators about Changes in Purchase Places for Agriculture Commodities**

Market, Income Strata	Changes in Purchasing Amount Compared to before COVID-19 (Proportion of Respondents, %)											
	The Philippines				Indonesia				Viet Nam			
	Increase	Decrease	No Change	Never	Increase	Decrease	No Change	Never	Increase	Decrease	No Change	Never
<b>Modern Market</b>												
<b>Supermarket</b>												
Lower Income	11.9	28.8	28.8	30.5	0.0	30.8	20.0	49.2	8.3	37.5	33.3	20.8
Upper Income	44.3	21.3	31.1	3.3	2.9	57.1	34.3	5.7	24.0	16.0	56.0	4.0
Total	28.3	25.0	30.0	16.7	1.0	40.0	25.0	34.0	16.3	26.5	44.9	12.2
<b>Hotel Restaurant and Café</b>												

<sup>7</sup> THAI NGUYEN PORTAL, "The main trend of Vietnam's retail industry in the context of the epidemic" <[http://thainguyen.gov.vn/vi\\_VN/kinh-te/-/asset\\_publisher/Z79abUzQC1QI/content/xu-huong-chu-ao-cua-nganh-ban-le-viet-nam-trong-boi-canh-dich-benh](http://thainguyen.gov.vn/vi_VN/kinh-te/-/asset_publisher/Z79abUzQC1QI/content/xu-huong-chu-ao-cua-nganh-ban-le-viet-nam-trong-boi-canh-dich-benh)>(17 February 2021, translated from Vietnamese)

<sup>8</sup> Vietnam net "Virus rouses food safety awareness in Vietnam" <<https://vietnamnet.vn/en/business/virus-rouses-food-safety-awareness-in-vietnam-616565.html>> (February 2021)

Market, Income Strata	Changes in Purchasing Amount Compared to before COVID-19 (Proportion of Respondents, %)											
	The Philippines				Indonesia				Viet Nam			
	Increase	Decrease	No Change	Never	Increase	Decrease	No Change	Never	Increase	Decrease	No Change	Never
Lower Income	10.2	47.5	16.9	25.4	1.5	4.6	1.5	92.3	0.0	29.2	12.5	58.3
Upper Income	11.5	68.9	16.4	3.3	0.0	28.6	2.9	68.6	0.0	80.0	4.0	16.0
Total	10.8	58.3	16.7	14.2	1.0	13.0	2.0	84.0	0.0	55.1	8.2	36.7

Note1: Items that account for 40% to Source: JICA Survey Team  
49.9 of the respondents were highlighted in gold, and items that account for 50% or more were highlighted in red.

### (3) E-Commerce (Online Platform and Delivery Service)

#### a) Literature Review

Facebook and Bain & Company, a consultancy company, released a report on digital consumption trends in major Southeast Asian countries, predicting that E-Commerce users in six countries; the Philippines, Indonesia, Malaysia, Thailand, and Singapore will grow 11 percent year-on-year to about 310 million by the end of 2020. Among them, the proportion of Indonesia's E-Commerce users in 2020 was expected to be 68% of the 203 million people aged over 15 years, up 10 points from 58% in the previous year (119 million people). In 2020, Indonesia ranked the lowest among six countries, but this year it took fourth place replaced by Viet Nam, placing the same position as Thailand<sup>9</sup>.

The online food market is expanding as well - according to the web version of the Vietnam News, an E-Commerce giant Lazada reported that the sales of fresh food tripled in July 2020 compared to April, and the number of suppliers increased six times.

The Nielsen Company reported that as of the third quarter of 2020, online shopping preferences of the Filipinos had changed where non-essential items such as shoes, apparel, jewelry, and accessories had declined by 34%. On the other hand, food and non-alcoholic beverages had increased by 51%, together with home care and personal care products which had a 48% increase. The top-selling food products in online groceries were carbonated drinks, biscuits, spirits, mixed coffee, snacks, dietetics, powdered milk, instant noodles, bottled water, and ready-to-drink milk.

#### b) Survey Results

There was a tendency that the upper-income group increased the usage of online platforms and food delivery more than the lower-income group. For example, in the Philippines, 5.1% of the lower-income group increased the use of food delivery, while 42.6% of the upper-income group increased the use (Table 4.2.11).

**Table 4.2.10 Indicators about Changes in Purchase Places for Agriculture Commodities**

Market, Income Strata	Changes in Purchasing Amount Compared to before COVID-19 (Proportion of Respondents, %)											
	The Philippines				Indonesia				Viet Nam			
	Increase	Decrease	No Change	Never	Increase	Decrease	No Change	Never	Increase	Decrease	No Change	Never
Modern Market												
Online Purchase												
Lower Income	5.1	0.0	8.5	86.4	16.9	0.0	6.2	76.9	12.5	16.7	20.8	50.0
Upper Income	42.6	4.9	31.1	21.3	54.3	5.7	11.4	28.6	24.0	24.0	28.0	24.0
Total	24.2	2.5	20.0	53.3	30.0	2.0	8.0	60.0	18.4	20.4	24.5	36.7

Note1: Items that account for 40% to Source: JICA Survey Team  
49.9 of the respondents were highlighted in gold, and items that account for 50% or more were highlighted in red.

<sup>9</sup> NNA ASIA "E-Commerce Users in Indonesia increased 140 million people in 2020, 15% up compared to previous year, showing largest growth among Southeast Asian Counties." (February 2021, translated from Japanese)

#### 4.2.4 Summary: An Implication for Food Value Chain With / Post COVID-19.

From the perspective of economic impact on consumers and changes in awareness and behaviors, the analysis focused on the degree of impact between lower-income and upper-income groups.

The economic impact of the COVID-19 pandemic affected a wide range of consumers both lower-income and upper-income classes. There was no clear evidence showing the rise of income inequality within the countries, however, the survey did not cover wealthier class consumers who are main holders of financial assets and stocks. So far, it is difficult to conclude as to whether the income disparities within the countries increased, and further study should be awaited.

In general, the lower-income group tends to have a high proportion of food expenditure, and it causes a big impact by the rise of consumer prices of food commodities, especially for staple foods. In this regard, it is important to continue the effort to strengthen the production base and enhancement the food distribution system to maintain domestic agricultural productions without high dependency on imports.

Another important point in this survey is that despite the negative image reported by media, not small numbers of consumers in the lower-income class continued to use the traditional market as before. For consumers in the lower income group who suffered from a decline in income, the familiar street vendors and nearest local public markets were indispensable for the purchase of daily foods.

The closure and shortening of operation hours of public markets implemented in some countries can have had serious consequences for people's food security. Policymakers need to carefully consider public health risks and food security needs to make a thoughtful decision whether to continue operations in conjunction with the implementation of necessary safety measures.

In summary, Table 4.2.11 shows the issues clarified in the consumer's survey, possible countermeasures, and recommendations for the assistance of Food Value Chain development.

**Table 4.2.11 Summary of Consumer Survey, Countermeasures, and Recommendations**

Items		Lower Income Class	Upper Income Class	Common Things	Countermeasures and Recommendations
Economic Impacts	Employment	Temporary Layoff, Reduced working days (In particular, part-time workers)	Reduced working times, the introduction of teleworking (In particular, full-time workers)	Reduced working times/days	Economic support for an affected farmer and non-farmer households. Support for small businesses, food assistance, and other humanitarian assistance.  Continuing the agriculture development projects to maintain domestic production and distribution.
	Income	Income Decrease	Income Decrease	Income Decrease	
	Expenditure	There were no general trends on the changes in food / non-food expenditure.		Increased utility fees and communication fees; Increased cost for sanitary items; Cutting expenditure for nonessential grocery items; Insufficient supply and surge in price for some specific items	
Typical Behavior Change	Continuing to use local market decisions and traditional vendors.	Increased use of supermarkets in the lower middle class.	Decreased use of HoReCa. Decreased time going outside for food	Strengthening hygiene management capabilities of traditional market stakeholders; supporting the	



Items		Lower Income Class	Upper Income Class	Common Things	Countermeasures and Recommendations
		<p>A tendency to buy minimum and necessary amounts.</p> <p>Minimizing the travel distance and saving transportation costs.</p> <p>Limited utilization of online platforms and food delivery due to internet accessibility and costs.</p>	<p>Increased use of the online platform and delivery service.</p> <p>Minimizing the time going outside by purchasing all-in-once.</p>	<p>purchase.</p>	<p>creation of crisis management manuals; clarifying the roles of the government and the private sector, and strengthening the functions of each actor; financial support for affected vendors; support for promotion activities through SNS.</p> <p>Support for the establishment of standards for pesticide residues, etc. to enhance the safety of ordinary vegetables; continuing to support the capacity building of institutions which in charge of SPS controls; and sensitization activities to select safe and secure agricultural products.</p> <p>Consideration for the digitally vulnerable (promotion of online education, etc.)</p>
	Changes on Purchased Item	<p>Purchasing cheaper alternatives due to income loss. (e.g., egg instead of meat) (only a few reported cases)</p> <p>A preference to buy well-preserved, nutrition-rich foods. (e.g., dry foods) (only a few reported cases)</p>	<p>Increased consumption of organic and pest-free products for some middle-class consumers.</p> <p>Increased consumption of processed foods at the beginning of the pandemic; increased consumption of raw vegetables, salads, dairy products since after the pandemic lasting long. (based on an interview to the supermarket in Indonesia)</p>	<p>Increase of food hygiene consciousness and health consciousness.</p> <p>Increase of meals at home.</p> <p>Increased consumption of locally produced agriculture commodities for some consumers.</p> <p>Regarding snacks, both increased tendency due to longer staying time at home and decreased tendency due to the rise of health consciousness were observed.</p>	

Source: JICA Survey Team

### 4.3 Review on the Impact on the Supply Side

In this section, we would like to show the results of the interviews on the impact of the COVID-19 pandemic on agricultural production which was conducted separately from the FVC survey. Specifically, the interviews as about the basic characteristics of farmers, the impacts on farmers' income, and issues and challenges on input, production, distribution, and marketing those are the main components of farm management. In addition, the countermeasures taken by farmers were surveyed as well.

The pilot projects planned in the survey were formulated from the perspective of 1) cooperation with existing JICA projects and 2) support for relatively new initiatives such as web page and software application development, and the introduction of equipment for cultivation management and supply adjustment. Since it was required to evaluate the results during the short period, farmer groups that had the potential to carry out these activities, that is, advanced farmers in the region were prioritized for the selection.

On the other hand, it was also necessary to examine whether the lesson learned through the implementation of pilot projects can be applied to small-scale farmers, which are the main targets of JICA's agricultural development assistance. This chapter examines what kind of consideration is necessary for small-scale farmers, by comparing the impacts and issues on the COVID-19 pandemic, which also affected the pilot project's beneficiary farmers (groups) and their surrounding small-scale farmers (groups). Based on such awareness of the concern, the survey in this section was conducted.

#### 4.3.1 The Characteristics of the Beneficiary Farmers of the Pilot Projects in Each Country and Their Surrounding Small-Scale Farmers.

Table 4.3.1 shows the characteristics of the beneficiary farmer groups of each country's pilot project and the surrounding small-scale farmers (groups) selected for the comparative examination. Approximately 20 to 25 farmers were selected for the interviews, through the identification by the heads of the farmer groups/ village chief, because they are familiar with the situation of each farmer.

**Table 4.3.1 The Survey Period and Sample Size in Each Country**

Countries	Period	Category	Name of Farmer Group	Size
The Philippines	From the End of November until Mid of December 2021	Target Farmers	Caridad Sur Farmers Association, Rizal Public Market Vendors and Farmers Multipurpose Cooperative	25
		Surrounding Farmers	Individual farmers surrounding target areas of the pilot project.	24
Indonesia	From Mid until the End of September 2021	Target Farmers	Mujagi Farmer Group, Sinar Mukti Farmer Group	25
		Surrounding Farmers	Farmer group surrounding target areas of the pilot project.	20
Viet Nam	From the End of November until Mid of December 2021	Target Farmers	Nong Diem, Quynh Minh Farmer Group, Xanh Hong Phong Farmers Group	24
		Surrounding Farmers	Farmer group surrounding target areas of the pilot project.	24
Thailand	Out of the Survey Scope since the pilot project is targeting a corporation.			
Lao PDR	From the End of November until Mid of December 2021	Target Farmers	Thongmang Organic Farmer Group, Nontea Organic Farmer Group	24
		Surrounding Farmers	Individual farmers surrounding target areas of the pilot project.	24
Total		Target Farmers		98
		Surrounding Farmers		92

Source: JICA Survey Team

The basic information collected in the survey includes average farmland size for each group, the percentage of the full-time farmers defined as a farmer who earns more than 90% of total income from agricultural income, the percentage of respondent's smartphone ownership, vaccination rates, and main crops cultivated. The areas of cultivated land by the surrounding farmers were smaller than that of the beneficiary farmers of the pilot project because they were selected from small-scale farmers.

**Table 4.3.2 The Characteristics of the Surveyed Farmers in Each County.**

Countries	Category	Cultivated Area (ha)	Percentage of full-time farmers (%)	Smartphone Ownership (%)	COVID-19 Vaccination Rate (%)	Main Crops
The Philippines	Target Farmers	0.87	84	60	40	Vegetables
	Surrounding Farmers	0.75	46	67	54	Vegetables
Indonesia	Target Farmers	0.55	68	84	28	Vegetable (Including Japanese Varieties)
	Surrounding Farmers	0.34	75	30	10	Vegetables
Viet Nam	Target Farmers	0.68	71	79	96	Vegetables, Rice
	Surrounding Farmers	0.22	46	79	96	Vegetables, Rice
Lao PDR	Target Farmers	0.41	71	42	67	Vegetables, Orchards (Banana)
	Surrounding Farmers	0.28	75	71	71	Vegetables, Orchards (Banana)

Source: JICA Survey Team

All the farmer groups are highly dependent on the sales channel through buyers/wholesalers who come to the production sites, followed by direct sales to traditional markets. Many beneficiary farmers in Lao PDR also sell to markets that handle only organic vegetables. Although it is a small number, some beneficiaries of the pilot project sell directly to supermarkets. There are also a few advanced farmers who have started selling online.

**Table 4.3.3 The Percentage of Sales by the Market Channels with respect to Total Sales**

Countries	Categories	Local Buyers/Middlemen	Traditional Market	Supermarket	HoReCa*	Online Sales	Others (e.g., organic market)
The Philippines	Target Farmers	75	25	0	0	0	0
	Surrounding Farmers	96	4	0	0	0	0
Indonesia	Target Farmers	79	14	5	0	2	0
	Surrounding Farmers	89	11	0	0	0	0
Viet Nam	Target Farmers	52	37	11	0	0	0
	Surrounding Farmers	63	37	0	0	1	0
Lao PDR	Target Farmers	37	23	9	0	1	30
	Surrounding Farmers	79	14	2	2	2	1

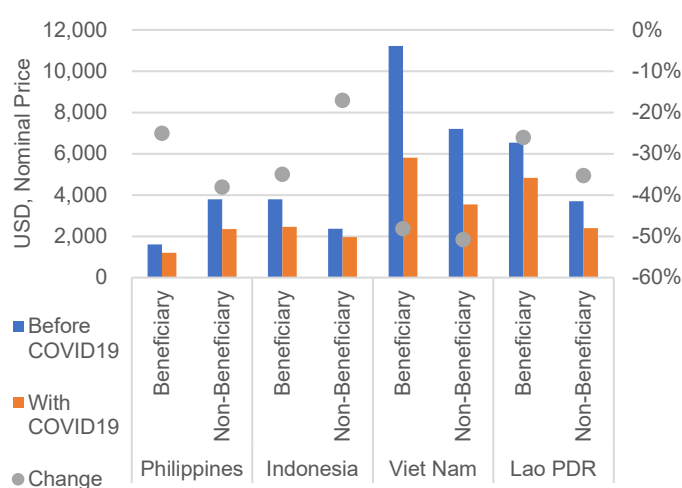
Note: HoReCa: Hotel, Restaurant, and Catering / Café

Source: JICA Survey Team, the share is based on rough calculations declared by the farmers.

### 4.3.2 The Changes on Farmer's Income Before/ With COVID-19 and the Factors of Change

As an indicator of the impact, farmers' income before COVID-19 (2019) and with COVID-19 (2020-2021) and its changes were calculated and compared. The results are shown in Figure 4.3.1.

Farmer's total income including non-agricultural income and government subsidies, declined in all groups when comparing the year before and during the COVID-19 period (12 consecutive months based on ordinal agriculture calendar in the area). The average rates of changes were by -17% to -51%.

**Figure 4.3.1 Changes on Farmer's Income between Before/With COVID-19 Period**

Source: JICA Survey Team

For households whose incomes declined, the surveyors asked about the main reasons. On the production side, the increases of production costs were raised by the respondents such as input (e.g., fertilizers)

costs, labor costs, and transportation costs. In the Philippines, there were a certain number of farmers who experienced declines in the planting areas and the harvesting volumes due to heavy rain and typhoon hitting (refer to Table 4.3.4).

Overall, the farmers who were affected by the factors in the demand side rather than the production side were overwhelmingly large, for example, the falls of producer prices and shipment volumes due to the decrease in the visits by local buyers, the oversupply tendency accompanied with increased disposals of products, the difficulty of farmers shipping directly to the market due to movement restrictions, and the cancellation of social events (e.g., weddings and religious events).

The vegetable farmers seem to have more difficulties than other types of farmers in finding sales channels during the period of oversupply tendency because vegetables are easily spoiled and cannot be stored for a long time.

**Table 4.3.4 The Main Reasons of Farmer's Income Reduction**

Countries	Categories	The Factors of Income Reduction
The Philippines	Target Farmers	Oversupply tendencies /Lower selling prices (13) decrease in cropping and harvesting due to heavy rain and/or typhoon hitting (5)
	Surrounding Farmers	Decrease in transaction volume and sales opportunities to buyers (19), Unable to go to the market by the farmers (2)
Indonesia	Target Farmers	Lower demands of vegetables in the market (4), oversupply tendencies /lower selling prices (17), higher input prices (3), higher transport costs (1), closure of HoReCa (5), supermarket closures (1), price fluctuation (3)
	Surrounding Farmers	Lower demands of vegetables in the market (7), oversupply tendencies /lower selling prices (10), higher input prices (3), closure of traditional markets (2), decrease in transaction volume and sales opportunities to buyers (1), increase in wage costs (1)
Viet Nam	Target Farmers	Decrease in transaction volume and sales opportunities to buyers (12), unable to go to traditional markets by the farmers (12), decrease in production volume due to bad weather (1), decrease in production due to reduced planting size (3)
	Surrounding Farmers	Decrease in transaction volume and sales opportunities to buyers (12), unable to go to traditional markets by the farmers (12)
Lao PDR	Target Farmers	Lower demands of vegetables in the market (4), decrease in transaction volume and sales opportunities to buyers (1), closure of traditional markets (1)
	Surrounding Farmers	Lower demands of vegetables in the market (1), oversupply tendencies /lower selling prices (2), and decrease in transaction volume and sales opportunities to buyers (2)

Source: JICA Survey Team

Note: the number in the parenthesis shows the number of respondents who raised the reasons.

### 4.3.3 Issues and Challenges on Farm Management during the COVID-19 Pandemic

Referring to the FVC related issues and challenges which were identified through the implementation of the surveys for FVC stakeholders, the criteria on-farm management during the COVID-19 pandemic were formulated from the farmer's viewpoints. The criteria asked farmers for the assessment of impacts in four-stage scores, namely "Significantly Occurred (4)", "Fairly Occurred (3)", "Partially Occurred (2)", and "Not Affected (1)", or "Not Applicable (NA)". Table 4.3.5 shows the calculated scores based on the results.

**Table 4.3.5 The Issues and Challenges during COVID-19 Pandemic on the Production Side**

FVC Sector	Issues and Challenges	Philippines		Indonesia		Viet Nam		Lao PDR		The Average	
		BF	SF	BF	SF	BF	SF	BF	SF	BF	SF
Overall	Overall Impacts	3.0	3.5	3.8	4.0	4.0	4.0	3.1	3.2	3.5	3.7
Input	Insufficient supply of inputs	1.1	1.0	2.0	1.7	2.7	2.5	1.2	1.7	1.8	1.7
	Price Increase of Inputs	4.0	4.0	2.6	2.6	3.9	3.8	2.3	3.0	3.2	3.3
	Limited Distribution of Subsidized Inputs	1.3	1.4	1.5	1.1	1.0	1.0	2.1	2.3	1.5	1.5
Production	Insufficient Labor Supply	1.0	1.1	1.0	1.0	1.9	1.5	1.1	1.3	1.3	1.2
	Return of Migrant Workers	NA	1.0	1.0	1.0	1.7	1.0	1.0	1.1	1.2	1.0
	Loss of Running Capital	3.0	3.4	2.6	3.2	2.0	1.5	2.3	2.5	2.5	2.6

FVC Sector	Issues and Challenges	Philippines		Indonesia		Viet Nam		Lao PDR		The Average	
		BF	SF	BF	SF	BF	SF	BF	SF	BF	SF
	Loss of products / Disposals due to lack of market to sell	1.1	3.4	3.4	2.9	4.0	4.0	1.7	1.8	2.5	3.0
	Extra Cost due to longer storage period before selling.	1.0	1.3	1.2	1.1	NA	NA	1.6	1.3	1.3	1.2
	Reduced Capacity for Production	1.0	1.4	2.7	2.9	3.1	1.7	1.0	1.2	2.0	1.8
Distribution	Cost Increase for Transportation & Distribution	2.1	1.3	2.7	1.8	1.2	1.0	1.5	1.2	1.9	1.3
Marketing	Reduced Procurement by Local buyers / brokers / collectors / middlemen	1.1	3.1	3.3	3.4	3.5	3.2	2.3	2.2	2.5	3.0
	Reduced Procurement by buyers/brokers/traders/wholesalers in Traditional Market	1.0	3.0	3.4	3.5	3.8	4.0	1.8	1.5	2.5	3.0
	Reduced Procurement by buyers/brokers/traders/wholesalers in Modern Market	NA	NA	2.8	2.2	1.5	1.0	1.3	1.0	1.9	1.4
	Reduced Procurement by HoReCa	NA	NA	1.4	1.0	NA	NA	1.0	1.0	1.2	1.0
	Reduced Procurement by Processing Company	NA	NA	2.6	1.9	NA	NA	1.2	1.0	1.9	1.4
	Reduced Procurement by Buyers from foreign country / Importers	NA	NA	1.4	1.0	NA	NA	1.1	1.1	1.2	1.1
	Lower Selling Price than Before	3.0	3.5	3.8	4.0	4.0	4.0	3.1	3.2	3.5	3.7

Note: BF means “beneficiary farmers for the pilot projects” and SF means farmers located in the surroundings of target farmers.  
Source: JICA Survey Team

One of the objectives of this survey was to compare the COVID-19 impact of the beneficiary farmers (groups) and the surrounding small-scale farmers (groups). From this perspective, the issues and challenges were classified into three categories, namely 1) issues and challenges especially seen in beneficiary farmers, 2) issues and challenges especially seen in surrounding farmers, and 3) issues and challenges commonly seen in both groups.

One of the most typical issues seen in beneficiary farmers was that although only a few farmers can directly wholesale to supermarkets and processors (frozen foods, confectionery, etc.), some farmers were affected significantly by the cancellation/ the decrease of orders from wholesalers who had business relationships with such large-scale customers (i.e., supermarkets and processors). Aside from that, the increase in transportation costs was also raised by some beneficiary farmers. It might be because of the surge in global crude oil prices and the supply chain disruption/ restructuring.

Issues and challenges particularly seen in surrounding farmers include lower producers’ prices, fewer procurement from local middlemen, fewer procurement from traditional markets, and increased loss of products and disposals. Although these were the issues and challenges that were also seen in beneficiary farmers to some extent, the surrounding farmers were more strongly affected by them. Regarding the increased loss of products and disposals, it may imply that the capacity to respond to the crisis in terms of sales activities is weaker for surrounding farmers than that of beneficiary farmers.

The issues and challenges commonly seen regardless of countries and groups include the insufficient supply of inputs and increased input prices (agricultural materials, fertilizers, pesticides, seeds, etc.). There was a common trend that the impact due to increased input prices was greater than the impact due to a supply shortage of inputs. In addition, the impact due to the shortage of workers was not so much seen among the surveyed farmers.

**Table 4.3.6 The Classification of the Issues Faced by Beneficiary Farmers and Their Surrounding Farmers**

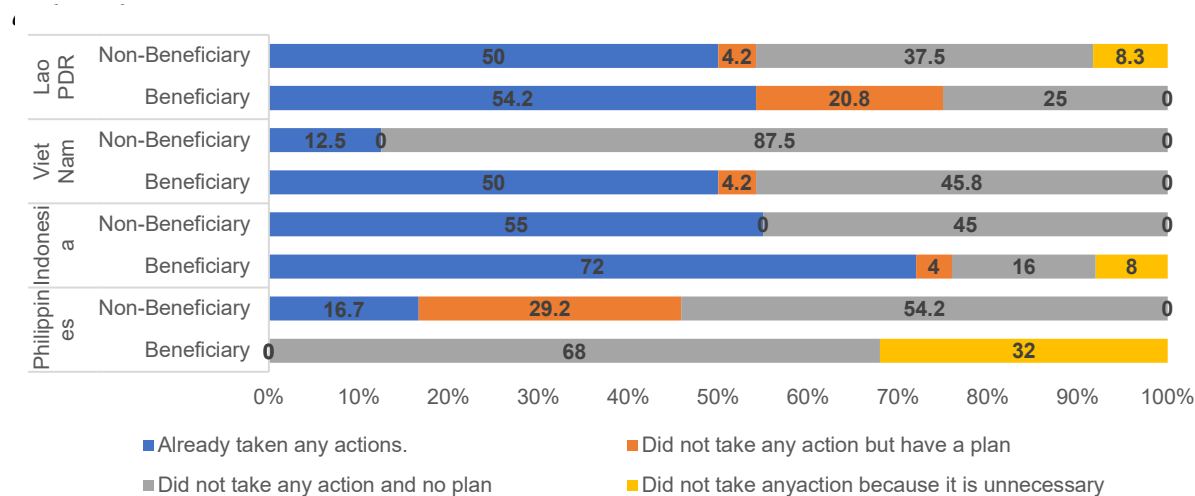
Classification	Issues
Issues and Challenges that were Particularly seen in Beneficiary Farmers	Reduced Procurement by Processing Company, Reduced Procurement by buyers/brokers/traders/wholesalers in Modern Market, Cost Increase for Transportation & Distribution.
Issues and Challenges that were Particularly seen in Surrounding Farmers	Lower Selling Price than Before, Reduced Procurement by Local buyers/brokers/collectors/middlemen, Reduced Procurement by

Classification	Issues
	buyers/brokers/traders/wholesalers in Traditional Market, Loss of products / Disposals due to lack of market to sell.
Issues and Challenges Commonly seen in both groups	Insufficient supply of inputs, Price Increase of Inputs

Source: JICA Survey Team

#### 4.3.4 Countermeasures on Farm Management Issues and Challenges Taken by the Surveyed Farmers

The questionnaire also asked respondents if they had taken any actions to address the above issues, and if they had any plans to implement them in the future. About half of the respondents answered that they had taken some actions (Fig. 4.3.2). In addition, the result finds that more than 90% of farmers recognized that some actions were needed, which is shown by the combination of farmers who answered, “already taken any actions”, “did not take any action but have a plan”, and “Did not take any action



**Figure 4.3.2 Implementation of Countermeasures by the Surveyed Farmers**

Source: JICA Survey Team

The measures that surveyed farmers have taken so far can be broadly divided into passive measures and positive measures. Passive measures are to review the number of employed workers and inputs amounts to reduce production scale and to save the total costs. The strategy aims to shift toward low-input agriculture such as fewer utilization of fertilizers and pesticides than the optimal amounts and higher dependency on family laborers rather than employed workers. On the other hand, positive measures are the efforts that aim to expand the sales channel outside of the region and online sales activities.

Another important viewpoint is farmers’ risk management efforts to deal with market risks such as loss of market for selling and the plunges in producer’s prices. The risk management efforts include switching to short or long days crops, diversification of the crops and varieties to be cultivated, or conversely concentrating resources on the cultivation of specific crops and varieties, to control the volume and timing of shipment. Also, some farmers started new livelihood activities such as stockbreeding and non-farm economic activities to increase the total income. In Lao PDR, in anticipation of future seed shortages, many farmers had taken actions such as securing more seed stockpiles than that were needed for the time being or harvesting seeds for replanting by themselves.

Regarding the comparison between beneficiary farmers (groups) and surrounding small-scale farmers (groups), there was not much difference in the implementation of passive measures, while beneficiary farmers were more actively aiming to expand sales channels (i.e., positive measures). The reason may be because the beneficiary farmer group is more well-organized, information sharing among farmers is more active, and they are trying to deal with the COVID-19 pandemic not only by the individual response but also by the direction of the group.

**Table 4.3.7 The Countermeasures Taken by the Beneficiary Farmers and their Surrounding Farmers**

Countries	Categories	Details of Countermeasures
The Philippines	Target Farmers	No Remarks (No Respondents answered "already take any action")
	Surrounding Farmers	Change of planting a variety of vegetables depending upon the weather condition, Online purchase of fertilizers and herbicides to avoid the chance of being affected by covid 19, an increase of planting area, following health protocol
Indonesia	Target Farmers	Converting to short-day crops, reduction of cultivated areas, reduction of workers, shifting to low-input agriculture, sales channel enhancement outside of the areas, practices of online sales and its plan, starting new livelihoods (e.g., agriculture labors), reduction of the crops and varieties grown
	Surrounding Farmers	reduction of cultivated areas, reduction of workers, shifting to low-input agriculture, sales channel enhancement outside of the areas, starting new livelihoods (e.g., stock breeding and construction workers).
Viet Nam	Target Farmers	Converting from short-day crops to long-day crops, Reduction of cultivated area
	Surrounding Farmers	Reduction of cultivated area
Lao PDR	Target Farmers	Hygiene Practice (e.g., vaccination, wearing masks, washing hands, washing clothes, staying at home), practices of online sales and its plan, starting new livelihood (e.g., stock breeding), harvesting seeds for replanting by themselves, seeds stockpiles.
	Surrounding Farmers	Hygiene Practice (e.g., vaccination, wearing masks, washing hands, washing clothes, staying at home), contacting with customers and taking orders via messages and phone calls, practices of online sales and its plan, planting more variety of vegetables to avoid overproducing the same vegetables, harvesting seeds for replanting by themselves, seeds stockpiles.

Source: JICA Survey Team

#### 4.3.5 Remarks and Recommendations on the Supply Side and the Consideration of Small-Scale Farmers

When comparing the impact of the beneficiary farmers (groups) and their surrounding small-scale farmers (groups) on the COVID-19 pandemic, there was much more similarity than the differences between the two groups. For both groups, the surveyed farmers cultivated similar crops, and their main market channels were local buyers/ middlemen and traditional markets. Thus, due to the supply and demand gap, the sales volume and the producer's price fell sharply, which caused a great impact.

About half of the surveyed farmers had already taken some actions, but most of them were only dealing with individual production management and marketing. For most individual farmers with limited sources of capital, it is challenging to take concrete measures against the unprecedented COVID-19 crisis in a short period.

Supporting the organization of farmer groups to be able to carry out production, post-harvest handlings, shipping, and marketing as a group can increase access to the modern market, increase the sales channels, and enhance the prices negotiation capacity. They also lead to improving the resilience against crises such as the COVID-19 pandemic.

As support for small-scale farmers, financial support for farmers who have difficulty in financial matters can be considered. Although the situation continues to be unpredictable due to the outbreak of the Omicron variant as of January 2022, the demand for agricultural products including horticultural crops had been in a recovery trend in each country due to the progress of vaccination. Therefore, supports for restoring the production capacity as before COVID-19 and to be able to produce crops according to the market demand are needed.

In addition, not only farmers but also local buyers/ middlemen and traditional market stakeholders were affected as well. To restore the normal operations of such stakeholders, several supports are needed such as strengthening public hygiene management capacities, financial support, support for the introduction of online transactions and promotion using SNS, strengthening the ability to broadcast price information in traditional markets, and support for the introduction of non-contact electronic money payments in traditional markets and other market channels.

Although selling agricultural products online is an effective measure as the response to the COVID-19 pandemic, it may not be a general solution for all farmers, because it requires making case-by-case deliveries with different needs in terms of both quality and quantity. Considering these requirements, medium or large-scale farmer groups, who are organized enough to handle joint shipment and can produce vegetables with large volumes and stable production, can be one of the target groups for the trial activities of online sales and promotion

Regarding the involvement of small-scale farmers, the experiences of online sales activities by medium and large-scale farmers groups can be shared with surrounding farmers in the areas. Further, they can be acting as a coordinator of shipment of the production area so the small-scale farmers can participate in the online sales activities under such coordination. Most farmers (groups) had just begun to be engaged in online transactions, and it is necessary to accumulate experiences and lessons learned, including through the implementation of the pilot project's activities of the Survey.



## 4.4 Impact of COVID-19 by Range of FVC

In the study area, a large variety and vast FVCs have been established not only domestically, but also across countries, including those trading within the ASEAN region and exporting to China, Japan, and the EU. In this section, we analyze the impact of COVID-19, focusing on the areal scope of FVCs, dividing them into domestically completed FVCs (impact in the production area, and impact between production and consumption areas), FVCs by target market (domestic and overseas), FVCs across ASEAN countries, and FVCs constructed between ASEAN and neighboring countries. Finally, a mapping of the impact on FVCs will be conducted, and measures will be discussed based on the timeline.

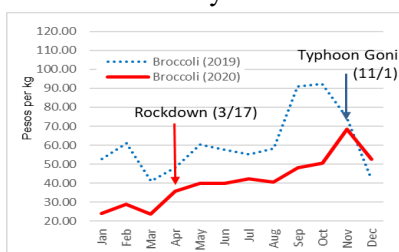
### 4.4.1 Corona shock and its impact on domestically completed FVCs

To identify the impact of the Corona shock on the local economy, the FVC of vegetables in the Philippines is analyzed as an example<sup>1</sup>. The target of the study is a FVC in the Luzon Island in the Philippines, and the impact of the Corona shock on vegetable prices is discussed based on the price information of both production and consumption areas. In the Philippines, the world's longest community quarantine measure (the Philippine version of the lockdown) has been in effect since March 2019 for the entire island of Luzon, which covers both large consumption areas and production areas, and has been directly affected by the lockdown. The Philippines example is followed by a case in which the entire FVC stagnated due to a division between industries located on the production side of the FVC (upstream industries) and those located on the consumption side (downstream industries).

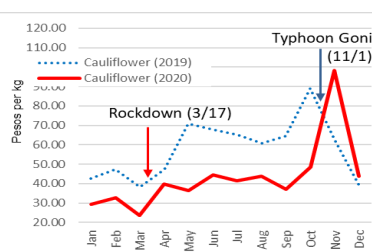
#### 1) Production Area

The direct impact on the local economy is caused by the disruption and stagnation of the distribution of agricultural products between urban and rural areas due to the inability of middlemen to move between production and consumption areas by blockades and the movement restrictions. In addition, as demand from hotels and restaurants in consumption areas decreased, the frequency of visits by brokers and collectors to farm gates and collection points in rural areas was decreased, resulting in the disposal of fresh products due to loss. On the other hand, the data shows that some of the farmers in the production area actively increased their access to the market by using SNS and ICT and increased their profits by developing channels of online sales.

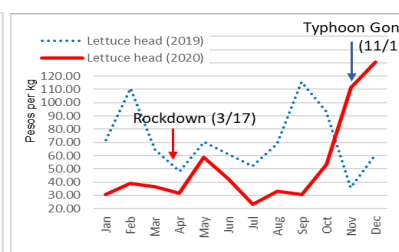
Since March 17, 2020, when the lockdown began in Luzon Island, prices in the wholesale market in Benguet Province have not been changed significantly compared to the previous year, 2019 (see figures below<sup>2</sup>). Rather, prices of broccoli, cauliflower, and lettuce have remained at lower levels than the previous year. It is probably because the governor of Benguet Province guaranteed that vegetable production would be continued even during the lockdown, and that the vegetables would be supplied to the market constantly<sup>3</sup>.



**Figure. 4.4.1 Benguet Wholesale Market Price (broccoli)**  
Source: Philippines Statistics Authority, "Open STAT, Data Base"



**Figure. 4.4.2 Benguet Wholesale Market Price (cauliflower)**  
Source: Philippines Statistics Authority, "Open STAT, Data Base"



**Figure. 4.4.3 Benguet Wholesale Market Price (lettuce)**  
Source: Philippines Statistics Authority, "Open STAT, Data Base"

<sup>1</sup> Organized based on the database of the Philippine Statistics Authority (PSA). <<https://psa.gov.ph/surveys-agriculture/wps>>

<sup>2</sup> In Benguet, most of the highland vegetables are produced in the fourth quarter of the year, with shipments reaching their peak in November and December. The price of vegetables also increases from August to October, peaking around October, and then tends to decrease from November to December.

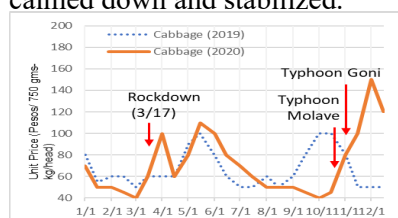
<sup>3</sup> Philippine News Agency, "Benguet assures ample supply of vegetables", March 18, 2020 <<https://www.pna.gov.ph/articles/1096989>>

In 2020, Luzon Island, including the province of Benguet, was hit by a major typhoon "Goni" ("Super Typhoon Rolly" in the Philippines) on November 1, which caused severe damages to agriculture. As a result, the vegetable prices were increased in 2020, especially for cabbage, lettuce, pechay (bok choy), snap beans, and radishes, during November and December, even when prices usually tend to drop.

## 2) Production Area and Consumption Area

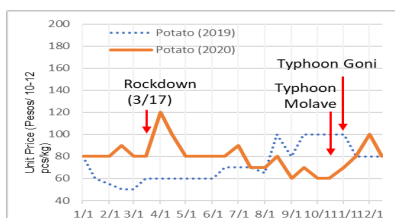
The PSA regularly monitors the prices of major crops in wholesale and retail markets throughout Metro Manila. Data on vegetable prices at retail markets shows that many vegetable prices have been increased since March 17, 2020, when the lockdown was started (see Figures 4.4.4 - 4.4.8). The trends of retail prices of cabbage, potatoes, and eggplants are clearly different compared to those in the same months of the previous year, which may indicate the impact of the lockdown.

The vegetable prices, which rose in March 2020 sharply, fell in mid-April, about a month later, and showed a stable trend after that. It implied that the lockdown order caused a temporary tightening of supply and demand, further, causing a delay in the distribution in some cases. However, since the goods were available, after measures for the smooth distribution were implemented, prices also have been calmed down and stabilized.



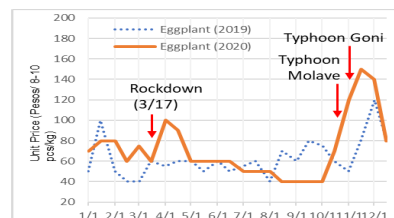
**Figure. 4.4.4 Retail prices in Metro Manila (cabbage)**

Source: Philippines Statistics Authority, "PSA Media Service".



**Figure. 4.4.5 Retail prices in Metro Manila (potato)**

Source: Philippines Statistics Authority, "PSA Media Service".

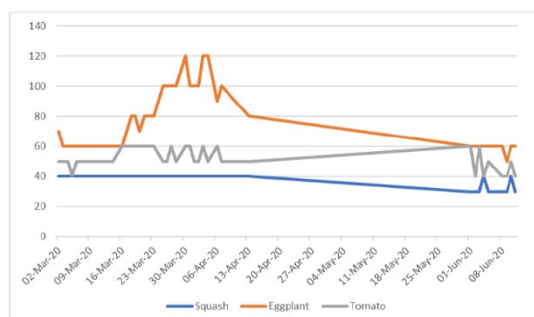


**Figure. 4.4.6 Retail prices in Metro Manila (eggplant)**

Source: Philippines Statistics Authority, "PSA Media Service".

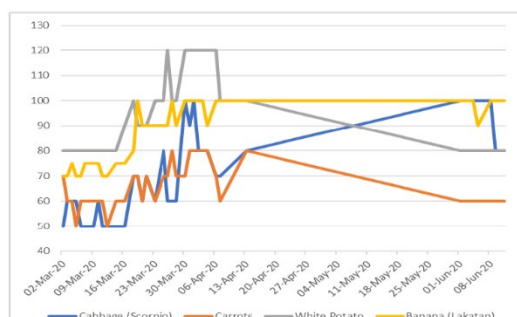
A survey conducted by FAO on the impact of COVID-19 on FVCs in the Philippines described the situations during this period in detail.<sup>4</sup> The report says that when the lockdown began in mid-March, panic buying was observed in Manila and other parts of the Philippines, causing a primary tightening of supply and demand. However, the number of customers was decreased due to the movement restrictions, which resulted in an oversupply situation.

One urban LGU limited the number of people entering the market to 300 at a time, and shopping time per person was limited to 13-18 minutes. It was also reported that only 120 to 150 of the 1,400 large retail stores in Quezon City were open during the lockdown. Due to such an overall decline in consumption, the retail prices of vegetables in Manila have been relatively stable since mid-April, changing from the sharp fluctuation before and after the lockdown.



**Figure. 4.4.7 Retail Prices Trend of Lowland Vegetables in Manila**

Source: Rapid assessment of the impact of COVID-19 on food supply chains in the Philippines (FAO), based on DA-AMAS data (2020)



**Figure. 4.4.8 Retail Prices Trend of Highland Vegetables in Manila**

Source : Rapid assessment of the impact of COVID-19 on food supply chains in the Philippines (FAO), based on DA-AMAS data (2020)

<sup>4</sup> FAO, "Rapid assessment of the impact of COVID-19 on food supply chains in the Philippines", 2021.

Even during the urban blockades and the movement restrictions, priority was given to food products distribution in many countries to ensure a stable food supply. However, there have been cases in the Philippines, Malaysia and other countries, that even if food manufacturers in downstream are allowed to be operated, suppliers such as packaging materials in the upstream were not allowed to do. Consequently, the FVCs were cut off and cannot function, and the supply chain cannot be maintained. On the other hand, as urban blockades and restrictions on movement were extended again and again, new FVCs are being created through E-Commerce to connect producers and consumers directly or in a shorter form than before.

### 3) Impact on Upstream and Downstream Industries

There were cases where FVCs have stagnated due to logistical delays between upstream and downstream industries. Under the lockdown, while a wide variety of companies were subject to the shutdown orders, companies that manufacture food, medicine, and other essential goods for maintaining daily life were allowed to continue their operations. Such FVCs are involved in a wide range of industries, both large and small, from upstream to downstream, and some companies have no relation to the food industry at first glance.

The case of a packaging materials supplier in the food supply chain is a good example, where a food factory could not operate because the supply of packaging materials was not sufficient, suggesting that the government's lack of understanding has stagnated FVC in the downstream portion of the supply chain. It is needed to decide to suspend operation carefully, looking down upon the entire FVC.

**Table 4.4.1 Cases of Logistics Stagnation between Upstream and Downstream Industries**

Factors	Impact and Countermeasures
Shutdown Order	<ul style="list-style-type: none"> <li>In China, there was a case that a Japanese food manufacturer could not start their operation because the packaging material supplier to the company was sopped. Similar cases have been confirmed in the Philippines and Malaysia. In another case, even if goods manufacturers in the downstream of the FVC are ready to operate, they could not start production without necessary item, since the supply enterprises in the upstream of the FVC were not allowed to operate.<sup>5</sup></li> </ul>
Lockdown (urban blockade)	<ul style="list-style-type: none"> <li>In Cambodia, a lockdown (urban blockade) began on April 15, 2020 in Phnom Penh area and the adjacent city of Takhmao in Kandal Province. In the areas subject to the lockdown, factories were not allowed to operate except for food, medicine, and medical supplies for the domestic market. For example, a Japanese snack company was forced to shut down its factory because it was not allowed to produce rice snacks, since the snacks are for export.<sup>6</sup> This is an example of a case in which the distribution of international FVCs was disrupted due to a lockdown, resulting in fragmentation on the upstream (production) side of international FVCs.</li> </ul>

Source: Listed in footnotes for each item

#### 4.4.2 Impact of COVID-19 on FVCs for Domestic and Foreign Markets

Based on the impact survey on FVCs conducted in this survey, the impact was summarized based on FVCs for the domestic market and FVCs for overseas markets, especially for large-scale farms and contract farming with large capital.

As for input materials, most of the FVCs of both domestic and overseas import pesticides, fertilizers, feeds, livestock sanitation materials, packaging materials, etc. from overseas, resulting in higher material prices due to increased transportation costs, stagnation and delayed transportation at ports, and supply shortages. In addition, it was confirmed that the sales volume of imported materials and equipment had been decreasing, especially in livestock and fishery products due to the impact of reduced demand caused by the HoReCa closure and the decrease in the number of tourists.

On the production side, production costs increased for most FVCs, both domestic and international, due

<sup>5</sup> JETRO Research Report, "Impact of the New Corona on the Supply Chain in the ASEAN+3 Region and Countermeasures", November 2020, <[20200023.pdf \(jetro.go.jp\)](#)>

<sup>6</sup> NNA Asian Economic News, "Japanese companies' factories shut down one after another due to city blockade", April 2021, <<https://www.nna.jp/news/show/2179003?media=bn&country=khr&type=4&free=1>>

to the rising prices of inputs. In banana plantations, the delay in the application of pesticides had resulted in the spread of diseases and a decline in production. In addition, pineapple plantations were experiencing a shortage of manpower due to movement restrictions, and coffee farmers had reported cases of losing sales outlets and shifting to other crops due to the closure of HoReCa and the decrease in tourists.

On the other hand, it can be assumed that the impact of the COVID-19 pandemic was relatively moderate, at least in the short term, for large capitals and large farms with advanced FVC integration. In pineapple production, farmers with large scale capital and contract farming were not affected by the rising material cost, and their sales volume did not change much. In the palm oil industry, both material costs and sales volume remained unchanged for large-scale farms, but for small-scale farms, the impact of rising material costs led to lower quality and lower income. This trend had also been observed in the aquaculture industry, with firms with their own farms reporting no procurement problems.

Other processing industries were facing difficult operations due to increased transportation and other costs, reduced procurement due to movement restrictions, lack of suppliers and buyers, and reduced demand in the market. Cassava factories, for example, which rely on foreign labor, were experiencing a shortage of workers and increased labor costs. Notably, consumers' awareness of food safety and security had changed, leading to increased interest in safety and traceability in livestock and marine products, which in turn had led to an increase in costs.

In terms of distribution, most FVCs, regardless of whether for domestic or overseas markets, had been affected by increased transportation costs, decreased handling volume, higher electricity costs due to longer storage periods, and increased losses. In particular, FVCs targeting overseas markets had been confronted with problems such as increased freight costs due to the shortage of containers, higher tariffs and storage fees, stagnation of transportation due to the suspension of air transportation, and decreased demand in overseas markets. Even for the domestic market, movement restrictions had been imposed in COVID-19-endemic areas, limiting the volume of distribution. On the other hand, as the with COVID-19 condition prolongs, there had been an increase in the volume of distribution, including small shipments, due to increased individual delivery demand and online trading.

In terms of consumption, it was confirmed that demand for coffee and other luxury goods, fruits, livestock and marine products, regardless of whether they were destined for domestic or overseas markets, had been declining due to the global HoReCa closure and the decrease in the number of tourists. In addition, with consumers becoming more safety- and security-conscious, there is a growing interest in safety and traceability, and non-contact transactions such as online ordering are growing. In addition, it was reported that the demand for fresh foods such as pangasius in traditional markets was decreasing, while the demand for frozen foods in modern markets (supermarkets, etc.) was growing. The differences in the impact of COVID-19 due to differences in FVCs, mainly in terms of target markets, are summarized in the table below.

**Table 4.4.2 Impact of COVID-19 on FVC for Domestic and Foreign Markets**

Item	FVC for Domestic Market		FVC for Foreign Market	
	Vegetables - Fruits - Horticulture (Banana, Pineapple, Coffee)	Livestock - Aquaculture (Poultry, Pork)	Vegetables - Fruits - Horticulture (Banana, Pineapple, Cassava, Coffee, Palm Oil)	Livestock - Aquaculture (Pangasius, Shrimp)
Input	<ul style="list-style-type: none"> <li>Price increase of imported input materials and equipment (pesticides, fertilizers)</li> </ul>	<ul style="list-style-type: none"> <li>Price increase in imported materials and equipment (firstborn chicks, livestock hygiene products, feed)</li> <li>Decrease in purchase volume due to decrease in the number of breeding chickens</li> </ul>	<ul style="list-style-type: none"> <li>Delay in delivery, price increase, shortage of imported input materials (pesticides, fertilizers, package materials)</li> <li>Stagnation at checkpoints (fuel and labor costs)</li> </ul>	<ul style="list-style-type: none"> <li>Prices increase of imported feed (due to transportation costs)</li> <li>Decrease in sales volume due to temporary closure of aquaculture businesses</li> </ul>
Production	<ul style="list-style-type: none"> <li>Spread of disease due to delay in pesticide spraying (banana)</li> </ul>	<ul style="list-style-type: none"> <li>Prices increase of input materials, production decrease, revenue decrease, declining number of birds raised, decrease in farmgate prices</li> <li>Large impact on users of commercial feed, small impact on users of homemade compound feed (pig farming)</li> <li>Increased awareness of food safety and traceability (pig farming)</li> <li>Rising fuel costs (skipjack tuna, tuna)</li> </ul>	<ul style="list-style-type: none"> <li>Increase in production cost</li> <li>Spread of diseases due to delay in spraying pesticides, decrease in supply (banana), shortage of labor due to movement restrictions (pineapple), decrease in production due to reduced demand (shift from coffee to other crops)</li> <li>No change in material cost or sales volume for contract growers with large capital (pineapple)</li> <li>Large-scale plantations had no change in both material cost and sales volume. For small-scale plantations, the impact of higher material costs resulted in lower quality and lower income</li> </ul>	<ul style="list-style-type: none"> <li>Temporary closure of aquaculture firms.</li> <li>Increase in feed costs</li> <li>Decrease in demand</li> <li>Cost increase due to prolonged breeding period caused by lack of sales</li> </ul>
Processing	<ul style="list-style-type: none"> <li>Decreased demand due to school closures, layoffs at processing plants (pineapple juice)</li> </ul>	<ul style="list-style-type: none"> <li>Decrease in handling volume due to movement restrictions, decrease in the number of birds processed and slaughtered</li> <li>Decrease in price, shortage of buyers</li> <li>The decreasing number of business partners and customers, intensifying competition</li> <li>Increased awareness of food safety and traceability (pig farming)</li> <li>Cost increased due to prolonged storage, decreased in the labor force (skipjack tuna, tuna)</li> </ul>	<ul style="list-style-type: none"> <li>Increased transportation costs.</li> <li>Shortage of foreign workers, increase in labor costs (cassava, palm oil)</li> <li>No training for employees (palm oil)</li> <li>Decreased sales volume, increased costs due to long-term storage, increased losses (coffee)</li> </ul>	<ul style="list-style-type: none"> <li>Shortage of raw materials due to a temporary closure of aquaculture firms; processors with their own farms face no procurement challenges (Pangasius)</li> </ul>
Distribution	<ul style="list-style-type: none"> <li>Lower supply, lower demand</li> <li>Stagnation due to traffic restrictions, longer inventory periods (higher storage and electricity costs), increased losses (coffee)</li> </ul>	<ul style="list-style-type: none"> <li>Higher transportation costs, lower shipping volume, lack of buyers</li> <li>Increased awareness of food safety and traceability (pig farming)</li> <li>Cost increased due to prolonged storage (skipjack tuna, tuna)</li> </ul>	<ul style="list-style-type: none"> <li>Lower supply, lower demand</li> <li>Stagnation due to traffic restrictions, higher tariffs and storage fees, higher transportation costs</li> <li>Increased competition from Chinese suppliers (bananas)</li> <li>Increased losses, increase in ocean freight costs due to container shortages (coffee)</li> </ul>	<ul style="list-style-type: none"> <li>Increasing elimination of middlemen (government policy), lower order volumes, higher ocean transport costs, restrictions on travel to corona-endemic areas (Pangasius)</li> <li>Increase in ocean transportation cost, closure of central market (cluster infection),</li> </ul>

Item	FVC for Domestic Market		FVC for Foreign Market	
	Vegetables - Fruits - Horticulture (Banana, Pineapple, Coffee)	Livestock - Aquaculture (Poultry, Pork)	Vegetables - Fruits - Horticulture (Banana, Pineapple, Cassava, Coffee, Palm Oil)	Livestock - Aquaculture (Pangasius, Shrimp)
Consumers	<ul style="list-style-type: none"> <li>Decreasing demand for HoReCa, decreasing number of travelers</li> </ul>	<ul style="list-style-type: none"> <li>Decreasing demand for HoReCa, decreasing number of travelers,</li> <li>Decrease in consumption</li> <li>Increased safety awareness, non-contact communication (online delivery)</li> <li>Increased competition in the retailers</li> <li>Decrease in poultry meat prices (oversupply) (Poultry)</li> <li>Decrease in import destinations, increase in storage costs (skipjack tuna, tuna)</li> </ul>	<ul style="list-style-type: none"> <li>Longer inventory periods (higher storage and electricity costs) (coffee, palm oil)</li> <li>Decreasing demand for HoReCa, decreasing number of travelers</li> <li>Decline in overseas demand (coffee)</li> <li>Difficulty in contacting exporters</li> <li>Increasing demand from health-conscious consumers (Davao) (Pineapple)</li> </ul>	<ul style="list-style-type: none"> <li>suspension of air transportation, decrease in procurement volume, increase in export cost (shrimp)</li> <li>Decreasing demand for HoReCa, decreasing number of travelers</li> <li>Fewer customers in traditional markets (no long-term storage), modern markets can be stored for longer periods (by frozen)</li> <li>Decrease in demand from overseas (China), suspension of exports due to border closures of neighboring countries (Pangasius)</li> <li>Import ban in neighboring countries (shrimp)</li> </ul>

Source: JICA Survey Team

### 4.4.3 Impact on FVCs across ASEAN Countries

In ASEAN, the ASEAN Economic Community (AEC) was officially launched on December 31, 2015. Since then, each member country has been working to amend its national laws and reform its institutions, aiming to eliminate tariff and non-tariff barriers for all products produced within the ASEAN region, liberalize and stimulate intra-regional trade, promote direct and intra-regional investment from outside the region, and strengthen the international competitiveness of the region's industries. In addition, the countries are working on both hard and soft infrastructure development to facilitate cross-border transportation. As hard measures, three economic corridors (North-South, East-West, and South-South) are being developed, and as soft measures, a Cross Border Transportation Agreement (CBTA) was signed in 2003 to facilitate logistics.

In the case of FVCs across national borders, the supply chains were disrupted due to border closures, suspension of air cargo operations, and other factors. Also, the supply chains did not work due to the stagnation of customs operations and other factors. Supply of trade goods, especially agricultural materials, fry and chicks, feed, vaccines, etc., was reduced, while production and distribution costs increased. Such situations resulted in damages to production activities and a decrease in sales volumes. This section will review the factors that have affected the movement of goods and people between countries and introduce new actions in ASEAN.

#### 1) Impact on the Flow of Commodities

Under the ASEAN Economic Community (AEC), which was inaugurated in 2015, the tariff barriers have been removed for products in the region, except for some strategic commodities such as rice, and the distribution of goods is being liberalized. However, even in this environment, trade practices and administrative procedures, such as the preparation of documents, certificates of origin, acquisition of other documents for customs clearance, which have been identified as problems in the past, are being highlighted as bottlenecks again for distribution under the COVID-19. In some cases, customs officers restricted their work at offices to prevent infection, which led to delays in custom procedures. The table below summarizes the factors and measures related to administrative procedures, practices, and institutions that have become bottlenecks in FVCs established across borders.

**Table 4.4.3 Impact of the COVID-19 on the Supply Chain and Countermeasures**

Factors	Impact and Countermeasures
Administrative Procedure	To avoid delays and stoppages in logistics in the supply chain, it is important to maintain access to logistics infrastructure such as customs procedures and ports, which are nodes of logistics. Delays in procedures due to the reduction in the number of personnel in the relevant government agencies were observed since the number of staff at offices was reduced to avoid infection. It is expected that such issues will be resolved by promoting remote works and IT procedures in the government offices.
Trade Practices and Administrative Procedures	As many countries adopted measures for the movement restriction, there were a number of problems in trade practices and administrative procedures that would not have occurred if digitization had been introduced. Further promotion of digitalization, digital signatures, and self-certification of trade and administrative documents, such as certificates of origin, is necessary. If digitalization of customs clearance procedures and trade practices, such as the introduction of National Single Window (NSW) and e-payments for tax payment, in addition to the digitization and paperless system is promoted, the risk of COVID-19 infection can be reduced, which can bring about more convenient working environment.
Administrative Procedure (old custom)	In Myanmar, the customs clearance system, "MACCS", was introduced with the support of Japan. It was pointed out that the documents are printed out and signed for approval at the customs office. Even if a system is introduced, digitalization of customs clearance procedures cannot be realized unless laws and regulations are established to ensure the legal validity of electronic documents as well as paper-based documents. Also, capacity building of human resources of customs office is necessary.
Administrative Procedure (inadequacies)	Although the system is being digitized, manual works are still operated partly. The Malaysian trade declaration system "myTRADELINK" (Dagang Net) uses the older system "Sistem Maklumat Kastam" (SMK) in parallel, which actually requires manual works by people, who mediate between the two systems. As SMK does not support air cargo, the customs clearance of air cargo cannot be operated in an electronic manner.
Administrative Procedure	It is desirable that the digitization of procedures related to Certificates of Origin (COO) and administrative documents, as well as customs procedures, will be promoted by governments and inter-governmental

Factors	Impact and Countermeasures
(Consistency)	negotiations. However, companies want to promote the whole digitization of the trade on an end-to-end basis. In other words, the most desirable environment is that all parties involved – exporters (shippers), customs brokers, shipping agents, ports, customs, banks, and importers – communicate online, and all trade transactions are completed on an electronic basis.
System Reform	It is needed to expand the AEO system, promote mutual recognition and increase flexibility in accepting certificates of origin and making permanent measures. Also, further promotion of trade facilitation measures and reduce non-tariff barriers is necessary. <sup>7</sup>
Formation of international rules	It is necessary to upgrade production and logistics by using digital technology and formulation of unified rules to facilitate the distribution of data within the region.

Source: "Impact of the New Corona on Supply Chains in the ASEAN+3 Region and Countermeasures (-ASEAN + China-Japan-Korea Joint Research Report- Country Report: Japan)", November 2020, <20200023.pdf (jetro.go.jp)>

As discussed in the table above, trade practices and administrative procedures can affect the supply chain. Customs and quarantine procedures at the border crossings and other logistical nodes are extremely complicated since many documents are to be prepared. Under the COVID-19 pandemic, border closures and attendance restrictions to inspectors caused delays in the procedures, further, led to logistical confusion.

As a result, the need for digitalization of customs clearance procedures and trade practices, including the introduction of the National Single Window (NSW) and e-payment for tax payment in addition to the digitization and paperless of documents, has been recognized again. In order to promote the reforms effectively, it is necessary to develop domestic laws that are compatible with the new system, including digitalization, training for border inspectors in terms of language, namely, English and ICT equipment use, and to address the issues of the sectionalism and the vested interests of customs officers within the government, and break down old practices.

## 2) Impact on Human Flow

By the closure of factories and mines by COVID-19, laid-off foreign workers are returning to their home countries, which causes social problems in Lao PDR and the Philippines. On the other hand, labor-intensive plantation agriculture, highly dependent on foreign workers, such as the palm oil industry in Malaysia, faces labor shortage by the restriction of entry of foreigners and other movements of labor. <sup>8</sup>

## 3) Action as ASEAN

In response to these individual cases, ASEAN adopted the "Hanoi Action Plan for ASEAN Economic Cooperation and Supply Chain Enhancement" in June 2020, and has expressed its commitment to COVID-19 as a community. These include: (1) refraining from the application of unnecessary non-tariff measures; (2) prompt notification of the application or lifting of measures prohibiting or restricting the export of essential goods; (3) smooth transportation of essential goods; (4) facilitation of consultative mechanisms related to customs procedures; and (5) introduction and maintenance of customs-related technologies to enable the prompt release of essential goods. In addition, in the interim assessment of the AEC Blueprint 2025 (April 2021), the AEC is moving to deepen its review of various regulations and restriction, citing that post-Corona ASEAN will not return to the pre-Corona world, but will "rebuild and diversify global and regional value chains, and emphasize resilience rather than supply chain efficiency. In addition, the mid-term assessment of the AEC Blueprint 2025 (April 2021) states that post-Corona ASEAN will not return to the pre-Corona world, and will "restructure and diversify global and regional value chains, with emphasizing resilience rather than supply chain efficiency.

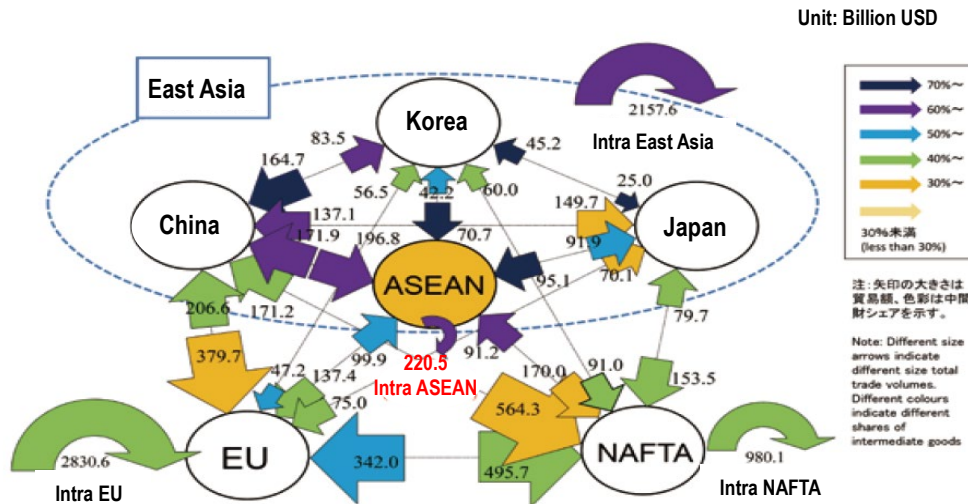
<sup>7</sup> AOE stand for "Authorized Economic Operator". The AOE system is a system under which customs approves and certifies businesses that have established systems for cargo security management and legal compliance and provides measures to ease and simplify customs procedures. (<https://www.customs.go.jp/index.htm>)

<sup>8</sup> NNA "Freeze on foreign hiring may be lifted if infection is curbed at farms," Feb. 9, 2021. <<https://www.nna.jp/news/show/2150822>>



**4.4.4 Corona Shock and its Impact on FVCs Established between ASEAN and Other Countries**

In the ASEAN countries, a diverse and vast supply chain across countries has been established. The value chain also covers trade in North-South, East-West, and Southern Corridors, transactions between ocean and land (Sea Corridor) within the ASEAN region, and trade with China, Japan, and European countries. The following figure shows the volume of trade with major countries and regions, including intermediate goods and finished products. In this figure, the shares of intermediate goods are illustrated by color, while trade values are shown by the thickness of the arrows.



**Figure 4.4.9 Supply Chain among ASEAN Countries (2015)**

Source : ASEAN Information Map, 2nd Edition in March 2020, Published in May 2020

In a cross-country FVC, measures against further expansion of COVID-19 pandemic, namely, movement restrictions, lockdowns, shutdown orders, and export bans in one country, may affect FVCs in other countries also. The impacts are various, for instance, stoppage of food factory operations, reduction of food imports, increase in food prices and unemployment rate and so on. The followings are examples of the impact on FVCs caused by new regulations/policies in other countries against the COVID-19.

**Table 4.4.4 Impact on FVC by Other Countries**

Factors	Impact and Countermeasures
Food Security and Export Bans	<ul style="list-style-type: none"> <li>• Viet Nam, the world's third-largest rice exporter, suspended exports in late March 2020 (resuming in April of the same year) in order to address growing food security concerns in the country. It was said that Timor-Leste, which relies on imports for 70% of its domestic rice consumption, could have faced a serious food crisis if Viet Nam's suspension of exports had been prolonged.</li> <li>• Cambodia started to restrict rice exports in April 2020, and Myanmar has also made the same decision. Thailand, the world's second-largest rice exporter following India, has experienced a decline in exports due to lower yields caused by drought, and the price of Thai rice, which is used as an international price index, has skyrocketed from USD400 per ton at the beginning of the year to nearly USD600 in April, posing a threat to rice importing countries.<sup>9</sup></li> <li>• Thailand decided to extend a week-long export ban for another month after eggs jumped three times their normal price.<sup>10</sup></li> <li>• In Myanmar, export of Rohu (Labeo rohita) to Bangladesh, India, and China, etc. and Pangasius (Pangasius bocourti) to the Middle East, and shrimp to Japan, Singapore, and Hong Kong was restricted. The export restrictions have had an impact on other segments, as government-run seed production facilities and private producers have been unable to find places to ship their products. On the other hand, there is also the aspect that export companies are unable to purchase raw materials due to the suspension of operations of processing plants.</li> </ul>

<sup>9</sup> JCAST News "A number of countries are restricting food exports, and whether or not it will affect Japan?", May 10, 2020, < <https://www.j-cast.com/2020/05/10385535.html?p=all> >

<sup>10</sup> Choshu Newspaper, "Move to limit food exports 'will lead to food shortages,' FAO and others warn", April 7, 2020, < <https://www.chosyu-journal.jp/shakai/16421> >

Factors	Impact and Countermeasures
Suspension or stagnation of operations	<ul style="list-style-type: none"> <li>In some industries relying on imported inputs from abroad, there have been cases of production declines due to difficulties in obtaining inputs by the suspension or delay in truck and commercial aircraft operations. One of the examples is the Philippines' white fish, Milkfish (<i>Chanos chanos</i>) aquaculture, which usually relies on airfreight from Indonesia for its fry.<sup>11</sup></li> </ul>
Suspension of operations and termination of employment	<ul style="list-style-type: none"> <li>In Lao PDR, the number of unemployed, including workers who have returned from abroad, due to the COVID-19 pandemic, has risen to an estimated 63,000 according to the Ministry of Labor. Also, according to the Department of Labor and Employment (DOLE) of the Philippines, the number of unemployed workers due to the new coronavirus reached 2,757,640 as of March 23, 2020. The unemployment rate stood at 17.7 percent in the April-June 2020 period, the worst level in the current statistics.<sup>12</sup></li> </ul>

The ASEAN countries are major rice exporters, and the suspension of rice exports raised serious food security issues for some rice importing countries. Rice is a staple food and an important crop for food security for the ASEAN countries. In the wake of the COVID-19 pandemic, export restrictions were imposed in Viet Nam, Cambodia, Myanmar, and other countries to allay public concerns about the food crisis in each country. As a result, Timor-Leste for example, which relies on imports for 70% of its domestic rice consumption, almost faced a serious food security crisis, but fortunately, the ban on exports of Vietnamese rice was lifted in a short period of time, and the country is said to have been able to avoid a food crisis.

Thailand, the world's second-largest rice exporter following India, experienced a decline in exports due to a drop in yields caused by drought. As a result, the price of rice in the country, which is also an international index of prices, has skyrocketed from USD400 per ton at the beginning of the year to nearly USD600 per ton in April 2020, posing a threat to rice importing countries. Thus, the results show clearly that the rice FVCs in the ASEAN countries are directly linked to the food security issue of the rice importing countries.

One of the impacts by the COVID-19 caused from outside of the ASEAN countries is an increase of the cost of international ocean freight transportation. According to Japan Maritime Center, freight rates from Shanghai to the U.S. West Coast were USD1,500 per 20-foot container in January 2020, namely, before the COVID-19, were rose to USD4,500 in May 2021.

Freight rates from Viet Nam to the West Coast of the United States exceeded USD10,000 as of May 2021, and freight rates to Europe have jumped to USD7,000-8,000 as of May 2021 from USD1,000-1,500 before the COVID-19. As a result, Thailand faced difficulties securing containers for rice exports, while Viet Nam experienced high prices of grains imported.<sup>13</sup> It is said that the reason for such situations is an increase in E-Commerce (EC) utilization due to demand increase during the stay home, as well as the backlog of containers due to the overcapacity of ports on the West Coast of the United States.<sup>14</sup>

As economic globalization progresses and the ties between countries grow stronger year by year, FVCs have been extended beyond the national borders. However, unprecedented crises such as COVID-19 are identified, governments seal their borders and cut off logistics to protect their own citizens, which could result in the decomposition of international FVCs. To take measurements against such events, FVC stakeholders are now expected to strengthen the FVCs by diversifying their production sites and sources of procurement<sup>15</sup>.

<sup>11</sup> FAO, "Rapid assessment of the impact of COVID-19 on food supply chains in the Philippines", 2021.

<sup>12</sup> Japan Research Institute, Research Department, "Asia Monthly vol. 22, No. 236", November 2020.

<sup>13</sup> NNA "Vietnam: Higher ocean freight rates put pressure on profits," May 28, 2021, <<https://leaders-online.jp/keiei/international/nna2193112>>

<sup>14</sup> NHK Business Special: "Where are the corona disaster anomalies containers" February 15, 2021, <<https://www3.nhk.or.jp/news/html/20210215/k10012867481000.html>>

<sup>15</sup> JETRO Research Report: "Impact of the New Corona on Supply Chains in the ASEAN + 3 Region and Countermeasures", November 2020, <<20200023.pdf> (jetro.go.jp)>

As economic globalization progresses and ties between countries grow stronger year by year, FVCs have extended beyond national borders. However, in times of unprecedented crisis such as COVID-19, countries close their borders to protect their own citizens and block logistics, thus forcibly dividing international FVCs. In order to cope with such a situation, FVC stakeholders are increasingly expected to strengthen their FVCs by diversifying and decentralizing their production sites and procurement sources<sup>16</sup>.

#### 4.5 Mapping of Impact on FVC

Finally, we summarize the impact of COVID-19 on FVC by mapping the survey items to the corresponding survey results (summary). In this study, the impact of COVID-19 on FVCs was identified from a global perspective in terms of socio-economic impact, and the status of COVID-19 infection, government measures to prevent its spread, and socio-economic impact were summarized by the country for a total of 11 covered in the study. In addition, we surveyed and analyzed the impact by industry, representative crop and livestock and fisheries FVCs, and from cross-sectional perspectives such as income level and consumer awareness. These research questions and a summary of the survey results are summarized in the table below.

**Table 4.5.1 Mapping of the Study Results**

Survey Items (Research Question)	Summary of Survey results (Impact of COVID-19)
<p><b><i>【What global issues have been generated by COVID-19?】</i></b></p> <ul style="list-style-type: none"> <li>• Socio-economy</li> <li>• Poverty and Inequality</li> </ul>	<ul style="list-style-type: none"> <li>• The problem is not limited to the medical crisis, but has developed into a fundamental socioeconomic issue</li> <li>• Concerns about growing poverty and inequality on a global scale</li> <li>• Global economic slowdown (e.g., employment adjustment, declining incomes, suspension of remittances, etc.)</li> <li>• New Normal (lifestyle, consumer behavior change, acceleration of DX)</li> <li>• Concerns about rising international food prices have raised the issue of food security</li> </ul>
<p><b><i>【What is the impact of COVID-19 on Socio-economy by country?】</i></b></p> <ul style="list-style-type: none"> <li>• Landlocked and maritime countries</li> <li>• ASEAN Economic Community (AEC)</li> <li>• Cross-Border Transit Agreements (CBTA)</li> </ul>	<ul style="list-style-type: none"> <li>• Food Security and Nutrition Issues Emerge in Agricultural Importing Countries</li> <li>• Movement restrictions and quarantine were major factors causing socioeconomic stagnation</li> <li>• Socioeconomic shock at the beginning of the pandemic, followed by repeated waves of infection spread</li> <li>• Export bans on rice and other commodities became a security issue in importing countries.</li> <li>• Cross-border supply chain fragmentation leads to stagnation of economic activity</li> <li>• Inland transportation: border bottlenecks are becoming a logistics bottleneck problem.</li> <li>• In maritime transportation, containerized cargo holdups have caused transportation costs to skyrocket.</li> </ul>
<p><b><i>【What is the industry impact of COVID-19?】</i></b></p> <ul style="list-style-type: none"> <li>• Primary Industry</li> <li>• Secondary Industry</li> <li>• Tertiary Industry</li> </ul>	<ul style="list-style-type: none"> <li>• Primary industry: Difficulty in obtaining inputs due to movement restrictions and stricter quarantine, reduced demand for HoReCa, lower garden prices for agricultural products, difficulty in securing customers, food loss, changes in demand for forest products, and mine closures</li> <li>• Secondary industries: Manufacturing shutdowns and closures, fragmentation and stagnation of material supply chains, soaring construction costs</li> <li>• Tertiary industries: stagnation in travel, HoReCa, and other service industries; increased costs in the transportation industry; increased demand in the information and communication industry (ICT, IoT, DX); suspension of events and entertainment activities</li> <li>• Corona demand and nest egg generation (hygiene products, long-lasting food products, telework equipment, biomedical manufacturing, etc.)</li> </ul>
<p><b><i>【What is the impact of COVID-19 on FVC?】</i></b></p> <ul style="list-style-type: none"> <li>• By Crop (11 items)</li> <li>• Domestic/International</li> </ul>	<ul style="list-style-type: none"> <li>• Supply chain fragmentation and stagnation (inputs, outputs, labor, etc.)</li> <li>• Shortage of materials and labor due to movement restrictions and stagnation of economic activities</li> <li>• Mismatch between supply and demand for fresh produce (temporary shortages in urban</li> </ul>

<sup>16</sup> JETRO research report, "Impact of the New Corona on the Supply Chain of the ASEAN+3 Region and Countermeasures" (November 2020)<20200023.pdf (jetro.go.jp)>

Survey Items (Research Question)	Summary of Survey results (Impact of COVID-19)
<ul style="list-style-type: none"> <li>• Fresh and processed foods</li> </ul>	<ul style="list-style-type: none"> <li>• areas and waste in rural areas)</li> <li>• Behavioral changes in consumption (local and modern markets, 3 density avoidance, safety orientation, nest eggs)</li> <li>• Loss of sales outlets and changes in demand (tourism, HoReCa industry, online transactions, etc.)</li> </ul>
<p><b>【 What is the cross-sectional impact of COVID-19 on FVC?】</b></p> <ul style="list-style-type: none"> <li>• Economic impact on consumers</li> <li>• Change in awareness and behavior</li> <li>• Production and management issues</li> <li>• By FVC Range</li> </ul>	<ul style="list-style-type: none"> <li>• Decrease in income due to consumers working fewer hours and days, less spending on luxury items, less use of HoReCa, less time and distance spent away from home related to food purchases, and more use of online purchasing and delivery</li> <li>• Lower income groups continue to use local markets; use of supermarkets increases among the lower middle class</li> <li>• Occurrence of supply-demand imbalance in the distribution of agricultural products (decrease in demand and oversupply to specific sellers)</li> <li>• Limitations of crisis response and risk aversion by individual and small-scale farmers are highlighted (increased need for farmers to organize).</li> <li>• Increased support needs (inputs, subsidies, etc.) for small farmers</li> </ul>

Source: Based on various surveys conducted by JICA survey team

The COVID-19 impacts shown in the table above include direct, short-term impacts and indirect, medium- to long-term impacts, each of which requires different measures. As COVID-19 spread, governments adopted emergency measures such as movement restrictions and lockdowns to prevent its spread, which in turn led to supply chain disruptions. The disruption associated with these emergency measures eases as the measures are lifted but tends to recur each time a second or third wave of infectious outbreaks repeats.

These immediate and short-term impacts include reduced demand in the HoReCa industry, the creation of stay-at-home demand in cities, and a shortage of workers in plantations and food factories. To address these impacts, initiatives such as resilience enhancement, including DX promotion to address information asymmetries and supply-demand mismatches, can be raised.

Meanwhile, as the response to COVID-19 is prolonged, changes are emerging that are prompting structural changes. For example, changes in lifestyles and consumer behavior due to the spread of telework/remote work, etc., changes in traditional rural community networks due to supply chain diversification, promotion of DX in all industries including agriculture, restructuring of supply chains for imported materials, etc. (fostering import substitution industries), food security, and other more Long-term, broad-based efforts will be required. The table below summarizes the impact of COVID-19 and the measures to be taken, based on the time frame.

**Table 4.5.2 Impact on FVC based on time frame and countermeasures**

Classification	Impact	Measures
Direct short-term	<p>&lt;Colona Shock&gt;</p> <ol style="list-style-type: none"> <li>1. supply chain disruption and stagnation due to movement restrictions and lockdowns to prevent the spread of infection</li> <li>2. decrease in demand for HoReCa</li> <li>3. demand for nest eggs</li> <li>4. worker shortage</li> <li>5. reduced use of traditional markets</li> <li>6. increase in online transactions</li> </ol>	<p>&lt;Strengthening Resilience&gt;</p> <ol style="list-style-type: none"> <li>1. diversification of sales channels (expansion of transactions through SNS/web)</li> <li>2. expansion of online transactions (e.g., matching VC parties)</li> <li>3. improvement of shelf life to reduce waste, and shift in sales channels through collaboration with different industries (switch to processed products and domestic market)</li> <li>4. promotion of local production for local consumption through contract cultivation with local consumers (hospitals, schools, etc.)</li> <li>5. the organization of farmers and diversification of cultivated products</li> <li>6. Ensuring transportation options under mobility</li> </ol>

Classification	Impact	Measures
		restrictions, such as shared rides in the logistics industry 7. promotion of labor saving and mechanization (improvement of production efficiency)
Indirect mid- to long-term	<Impact under the New Normal> 1. change in lifestyle (establishment of remote work/telework) 2. promotion of DX in all industries 3. decrease in purchasing power of countries importing food and raw materials due to decrease in overseas remittances, exchange rates, and foreign currency reserves 4. hit the poor and vulnerable who do not have access to safety nets	<Responding to Structural Change> 1. improve food safety and introduce/enhance traceability 2. establishment of farmer database and provision of public services (including financial inclusion) 3. diversification of the imported materials supply chain (fostering import substitution industries) 4. development of ICT/IoT environment, promotion of data-driven agriculture, and creation of data platform for agriculture 5. transition from labor-intensive to capital-intensive 6. review of food security (e.g., increase in self-sufficiency)

Source: JICA Study Team



## CHAPTER 5 DIGITAL TRANSFORMATION AND SMART FOOD CHAIN

Digital transformation (DX) and smart food chains are attracting attention in the agricultural field in recent years. During the COVID-19 pandemic, there were many reports that digital transformation such as E-Commerce is accelerating. DX technologies introduced during the COVID-19 pandemic, and proper use of DX toward with /post-COVID-19 society are discussed in this chapter.

### 5.1 Movement in Digital Transformation (DX)

#### 5.1.1 Recent Trend of Digital Transformation (DX)

The concept of DX was proposed by Professor Erik Stolterman of Sweden in "Information Technology and the Good Life" in 2004. "The digital transformation can be understood as the changes that the digital technology causes or influences in all aspects of human life. "

The Ministry of Economy, Trade, and Industry, Japan formulated "The Guidelines for Promotion of Digital Transformations" in 2018. In the guidelines, DX is defined as "Enterprises, responding to drastic changes in the business environment, utilize data and digital technology to transform products, services, and business models based on the needs of customers and society, as well as the business operations, organizations, processes, and corporate culture to establish a competitive advantage".

In the guidelines, DX is defined from the view of "Enterprise", it can be changed from the view of "Sector" keeping the same sense. Samples and recent trends of DX are described below. These trends and movements toward DX are seen not only in developed countries but also in developing countries.

#### 1) Sales/E-Commerce

E-Commerce was born and spread in the middle of the 1990s by the emergence of the internet. After 2010, the widespread of smartphones has accelerated its spread out. In the Asian region, the popular model of E-Commerce is the virtual shopping mall where retailers can open stores.

This has brought about structural changes in distribution channels like manufactures' direct sales, disintermediation, drop-shipping. In recent years, the D2C model (Direct to Consumer) has become a new trend that sellers operate their own sites without using virtual shopping malls or selling their products to internet shopping operators like Amazon.

#### 2) Manufacturing

Data utilization and automation of manufacturing processes, Artificial Intelligence (AI) utilization in quality management, automation of maintenance, preventive maintenance, etc. are going to be realized by full use of the Internet of Technology (IoT) and AI. These are referred to as Industry 4.0.

#### 3) Supply-chain

Data exchange between or among existing business partners had been used as Electronic Data Interchange (EDI) since before the commencement of the Internet era. After the internet appearance, new functions connecting with potential business partners had appeared and spread. One of the famous samples is Chinese Alibaba, which provides a business matching function that enterprises can find new suppliers. Recently, since those enterprises in the supply chain are linked with each other, traceability and transportation of demand estimation, production planning, and procurement planning by AI are realized.

#### 4) Logistics/Transportation

Various kinds of sharing services, such as ride-share, car-share and online delivery services, were born and become widespread through the use of digital technology. MaaS (Mobility as a Service), which is a

mixed transportation system including sharing services, is being promoted in some countries. Car-pooling services (buses, trains, airs), which link people and luggage, are also realized by utilizing schedule management and space availability information by digital technology. In the future, it is expected that such sharing services for machines, equipment, and trucks in business-centric fields will be increased in number.

**5) Finance**

Automatic Teller Machine (ATM) and Internet Banking are parts of DX. Recent DXs may be mobile payment, debit cards, and so on. In addition, many application systems through AI in the financing industry are being developed and used as AI loans (AI credit line calculation) and AI insurance.

**6) Medical & Healthcare**

AI diagnosis, remote surgical operation, AI operation, etc. including remote diagnosis has been started in Japan due to the COVID-19 pandemic. The advent of vital data acquisition devices such as the Apple Watch made it possible to provide healthcare services for a non-illness period. By the spread of electronic medical records, health information and medical information are being continuously recorded.

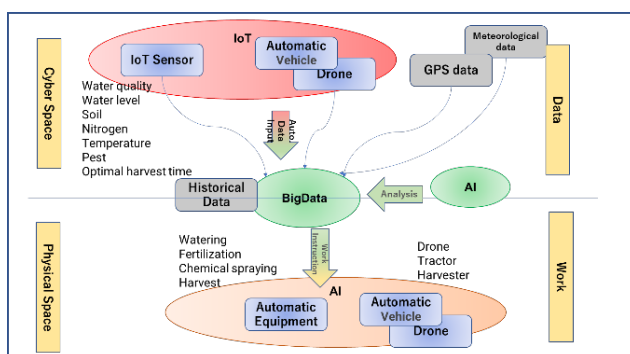
**7) Education**

The pandemic enforced the education world to promote online remote classes instead of real classes from preliminary school to university. At the same time, the utilization of Computer-Based Testing (CBT) on an online real-time basis and Learning Management Systems (LMS) by AI are rapidly expanding. Education in Nursing/Medical care is promoted by using Robots, Virtual Reality(VR), and Augmented Reality (AR).

**5.1.2 DX in Agriculture Field**

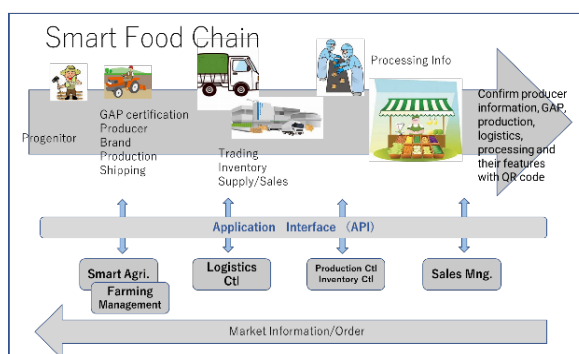
In the past, Agriculture was said a field of manual work. However, the new movement toward digitalization has begun as given in the next sub-section. ICT, especially, IoT, AI, Big Data can be applied to the agriculture and food industries. Various kinds of application systems have been implemented for improving the effectiveness of the supply chain and the safeness of agriculture and agricultural products.

In Japan, the “Cross-ministerial Strategic Innovation Promotion Program” (SIP) is promoted under the concept “Society 5.0”, where “Human-centric Society” is built by the fusion of Cyberspace and Physical Space. Agriculture is also one of the targets of SIP. Various kinds and a huge number of data are collected by various measures including IoT equipment to store Big Data in Cyber-Space. These data and real-time data newly are to be analyzed by AI, which makes it possible to instruct physical goods to act (Figure 5.1.1). The applications systems or services by the fusion of Cyberspace and Physical space are utilized at all processes in the supply chain and the relationship with multiple processes (Figure 5.1.2).



**Figure 5.1.1 Whole Picture of DX in Agriculture Production Field**

Source : JICA Survey Team



**Figure 5.1.2 Whole Picture of DX throughout FVC**

Source : JICA Survey Team



The examples of applications that are used in the agricultural production field and FVC as well as their merits are as follows.

**Table 5.1.1 Merits by DX in Agriculture Production**

Application				Merit				
Category	Equipment	Data Collection	Work	Productivity Improvement	Labor shortages replenishment	Quality Improvement	Loss Reduction	Cost Reduction
Automatic Vehicle (IoT sensor, Robotics) Remote control Autonomous driving	Unmanned Vehicle (Tractors, Harvesters, etc.)	Tractor	Seedling/fertilization/ Harvest	○	○			
	Unmanned Boat	Water quality Fry counting	Feeding		○			
	Unmanned aerial vehicle (Drone)	Harvest monitor Pest monitor (Leaf color analysis)	Chemical/Fertilizer Spraying	○	○	○ (Proper harvest time /pesticides and fertilizers volume)	○	○ (Chemical/Fertilizer Reduction)
General-purpose Data	Satellite	Meteorological data Map data GPS data		○	○	○		○
IoT Sensor	Water Monitor	Water depth Groundwater level Temperature Soil moisture				○ (Environment Management)	○	○ (Water Reduction)
	Environment monitor in house	Temperature Humidity				○ (Environment Management)		○ (Water Reduction)
	Soil monitor	Soil nutrients						○ (Chemical/Fertilizer Reduction)

Source : JICA Survey Team based on various sources

**Table 5.1.2 Merits by DX applications in FVC**

Category	Application	Description	Market Extension	Shorten Lead-time	Cost Reduction	Cash Flow Imp't	Risk Red'on
Smart Food Chain	B2C E-Commerce	E-Commerce which buyers are end consumers. In many cases, sellers are retailers or wholesalers. In the agricultural field, farmers or agricultural cooperatives can be also sellers, who directly sell to consumers. There are two patterns of the platform. One is the D2C model that sellers have their site, and another is the Marketplace model that sellers open stores on a site prepared by E-Commerce platform provider such as Rakuten.	○	○	○ (Eliminate intermediate margin by direct trade)		
	B2B E-Commerce	E-Commerce between businesses. In the agriculture or food field, it includes a business matching function, product exchange function, or ordering function on the internet between farmers/cooperatives and wholesalers traders/factories, wholesalers/traders, and retailers.	○	○			
	Logistics Management Systems	Arranges trucks, vacant storage and optimizes transportation routes, and so on. Controls and coordinates the first mile (from shipping point to pick-up point), trunk line (from pick-up point to delivery base), the last mile (from delivery base to delivery point). The last mile service may be an online delivery service provider like Uber.	○	○	○ (Logistics Cost)		
	Farming Management System	Monitors and manages daily work such as fieldwork, material input, harvesting, and shipping. It also includes GAP certification management. Entered information related to production which is the	○		○		○

Category	Application	Description	Market Extension	Shorten Lead-time	Cost Reduction	Cash Flow Imp't	Risk Red'on
		basis of traceability. Cooperating with smart agriculture provides more effective utilization.					
Fintech	Online Payment	A system that allows payment (remittance, deposit) by personal devices such as PCs and smartphones. They are credit card online payments, internet banking, smartphone payments, electronic currencies, etc. which can be linked with E-Commerce. Electronic currencies are also considerable for unique groups whose members have only a few bank accounts and credit cards.				○	
	AI Credit	Credit line for finance is set to be calculated by AI based on collateral like harvests, equipment, and materials.				○	
	AI Insurance	Quantify and analyze risks such as natural disasters, wildlife harm, damage or theft of agricultural facilities or equipment, and plunge of market price to calculate insurance premium, and to pay insurance when the risks are realized.					○

Source : JICA Study Team based on various sources

## 5.2 Examples of DX Introduced under the COVID-19 Pandemic

### 5.2.1 Digital Platform Utilization to Promote DX

It is expected that Digital Transformation of the FVC, where telecommunication environment as the infrastructure has been established, necessary equipment for users has been widespread, and the know-how has been widespread to some extent. Table 5.2.1 shows digitalization indicators in the eleven countries, Japan, and the World.

According to Table 5.2.1, the ownership rate of computers is still low in the low developed ASEAN countries, while that of mobile phones is over 100% in total. However, the internet utilization rate is less than 50% in low developed countries. Even though many populations own smartphones, a certain percentage of owners do not use the Internet. Instead, seemingly, they use only voice calls, SMS, and offline functions like cameras and notepads. Since there are many prepaid contracts, the fee may be higher depending on the fee plan, which may hinder the use of data communication such as the use of the Internet.

Thus, it can be said that the infrastructure for using the Internet by both farmers and consumers is almost well prepared. But digitalization requires the farmers to frequently upload photos to E-Commerce sites, process orders, or connect IoT devices such as sensors, agricultural machinery with the Internet so that there is a possibility that the Internet cannot be connected at the workplace, and communication charges will increase. In the example promoted in Thailand, the government supports to install Wi-Fi stations in rural areas.

In terms of user literacy, the SNS user rates of target countries are almost the same as or higher than Japan except for Timor Leste and Lao PDR. As far as the internet can be used, the literacies of the people in the use of digital devices such as smartphones are not low in many countries. In fact, in Viet Nam, Thailand, etc., it is said that SNS commerce (E-Commerce using the marketplace function of SNS such as Facebook) is used more than in Japan. However, as more infrastructure will be developed in rural areas, more numbers of new digital beginners will increase. So, as the development of ICT infrastructure, education to improve the literacy of safety utilization of digital technology is important.

**Table 5.2.1 ICT Infrastructure Situation of Each Country**

	Philippines	Indonesia	Timor-Leste	Malaysia	Thailand	Myanmar
1 Penetration						
1-1 Mobile Connection(%)	138.2	125.6	109.7	122.8	129.7	127.2
1-2 Annual Change	-8.9%	+1.2%	+0.4%	-0.2%	-3.8%	-0.9%
1-3 Internet Users(%)	67	73.7	45.1	84.2	69.5	43.3
1-4 Annual Change	+6.1%	+15.5%	+16.4%	+2.8%	+7.4%	+11.8%
1-5 Internet Users(ITU 2019,%)	43	47.7	27.5	84.2	66.7	23.6
1-6 Active Social Media Users(%)	80.7	61.8	33.1	86	78.7	53.1
1-7 Overall reteracy	98.2	95.7	68.1	94.9	93.8	75.6
2 Device Ownership/Internet Users						
2-1 Smartphone	98.5	98.2		99.2	98.9	
2-2 Non-smartphone	13.3	16		9.7	6.7	
2-3 PC	77.3	74.7		75.8	48.5	
2-4 Tablet	33.2	18.5		32.3	34.7	
3 Mobile Connection by type						
3-1 Pre-paid connection/Mobile connection	96.7	97	99.2	68	72.1	97.8
3-2 Broadbandconnection/all connection	92.9	94.9	32.6	93.8	98.7	91.2
4 Mobile connectivity Index						
4-1 Overall country index score	62.79	62.9	41.58	69.17	70.9	52.59
4-2 Mobile Network Infrastructure	64.95	58.89	45.91	66.77	66.86	55.37
4-3 Affordbilty of Devices and Services	52.43	60.18	49.93	60.72	67.26	60.33
4-4 Consumer Readiness	75.44	66.85	60.61	75.87	80.33	54.1
4-5 Availability of Relevant content and services	60.52	66.07	21.52	74.4	69.94	42.32
5 Use of mobile apps by category/Internet users 16-64						
5-1 SNS Apps	98.2	96.3		97.5	97.6	
5-2 Shopping Apps	85.7	78.2		88.3	83.4	
5-3 Banking and Finance apps	42.1	39.2		55.7	68.1	
6 Digital Payment						
6-1 Use a mobile payment services	29.9	29.2		29.4	45.3	
6-2 Value of Digitally Enabled Cosumer Transaction	+26.6%	+27.6%		+21.7%	+18.6%	
7 Internet Connection Speed(Download)						
7-1 Average Download Speed of Mobile Internet Connections	22.50Mbps	17.26Mbps		25.60Mbps	51.75Mbps	26.08Mbps
7-2 Average Download Speed of Fixed Internet Connections	31.44Mbps	23.32Mbps		93.67Mbps	308.35Mbps	20.95bps

	Viet Nam	Cambodia	Lao PDR	Singapore	Brunei	Japan	World
1 Penetration							
1-1 Mobile Connection(%)	157.9	125.8	79.1	145.5	129.3	159.3	66.6
1-2 Annual Change	+0.9%	+0.9%	+7.7%	-0.3%	+0.9%	+3.1%	+1.8%
1-3 Internet Users(%)	70.3	52.6	48.4	90	95	93.00%	59.5
1-4 Annual Change	+0.8%	+14.4%	+15.2%	+2.8%	+1.1%	+0.8%	+7.3%
1-5 Internet Users(ITU 2019,%)	68.7	40.5	25.5	88.9	95	91.3	51.4
1-6 Active Social Media Users(%)	73.7	71.3	49.1	84.4	99	74.3	53.6
1-7 Overall reteracy	95	80.5	84.7	97.3	95	99	
2 Device Ownership/Internet Users							
2-1 Smartphone	96.9			98		89.6	
2-2 Non-smartphone	19			4.2		9.3	
2-3 PC	66.1			78.4		74.6	
2-4 Tablet	31.9			45.3		28	
3 Mobile Connection by type							
3-1 Pre-paid connection/Mobile connection	89	91.3	95.5	33	81.3	1.1	
3-2 Broadbandconnection/all connection	64	73.1	75.5	99.2	78.9	99.7	
4 Mobile connectivity Index							
4-1 Overall country index score	64.6	49.14	45.69	89.27	67.37	83.4	
4-2 Mobile Network Infrastructure	59.99	53.52	46.7	88.92	59.63	78.94	
4-3 Affordbilty of Devices and Services	58.52	56.21	45.8	85.59	69.64	84.84	
4-4 Consumer Readiness	75.36	58.9	64.52	89.47	74.63	84.75	
4-5 Availability of Relevant content and services	65.85	32.9	31.57	93.26	66.44	85.23	
5 Use of mobile apps by category/Internet users 16-64							
5-1 SNS Apps	94.5			93.3		74.7	
5-2 Shopping Apps	68.5			81.5		48.4	
5-3 Banking and Finance apps	40.1			55.8		24.7	
6 Digital Payment							
6-1 Use a mobile payment services	33			37.5		25	
6-2 Value of Digitally Enabled Cosumer Transaction	+19.3			+24.0%		+5.9%	
7 Internet Connection Speed(Download)							
7-1 Average Download Speed of Mobile Internet Connections		19.22Mbps	28.28Mbps	66.82Mbps	34.32Mbps	46.96Mbps	
7-2 Average Download Speed of Fixed Internet Connections		25.29Mbps	35.85Mbps	245.31Mbps	-	150.27Mbps	

Source : Data portal, January 2021. Only Internet users, figures by ITU (International Telecommunication Unit) which is the most authoritative in the telecommunication field are parallely listed because differences are large.

Description :

1. Penetration: Ratio per total population. "Increase rate" = "Rate 2021" – "Rate 2020"

1-5. Internet users (ITU2019): Surveyed by ITU (International Telecommunication Unit in 2019)

2. Device ownership: "Number of owners of each equipment" ÷ "Number of Internet Users"
- 3-1. Pre-paid Connection: "Pre-paid connection" ÷ "Number of mobile owners"
- 3-2. Broadband connection: "Mobile connection by 3G or higher" ÷ "All Connection"
4. Mobile connectivity Index: Indicators related to Mobile Network penetration by countries published by GSMA intelligence
- 4-4. Consumer readiness: Awareness and skills regarding internet use
5. Use of Mobile Apps: "Apps users by category" ÷ "Number of Internet Users 16-64 age group"
- 6-1. Use of Mobile Payment Services: "Mobile Payment Service users" ÷ "Number of Internet Users 16-64 age group"
- 6-2. Value of Digitally enabled consumer Transaction: Increased Rate against the previous year
7. Internet Connection Speed (Download): Each for Mobile connection, Fixed line connection.

## 5.2.2 Spread of E-Commerce in Southeast Asian Region

### (1) Comparison of E-Commerce in Six Southeast Asian Countries

Restriction of movement, suspension of business operation for retail stores, lock-down against COVID-19 morbidity has been implemented in the ASEAN countries. As seen in Japan, the use of E-Commerce purchases and food delivery services, including food and agricultural products, has been expanded. The following tables show data regarding E-Commerce in the Philippines, Indonesia, Viet Nam, Malaysia, Thailand, and Singapore.

**Table 5.2.2 E-Commerce Situation in the Selected Countries**

	Philippines	Indonesia	Malaysia	Thailand	Viet Nam	Singapore	Japan	World	
1 General Environment									
1-1	Mobile Connection(%)	138.2	125.6	122.8	129.7	157.9	145.5	159.3	66.6
1-2	Annual Change	-8.9%	+1.2%	-0.2%	-3.8%	+0.9%	-0.3%	+3.1%	+1.8%
1-3	Internet Users(%)	67	73.7	84.2	69.5	70.3	90	93	59.5
1-4	Annual Change	+6.1%	+15.5%	+2.8%	+7.4%	+0.8%	+2.8%	+0.8%	+7.3%
1-5	Internet Users(ITU2019%)	43	47.7	84.2	66.7	68.7	88.9	91.3	51.4
1-6	Estimated Internet Users (%)	55.0	66.8	92.6	74.9	76.5	98.4	92.2	61.0
1-7	Estimated Internet Users in 16-64 age group	60.5	73.4	100.0	82.4	84.1	100.0	101.4	67.1
1-8	Active Social Media Users(%)	80.7	61.8	86	78.7	73.7	84.4	74.3	53.6
2 Device Ownership/Internet Users									
2-1	Smartphone	98.5	98.2	99.2	98.9	96.9	98	89.6	
2-2	PC	77.3	74.7	75.8	48.5	66.1	78.4	74.6	
3 Mobile Connection by type									
3-1	Pre-paid connection/Mobile connection	96.7	97	68	72.1	89	33	1.1	
3-2	Broadbandconnection/all connection	92.9	94.9	93.8	98.7	64	99.2	99.7	
4 Mobile Actions									
4-1	Use a mobile payment services (%)	29.9	29.2	29.4	45.3	33	37.5	25	
5 Financial Inclusion Factors (per population over 15)									
5-1	Has an account with a bank	34.5	48.9	85.3	81.6	30.8	97.9	98.2	
5-2	Credit Card	1.9	2.4	21.3	9.8	4.1	48.9	68.4	
5-3	Mobile Money Account	4.5	3.1	10.9	8.3	3.5	9.5		
6 E-Commerce Activity Overview/Internet users 16-64									
6-1	Purchased Products online	80.2	87.1	82.9	83.6	78.7	79.7	73.7	
6-2	Purchased Products via Mobile	69.6	79.1	68.4	74.2	61.4	56.9	32.1	
7 E-Commerce Growth Category									
7-1	Food and Personal care eCommerce Growth	+64.3%	+61.3%	+38.4%	+74.3%	+45.9%	+37%	+31.7%	
7-2	Average except travel	+40.2%	+49%	+31.4%	+49%	+36.8%	+31.4%	+18.5%	
8 Overview Online Food Delivery									
8-1	Annual Change in the total value of the Online	+48.5%	+35.2%	+45.9%	+38.2%	+45.9%	+34.7%	+23.6%	
8-2	Online Food Delivery Service Average Annual	\$28	\$52	\$31	\$28	\$32	\$194	\$148	

Source; Data portal, January 2021

Calculation Method of E-Commerce users:

- Internet Users (%) is relatively higher than figures of ITU which is the most internationally authoritative (2019). However, Data portal's survey is new. So average (midst) figures are used as estimated figures.
- Internet usage rate in 16 to 64 age range may be higher than the rate of the whole population. So, the denominator of usage rate has been multiplied by 105%.

<Description>

4. Use a mobile payment service(%): % against 16–65 age group internet users
5. Financial Inclusion Factors: Against a population over 15
6. E-Commerce Activity Overview; % against 16–65 age group internet users
7. E-Commerce Growth Category: Increased rate in an amount from the previous year

7-2. Average Except Travel; Travel, Mobility & Accommodation which is decreased much is excluded. But Fashion & Beauty, Electronics & Physical Media, Food & Personal Care, Furniture & Appliances, Toys, DIY & Hobbies, Digital Music, Video Games.  
8-1. Annual Change in the total value of the Online food delivery Market: Increment from the previous year.

The internet usage rate in the 16-64 age group exceeds 90% in Singapore and Malaysia, which are advanced IT countries, in the 70% range in Thailand and Viet Nam, and in the 60% range in the Philippines and Indonesia. Most of those who access to the internet should own a smartphone, however even those who own a smartphone still don not always use online data communication functions (using the Internet) but use offline functions such as cameras, notepads, calendars, voice communication, SMS.

It is noted that data communication is possible enough since nearly 100% broadband connection (3G / 4G) is possible except for Viet Nam. The major contract with the mobile communication company is the prepaid contract, and in some cases, the data communication fee may become higher, or the prepaid amount may be high. To use the mobile application stably, it may be necessary to take measures such as installing public Wi-Fi systems in rural areas.

The experience rate of purchasing in E-Commerce is around 50%<sup>1</sup> of the total population in these countries (the Philippines, Indonesia, Viet Nam, Malaysia, Thailand and Singapore), which is higher than the utilization rate in Japan. Generally, from the buyer's point of view, the availability of E-Commerce is high. Especially, under the COVID-19 pandemic, E-Commerce has spread more by 30% compared to the previous year. In particular, the use of E-Commerce for food and daily necessities is rapidly spreading. In addition, the food delivery market is expanded as same as in Japan.

Throughout the Southeast Asian countries, China's Alibaba is operating an E-Commerce named LAZADA mall, which is a cross-border E-Commerce from China and Japan, as well as local E-Commerce. It was originally started by a German venture mainly, however, was acquired by Alibaba in 2016. As of March 2021, the Philippines, Indonesia, Malaysia, Thailand, and Viet Nam are the destinations, centering Singapore. LAZADA handles food and agricultural products also. Shopee is another regional famous E-Commerce site based in Singapore with markets in Taiwan, Indonesia, Malaysia, Thailand, Viet Nam, and the Philippines, and can be exhibited from Japan. Shopee's parent company is Singapore's SEA Group, which is funded by Tencent of China.

Agricultural, livestock, and fishery products are partly handled by E-Commerce. It is still few that producers directly sell their products to consumers on E-Commerce. Major sellers on the E-Commerce platform are wholesalers and retailers who procure agricultural, livestock, and fishery products from producers. E-Commerce is spread, while distribution is operated through multiple stages as before. In terms of payment, the use of credit cards is very limited or there are very few credit cardholders. On the other hand, mobile payments are commonly used more than in Japan.

The current situation of E-Commerce is summarized as below. Also, the situations and impacts of the COVID-19 pandemic in each country are described by country hereinafter.

- 1) Infrastructure is in place to promote the spread of E-Commerce.
- 2) Mobile phones and smartphones are also widespread.
- 3) The actual usage rate of E-Commerce is high and is equivalent to that of Japan.
- 4) The of E-Commerce has been increased significantly in number during the COVID-19 pandemic.
- 5) In particular, the growth of online purchases of food and personal care is remarkable.
- 6) The ownership rate of credit cards is low, and E-Commerce payment methods are mainly bank transfers and cash payments, but digital payment is also expanded.

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<sup>1</sup> In Table 5.2.2, online purchasing experience per 16-65 years old internet users are described about 80%. Here considering internet users ratio, online purchasing experience per whole population is estimated about 50%.

## **(2) E-Commerce Diffusion in Each Country**

The status of E-Commerce diffusion in the five countries for which information was obtained are discussed below:

### **1) Philippines**

There are many E-Commerce sites and majors are LAZADA and Shopee, which are widely operated in the ASEAN countries. While agriculture products are also sold on these sites, supermarkets at the sites sell products as well as real stores (In Japan, so-called Net-Supermarket). Sellers and consumers are located closer. As per payment, “Cash on delivery” is still major, while “electric payment” can be used like G-Cash.

There are many “Last-mile Delivery,” which is from the delivery point to consumer, operators like Grab, MOVE, Lala. Many independent deliverers are registered in multiple operators. They change suits with logos depending on the delivery order. Demand for E-Commerce increased due to go-out restrictions under COVID-19 pandemic. However, at the beginning of the pandemic, problems such as delays or failure in delivery were frequently observed. As the pandemic prolongs, issues related to E-Commerce operation has been settled down and constantly used.

### **2) Indonesia**

There are many E-Commerce services in Indonesia. There are sites for agriculture products such as TaniHub (<https://tanihub.com>) and Sayurbox (<https://www.sayurbox.com>). On the other hand, Tokopedia ([www.tokopedia.com](http://www.tokopedia.com)), Singapore based Shopee ([shopee.co.id](http://shopee.co.id)) are handling food products but very few fresh foods. Major payment method is bank transfer (ATM, Internet banking) and cash on delivery, but electric payment including e-Wallet like OVO, DANA is spread.

The top three logistic services in Indonesia are 1) JNE, 2) J&T, and 3) Indonesian Post<sup>2</sup>, and they are popular sites for delivery of procured products by E-Commerce. GoSend by GoJek, GrabExpress by Grab are well used for fresh food delivery. At the beginning of COVID-19 pandemic, delays of delivery were often observed, especially for E-Commerce products except for fresh foods, but the situation has been improved gradually.

E-Commerce has become more important due to the restrictions of movement under the COVID-19 pandemic. Fresh foods such as vegetables, fruits, fish were not handled so much before the pandemic, but now, they are handled through the online system even at small and medium-sized sites. As the pandemic prolongs, the traditional market has been re-opened as well as fresh food sales in the online market continue to be a major player.

### **3) Thailand**

In Thailand, Lazada has an overwhelming share followed by Shopee and JD Central which is a joint venture of a local large retailer Central with Chinese JD.com. JD Central is also expanded to Indonesia, Viet Nam, and China. Fresh products are also sold at these sites.

Major payment methods are credit cards, even though the penetration rate is about only 10%. Electric money is gradually expanding, and there are alliances with E-Commerce sites such as True Money for LAZADA and AirPay for Shopee. Most of the delivery services are provided by E-Commerce sites. In the case of LAZADA, it is LEL Express. The Thailand Post, private Kerry Express, and SCG Express support parcel transportation services and provide E-Commerce product delivery services.

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<sup>2</sup> <https://pelayananpublik.id/2020/01/17/ini-dia-10-jasa-pengiriman-terpopuler-di-indonesia/>

#### 4) Viet Nam

Viet Nam's famous E-Commerce services are domestic Tiki (<https://tiki.vn/>), Singaporean Shopee (<https://shopee.vn/>), and Chinese Alibaba LAZADA (<http://larada.vn>). However, at the moment, Shopee does not handle food, and although Tiki handles only processed food, it seems that it does not handle fresh foods.

Agricultural and fishery products are also exhibited at LAZADA, but they are used mainly by the seller in the southern area since many of them show “Ho Chi Minh City” on the product photos. In addition, it is not an E-Commerce specific service, however, products are also sold and bought through Facebook's Marketplace. Facebook is used by more than 70% of all population in Viet Nam.

The major payment method is cash on delivery, but mobile payments and credit card payments, which are not major as a whole country, are also used. It is expected that digital payment, including mobile payments, will be more widespread by improvement of the speed and security of payments, which enables early and safe collection of funds for the sellers (farmers).

Grab, which is called “Viet Nam Uber,” is the most famous delivery system. The cost is 15,000 VND for delivering within 2 km and is also used for online food delivery. In the case of online shopping, the seller delivers goods to the pick-up spots, which are facilitated in the buyer's city, and the last mile delivery company such as Grab picks and delivers the products to the buyers.

#### 5) Lao PDR

Only Organic Home (<https://organichomelao.com/>) is the E-Commerce site that handles agricultural products in June 2021. Organic Home (OH) receives purchase orders by its site or SNS (WhatsApp, Facebook), purchases products at the Organic Agriculture (OA)Market, which sells organic vegetables near OH to deliver organic vegetables to purchasers. The vegetables are delivered by part-time workers. Its business model is shopping services rather than E-Commerce. Major customers are foreigners in Lao PDR.

It is reported that generally, E-Commerce has expanded due to COVID-19 pandemic. At the same time, delivery delays have been frequently observed. HAL logistics, a local company, has built a nationwide logistics network, and basically, they can deliver the products on the next day. Popular electronic payment in Laos is Oney, which is the BCEL Bank's online payment system.

### (3) Prediction of E-Commerce Growth in the Future

E-Commerce is predicted to continue to expand in ASEAN countries after COVID-19 pandemic. According to Table 5.2.3, growth rates in each country are expected to grow at an annual rate of about 4% to 15%, and double-digit growth is expected in Indonesia, Malaysia, the Philippines, Myanmar, and Lao PDR.

**Table 5.2.3 Prediction of E-Commerce Expansion by Country**

Country	2021(mil\$)	2025(mil\$)	CAGR (%)
Indonesia	38,195	56,358	10.2
Thailand	8,900	12,319	8.5
Vietnam	7,010	8,741	5.7
Malaysia	5,540	9,679	15
Philippines	4,421	7,665	14.7
Singapore	2,793	4,079	9.9
Myanmar	410	667	12.9
Cambodia	222	313	9
Lao	81	124	11.2
Brunei	54	63	3.9

Source: JETRO

### 5.3 State of Rural and Agricultural DX during COVID-19 Pandemic

#### 5.3.1 Rural and Agricultural DX and Its Relation to COVID-19 Pandemic

DX in the agricultural field has been promoted since before the COVID-19 pandemic. Many applications can contribute to the realization of keywords for COVID-19 countermeasures such as non-contact, avoiding three Cs (Close spaces, Crowded places, Close-Contact setting), going-out restriction, and lockdown. They can continue to benefit their customers even after the COVID-19. The relationships between rural/ agricultural DX and COVID-19 are summarized below.

**Table 5.3.1 Rural and Agri DX Technology and relationship with COVID-19**

Category	Explanation
1) Use and expansion of E-Commerce / Online delivery services	<ul style="list-style-type: none"> <li>✓ Delivery of foodstuffs and cooked foods have increased in number due to restrictions on go-out and restrictions at restaurants and retail stores. Derestriction will bring a return to real stores. However, alternative channels can reduce risk, when similar situations occur due to not only pandemics but various factors,</li> <li>✓ It can be used even during a normal period from the viewpoints of expanding and diversifying channels. It may be possible to eliminate intermediation in the distribution and to provide cheaper products to consumers at the same time to increase producers' profit.</li> <li>✓ Consumers have fewer contact opportunities with others.</li> </ul>
2) IoT sensors	<ul style="list-style-type: none"> <li>✓ Can reduce laboring. Some countries or regions rely on migrant workers for their labor force, and there are cases that they are facing a shortage of labor force since such migrant workers have returned to their hometowns due to the pandemic. The IoT sensor can reduce the labor force by automatic sensing instead of manual measurement.</li> </ul>
3) Automated Equipment	<ul style="list-style-type: none"> <li>✓ Not only reduction of labor forces can be measured more precisely in spatially and timely. Improve quality is more important under the pandemic which leads to implementation opportunity of precise agriculture.</li> <li>✓ Since the manual measuring device is no more operated, the opportunities of touching or disinfecting something can be reduced.</li> </ul>
4) Farming Management Systems	<ul style="list-style-type: none"> <li>✓ Incorporating GAP certification management will contribute to hygiene awareness, a quality improvement that is more important in the COVID-19 pandemic, and expansion of the market.</li> </ul>
5) Fintech (Online Payment)	<ul style="list-style-type: none"> <li>✓ Reduction of contact opportunities compared with cash handling or ATM handling.</li> </ul>

Source: JICA Survey Team based on various sources

#### 5.3.2 Introduction of DX under COVID-19 Pandemic

##### (1) Overall

During COVID-19 pandemic, mobile phone ownership and internet users had changed. As shown in Table 5.2.1, the rate of mobile phone ownership in 2020 is increased by 7.7% compared with that in the previous year, although the penetration rate is lower than other countries<sup>3</sup>. The number of internet users has been increased significantly, and as seen in Table 5.3.1, the increased rate of use of E-Commerce is also remarkable. In particular, online purchases of food and daily care and use of online food delivery services are increased in number significantly.

Agricultural DX, which is mainly related to production processes is considered also beneficial under With/Post-COVID-19 for stakeholders including farmers. There are cases that it was started before the pandemic, however, there is no clear information under the pandemic. Although there are merits of DXs, the implementation may have been slowed down because the introduction of equipment and education has become rather difficult as far as the go-out restrictions policy continues.

Public policies related to promoting agriculture DX in ASEAN are described below. There were some

<sup>3</sup> Since before pandemic, mobile phones and smartphones have been widespread, and there is not much need to purchase new ones during the pandemic (there must be a replacement purchases, but sales data are not available). It implies that the use of the internet is increased due to stay-home.



countries like Timor-Leste, Myanmar, those policies were not confirmed.

## (2) DX policies by Government Agencies

### 1) Philippines

<Roadmap for Digital Agriculture >

“The One DA Reform Agenda” by the Department of Agriculture is listing eighteen key strategies such as “Cooperative Development”, “Diversification” and “Farm Mechanization”<sup>4</sup>. One of those strategies is “Technology and Innovation including Digital Agriculture” which is described as “Agriculture4.0”.

6 March 2021– At a science and technology conference in Haneda Innovation City, Tokyo, the Philippine Embassy in Tokyo presented Agriculture 4.0, Digital Agriculture, a roadmap to elevate Philippine agriculture using digital technology to provide farmers and fishers with high yield and increased income<sup>5</sup>. The roadmap includes building agri-industrial corridors across the country which would provide a technology eco-system promoting incubators, developing rural communities, and meeting global demand. According to the Video presentation held at the conference, the following technology for agriculture are included

- Data-Lake (Big Data Centralization) at Precision Farming
- Farmers and Fisherfolk Registry System for prompt and timely support and providing various kinds of programs.

Priority Projects are listed as below:

Phase 1:

- A. Agriculture-based central data Ecosystem (AbCDE)
- B. Updating of the RSBSA through the Farmers and Fisherfolk Registry Systems (FFRS)
- C. Streamlined CSR partnerships with big IT companies
- D. Farmers and fisherfolk enterprise development information system (FFEDIS) for agribusiness linkages
- E. Digi Agriponics (Smart hydroponics, aquaponics, and aeroponics)
- F. Institutionalization of e-Kadiwa, Ani@Kita app and Deliver-E
- G. Enhancement of price monitoring system (DA price watch) and Bantay-presyo mobile app
- H. Implementation of digital signatures for paperless transactions.
- I. Philippine Animal Industry Management Information System (PhilAIMS)
- J. Rice Farmers Fertilizer Assistance (RFFA) System
- K. Warehouse Stock Monitoring System

Phase 2 :

- A. Roll-out of farmers’ interventions and monitoring system (FIMS)
- B. Turn-over and operationalization of the rice crop manager – advisory system (RCM-AS)
- C. Implementation of the geo-referencing component of the RSBSA
- D. Agri-fisheries mechanization engineering resources network
- E. Data privacy and cyber security initiatives
- F. Precision farming and space technologies

<sup>4</sup>Source ; The department of Agriculture, Philippines “The One DA Reform Agenda: Eighteen (18) Key Strategies”  
< <https://www.da.gov.ph/the-one-da-reform-agenda-eighteen-18-key-strategies/> >  
(Accessed on March 3,2022)

<sup>5</sup>Source ; Philippine Embassy – Tokyo, Japan, 「PH Continues Push For Digital Agriculture」 March 21,2021  
< [https://tokyo.philembassy.net/02events/ph-continues-push-for-digital-agriculture/?fbclid=IwAR0h\\_nLiMqfon1apR9xx0tLLmkwT71ZJ5wecq6Qic6N-nOIHZienIbAI](https://tokyo.philembassy.net/02events/ph-continues-push-for-digital-agriculture/?fbclid=IwAR0h_nLiMqfon1apR9xx0tLLmkwT71ZJ5wecq6Qic6N-nOIHZienIbAI) >  
(Accessed on January 7,2022)

G. Rice fund impact monitoring system (RiFIMS)

Phase 3:

- A. Integration of electronic certificate information system (E-CIS) in online import and export certifications, national single window (NSW), and ASEA single widow (ASW).
- B. Continuous training and subject matter experts exchange (SMEE) on data science, artificial intelligence, and machine learning.
- C. Biosafety and biosecurity – Laboratory information management system (LIMS)
- D. ISO/IEC27001-Information security management system (ISMS) certified.

Phase 4:

- A. Continued upgrade of DA systems and infrastructure to ensure security, reliability, and integrity.
- B. Web portals, agency websites, and web services
- C. Private network in remote sites
- D. Datawarehouse and other databases
- E. Wide area network (WAN), local area networks (LANs) including RIARCS, quarantine stations, and priority LGUs.
- F. Web-enabled geographic information infrastructure (GII).
- G. ICT support to DA-wide systems/applications

## 2) Indonesia

<The Strategic Plan of the Ministry of Agriculture for 2020 - 2024><sup>6</sup>

In the Strategic Plan of the Ministry of Agriculture for 2020-2024 formulated in May 2020, "Strengthening infrastructure to support economic development and basic services" is mentioned as one of the development agendas in "Policy Direction and National Strategy". This infrastructure includes ICT infrastructure.

As for the utilization of environment construction, disaster resistance improvement, and climate change countermeasures ICT technologies such as Big Data, IoT, AI, etc. will be adopted to perform digital transformation for improving the accuracy of the plan and monitoring using Big Data under the concept of One Data. It is also aimed to build a nationwide data dashboard.

ICT-related priority projects include coordination and coordination of agricultural development strategies in One Command. This is a "national agricultural development reform movement" in the form of the One Command aiming to synergize all agricultural stakeholders with the collaboration strategy from the center to the sub-districts. And this is used to realize national food sovereignty by optimizing the role and tasks of the Agricultural Extension Center (BPP; Balai Penyuluh Pertanian) which uses ICT as a means of implementing agriculture development programs and those activities. Specifically, this includes the following facilities:

- Center agricultural data and information, which includes agricultural statistical data and agricultural human resources,
- Center for agricultural development movement in coordinating and synchronizing to synergize strategic programs for agricultural and food development
- Learning center as a forum and vehicle for increasing the capacity of agricultural human resources,

<sup>6</sup> Source; Renstra Kementerian Pertanian Tahun 2020 – 2024 [https://ppid.pertanian.go.id/doc/1/Draft%20Renstra%202020-2024%20edited%20BAPPENAS%20\(Final\).pdf](https://ppid.pertanian.go.id/doc/1/Draft%20Renstra%202020-2024%20edited%20BAPPENAS%20(Final).pdf)  
(Accessed on February, 23/2022)

through the teaching and learning process, in the form of technical guidance, pilot (Field Schools/Demplot/Demfarm/Demaree);

- Center for agribusiness consultation between the main actors and business actors by involving other agencies/institutions
- Network development center partnership as a place for developing business partnerships for the main actors and business actors with other parties.

A large single-data dashboard as a means of communication and information at the national level was built by the Ministry of Agriculture as a command center in the implementation of data collection and information on agricultural and food development.

### 3) Malaysia

<The 12<sup>th</sup> Malaysia Plan (2021–2025) >

The 12<sup>th</sup> Malaysia Plan (2021–2025) sets out five priority measures in the agricultural sector for food security and sustainability in Malaysia, where the self-sufficiency rate of staple food is only 25%<sup>7</sup>.

- 1) Food supply, whereby the reliance on imports for staple foods must be reduced.
- 2) Reducing food loss and wastage, which is about one-third of produced food, and especially reducing two-thirds of waste that occurred in the supply chain during harvesting, shipping, and storage.
- 3) Introduction of smart farming such as the Internet of Things (IoT) or traceability systems which increase is food safety and production transparency. In addition, introduction of measures to increase agricultural efficiency, and to reduce toxic foods, chronic diseases, and public health costs.
- 4) Youth involvement in agriculture and promotion of youth involvement by smart agriculture.
- 5) Use of biomass as a source of renewable energy.

### 4) Thailand

<Digital Agriculture Strategy>

The Ministry of Agriculture and Cooperative (MOAC) has formulated “The agricultural development plan (2017-2021)” under “The 12th National Economic and Social Development Plan (2017-2021)”, in which “The MOAC’s Digital Agricultural Strategy (2017-2021)”<sup>8</sup> had been launched. This strategy has three missions: (1) Development of agricultural information system for proactive management, (2) Appropriate application of digital technology with context to the agricultural field, and (3) Support for sustainable agriculture. It has been broken down into five strategies.

- a. To escalate digital literacy and bridge the network-learning society to simplify existing know-how to fit for farmers’ accessibility, for example, turning explicit and implicit knowledge into digital KM, bringing knowledge-on-demand and alert systems into a mobile phone and other internet platforms.
- b. To emphasize digital technology for supply-chain management, i.e., to increase efficiency and reduce risk, for instance, introducing precision farming, changing to an automatic production system, and developing big data analytics
- c. To integrate data and information for farmers’ well-being and sustainable agriculture, for example,

<sup>7</sup> Source ; New STRAITS TIMES April 11,2020, “Smart farming, youth are key to food sustainability”, Smart farming, youth are key to food sustainability) < <https://www.nst.com.my/opinion/columnists/2020/07/606732/smart-farming-youth-are-key-food-sustainability> > (Accessed on March 31,2021)

<sup>8</sup> Source ; FFTC Agricultural Policy Platform 16 June, 2019, “Thailand Agricultural Policies and Development Strategies” < <https://ap.ffc.org.tw/article/1393> > (Accessed on 23 February, 2022)

developing single

d. To add values into agriculture products for increasing accessibility to markets such as promoting online market to farmers, recommending RFID/Wireless sensor/Embedded System were appropriated, applying software and application for agribusiness entrepreneurs and Smart Cooperatives.

e. To transform into the digital organization by integrating technology information with the organization's role and responsibility from business architecture level up to roadmap level, and developing human resources for digital literacy.

<Cyber Brain Project for Farmer>

Smart agriculture is being promoted under the initiative of the Ministry of Information Technology Promotion. The ministry's "Cyber Brain Project for Farmers"<sup>9</sup> provides information on crop cultivation methods and market prices. In particular, those cultivation methods have become powerful tools to support new farmers by documenting and quantifying the traditional farming methods. The expansion of ICT use in agriculture is being promoted as a national project to increase the profitability of small-scale farmers, which is the main model of Thai farmers.

## 5) Viet Nam

<The Steering Committee for Digital Transformation in the Agricultural Sector>

On December 14, 2021, the Ministry of Agriculture and Rural Development announced the Decision to establish the Steering Committee for Digital Transformation in the agricultural sector of the Ministry of Agriculture and Rural Development<sup>10</sup>. Minister of Agriculture and Rural Development is the Head of the Steering Committee; The Deputy Head of the Steering Committee is Deputy Minister of Agriculture and Rural Development. The members assisting the Steering Committee include leaders of units under the Ministry of Agriculture and Rural Development.

The missions of the steering committee are;

- Research, propose to promulgate policies, management, and administration mechanisms
- Formulating programs, schemes, master plans, plans, and strategies to integrate contents of agricultural digital transformation.
- Creating conditions to promote people and enterprises to produce and trade agricultural value chains in the direction of digitization, building smart new rural areas across the country.
- Review, propose amendments, supplements, and new promulgation of legal documents in specialized fields to meet the requirements of adjusting new relationships arising in the process of digital transformation, encouraging innovation and creativity in agricultural digital transformation.

The committee is to direct agencies and units under the Ministry to build data systems of the sector, implement digitization in each specialized field: agricultural land, crops, livestock, fisheries, forestry, processing, food safety management, irrigation, natural disaster prevention, and control. Digital technology will be applied in market forecasting and warning, planning management as well as to automate production, business, management, and monitoring processes, product supply chain, ensuring

<sup>9</sup> Source ; National Chamber of Agriculture Japan "Dispatching Southeast Asia Agricultural Situation Inspection Team" <<https://www.nca.or.jp/upload/879718aea49cc97d76e61e89bebe9a7743334c54.pdf>> (Accessed on February 19,2021)

<sup>10</sup> Source ; Ministry of Agriculture and Rural Development of the Socialist Republic of Vietnam "tQuyết định thành lập Ban Chỉ đạo Chuyển đổi số trong lĩnh vực nông nghiệp" <December 15, 2021> <<https://www.mard.gov.vn/Pages/quyet-dinh-thanh-lap-ban-chi-dao-chuyen-doi-so-trong-linh-vuc-nong-nghiep.aspx?item=38>> (Accessed on February 23,,2022)

speed, transparency, and accuracy.

The implementation of digital transformation activities in the agricultural sector is urged and coordinated. Aims are to raise awareness of the mission, necessity, and urgency of digital transformation in the Agriculture and Rural Development sector and to execute DX programs synchronously at all levels with the participation of all stakeholders in the entire Agriculture sector. Based on the annual agricultural and rural digital transformation task, the Steering Committee is to determine the digital transformation themes of the year, and to guide the agencies and units under the Ministry to organize the digital transformation activities.

This is a part of the tasks and solutions in the Prime Minister's Decision No. 749 on “Approving the National Digital Transformation Program to 2025, with a vision to 2030”

## 6) Cambodia

<Agricultural Extension Policy in Cambodia2015>

Ministry of Agriculture, Forestry, Hunting and Fisheries of Cambodia announced the “Agricultural Extension Policy in Cambodia” in April 2015 aiming at increasing efficiency of providing agricultural extension services<sup>11</sup>. Related to ICT/DX, it is proposed as “Agricultural Extension Approach and Methodology” that agricultural extension services providers will apply innovative and effective extension approaches and methods, especially using information and communication technologies (ICTs) as the means for delivering messages. This will be performed by below means.

- 1) Adopting an integrated farming systems approach for sustainable agricultural development.
- 2) Supporting all categories of farmers by promoting demand-driven and beneficiary approaches in the selection of new yield-increasing technologies and/or more profitable practices.
- 3) Working with farmer groups of all kinds and taking into consideration the importance of indigenous or farmer-invented knowledge and technologies.
- 4) Building into the agricultural system sustainability mechanisms such as cost-sharing and partial cost recovery, then gradually moving to a full-cost recovery system for services and discouraging dependency.
- 5) Supporting pluralism in service delivery (i.e., providing integrated extension support to farmers) and promoting strong stakeholder collaboration and networking to build synergy and enhance efficiency in resource utilization.
- 6) Using multidisciplinary teams for holistic solving of farmers’ problems. Agricultural Extension Policy in Cambodia – Unofficial translation.
- 7) Using a mix of ICTs, field demonstrations, farmer field schools, study visits, call centers, farmer training, mass media-based extension campaigns, publications, radio, and television for wide coverage and enhanced sharing of information.
- 8) Motivating the private sector to establish and operate ICT-based rural information centers (one example is using smartphones to share market information) and establish community-based farm radio and TV programs.
- 9) Investing in development of quality content, with regular updates, in response to farmers’ needs and priorities.

<sup>11</sup> Source ; Ministry of Agriculture, Forestry, Hunting and Fisheries of Cambodia

<[https://server2.maff.gov.kh/parse/files/myAppId5hD7ypUYw61sTqML/4815d8a21e0f616ff81ff619b308f658\\_1596527169.pdf?\\_x\\_tr\\_sl=km&\\_x\\_tr\\_tl=ja&\\_x\\_tr\\_hl=ja&\\_x\\_tr\\_pto=wapp](https://server2.maff.gov.kh/parse/files/myAppId5hD7ypUYw61sTqML/4815d8a21e0f616ff81ff619b308f658_1596527169.pdf?_x_tr_sl=km&_x_tr_tl=ja&_x_tr_hl=ja&_x_tr_pto=wapp)> (Accessed on 23 February, 2022)

## 7) Lao PDR

<The Agriculture Development Strategy to the year 2025 and Vision to the year 2030>

Ministry of Agriculture and Forestry published “the Agriculture Development Strategy to the year 2025 and Vision to the year 2030<sup>12</sup>” which include the strategy to utilization of Information systems (ICT) as below.

1) As an improvement and development of the governance mechanism system in the agriculture sector, to improve information system from central to local levels to enable the reporting system on services and improve coordination between central and local levels, between Agriculture and Forestry Sector and other sectors to be more smoothly.

2) To research and apply new technology and appropriate techniques. This research includes:

- a. the use of agriculture and forestry biodiversity at the maximum level and sustainable ways
- b. Techniques and technologies for agriculture and forestry production to adapt to climate change.
- c. Seeds and technology to increase productivity of agriculture and forestry production.
- d. Policies to provide information and recommendations to decision-makers at all levels.

In addition, shall also improve the information system to disseminate and exchange research findings, enabling related sectors could access to information with regards to research findings.

3) Livestock production, animal health, and fishery-related media and information system development.

4) The province shall have a good information system and shall coordinate with the district agriculture and forestry offices systematically.

## 8) Singapore

<30 by 30 vision><sup>13</sup>

Singapore currently relies on imports for more than 90% of its food but aims to produce 30% of its nutritional needs by 2030, which is called the “30 by 30” vision. To achieve that vision, the Singapore Food Agency (SFA) is supporting the introduction and transformation of new technologies to increase productivity through financial assistance and technology transfer to farmers. The fields and technologies include the following.

- Agriculture: Cultivation using an urban vertical / multi-layer system in buildings, rooftops, etc. Utilization of digital technologies such as artificial lighting and recirculating hydroponics system.

- Fisheries (aquaculture): Marine net cage farm using IoT, water monitoring system, and recirculation aquaculture system (RAS)

## 9) Brunei Darussalam

The government Digital Economy Council has launched its first five-year master plan “The Digital Economy Masterplan 2025” towards transforming Brunei Darussalam into a Smart Nation in June/2020<sup>14</sup>. This plan is the strategy for Brunei Darussalam to become a Smart Nation with a digital society, a future-ready society, a vibrant and sustainable economy as well as a conducive digital eco-

<sup>12</sup> Source ; Ministry of Agriculture and Forestry of Lao PDR 「Agriculture Development Strategy to 2025 and Vision to 2030」 <<http://www.maf.gov.la/wp-content/uploads/2016/01/MDS-2025-and-Vision-to-2030-Eng.pdf>>> (Accessed on 23 February, 2022)

<sup>13</sup> Source: Singapore Food Agency HP <<https://www.sfa.gov.sg/food-farming>> (Accessed on February 23, 2022)

<sup>14</sup> Source: The SCOOP 「Gov't releases first digital economy masterplan」 <https://thescoop.co/2020/06/05/govt-releases-first-digital-economy-masterplan/> (Accessed on February 19,2021)

system. It is intended to support high Quality of Life, which is one of the objectives of National Vision 2035, aiming at higher education, skilled workforce, and a sustainable and dynamic economy.

The master plan lists 17 projects, which are expected to be implemented in the next five years. In agriculture, the pilot project for Smart agriculture and IoT will be launched soon.

### (3) Cases

#### 1) Philippines

< We Recover As One, 22 May 2020 >

In a report released by the National Economic and Development Authority (NEDA) – the Inter-Agency Task Force for the Management of Emerging Infectious Diseases – Technical Working Group for Anticipatory and Forward Planning (IATF – TWG for AFP), there are comments on agricultural DX as follows<sup>15</sup>.

- ✓ Strengthen online marketing of agricultural production. Supermarkets and retail food establishments will have to be encouraged to establish online or digital channels for transactions and delivery services.
- ✓ In areas where food and groceries delivery are not available, an online service delivery system where buyers send a list of items to a PAVILI<sup>16</sup> service provider may be explored as an option. In parallel, a registry system of online sellers or deliveries may be established to monitor and regulate the movement of people engaged in such transactions. Investments in ICT infrastructure will also have to be boosted to meet the surge of online transactions and the consumers' expectations for reliable digital connectivity.

<Agri Fintech>

It is being considered to introduce AI screening/ credit management (crop producers take pictures of crops as needed to know the growth situation by AI and determine to lend or not accordingly), Agri-Uber (matching distributors with truck drivers), dynamic pricing. In addition, Benguet State University conducts preliminary surveys for the development of AI screening and credit systems under an assistance from JICA: “Technical Assistance for Proof of Concept under The Data Collection Survey for the Dissemination of Innovative Rural and Agricultural Finance by Digital Transformation.”

<Deliver-E>

Deliver-E, an agriculture supply chain platform, was organized in partnership with the Department of Trade and Industry (DTI), Food Terminal Inc. (FTI), Farmers' cooperatives, the private sector, and the United States Agency for International Development (USAID)<sup>17</sup>. Together, on December 14, 2020, they held a virtual pledge signing. Deliver-E is the blockchain-powered platform, which tries to integrate all of supply chain processes from consolidation point to a central warehousing facility and then to last-mile to consumers with E-Commerce and logistics application services. It intends to give merits to producers and consumers and to improve farmers' income.

In a half year since its soft-launch in April 2020, Deliver-E had already supported about 600 farmers in

<sup>15</sup> Source ; National Economic and Development Authority, The Philippines 「We Recover As One」 September 3,2020  
<<https://www.neda.gov.ph/we-recover-as-one/>> (Accessed on 31 March, 2021)

<sup>16</sup> Pabali; LGUs should use the Office of Senior Citizen Affairs registries in identifying households with older persons, and if possible, deliver their needed supplies, including food and medicine. Households with senior citizens and high-risk individuals should also be encouraged to contact their respective barangay officials to be registered for the assistance.

<sup>17</sup>Source ; Philippine Information Agency, 「Agri chief: Online is the new byword in food security」 December 17,2020  
< <https://fanssea.searca.org/news-and-updates/philippines/agri-chief-online-is-the-new-byword-in-food-security> >  
(Accessed on March 31,2021)

Luzon and the southern Philippines, doubling their income by reducing waste from 50 percent down to only five percent. More than 260 tons of fresh fruits and vegetables were distributed using the online platform, and over P7.15 million were generated in sales.

<MIYANI>

There is a company called MAYANI that operates a platform similar to DELIVER-E, which is a start-up company supported by a supporting scheme of overseas companies by the Private Sector Partnership and Finance Department of JICA. MAYANI is one of the fastest-growing agritech start-ups in the Philippines. It aims to increase the income of small farmers by restructuring the way to deliver agricultural products to the people's dining tables. It is also supported by the Asian Development Bank (ADB), and AgFunder and Plug and Play which are venture capitals in Silicon Valley.

## 2) Indonesia

As mentioned in Section 5.2.2, Indonesia has many E-Commerce services specializing in agricultural products such as TaniHub (<https://tanihub.com>) and Sayurbox (<https://www.sayurbox.com>). TaniHub, for example, is an emerging platform for farmers, revealing the faces of producers and aiming for fair trade with food safety. In addition, ThaniHub is planning to expand financing to farmers by a partnership with a startup company called Modalku which provides a P2P financial platform.

Another example is a startup Limakilo which developed a digital platform that connects farmers directly with retailers to reduce fees previously paid to middlemen by direct transactions, and to make production areas and processes clear.<sup>18</sup>

By monitoring and checking purchase prices on such app platforms, farmers have become able to obtain appropriate price information. As a result, it is reported that the market price has been set by an appropriate producer. In addition, the availability of online application-based transportation services as part of these platforms encourages direct sales from producers to consumers without going through traditional intermediaries.

Farmers can monitor and check prices on these application platforms to get prompt price information. It is reported that farmers were gradually able to price appropriately by themselves<sup>19</sup>. In addition, transportation service online has promoted direct sales from producers to consumers without using traditional brokers.

## 3) Timor-Leste

USAID's Avansa Agrikultura Project<sup>20</sup> in Timor-Leste is a horticultural market systems project for strengthening market linkages and transformation of subsistence farming practices in the past six years since 2014. The project promoted the use of WhatsApp chat groups, by linking field staff across the five project offices and six municipalities to support promoting distribution and sales of agriculture products. Other method than face-to-face trades had become necessary by COVID-19 pandemic; it enables transparency of communication and improvement of trade in the long term.

## 4) Malaysia

The VisconAgro Precision Full Cycle fertigation system is an example of Precise farming, one of IoT

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<sup>18</sup> Source: Ideas for Good : <https://ideasforgood.jp/2019/04/22/warung-pintar/> (accessed on March 4, 2022)

<sup>19</sup> Source ; Reports of Socio-Demographic Survey on COVID-19 Impact 2020 (Hasil Survei Sosial Demografi Dampak COVID-19 2020) < <https://covid-19.bps.go.id/publikasi/detail/7>> Accessed on February 19, 2021)

<sup>20</sup> Source; USAID; AgriLINKS, "Adapting Agribusiness to Maintain Timor-Leste Food Supply" <<https://www.agrilinks.org/post/state-urgency-adapting-agribusiness-maintain-timor-leste-food-supply>> (Accessed on February 19,2021)



farming, which offers farmers full interactive real-time control of the fertigation process<sup>21</sup>. The system helps increase of productivity by improving the use of fertilizer and water as well as minimizing pollution. It is accessible via mobile devices such as smartphones and tablets. If the required fertilizer is scheduled in advance, fertilizer can be applied regularly and automatically and can be adjusted using management reports.

Labor shortages can be solved by reducing fieldwork, and yields can be increased as well. In Melaca, this system has been applied to melon cultivation and enabled harvest five times in 18 months and a profit for each harvest reached 50%. The Central Malacca Agricultural Office is preparing farmland and recruiting applicants who want to engage in agriculture.

## 5) Thailand

A venture company in Chachoengsao province had started the business aiming at the improvement of Cassava's value chain by digital solutions. Impress Green Energy Co., Ltd. developed a platform called BioMatLinks which connects cassava farmers with processing factories (ethanol, starch, etc.). BioMatLinks collects demands from factories (temporary orders before planting), digitizes them, notifies member farmers of the schedule, selects farmers, and formulates cultivation plans. BioMatLinks already owns multiple stations in Chachoengsao, where farmers bring cassava to the stations after cleaning (sand removal, etc.) and inspection work which buyers in factories used to do. During cultivation, it also provides fertilization services using drones and facilitates farmers and buyers to shorten the payment period to farmers. BioMatLinks plans to build more than 200 stations in Chachoengsao shortly. (<http://www.biomatlink.com>)

The following digital solutions upstream of the value chain are found in shrimp farming.

- 1) AI-based juvenile shrimp counter which reduces labor effort and improves accuracy.  
<ALGAEBA ; <https://www.algaeba.com>>
- 2) Management of the water control of the aquaculture pond by sensors to shorten the shrimp growing period as well as optimal management of the input feed.  
<VEGA Automation Co., Ltd. ; <https://www.vegaauto.co.th/>>

## 6) Myanmar

Sesame is a valuable cash crop in Myanmar and an indispensable crop on the table. However, there are a lot of issues such as delay in the improvement of cultivation technology, insufficient introduction of modern technology, distribution know-how, and so on. Under this situation, "Project for PoC on the quality and traceability of agricultural products through a farming support platform based on AI image recognition model" has been selected by "Asian DX promotion project under Japan-ASEAN corporation" by JETRO in 2020.<sup>22</sup> This project aims at the establishment of a platform "r-Marketplace" for farmers' better market access and to introduce QR codes of agricultural products based on AI image recognition to ensure quality and traceability.

## 7) Viet Nam

Lam Dong province is one of the leading localities in developing high-tech agriculture, smart agriculture, and organic agriculture, and has created a breakthrough in promoting agriculture as a key economic

<sup>21</sup> Source ; New STRAITS TIMES March 24,2020, "#TECH: Rock-solid farming tech"

<<https://www.nst.com.my/lifestyle/bots/2020/03/577531/tech-rock-solid-farming-tech> > (Accessed on March 31,2021)

<sup>22</sup> Source; JETRO, Project for PoC on the quality and traceability of agricultural products through a farming support platform based on AI image recognition model <<https://www.jetro.go.jp/news/announcement/2020/89bff31203b57b8b.html>> (Accessed on February 19,2021)

sector<sup>23</sup>. The total area applying IoT technology in crop cultivation in the province has reached more than 235 hectares, with many models achieving annual revenue of more than VND3 billion per hectare. The province has zoned off 4,000 hectares for 18 areas for high-tech agriculture, and trademarks have been awarded to 21 local agricultural products.

According to Lam Dong Agriculture Rural Development Agency, Lam Dong invests about 80% of its budget in agriculture every year. Over the past five years, the province has approved eleven programs and projects to support production with a total budget of VND 108 billion. As a result, the total value of the province's agricultural production in 2020 reached VND180 million per hectare. To date, high technologies have been applied in more than 60,000 hectares of agricultural land in Lam Dong Province, accounting for 20% of the total farming, and the average production value per hectare of agricultural land is estimated at VND400 million.

An example is YSA Orchid Farm, which currently cultivates more than 300 kinds of orchids at three high-tech farms more than 10 hectares in 3 cities in the province and gains an annual revenue of more than JPY 600 billion from the domestic and international market. The farm is equipped with greenhouse systems, automatic air conditioning, and a temperature sensor system. Remote control software developed by the director of the Viet Hydroponics Cooperative in Darat city can predict the outbreak of pests and diseases based on a database of weather conditions, humidity, temperature, and plant growth.

## 8) Cambodia

The pandemic is fueling E-Commerce growth in Cambodia, with the potential to create new employment opportunities<sup>24</sup>. For instance, Grocerdel, an online startup that delivers fresh farm products in Phnom Penh, has increased its sales by over 165% and has to increase its staff by 50% to meet the demand.

In October 2020, under the pandemic of COVID-19, Bakong, the Central Bank Digital Currency (CBDC), was introduced<sup>25</sup>. In Cambodia, it is said that the penetration rate of smartphones exceeds 100%, and smartphone payment companies are crowded. However, especially in rural areas, few people have bank accounts, and the payment term by smartphone payment is too long, which causes shortages of funds. Under such an environment, CBDC has been introduced.

## 9) Singapore

Entrepreneurs, who are rapidly expanding, are entering the AgriTech field, which creates urban farms with highly efficient technologies<sup>26</sup>. While Singapore's traditional farmers are also incorporating technology into their farming systems, new players have introduced smart systems such as technologically advanced infrastructure, IoT sensors, and analytics to optimize food production.

For example, IoT data analysis allows farms to control environmental conditions such as light and irrigation to track temperature, humidity, and crop growth. Automated systems such as auto-feeders, automated pump systems, and shed-cleaning bots compensate for the labor shortage. Hydroponics systems eliminate the need for pesticides and fertilizers by optimizing the nutritional value of harvested plants.

In Singapore, support from the government and research institutes in agri-food technology is growing.

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<sup>23</sup> Source: Nhan Dan Online February 8,2021, "Lam Dong develops modern agriculture"  
<https://en.nhandan.com.vn/business/item/9574702-lam-dong-develops-modern-agriculture.html>> (Accessed on March 31, 2021)

<sup>24</sup> Source: UNCTAD "Cambodia's digital startups help blunt economic impact of COVID-19"  
<<https://unctad.org/news/cambodias-digital-startups-help-blunt-economic-impact-covid-19>> (Accessed on February 19,2021)

<sup>25</sup> Source: Hearing from SORMISU Co., Ltd. February 3,2021

<sup>26</sup>Source: UNDP "Singapore's Emerging AgriTech Ecosystem"  
<<https://sgtechcentre.undp.org/content/sgtechcentre/en/home/blogs/sg-agritech-ecosystem.html>> (Accessed on February 19, 2021)

Singapore's government has launched two centers of innovation, in collaboration with Nanyang Technological University and Temasek Polytechnic, to focus on finding solutions for agricultural challenges. For example, researchers from Singapore-based Temasek Life Sciences Laboratory have found a way to use technology to identify and select fish with desirable traits, successfully breeding freshwater tilapia in seawater without genetic modification. One pioneer research product that has made it to the Singapore market is Temasek Rice. Unconventionally grown in Singapore, this rice has been formulated to withstand floods and droughts, as well as fungal and bacterial attacks, effectively producing climate-resistant rice.



# **PART II**

## **Pilot Project Designing and Implementation**



## CHAPTER 1 SELECTION OF PILOT PROJECT

The JICA Survey Team has investigated and analyzed the impact of COVID-19 on FVC (see Part I). Based on the results of these studies, the Team will design and implement pilot projects to mitigate the negative impact of COVID-19 and compile recommendations on how to strengthen the FVCs in a With/Post COVID-19 society. The following describes the selection process for the pilot projects and an overview of the selected pilot projects;

### 1.1 Points taken in Selecting Pilot Project

In selecting the pilot projects, the Team first refers to the analysis results on the COVID-19 impacted as discussed in Chapter 3 of Part I, and at the same time following 2 points are taken into consideration; 1) both cost and implementation period should be appropriate, namely, the cost should be thoroughly planned not to be huge taking into account the sustainability, and implementation period should not go beyond half a year, as an overall time frame, and 2) collaboration with on-going and/or already planned JICA projects in Southeast Asian countries could be established.

Table 1.1.1 summarizes the impacts of COVID-19 on FVCs, classifying them into two major categories: upstream and downstream impacts (upstream refers mainly to the production and processing stages, while downstream refers to distribution and marketing as well as the consumption stage). The table also indicates whether these impacts are likely to occur in the short term or over the long term, including the future, and the response measures include the use of DX, which has made significant progress under the COVID-19 pandemic (see italics).

**Table 1.1.1 Impacts on FVC by COVID-19, and Measures, Responses and Approaches**

No.	Impacts/Issues by COVID-19	Responses, Mitigation Measures	Approach
<b>Upstream side (e.g., production and processing stage)</b>			
1	Movement restriction has made collectors not able to come to the collection points of agricultural products to buy. Accordingly, sales of the produces came to stop and interrupted, and also farmers were forced to sell those produces at lower prices (relatively short-term impact).	Secure new sales channels in addition to conventional sales to the collectors, e.g., sales through E-Commerce, direct sales to modern markets such as supermarkets, HoReCa(*). <i>In particular, the COVID-19 pandemic has made significant progress in DX, and it is necessary to make effective use of this progress.</i>	Diversification of Sales Channels (on-line, direct sales)
2	There are farmers and farmer groups who have tried direct sales to customers using E-Commerce. With this, there are new and/or additional measures they have to undertake, different from conventional sales, which are frequent and small-volume shipping, changing the channel from the collectors to new distribution routes, etc. (relatively mid to long term measurement required).	Need to establish a production and shipping system to accommodate small-scale, high-frequency shipments and e-commerce. <i>DX has made great progress in the COVID-19 pandemic, and there is a due need of making effective use of this trend.</i>	Diversification of Sales Channels (respond to new issues under on-line sales)
3	There have been wastes of agricultural, livestock and fishery products due to wide-range movement restriction and in cases market closures enforced under the occurrence of COVID-19 infection cluster (relatively short-term impact).	Introduce a process of storing perishable produces longer-time with cold storage, and also a processing function, which could also contribute to improving quality. Further, promote local-production for local-consumption (e.g., In Thailand, government led movement for the local-procution for local consumption was promoted).	Quality Improvement and Processing Introduction
4	Production, harvesting and sales activities have been hindered due to labor shortage, movement restriction, and restriction of intensive/congested work situation (relatively short-term impact).	Introduce labor-saving technology, automation technology, and mechanization in the process of production.	Automation and Mechanization
5	Due to movement restriction, extension workers have had a difficulty of visiting their farmers, whereby extension opportunities have been less. Likewise,	Need to provide extension information and also training contents through SNS and on-line (through web), while conventional face-to-face extension and training should be	DX Utilization (Cross Cutting Issue)

No.	Impacts/Issues by COVID-19	Responses, Mitigation Measures	Approach
	factories engaged in processing have hardly been able to arrange trainers for their labors, leading to less opportunity of trainings on factory works (relatively short-term impact).	tried where possible. <i>In fact, the environment for online training and meetings has been greatly improved because of the big progress in DX under the COVID-19 pandemic.</i>	
6	Conventional challenges such as Africa swine fever, cassava virus pest, etc. are also prevalent in some places (Viet Nam for ASF, cassava virus in Thailand and Cambodia). Aside from the COVID-19, those conventional issues have to be undertaken (relatively mid to long term impact).	Need continued efforts to address the issues that existed in the past, but given mobility restrictions, more efficient dissemination of information is required, such as through SNS and the Web (e.g., through the use of DX).	DX Utilization (Cross Cutting Issue)
<b>Downstream side (e.g., distribution and consumption)</b>			
7	In traditional markets where many people tend to gather, higher infectious risks (clustering in some cases) and relatively poor sanitary conditions have reduced consumer use and similar trends may continue in a post-COVID-19 society as well (i.e., this may be a medium- to long-term impact).	Diversify the market channels, for example, to a modern market represented by supermarkets and HoReCa, in addition to the sales through E-Commerce directly to the consumers. Note that both quality and quantity should be well regulated and maintained continuously in order to access such modern markets.	Diversification of Sales Channels Quality Improvement
8	Sales opportunities have vanished due to the closure of HoReCa, drastic decrease of tourist, especially foreign tourist, cancellation of such events as wedding where many people can be expected to come (this situation has continued even in 2021 though it was expected to settle soon), which is a relatively short to mid term impact).	Need to acquire new customers, for which such opportunity should be created as to matching the producers with customers, expecting to realize access to modern market, e.g., super-markets by direct sales.	Distribution Enhancement and Strengthening (matching)
9	Cases of increased sales in modern markets such as supermarkets have been reported in the COVID-19 pandemic, and there were cases of farmers expanding their sales channels to modern markets. However, entry into modern markets requires a stable supply of high-quality agricultural products, and competition is intensifying than ever before.	It is necessary to strengthen the production and shipping system to meet market needs. In other words, it is necessary to have the capacity and system to produce and deliver the right amount of agricultural products demanded by the market at the right time and in the right quantity.	Distribution Enhancement and Strengthening (planned cultivation, quality improvement)
10	Under COVID-19 pandemic, consumers have become more concerned on food safety and food security than ever before (relatively mid to long term impact).	Need to establish traceability system covering production and shipping process especially in the sectors of livestock and fishery.	Food Safety Improvement

\*: HoReCa stands for Hotel, Restaurants, Case (or Catering)

Source: JICA Survey Team based on the discussions in Chapter 3 of Part I

Table 1.1.1 above lists the response and mitigation measures against the impacts of the COVID-19 pandemic, and these may require similar approaches for some impacts. These are listed in the right column of the table as approaches and are outlined below;

### 1) Diversification of Sales Channels

FVC connecting consumers with producers has been disrupted and changed very much due to the consumers' behavior change resulting mainly from movement restriction, social distancing, and also concerns on the infection to the virus. Under this situation, sales channels should be diversified, namely, in addition to the conventional markets usually accessed, participation to modern markets as well as to E-Commerce markets should be attempted. It is noted that the participants to the new markets should be aware of undertaking measures to cope with the requirement from the new markets, e.g., small/ frequent delivery of the produces, introduction of electronic money, etc.



## 2) Distribution Enhancement and Strengthening

Under COVID-19, conventional sales channels have been often disrupted and even almost disappeared, and therefore new customers should be sought and solicited. To cope with this situation, there should be a matching opportunity amongst producers, collectors/distributors, suppliers and even modern market operators, through which new businesses may take place in creating new transactions. In addition, distribution mean itself should be strengthened<sup>1</sup>, and also a planned cropping according the consumers' demand can be tried, so that distribution of the produces could be smoothly made.

## 3) Quality Improvement and Processing Introduction

There have been wastes of agricultural, livestock and fishery products due to wide-range movement restriction and in cases market closures enforced under the occurrence of COVID-19 infection cluster. To cope with this situation, there should be a need of introducing a process of longer cooling and storing for such perishable products e.g., horticulture and fishery products, by a means of establishing cold storage. Cold storage can also contribute to improving quality by adjusting the shipping-out timing, whereby there could be an opportunity of accessing modern markets. In addition, if those perishables are to be processed into, e.g., the form of dry/fried vegetables, they can be on sale longer time, and hardly been wasted either.

## 4) Automation and Mechanization

On the upstream side of the FVC, efforts should be made to improve and stabilize productivity while addressing the challenges that have existed (disease, drought, etc.). Furthermore, the need for labor saving through automation and mechanization is expected to increase, as securing agricultural workers becomes an issue in countries with aging populations and remarkable development in the industrial sector.

## 5) Food Safety Improvement

Facing the COVID-19 pandemic worldwide, consumers' concern on the food safety has increased very much in parallel with paying attention to nutrition. To respond the consumers' behavior change represented by the higher concern on the food safety, such certifications as GAP, GAqP, HACCP should be strongly promoted. In addition, hygiene condition should be well maintained clean and safe, and also washing, cleaning and packing processes prior to the shipping-out should be further introduced.

## 6) DX Utilization (Cross Cutting Issue)

Nowadays, DX technology is sweeping over the world in many sectors and this trend had been accelerated since the onset of COVID-19 pandemic; agriculture and food sector is no doubt exception. Thus, it is useful to incorporate DX technologies in conducting sales and production, e.g., new customer acquisition using SNS. Further, SNS and Web could be and should be utilized in conducting agriculture extension works and also job-related trainings for factory labors.

### 1.2 Selection of Pilot Project

Table 1.2.1 shows the approaches identified through the above discussions first, following which potential pilot projects are presented together with brief description as in Table 1.2.2 (for the detail description, see the next chapters). The proposed pilot projects are meant to cope with and solve issues/challenges facing the stakeholders along the FVCs. Table 1.2.1 also shows which ones the proposed

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<sup>1</sup> To respond the order from a modern market, e.g., supermarkets, regular delivery, e.g., once in a week, should be made by keeping some volume as ordered in addition to maintaining a high standard quality. To respond this requirement, well-planned cultivation should be required and also a capable distributor should be kept, or the producers should be equipped with good transportation mean, e.g., truck.

project would more work on; namely, on the strengthening of connecting points of stages or on the strengthening of the stage itself.

There are 12 potential pilot projects in total, and taking into account the implantation period required, cost scale, and relations with on-going and/or planned JICA projects, finally 6 pilot are taken up for the implementation (see the bold and underlined projects in Table 1.2.1). As a matter of fact, while all these selected pilot projects are related to agriculture/ crop production and distribution sector, fisheries were also considered, e.g., shrimp culture with AI-IOT and digital traceability for tuna in the process of examining the potential pilot project. However, these were dropped taking into account cost scale, implementation period required as well as relevancy to JICA on-going/planned projects.

**Table 1.2.1 Proposal of Pilot Projects**

Approach	Con'g Point	Stage Itself	Potential Pilot Project (bold and underlined are selected pilot project)
Diversification of Sales Channels 1. Direct Sale 2. On-line sales	◎	-	1) <b><u>Viet Nam: Online Sales Support for Vegetable Producers' Cooperative</u></b> 2) <b><u>Lao PDR: Stabilization of Organic Vegetable Supply and Expansion of Sales Channels</u></b> 3) Philippines: Agri-Pinoy Trading Centers (APTC) Digital Modernization
Distribution Enhancement and Strengthening 1. Matching 2. Planned cultivation	◎	○	4) <b><u>Viet Nam: Digital Matching Support between Vegetable Farmers and Buyers</u></b> 5) <b><u>Philippines: DA BAYANI KITA Application Enhancement Support</u></b>
Quality Improvement and Processing Introduction 1. Cooling, washing, packing 2. Processing	○	◎	6) <b><u>Indonesia: Horticulture Quality Improvement and Sales Channel Enhancement</u></b> 7) Viet Nam: Demand Responsive Capacity Enhancement with the Introduction of Vegetable Processing
Automation and Mechanization	-	◎	8) <b><u>Thailand: Introduction of Smart Agriculture Technology on Organic Farming in Greenhouses</u></b> 9) Thailand: Improvement of Shrimp Production and Shipping Management with AI/IOT Interlocution
Food Safety Improvement 1. Certification promotion 2. Traceability strengthening	△ ◎	○	10) Viet Nam: Support for Basic Gap Digital Certification Acquisition 11) Indonesia: Establishment of Digital Traceability System for Tuna Supply Chain 12) Thailand: Establishment of Cassava Supply Chain Traceability System

Source: JICA Survey Team

**Table 1.2.2 Brief Description of Candidate Pilot Projects**

No.	Pilot Project	Objectives and Major Activities	Pilot Selection
1	Viet Nam: Online Sales Support for Vegetable Producers' Cooperative	Farmers diversify sales channels such as online sales using E-Commerce. For this purpose, agricultural cooperatives open on-line stores on existing mall-type EC sites and sell their products through the sites, online sales customers are acquired through the sale of agricultural products at physical stores, and also agricultural cooperatives will have a collection function and strengthen the collective activities to support transportation from individual producers to the pick-up point.	Selected
2	Lao PDR; Stabilization of Organic Vegetable Supply and Expansion of Sales Channels	Target farmer groups will use SNS to distribute organic (OA) market information in real time to understand consumer needs and also promote their sales. In addition, since COVID-19 has made it difficult to obtain organic farming materials, support will be provided for the procurement of farm equipment (cutters and crushers) to establish a stable production system for high-quality organic farming materials.	Selected

No.	Pilot Project	Objectives and Major Activities	Pilot Selection
3	Philippines: Agri-Pinoy Trading Centers (APTC) Digital Modernization Support	In the Philippines, APTCs have been established as collection and shipping centers for agricultural products, and farmers who ship their products to APTCs are grouped together to sell their products online to supermarkets through an EC platform, and also by providing transport trucks, the farmers are to improve their direct sales to supermarkets.	-
4	Viet Nam: Digital Matching Support between Vegetable Farmers and Buyers	It is necessary to create a membership database for the purpose of non-contact transaction matching between producers and buyers. The pilot project digitally lists farmers who grow safe vegetables in agricultural cooperatives that have acquired Basic Gap (Viet GAP). In addition, the actual matching events of the members registered in the database may be included as one of the pilot activities to create matching opportunities between the producers and the purchasers.	Selected
5	Philippines: DA BAYANI KITA Application Enhancement Support	The BayAni Kita App, an integrated application operated by the Department of Agriculture (DA) to support farmers' production and sales, and Deliver-E, an e-commerce platform for agricultural products, will be linked to improve the convenience of the application. In addition, feedback from application users will be used to improve, promote, and update the application.	Selected
6	Indonesia: Horticulture Quality Improvement and Sales Channel Enhancement	In response to the fluctuations in demand for horticultural crops caused by COVID-19, refrigerators will be installed to preserve horticultural crops and a shipping system will be developed to meet the demand. In addition, post-harvest processing machines (washing and packaging) for vegetables and fruits will be introduced to expand sales channels to modern markets (supermarkets, etc.). In addition, the beneficiary cooperatives will expand sales channels through the use of digital technology by launching a website and promoting the products (horticultural crops) handled through the website.	Selected
7	Viet Nam: Demand Responsive Capacity Enhancement with the Introduction of Vegetable Processing	The introduction of vegetable processing will help meet the fluctuating demand for fresh produce, prevent waste of produce, and improve the income of farmers and processors. In order to achieve this, the following activities are to be carried out: 1) support for local processors and agricultural cooperatives, such as the introduction of vacuum fryers for the production of vegetable chips; 2) support for matching processors with agricultural cooperatives that provide contract processing or raw materials; and 3) support for online sales of processed products.	-
8	Thailand: Introduction of Smart Agriculture Technology on Organic Farming in Greenhouses	While the need for safe vegetables has increased under the Corona pandemic, the shortage of laborers and the improvement of productivity have become issues. Therefore, in organic vegetable cultivation in a closed system environment (green house), various environmental sensors will be introduced to ensure stable production of high-quality vegetables based on relevant data. The activities include: 1) semi-automatic control of the green house environment using IoT, 2) reduction of labor hours in the green house by introducing IoT, and 3) sharing knowledge on smart agriculture with related organizations.	Selected
9	Thailand: Improvement of Shrimp Production and Shipping Management with AI/IOT Interlocution	Using IOT technology, the system automatically activates aeration in the aquaculture pond according to the oxygen concentration in the water, thereby saving up to 50% of electricity costs. This reduces the cost of electricity and fuel, which account for 22% of the total cost of shrimp farming. In addition, 24-hour monitoring of DO, pH, and water temperature data and setting of alarms enable the system to respond to unexpected changes in the pond.	-
10	Viet Nam: Support for Basic Gap Digital Certification Acquisition	By digitally recording the information required for Basic Gap or Viet Gap approval, which are such input data as pesticides and fertilizers, as well as management records using a mobile application, the system supports farmers in applying for Basic Gap. The system will also contribute to speeding up and ensuring the certification process by DARD, the approval agency.	-
11	Indonesia: Establishment of Digital Traceability System for Tuna Supply Chain	The introduction of blockchain technology will enable transactions that ensure data tamper-resistance and transparency in a series of supply chains for export-oriented marine products (e.g., tuna), including landings and transactions in wholesale markets, all the way to the export destinations. By introducing blockchain, it is possible to	-

No.	Pilot Project	Objectives and Major Activities	Pilot Selection
		quickly identify how much seafood is staying in which stage and where, i.e., bottlenecks in logistics will be clearly grasped. In other words, it will speed up the implementation of countermeasures in the event of a logistics stoppage, e.g., by COVID-19 occurrence.	
12	Thailand: Establishment of Cassava Supply Chain Traceability System	IOT will be used for non-contact evaluation of cassava quality, online information sharing, and product tagging to ensure reliability of quality. The project will also include the introduction of tools for growth monitoring and cultivation planning based on the market needs, if starting from growth management.	-

Source: JICA Survey Team

## CHAPTER 2 PILOT PROJECT FOR DIGITAL MATCHING SUPPORT BETWEEN VEGETABLE FARMERS AND BUYERS (VIET NAM)

### 2.1 Project Summary: Project Design Matrix

Due to the decrease in demand amid the COVID-19 pandemic, vegetable production farmers have faced difficulties in securing sales destinations. In addition, there are still restrictions on bilateral transactions, thus, they need to keep social distances, expand non-contact sales, and create new online business opportunities.

Under these circumstances, a pilot project was conducted in Viet Nam to create a membership database for promoting new transactions through digital matching. This pilot project targets a “Distribution Enhancement and Strengthening approach”. In this pilot project, agricultural cooperatives that grow safe vegetables and have acquired Basic GAP and/or VietGAP and buyers that handle such vegetables are listed and registered online. Also, to create business opportunities, the pilot project included the actual matching event between members registered in the database as one of the pilot activities.

The expected outputs of the pilot project are; 1) Agricultural cooperatives and buyers are connected through the membership database, which will contribute to securing sales channels, 2) Matching opportunities are generated for the members (agricultural cooperatives and buyers) registered in the database, 3) The number of new farmers and registered members are increased by providing updated information from Agriculture Marketing Plat Form (AMPF) as an incentive, and 4) The pilot project provides a venue for matching between individual farmers and buyers e.g., through Facebook. The project Design Matrix (PDM) of the Pilot Project is as shown in the next table.

AMPF is a platform established in the "Technical Cooperation Project on Development Planning of Agriculture Sector in Nghe An" completed in March 2019. The role of AMPF in the project was as follows.

- Establishment of a database for FVC stakeholders of Nghe An agricultural and livestock products
- Promotion of marketing activities for agricultural and livestock products in Nghe An through discussion meetings among FVC stakeholders
- Gathering information on agricultural and livestock product needs in domestic and international markets
- Disseminate market needs information to producers and support production of agricultural and livestock products that meet those needs.

After the above project was completed, AMPF was not functioning sufficiently, so JICA dispatched " JICA Advisor for Food Value Chain Promotion in Viet Nam " to promote FVC and reactivate AMPF in Nghe An Province from 2021. According to the AMPF website as of March 2022, the role of AMPF is as follows.

- Collect and share information about the province's key agricultural products with domestic and international markets.
- Exploiting potential domestic and international customers to shape and build new sales channels.
- Connecting supply and demand of new agricultural products in the province, contributing to promoting agricultural product consumption.
- Building a database of enterprises, cooperatives, groups, farmer households, etc. related to the market of agricultural products in Nghe An.
- Build value chain models.
- PR of agricultural products of Nghe An Province to promote product consumption.
- Organize capacity-building training for participants in the value chain of agricultural products.
- Perform several other tasks assigned by the Provincial People's Committee and the Department of

## Agriculture and Rural Development (DARD).

**Table 2.1.1 Project Design Matrix**

Country	Viet Nam	Target FVC	Vegetable
Project	Pilot Project for Digital Matching Support between Vegetable Farmers and Buyers		
Purpose	Digital matching creates new transactions between producers and buyers (trader, distributor, wholesaler, retailer, etc.) and improves farmers' resilience in securing sales channels		
Location	Nghe An Province (a province located in the north-central region, about 300 km from Hanoi towards south direction, which takes about 1 hour by plane or about 5 hours and 30 minutes by car)		
Beneficiaries	Vegetable Farmers in Nghe An Province and Buyers (trader, distributor, wholesaler, retailer, etc.)		
Related Project	JICA Advisor for Food Value Chain Promotion in Viet Nam		
Relevant Organization	Agriculture Marketing Platform (DARD in Nghe An Province)		
<p>Rationale:</p> <p>Due to the decrease in demand amid the COVID-19 pandemic, vegetable farmers have had a difficulty of securing sales destinations. In addition, there are still restrictions on bilateral transactions and the farmers are required to secure social distances, expand non-contact sales, and create new online business opportunities.</p> <p>Under such circumstances, it is necessary to create a membership database for the purpose of non-contact transaction matching between producers and buyers. The pilot project digitally lists farmers who grow safe vegetables in agricultural cooperatives that have acquired Basic Gap and/or Viet GAP. In addition, the actual matching events of the members registered in the database may be included as one of the pilot activities to create matching opportunities between the producers and the buyers.</p>			
<p>Outputs:</p> <ol style="list-style-type: none"> <li>1) Agricultural cooperatives and buyers are connected through the membership database, which contributes to securing sales channels.</li> <li>2) Matching opportunities are generated for the members (agricultural cooperatives and buyers) registered in the database.</li> <li>3) The number of new farmers and registered members is increased by providing updated information from AMPF (DARD) as an incentive.</li> <li>4) The pilot project provides a venue for matching between individual farmers and buyers (e.g., through the Facebook marketplace).</li> </ol>		<p>Indicators :</p> <ol style="list-style-type: none"> <li>1) AMPF staff can utilize the membership database and update the membership database at least once during the pilot project period.</li> <li>2) A matching forum* is held at least once by AMPF.</li> <li>3) AMPF staff posts the latest information of DARD at least twice during the pilot project period.</li> <li>4) The number of registered members of the Facebook group exceeds 100 farmers, and AMPF staff can manage it.</li> </ol>	
<p>Activities :</p> <ol style="list-style-type: none"> <li>1) Create a member database by improving and updating the AMPF website (<a href="https://ampf.vn/">https://ampf.vn/</a>), and digitally list farmers who grow safe vegetables for Basic GAP and/or Viet GAP in agricultural cooperatives.</li> <li>2) Hold an online matching forum for vegetable farmers and buyers listed in the member database.</li> <li>3) Build a system that allows the latest information on DARD (support, market information, etc.) to be sent to the agricultural cooperatives registered in the database.</li> <li>4) Establish the "Nghe An Province Vegetable Wholesale" group on Facebook to encourage individual farmers to participate.</li> </ol>		<p>Input :</p> <p>Equipment</p> <ol style="list-style-type: none"> <li>1) Laptops</li> <li>2) Tablets</li> <li>3) Printers</li> <li>4) Internet connection devices</li> <li>5) Webcam</li> <li>6) Tripod</li> <li>7) Speaker</li> <li>8) Microphone</li> <li>9) Projector</li> <li>10) Vegetable quality checker</li> </ol> <p>Personnel</p> <ol style="list-style-type: none"> <li>1) Coordinator</li> <li>2) Activity support staff</li> <li>3) IT engineer</li> </ol> <p>Others</p> <ol style="list-style-type: none"> <li>1) Cost for Matching forum</li> <li>2) Cost for Training</li> <li>3) Server</li> <li>4) Rent-a-car</li> </ol>	

\*Matchmaking forum is a term used in the SHEP approach and generally refers to business matching and business talks.

The pilot project was kicked off at the beginning of September 2021 and has completed in January 2022. It has been implemented by the AMPF, composed of 13 staff, and supported technically and financially by the JICA Survey Team. IT engineers have been employed and they worked for upgrading the AMPF

website. The pilot project provided AMPF with online-meeting devices and supplied tablets, vegetable quality checkers, monitoring camera to support the activities for the target agricultural cooperatives and buyers.

## **2.2 Implementation Modality, Players, Stakeholders and Consensus Making**

### **2.2.1 Implementation Modality, Players, Stakeholders**

AMPF was formally established through a Letter of Decision issued by the Provincial People's Committee (PPC) of Nghe An Province on June 15, 2016. The AMPF is a special unit under the Project Management Unit of Nghe An DARD to provide the platform functions to various actors involved in the agricultural food value chain. In June 2022, thirteen staff were re-assigned in AMPF's activities, all of whom were working part-time. As of January 2022, three staff are fully assigned to AMPF, while other staff has other assignments apart from AMPF. AMPF members are from not only DARD but also Provincial People's Committee (PPC) and Department of Industry and Trade, etc.

This pilot project is mainly implemented by three fully assigned members of AMPF with the activities; 1) To create a member database by improving and updating the AMPF website (<https://ampf.vn/>), and digitally list farmers who grow safe vegetables for Basic GAP and/or VietGAP in agricultural cooperatives, 2) To hold an online matching forum for vegetable farmers and buyers listed in the member database, 3) To build the latest information system of DARD such as market information to be sent to the agricultural cooperatives registered in the database, and 4) To establish the "Nghe An Province Vegetable Wholesale" group on the Facebook to encourage individual farmers to participate.

Apart from the AMPF staff, one Vietnamese coordinator has been employed as the liaison staff between the JICA Survey Team and the AMPF staff. He prepares and submits weekly reports to the JICA Survey Team to inform the project progress or current issues. Also, he sends feedback from the JICA Survey Team to the AMPF staff for the smooth implementation of the pilot project. In addition, a professional IT engineer has been employed to update and develop the website of AMPF.

### **2.2.2 Consensus Making for the Pilot Project Design and Implementation**

Based on the results of the FVC survey targeting vegetable production farmers in Viet Nam, the JICA Survey Team proposed the pilot project, and prepared the Project Design Matrix (PDM) and Plan of Operation (PO). Referring to the PDM and the PO, the stakeholders, namely, AMPF, the JICA Advisor (JICA Advisor for Food Value Chain Promotion in Viet Nam), the JICA Survey Team and JICA Viet Nam office participated in the kick-off meeting held on September 13, 2021, and they agreed on the proposed activities of the pilot project.

During the meeting, the JICA Viet Nam office said that it is important to differentiate safe and healthy vegetables from ordinal ones in the pilot project activities and to monitor/record volumes of sales before/after the proposed matching meeting to examine the achievement of project evaluation indicators. Besides, the JICA Advisor emphasized that it is important for the AMPF to be fully involved in the activities, so that the results will be reported to the Government of Viet Nam but also other ASEAN countries.

## 2.3 Activities, Monitoring and Evaluation of the Pilot Project

### 2.3.1 Activities, Monitoring and Follow Up

The pilot project was kicked-off at the beginning of September 2021 when the COVID-19 restriction was still very strict. Such situations caused a delay of the planned activities in September, namely, survey works. According to the original schedule, the matching event was supposed to be held in early October 2021. However, vegetable harvest was also delayed due to heavy rains and started at the end of November, so that AMPF staff revised the schedule and postponed some activities to December 2021 and January 2022. Thus, whole activities are somehow delayed compared with the original one. During the implementation process, AMPF members have regularly received advice, technical support and suggestions from the JICA Survey Team as well as the JICA Advisor, e.g., how to collect database information under the movement restriction against COVID-19.

The content on the AMPF website was developed from September to December 2021. The AMPF and JICA Survey Team continuously exchanged ideas and opinions to improve the content of the website, especially to upgrade the functions and database. By the end of December 2021, the new AMPF website was completed including the function of matching producers and buyers. Information on market needs was also posted, and AMPF fully updated the website database.

From November to December 2021, AMPF and JICA Survey Team held a series of matching events. JICA Advisor technically supported AMPF at Vinh Orange Matching Event (held on November 26, 2021) and VietGAP Matching Forum (December 2, 2021) that connects producers and buyers. Besides, JICA Advisor also gave advice on One Commune One product of Viet Nam (OCOP), trade fairs and exhibitions. Advice to AMPF and participants agricultural cooperatives are, e.g., how to showcase products at the event and how to attract customers

Through the matching events from November to December 2021, the agricultural cooperatives with VietGAP in Nghe An were able to gain experiences in organized activities for the production and sales of vegetables, even under the influence of the COVID-19 pandemic. Specifically, by participating in the matching events, the cooperatives learnt how to display products, information on producers to be provided, needs of buyers, and the quality and quantity of agricultural products that the buyers want, with the advice of JICA advisor and AMPF.



AMPF staffs surveyed in Nghi Long Agricultural cooperative

During the implementation process, AMPF members have regularly received advice, technical support and suggestions from the JICA Survey Team as well as the JICA Advisor, e.g., how to collect database information under the movement restriction against COVID-19.



Upgraded AMPF Website



Vinh Orange Matching Event held by AMPF on November 26, 2021



The JICA Survey Team provided advice to hold the VietGAP Matching Forum. For example, the team suggested that AMPF should limit the number of participants to facilitate communication amid the COVID-19 instead of organizing a large event and invite local traders who could be future business partners of agricultural cooperatives. The team also suggested exchanging participants' profiles in advance, so that participants can start negotiations immediately after they have met without wasting time during the forum. In addition, JICA Advisor emphasized the importance of this event not only for business but also for strengthening trust among FVC stakeholders. JICA Advisor also screened a video showing a case study of how Japanese retailers are exhibiting agricultural products.

The following table shows the Plan of Operation (PO) of the pilot project and a comparison between the planned activities and the implemented ones.

**Table 2.2.1 Plan of Operation (PO): Pilot Project for Digital Matching Support between Vegetable Farmers and Buyers, Viet Nam**

	by AMPF	by JICA Team	Sep 2021				Oct 2021				Nov 2021				Dec 2021				Jan 2022			
			1w	2w	3w	4w	1w	2w	3w	4w	1w	2w	3w	4w	1w	2w	3w	4w	1w	2w	3w	4w
<b>1) Create a member database by improving and updating the AMPF website (https://ampf.vn/), and digitally list farmers who grow safe vegetables for Basic GAP or/and Viet GAP in agricultural cooperatives.</b>																						
<b>Breakdown of Activity</b>																						
1.1. Collecting data and surveys	○	○																				
Progress																						
1.1.1 Survey Basic GAP or/and VietGAP agricultural cooperatives	○	○																				
Progress																						
1.1.2 Survey vegetable shops, schools, restaurants, hotels, logistic companies	○	○																				
Progress																						
1.1.3 Survey vegetable wholesalers in Vinh wholesale market	○	○																				
Progress																						
1.1.4 Survey vegetable processors	○	○																				
Progress																						
1.2 Updating data of AMPF website	○	○																				
Progress																						
1.3 Procurement of equipment for AMPF and agricultural cooperatives	○	○																				
Progress																						
-Selecting device specification, quantity	○	○																				
Progress																						
-Purchasing Equipment for AMPF	○	○																				
Progress																						
-Purchasing Equipment for agricultural cooperatives	○	○																				
Progress																						
1.4 To promote AMPF's website online	○	○																				
Progress																						
1.5 Inviting field visit to the typical cooperative for directors of cooperatives, farmer, and buyers.	○	○																				
Progress																						
<b>2) Hold an online matching forum for agricultural cooperatives and buyers listed in the member database.</b>																						
<b>Breakdown of Activity</b>																						
2.1. Preparing the content of training, discussion in the	○	○																				
Progress																						





### 2.3.2 Evaluation

In general, the Pilot Project has been implemented satisfactorily in accordance with the indicators as summarized in the following table.

As of January 17, 2022, most of the planned activities have been implemented while some activities remain.

First, many registered producers and buyers on the database have exchanged their business needs. For example, Quynh Lien agricultural cooperative has transacted business with 8 buyers after matching event and nearly 10 tons of products were sold to the registered buyers in the database.

All the stakeholders, namely, AMPF, buyers and producers have gained some knowledge to promote matching business. This pilot project built a membership database on the AMPF website, provided online matching opportunities using Facebook, and provided opportunities for offline matching opportunities such as face-to-face meetings. Since the connections between the producers and buyers were strengthened during this pilot project, and they learned how to find a business partner, it is expected that new matching will be born in the future. On the other hand, if the budget and personnel can be secured, AMPF is expected to continue to provide opportunities for offline matching events even after the completion of the pilot project.



AMPF held the Nghe An VietGAP vegetable matching event on December 2, 2021

AMPF is expected to continue the pilot project to strengthen the connection among FVC stakeholders and build a system that can stably sell and purchase vegetables even in an emergency such as COVID-19. AMPF is collecting data on the number of new contracts and transactions by the matching. Even after the completion of the pilot projects, AMPF should continue to collect data to evaluate the effectiveness, impact, and sustainability of the project.

In terms of impact perspective, the project activities must be continuously expanded by the implementing organization. According to AMPF, as of January 2022, there are 628 agricultural cooperatives in Nghe An Province, of which 339 are functioning. Continued intervention by AMPF is needed to understand the trends and status of functional and non-functioning cooperatives and to promote further cooperative activities. As of January 2022, AMPF has only three staff members and therefore should increase the numbers of the staff to be assigned.

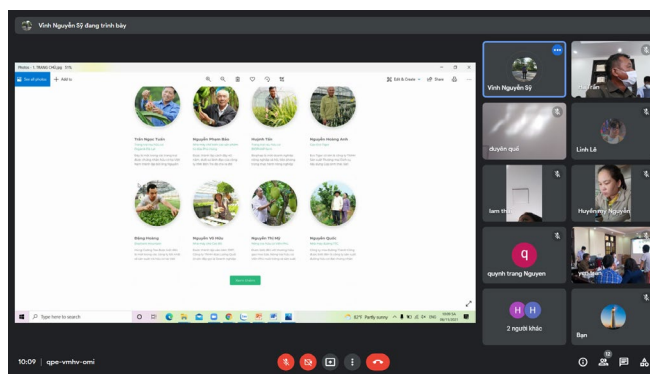
Regarding the sustainability of the pilot project, as mentioned above, the number of full-time staff of AMPF and the annual budget are limited, thus it can hardly be said that it has reached a sufficient level. On the other hand, AMPF can update database, manage the Facebook group, and hold online matching events with a limited budget and staff. Since the JICA Survey Team prepared an implementation manual of the pilot projects, AMPF can refer them to take over the activities in the pilot projects. Thus, AMPF can integrate the activities in the pilot projects into their daily works.

Table 2.3.1 Monitoring Indicators and Achievements

Country	Viet Nam	Target FVC	Vegetable	Status and Conditions as per Each Outputs & Indicators			Remarks (Change) with the Pilot Project Done
				1) 2019	2) 2020 –2021 August (before Pilot Project)	3) as of End 2021/ Beginning 2022	
Project	Pilot Project for Digital Matching Support between Vegetable Farmers and Buyers						
Purpose	Digital matching creates new transactions between producers and buyers (trader, distributor, wholesaler, retailer, etc.) and improves farmers' resilience in securing sales channels						
Outputs:		Indicators :					
1) Agricultural cooperatives and buyers are connected through the membership database, which will contribute to securing sales channels.		1) AMPF staff are able to utilize the membership database and update the membership database at least once during the pilot project period.		Updating of database could not be conducted periodically.	There was no activity in this period.	AMPF staff have been updated the membership database twice during the pilot project (in September 2021 and December 2021). As of January 2022, 131 stakeholders have been registered. Stakeholders other than AMPF can also post information in their databases.	AMPF's website was developed, and membership can be registered to update their information, post the market needs by themselves on the Website. Not only information from the domestic market but also from abroad can be linked through the website.
2) Matching opportunities are generated for the members (agricultural cooperatives and buyers) registered in the database.		2) A matching forum is held at least once by AMPF.		AMPF held 6 matching events.	There was no activity in this period.	AMPF held matching forums twice by combining online and offline. And it held an online matching forum once.	Quynh Lien agriculture cooperative traded with eight buyers listed in the database after the matching event and sold nearly 10 tons of products.
3) The number of new farmers and registered members is increased by providing updated information from AMPF (DARD) as an incentive.		3) AMPF staff posts the latest information of DARD at least twice during the pilot project period.		Information was provided on the old AMPF website, but it was infrequent, and the information was out of date.	Same as "Before COVID-19"	AMPF staff have posted the latest information on DARD more than 33 times through Facebook groups and the AMPF website.	
4) The pilot project provides a venue for matching between individual farmers and buyers.		4) The number of registered members of the Facebook group exceeds 100 farmers, and AMPF staff can manage it.		There was no Facebook group run by AMPF. There was no activity using Facebook	Same as "Before COVID-19"	The number of registered members of the Facebook group has exceeded 450. Many producers and buyers exchanged market needs within the FB group, and AMPF staff manages those exchanges.	

## 2.4 Issues Raised and Lessons Learnt in the Context of FVC Development in With/Post-COVID-19 Society

AMPF should facilitate communication between producers and buyers/ consumers for further FVC development. Still, it seems difficult for AMPF to secure sufficient budget and human resources necessary for the activities due to the series of administrative reforms, e.g., public debt management, reduction of the number of public servants, etc. by the Government of Viet Nam. Under these circumstances, it is necessary to examine ways to promote online producer-buyer matching that can be implemented with a minimum budget as the picture shows.

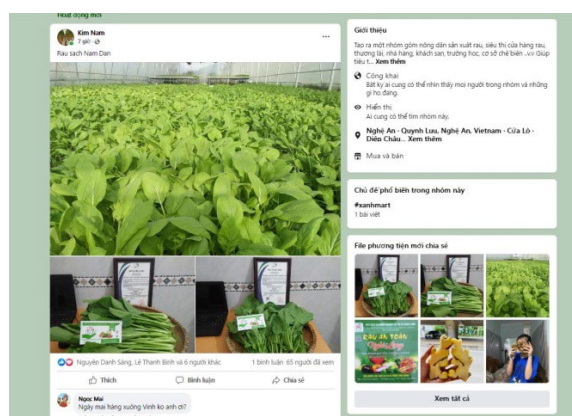


AMPF held the online matching event

Due to the limited variety of vegetables produced by many agricultural cooperatives with VietGAP, it is not possible to order a variety of agricultural products from the perspective of the buyers. To deal with such a situation, it is necessary to increase the types of agricultural products to be sold by establishing or coordinating agricultural cooperative groups consisting of multiple agricultural cooperatives.

Following the implementation of this pilot project, AMPF proposed to unite single agricultural cooperatives in Dien Chau District and Quynh Luu District as an agricultural cooperative group to further strengthen vegetable production and supply to the market and the cooperatives also agreed with the suggestion. For example, Quynh Lien agricultural cooperative plans to play a role in calling on neighboring agricultural cooperatives to have a collection function when a large number or multiple types of orders are received. AMPF has been supporting three cooperatives (Quynh Minh agricultural cooperative, Quynh Bang agricultural cooperative, Quynh Lien agricultural cooperative) together in supplying carrots for an exporter to Korea. AMPF and the agricultural cooperatives are positively responding to the issues arisen from this pilot project, and they will continue in the future.

The pilot project has assisted the producers and the buyers to change their ways to approach the market from passive way to active one through the internet. Compared to conventional supply systems from producers to distributors/purchasers, such an active approach requires improved packaging and processing controls. Especially, more investment in branding and packaging is necessary. Through the developed website and matching forums, the producers have tried to improve their images and qualities of the products, to attract more buyers for business contracts in an advanced way.



Farmers shared the products' information on Facebook. More information is provided by farmers more than before.

By implementation of the Pilot Project, the target producers with VietGAP learned how to emphasize their sales points including food safety and health protection, etc. It is a good opportunity for the consumers also, since they can access safe and healthy vegetables easier than before, and they can identify who is producing a particular kind of safe vegetables.

Amid the COVID-19, it has been difficult for consumers to buy vegetables at the on-site shops, which

results in the promotion of online shopping. Also, due to the COVID-19 pandemic, people are aware of the importance of healthy and safe foods more than before. In order to continue to attract buyers, AMPF is expected to continuously update the membership database, products, and producer information on the website.



## CHAPTER 3 PILOT PROJECT FOR ONLINE SALES SUPPORT FOR VEGETABLE PRODUCERS' COOPERATIVE (VIET NAM)

### 3.1 Project Summary: Project Design Matrix

Amid the movement restriction against the COVID-19, retailers have begun to access online sales services, and vegetable production farmers are also under the pressure to use online sales. However, farmers may have difficulties securing the quantity and quality of products required by buyers. In addition, they often do not have sufficient transportation means of their products to the collection points.

Under this circumstance, a diversified sales channel system for agricultural cooperatives is necessary. The purpose of the Pilot Project is to strengthen the resilience of farmers by diversifying sales channels including e-commerce introduction. Considering this, an approach for “Diversification of Sales Channels” is taken in the Pilot Project.

For diversification of sales channel, there are three outputs. They are 1) Agricultural cooperatives open online stores on existing mall-type E-Commerce sites and sell their products through the sites, 2) Online sales customers are acquired through the sales at physical stores (PR activities are necessary for online sales, i.e., physical stores could create a fan of vegetables to be sold on E-Commerce sites), and 3) Agricultural cooperatives have a collection function and strengthen the collective activities to support transportation from individual producers to a pick-up point.

The PDM of the Pilot Project is shown below:

**Table 3.1.1 Project Design Matrix**

Country	Viet Nam	Target FVC	Vegetable
Project	Pilot Project of Online Sales Support for Vegetable Producers' Cooperatives		
Purpose	Farmers strengthen resilience by diversifying sales channels such as online sales using e-commerce.		
Location	Nghe An Province (a province located in the north-central region, about 300 km from Hanoi towards the south, which takes about 1 hour by plane or about 5 hours and 30 minutes by car)		
Beneficiaries	Vegetable farmers in Nghe An Province		
Related Project	JICA Advisor for Food Value Chain Development in Viet Nam		
Relevant Organization	Agriculture Marketing Platform (DARD in Nghe An Province)		
Rationale:			
Amid the COVID-19, retailers have begun to use online sales services, and vegetable farmers are also under pressure to use online sales. However, the farmers are facing challenges in utilizing online sales; for example, they can hardly secure the quantity and quality required by the buyers and also transport the product to the collection point where the trader comes to pick it up. Under this circumstance, a diversified sales channel system is required by agricultural cooperatives.			
Outputs:		Indicators :	
<ol style="list-style-type: none"> <li>1) Agricultural cooperatives open online stores on existing mall-type EC sites and sell their products through the sites.</li> <li>2) Online sales customers are acquired through the sale of agricultural products at physical stores (PR activities are necessary for online sales, i.e., physical stores could create a fan of vegetables to be sold on EC sites)</li> <li>3) Agricultural cooperatives have a collection function and strengthen the collective activities to support transportation from individual producers to the pick-up point.</li> </ol>		<ol style="list-style-type: none"> <li>1) There is at least one agricultural cooperative that has opened a store on the EC site and sold its products through the site. In addition, AMPF can support farmers in opening stores on EC sites.</li> <li>2) The number of online sales customers is 10 or more per agricultural cooperative.</li> <li>3) In online sales, agricultural cooperatives can sell the required amount to the consumers without delay.</li> </ol>	
Activities :		Input :	
<ol style="list-style-type: none"> <li>1) Support the opening of stores on existing mall-type EC sites by agricultural cooperatives through OJT. The target EC sites are assumed to be Shopee, Lazada, Now (Foody), SENDO.VN, etc.</li> <li>2) Hold Marche and antenna shop events as PR activities of online sales, including distribution of pamphlets and posters.</li> <li>3) Support agricultural cooperatives to collect vegetables. In addition, through the “Pilot Project for Digital Matching</li> </ol>		Equipment <ol style="list-style-type: none"> <li>1) Laptop, tablet (SIM card compatible), printer, monitoring camera, internet connection device, vegetable quality checker</li> </ol> CP <ol style="list-style-type: none"> <li>1) Fuel costs, field allowances, etc.</li> </ol>	

between Vegetable Farmers and Buyers (B 2 B)", the project will search for a distributor who outsources transportation to the pick-up point.	Others 1) Training 2) Marche / Antenna shop event
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## 3.2 Implementation Modality, Players, Stakeholders, and Consensus Making

### 3.2.1 Implementation Modality and Players/ Stakeholders

AMPF is the implementation organization of the Pilot Project, as well as “Pilot Project for Digital Matching between Vegetable Farmers and Buyers”. There are three staff members fully assigned in the AMPF, while other staff members have other assignments apart from the ones of AMPF.

The expected roles of AMPF in the Pilot Project are 1) To support agricultural cooperatives to open their stores on existing mall-type E-Commerce sites such as Shopee, Lazada, Now (Foody), SENDO.VN, etc., 2) To organize Marche and antenna shop events as PR activities for online sales, including distribution of pamphlets and posters, and 3) To support agricultural cooperatives to collect vegetables. In addition, by “Pilot Project for Digital Matching between Vegetable Farmers and Buyers” (refer to the previous chapter), the Pilot Project will search distributors who can provide transportation means to the pick-up point.

As well as the Pilot Project mentioned in the previous chapter, one Vietnamese coordinator has been employed as the liaison staff between the JICA Project Team and AMPF staff. He prepares and submits reports weekly to the JICA team to inform the project progress and current issues. Also, he sends feedback from the JICA team to the AMPF staff for smooth implementation of the Pilot Project.

### 3.2.2 Consensus Making for the Pilot Project Design and Implementation

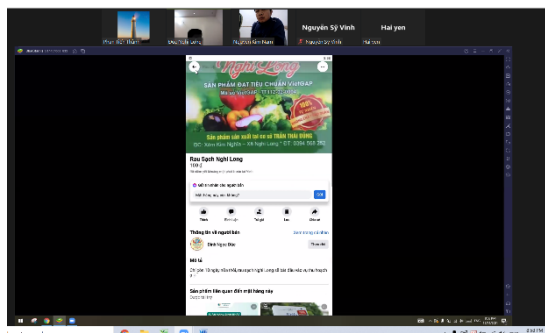
Based on the results of the FVC survey targeting vegetable production farmers in Viet Nam, the JICA team proposed the Pilot Project and prepared PO and PDM. Referring to them, the kick-off meeting was organized on September 13, 2021, and the participants, namely, AMPF staff, the JICA Advisor (Food Value Chain Development in Viet Nam), the JICA Team, and the JICA Viet Nam office agreed on the proposed activities of the pilot project. The main comments from the participants at the meeting are as follows:

- ✓ The JICA Viet Nam office commented that it is needed to examine who plays as a trainer within AMPF after the Pilot Project taking into account sustainability. Also, it is needed to consider collaboration with local organizations, which have worked with JICA before, e.g., Bibi Green, which operates food stores and sells by wholesale.
- ✓ The JICA Advisor emphasized that AMPF should be fully responsible for the implementation of the Pilot Project. AMPF is expected to take initiatives for the implementation of each of the activities.

## 3.3 Activities, Monitoring, and Evaluation of the Pilot Project

### 3.3.1 Activities, Monitoring, and Follow Up

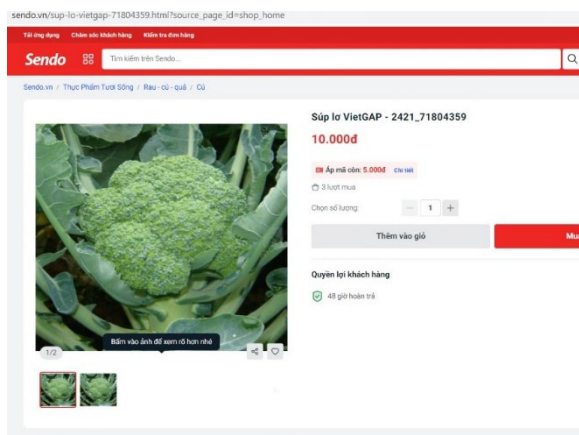
The JICA team and AMPF have prepared a tutorial manual, which instructs how to register and sell products on Facebook, E-Commerce sites like SENDO, VOSO for the target cooperatives and buyers to strengthen their business skills. In addition, the JICA team and AMPF have organized online-sale training courses for the targeting cooperatives in November 2021. Outline of the training contents was presented by the AMPF staff. After the training, the target cooperatives opened their stores on the E-Commerce site.



Training for online sale: This training was also organized in both online and face-to-face. The trainees learned how to sell product on EC sites.



Training for online sale: AMPF staff explained AMPF website.



The shop opened by the target coop on EC mall (SENDO)

AMPF and the JICA Team have organized mobile sales car events for products promotion and branding at the traditional markets in the city such as Quan Lau, Hung Dung, Quang Trung, Phong Toan markets. It aimed at sales promotion of high-quality products of the cooperatives through direct sale, which can lead to online sales in the long run. Orange sale using the mobile car was organized on 21<sup>st</sup> November as a trial, and it was very successful, thus, the sale period was extended from the planned two days to one week. In addition, the event was broadcasted on TV news on 24<sup>th</sup> November. Concerning the sale of vegetables, the harvest was delayed due to heavy rains in October. However, the sales event of VietGAP (GAP in Viet Nam) vegetables was also implemented at the end of November 2021, and the products were sold out in a short time.



Mobile sale event of orange produced in Vinh, Nghe An



Mobile sale event of VietGAP vegetables

The consumers are interested in VietGAP vegetables very much and they requested AMPF to open such events more frequently. Prices of vegetables on the sales event were a little higher than those of conventional vegetables in the traditional markets, by around 10%. Yet, many of the customers prefer VietGAP vegetables taking into account their health.

In the process of activities, some issues in terms of product promotion were identified. For example, display of products should be improved, information of producers such as contact number is not enough, and poster/banner to attract more customers should also be presented. In terms of technical matter also, it was pointed out that products were sold under the strong sunshine or too tight packaging of vegetables cannot control suitable moisture contents, which can give some damages to the vegetables.

In December 2021, AMPF and the JICA Team hired trucks to support vegetable collection from Xanh Hong Phong, Dien Thanh cooperatives to deliver to Bibi Green stores. However, Bibi Green purchased only a small amount of vegetables from the cooperatives than the truck capacity. Thus, the activities seemed not very successful. It is because Bibi Green doesn't have a sufficient storage system to store vegetables, and orders vegetables every three times per week.

The cooperatives produce only a few products with a big amount, while Bibi Green needs diverse vegetable varieties with a small amount. It means that there is a gap between the products and the needs of buyers. Furthermore, vegetable collection arrangement from the two target cooperatives was not efficient, which took a long time and caused a delay in delivery. In this way, some challenges have been observed.

Considering the weather and other natural conditions in Nghe An province, it is difficult for farmers to cultivate more varieties of vegetable throughout-year. Thus, it is needed for them to find buyers, who order a large volume of vegetables at once. In addition, it is necessary to set up a buyer group to use a truck together to collect vegetables from such several cooperatives for efficient collection and delivery. AMPF is expected to support such activities from now on.

Procedures taken in the Pilot Projects are compiled as the implementation manual, and it is expected that the manual will be utilized by AMPF to promote the online sale of agricultural products.

The PO and activity progress are presented on the following page.



Progress	Sep 2021				Oct 2021				Nov 2021				Dec 2021				Jan 2022			
	1w	2w	3w	4w	1w	2w	3w	4w	1w	2w	3w	4w	1w	2w	3w	4w	1w	2w	3w	4w
3) Support agricultural cooperatives to collect vegetables. In addition, through the "Pilot Project for Digital Matching between Vegetable Farmers and Buyers (B 2 B)", the project will search for a distributor who outsources transportation to the pick-up point.																				
<b>Breakdown of Activity</b>																				
3.1 Selecting cooperatives and distributor																				
3.2 Hiring truck for farmers																				
Overall Evaluation																				
<b>Manual Preparation</b>																				
Progress																				

Source: JICA Survey Team

Note: The line in yellow indicates the planned activity period at the time of planning, and the line in blue indicates the actual activity period.

### 3.3.2 Evaluation

#### (1) Achievement of the Project Purpose

All proposed activities have been completed, and the achievement of the proposed activities is described in Table 3.3.2. Regarding Output 1, online sale of products has yet to be conducted except trial orders, the three target cooperatives have already opened shops on the E-Commerce site, though. Thus, Output 2, acquirement of customers via online have yet to be achieved, even though the sale of vegetables and fruits by mobile car was implemented. Moreover, products of the target cooperatives were transported to Bibi Green, however, continuous collection and transportation are not done, which means that Output 3 has not been achieved. Therefore, the project objectives are not fulfilled.

The reasons for such situations, first, due to the unseasonal weather in 2021, the vegetable harvesting period was delayed, and therefore, the cooperatives have delayed the online sales on E-Commerce sites. Moreover, handling volumes at E-Commerce is limited, and the system of transaction and payment is complicated. The followings are procedures of online sale by E-Commerce.

- 1) Companies operating E-Commerce sites are not involved in the collection of products, thus, a grocery store such as Bibi Green plays as the pickup point and storage in Vinh City in the Pilot Project, and the cooperatives have to pay the storage fee to the grocery store.
- 2) The producers register on the E-Commerce sites with the address of the grocery store address as the pickup point. The cooperatives send a large volume of products to the grocery store in Vinh City for storage. When a customer sent an order on SENDO, the cooperative receives the order notification on SENDO and confirms whether the stored products are still available. The cooperatives send the order detail information to the grocery store. After that, the grocery store packs the products as ordered. SENDO sends a message to Viettel Post, a logistic company, and Viettel post dispatches a shipper to the grocery store to pick up and to deliver the packed products to the Viettel Post-delivery center. Finally, the products are delivered to the customers.
- 3) The customers can pay cash to the shippers directly, or transfer money to the account of the E-Commerce. After the shipper informs of the delivery completion to the system, SENDO transferred the money to the Wallet of cooperatives on SENDO.

It is needed for the cooperatives to send their products to the grocery shop in advance and to pay the storage fee to the shop. Also, it is necessary to manage amounts of stored products and to dispose of stale products as necessary, which are big burdens for the cooperatives.

The maximum weight and dimension of order through E-Commerce sites like SENDO are limited to 200 kg and 200cm x 200cm x 200cm, respectively. Besides, almost customers via E-Commerce sites buy a small amount, and the cooperatives consider such a transaction system is very complicated with less profit. Therefore, producers consider that it is not beneficial compared with the traditional way. General consumers, who are accustomed to direct transactions, are not interested in online sales, and it is important to change such minds of the customers for the promotion of sales on E-Commerce.

#### (2) Evaluation Workshop

On September 9, 2022, an online evaluation WS was organized to assess the series of the Pilot Project in Viet Nam, and one of the AMPF staff played the role of presenter. The JICA Advisor asked two questions, namely, frequency of the AMPF website updating and the number of visitors to the website. The AMPF staff answered that the users can update information by themselves, since the site is equipped with the latest updating system, and the users can receive market information and transaction directly from their customers on the website. So far, 19,782 visitors have accessed the AMPF website, in other words, 248 visitors/day on average.

The JICA HQ asked about the future plan of AMPF, and AMPF said (1) Building the models of VietGAP, Global GAP, and organic products to ensure matching to buyers, (2) Organization of exchange visits, training, (3) Continuous and regular updating of the product information on the website so that the stakeholders can connect, and (4) 131 OCOP products have already been certified in 2021. It is expected that AMPF can introduce 140 and more OCOP products, which will be presented on the website in 2022.

The JICA HQ asked about any ways to encourage the farmers to sell their products at E-Commerce and about their potential to do that. An AMPF responded that it is needed to satisfy high requirements to participate in E-Commerce, which is difficult for local farmers, even though they have gotten used to doing that gradually. He pointed out that both customers and producers are accustomed to direct transactions, moreover, the online sale is time-consuming, which can result in quality deterioration of the products. However, he said that the farmers can gradually participate in the E-Commerce market by the intervention of relevant authorities including AMPF. AMPF examines the provision of reliable information to the producers so that they can choose E-Commerce as one of the measures for the sale of products.

### **(3) Way forward**

It is important for AMPF to collaborate with local companies such as Bibi Green for continuous activities from now on. Regarding the sustainability of the Pilot Project, considering that the number of fully assigned AMPF staff and the annual budget is limited as mentioned in the previous chapter, such a situation can be a constraint. It is necessary for AMPF to secure enough annual budget and to set up a proper structure, which can support the agricultural crop producer cooperatives.

### **3.4 Issues Raised and Lessons Learnt in the Context of FVC Development in With/Post-COVID-19 Society**

Sales at E-Commerce sites is a good business chance to get more customers and has a high potential for business expansion. However, the only opening shops on the E-Commerce site is not enough and the logistics to deliver vegetables to customers is necessary. It is therefore needed to secure delivery means, and also connect producer groups and retailers (store systems) as one that retailers can be as the storage places for E-Commerce channel. It is also important to examine more accessible platform formation for users through the improvement of User Experience (UX) design such as reform of payment system.

Mobile sales car events can be a good tool to appeal the quality product for general consumers since organizing sales can create a business place anywhere without big space. Such cars can move to different locations where people gather. Besides, mobile sales car provides a solution to increase the supply of goods and food to the consumers during the COVID 19 restriction period. From now on such sales of crops by using the mobile car is to be promoted.

An issue of vegetable products in the sales of products on the E-Commerce is packaging, and appearance and explanation were not much attractive and clear. It is very important to appeal their products' quality and information. For example, product name, product certification, date of harvest, expiry date, address, phone number, and so on should be presented clearly. However, the producers cannot display products well to attract buyers on the sales event by the mobile car. It is needed to present such information, so that customers can more be attracted, and thus contact the producers easily.



**Table 3.3.2 Monitoring Indicators and Achievements**

Country	Viet Nam	Target FVC	Vegetable	Status and Conditions as per Each Outputs & Indicators			Remarks (Change) with the Pilot Project Done
				1) 2019	2) 2020 –2021 August (before Pilot Project)	3) as of End 2021/ Beginning 2022	
Project	Pilot Project for Online Sales Support for Vegetable Producers' Cooperatives			Before COVID19	During COVID 19	With Pilot Project Done	
Purpose	Farmers strengthen resilience by diversifying sales channels such as online sales using e-commerce.						
Outputs:		Indicators :					
1) Agricultural cooperatives open online stores on existing mall-type EC sites and sell their products through the sites.	There is at least one agricultural cooperative that has opened a store on the EC site and sold its products through the site. In addition, AMPF can support farmers in opening stores on EC sites.	1)		None	None	There are three agricultural cooperatives, which have opened online stores on the SENDO site, but they did not sell vegetables on it.	Three target agricultural cooperatives have opened stores on the EC site, but they have yet to sell their products. The reason for the situation is that volume of products is limited, and the payment system is complicated for the producers.
2) Online sales customers are acquired through the sale of agricultural products at physical stores (PR activities are necessary for online sales, i.e., physical stores could create a fan of vegetables to be sold on EC sites)	The number of online sales customers is 10 or more per agricultural cooperative.	2)		None	None	There was no transaction because the cooperatives have just posted products for a few days recently without PR activities.	Customers at traditional markets (face-to-face markets) are not interested in online sales very much. In addition, posting of products on EC mall has not been started when mobile car sales events were organized.
3) Agricultural cooperatives have a collection function and strengthen the collective activities to support transportation from individual producers to the pick-up point.	In online sales, agricultural cooperatives can sell the required amount to the consumers without delay.	3)		None	None	There was no transaction because the cooperatives have just posted products for a few days recently without PR activities.	The bottleneck of continuous collection and delivery from product places to collection points is how to cover the cost. It is needed to request some companies such as Bibi Green to collaborate for the collection and delivery.



## CHAPTER 4 PILOT PROJECT FOR HORTICULTURE QUALITY IMPROVEMENT AND SALES CHANNEL ENHANCEMENT (INDONESIA)

### 4.1 Project Summary: Project Design Matrix

Under the COVID-19 pandemic, traders/collectors have had difficulties visiting farmers due to movement restrictions. Market demands for horticultural products have also been fluctuating since the beginning of the COVID-19 pandemic, often given the closure of foodservice providers due to lockdowns. Thus, horticulture farmers are forced to reduce the production to avoid the risks of price fall downs and post-harvesting losses.

On the other hand, some modern markets, e.g., supermarkets, have increased their sales due to growing demands for safer products. Likewise, many E-Commerce businesses have started selling fruits and vegetables online. However, as the competition gets tough, E-Commerce can hardly be successful in many cases unless one could provide specific services to attract customers.

To continue their marketing and sales under with/post-COVID-19 society, farmer groups must improve their market access, by increasing their capacity to supply horticultural products based on the fluctuating market demands. It is also necessary to improve the quality of their horticultural products to expand their sales channels to modern markets ensuring more stable shipment/ delivery.

This pilot project examines how introduced facilities such as cold storage could contribute to adjusting the demand-supply gap of horticulture products. The pilot project will also aim at improving their access to modern markets such as supermarkets, by providing post-harvesting facilities i.e., packing and washing machines. In addition, the farmer group's webpage will be developed, on which the farmer groups may post and promote their horticulture products and expand their sales channels and opportunities by using such digital technologies.

**Table 4.1.1 Project Design Matrix**

Country	Indonesia	Target FVC	Vegetables
Project	Pilot Project for Horticulture Quality Improvement and Sales Channel Enhancement		
Purpose	Horticulture farmer groups manage cold storage. They can supply the vegetables according to the market demand and improve the quality, whereby establish new sales channels to modern markets, e.g., a large customer of supermarkets.		
Location	Cianjur Kabupaten, West Bandung Kabupaten, West Java Province		
Beneficiaries	Mujagi and Saluyu Farmer Group, located at Cianjur Kabupaten (approximately 90km towards the south-south-eastern direction from Jakarta) Sinar Mukti Farmer Group, located at West Bandung Kabupaten (approximately 140km towards the south-eastern direction from Jakarta)		
Related Project	Public-Private-Partnership Project for the Improvement of the Agriculture Product Marketing and Distribution System (Phase 2)		
Relevant Organization	Directorate General of Horticulture, Ministry of Agriculture (MOA), JICA, IJHOP4-2 team, Kabupaten DINAS		
<p>Rationale:</p> <p>Under the COVID-19 pandemic, traders/ collectors have had difficulties visiting the producer farmers due to movement restrictions while there are many modern markets, e.g., supermarkets that have increased their sales contrary to the so-called HoReCa(*) businesses. At the same time, under the movement restriction enforced, many E-Commerce business entities have started their sales online, thereby competition has been tougher. Therefore, without specific services to be available to provide, E-Commerce sales can hardly be succeeded.</p> <p>Given the above situation, it is necessary for farmer groups that they need to improve the quality of their horticulture produces, e.g., by introducing cold storage which can also contribute to adjusting the demand-supply gap, washing machine and also packing machine, whereby the groups are expected to access to modern markets such as supermarkets.</p> <p>In addition, with the group's webpage in which they can post their horticulture products for the promotion purpose, the farmer groups are expected to have new sales channels by utilizing such digital technologies, whereby they can diversify sales channels targeting not only ordinary customers but also large customers such as supermarkets.</p>			
<p>Outputs:</p> <ol style="list-style-type: none"> <li>1) High-quality horticulture products are supplied according to demand by introducing modern post-harvest technology (e.g., the introduction of cold storage),</li> <li>2) New customers are acquired through the webpage and online markets, and</li> <li>3) On-line sales marketing is successively conducted through the supply of high-quality horticulture products together with attractive marketing.</li> </ol>		<p>Indicators:</p> <ol style="list-style-type: none"> <li>1) Horticulture produces are supplied according to the customer demand in terms of both quality and quantity by utilizing the procured equipment properly,</li> <li>2) New customers are acquired by 10% increase, and</li> <li>3) Successive online sale activities are conducted.</li> </ol>	
Activities:		Input:	

1) Provide such facilities/ equipment as cold storage, vegetable washing machines, and packing machines to the target farmer groups together with the necessary training for the proper use of those,	Equipment 1) Cold storage 2) Washing machine 3) Packing machine
2) Support the establishment of the farmer groups' webpage and online marketing platform targeting specific customers with the introduction of relevant IT tools/ equipment,	4) Note type PC 5) Printer 6) Personnel
3) Provide necessary training to the farmer groups on online marketing and its promotion activities, including procurement of necessary IT tools/ equipment.	7) Monitoring, Supporters Others 1) Promotion materials; 1 LS 2) Training: as required 3) Car

\* HoReCa stands for Hotel, Restaurant, and Catering (or Caffe).

The pilot project consists of three activities. First, aiming to improve farmer groups' access to modern markets (e.g., supermarket), the pilot project provides post-harvesting facilities (e.g., packing and washing machine, cold storage, trolley, generator). In addition, the pilot project supports basic materials such as vegetable storage boxes, plastic pallets, digital scales, web cameras, tripods, etc. The pilot project also supports warehouse construction and rehabilitation to accommodate these facilities. After the provisions, it is expected that post-harvest handlings will be carried out by the farmer groups according to the market's requirement, and the storage and sales capacities of horticulture crops will be improved.

Secondly, the pilot project supports the information technology (IT) equipment and the development of the group's web page. The farmer groups may post and promote their horticulture products and expand their sales channels and opportunities by using digital technologies.

Thirdly, to continue their marketing and sal /post-COVID-19 society, the requirements are not only by providing the facilities but also improving the proving the of farmer group's selling skills. The pilot project is to administer training by inviting experts in post-harvest handling, product branding, and online sales promotion. The main facilities provided through the pilot project are listed in Table 4.1.2a, Table 4.1.2b, Table 4.1.2c.

**Table 4.1.2a List of Main Facilities Provisioned for Mujagi Farmer Group Union**

NO	Description	Unit
<b>A</b>	<b>Main Equipment</b>	
1	Split Cold storage	1
2	Leaf Vegetable Washing Machine	1
3	Hydraulic Trolley	1
4	Generator	1
<b>B</b>	<b>IT Equipment for online Marketing</b>	
5	Laptop	1
6	Printer	1
7	LCD In focus IN114XV	1
<b>C</b>	<b>Warehouse Improvement</b>	
8	Floor partition and Tile Installation	1

Note: In addition, basic materials such as vegetable storage boxes, plastic pallets, digital scales, web cameras, tripods are supported.

**Table 4.1.2b List of Main Facilities Provisioned for Saluyu Farmer Group**

NO	Description	Unit
<b>A</b>	<b>Warehouse Improvement</b>	
1	Warehouse	1
2	Parking area	1
3	Washing Pool	1

Note: In addition, basic materials such as vegetable storage boxes, plastic pallets, digital scales are supported.

**Table 4.1.2c List of Main Facilities Provisioned for Sinar Mukti Farmer Group**

NO	Description	Unit
<b>A</b>	<b>Main Equipment</b>	
1	Leaf Vegetable Washing Machine	1

NO	Description	Unit
2	Stainless Vegetable Rack	1
3	Showcase Cold Storage with Two Glass Doors	2
<b>B</b>	<b>IT Equipment for online Marketing</b>	
4	Laptop	1
5	Printer	1
6	LCD in focus IN114XV	1
<b>B</b>	<b>Warehouse Improvement</b>	
7	New Construction of improvement of packing and sorting house	1

Note: In addition, basic materials such as vegetable storage boxes, plastic pallets, digital scales, web cameras, tripods are supported.

## 4.2 Implementation Modality, Players, Stakeholders, and Consensus Making

### 4.2.1 Implementation Modality and Players / Stakeholders

The pilot project was designed and operated by the JICA Survey team (i.e., the Team). It was designed to create synergies with an ongoing JICA technical cooperation project, that is ‘Public-Private-Partnership Project for the Improvement of the Agriculture Product Marketing and Distribution System (IJHOP4), Phase 2.

One of the goals of IJHOP4-2 project is to strengthen the horticulture value chain by enhancing effective collaboration among farmer groups in terms of production, distribution, and marketing. To do this, core (model) farmer groups will play a central role in co-working with surrounding farmer groups. By organizing the supply system centered by such core farmer groups, the IJHOP4-2 project aims to establish the value chain for fresh vegetables and fruits connecting between production sites and Jakarta Market.

To achieve this goal, the pilot project assists for the capacity building for the potential core farmer groups (i.e., the beneficiary farmer group of this pilot project), by procuring facilities and providing training that is necessary for modern market distribution and online sales.

In total, there are three farmer groups selected for the implementation of the pilot project, where are in West Java Province. Those three farmer groups are:

- 1) Mujagi farmer group Union, located at Cianjur Kabupaten
- 2) Saluyu farmer group, located at Cianjur Kabupaten
- 3) Sinar Mukti farmer group, located at West Bandung Kabupaten

Table 4.2.1 summarizes the profiles of three farmer groups. These farmer groups were screened from the beneficiaries of IJHOP4-2 considering 1) potentials of market access to modern market as well as online sales activities; 2) capacities to handle and maintain post-harvesting facilities and IT equipment, including bearing the operational costs. During the screening, there was a comment from a stakeholder that Saluyu farmer group might not have enough capacity to handle these machinery and online sales.

Considering the comment, the JICA team decided not to install large machinery and IT equipment such as cold storage, vegetable washing machines, PC, and printers for Saluyu farmer group. While considering their requests and business plan, the Team decided to support certain basic materials such as vegetable storage boxes, digital scale, and in addition warehouse construction.

**Table 4.2.1 Profiles of Three Farmer Groups**

Name of Farmers' Group	Multi Tani Jaya Giri (MUJAGI) Farmer Group Union	Saluyu Farmer Group	Sinar Mukti Farmer Group
Date of Establishment	2 January 2009	10 August 2009	9 September 2008
Total of Member	150 members	142 members	24 members
Total of Farmland	100 Ha	30 ha	15 ha

Name of Farmers' Group	Multi Tani Jaya Giri (MUJAGI) Farmer Group Union	Saluyu Farmer Group	Sinar Mukti Farmer Group
Head of Group	Suhendar	Acep Sofyan Hadi	Muhammad Taufik
Secretary	Dina Sdastia Dewi, S.	Neneng Ayi Purnama	Yahya Sunarya
Treasurer	Rahmat Hidayat	Dani	Eman Hermawan
Main Crops	Highland vegetable, chili, garlic, and Japanese varieties of vegetable (e.g., Momotaro Tomato).	Tomato, Leek, Chili, Cabbage, Carrot, Cucumber, Broccoli, Chayote, Mustard	Broccoli, Lettuce, Tomato, Baby green Beans, Edamame, and Bell pepper
Main Markets	Suppliers selling to modern markets (e.g., supermarket, HoReCa)	Middlemen selling to the local market.	Middlemen selling to the local market, directly selling to consumers

Source: JICA Survey Team

The pilot project has been implemented in collaboration among JICA, Ministry of Agriculture, JICA Team, field staff of IJHOP4-2, and by the selected farmer groups. The roles of each stakeholder are summarized below;

#### 1) Directorate General of Horticulture, Ministry of Agriculture

- ✓ Coordinating JICA's collaboration with the Directorate General of Horticulture and related stakeholders (Provincial Dinas, Dinas of Kabupaten Cianjur, and Kabupaten West Bandung),
- ✓ Providing advice for the smooth implementation, and
- ✓ Providing instructions to farmer groups to use equipment properly and maintain.

#### 2) KABUPATEN DINAS (Cianjur and West Bandung):

- ✓ Together with the JICA team, doing initial identification of farmer group's equipment needed,
- ✓ Carrying out monitoring and equipment inspection, which is delivered to the farmer group,
- ✓ Together with the JICA team, doing the monitoring of farmer groups using the post-harvest equipment, and
- ✓ In the future, the Dinas will continue to assist selected farmer groups in using the equipment so that they can keep maintaining the activities.

#### 3) IJHOP4-2 Team:

- ✓ Together with the JICA team, doing the initial selection of the target farmer group,
- ✓ Dispatching field manager to provide advice for smooth implementation and communication at the sites, and
- ✓ After completion of the pilot project, carefully monitor and follow up the machinery to be used.

### 4.2.2 Consensus Making for the Pilot Project Design and Implementation

At the beginning of the pilot project, the JICA team visited each farmer group together with the IJHOP4-2 team to discuss their business plan with expected cropping patterns with the pilot project. Then, each farmer group identified necessary post-harvesting facilities, IT equipment, and training to realize their business plans in September 2021. The plans were approved among stakeholders (i.e., DGH, JICA, IJHOP4-2, and Kabupaten and Provincial DINAS) through online meetings held in October 2020.

In parallel with the above discussion, the JICA team and the farmer groups identified the candidate sites of warehouses newly constructed. As a result, the identified locations were owned by the leaders of each farmer group. After their internal discussions, the leaders issued statement letters, which declare that the lands would be donated to the farmer group with no disputes in the future and witnessed by their family members and representatives of the farmer group members.

### 4.3 Activities, Monitoring, and Evaluation of the Pilot Project

#### 4.3.1 Activities, Monitoring, and Follow Up

Due to the strict COVID-19 restriction in Indonesia, the planned activities had delayed in August and September 2021, particularly, discussions on the business plan and warehouse constructions. The JICA team carried out procurement of machinery from October till around the end of November 2021. A Web-developer team developed the group webpages and prepared user manuals from September to October 2021. The construction service providers have worked for the warehouse construction from October 2021 till January 2022.

In November 2021, training for webpage utilization and content update was held to familiarize the appointed IT personnel in charge within the members of farmer groups. The training undertook such issues of how the farmer groups should utilize and update the web pages. On 14-15 December 2021, a two days session about post-harvesting techniques, online sales, and promotion strategy was also held (see Table 4.3.1):

**Table 4.3.1 Training Sessions hosted by the Pilot Project**

No	Content of Training	Trainer	Date plan
1	Webpage utilization and content update	Web Developer	25 November 2021 and 30 November 2021
2	Vegetable Post Harvest Handling	Central Agriculture Extension Agency (BPPT)	14 December 2021
3	Product Branding and Promotion	Communication Expert from IPB University	14 December 2021
4	Utilization of E-Commerce platforms and Social media in increasing the promotion and online selling	A representative from Sayur Box (an Indonesian online grocery)	15 December 2021

Source: JICA Survey Team

In January 2022, the three farmer groups have confirmed operational and maintenance arrangements for procured equipment and facilities after the completion of the pilot project. It was confirmed that the nominated persons listed in Table 4.3.2 will be responsible for taking care of the equipment and facilities.

**Table 4.3.2 List of Persons and Division in Charge of Operation & Maintenance of Equipment**

No	Farmer Group	Person In Charge	Position and Role
1	Mujagi Farmer Group Union	Mr. Asep Rahmat Hidayat	Warehouse & Distribution managers, In charge of Machinery OM, making inventories.
		Mr. Dadan Ramdani	
		Ms. Dina Sastia Dewi	Financial Administration, in charge of IT equipment.
2	Saluyu Farmer Group	N.A (only basic materials were procured)	N.A
3	Sinar Mukti	Mr. Eman Hermawan	Treasurer of the Farmer Group, In charge of Machinery OM
		Mr. Kemal Noviansyah	Marketing Division, IT Administration, in charge of IT equipment.

Source: JICA Survey Team

**Table 4.3.3 Plan of Operation (PO): Pilot Project No.3: Pilot Project for Horticulture Quality Improvement and Sales Channel Enhancement, Indonesia**

1) Provide facilities/equipment such as cold storage, vegetable washing machines, and packing machines to the target farmer groups and conduct necessary training to support the proper usage of such facilities/equipment.	by JICA Team	Aug 2021				Sep 2021				Oct 2021				Nov 2021				Dec 2021				Jan 2022			
		1w	2w	3w	4w	1w	2w	3w	4w	1w	2w	3w	4w	1w	2w	3w	4w	1w	2w	3w	4w	1w	2w	3w	4w
1.1. Interviewing Farmer Group what support they need for quality improvement and sales channel enhancement.	O																								
1.2. Farmer groups to draft business plan and cropping pattern after the installation of the facilities/equipment and training.	O																								
1.3. Selecting the specification and quantity of facilities/equipment	O																								
1.4. Organizing an online meeting with DGH, JICA, IJHOP4-2, and Kabupaten / Provincial DINAS for the approval of the activity.	O																								
1.5. Procuring the facilities/equipment and inspection.	O																								
1.6. Delivering and installment of equipment	O																								
1.7. Operational guide of equipment	O																								
1.8. Field visitation to identify the sites of warehouse construction	O																								
1.9. Selection of Constructors	O																								
1.10 Monitoring the progress of warehouse construction	O																								
1.11 Ceremony of Handover	O																								
1.12 Monthly Review and Overall Evaluation	O																								
2) Support the establishment of the farmer group's webpage and online marketing platform targeting specific customers with the introduction of relevant IT tools/equipment.	O																								



Breakdown of Activity	by JICA Team	Aug 2021				Sep 2021				Oct 2021				Nov 2021				Dec 2021				Jan 2022			
		1w	2w	3w	4w	1w	2w	3w	4w	1w	2w	3w	4w	1w	2w	3w	4w	1w	2w	3w	4w	1w	2w	3w	4w
2.1. Discussing contents of webpage between JICA Project team with farmers	○																								
2.1.1. Selecting webpage developer	Progress																								
2.2. Organizing an online meeting with the IT engineer team about an outline of the webpage.	○																								
2.3. Discussing contents of webpage between web-developer and farmers	○																								
2.4. Web-developer team to construct the webpage and user manual.	○																								
2.5. Supervision and acceptance of the webpage design	○																								
2.6. Web-developer to train farmers how to operate and maintain the webpage.	○																								
2.7. Maintenance guarantee from web developer to farmers for troubleshooting.	○																								
2.8. Monthly Review and Overall Evaluation	○																								
<b>3) Provide necessary tr to the farmer groups on the onaining marketing as well as its promotion activities</b>																									
Breakdown of Activity	by JICA Team																								
3.1 Discussing with farmers about the utilization of E-Commerce and social media platforms for product promotion and marketing	○																								
3.2 Preparing criteria, features for utilization of E-Commerce and social media platforms based on the results of the discussion	○																								
3.3 Organizing t of online marketing through E-Commerce and social media platforms for farmers	○																								
3.4 Training the use of E-Commerce, product branding, and social media	○																								
3.5 Monitoring the use of webpage and online marketing	○																								
3.6 Monthly Review and Overall Evaluation	○																								

Source: JICA Survey Team

Note: The line in yellow indicates the planned activity period at the time of planning, and the line in blue indicates the actual activity period.

### 4.3.2 Evaluation

The following table shows the status and conditions of activities based on the proposed ones. The assessment is done based on the achievements of two Farmer Group (Mujagi and Sinar Mukti) because the pilot project did not support large machinery and IT equipment for Saluyu farmer group.

**Table 4.3.4 Monitoring Indicators and Achievements**

Country	Indonesia	Target FVC	Vegetable	Status and Conditions as per Each output & Indicators			Remarks (Change) with the Pilot Project Done
Project	Pilot Project for Horticulture Quality Improvement and Sales Channel Enhancement			1) 2019	2) 2020 –2021 before Pilot Project	3) as of End 2021/ Beginning 2022	
Purpose	Horticulture farmer groups manage cold storage . They can supply the vegetables according to the market demand and improve the quality, whereby establish new sales channels to modern markets, e.g., a large customer of super-markets.			Before COVID19	During COVID19	With Pilot Project Done	
Outputs:	Indicators :						
1) high-quality horticulture products are supplied according to demand by introducing modern post-harvest technology (e.g. introduction of cold storage),	1) Horticulture produces are supplied according to the customer demand in terms of both quality and quantity by utilizing the procured equipment properly, (Average monthly total sales of horticulture produces)			Mujagi: 122,267,000 Rps per month (Rough calculation) Sinar Mukti: 210,000,000 Rps per month (Rough calculation)	Mujagi: 8,668,000 Rps Per Month (Rough calculation) Sinar Mukti: 94,000,000 Rps per month (Rough calculation)	Mujagi: 87,972,000 Rps Per Month (Rough calculation) Sinar Mukti: 285,000,000 Rps per month (Rough calculation)	Volumes of horticulture crops per shipment were increased (e.g., in Mujagi, 2-3 tons per shipment to 5-6 tons per shipment)
2) New customers are acquired through the webpage and online markets.	2) New customers are acquired by 10% increase (The number of modern suppliers)			Mujagi: 2 Suppliers Sinar Mukti: 1 Suppliers	Mujagi: 2 Suppliers Sinar Mukti: 1 Supplier and C2C platforms	Mujagi: 5 Suppliers & 3 new contracts Sinar Mukti: 2 Suppliers, 1 B2B platform, 1 negotiation	All Farmer Group acquired new Suppliers from modern markets
3) On-line sales marketing is successively conducted through the supply of high-quality horticulture products together with attractive marketing.	3) Successive online sale activities are conducted. (Qualitative evaluation of the situation)  <b>Note: in parentheses (), qualitative/quantitative Indicators are shown for the assessment.</b>			Mujagi: Do not have an online marketing system or platform. Sinar Mukti: Not yet making online sales (In March 2020, they started their online sales activities.)	Mujagi: Online marketing efforts have begun to be explored by utilizing social media Sinar Mukti: in August 2021 they withdrew from online sales due to a drastic decline in sales while distribution and promotion costs still remain.	Mujagi: Online marketing efforts will be a priority program in the 2022 workplan. Sinar Mukti: In early January 2020, they restarted sales in C2C platform (Shopee and Tokopedia)	Sinar Mukti recently got a partnership offer from Sayurbox, an e-groceries platform

Source: JICA Survey Team

As of January 2022, most of the activities have been implemented while some activities remain uncompleted. The farmer groups just started using large machinery such as cold storage, vegetable washing machine since they had to wait for the completion of the new warehouse and electricity works, all of which had been completed at the end of January 2022. On the other hand, some small machinery and basic materials such as wrapping machines, vegetable plastic boxes with pallets, and digital scales

have all been utilized since November 2021.

In terms of impact, the largest impacts are seen in the fact that all the three groups acquired new customers with the pilot project implementation (see below). The procured facilities contributed to improving the supply of horticulture crops in terms of quality and quantity. Also, the co-working activities among group members for the management of equipment lead to an increase of motivation as an organization. To keep the supply contracts, the facilities must be continuously maintained and updated. It is necessary to be done by farmer groups themselves probably with assistance by JICA-IJHOP4-2 team upon the completion of the pilot project.

- Mujagi is now trying to supply local and Japanese vegetables to AEON Supermarket. The field inspector from AEON had a field inspection at Mujagi's farm on the 28th of December, 2021. The increment in terms of market supply from Mujagi group has been increased by 50% compared to before the pilot project (i.e., July 2021). Likewise, the selling volume per shipment was increased from 2-3 tons per shipment to 5-6 tons per shipment and partnership has also been increased from 3 suppliers to 5 suppliers as of the end of December 2021.
- Before the project, Saluyu had no or very little cooperation with any suppliers/middlemen out of their farmer group residential area because they mostly used to deliver their harvests to the local markets nearby through middlemen. During the pilot project, Saluyu started collaborating with a supplier named Amanah, which distributes their product to Jakarta's market, especially in the East Jakarta region. This cooperation enabled the Saluyu group to deliver their harvests three times a week and they earn 10 million Rs (approximately 714 USD) for a week from this selling activity.
- After the launch of a pilot project at Sinar Mukti group, a contract with Uri Agro co. was signed, which is effective from 15 December 2021 to December 2022. It is a supply contract of Kenya beans for export with a shipping volume of 3,000 kg per week with a contract price of IDR 18,000 per kg (approximately 13 USD). In addition, for the sales enhancement, Sinar Mukti received a partnership offer from Sayurbox, an e-groceries platform. The partnership was initiated by the online sales promotion training arranged by the pilot project, for which the trainer came from Sayurbox.

With post-harvest facilities (e.g., vegetable boxes and digital scales, stainless racks, and tables), the three farmer groups can now handle post-harvesting activities such as packing, washing, storing, shipping more efficiently than before. For example, Sinar Multi farmer group used to wash their products by manual labor resulting in not much cleanness. They tried to manage this challenge by opting to peel the produces, but this method was consuming a lot of time and increasing the risk of the product getting wilted faster. By using washing machines, they can wash their products cleaner, more labor-saving way, and more efficient way.

Regarding sustainability, so far, it is difficult to assess because big machinery has just started operating in January 2022. At the screening stage, the farmer groups were selected based on the capacity of handling such big machinery. As it was mentioned before, the farmer groups already discussed the operational arrangements and nominated the persons who will be responsible for taking care of these machineries. In addition, all procured facilities will be continuously monitored by JICA-IJHOP4-2 team.

#### **4.4 Issues Raised and Lessons Learnt in the Context of FVC Development in With/Post-COVID-19 Society**

During the peak of the COVID-19 pandemic, the farmer groups were severely affected by the cancellation of orders (e.g., orders from suppliers to HoReCa and middlemen of local traditional markets). On the other hand, when the pilot project began (August 2021), the market had been recovering from the pandemic. The machinery and material provisions in the pilot project helped farmer


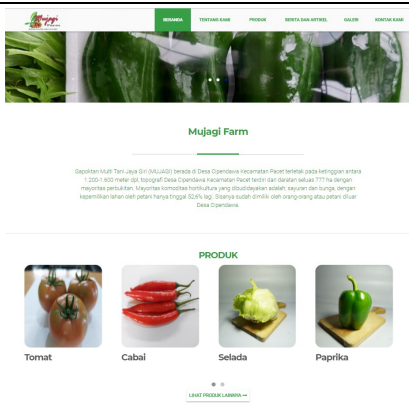


groups expand their sales. All the farmer groups engaged in the pilot project have worked actively to meet these opportunities. They have acquired their new customers as well.

Sales to the modern markets require stable production in both quantity and quality. In this regard, it is important to maintain and manage the installed facilities properly, to continue the partnerships with newly acquired partners. The farmer groups selected in the pilot project are well-organized and somewhat advanced ones, and importantly, machinery provision was decided after having clarified the use of the facilities through prior consultation.

In Indonesia, sales on EC platforms are increasing dramatically. However, farmer groups' sales activities through C2C platforms (Tokopedia, Shoppes, etc.) are not always profitable enough because the sales volume per shipment is usually small and fluctuating. Also, many farmer groups are often affected by the promotion activities of their competitors.

The farmer groups are also tackling the issues, and several efforts have been made such as direct promotion to surrounding customers by SNS (e.g., WhatsApp), and partnership with B2B the platform. The B2B platform usually requires certain quality standards as required by supermarkets. The post-harvest facilities provided by the pilot project can be used effectively to meet these standards. Further, it is expected that facilities for adjustment in shipping operation like cold storage will be utilized for the temporary storage of commodities to be sold by online sales.

Including above, through the pilot online sales activities, the farmer groups have acquired important lessons. As the model farmer groups in the area, it is expected and desirable that the farmer groups will share the knowledge and experience with the other farmers in the areas.

<b>Pictures of Activities</b>	
	
<p>Mujagi Farmer Group Increased Handling Volume per Shipment by Utilizing Vegetable box, Pallet, and Trolley</p>	<p>The HP Developer Team Developed Farmer Group's Website</p>
	

<p>The JICA Team held training on E-Commerce, Product Branding, and Online Promotion on 14<sup>th</sup> and 15<sup>th</sup> of December 2021</p>	<p>The HP Developer Team held training on Wonsite Utilization and Updating on the 25<sup>th</sup> and 30<sup>th</sup> of November 2021</p>
	
<p>The Newly Constructed Warehouse In Sinar Mukti Farmer Group</p>	<p>Sinar Mukti Farmer Group Started to Sell Vegetables with Packaged Form (Example of Post- Harvest Handling)</p>



## CHAPTER 5 PILOT PROJECT FOR STABILIZATION OF ORGANIC VEGETABLE SUPPLY AND EXPANSION OF SALES CHANNELS (LAO PDR)

### 5.1 Project Summary: Project Design Matrix

In recent years, organic vegetables have been cultivated in Lao PDR with the support of the government and donors from the viewpoint of health promotion. Sales of organic vegetables have been expanding based on the Organic Agriculture (OA) market, but under the COVID-19 situation, the opening of the OA market has been restricted in order to prevent the spread of COVID-19 infection.

Under the COVID-19 situation, minimizing contact between people is required even when the OA market is open. Therefore, the project team planned real-time distribution of the OA market through SNS for two objectives, 1) to know the market congestion situation of OA market users, and 2) to create a new market channel by chat function. This plan is categorized as 1) sales channel diversification approach and 6) DX in Chapter 1. In order to carry out this activity, the pilot project provided necessary equipment to OA groups, e.g., 1) tablets, 2) smartphones, 3) tripods, etc. for real-time distribution, and made manuals and training on how to use them.

In addition, the OA market is managed and operated by the OA committee consisting of representatives of each OA group, provincial agriculture and forestry offices (PAFO), and district agriculture and forestry offices (DAFO). They hold a meeting as per the need about once every few months to discuss management issues. However, under the COVID-19 situation, a notification from the government prohibits gatherings of more than 20 people, so that no meetings had been held for a long time, and there was a lack of communication among the parties concerned.

Therefore, the JICA team planned to hold an online conference which is categorized as 6) DX in Chapter 1. To implement this activity, the project team provided the PAFO and DAFO with necessary equipment for online meetings such as 1) laptop computers, 2) webcams, 3) speaker microphones, as well as prepared manuals and arranged the training on how to use them. For the OA groups, the project team planned to participate in an online conference using provided equipment for real-time distribution, which is pilot activity No.1.

Moreover, the OA groups need much time in the procurement of the organic agriculture materials or cannot procure a sufficient amount of it from distant farms and farming villages due to movement restrictions under the COVID-19 situation. Therefore, the importance of self-making of organic agriculture materials by OA farmers is increasing to utilize the resources in their residential areas and around farm fields. To deal with this situation, the project team provides agricultural tools (cutting machines and crushers) to each OA group and also conducts training on how to use these tools for making high-quality organic agricultural materials.

The above three activities were set as a pilot project to deal with the COVID-19 situation in organic vegetable VCs in Lao PDR. The PDM of this pilot project is as follows.

**Table 5.1.1 Project Design Matrix**

Country	Lao PDR	Target FVC	Organic Vegetables
Project	Pilot Project for Stabilization of Organic Vegetable Supply and Expansion of Sales Channels		
Purpose	Target farmers will carry out production that grasps demand through the real-time distribution of the organic vegetable market and aim to increase sales volume steadily.		
Location	Vientiane Capital		
Beneficiaries	Target farmer groups and E-Commerce (EC) retailer, Organic Home (OH)		
Related Project	Clean Agriculture Development Project		
Relevant Organization	Department of Agriculture, Ministry of Agriculture and Forestry / Clean Agriculture Standard Center		
<b>Rationale:</b>			
In Lao P.D.R., sales of organic vegetables based on the Organic Agriculture (OA) market are steadily increasing, but			

<p>under the COVID-19 situation, holding of the OA market is restricted from the viewpoint of preventing the spread of infection. Therefore, when the OA market is held, the introduction of non-contact transactions is required.</p> <p>The OA market is operated by the OA Committee, Provincial Agriculture and Forestry Office (PAFO) and District Agriculture and Forestry Office (DAFO) and these meet irregularly about once every few months to decide the management policy. However, under the COVID-19 condition, the government has prohibited the gathering of more than 20 people, so the meeting has not been held for a long time, and there is a lack of communication among the parties concerned.</p> <p>Furthermore, under COVID-19, the supply of organic materials is stagnant, or a sufficient amount cannot be secured due to movement restrictions, so the importance of self-produced organic agricultural materials by the OA farmers becomes high.</p>	
<p><b>Outputs:</b></p> <ol style="list-style-type: none"> <li>1) The target farmer groups deliver the real-time distribution of OA market using the SNS, and the sale is carried out using it.</li> <li>2) The OA Group, PAFO and DAFO hold an online meeting under the COVID-19 situation using provided equipment. In addition, PAFO and DAFO improve the management of OA market using provided equipment.</li> <li>3) The OA groups use the agricultural tools (Chopper and Grinder) provided by the project to produce high-quality organic agricultural materials and use them for the cultivation of organic agricultural products.</li> </ol>	<p><b>Indicators :</b></p> <ol style="list-style-type: none"> <li>1) More than 20 people watch the real-time distribution of the OA market.</li> <li>2) Hold two or more online meetings using the provided equipment.</li> <li>3) Create organic agricultural materials at least twice using the provided agricultural machinery.</li> </ol>
<p><b>Activities :</b></p> <ol style="list-style-type: none"> <li>1) OA group delivers real-time distribution of the OA market, and practices negotiation, reservation, and sales.</li> <li>2) Provide necessary materials and equipment to the OA Group, PAFO and DAFO, and conduct training on using them.</li> <li>3) Provide agricultural tools (Chopper and Grinder) to produce organic agrarian materials to the OA group and provide training on how to use it.</li> </ol>	<p><b>Input :</b></p> <p>Equipment &lt;For PAFO and DAFO&gt;</p> <ol style="list-style-type: none"> <li>1) Laptop PC</li> <li>2) Projector</li> <li>3) Projector screen</li> <li>4) Web camera</li> <li>5) Speakerphone</li> <li>6) Pocket WiFi</li> <li>7) Printer</li> </ol> <p>&lt;For OA group&gt;</p> <ol style="list-style-type: none"> <li>8) Tablet PC</li> <li>9) Smartphone</li> <li>10) Microphone for Tablet and Smartphone</li> <li>11) Tripod stand</li> <li>12) Mobile battery</li> <li>13) Agricultural Tools (Chopper and Grinder)</li> <li>14) Thermometer</li> <li>15) Banner for PR</li> </ol> <p>Personnel</p> <ol style="list-style-type: none"> <li>1) Lecturer</li> <li>2) Monitoring staff</li> <li>3) Activity support staff</li> </ol> <p>Others</p> <ol style="list-style-type: none"> <li>1) Transportation (Rental Car)</li> <li>2) Training cost</li> </ol>

## 5.2 Implementation Modality, Players, Stakeholders and Consensus Making

### 5.2.1 Implementation Modality and Players/ Stakeholders

For this pilot project, firstly, based on the results of a COVID-19 impact survey on vegetable VCs in Lao PDR, several pilot project plans were formulated against the COVID-19 situation. Then, based on the comments from related technical cooperation projects and work management committees, narrowed down these several pilot project plans to one plan that is considered to be the most realistic and effective.

After that, from August 29, 2021, a Japanese team member traveled to Lao PDR, interviewed the people concerned and confirmed the current situation, revised the project plan, and launched the project. Then, the project was implemented remotely by JICA team, and national staff carried out such activities as



trainings, monitoring, follow-up, and evaluation by the end of January 2022.

This pilot project was carried out for the OA committee in the Vientiane capital. The OA Committee consists of 11 OA groups, PAFO and DAFO in the Vientiane capital. The list of members of this committee is as follows.

**Table 5.2.1 Member of OA Committee in Vientiane Capital**

No	Name and Surname	Position
<b>Organic Agriculture Group in Vientiane Capital</b>		
1	Mr. Thongxay	Head of OA Committees
2	Mr. Khampou Phanthaboun	Vice Head of OA Committees
3	Mr. Somboun	Thaxang OA group
4	Mr. Som-Ok	Nasangphai OA group
5	Mrs. Khammone	Thongmang OA group
6	Mr. Khampou Phanthaboun	Nongtae OA group
7	Mr. Suansanam	Somsavanh OA group
8	Mr. Vanhnoukone	Xiengda OA group
9	Mr. Phua	Koksai OA group
10	Mr. Santipab	Sayfong OA group
11	Mrs. Khambang	Phonkeo OA group
12	Mrs. Kham-merng	Champa OA group
13	Mrs. Dova	Nongda OA group
<b>Head of District Agriculture Sector</b>		
14	Khonesamai	Head of Sector, Chanthabouly District
15	Bounmy Thammavong	Head of Sector, Sisattanak District
16	Ms. Kedmany Phosalad	Deputy Head of Sector, Sikottabong District
17	Bounyung Latsamee	Head of Sector, Hadsayfong District
18	Khamphien Inthalad	Sector representative, Saysetha District
19	Somphan Sihalad	Head of Sector, Nasaythong District
20	Khamphet Kongthavysay	Head of Sector, Xaythani District
21	Sounthone Khaophon	Head of Sector, PakNgeum District
22	Khunti Duangboutdy	Head of Sector, Sangthong District
<b>Head of Sectors, Deputy Head of Sectors and officers at Agriculture Sector in PAFO</b>		
23	Nieokham Khamminathy	Head of Sector
24	Khunkeo Meuangvung	Deputy Head of Sector
25	Ketsadong Silythone	Academic officer in the Sector
26	Bounpheng Thanthongbai	Academic officer at Nonewai Plant Research Laboratory
27	Ms. Kesone Keovongsa	Academic officer at Nonewai Plant Research Laboratory

Source: Information from AMPF

## 5.2.2 Consensus Making for the Pilot Project Design and Implementation

In preparing the plan for this pilot project, the project team made several pilot project plans based on the results of the impact survey of COVID-19 for vegetable VCs in Lao PDR, the results of interviews with experts in the JICA technical cooperation project, and review results of collected information. Then, according to the interviews with the experts of the JICA technical cooperation project and discussions at the Work Management Committee for the pilot project plans, the pilot project proposals were narrowed down and the one pilot project was decided.

To implement the pilot project, the team member who traveled to Lao PDR from 29<sup>th</sup> August 2022, and visited all 11 OA groups to explain the contents of the pilot project, and confirmed the feasibility. In addition, the team member had a meeting with the experts of the JICA technical cooperation project in Lao PDR and received advices on the contents of the pilot project. After that, the project team explained the pilot project activities, schedule, and necessary equipment to the head of the section of PAFO and the vice-head of the section of PAFO, who are the member of the OA committee, and they agreed to implement the pilot project. Thus, the pilot project was commenced.

## 5.3 Activities, Monitoring and Evaluation of the Pilot Project

### 5.3.1 Activities, Monitoring and Follow Up

The pilot project was started in mid-September 2021. Firstly, the team member had a meeting with all the stakeholders involved in this pilot project (OA group, OA vegetable sales company, prefectural

agriculture and forestry office, and JICA technical cooperation project team) to explain the current situation and the project activities, and then decided the details of the pilot project. Initially, the development of an application that matches the market demand of OA vegetable sales companies with the supply status of farmers was included, but it became clear that would be supported by other donor(s), so it was excluded.

On the other hand, in confirming the current situation, it became clear that the OA committee meeting was not held due to the impact of the COVID-19, and that the procurement of organic agricultural materials was hindered. Therefore, the project team decided to incorporate activities to improve these into the pilot project.

In order to carry out real-time distribution of the OA market, which is the first activity of the pilot project, the project team interviewed an OA farmer group about SNS having many users in Lao PDR. As a result, it became clear that there are many users of Facebook and WhatsApp. Therefore, the project team decided to use "Live video", which is a function of Facebook, for real-time distribution. Also, since people who post live videos have their own accounts, the project team decided to create a "group" for each OA market and post live videos here, so that each person can upload live videos.

In order to try real-time distribution of the OA market, the project team started real-time distribution at International Trade Exhibition and Convention Center (ITECC) OA market, which was the only open at that time from 9<sup>th</sup> October 2021. The ITECC OA market was open every Wednesday and Saturday even under COVID-19 situation. Since it is important to continuously delivery the live video in order to increase the number of viewers, the project has been delivering video every Wednesday and Saturday since the 9<sup>th</sup> October 2021.

Since the implementation method was confirmed by a trial of real-time distribution, the project team started procurement of equipment to be provided to the OA group from the end October 2021. An equipment handing over ceremony was held at the PAFO office in Vientiane capital on 7<sup>th</sup> December 2021, after the procurement of all equipment, including the equipment for activities No. 2 and No. 3, was completed. After that, the distribution of the equipment to each OA group and training on how to use it were carried out. Accordingly, real-time distribution of OA market by the OA farmer groups started on December 18, 2021.

For the online meeting of the OA Committee in Activity No. 2, the equipment was distributed in the same way as Activity No. 1, and training on how to use the equipment was also conducted at the same



Meeting with OA group



Real-time distribution of OA market



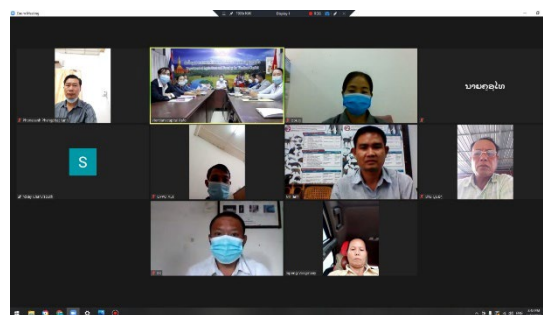
Handing over Ceremony at PAFO office

time. In this training, explanations were given with reference to the manual created by the project team. As a result, a quarterly regular meeting of the PAFO and DAFO in Vientiane capital was held online using the equipment provided by the project on 17<sup>th</sup> January 2022. An OA committee meeting will also be held online in late January.

In Activity 3, which supports farmer groups in creating their own organic farming materials that are difficult to procure from distant locations due to mobility restrictions, agricultural tools (cutting machines and crushers) related to making high-quality organic agricultural materials were also distributed to each OA group, and the project team provided them with the training on how to use them same as activity No. 1 and No. 2. These distributions and training were completed by 21st December 2021 for all the OA groups except two OA groups (Xiengda and Nasangphai groups), and each group had started to use agricultural tools. In addition, the provided agricultural tools can be used for practicing the agricultural technics which were provided by the JICA Clean Agriculture Development Project for OA groups.



Training for OA group on the equipment



Online meeting using the delivered equipment

**Table 5.3.1 Plan of Operation (PO): Pilot project for support the stabilization of organic vegetable supply and expansion of sales channels, Lao PDR**

Breakdown of Activity	Responsibility by PAFO	Responsibility by JICA Team	Sep 2021				Oct 2021				Nov 2021				Dec 2021				Jan 2022																					
			1w	2w	3w	4w	1w	2w	3w	4w	1w	2w	3w	4w	1w	2w	3w	4w	1w	2w	3w	4w																		
1) The OA farmer groups practice the SNS live streaming of the OA market, negotiate with its viewers, and book and sell products.																																								
1.1 Interview the current condition of OA groups		○																																						
1.2 Create the Facebook page for each OA market																																								
1.3 Make training materials		○																																						
1.4 Purchase equipment																																								
1.5 Distribute equipment		○																																						
1.6 Give training on how to use the equipment																																								
1.7 Deliver the livestreaming of OA market		○																																						
1.8 Monitoring		○																																						
2) Provide necessary IT tools to the OA Groups, Provincial and District Agricultural and Forestry office of the Ministry of Agriculture and conduct training on how to use them.																																								
2.1 Check the current situation by interview																																								
2.2 Make training materials																																								
2.3 Purchase equipment																																								
2.4 Distribute equipment		○																																						
2.5 Give training on how to use the equipment																																								
2.6 Have an Online meeting		○																																						
3) Provide agricultural tools (e.g., small grass chopper) for the production of organic agricultural materials to the OA groups and give training on how to use them.																																								
Breakdown of Activity																																								



### 5.3.2 Evaluation

The monitoring results the pilot project is summarized as shown in Table 5.3.2: Regarding Activity No.1, the only OA market under the COVID-19 situation, ITECC, has been conducting real-time distribution of the OA market every Wednesday and Saturday from 9<sup>th</sup> October 2021. After that, from 18<sup>th</sup> December, when the equipment supply and training to the OA group were completed, the OA group took the charge of distribution in place of the project team. All 11 OA groups created distribution schedules, and OA groups take turns in charge of distribution. In addition, from January 2022, Monday was the newly OA market date at ITECC, and the two OA markets, Vientiane Center and Xangpheuk, were reopened, and real-time distribution was implemented at each of the markets.

At the beginning of the distribution, there were only a few viewers, but gradually the viewers were increased by informing the real-time distribution in the OA market and also distributing the flyer of QR code which mentioned the URL of the real-time distribution website. In particular, since the middle of December 2021, when the OA group started real-time distribution, the number of viewers has been steadily increasing, which was initially several but it has increased to 20 or more, thus it is thought that there was a certain impact.

Also, in the chat section of this real-time distribution, there were questions about vegetable prices, market locations, and opening hours, but it was yet started a business talk. Moreover, it could not be tried a method such as improving the website to minimize the mistakes in a series of transactions from negotiations to orders, deposits, and shipments. In the future, it is necessary to consider the development of apps and websites that enable viewers of real-time distribution to make transactions smoothly and to encourage viewers to negotiate business.

In addition, an OA vegetable sales company that considers a pilot business is considering a service that receives orders for OA vegetables via chat during real-time distribution, purchases the vegetables in the OA market, and transports them to the orderer's home. By linking this service with the real-time distribution of this project, the project will be working on non-contact sales.

The sustainability of this activity depends on whether this business model can be continued in the future. Since a certain degree of effect was obtained, it was confirmed that the OA group intends to continue. On the other hand, since the communication cost for each distribution is a burden, it is necessary to generate profits that can sufficiently cover this burden by real-time distribution. Therefore, it is necessary to increase the viewers and generate the business talk through the chat system.

Regarding activity No.2, although PAFO and DAFO held a quarterly regular meeting online using the equipment provided by the project, the online meeting of the OA Committee has not yet been held. For government officials who have some experience using PCs, it became clear that they could hold an online meeting without any assistance. Meanwhile, many of the OA group's committee members are elderly and not familiar with the use of smartphones and tablets, thus it is necessary to follow up with them through related technical cooperation projects.

Regarding activity No.3, it is necessary to confirm and evaluate the actual operating status of agricultural tools and the production status of agricultural materials, but the mechanization of the manual agricultural material production work has surely improved the efficiency of the work. Furthermore, since organic materials can be prepared more finely and uniformly than that by manual work, the time required for fermentation of compost and organic pesticides can be shortened, and high-quality organic materials can be produced. However, it will be necessary to follow up the maintenance of the provided agricultural tools for the OA groups.

**Table 5.3.2 Monitoring Indicators and Achievements**

Country	Lao PDR	Target FVC	Organic Vegetable		Status and Conditions as per Each output & Indicator			Remarks (Change) with the Pilot Project Done
			of organic vegetable supply and	supply and	1) 2019	2) 2020–2021 before Pilot Project	3) as of End 2021/ Beginning 2022	
Project	Support the stabilization of sales channels	Target FVC			Before COVID19	During COVID19	With Pilot Project Done	
Purpose	Target farmers will carry out production that grasps demand through the real-time distribution of the organic vegetable market and aim to steadily increase sales volume.	Indicators :			Before COVID19	During COVID19	With Pilot Project Done	
Outputs:					Before COVID19	During COVID19	With Pilot Project Done	
1)	The target farmer groups deliver the real-time distribution of OA market using the SNS, and the sale is carried out using it.	1) More than 20 people watch the real-time distribution of the OA market.			Several OA farmers personally shot videos and distributed them through SNS, mainly for friends.	Same as before COVID19.	Number of simultaneous viewers is 8.5 on average (peak at 23) as of 6 <sup>th</sup> January 2021.	<ul style="list-style-type: none"> <li>➤ Farmers are still shy when standing in front of camera.</li> <li>➤ Some OA groups are not proactive in delivering live streaming. Hence, the project team have to support them individually.</li> <li>➤ There are some customers asking for prices of vegs, market locations and opening time on the comment section</li> <li>➤ - No real-time transaction/negotiation happened, so far.</li> </ul>
2)	The OA Group, PAFO and DAFO hold an online meeting under the COVID-19 situation using provided equipment. In addition, PAFO and DAFO improve the management of OA market using provided equipment.	2) Hold two or more online meetings using the provided equipment.			Face-to-face committee meetings were held irregularly about once every few months.	No OA committee meeting was held.	the meeting is expected to be hold sometime between 18 <sup>th</sup> to 21 <sup>st</sup> January 2022. The exact date is to be determined.	
3)	The OA groups use the agricultural tools (Chopper and Grinder) provided by the project to produce high-quality organic agricultural materials and use them for the cultivation of organic agricultural products.	3) Create organic agricultural materials at least twice using the provided agricultural machinery.			Mainly bought the organic agriculture materials from the out of the village.	It was difficult to procure organic agricultural materials due to movement restrictions.	Equipment handover finished on 21 <sup>st</sup> December 2021 (except for Xiengda and Nasangphai group). Farmers are preparing to use the provided tools.	

#### **5.4 Issues Raised and Lessons Learnt in the Context of FVC Development in With/Post-COVID-19 Society**

As a pilot project, Facebook was used as an SNS with many users in Lao PDR, and the group page function in it was used to create a group page for the OA market, and “live video” was posted there for real-time distribution. There were no particular restrictions on the Facebook group page of this OA market, so that the person in charge of each OA group could post live videos. Therefore, an outside person who introduces a personal business unrelated to OA vegetables posted on the OA market group page, and it sometimes became difficult to find out the real-time distribution by this pilot project.

To rectify this situation, it is necessary to manage the OA market’s group page of OA market, such as making rules and limitation of posters, but this was not made during this pilot project. It will be necessary to create a subgroup in charge of IT aspects such as live streaming within the OA group or OA committee in the future.

Through this pilot project, it was able to confirm the possibility of a different sales channel (business negotiation using the chat function during real-time distribution). By strengthening cooperation with OA vegetable sales companies, this sales channel would lead to sustainable sales. On the other hand, in order to increase the sustainability of the pilot activities, it is necessary to continue to provide support for implementation, and the OA group must become accustomed to real-time distribution and fully realize its advantages. In addition to business negotiations using the chat function of SNS, it is also necessary to improve apps and web pages so that mistakes do not occur in a series of transactions such as viewer orders, deposits, and shipments from the seller side. In this short pilot project period, OA groups could not fully control the IT equipment and feel the advantage of live streaming adequately, so it is necessary to continue monitoring and follow-up.

In addition, the project team was able to enhance the IT literacy of OA groups and related government officials through these pilot project activities. The project has confirmed the possibility of expanding the usage of SNS, which was previously limited to personal use, to business and becoming a new sales channel. In addition, not only the online conferences can be held in a non-contact manner to prevent the spread of the COVID-19, but also it is possible to save time and resources by holding conferences without people moving even during a normal time. Furthermore, it can be possible to hold the meetings with watching face each other with people who are in other regions and even distant countries. This pilot project was able to lay the foundation for the DX activities.



## CHAPTER 6 PILOT PROJECT FOR DA BAYANI KITA APPLICATION ENHANCEMENT SUPPORT (PHILIPPINES)

### 6.1 Project Summary: Project Design Matrix

This pilot project addresses the second approach of the five approaches indicated in Chapter 1, “the distribution promotion and enhancement approach”. Under the lockdown and movement restrictions imposed by COVID-19 pandemic, the movement of middlemen and other distributors was restricted, resulting in farmers loss of marketing channels and opportunities. The objective of this pilot project is to use DX technology to diversify farmers' marketing channels and improve their bargaining power.

The BayAni Kita application, which was launched by the Philippine Department of Agriculture (DA) in August 2021, is equipped with various functions (weather information, location information, direct sales application, retail price information in consumer markets, bulletin board, etc.) to support farmers' production and marketing. However, at present, BayAni Kita app may not fully meet the needs of farmers, especially in the downstream of VC, such as information necessary for farmers to choose where to sell their products.

Therefore, collaboration with Deliver-E, which is already well known as an agricultural product distribution platform and has a large number of buyers, is designed to enhance the convenience of users and to improve the sales ability of farmers. The objectives and outputs of this pilot project, as well as the activities and inputs to achieve them, are summarized in the PDM below.

**Table 6.1.1 Project Design Matrix**

Country	The Philippines	Target FVC	Vegetables
Project	DA BayAni Kita Application Enhancement Support Pilot Project		
Purpose	BayAni Kita, an integrated application launched by the Department of Agriculture (DA) to connect farmers with DA, will be disseminated to farmers, and feedback from users will be used to improve the application.		
Location	Department of Agriculture (DA) of the Philippines Government, Benguet Province		
Beneficiaries	Target farmers and farmer groups in the Benguet Province to promote the BayAni Kita app.		
Related Project	Food Value Chain Improvement Project for Horticulture Crops in the Philippines (scheduled to start in August 2021)		
Relevant Organization	Department of Agriculture (DA)		
Rationale:			
The BayAni Kita application, which is being developed by the Philippine's Department of Agriculture (DA) and is scheduled for trial in July 2021, has various functions, such as weather information, location information, direct sales application, retail price information in the consumer market, and bulletin board. At present, however, the system does not fully meet the needs of farmers, including necessary information for them to choose where to sell their products. Therefore, the project will link the application with Deliver-E, which has already been established as an online agricultural product distribution platform, to enhance user convenience. By promoting the use of the BayAni Kita app among farmers, it is expected to encourage farmers to use DX and improve their production and marketing capabilities.			
Outputs:		Indicators :	
<ol style="list-style-type: none"> <li>1) The linkage between BayAni Kita and Deliver-E will be realized on the application.</li> <li>2) Training for farmers and farmer groups to promote the use of the application will be implemented.</li> <li>3) Farmers will use the application and provide feedback on its functions and usability.</li> <li>4) DA will improve the BayAni Kita application based on the feedback from farmers.</li> </ol>		<ol style="list-style-type: none"> <li>1) The functions of BayAni Kita and Deliver-E are integrated.</li> <li>2) At least 10 training sessions for farmers will be organized.</li> <li>3) 30 farmers will use the application and provide feedback.</li> <li>4) Functions and usability that need to be improved will be obtained through feedback from farmers/ farmer groups, and the improvement of application is made by DA.</li> </ol>	
Activities :		Input :	
<ol style="list-style-type: none"> <li>1) BayAni Kita and Deliver-E will be linked on the application.</li> <li>2) Develop procedure manual to use existing applications so that producers can actually use them.</li> <li>3) Provide guidance and training to farmers and farmer groups on trial use of existing applications,</li> </ol>		Personnel Input <ol style="list-style-type: none"> <li>1) system engineers for additional functions</li> <li>2) monitoring personnel</li> <li>3) dissemination support personnel</li> </ol> Others <ol style="list-style-type: none"> <li>1) reparation of dissemination materials: complete set</li> </ol>	

<p>customization and updates based on the results of the trial.</p> <p>4) Compile feedback from farmers and share it with DA.</p>	<p>2) Training: (Training for dissemination of BayAni Kita application to the target farmers and farmer groups)</p> <p>3) Transportation</p>
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## 6.2 Implementation Modality, Players, Stakeholders and Consensus Making

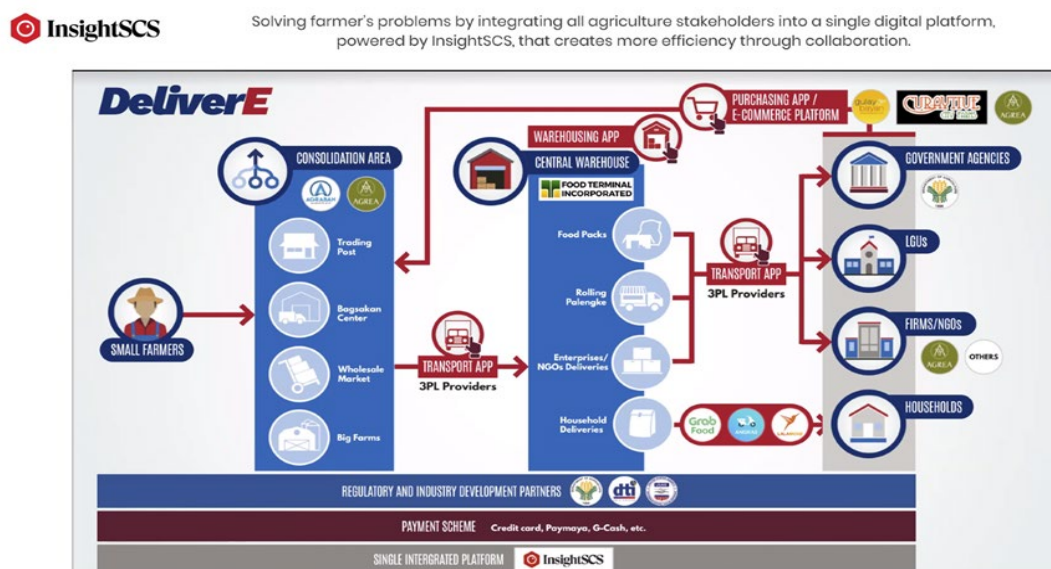
### 6.2.1 Implementation Modality, Players, Stakeholders

This pilot project will be implemented through a sub-contracting work to IOT Technology, the company that developed the BayAni Kita application, and Insight SCS, the company that developed Deliver-E. Although the BayAni Kita application is operated by DA, it was developed free of charge by IOT Valley (a subsidiary company of IOT Technology), and IOT Technology retains the intellectual property rights. As this pilot project includes improvements of the BayAni Kita application, it will be necessary to make sub-contracting with the IOT Technology.

On the other hand, Deliver-E, an online platform for agricultural product distribution, was developed, and is maintained and operated by InsightSCS with support from DA, Department of Trade and Industry (DTI) and USAID. Deliver-E is a comprehensive and transparent e-commerce platform that registers a large number of FVC stakeholders including production, distribution, processing, and consumption, with the intention of cutting through the middlemen and improving FVC efficiency by bringing producers closer to buyers<sup>1</sup>. In this project, functions of Deliver-E will be linked up with the BayAni Kita application to provide support services such as market access, timely information from the market, and access to financing for the BayAni Kita application users. To this end, a sub-contracting work is conducted with InsightSCS for the purpose of functional integration and training related to Deliver-E.



**Figure 6.2.1 BayAni Kita Application**  
Source: IOT Technology



**Figure 6.2.2 Outline of Deliver-E as an agricultural product distribution platform**  
Source: InsightSCS

In the implementation of the pilot project, the DA in charge of the operation and dissemination of the BayAni Kita application took the lead. In other words, the DA and Local Government Unit (LGU)

<sup>1</sup> DTI, < [Keynote Message of Secretary Ramon M. Lopez, DELIVER-e Goes Live | Department of Trade and Industry Philippines \(dti.gov.ph\)](#) >

extension officers were in charge of selecting farmer groups and convening farmer groups to disseminate the BayAni Kita application strengthened by this pilot project, while the actual training is conducted jointly with IOT Technology and InsightSCS.

### 6.2.2 Consensus Making for the Pilot Project Design and Implementation

Due to the severe travel restrictions imposed by the Philippines Government as a countermeasure against the COVID-19, it has become very difficult for Japanese to obtain a VISA and travel to the Philippines. For this reason, a coordinator was employed as a facilitator for the planning and implementation of the pilot project, specifically, to conduct a survey on the current status of the market for mobile applications for farmers, select and coordinate the relevant parties/ organizations, confirm their interests, and set up meetings for the planning and implementation of the pilot project.

As of early June 2021, when JICA survey team started field survey, the team investigated existing efforts to promote and enhance distribution of farm products and studied a possibility to support the KADIWA program operated by the DA, which is a distribution and sales mechanism that directly connects agricultural and marine producers with consumers. In particular, eKADIWA, an E-Commerce platform for farmers and farmer groups, was considered to be a promising initiative for directly connecting producers and consumers, which had been split up by COVID-19.

However, in the course of the survey, it was confirmed that eKADIWA has many issues to be addressed, and that eKADIWA was in the process of being migrated to Deliver-E, an agricultural product distribution platform. In place of eKADIWA, DA is planning to launch the BayAni Kita application soon as a production and sales support application for farmers and expected JICA to support the dissemination of this application.

Based on this background, the pilot project was planned and implemented in collaboration with the DA, which is in charge of promoting the BayAni Kita application, and the development company of the BayAni Kita application (IOT Technology), and the development and operation company of Deliver-E platform (InsightSCS).

## 6.3 Activities, Monitoring and Evaluation of the Pilot Project

### 6.3.1 Activities, Monitoring and Follow Up

#### 1) Linkage between BayAni Kita application and Deliver-E

The BayAni Kita app was launched and became operational on August 2, 2021 with the signing of a Memorandum of Understanding (MOU) by the Secretary of the Department of Agriculture (DA). During this period, the stakeholders of the pilot project were discussing on how to link the BayAni Kita app with Deliver-E. The plan for the pilot project was formulated and the sub-contract was signed on September 24. Since then, IOT Technology and InsightSCS had been integrating the both applications, and on October 26, BayAni Kita app version 1.1 with the additional function to link with the Deliver-E was approved by the DA.

During this period, the DA took the initiative in selecting farmer groups and regions to be disseminated. Initially, the training was planned to be conducted for a group of farmers growing horticultural crops in Benguet Province, where the JICA technical cooperation



Onboarding Training in Ilocos Sur

project is scheduled to be implemented, but the training had to be suspended due to the damages caused by Typhoon Maring that hit Benguet Province on October 11, 2021. Therefore, it was decided to select other farmer groups from several locations in Luzon and confirm their willingness to participate in the pilot project.

The first on-boarding training was held from November 3 to 5, 2021 in the province of Ilocos Sur located in the northwestern part of Luzon Island. Totally 81 farmers participated in the training with the cooperation of LGU. On the first day, the functions of BayAni Kita and Deliver-E were explained, and on-boarding training and guidance on how to use them were provided. On the second day, with the participation of the Undersecretary of the Ministry of Agriculture, there were a consultation on the modernization of agriculture in the Suyo Municipality and a farmer group meeting (Suyo Multipurpose Cooperative). Then, the third day, there was a study tour to the public market in Suyo. As a result of the three days training, 76 farmers were registered with the BayAni Kita application.

The second on-boarding training was conducted in Nueva Ecija from November 17 to 19, 2021, and 42 out of 161 participating farmers were registered. The third training was held in Batangas Province from December 9 to 10, 2021, and 20 farmers out of 30 were registered. The number of registered users at the end of the training arrived at 138, but after the training, the number of registered users of the BayAni Kita application increased, and as of December 28, 2021, about 40 days after the end of the training, 181 people had been registered.



Onboarding Training in Nueva Ecija

The number of participants and registered users of the three trainings are summarized in the table below. The reason for the low number of registrations for Nueva Ecija is that only a few participants had smartphones, and even those who did had low specifications and could not download the software.

**Table 6.3.1 The number of Participants and Registered Users**

Location	Participants	Registered	%
Ilocos Sur	81	76	94%
Nueva Ecija	161	42	26%
Batangas	30	20	67%
Total	272	138	51%

Source: JICA Survey Team

Through the on-boarding training in the three provinces, the following issues were identified as the introduction phase of the BayAni Kita application;

- ✓ Locational differences in smartphone ownership were observed, and only 34% of participating farmers in Nueva Ecija don't have smartphone, resulting in low enrollment in the area.
- ✓ There were also regional differences in network connectivity (environment), with Ilocos Sur having the worst and Batangas having the best.
- ✓ Farmers who own smartphones (Huawei) that do not support Google Play were not able to download Deliver-E, causing compatibility issues.
- ✓ Problems such as insufficient storage memory, difficulty filling out the application registration form, etc. were observed.





## 2) Monitoring

Dashboard software has been developed by IOT Technology and InsightSCS to monitor the use of the BayAni Kita application and Deliver-E platform by registered farmers. For example, at IOT Technology, the development of the Dashboard was completed on November 19, 2021, after the following steps: 1) design of the monitoring function, 2) addition of data collection functions related to user usage, 3) addition of data processing functions (pie charts, etc.), 4) creation of a page to display the monitoring results, 4) testing, and 6) confirmation by the CEO, then development of the monitoring software was completed on November 19, 2021.

According to a report from IOT Technology, a total of 1,255 accesses to the 14 menus in the BayAni Kita app were made by 181 registered users from November to the end of December 2021. Of these, the most accessed menu was "E-Commerce" with 190 (15%), followed by "E-wallet" with 138 (11%), "Chat" with 114 (9%), and "Association" with 108 (8.6%). As for "E-Commerce", it was observed that online transaction of farm products of BayAni Kita users had initiated through the data shared by Deliver-E. E-wallet" is a menu item related to electronic payments, and "Chat" is a function for two-way communication, such as consulting with the DA officers including the Secretary of DA ("Say something to Mr. Willie"). These access number indicates the farmers' interest in the BayAni Kita application.

According to the feedback from 23 farmers obtained during the pilot project, the most useful function for farmers was "Market Place" (78%), followed by "Weather Forecast" (39%), "Price Check" (30%), and "Association" (30%). Market Place is an E-Commerce platform for B2B transactions between cooperatives and buyers, while Association is a platform for various cooperatives related to DA.

On the other hand, according to InsightSCS, the number of farmers who successfully downloaded Deliver-E during the training period was 128. Out of 776 accesses to the Deliver-E function, 250 (32%) were price checks, 63 (8%) were product upload status checks, and 48 (6%) were order confirmations.

Of the 128 farmers who successfully downloaded the software, 112 (88%) checked the prices, and 33 (26%) uploaded their produce on the platform. The uploaded agricultural products were, in descending order, rice, bitter melon, onion, green pepper, eggplant, broccoli, and grapes. The transaction status after the upload can be monitored by the Deliver-E system. Detailed data such as the type of product, order quantity, price of the product agreed upon between the buyer and seller, delivery date, product specifications, and payment method are recorded.

In addition, Deliver-E has been providing support services for sales contracts with buyers of SMEs and large companies by continuously matching buyers and sellers. For example, it supports transactions related to the supply of raw maize by matching a maize supplier in Nueva Ecija with a feed manufacturing company in Bulacan. The initial requirement for the purchase by the feed manufacturer is 40-45 tons of shelled seed A yellow corn with 13% moisture content, and if the supplier can meet this quality specification and have a steady supply capacity, the transaction could potentially grow to a monthly supply of 5,000 tons of feed.

The Dashboard page for monitoring the usage of the BayAni Kita application is attached below.



**Figure 6.3.1 Monitoring tools for BayAni Kita application (Dashboard Analytics)**

Source: IOT Technology



### 6.3.2 Evaluation

Among the indicators shown in the PDM, we were not able to achieve the numerical target of 10 training sessions for farmers. This was due to the fact that in the initial plan, it was not clear how large a scale of training could be held in the midst of the spread of COVID-19, and it was assumed that the training sessions would be conducted by a small number of participants to be on the safe side. In reality, however, we were able to hold the training at a time when the spread of COVID-19 was relatively settled, and could use barangay halls and other facilities with good ventilation condition. Thus, we succeeded holding training sessions with 50 to 150 participants per session. As a result, the number of training sessions fell short of the target, yet the number of registered participants arrived at 181, far exceeding the initial estimate of 90.

Regarding the improvement of the application based on the feedback from registered farmers, InsightSCS reported that they have improved the application to allow farmers to upload photos and details of their products directly from their smartphones. They also reported that they are currently incorporating supply chain finance, so that farmers and cooperatives can obtain loans. Farmers have traditionally been charged a fee of 15-20% to obtain loans from local traders. However, by using the data and analytics generated by Deliver-E's platform, lending institutions, such as banks and alternative finance, will be able to provide loans to farmers and cooperatives that were previously unable to obtain loans. As a result, it is estimated that loan charges could be lowered to 3-5%, allowing farmers to earn more profit.

Translated with [www.DeepL.com/Translator](http://www.DeepL.com/Translator) (free version)

Based on the feedback from the farmers, DA together with the InsightsSCS and IOT Technology will continue to improve the convenience of the BayAni Kita application and the Deliver-E platform to increase the registration rate. In summary, the objectives of the pilot project have been achieved, and the table below shows the indicators in the PDM and the status of their achievement.

**Table 6.3.3 Monitoring Indicators and Achievements**

PDM Indicators	Achievement
1. The functions of BayAni Kita and Deliver-E are integrated.	On October 26, a button to link with Deliver-E was added on the BayAni Kita application, and it was approved by the DA as BayAni Kita application version 1.1.
2. At least 10 training sessions for farmers will be organized.	The on-boarding training was held for a total of eight days in four municipality in three provinces: Ilocos Sur (Suyo), Nueva Ecija (Llanera, Rizal), and Batangas (San Jose). Benguet, which was originally scheduled to be held on October 11, was cancelled because the farmers were not ready to accept the project due to the typhoon damage.
3. 30 farmers will use the application and provide feedback	The initial plan was to have 30 target farmers per location, and 90 farmers in three locations were assumed at the beginning of the pilot project. As a result, a total of 181 farmers have registered (as of December 28) in the three locations where the training was conducted, exceeding the initial expectations.
4. Functions and usability that need to be improved will be obtained through feedback from farmers and farmer groups, and the improvement of application is made by DA.	Based on the feedback obtained from registered farmers during the pilot project, improvements have been made to the content of product information uploaded from smartphones, and a module on supply chain finance has been incorporated.

Source: JICA Team

In the rural areas of the Philippines, there is a traditionally existed distribution network as represented by the "rice cartel," and the fact that the distribution of agricultural products was temporarily disrupted by COVID-19 was the starting point of the discussion of the pilot project. Against this backdrop, this pilot project offered a new distribution channel option by connecting BayAni Kita users with a platform (Deliver-E) formed by private companies as a new form of distribution to the existing distribution

network.

While it is not realistic to improve the existing distribution network all at once, the demonstration of a new distribution format through the integration of BayAni Kita and Deliver-E is a somewhat but potentially significant impact. As transactions using Deliver-E continue and expand, and as the benefits of using the platform spread to more and more farmer groups, we can expect to see a gradual transformation toward more efficient distribution of agricultural products.

On the other hand, from the perspective of sustainability, it is important to increase the number of registered farmers and increase the frequency of use. The following are some of the issues that need to be addressed.

- ✓ Budgetary arrangement for sustainable onboarding and training of farmers,
- ✓ Enhancing functions to address farmers' interest, such as online trading, weather forecasting, price monitoring, and electronic payments and loans, will be important for sustainability,
- ✓ Promote the use of young farmers and students (Faculty of Agriculture) who are familiar with the use of ICT, and
- ✓ Facilitate onboarding of buyers as BayAni Kita / Deliver-E users.

In terms of further dissemination, InsightSCS plans to promote further marketing activities such as (1) sharing daily exchange prices through push notifications and SMS to farmers, and (2) order notifications from buyers (both retail and institutional) in the short term in response to requests from participants. From a long-term perspective, continued promotion of Deliver-E is being made with ongoing inter-agency collaborations such as that of the Supply Chain Management program of the DTI, National Cold Chain Committee of the Board of Investments and “boosting” on social media platforms (Facebook, curated articles) to name a few.

#### **6.4 Issues Raised and Lessons Learnt in the Context of FVC Development in With/Post-COVID-19 Society**

Noteworthy items and lessons learned in the process of implementing the pilot project are summarized below;

##### **1) Strengthening Linkages between Farmers and Government Services**

When a farmer registers him/her on the BayAni Kita app, it means that the farmer is registered in the database of the Department of Agriculture, and can use various functions on the BayAni Kita app to benefit from various government services and projects in the future, such as subsidies, grants, loans, and insurance. It remains to be seen how effective and sustainable the "chat" function and the function to talk directly to the DA Secretary ("Say something to Mr. Willie") will be, but it is due possible to link with the government beyond far physical distance.

This is the new relationship between government and farmers in the With/Post-COVID-19 society, and it needs to be expanded and strengthened. In order to achieve this, DA needs to make efforts to attract more BayAni Kita users and improve its services by further improving the usability of the BayAni Kita application, strengthening the system by increasing the number of personnel to handle the "chat" function, and taking necessary measures for budgetary arrangement to conduct the onboarding training.

##### **2) Strengthening Linkages between Farmers and the Digital Society**

Through the BayAni Kita app, farmers will be able to connect to the digital society while stay in rural areas. Although many farmers do not have bank accounts, E-wallet will enable them to make payments directly to buyers and consumers located in distant cities. The Deliver-E platform also enables farmers to connect with warehouse, processors, distributors, and wholesalers, enabling them to objectively

recognize their position in the FVC, diversify their distribution network, and expand their sales network. By connecting to the digital world, it will be possible to overcome physical limitations.

### **3) Strengthening Linkages between Farmers and Markets**

Deliver-E's price monitoring function is not for consumers, but for farmers who sell their produce, and is currently available for viewing wholesale prices at four trading posts including BAPTC (Benguet), NVAT (Nueva Vizcaya), Sentrong Pamilihan (Quezon), and Batangas. The BayAni Kita app also has a price monitoring function, but this is for monitoring retail prices for consumers, not for producers. The collaboration between Deliver-E and the BayAni Kita app will help to mitigate information asymmetry by allowing more farmer groups to compare market prices and choose where to sell.

In addition, it is very important to onboard the buyer side as BayAni Kita / Deliver-E users to encourage farmers to recognize that this platform is good very enough to sell their farm products. This arrangement, if realized, will definitely contribute to the improvement of farmers' income.

### **4) Existing Distribution Plus One and Improve Efficiency of FVC**

The current changes in FVCs are relatively large on the downstream side, whereas the upstream side has not been able to cope with the changes due to its strong relationship with traditional distributors. In this pilot project, we presented a new option for distribution channels such as connecting BayAni Kita users with a platform (Deliver-E) formed by private companies, and for securing distribution channels to major markets such as the metropolitan area.

Although it is not realistic to improve the existing distribution network all at once, the fact that the pilot project has presented "another option (plus one)" of distributing agricultural products through E-Commerce may provide an opportunity to the future changes. In the future, as transactions using Deliver-E continue and expand, and as the benefits of using the platform become more widely known to many farmer groups, it is expected to see a gradual transformation toward efficient and well functional FVCs.

### **5) Support to Farmer Groups**

Distribution platforms such as Deliver-E will contribute to expand the distribution and sales network of agricultural products of farmers. However, without sufficient quantities of agricultural products for market transactions, farmers will not be able to make advantageous transactions. In this regard, smallholder farmers can gain bargaining power by belonging to cooperatives or associations, or by working with collectors and processors. For this reason, targeting and/or dealing with farmer groups are important in the promotion of E-Commerce. With this mind, the BayAni Kita app has been supported by the Philippine Association of Agriculturists, Inc. (PAA) since its launching, which is expected to increase the number of registered users<sup>2</sup>. In this pilot project, onboarding training was conducted for farmer groups, and it is advantageous to target groups in terms of efficient implementation of the training.

### **6) Support from the Government**

The effectiveness of the link between the BayAni Kita application and Deliver-E was confirmed through this pilot project, and it is hoped that such efforts will be expanded to the national level in the future. To this end, it is desirable for the DA to continue conducting onboarding training, but the key will be to secure the budget and personnel to do so. It is important not to miss this opportunity, which has shown positive results, to conduct training one after another targeting quality farmer organizations. Under these circumstances, the government could support the implementation of training, support for

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<sup>2</sup> Dar pushes for digitalization of Phl agri with Byaheng Digiskarte, BayaniKita | Official Portal of the Department of Agriculture

improvement of applications based on food back from farmers, and enhancement of available functions such as farmer support services by the government.

BayAni Kita's functions will be linked to subsidies, grants, loans, insurance and other support services in the future, and financial services in particular are highly anticipated by farmers. Under the Supply Chain Finance scheme, the Financer will make the payment on behalf of the client, and the client will repay the Financer when the goods are actually sold and the payment is received. Such a service will help farmers reduce their debts to local authorities. Improving farmers' access to financial services is a useful consideration in the context of the government assistance.

## **CHAPTER 7 SUPPORT FOR THE INTRODUCTION OF SMART AGRICULTURE TECHNOLOGY ON ORGANIC FARMING IN GREENHOUSES IN THAILAND**

### **7.1 Project Summary: Project Design Matrix (PDM)**

#### **7.1.1 Background in Selecting the Project**

This pilot project corresponds to the “Automation and Mechanization Approach” which is one of the five approaches described in Chapter 1 of this report. The other five pilot projects are related to enhancement and diversification in distribution and marketing of agricultural products because the JICA team had paid attention to the distribution stagnation of agriproducts due to disruption of the “chains” between each stage of the FVC enforced by the lockdown and movement restrictions amid the COVID-19 pandemic. To complement the remaining part of the FVC, thus, this pilot project in Thailand was focused on supporting the “production” stage.

The momentum for the promotion of smart agriculture in Thailand and labor shortage in rural areas caused by the acceleration of aging society in Thailand compared to other South-East Asian countries are behind the selection process of this project. The team assumes that the issue of labor shortage continues in with/post-COVID-19 society and thus working environment must be changed in the agriculture sector. In this backdrop, the pilot project is expected to present a new model in agricultural production so that lessons learned from the pilot project can be applied in agricultural development by Thai government and to the promotion of Smart Food Chain (SFC), to which JICA may provide support in the future.

As a background in the selection and planning of the pilot project, “status of digitalization in Thailand,” “roles of Digital Economy Promotion Agency (DEPA) in such an initiative,” and “possibilities of JICA’s support in the agricultural sector in Thailand” are described as follows;

#### **1) Current Status in Promotion of Digitalization in Thailand**

The Thai government published “Thailand 4.0” in 2015 as a long-term socio-economic vision for the next 20 years. The vision aims at creating a “Digital Economic Society” and advocates the establishment of the social infrastructure that enables the whole society to be accessible to digital technologies. “Thailand 4.0” presents 10 important industries for achieving this vision, which includes “Smart Electronics,” “Digital Economy” and “Agriculture and Biotechnology.” In this vision, the agriculture sector is expected to transform from traditional agriculture to smart agriculture.

To achieve the vision, the Thai government designated three prefectures on the east side of Bangkok (Chachoengsao, Chonburi, and Rayong) as “Eastern Economic Corridor (EEC),” where various preferential treatment, such as the corporate tax exemption, are applied. Also, to realize a digitized economy, the government reorganized the “Ministry of Information and Communication Technology (MICT)” to the “Ministry of Digital Economy and Society (MDES)” in 2016, and the “Software Industry Promotion Agency (SIPA),” which was the umbrella organization of MDES, to the “Digital Economy Promotion Agency (DEPA).” In January 2021, the promotion of the “BCG (Bio, Circular, Green) economy” was officially designated as a national strategy, and thus the investment promotion in the relevant business fields is being accelerated.

The concept of this pilot project is relevant with the “Smart Electronics,” “Digital Economy,” and “Agricultural and Biotechnology,” which are principal industries in “Thailand 4.0”, and the “bio-circular” under the BCG economy.

## 2) The Possibilities of JICA's Support in the Agricultural Sector Thailand

Although JICA had been implementing a lot of projects in Thailand for many years, support in the agricultural, livestock, and fishery sectors tends to be less as the country had performed a big economic growth these years. The supports currently implemented in these sectors are limited to SATREPS<sup>12</sup>, projects for ASEAN region, and dispatches of long-term experts.

In this situation, implementation of the support on a co-creation of eco-system for the establishment of SFC by both the public and private sectors through the technical cooperation scheme is expected, by taking advantage of the survey on “Digital Transformation (DX) Smart Food Chain in Agriculture and Rural Development” conducted by the Economic Development Department of JICA in August 2020<sup>3</sup>.

In this connection, MOAC (Ministry of Agriculture and Cooperatives) of the government of Thailand submitted an “application form” to JICA for the technical cooperation which covers the development of Smart Food Chain. So, it is reasonable to believe that an environment is already harnessed for JICA to implement such projects with an unconventional approach of smart food chain.

### 7.1.2 Outline of the Pilot Project

The purpose of the Survey is to present lessons that would be useful for ongoing and future JICA projects. Thus, the team selected this pilot project in consideration with the policy framework of the Thai government and the potential of JICA's support in the future, that is, the lessons from the pilot project may be applied in the future project. The following PDM shows the project purpose, outputs, activities, input, etc.

As shown in the PDM, this pilot project aims to realize farm management with a labor-saving method by introducing an IoT system equipped with an automatic controlling mechanism that enables farmers to obtain data of environmental indicators. The project site is the farmstead of an agricultural farm producing organic products.

**Table 7.1.1 Project Design Matrix**

Country	Thailand	Target FVC	Vegetable
Project	Support for the introduction of smart agriculture technology on organic farming in greenhouses (application of environmental sensors and automatic controllers)		
Purpose	To enhance the productivity of organic products with improved labor efficiency, and to realize a contactless production system by introducing IoT in greenhouses (indicator: reduction of working hours, and increase of production volume)		
Location	Chachoengsao province located about 90-minute drive from Bangkok.		
Beneficiaries	An agricultural corporation named “Pure Organic Farm”, which produces organic foods in Chachoengsao province. It has a shop in Bangkok that serves organic vegetables and drinks. Cultivation of leafy vegetables is managed in greenhouses. Also, herbs, mushrooms, poultry are produced at the farms. By making the best use of the resources from these commodities, integrated organic farming is being operated.		
Related Project	Ministry of Agriculture and Cooperatives (MOAC) is preparing an application form for JICA's technical cooperation on the Smart Food Chain (the scheduled date of submission is in August 2021). At the same time, the Cooperative Promotion Department (CPD) of MOAC submitted a draft of the application form on “the cooperation project on smart agriculture utilization in farmers' organic vegetable greenhouses” to the JICA Thailand office.		
Relevant Organization	Ministry of Agriculture and Cooperatives: MOAC Digital Economy Promotion Agency: DEPA		
Rationale:	There is an increased health consciousness and need for food safety under the COVID-19 pandemic situation. The nature of horticulture crop cultivation in Thailand, especially organic vegetables, is labor-intensive. However, Thailand faces the fastest aging society in the emerging countries in Asia. Therefore, the labor shortage in the agricultural sector		

<sup>1</sup> “Utilization of Thailand Local Genetic Resources to Develop Novel Farmed Fish for Global Market”  
<https://www.kaiyodai.ac.jp/satreps/index.html>

<sup>2</sup> “Development and Dissemination of Sustainable Production System Based on Invasive Pest Management of Cassava in Vietnam, Cambodia and Thailand” [https://www.jst.go.jp/global/kadai/h2708\\_vietnam.html](https://www.jst.go.jp/global/kadai/h2708_vietnam.html)

<sup>3</sup> [https://www.jica.go.jp/activities/issues/agricul/jipfa/ku57pq00002kzmox-att/smart\\_02\\_04.pdf](https://www.jica.go.jp/activities/issues/agricul/jipfa/ku57pq00002kzmox-att/smart_02_04.pdf) (Japanese only)

is a serious problem. Also, there is an issue that a closed space in a greenhouse creates a circumstance of “Three CS: closed space, crowded place, and close-contact setting.”

Given the above situation, reduction of labor requirements is necessary on the production system of organic vegetables, which performs in a closed environment (greenhouse) through the introduction of a variety of environmental sensors, which enable automatic environmental control of the greenhouse based on the indicators such as soil temperature and air temperature.

Stabilization of the production of high-quality vegetables and other organic commodities based on data is also expected. This pilot project contributes to establishing the agricultural production model which fits into the post-COVID-19 society by utilizing the DX technology. This production model will also play a role in solving the limited labor force, which has been an issue since before the COVID-19 pandemic and will be in line with the trend of a growing need for the safety foods under the COVID-19 pandemic.

<p><b>Outputs:</b></p> <ol style="list-style-type: none"> <li>1) Environmental control in greenhouses is managed semi-automatically by using IoT.</li> <li>2) Productivity in the greenhouses that introduced IoT is increased while reducing or keeping working hours</li> <li>3) The information related to smart agriculture is shared among relevant organizations</li> </ol>	<p><b>Indicators:</b></p> <ol style="list-style-type: none"> <li>1) Introduced IoT system operates properly</li> <li>2) Total working hours in the greenhouses reduced 5% compared to that without IoT/ the yield of shippable vegetables increases 5% with the same working hours</li> <li>3) Online seminar with people involved is held more than one time</li> </ol>
<p><b>Activities:</b></p> <ol style="list-style-type: none"> <li>1) Introduce and operate IoT in greenhouses (sensors, information communication equipment, automatic controlling equipment)</li> <li>2) Manage the cultivation using IoT, and make a database with cultivation records</li> <li>3) Implement an (online) seminar to share knowledge and findings of plot cultivations with relevant organizations and farmers</li> </ol>	<p><b>Input:</b></p> <p>Equipment</p> <ol style="list-style-type: none"> <li>1) IoT sensors for environmental measurement (electricity meter, water meter, wind meter, I/O controller, pH sensor, NPK sensor, servomotor, pump, monitoring station, etc.)</li> <li>2) Information and communication equipment/ information management equipment (software license of platform for management, communication gateway, SIM, tag, etc.)</li> <li>3) Personal badge tracker LoRa</li> </ol> <p>Personnel</p> <ol style="list-style-type: none"> <li>1) Monitoring staff</li> <li>2) Rent-a-car for monitoring</li> </ol> <p>Others</p> <ol style="list-style-type: none"> <li>1) Preparing materials for seminars, etc.</li> <li>2) Training: 1 time (online training is also available)</li> </ol>

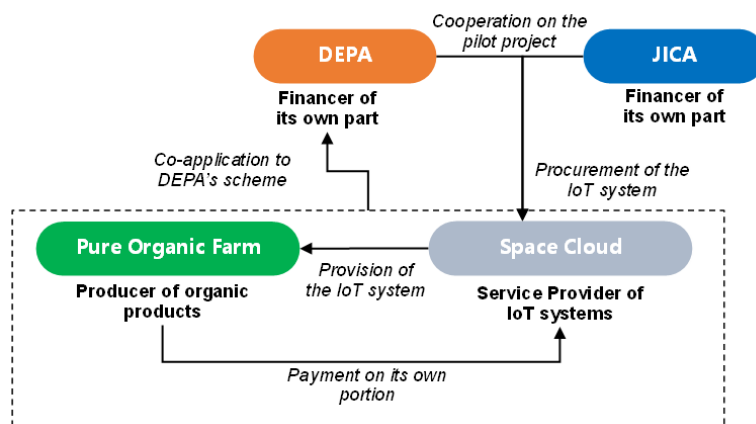
Source: JICA Survey Team

## 7.2 Implementation Method, Implementation Body, Relevant Parties, Consensus Formation

### 7.2.1 Implementation Method, Implementation Body, Relevant Parties

This pilot project has been implemented through cost-sharing and cooperation with DEPA. It was a business model selected from business proposals applied to the supporting scheme DEPA offers for the digitization promotion program. For the selection of business models, DEPA maintains its own criteria, with which DEPA authorized 50-60 projects in 2021, including 14 projects related to agricultural, livestock, and fishery sector.

The implementation body of the project is an agricultural corporation named “Pure Organic Farm”, which produces organic products in Chachoengsao province. The pilot project is to introduce various IoT sensors and equipment to the farm. In addition, Space Cloud, which applied to DEPA’s supporting scheme as a joint venture with Pure Organic Farm, is responsible for the provision and installation of the equipment. Three parties of Pure Organic Farm, DEPA,



**Figure 7.2.1 Implementation structure of the project**

Source: JICA Survey Team

and JICA survey team shared the procurement cost of the system with the percentages agreed before the commencement of the pilot project.

As the sealing amount for the supporting scheme had been already set by DEPA for this project, three parties agreed on the cost-sharing with the ratios of 30% of the total budget is by DEPA, 60% is by JICA, and 10% is by Pure Organic Farm. The table below shows the roles of each organization.

**Table 7.2.1 Relevant organizations and roles**

Relevant organization	Main roles
DEPA	<ul style="list-style-type: none"> <li>- Selection of the business based on its criteria (it was completed by the time the pilot project was selected)</li> <li>- Sharing 30% of the total cost</li> <li>- Monitoring of the implementation</li> <li>- Holding a lessons-sharing seminar (for relevant parties in Thailand)</li> </ul>
JICA Team	<ul style="list-style-type: none"> <li>- Sharing 60% of the total cost</li> <li>- Monitoring of the implementation</li> <li>- Holding a lessons-sharing seminar (for relevant parties in Thailand)</li> </ul>
Pure Organic Farm	<ul style="list-style-type: none"> <li>- Implementation body</li> <li>- Sharing 10% of the total cost</li> <li>- Cultivation management and monitoring using introduced IoT equipment</li> <li>- Presentation in the lessons-sharing seminar</li> </ul>
Space Cloud	<ul style="list-style-type: none"> <li>- Installation of IoT equipment</li> <li>- Initial training on the use of the equipment for the staff members of Pure Organic Farm</li> <li>- Provision of after-sales service</li> <li>- Data collection/analysis and feedback</li> </ul>

Source: JICA Survey Team

## 7.2.2 Consensus Formation on the Planning and Implementation of the Pilot Project

To formulate the plan of the pilot project, the team conducted a pre-screening on the proposed businesses that DEPA had already selected/ authorized. DEPA already had 24 business models related to agricultural, livestock, and fishery sectors selected through its own criteria. The team narrowed the business models down to 4 projects using four criteria:

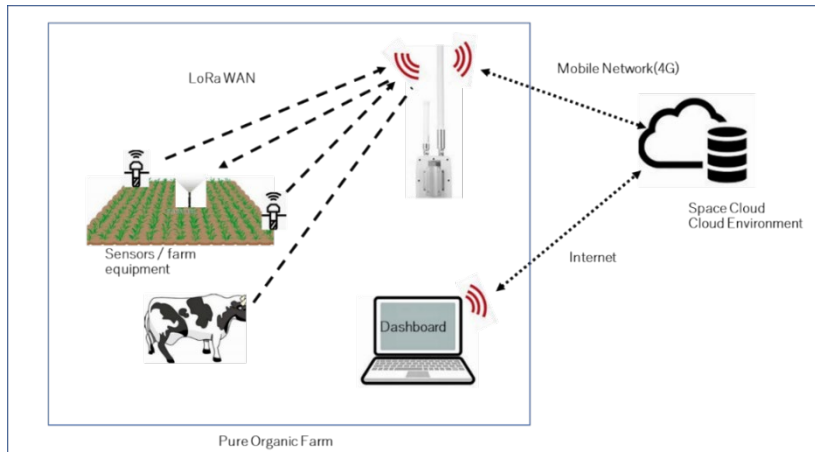
- 1) the business model can address, in some way, the social challenges caused by COVID-19,
- 2) the location of the organization is within the range of a day trip from Bangkok,
- 3) implementation can be facilitated in a short period, and
- 4) the business model has a certain level of applicability to other entities; for this reason, the team disqualified business models of establishing Enterprise Resource Planning (ERP) of specific enterprises.

After that, the team made online interviews with the 4 companies individually. Although all companies adequately fulfill the above four criteria, the team selected the project that was to introduce Smart Agriculture, which has a potential theme that JICA may implement any survey or project in the future. Through the consultation among relevant parties of JICA, the plan of the pilot project was formulated.

## 7.2.3 Outline of the IoT System Introduced

In this pilot project, various sensors were introduced to the organic farm (around 2.0 ha) managed by Pure Organic farm in Chachoengsao prefecture of Thailand. The system can send the sensing information to the cloud environment allocated to the Space Cloud on a real-time basis. Also, it has a function to put out an alert by setting the threshold value of each sensing indicator and to operate equipment automatically. LoRaWAN is available within the farm area, and the mobile network is used to send collected data by sensors to the cloud. Observation of real-time information and manual operation of the equipment are available from the Dashboard as far as it is connected to the cloud.





**Figure 7.2.2 Schematic Views of the System**

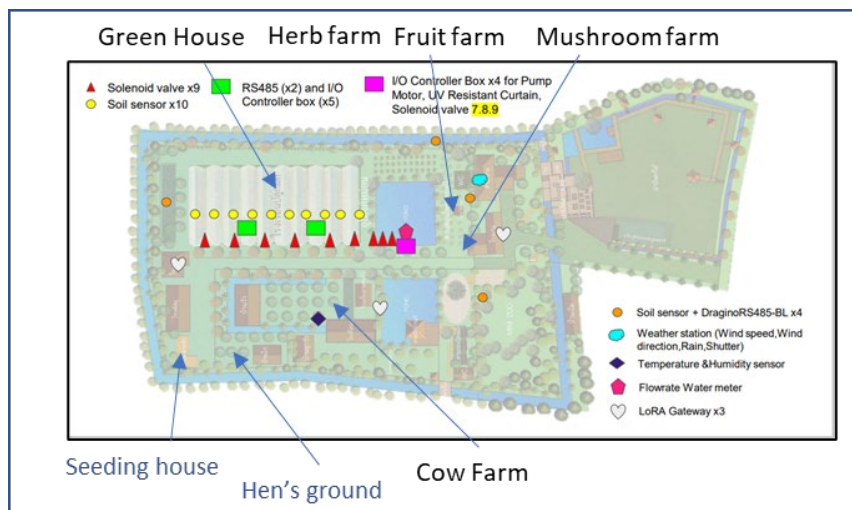
Source: JICA Survey Team (based on a document provided by Space Cloud)

Note: LoRaWAN: Long Range Wide Area Network: A type of LPWAN (Low Power Wide Area) network. It can be used for wide networking from a few kilometers to nearly 20 km. It is often used for IoT networking in the fields of agriculture, river administration, and disaster management.

The table below shows the list of equipment procured and installed by the pilot project, which includes the ones procured with the budget of DEPA and Pure Organic Farm. The dashboard screen of the control system is also shown in Figures 7.2.4 and 7.2.5

**Table 7.2.2 List of Equipment Installed**

Network Equipment		
LoRaWAN Gateway		3
Sensing devices		
Weather Station	Wind speed, direction, rain, temp, humidity, illuminance, atmospheric pressure	1
Soil Temp & Humidity sensor	humidity, temp	13
pH/ NPK sensors	pH, NPK, humidity, temp, EC	4
Ear Tag	Location of cows	5
Personal badge tracker	Tracking too short distance between persons	50
Control Devices		
I/O Controller	Controllers to operate water valves, UV cut curtain, etc.	18



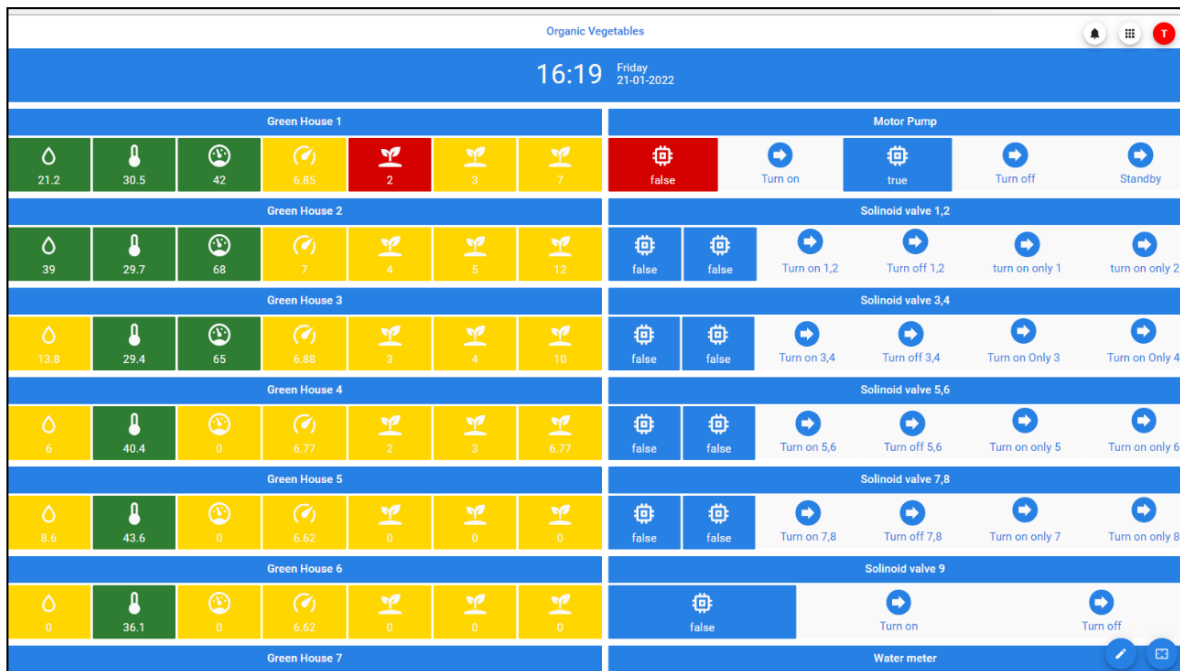
**Figure 7.2.3 Layout Plan of Equipment in the Pilot Project Site**

Source: JICA Survey Team (based on a document provided by Space Cloud)



**Figure 7.2.4 Weather Station Monitoring Screen (including operation mode of shading curtain)**

Source: JICA Survey Team (based on a document provided by Space Cloud)



**Figure 7.2.5 Green House environment monitoring/control screen**

Source: JICA Survey Team (based on a document provided by Space Cloud)

## 7.3 Activities, Monitoring/ Evaluation

### 7.3.1 Activities, Monitoring/ Follow-up

#### 1) Activities

After the contents of the pilot project were approved by JICA, the JICA team and Pure Organic Farm, which is the main implementation body, signed a Minutes of Meeting dated September 16, 2021. The role of Pure Organic Farm includes the proper management and use of all equipment, operation of the monitoring system, provision of data collected, and holding a workshop to share the outcome of the pilot project with the relevant parties and farmers. Then, the JICA team placed an order of the equipment (JICA portion) to Space Cloud.

Space Cloud started the installation of equipment to the farms of Pure Organic Farm in November 2021, after the procurement of imported equipment from foreign countries was completed. Although the equipment installation was nearly completed in December 2021, it took some more days to replace the disconnected controlling wires for shading curtain (made by saran net). Pure Organic Farm started the operation of a part of the system manually because the software development to manage the installed system was delayed.

In the meantime, Pure Organic Farm is recording the working hours of the workers for farm management to measure the project effects. Based on the recorded working hours for each work item, the JICA team evaluates the reduction effect of working hours after a certain period of using the system. The table on the following page shows the Plan of Operation of this pilot project.

#### 2) Monitoring

The JICA team carried out on-site monitoring on January 13, 2022. Although the survey team confirmed the installation status and the operating conditions of each piece of equipment, it was impossible to conclude the results of the activities because it had been only a short period since the equipment was installed and the data accumulation for monitoring was just started.



Soil sensor: by five pins, pH, NPK, soil moisture, soil temperature, and EC can be detected and recorded.



Dashboard shown on the computer screen can administer the operation of the sprinklers. It is necessary to connect to the software in the cloud.



Greenhouse with shading curtain: with the system, curtain can be operated automatically. Before it was operated by farm labors using sticks.

**Table 7.3.1 Plan of Operation (PO): Pilot Project for Introduction of Smart Agriculture Technology on Organic Farming in Greenhouses, Thailand**

1) Introduce and operate IoT in greenhouses (sensors, information communication equipment, automatic controlling equipment)	Breakdown of Activity	by Thai side	by JICA Team	Sep 2021				Oct 2021				Nov 2021				Dec 2021				Jan 2022				Feb 2022				Mar							
				1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
				Progress				Progress				Progress				Progress				Progress				Progress											
1.1 Determine the layout of the cultivation field		○																																	
1.2 Determine the installation condition of each piece of equipment (place and quantity)		○																																	
1.3 Purchase the equipment		○																																	
1.4 Customize the software of each IoT device		○																																	
1.5 Config the IoT devices		○																																	
1.6 Install the hardware		○																																	
1.7 Carry out operation check both hardware and software		○																																	
1.8 True-up and optimize the system		○																																	
2) Manage the cultivation using IoT, and make a database with cultivation records																																			
2.1 Monitor the state of cultivation on the fields using IoT		○																																	
2.2 Monitor the workload in the greenhouses		○																																	
2.3 Monitor the progress of data collection		○																																	



### 7.3.2 Evaluation

The below table shows the indicator of each output described in the PDM and the level of attainment by indicator item.

**Table 7.3.2 Indicators and Attainment level**

Indicator of each output	Attainment level
1) Introduced IoT system operates properly	Although almost all the equipment installed operates properly, total automation is yet-to-be-completed as of January 13, 2022, as the IoT provider needs to develop/ update the software. It is necessary for the system to be able to synchronize the timing of aspersion pump and the water valves even when the WiFi network is disconnected.
2) Total working hours in the greenhouses reduced 5% compared to that without IoT/ the yield of shippable vegetables increases 5% with the same working hours.	According to the summary records of the working hours before installation of the system, five workers spent 67 hours for the farm management in the greenhouses. The breakdown of the working hours indicates as follows: 21 hours for irrigation, 32 hours for fertilization, 7 hours for operation of the shading curtain, and 7 hours for observation in and around the greenhouses. Given that the three items of irrigation, operation of the shading curtain, and observation will become automation, there is a potential to reduce up to 35 hours out of 67 hours (approximately 50%).
3) Online seminar with people involved is held more than one time	The online seminar was held on March 1, 2022, for which around 60 people participated. Participants were from the government, university, and private sector.

Source: JICA Survey Team

Three outputs were set in the PDM of the pilot project. Indicator 1 “Introduced IoT system operates properly” is almost achieved. The environmental monitoring equipment and the controlling instrument such as sprinklers and operation system of shading curtains operate properly. The automation controlling on the linkage between the monitoring equipment and control instrument, such as the automatic control system of sprinklers in response to the values of environmental monitoring (soil humidity, etc.) will become in effect only after the software development completes.

Indicator 2 “Total working hours in the greenhouses reduces 5% compared to that without IoT/ the yield of shippable vegetables increases 5% with the same working hours” is not achieved as of January 2022. The result is due to the time constraint for the implementation period of this pilot project. It is expected to reach a certain conclusion after the system operates for an adequate period.

Three items of irrigation, operation of shading curtain, and observation will operate automatically, reduction of up to 50% of total working hours for the management of the vegetable cultivation in the greenhouses, which was 67 hours per week before the system introduction, is theoretically possible. The observation work at the site will still be necessary even after the introduction of the automatic controlling system is completed. Even though the 50% reduction of working hours is too ambitious, the 5% reduction of total working hours, which is the outcome indicator, will be surely achieved.

In addition to such a tangible indicator of working hours, it was reported that there is a potential that the automation will enhance reliable performance. For example, under the intensely hot temperature in the dry season, employees often evade the tasks of opening and closing shading curtains every day. Therefore, the owner of the firm gives credit to the accuracy and reliability of the operating system of shading curtains, which work automatically/ semi-automatically.

On the other hand, it is difficult to evaluate the indicator of “the yield of shippable vegetable increases” at this moment. It is necessary to evaluate how adequate fertilizer management, water management, and lighting management using the system can contribute to the quality of products.

Indicator 3 “Online seminar with people involved is held more than one time” was achieved as the

seminar was held on March 1, 2022. There were around 60 participants from the government, university, and the private sector.

Although there are some items that have not been sufficiently verified because of time constraints, the introduction of IoT and automatic control surely contribute to realizing less-contact production of organic vegetables. In this sense, the purpose of the pilot project was generally achieved as it suggested one model of agriculture in the post/ with COVID-19 society in Thailand where there is a growing concern about labor shortages in the future. However, further verification from the viewpoint of cost-effectiveness is necessary, and this point will be discussed in the next section.

#### **7.4 Special Notes and Lessons for the FVC Development in With/ Post-COVID-19 Society**

Finding and lessons gained in the process of the pilot project implementation are summarized below:

##### **1) Optimization of the environment controlling system**

The introduced system enables the operation of shading curtains automatically and semi-automatically, and also the operation of sprinklers based on the value of sensing indicators. Authorized operators can operate the system through PCs using an operation dashboard. In the future, a benchmark of each sensing indicator (upper limit/ lower limit) shall be established, so that operation can be automatically performed based on such value or at least give alert notification to the operator. The current software already has such function to conduct such operation. Therefore, threshold values shall be established based on the result of the practice in the farm fields.

##### **2) Development from the environment controlling system to the cultivation management system**

From a long-term perspective, a setting of adequate cultivation management criteria is needed based on the cultivation record. The operation procedures mentioned in 1) are to set the threshold values to keep the cultivation environment within an appropriate range for the growth of plants. The point of this section is to set the Standard Operation Procedure (SOP) that suggests more adequate environmental setting throughout the growing period to pursue harvesting high-quality and high-yield products.

In the field of environmental control in the closed system (greenhouse) in Japan, in addition to the conventional environmental control according to temperature, humidity, etc., environmental control methods using the indicator of “saturation<sup>4</sup>” are being studied and implemented. Since the greenhouses where the system was introduced in the pilot project are not a closed structure but houses without side walls due to the environment of the tropical area, complete environmental control is not practical. However, it is possible to build a cultivation model of what kind of cultivation management is the most desirable from a series of observed environmental data, cultivation management data, and yield/quality data, and to develop an automatic control system based on that standard.

##### **3) Reinforcement of the cooperation with research institutes**

As discussed in the section “2)”, formulation of appropriate cultivation management guidelines based on data is required in the future. Pure Organic Farm and IoT service provider (Space Cloud) who participated in the pilot project are also motivated to continue data collection and analysis and link them to the construction of optimized models. For more effective development, it is recommended to realize it through cooperation with agricultural research institutes and universities.

It is necessary to create a system, in which anyone can obtain a wider range of data and use it for optimizing one's own cultivation management by providing its own data. One of the examples may

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<sup>4</sup> An index showing how much water vapor can additionally be added in air at a certain temperature and humidity, and the free capacity of water vapor per m<sup>3</sup> of air is expressed in “g” (g/m<sup>3</sup>). <http://lib.ruralnet.or.jp/genno/yougo/gy087.html>

include WAGRI of Japan<sup>5</sup>. As of January 2022, such a government-led agricultural data platform in Thailand has not been confirmed. Assuming that similar efforts by individual agricultural corporations, such as Pure Organic Farm, will increase in the future, such a mechanism or a platform to integrate them and share knowledge widely to create data-driven agricultural production, or smart agriculture, shall be established.

#### **4) Evaluation of the cost-effectiveness**

In this pilot project, it was generally confirmed that the introduction of the IoT system can improve labor efficiency of some items such as irrigation work and shading management, and thereby reduce the labor force. Still, it is a question of whether it can sufficiently pay the introduction cost of the entire IoT system. It can create a new value, such as being able to perform operations properly (opening and closing of shading curtains, etc.) that were not properly managed by employed workers.

In the future, the following two directions can be considered to improve cost-effectiveness. One is to expect positive externalities in the results of “data collection” through the “data linkage platform” mentioned above. Although this does not bring direct benefits to agricultural corporations, which are the economic agents that are trying to introduce the system, it can lead to any opportunities to obtain new information and knowledge through feedback from the data linkage platform.

The second direction is to diversify profits as an agricultural corporation. Pure Organic Farm is planning to start tourist farms after the COVID-19 pandemic has subsided. Similar to “organic farming”, “DX farming” will also provide a new value to society. Therefore, it can be expected that these advanced cases will lead to providing a place for visitors to learn and experience something new, which in turn will help improve the profitability of the agricultural corporation.

#### **5) Possibilities of smart agriculture in the with/ post-COVID-19 society**

Of the five approaches shown in Chapter 1, this pilot project targeted “4) Automation/mechanization approach.” There can be various contents in the automation/mechanization approach or the technology called smart agriculture. For example, from the one that automates only the operation of the shading curtain to the one that performs integrated cultivation management based on the weather and environmental data in the field. Of these, the types and scope of cost-effective technologies could not be concluded only from the experience of this pilot project, but at least, automation and mechanization will lead to the reduction of human labor.

In with/ post-COVID-19 society, it is expected that it will be more difficult to secure agricultural workers in Thailand. The introduction of smart agriculture using IoT is expected to be one solution, but it is hard to say that it will be applicable to all of Thai agriculture. Regardless of whether it is in with/ post COVID-19 society, some kinds of support will be still needed for resource-poor people.

For the agriculture sector in Thailand in the with/ post-COVID-19 society in the future, securing new farmers/ workers, especially by young people, will be one of the challenges. New and therefore challenging forms of farming, such as smart farming, can be a catalyst for attracting young people to be newly engaged in farming. To promote smart agriculture, communication network development, and related legislation, for the operation of drones, for example, will be necessary for the sense of expanding public goods for new forms of agriculture.

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<sup>5</sup> WAGRI: <https://wagri.net/en-us/>



# **PART III**

## Policy

## Recommendations and Way-Forward



## **CHAPTER 1 IMPLICATIONS TOWARDS WITH/POST COVID-19 SOCIETY FROM THE IMPACT SURVEY RESULTS**

In this Survey, the Team has conducted a literature review and data collection on COVID-19 and an impact survey on FVCs using questionnaires, which targeted total 16 commodities in 5 countries including the Philippines, Thailand, Viet Nam, Indonesia, and Lao PDR. In addition, a questionnaire-based impact survey was conducted on consumer behavior change and also on farmers economic status. The following sections will discuss what implications the results of these surveys would indicate towards the with/post COVID-19 society.

### **1.1 Implications towards With/Post COVID-19 Society based on FVC Impact Survey**

In the COVID-19 pandemic, while there are many FVC stages being affected negatively, e.g. significant decrease in income, there are some stages that have not been affected as much, and also there are stages that have seen an increase in sales revenue. The FVC stages that have experienced a significant decrease in revenue are represented by small to medium scale farmers and the HoReCa industry, which are directly affected by the movement restrictions enforced.

Less affected stages include farmers who produce agriculture commodities that can be stored for a long time, e.g. cassava, as well as companies that produce export products or contracted farmers with those export-oriented companies. Modern markets, e.g., supermarkets, are the least affected stage of FVC, and there are many cases even having increased their sales revenues. Based on these findings, the following recommendations are presented towards the with/post COVID-19 society.

#### **1) E-Commerce (EC) Introduction Coping with Different Requirements**

Diversification of sales channels, including EC introduction on top of existing FVCs and thus direct sales, is considered to be an appropriate direction in the with/post COVID-19 society that can respond to not only ordinary but also emergency situations. However, in fact, sales through EC will require the ability to meet different needs and requirements. For example, such ability is required as to ship in small lots and at high frequency, and to ensure the high quality and stable supply necessary for delivery to modern markets. Therefore, while maintaining the existing distribution system, it is necessary to build up the capacity to meet new requirements as a future initiative.

Of the FVC challenges that occurred under the COVID-19 pandemic, the most prominent one is the loss of demand in the existing sales channels. While this has been often temporary, many stakeholders involved in the existing FVCs have been hit hard to date. In addition, although the total volume of demand at the final stage of consumers has not changed much, consumers have also been required to change their behavior, such as shifting from eating out to eating in. Under these circumstances, revitalization of sales channels using EC, especially in urban areas, must be a clear indication leading to a potential diversification of FVCs in Southeast Asia.

#### **2) Improvement of Hygiene and Operation of Traditional/ Conventional Markets<sup>1</sup>**

In addition to the diversification of sales channels mentioned above, the creation of a hygienic environment through modernization of facilities in traditional markets should also be explored. Survey results have acknowledged an increased awareness of food safety in the wake of the COVID-19 pandemic. It is due expected that more consumers will prefer to purchase their daily needs in a more hygienic environment, and this could be a characteristic of the with/post COVID-19 society. Therefore, in line with the modernization of traditional market facilities, hygiene control should also be strengthened, probably together with the introduction of electronic money for payment transaction,

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<sup>1</sup> Traditional markets here include local markets operated by local governments, roadside stalls, and kiosks. In other words, it refers to all markets that are not included in modern markets represented by supermarket.

information dissemination on the situation of customers congestion, as well as making roadside stalls to keep distance each other.

In the COVID-19 pandemic, a cluster outbreak at a large seafood market and the subsequent closure of the market, as an example, raised concerns about the spread of infection in such traditional markets where many people gather. As a result, people tended to avoid using such markets. There is a possibility that the same trend may continue in the with/post COVID-19 society, and for this reason, it is thought that the diversification of sales channels mentioned above will become necessary. On the other hand, such traditional markets that exist in various parts of the countries are easily accessible and convenient for many populations, and thus they will serve as hubs for intra-area distribution. It means that the needs for such markets are very much expected to remain unchanged in the future too, and therefore facility modernization with hygiene control measures should be promoted.

### **3) Food Safety Initiatives and Government Support**

There are many reports that the COVID-19 pandemic has raised awareness of "food safety". In order to respond to this, introduction of certification systems (e.g., GAP) that ensure the proper use of agriculture chemicals, as an example, in the production process is recommended as a required measure in the with/post COVID-19 society. In fact, in the midst of COVID-19 pandemic, consumers have become more concerned than ever about food safety. In other words, in the with/post COVID-19 society, there is a high possibility that the proper use of agricultural chemicals will be more required and buyers who need such certified agricultural produces will increase.

However, on the other hand, it is also noticed that in this COVID-19 pandemic, the shortage of laborers has become more severe, exposing the vulnerability of labor-intensive production process. Furthermore, it has been observed that the farmers are unable to pass on the costs of such required management to the price when demand declines from the market. Since satisfying the social needs of FVCs (in this case, ensuring food safety) may be a higher risk endeavor for farmers in the "production" sector, we all should consider the coordination between the overall best (public level best) and the partial best (farmer level best). Therefore, it is necessary to consider government supports for the farmers who are to undertake food safety initiative by, for example, providing technical and administrative support for obtaining certifications.

### **4) Disposal Reduction of Unsalable Products**

In the COVID-19 pandemic, there have been cases where agricultural, livestock, and fishery products that lost their marketing destinations were not harvested or were disposed of due to movement restrictions. Therefore, it is necessary to add or strengthen conventional storage capacity, cold storage facilities, and processing functions on the existing FVCs, or to promote local productions for local consumptions. This is similar to the concept of "sixth industrialization<sup>2</sup> in agriculture sector" in Japan. As additional investment is required for agricultural producers, it may be difficult for individual farmers to respond to. Therefore, it is necessary to consider the response by farmers' organizations, not by individual farmers, and also government supports in organizing and strengthening farmer groups, together with loan provisions at low interest rates.

In considering the direction of strengthening the farmers' resilience in the with/post COVID-19 society, it is necessary to have a strategy to establish a system that can cope with the stagnation of agriculture trade. For this purpose, it is necessary to introduce storage facilities, promote the processing industry to extend the sales life, e.g., processing into vegetable chips, and promote local productions for local

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<sup>2</sup> The general idea of sixth industrialization is to promote revitalization of agriculture by combining the traditional primary industry (1) with processing (secondary industry 2) and distributing and selling things (tertiary 3) to produce synergies (1 + 2 + 3 = 6).

consumptions also as a social movement because it also leads to CO2 reduction. If existing sales channels become stagnant, farmers may sell through other channel as mentioned in ‘1) E-Commerce (EC) Introduction Coping with Different Requirements’, while in this case, farmers can ensure that existing sales channels are secured.

In addition to the above activities undertaken by the agricultural producers, they can also collaborate with processors. For example, producers may work with processors who have cold storage facilities to reduce the loss and waste of produces, and with those who own processing facilities to enable long-period storage of products. Since most processors in the agricultural sector are small and medium-sized enterprises (SMEs), it is necessary to prepare public support measures such as low-interest loans for capital investment as well as product development.

It is also necessary to establish a system to distribute agricultural products, which have lost their ways for sales, to the poor on a priority basis. Although this is not likely to be profitable for the producer farmers, it is more compatible with the SDGs, and environment cautious and energy-saving society than just disposing of the produce resulting in total waste. Another important role of the government is to provide related information on where to access such agricultural products, even if they can be provided for free or at very low prices. It has been reported that the children's mess houses run by NPOs in Japan are making effective use of, e.g. vegetables, that were to be disposed of, but the biggest challenge is that there is a difficulty of delivering the information to the children who cannot have supper in their home.

## **5) Domestic Consumption Trial for Export Crops, and Use of Information Platforms**

The main impact of COVID-19 on the export sector is the restriction of cross-regional/ cross-county logistics. With limited domestic and intra-regional populations, it must be difficult for corporate producers, e.g., large private companies, to ship out major parts of these products to the domestic market, especially in the case of raw agricultural products. However, there are many cases where crops for export are produced not only by corporate entities but also by individual small to medium scale farmers or under contract with corporate entities.

In the case of small-scale farmers, based on the assumption that their production volume is not big, they may expect to develop domestic markets in addition to their existing export markets. For example, palm oil produced in Indonesia is mainly for export, but it is also widely used in the domestic market. In other words, if there is a domestic market for an export-oriented product, sales to such domestic market should also be tried.

Not only agricultural products meant for export, for example, the export-oriented Pangasius, a fresh water fish produced in Viet Nam, has been severely hit by the COVID-19 pandemic when exports stopped. For such export-dependent commodities, the development of new domestic sales channels should be explored, in cases combined with a movement of local production for local consumption as practiced in Thailand during the COVID-19 pandemic. Such development of new domestic market would provide flexibility and install resilience in their businesses.

The establishment of distribution information platforms can be effective in mitigating the effects of logistical restrictions enforced under COVID-19 by reducing stagnant stocks at each stage of the supply chain. For example, in Japan, agricultural product information platforms are being developed to make public accessible to required information across the production and distribution sectors. The use of such information platforms may be useful for small-scale farmers producing products for export to enter the domestic market in future.

## **6) Enhancement of Production Management to Cope With Labor-Intensive Activities and Labor Shortages**

In the with/post COVID-19 society, it is suggested to introduce automation and mechanization into the production management; in other words, there is a need of introducing a system that does not excessively rely on scarce labor in both normal and emergency situations. However, for example, when introducing agriculture machineries, it may be difficult to use those effectively unless otherwise the infrastructure, such as agricultural infrastructure and roads, is developed. Thus, introduction of automation and mechanization should be in line with the country's development stage in the agriculture sector.

In Southeast Asian countries, labor-intensive agriculture still dominates in many cases. In Thailand and Myanmar, on the other hand, the aging of the population and the resulting shortage of young workers have already been a high concern. Under such circumstances, if tough restrictions on movement are imposed, e.g., under the case of Delta variant spiking of COVID-19, the shortage of workers will become a very much major problem. In order to cope with this situation, it is necessary to promote labor-saving production activities by automating parts of production management and introducing agricultural machineries as well.

One of the findings of this survey is that the COVID-19 pandemic has not only brought about new challenges, but also made it more difficult to deal with existing problems. For this reason, the with/post COVID-19 society should not neglect the existing problems and should take measures in parallel with the promotion of research and development fields. For example, introduction of genome-edited varieties may shorten the time required for the implementation of countermeasures, and may also contribute to the improvement of labor-saving and efficiency in agricultural systems by rapidly developing varieties suitable for, e.g., agricultural mechanization and automation of production management.

## **7) Continuous Efforts on Impacts Existing from before-COVID-19 Pandemic (e.g., African Swine Fever, etc.)**

According to the results of questionnaire surveys in the target countries, some respondents indicated that the impact of previous problems was still stronger than the impact of COVID-19 pandemic. For example, often cited are the spread of African swine fever in pig farming (Viet Nam) and the spread of viral diseases in cassava (Thailand). The government institutes in charge in each country are continuously working on these issues, and JICA is also implementing projects to deal with such themes (e.g. implementation of SATREPS including disease control for cassava).

As in the case of the COVID-19 pandemic, where demand was lost in one fell swoop due to movement restrictions, the loss of production at a large scale due to persisting problems, e.g. African swine fever, is also a significant risk, especially for the producers. These existing problems, when combined with labor shortages and hampered distribution functions under the COVID-19 pandemic, will have a more serious impact on the producers. Continued efforts are required to address the existing issues to avoid a greater impact.

## **1.2 Survey Results on Consumer Behaviors Change and Implications for Future**

The Team has also conducted a questionnaire survey to know the economic impact on consumers and also to know their behavior changes in such 3 countries as Indonesia, Viet Nam, and the Philippines. In this survey, the Team has comparatively analyzed the difference in impact on low-income and upper-income groups. The following section discusses the overall impact of the pandemic on consumers, how it has affected different income groups, and the measures that have been taken and need to be taken:

### **1) Strengthening of Domestic Production Base of Major Crops**

The expansion of middle-class population is essential for the growth of Southeast Asia's food markets,

and the economic blow under the COVID-19 pandemic to the lower income groups, especially those who could become the near future middle class, could hinder the on-going growth of the countries. The survey conducted in the Philippines indicated that low-income groups tended to have bought less groceries in the face of higher prices and lower incomes during the COVID-19 pandemic.

The low-income group tends to have a high expenditure ratio (Engel's coefficient) for food, and thus the most significant impact should be the increase in retail prices of agricultural products such as staple foods, which are in most cases purchased in bigger quantities. In order to mitigate this situation, it will be important to continue as before with efforts to strengthen the agriculture production base and also distribution channels in order to maintain domestic agricultural production, rather than heavily dependent on imports.

## **2) Support in Traditional Market Operation**

The results of the consumer survey showed that many low-income consumers continued to use traditional street markets and also local markets despite harmful rumors sometimes caused by media reports. Familiar nearest public markets, which are in most cases traditional ones, are in fact due needed for low-income people who have suffered from the loss of income to procure daily groceries. The closure or scaling down of such public markets in several countries may have presented serious implications for people's food security.

The closure of public markets and reduction of the scales of operations may be necessary depending on the level of COVID-19 infection, but with due consideration of the public health risks and the need for food security, it may be possible, for example, to disseminate information on market congestion through real-time information distribution, as tried in Lao PDR, and thereby promote purchasing activities at different times. In addition, it is necessary to strengthen hygiene management capacity of those markets and introduce contactless electronic money, etc., so that the market may continue to operate even in times of emergency. In supporting traditional markets, it is important to clarify the roles of local government and the private sector, and to have both parties cooperate in the implementation of such supports.

## **3) Support for Lower Income Groups**

In the Philippines, different impacts were clearly observed in the lower and upper income groups. The percentage of households that experienced some form of employment impact was 75% in the lower income group while it was 56% in the upper income group. Looking at the results in more detail, a higher percentage of households in the lower income group were affected by temporary layoffs or a reduction in the number of "work days," while a higher percentage of households in the upper income group were affected by a reduction in the number of "work hours. In the Philippines, the impact on income was clearly different between the income groups. The income of the lower income group has decreased by an average of 25 % points compared to that of before COVID-19 pandemic, while the income of the upper income group decreased by an average of only 3 % points.

For the most affected households, who are in fact the poorer households, there should be a need for economic supports such as humanitarian assistance including food aid and provision of temporary financial benefits, etc. Lower income groups are more likely to continue to use nearby local public markets and in cases street vendors to save transportation costs and minimize travel distances (Note that online purchase and delivery, as well as purchase in modern markets, are limited by accessibility and cost). In addition, they tend to buy only what they need in the quantities they need, rather than buying in bulk; so as mentioned above, support is needed to enable the traditional markets to continue operating.

### **1.3 Survey Results on Different Farmer Groups and Actions for Future**

A questionnaire-based survey was conducted targeting the beneficiary farmers (groups) of the pilot project and the surrounding small-scale farmers (groups) to understand the magnitude of the impact of the COVID-19 pandemic on the 2 groups. This survey was conducted in 4 countries (Philippines, Viet Nam, Lao PDR, and Indonesia) out of the 5 countries where pilot project was implemented. As a result, while there were many similarities in the agricultural management issues faced by the two groups, there were also some differences between the two groups.

The two target groups are located in close proximity to each other and grow similar crops. They grow similar crops and sell mostly to local buyers, middlemen, traditional marketers, and consumers directly in some cases. Therefore, the imbalance between supply and demand, such as a decrease in demand under the COVID-19 pandemic while an oversupply to specific customers, has resulted in a decline in both sales volume and sales price, and thus both groups have suffered a significant impact in a similar way. Based on the results of the survey, following are proposed to implement in the with/post COVID-19 society.

#### **1) Challenges and Support Required for Peripheral Farmers (Small-scale Farmers)**

Some of the challenges that were particularly observed among the peripheral farmers were lower producer prices, less procurement by local middlemen, less procurement from traditional markets, increased loss and waste, and reduced or insufficient cash reserves. While these issues are common to some extent to the beneficiary farmers for pilot project, the impact was stronger for the peripheral farmers. While some of the beneficiary farmers have taken proactive COVID-19 measures, for example, diversifying sales channels, these measures have rarely been taken among the peripheral farmers, who may be less resilient in terms of sales than the pilot project beneficiary farmers.

The first step in providing support to small-scale farmers, who have experienced the most severe financial difficulties, may be to provide subsidies or any form of financial support. As of January 2022, the situation is still difficult due to the outbreak of the Omicron variant, but the demand for agricultural products, including horticultural products, is recovering in many countries due to the progress in vaccination. Therefore, support for input materials (seeds, fertilizers, etc.) and an increase of low-interest short-term agricultural loans should be provided to help small-scale farmers recover their traditional production systems and produce according to the recovering demand under appropriate production management.

#### **2) Support for Organizing Farmers Group**

In the wake of the COVID-19 pandemic, about half of the farmers have already taken some measures, yet most of them are still at the level of individual production management and marketing, and the small scale farmers with less financial resources are limited in their ability to respond to the unprecedented crisis of COVID-19 in a short period of time. Helping farmers to organize and work as a group in production, post-harvest processing, and joint shipping and marketing will increase their access to modern markets, diversify their marketing channels, and improve their ability to negotiate prices and of course respond to crises such as the COVID-19 pandemic.

In terms of comparison between the beneficiary farmers (group) and the surrounding small-scale farmers (group), there was not much difference in the implementation of passive measures to deal with COVID-19 impact such as reduction of input volume and reduction of hired labors. However, the beneficiary farmer groups for the pilot project were more active in the implementation of proactive measures against COVID-19, e.g. expansion of sales channels. The reason may be that the beneficiary farmers are more advanced as an organization and more active in sharing information among colleague farmers, and they are trying to respond to the COVID-19 pandemic not only individually but also as a group. In other



words, there is a need to support farmers in organizing themselves.

### **3) Challenges and Support on Online Sales**

Although selling agricultural products online is an effective countermeasure to the market situation restricted by COVID-19, as already pointed out in this report, it is not necessarily a measure that should be implemented immediately by all farmers, as it requires small-lot delivery and the ability to respond to different demands both in terms of quantity and timing. Considering the fact that farmers (groups) must be able to meet these requirements, it may be a good idea to start with groups of medium or larger scale farmers who are already organized enough to enable joint shipments as a group and have the ability to stably supply a large volume of products.

In addition, it is possible to share the experiences accumulated by the medium-large farmer groups to the neighboring farmers (groups), and also to involve neighboring small-scale farmers in the process of adjusting the volume of shipments in order to respond to the fluctuating demand as one production area. Most of the farmers (groups) have just begun to engage in online transactions, and it is necessary to accumulate good examples of activities and lessons learned for the future, including the findings of this pilot project.



## CHAPTER 2 IMPLICATIONS TOWARDS WITH/POST COVID-19 SOCIETY FROM THE PILOT PROJECTS

In this section, we discuss whether the objectives of the pilot project were achieved or not. We will also discuss the implications of the results of the pilot projects for FVC development in the With/Post COVID-19 society.

### 2.1 Diversification of Sales Channels Approach

The spread of COVID-19 and the measures taken by governments have resulted in the disruption and stagnation of FVCs as well as stimulating behavioral changes among consumers. Producers were often forced to diversify their marketing channels and to adapt consumer's new style of consumption. In addition to the traditional markets, there is a need to address new markets, such as modern markets and online markets. Conventionally, information on market distribution has been held by downstream stakeholders in the FVCs, such as middlemen, collectors, wholesalers, retailers, and exporters. Producers have been kept away from the market information and needs, and have been in a weak position in terms of bargaining power.

With ICT technology promoted, the pilot projects aimed to enhance producers' access to information on market and distribution and to generate and expand new marketing channels. In Viet Nam, for example, a database was created based on the information of producers and buyers, so that producers can also obtain the information of buyers, thereby mitigating the information asymmetry. Then, through digital matching, new transactions between farmers and buyers were created, and new sales channels have been established. In order to sustain the efforts of this pilot project in the future, it will be necessary to continuously update the database by the AMPF (Agriculture Marketing Plat Form), hold matching events, involve cooperatives, and form and develop associated organizations of the cooperatives.

On the other hand, in Laos, we aimed to realize less-contact transactions and to promote sales of organic vegetables by disseminating information on the OA (Organic Agriculture) market to consumers through SNS. As a result, although we were not able to expand the sales of organic vegetables during the pilot period, we expanded the use of SNS, which had been limited to personal use, to business use, thereby demonstrating the possibility of a new sales channel where producers approach consumers. In the future, the sustainability of the OA group will depend on how it can secure the budget for tele-communication for distributing market information and whether it can establish a B2B business model by acquiring large customers. Following table shows evaluation of the objective level achievement of the pilot projects and its lessons learned.

**Table 2.1.1 Objective Achievement and Lessons Learned from the Pilot Project  
(Diversification of Sales Channels Approach)**

Pilot Project	Objective of the pilot project	Evaluation of achievement of objectives	Lessons Learned
Digital Matching Support Between Vegetable Farmers and Buyers (Viet Nam)	Digital matching creates new transactions between producers and buyers and improves farmers' resilience in securing sales channels	The information of producers and buyers was registered in the AMPF database, and information on each other's needs was exchanged through digital matching. As a result, new transactions (around 10 tons) have been initiated, and the project objective was achieved.	<ul style="list-style-type: none"> <li>Continuous assistance by AMPF is required for database updating and matching, but the lack of budget and personnel is an issue to be tackle.</li> <li>In order to promote trade, it is necessary to further involve cooperatives, strengthen their training, and develop upper-level organizations.</li> <li>Producers need to be supported in their more active participation in trade (branding, packaging, processing, etc.).</li> <li>It is necessary to promote the provision of information and support for producers in order to respond to changes in consumers' preferences for healthy and safe food.</li> </ul>

Pilot Project	Objective of the pilot project	Evaluation of achievement of objectives	Lessons Learned
Stabilization of Organic Vegetable Supply and Expansion of Sales Channels (Laos)	Target farmers will carry out production that grasps demand through the real-time distribution of the organic vegetable market and aim to increase sales volume steadily.	Real-time distribution of OA market information using SNS was materialized, and the possibility of less-physical contact market transactions was demonstrated. However, the expansion of sales of organic vegetables and the holding the OA committee meetings have not been realized and will be the subject of future intervention.	<ul style="list-style-type: none"> <li>• The use of social networking services, which had been limited to personal use, was expanded to business use, showing the potential for new sales channels.</li> <li>• It is necessary to increase the number of viewers and create a track record of business transactions. In addition, continuation of activities by the OA group, especially further promotion activities, is necessary.</li> <li>• How the OA group will arrange the budget of information distribution via SNS is an important issue that will affect its sustainability.</li> <li>• It is important for the OA Group to collaborate with OA vegetable sales firms in order to promote business negotiations and to establish a business model that cannot be established by the OA Group alone, including payment and transportation arrangements.</li> </ul>

Source: JICA Survey Team

## 2.2 Distribution Enhancement and Strengthening Approach

In many regions and countries, COVID-19 has caused the stagnation and disruption of the traditional distribution channels for agriculture produces. Under these circumstances, producers needed to diversify their marketing channels, and buyers also needed to diversify their procurement sources in order to strengthen their distribution resilience. In addition to the traditional distribution channels, E-Commerce is gaining unprecedented prominence as a new option to improve and enhance distribution of farm products.

In order to establish and promote online trading of agricultural products, producers need to address the issue of how to secure the quantity of products, as well as the issue of how to safely and reliably deliver their products to the buyers. The pilot projects in Viet Nam and the Philippines implemented under the "Distribution Promotion and Enhancement Approach" both engaged producer organizations in order to secure volume of products. However, in terms of securing the means of distribution, they have adopted different approaches.

In the pilot project in Viet Nam, mobile sales were tried out, although it was for promotional purposes. The mobile sales is a method of direct approach from the producers to their consumers, and was confirmed to be effective in attracting consumers' attention to specific products (e.g., safe and secure vegetables), differentiating them from other similar products, and as an effective means of branding and promotion.

On the other hand, the pilot project in the Philippines has tried to improve the efficiency of distribution by linking the application for agricultural producers to a private-sector agricultural distribution platform (i.e., Deliver-E). The Deliver-E platform has several registered warehouses, transporters, wholesalers, and retailers, and although they may not be aware of it, by this set-up, they are utilizing market principles to increase efficiency and reduce transaction costs. Whether such an approach will be effective for enhancing producers will depend on the stage of economic development, but the distribution platform (like Deliver-E) that successfully incorporates the competitive principles of the market, as in the Philippines, must be an informative direction for the enhancement of the future FVC.

As the pilot project in Viet Nam has not been completed at the end of the project, further activities by AMPF are required to be continued. In the pilot project in the Philippines, online transactions have been started by registered users, and the results of the pilot project have been achieved. In order to sustain the achievements of the pilot project in the future, the Department of Agriculture (DA) needs to make efforts

to attract more users of the BayAni Kita app and improve its services by further improving the usability of the app, strengthening the system by increasing the number of staff, and taking budgetary measures to conduct onboarding trainings for the potential farmers.

Following table shows evaluation of the objective level achievement of the pilot project and its lessons learned.

**Table 2.2.1 Objective Achievement and Lessons Learned from the Pilot Project  
(Distribution Enhancement and Strengthening Approach)**

Pilot Project	Objective of the pilot project	Evaluation of achievement of objectives	Lessons Learned
Online Sales Support for Vegetable Producers' Cooperatives (Viet Nam)	Farmers strengthen resilience by diversifying sales channels such as online sales using E-Commerce.	Three cooperatives opened stores on the EC website, showing the possibility of diversifying sales channels. However, due to delays of the project activities, they have yet to realize transactions. On the other hand, as an initiative related to the means of transportation, mobile sales were conducted, which succeeded in differentiating the products and directly obtaining consumer responses, and practical lessons were learned.	<ul style="list-style-type: none"> <li>• The activities have not been completed at the end of the pilot project and AMPF is required to continue the activities.</li> <li>• Securing of volume of products, simplification of payment methods, provision of product information, and improvement of packaging methods on the EC site will be future challenges.</li> <li>• Mobile sales are effective in attracting consumers' attention to specific products (e.g., safe and secure vegetables), and are an effective means of branding and advertising.</li> <li>• For mobile sales, it is necessary to learn through experience how to display, provide product information, location to sell, and package of products.</li> </ul>
DA BayAni Kita Application Enhancement Support (Philippines)	BayAni Kita, an integrated application launched by the Department of Agriculture (DA) to connect farmers with DA, will be disseminated to farmers, and feedback from users will be used to improve the application.	The "BAYANI KITA App" and Deliver-E are now integrated, and online agricultural trade between farmers and consumers has been created. In addition, some improvements of the application based on feedback from users have been conducted, and there are plans for future improvements. As a result, it can be said that the objectives of the pilot project have been achieved.	<ul style="list-style-type: none"> <li>• Registration of the app by farmers means registration in the DA (government) database, which leads to better access by farmers to the various services provided by the DA. There is also a two-way chat function, indicating a new relationship between the government and farmers.</li> <li>• Deliver-E is a distribution platform made up of a number of private players and may become a new alternative to the traditional distribution channels that have deeply rooted in rural areas.</li> <li>• The DA needs to make efforts to attract more BayAni Kita users and improve its services by further increasing the app's usability, strengthening the system such as increasing the number of personnel, and taking budgetary measures to promote on-boarding training, etc.</li> <li>• It is important to promote E-Commerce by facilitating onboarding on the consumer side.</li> <li>• Support for farmers who do not own a smartphone should also be considered.</li> </ul>

Source: JICA Survey Team

### 2.3 Quality Improvement and Processing Introduction Approach

Vegetable growers whose customers are HoReCa and local market brokers were severely damaged due to cancellations of orders during the peak season under COVID-19 pandemic. This pilot project aims to support the introduction of post-harvest facilities and equipment, such as warehouses and cold storage, to farmer groups, mainly horticultural farmers in Indonesia, to enable them to ship vegetables according to demand and to develop sales channels to modern markets, including large supermarkets, by improving the both quality and quantity.

As a result, by introducing and effectively using equipment and facilities for post-harvest processing, the capacity to supply vegetables has been improved in terms of quantity and quality, and all of the targeted farmer groups have succeeded in acquiring new customers. Some of the groups have increased their sales volume to Japanese supermarkets, others have opened up new sales channels to the capital city of Jakarta, and a farmer group has signed contracts with exporters, all of whom have succeeded in expanding their sales channels and have achieved significant results.

The farmer groups targeted in this pilot project are relatively advanced groups that have been well organized through a JICA technical cooperation project. By encouraging those kind of farmer groups with high organizational capacity to provide loans to invest in equipment and facilities such as warehouses and cold storages, the marketing capacity of the farmer groups will definitely be enhanced. In addition, it will contribute to the expansion of sales channels to modern markets, that are expected to grow in the post COVID-19 society, which in turn will contribute to the strengthening of the future FVCs.

**Table 2.3.1 Objective Achievement and Lessons Learned from the Pilot Project  
(Quality Improvement and Processing Introduction Approach)**

Pilot Project	Objective of the pilot project	Evaluation of achievement of objectives	Lessons Learned
Horticulture Quality Improvement and Sales Channel Enhancement (Indonesia)	Horticulture farmer groups manage cold storage, with which they can supply the vegetables according to the market demand and also improve the quality, whereby establish new sales channels to modern markets, e.g., large customer of super-markets.	With the introduction of equipment and facilities for post-harvest processing, the capacity to supply vegetables has been improved in terms of quantity and quality, and all targeted farmer groups have succeeded in attracting new customers and increasing the volume of delivery. The newly obtained customers include not only modern markets, but also buyers in remote areas (metropolitan area) and exporters.	<ul style="list-style-type: none"> <li>It was indicated that targeting the farmer groups with high organizational capacity and encouraging them to invest in facilities such as warehouses and refrigerators will strengthen the marketing capacity of the groups (shipment coordination and quality improvement, and stable supply) and facilitate their access to the modern markets.</li> <li>Since the warehouses and refrigerators have only been in operation for a short time, the realization of demand-oriented distribution will depend on their proper operation in the future.</li> <li>Since the supply to the modern market requires stable supply in terms of both quantity and quality, it is important to properly maintain the equipment introduced.</li> </ul>

Source: JICA Survey Team

## 2.4 Automation and Mechanization Approach

Under COVID-19 pandemic, production activities often get stagnant or interrupted due to lack of workers. Based on this situation, JICA team has tried to introduce smart agriculture technology in the green house organic vegetable production in Thailand, using "automation and mechanization approach" as the theme of the pilot project. Due to time constraints, we were not able to obtain sufficient data on work efficiency in this pilot project, but it was a sufficiently meaningful pilot project as the project demonstrated the effectiveness of mechanization, automation, and DX for labor-saving in the labor-intensive agriculture, as well as identified the issues that need to be addressed in promoting further this approach.

The IoT technology tested in this pilot project has a great potential for technological development in the future, such as optimization of environmental systems and development of environmental control systems into cultivation management system. These technologies need to be adapted to the production environment in Thailand, taking into account the current status of the country's human resources and IT infrastructure. On the other hand, the cost effectiveness of the technologies that can be adapted may be

an issue to be verified in the future. The integration of individual information through the data linkage infrastructure, such as WAGRI in Japan, to improve the efficiency and optimization of farming operations is also an issue for further study.

**Table 2.4.1 Objective Achievement and Lessons Learned from the Pilot Project  
(Automation and Mechanization Approach)**

Pilot Project	Objective of the pilot project	Evaluation of achievement of objectives	Lessons Learned
Introduction of Smart Agriculture Technology on Organic Farming in Greenhouses	To enhance the productivity of organic products with improved labor efficiency, and to realize a contactless production system by introducing IoT in greenhouses (indicator: reduction of working hours, and increase of production volume)	The introduction of the IoT and the automatic control based on the IoT sufficiently suggested the possibility of realizing the contactless production. The purpose of the pilot project was mostly achieved since it suggested an innovative agricultural model in Thailand, in where a concern about the shortage of workers in the future is growing.	<ul style="list-style-type: none"> <li>· In the future, there is great potential for technology development, such as optimization of environmental systems and development from the environmental control systems to the cultivation management systems.</li> <li>· The verification of cost-effectiveness is an issue for the future, and the appropriate range of inputs (types of equipment, etc.) needs to be verified.</li> <li>· It is also important to improve efficiency and optimization by accumulating experience through the data linkage infrastructure.</li> <li>· There is a possibility that the players of smart agriculture will include young people and companies that have no experience in agriculture, and this could create a breakthrough in the problem of labor shortage.</li> <li>· To promote smart agriculture and precision agriculture in urban and suburban areas, in addition to the development of agricultural infrastructures such as irrigation, roads, and fields, it will be necessary to develop communication networks and, in the case of drone applications, related laws and regulations in order to expand public goods.</li> </ul>

Source: JICA Survey Team





## **CHAPTER 3: POLICY RECOMMENDATIONS TO THE WITH/POST COVID-19 SOCIETY AND INPUTS TO JICA PROJECTS**

This last chapter presents the policy recommendations for building more resilient FVCs in the with/post COVID-19 society. In addition, points to be considered when implementing on-going and/or formulating future JICA projects/ programs will be presented:

### **3.1 Recommendations for With/Post COVID-19 Society**

In the conventional FVCs, intermediary distributors collect and consolidate agricultural, livestock, and fishery products from the producers, and transport them over medium to long distances, and then distribute them to the clients and consumers. At the same time, intermediary distributors plays a role to deliver market information (markets' demands on quantity, quality, timing of distribution, etc.) to the producers from the downstream of FVCs. In other words, in the conventional FVCs, both "goods (logistics)" and "information" have been handled by the same actor (intermediary distributors).

However, under the COVID-19 pandemic, intermediate distributors were unable to move across the cities due to lockdowns. Under such circumstances, producers needed to secure both sales channels and source of market information by themselves, in order to deliver their produces directly to the markets. The increasing use of E-Commerce and IoT enabled producers to directly gather market information and even conduct transactions directly with consumers. In other words, the decoupling of "goods (logistics)" and "information" is taking place under the COVID-19 pandemic.

Another major trend is the acceleration of the DX, which is nowadays advancing in almost all sectors. For example, in the past, agricultural extension activities in rural areas was limited due to lack of extension staff, lack of budgets, and scattered farm areas. In addition, access to financial services has been limited since some farmers in rural areas do not have bank accounts, although this varies from country to country.

However, in recent years, ICT and DX have advanced in almost all areas, and even in rural areas 3G, 4G, or public WiFi using cellular networks are being developed. The Internet enables efficient distribution of information and activities such as agricultural extension could benefit from direct communication between the farmers and extension staff through chat functions. In other words, the physical constraints could be addressed using ICT and DX.

What was mentioned above shows that two major movements are emerging in the COVID-19 pandemic. One is the structural change in the FVCs, and the other is the acceleration of DX, which has already been underway for some time. Based on these 2 major movements taking place, the followings are the recommendations on what governments and development partners should consider when supporting the strengthening of FVCS in a with/post COVID-19 society.

#### **1) Matching Support by Government Agencies**

The spread of COVID-19 has led to many trade disruptions among FVCs actors, resulting in the fragmentation of the FVCs. As a result, the flow of agricultural products and foodstuffs from upstream to downstream of the value chains has become stagnant, and domestic and export markets located in the most downstream stage of the FVCs were sometimes and/or often closed, resulting in the loss of customers. In addition, the spread of COVID-19 has led to a significant change in the status and nature of FVCs, with the emergence of other types of VCs such as direct sales from the producers to consumers including online sales.

In order to cope with such changes, government agencies and development partner agencies need to provide matching support to rebuild or generate new communication channels among various stakeholders in the VCs, especially between the producers and the buyers. In particular, since the

COVID-19 has not caused damages to hard infrastructure, it is important to provide support from the software point of view, such as the introduction of new matching opportunities. For example, by organizing and creating a database of agricultural cooperatives and agro-related companies, the pilot project conducted in Viet Nam succeeded in visualizing the parties involved on the VC, and accordingly the project has created new transactions among agricultural cooperatives and agro-related companies.

Furthermore, in the pilot projects conducted in Viet Nam, Lao PDR, and Indonesia, participating farmers and agricultural cooperatives started activities that had not been undertaken before COVID-19, such as online sales and promotion activities using available E-Commerce sites and also SNS market place function. This has enabled the strengthening of communication among actors in the FVCs, especially between the producer and buyers. Even though the scale of the project is small, it seems to have contributed to the build back better for the FVCs.

In order to promote the above-mentioned matching and online sales, a cross-departmental task force team should be established. For example, the AMPF which led the implementation of the pilot project in Viet Nam includes not only DARD (Department of Agriculture) staff but also staff from other departments such as Department of Planning and Investment and Department of Industry and Trade. In the future, it will be necessary to collaborate with local government departments related to tourism and education, targeting school lunches as destinations for the sales of agricultural products. In addition, sufficient budget and personnel should be secured for the new organization, the cross-departmental task force team, to operate.

## **2) Support of Consumer Awareness Creation on FVCs**

Although it was not undertaken as a pilot activity due to time constraints, it is necessary to conduct awareness raising activities to promote the purchase of local agricultural products among local consumers such as groceries stores, women's groups, schools and hospitals. Sales of local agricultural products by mobile vending trucks, which was tried in a pilot project in Viet Nam, is also considered to be a good way of promoting sales targeting the local customers. At the same time, through the mobile vending track activities, the producers are also able to know what kind of agricultural products and foods are demanded by local customers.

In Japan, the Ministry of Agriculture, Forestry and Fisheries conducted a campaign to promote the consumption of Japanese agricultural products during the COVID-19 pandemic. In such a situation of logistical chaos at the global level, it is recommended that support will be necessary to connect local consumers with local producers by introducing 'local production for local consumption' and in cases combined with OVOP products (one village one product). Also, as seen in Thailand, voluntary efforts by consumers to support local farmers are important, and here too, government coordination and promotion are very much expected.

## **3) Strengthening of Resilience by Promoting Farmer Organization**

The COVID-19 pandemic has increased the number of consumers, who have started purchasing agricultural products via online. Supermarkets tend to cater to a wide variety of consumers, and individual households tend to seek "small to medium quantities of many products" due to limited consumption volume once at home. Producers, on the other hand, tend to produce "small-variety, big-quantity products" from the view point of production efficiency even if, for example, it is necessary to produce a number of products from the viewpoint of risk diversification. In addition, depending on the natural conditions of the production area, e.g., rainfall and soil conditions, some agricultural products may be difficult to cultivate by area.

In other words, it is not easy for the farmer producers to diversify their product items, and a mismatch occurs between what the market demands and what is available to produce by farmers. In conventional

transactions through middlemen, middlemen have procured multiple products from multiple farmers, and wholesalers located at mid-downstream stage of FVC have purchased diverse products through such multiple middlemen. Yet, this function is excluded in direct transactions between producers and consumers. This means that the mismatch between producers and markets can hardly be resolved.

In response to the above issue, it is necessary to invent a way of providing a combination of various products through cooperation among farmers who cultivate different farm produces. Here, support is needed to encourage individual farmers to form a cooperative or association. In the past, for example, organizations were often formed among farmers in the same village. This trend would continue in the future too, but as the DX in the agriculture sector progresses, it is expected that there will be cases where those who have something in common, such as entry into a new market, may join together even though they are from different villages. Although such organizations may be looser in their relationship than organizations based on geo- and blood ties, they must have a clear sense of same purpose.

In addition, the government may be encouraged, together with private companies, to establish an EC platform that can function as middlemen or intermediaries to procure multiple products. Such a platform would be able to procure products from individual farmers and offer a wide variety of products. This kind of platform could also be developed into a service business that includes small-lot and multi-product food delivery to urban consumers, able to be operated by a private company on a profit making basis.

#### **4) Establishment of Certification System, and Support for Inter-Region Certification System**

The COVID-19 pandemic has raised awareness about food safety. As a result, the importance of recommending the proper use of pesticides in the production process and the introduction of a certification system (e.g. GAP) was already afore-mentioned. Further, in order to deliver safe food to consumers, hygienic raw materials must be provided at each stage of production, distribution, processing, and retail, etc.

The efforts of hygiene management at each stage must be well organized as a food chain system to provide safe food. In other words, GAP is one of the proper practices to be obtained at the production stage, but it is also necessary to link it with the certifications required in other processes (e.g., Good Manufacturing Practices: GMP, Good Hygiene Practices: GHP).

In the current situation where various certifications are found, internationally approved certified products are expected to be able to maintain their competitiveness even in an emergency situation such as COVID-19 pandemic. In addition, it is also important to establish a system of mutual recognition for certificates in a bilateral or multi-lateral set-up, in which products based on such certification system will be given priority for import and export even in case of emergency. This is expected to have the effect of limiting the impact to a relatively small level even in the event of global distribution stagnation. In addition, for private companies, certification will lead to increased added value for their products.

#### **5) Establishment of Database/Application for Farmer Support and Information Dissemination**

In order to build a new relationship between farmers and the government in the DX era, it is important to strategically promote the use of ICT in the agriculture, livestock and fisheries sector. In terms of improving farmers' access to government services, one idea is for the government to build a database of farmers and incorporate various government service functions into it. Registered farmers would be able to access various services through a mobile application, and this would contribute to the dissemination of government services.

In the pilot project conducted in the Philippines, the Team supported the dissemination of a farmer support application operated by the Department of Agriculture (DA). The registration of farmers in the

app means that the farmers are registered in the database of the DA. As a result, access to various services provided by the government could be greatly improved. Likewise, it will be possible to build a new relationship between the farmers and the government using ICT, for example, by creating a database of farmers and other FVC stakeholders, distributing technical information by online, and promoting direct communication using the chat function.

In the past, the provision of agricultural extension and other government services in rural areas has been limited due to the lack of extension workers and budgets, but the use of ICTs would overcome these limitations in the coming future. However, the use of ICTs in rural areas is still limited in many areas where networks are not yet in place, and therefore it is necessary to strengthen the existing systems in these areas. In addition, in order to use ICT for agricultural extension, it is necessary to deal with new issues such as development of online contents, training of government officials who are to use ICT equipment, maintenance of equipment including servers, and cost burden for the equipment maintenance.

The use of ICTs could lead to a breakthrough in the existing distribution channels with a large number of middlemen traditionally found in rural areas of Southeast Asian countries. For example, better access to government programs such as subsidies, grants, loans, and agri-insurance may reduce the amount of debt that farmers have had to rely on local influential persons and middlemen, and open up the possibility of choosing more efficient FVCs with lessor ties to them. In order to actually deal directly with distributors in urban areas, it is necessary to work on ensuring the quantity and quality of products as per the demand, but at least reducing the ties that have persisted in rural areas could be the first step to help farmers gain more profit.

The pilot project in the Philippines presented an option for distribution channels as a new form of distribution other than the existing distribution network. The application being promoted by DA has connected a distribution platform built by a private IT company, which is already in big use, with the DA's farmer support app to secure distribution channels for the app users to major markets such as the metropolitan area. While it is neither practical nor necessary to improve the existing distribution network all at once, this provision of "another option = plus one" of distributing agricultural products through E-Commerce may provide an opportunity to stimulate a major change in the distribution system in rural areas.

## **6) Support for the First One Mile**

One of the structural changes observed in the COVID-19 pandemic is the decoupling of "goods (logistics)" and "information (commercial distribution)," both of which have been undertaken by intermediary collectors. E-Commerce and IoT-based market information platforms, which have become increasingly popular in recent years, allow producers to directly learn about market conditions. The direction of separate development of logistics channels (actors) and information channels (actors/platforms) in the FVCs is becoming a major feature of the new FVCs.

Therefore, when governments consider providing support in the field of FVCs in the future, they need to pay attention to the differences between the logistics channels and information flow channels. For example, in Japan, delivery industry is well developed, and logistics can be outsourced if an online trading platform is established. On the other hand, in many Southeast Asian countries, this type of business is still underdeveloped, especially in the last mile and first mile, especially in the cases of shipping rural products by themselves.

As a result, even with the development of E-Commerce, it may take several days from the time a product is ordered to the time the product is received. In the COVID-19 pandemic, the use of motorcycle delivery services has expanded very much in urban areas, and there has been considerable improvement in the last mile. Therefore, it is now necessary to consider the supports for improving the first mile in light of these changes. As it may be difficult for private companies to establish a first one-mile network in rural

areas from a profit margin point of view, the delivery mode is likely to be more complex.

The delivery mode will have to include collection over a short distance using individual means of transport owned by each of the farmers, transportation from there to nearby townships by trucks possibly rented jointly by the farmers, and then bulk delivery by private companies or by farmer cooperative. In this regard, strengthening the delivery mode from the production area through farmers' organizations, which enables collective logistics, is also an important area for future support by the government.

In addition to securing the first mile by farmer organizations as described above, a system may need to be established in which wholesalers would make a round-collection of the products at a cost borne by the farmers. In other words, if farmers are free from the time of shipping and delivery, they can concentrate on production, which may in turn contribute to improved quality and productivity of their products. By examining the balance between transportation costs and labor hours to be saved for the shipping and delivery, farmer organizations should have the options of either delivering the products by their own or outsourcing shipping and delivery to an external party, e.g. wholesalers.

### **7) Support for Risk Hedge (Contract Cultivation and Inclusive Financial Support)**

The Survey highlighted that the movement restrictions and consumer behavior changes have made a partial and temporary loss of demand. This was transmitted from downstream to upstream of the existing FVCs in the form of "reduced demand," but the production sector, which has the longest cycle of business activity, is the one most significantly affected by this reduced demand. For example, intermediary distributors may have an option of cancelling purchases when they can no longer sell their products, but in the production sector such as crop production, animal husbandry and aquaculture, it is difficult to stop production activities once they have begun, and they run the risk of not being able to recover all of their investments.

On the other hand, in terms of price signals, input prices have increased due to the restriction of international trade, and producers have been forced to buy at higher prices. In addition, there were even some cases of disposal of products, though not many. This is another example of the risk being increased due to the long time between the start of production and the sale of the products, suggesting that the risk imposed on the producers is structurally high.

In the post/ with COVID-19 society, it is necessary to consider how to provide supports, which can more focus on this difference in risk structure. The promotion of "contract farming" and "inclusive financial support" could be candidates. In contract farming, harvest specifications and prices are set at the start of cultivation, which allows producers to reduce the "risk associated with time" mentioned above. Of course, this is not easy to implement due to the various issues involved, but it could be an effective approach in terms of "risk hedge". In addition to the dissemination of agricultural technologies, the government is expected to provide farmers with information on farming practices, including contract farming.

For the actors involved in the intermediary distribution industry, it was clearly found that the amount of available funds dictates the amount that can be purchased. In addition, according to the results of farmer survey, which covered both pilot project beneficiaries and non-beneficiaries who are smaller scale farmers, the latter farmers face more difficulties in accessing finance in the COVID-19 pandemic. Therefore, it is expected to promote inclusive financial support, including the provision of low-interest agricultural loans, SME loans, and deferral of interest payments on existing loans.

### **8) Perspectives on SME Support Policies**

Small and medium enterprises (SMEs) are more vulnerable than large enterprises to shocks caused from rising input prices, labor shortages, and declining market demands. The survey on the impact of FVCs

by COVID-19 pandemic has also confirmed that the farmers who had been contracted with large capital firms such as Del Monte and Dole were less affected by high material prices and declining demands, while those who did not were severely affected.

According to an ADBI report, small and medium-sized enterprises (SMEs) in developing countries in Asia experienced substantial declines in employment and sales in the first few months after the outbreak of COVID-19 pandemic. The decline in employment was significant both for informal and regular employment sectors, but the former sector was hit harder. Depending on the country, 25-50% of the SMEs surveyed experienced temporary closures during this period, while 30-60% faced cash shortages. Thus, the impact of the pandemic on employment and business sustainability was quite severe.

In this context, governments have provided support related to taxes, such as moratorium or exemption of tax payments and application of reduced tax rates, as well as support related to financing, such as moratorium or subsidization of payments, restructuring of loans, guarantees, and support for new loans. Government support has also been provided in the form of lump-sum grants, public procurement, information dissemination, rent payments, salary and wage payments, and utility payments.

On the other hand, 53% of SME owners would like the government to provide tax-related assistance such as tax deferral, tax exemption, or reduced tax rates, while 48% would like the government to provide loan-related assistance such as deferral of repayment or rescheduling of loans. According to the Global State of Small Business Report, the government support requested by SME owners include salary subsidies (40%), tax deferral (30%), access to loans and credit guarantees (29%), as well as deferral of rent and loan repayments and subsidized utilities.

In addition to such direct assistance in taxation, financing, salary supplements, etc., support on DX may also be useful. According to the ADBI report, many SMEs are going for digitization such as online sales under COVID-19. This includes the use of social media and mobile messaging services, participation in online or freelance marketplaces, as well as introduction of digital wallets/online payments (e.g., Paypay, Mobivi, 2C2P) and mobile payments (e.g., Apple Pay, Google Pay, LINE Pay, GrabPay) to address physical constraints and new consumer behaviors. Supporting these trends could also be an effective way to support SMEs.

## **9) Assistance for the Poor**

The results of the questionnaire survey covering each income group of the farmer producers and consumers indicated that socially vulnerable groups, i.e., lower income consumers and small-scale farmers, can be rapidly impoverished by external shocks such as the COVID-19 pandemic. This means that support for the poor needs to be provided in the short term or on an emergency basis.

In terms of support for small-scale farmers, first, subsidies for farmers in financial difficulties should be considered, followed by support for inputs (seeds, fertilizers, etc.) in order to reinstall their agriculture in a soonest time, and expansion of low-interest short-term agricultural loans. In addition, the promotion of local production for local consumption even under normal times is especially important for small-scale producers who have difficulty in securing wide-area sales channels. This local production for local consumption should be promoted not only to general consumers, but also at schools, hospitals, and community events.

As for low-income consumers, the first priority should be to have traditional markets continue to operate as long as possible, even in times of emergency such as the COVID-19 pandemic. The support should include improvement of the sanitary conditions in the market (e.g., improving aged facilities, drainage channels, etc.), strengthening of the sanitary/hygiene management capacity of the people involved in the operation (mostly local government staff) and shopkeepers. Further, introduction of contactless electronic money, and also publicizing of customers flow, as has been tried under a pilot project in Lao

PDR, should be taken into account in order to ensure the continued operation of the traditional markets.

### **3.2 Points to be Considered for On-going and Future JICA Projects**

The following points may be taken into account when formulating and implementing future JICA projects.

#### **1) Points in Selecting Target Farmers**

In the Philippines, a FVC survey was conducted focusing on the export commodities of banana and pineapple. Many times, these agriculture products are produced and distributed by a single multinational company, such as Dole and Del Monte, from the stage of production to the export. They have maintained their operation capacity from the production, collection and then shipping even in the midst of the COVID-19 pandemic. As a result, contract farmers affiliated with these companies have been relatively less affected by the pandemic.

It has been noted in this report that individual farmers and farmer groups have been more affected by COVID-19 than corporate entities. Also, among farmers, small-scale farmers have faced negative impacts harder, such as reducing the use of inputs, e.g., fertilizer, as well as reduced cash reserves. Therefore, it could be rationale for Japan's ODA to continue to target small- and medium-scale producers, such as rice and vegetable growers, who are seldom under the umbrella of large corporations.

Here, there is a unique farmer example. The owner's background of the target site of the pilot project conducted in Thailand is not agriculture. After having taken a course of business administration, he started his own business, and since then, he has self-learned advanced technologies in the field of agriculture and started his own advanced farming. Thus, there may be number of human resources from different carrier background, who can also be the target of support from the government and development partners. From the public interest point of view, support biased only toward advanced farmers should be avoided, yet, if there is a possibility of disseminating such advanced technology to potential follower famers, and if the project has several components, collaboration with such advanced farmers may be considered as one of the project activities.

#### **2) Support for the Establishment of Agriculture Data Platforms**

In the pilot project conducted in the Philippines, one of the information that farmers expected from the government was weather forecasts. In order to improve the accuracy of weather information needed for agriculture, it is necessary to handle a large amount of data related to weather and hydrology. Not only weather information but also a large amount of relevant data is being generated with the expansion of IoT, and there is a growing need to use AI to analyze huge amounts of data and use them to predict yields and also pests occurrence.

In order to meet above needs and promote ICT agriculture, it is necessary to establish an agricultural data platform, which is a system that consolidates and integrates data in various formats held by private companies and government agencies, and processes and provides them in a way that can be easily used by relevant players involved in FVCs. In addition to the information on agricultural production, the agricultural data platform should be able to provide useful data on market conditions, market prices, and other distribution-related data, which will increase the number of users.

Regarding the establishment of such an agricultural data platform, the importance of data-driven agriculture has been recognized, at least at the government level, in Southeast Asian countries. There is also an understanding of the importance of agricultural data platforms by consolidating and integrating various types of agricultural information, including meteorological and hydrological information, so as to be utilized for strategic agricultural management.

An era is coming when ICT agriculture will become a common, using big data to predict weather, pests and diseases occurrence, and harvest timing with expected yield range. In preparation for such an era, the establishment of an agricultural data platform, including the development of meteorological and hydrological data observation systems, improvement of the accuracy of various data such as soil information and standardization, should be an area for public support, and ODA support can be considered.

### 3) New Support Scheme Combined with Technical and Financial Cooperation

This Survey was conducted for a period of about one year; the first half of which undertook an impact survey of COVID-19, and the latter half to implement pilot projects in 5 counties. Based on the results of the survey and the lessons learned from the pilot projects, the Team has developed recommendations on how FVCs should be strengthened to be more resilient in the with/post COVID-19 society.

This Survey, including the pilot project implementation, was similar to the JICA technical cooperation project scheme for development planning. This scheme, for example, support formulation of master plans and strategies in developing countries. Using this scheme, JICA promotes technical transfer to counterpart governments, and formulate a plan together. In the process, budgets are allocated and project team(s) is dispatched to, for example, restore basic infrastructure damaged by natural disasters.

The implementation of the plans/projects proposed using this scheme depends on the decision of the counterpart governments. Since, in many cases, the budget which could be allocated for the proposed projects are limited, there is a possibility that these proposals may not be utilized even if they are valid plans and projects.

To address the issues, it is recommended that JICA to develop a scheme which enables seamless implementation of the project, following the pilot project phase implemented under the planning projects. This may require JICA's project/survey/study to be divided into different phases such as project formulation, pilot implementation and then implementation of the actual projects.

For example, the EU's cooperation modalities in Africa include allocating one to two billion yen to a project team to procure equipment and materials for urgently needed projects. This arrangement can target a larger number of beneficiaries and a much wider area of activities than pilot projects. In addition to the above, it may also be possible to use yen loans to implement the projects covering much wider area than that of pilot project. The same kind of strategic response is possible with yen loans, using Advance Procedure for the loan disbursement. Yet the yen loans need a long lead time before they can be activated for the implementation on the ground.

In order to address the above issues, the Team believes that it is essential to develop a new JICA scheme that combines the benefits of technical cooperation and grant cooperation. The lessons learned from the pilot projects are very valuable, but putting the lessons into practice can hardly be always guaranteed, as it is on the initiative of the partner governments.

Therefore, by dispatching a team and allocating the fund equivalent to grant cooperation undertaken by JICA, it will be possible to respond to emergencies situation in more effective manner. The development of such new scheme could also be expected to ensure more visibility of the JICA projects.