

Asia Region

The Data Collection Survey on ASEAN–JICA Food Value Chain Development Project

Final Report

May 2020

Japan International Cooperation Agency (JICA)

International Development Center of Japan Inc. (IDCJ)

Nippon Koei Co., Ltd. (NK)

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Exchange Rate

(April 2020)

Brunei Darussalam	BND1= ¥ 74.9410 *
Cambodia	KHR1 =¥ 0.027130
Indonesia	IDR1 =¥ 0.006600
Lao PDR	LAK1 =¥ 0.012380
Malaysia	MYR1 =¥ 24.961000
Myanmar	MMK1 =¥ 0.078150
Philippines	PHP1 =¥ 2.121120
Singapore	SGD1 =¥ 75.665300
Thailand	THB1 =¥ 3.307070
Viet Nam	VND1 =¥ 0.004600
The United States of America	USD1 =¥ 107.957000

Source: JICA Monthly Rate in April 2020.

*: <https://ja.exchange-rates.org/Rate/BND/JPY> as of April 29, 2020.



Map: ASEAN Member States (AMS)

Abbreviations and Acronyms

AADCP	The ASEAN-Australia Development Cooperation Program
ADB	Asian Development Bank
AEC	ASEAN Economic Community
ALARA	As Low As Reasonably Achievable
AMAF	ASEAN Ministerial Meeting on Agriculture and Forestry
AMS	ASEAN Member State
ASEAN	Association of Southeast Asian Nations
ASEC	ASEAN Secretariat
ASWGC	ASEAN Working Group on Crops
ASWGF	ASEAN Working Group on Fisheries
AusAID	Australian Agency for International Development
CLMV	Cambodia, Lao PDR, Myanmar, and Viet Nam
CODEX	Codex Alimentarius Commission
CPR	Committee of Permanent Representative to ASEAN
CSR	Corporate Social Responsibility
EDB	Foreign Investment: Brunei Economic Development Board in Brunei Darussalam
ESC	Environmental and Social Consideration
EWG	Expert Working Group
FAO	Food and Agriculture Organization
FVC	Food Value Chain
GAHP	Good Animal Husbandry Practice
GAP	Good Agricultural Practice
GAqP	Good Aquaculture Practices
GDP	Gross Domestic Product
GIZ	German Agency for International Cooperation
GMO	Genetically Modified Organisms
GMS	Greater Mekong Sub-region
GVC	Global Value Chain
HDC	Halal Industry Development Corporation in Malaysia
IAI III	Initiative for ASEAN Integration Work Plan III
IPPC	International Plant Protection Convention
JICA	Japan International Cooperation Agency
LPI	Logistic Performance Index
MAF	Ministry of Agriculture and Forestry in Lao PDR
MAFF in Cambodia	Ministry of Agriculture, Forestry and Fisheries in Cambodia
MAFF in Japan	Ministry of Agriculture, Forestry and Fisheries in Japan
MARD	Ministry of Agriculture and Rural Development in Viet Nam

MEMI	Ministry of Energy, Manpower and Industry in Brunei Darussalam
MPAC	Master Plan on ASEAN Connectivity 2025
MPRT	Ministry of Primary Resources and Tourism in Brunei Darussalam
MOALI	Ministry of Agriculture, Livestock and Irrigation in Myanmar
MOIC	Ministry of Industry and Commerce in Lao PDR
MPI	Ministry of Planning and Investment in Lao PDR
MSME	Micro, Small and Medium Enterprise
MRL	Maximum Residue Limit
NRL	National Reference Laboratory
OECD	Organization for Economic Co-operation and Development
OIE	The World Organization for Animal Health
PIHH	Penang International Halal Hub
PPP	Public-Private Partnership
SEAFDEC	Southeast Asian Fisheries Development Center
SFA	Singapore Food Agency
SME	Small and Medium Enterprise
SOM	Senior Officials Meeting of Meeting of the ASEAN Ministers on Agriculture and Forestry
SOM-AMAF+3	Senior Officials Meeting of the ASEAN Ministers on Agriculture and Forestry plus Three
SOP	Standard Operating Procedure
SPS	Sanitary and Phytosanitary Measures
TBT	Technical Barriers to Trade
UNIDO	United Nations Industrial Development Organization
USAID	United States Agency for International Development
USD	United States Dollar
WTO	World Trade Organization

Summary

In ASEAN (the Association of Southeast Asian Nations), agriculture is one of the most important sectors, as it provides the main source of employment opportunities and income as well as the base of food security. In ASEAN, with the recent economic growth, the demand for safe, high-quality, value-added agricultural products and foods has been increasing that is led by the growing middle-income class, At the same time, a significant number of traditional farmers in the region are still left below the poverty line because of the vulnerability of the food value chain (FVC) and unfair income distribution in the sector.

ASEAN recognizes that the establishment of a sound FVC can be a key solution for ensuring food safety and sustainable development in the region. It is reflected in its various policy documents such as the Vision and Strategic Plan for ASEAN Cooperation in Food, Agriculture and Forestry (2016-2025), ASEAN Integrated Food Security Framework and Strategic Plan of Action on Food Security in the ASEAN Region (2015-2020), and the ASEAN Plus Three Leader's Statement on Food Security Cooperation 2017.

Since February 2018, the ASEAN Secretariat (ASEC) and the Japan International Cooperation Agency (JICA) have been discussing on formulating an ASEAN-JICA Food Value Chain (FVC) Development Project. Based on the Project's concept note presented by JICA at the 17th Senior Officials Meeting of the ASEAN +3 Ministers on Agriculture and Forestry (SOM-AMAF+3) in August 2018, JICA implemented the Data Collection Survey on ASEAN-JICA Food Value Chain Development Project in 2019. With the results of the survey, JICA presented the conceptual framework of the cooperation in the occasion of the Special SOM-18th AMAF+3 Meeting held on 7 August 2019 in Viet Nam, in which the concept proposal was welcomed by the representatives from ASEAN Member States (AMSs).

This report compiles the results of the survey which collected and analyzed information for a proposal of the ASEAN-JICA FVC Development Project. It puts special focus on identifying the objectives and contents of the activities in three thematic areas: 1) ASEAN-GAP (Good Agriculture Practice), 2) Sanitary and Phytosanitary Measures (SPS), and 3) public-private partnership (PPP) for the development of regional food cluster. It also looks into FVC in fisheries sector in ASEAN. The results of the survey are as follows.

Current status and challenges of FVC in ASEAN

AMSs have diverse demands for agricultural products and foods. While some AMSs, such as Singapore, has larger demands of high-quality foods, CLMV countries have basic needs for safer foods.

Food Safety and FVC: Agricultural products and foods without secured safety are sold in some AMSs and traded among some AMSs. Undoubtedly, food safety is the most important issue for the human health; unsafe foods should be controlled. It is also an important challenge to establish the safe food system to achieve the economic integration in ASEAN. Yet currently, some AMSs have challenges in ensuring food safety and it also becomes one of the bottlenecks to expand regional and international trade of agricultural and food products produced in ASEAN.

One of the challenges is that food safety assurance system is not yet fully developed in many of the AMSs. There are also different systems in different AMSs, which hinders AMSs to efficiently align food safety standards in the region. ASEAN has taken food safety as an important issue not only in food

safety policies but also in trade facilitation. ASEAN is currently taking initiatives such as promotion of ASEAN GAP, strengthening of SPS measures, and managing hygiene throughout the supply chain of fishery products to ensure the food safety in the region

ASEAN GAP was introduced by ASEAN as a standard to prevent and minimize the risks at the production, harvesting, and post-harvest handling stages of fresh fruits and vegetables. ASEAN encourages aligning AMSs' national GAPs to the ASEAN GAP guidelines in order to promote trade within ASEAN and with rest of the world. Yet, among AMSs, there are differences in the operational status and the certification system of national GAPs. Systems and standards of pesticide residue inspection also differ among AMSs. Besides, ASEAN GAP is not recognized as a standard that could bring commercial benefits to buyers and producers.

As for food hygiene issue in SPS, it is necessary for AMSs to foster ability to detect hazardous substances in order to prevent food contamination, distribution, and trades of unsafe food within ASEAN. However, there are still some challenges for the National Reference Laboratories (NRLs) of AMSs in analyzing hazardous substances, such as pesticide residues. The analytical capability varies across the countries and there are differences in numbers of pesticide-derived compounds to be analyzed.

On the animal and plant quarantine in SPS, ASEAN has an environment where pests and diseases could easily be transmitted via plants and animals, and it poses threats to the stable supply of agricultural products and human health in the region. One of the reasons for this is the lack of harmonized SOP (standard operating procedure) in SPS measures in ASEAN. In some countries, pest control system is not yet fully established, and the different levels of the control among AMSs make it difficult to prevent epidemics spreading across the borders. ASEAN needs to standardize pest identification and diagnosis procedures among its members for the prevention of future epidemics.

In the fishery sector, since fishery products deteriorates quickly, it is necessary to manage hygiene throughout the supply chain. ASEAN has introduced Good Aquaculture Practices (GAqP) and SPS related efforts to AMSs to enhance reliability of fishery products in ASEAN and to facilitate both regional and international trade. Nevertheless, there are some challenges including lack of information sharing among AMSs on operational status of GAqP, insufficient assessment of the management systems to monitor hygiene in the whole supply chain, and the different systems and inspection mechanisms in AMSs, which make it difficult to have standardized safety assurance system in ASEAN.

Value Added Products and FVC: The amount of trade of high-quality and value-added (VA) foods are still limited in ASEAN. Production and trade of such agricultural products and foods are expected to increase in the future, and small-scale producers and micro, small and medium enterprises (MSMEs) in ASEAN could play important roles as the main players in FVC, although not many of them are currently being involved in the production and trade of high-quality and value-added agricultural products and foods. ASEAN has been focusing on strengthening the competitiveness of small-scale farmers and MSMEs to achieve the inclusive development of FVC. Furthermore, many business owners in ASEAN, including MSMEs, are looking for partnerships with investors and businesses from other countries, but many of them do not have adequate information on potential business partners.

There are also no government agencies responsible to oversee whole FVC, from the production, processing, distribution, to the consumption. Collaboration between public and private sectors is still

limited to strengthen capacities of small-scale farmers and MSMEs. Thus, it is necessary to promote public-private partnership (PPP) to achieve the inclusive FVC at ASEAN level.

Proposed Activities

The proposed framework of the ASEAN-JICA cooperation consists of two pillars and four main thematic areas. The first pillar is the safe FVC, which includes three components: i) ASEAN GAP (Good Agricultural Practice), ii) Sanitary and Phytosanitary measures (SPS) measures, and iii) Fisheries. The second pillar is public-private partnership (PPP) for inclusive FVC, with the component: iv) study on PPP based FVC.

Regarding ASEAN GAP, the proposed activities will support the update of the ASEAN GAP in order to increase the food safety to protect both producers and farmers, including through enhancing the recognition of ASEAN GAP which reflects the needs of the producers and buyers. Activities under this thematic area include studying and sharing the bottlenecks in promoting national GAPs in AMSs as well as conducting buyers' assessment on AMSs' national GAP. The cooperation will also include the design and implementation of the action plans to increase awareness on national GAPs and to promote its application by buyers and producers in AMSs. Based on these results, the cooperation will plan to upgrade ASEAN GAP and provides recommendations to AMSs to promote ASEAN GAP.

Regarding SPS, proposed activities will provide short-term support to some of the National Reference Laboratories (NRLs) in AMSs to accelerate their efforts in obtaining ISO / IEC 17025 in the future. Proposed activities include providing step-by-step trainings on pesticide residue analysis, assessing analytical capacities of NRLs, along with recommendations to AMSs.

In the fishery sector, proposed activities will support AMSs in improving hygiene management throughout the fishery value chain. Activities include assessing and sharing the hygiene management systems of the fishery value chain in AMSs, supporting ASEC in preparing GAqP operational guidelines, and preparation of the inspection guidelines for each stage of value chain. As medium to long term issues, smart fisheries and regional fisheries ecolabels will also be considered.

As for PPP for inclusive FVC, which is relatively new in ASEAN, proposed activities include studies on PPP based FVC in AMSs and drafting policy recommendations to promote PPP when developing FVC in ASEAN. In the medium to long term, PPP mechanism for FVC in ASEAN will be studied.

Expected Outcomes of Activities

The following outcomes are expected from the above cooperation activities.

- i) In ASEAN GAP, policy recommendations are prepared for the promotion of further dissemination and upgrades of ASEAN GAP for expanding recognition and application of the national GAP of each AMS among buyers and producers.
- ii) In SPS, policy recommendations are prepared for the all NRLs of AMSs to become accredited inspection bodies as recognized by ISO / IEC17025 in the future.
- iii) In the fisheries sector, the hygiene management system at each stage of the supply chain is assessed and shared among AMSs, GAqP operational guidelines are discussed, and inspection guidelines for each stage of the value chain is prepared.

iv) In the PPP for inclusive FVC, good practices of FVC in ASEAN are studied and shared, policy recommendations for strengthening the PPP mechanism for ASEAN FVC development are provided.

As a result of the cooperation as a whole, a policy paper for quality and safe FVC development in ASEAN will be prepared, which integrates four expected outcomes and other experiences gained through the implementation of the ASEAN-JICA cooperation.

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Chapter 1 Background and Objectives of the Survey

1.1 Background

, In ASEAN (the Association of Southeast Asian Nations) Member States (AMSs), the agricultural sector remains important to most AMSs, providing a major source of food and nutritional security, employment, and incomes to a large proportion of the population.

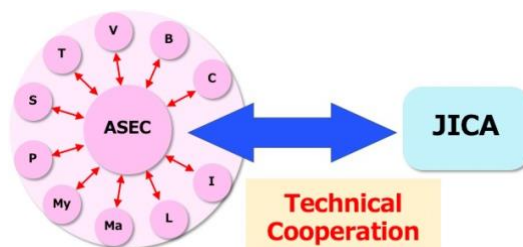
In AMSs, the demands for safe and high-quality food products have been increasing for last decades. Those demands come from the growing number of middle-income class consumers while a number of traditional farmers in the ASEAN region still live below the poverty line due to vulnerability of the food value chain and/or unfair profit distribution in the agricultural sector.

ASEAN recognizes that the establishment of a sound food value chain can be a key solution for ensuring the food safety and sustainable development in the region as reflected in its various policy documents such as the Vision and Strategic Plan for ASEAN Cooperation in Food, Agriculture and Forestry (2016-2025), Strategic Plan of Action on Food Security in the ASEAN Region (2015-2020), and the ASEAN Plus Three Leader’s Statement on Food Security Cooperation 2017.

Since February 2018, the ASEAN Secretariat and JICA have been discussing on formulating an ASEAN-JICA Food Value Chain (FVC) Development Project. As a result of this effort, a concept note was prepared to briefly describe the future cooperation project between ASEAN and JICA in the ASEAN food value chain.

1.2 Objective of the Survey

The objective of the survey is to collect and analyze information for preparing a project proposal for the ASEAN-JICA technical cooperation project based on the concept note presented at the Senior Officials Meeting of the ASEAN +3 Ministers on Agriculture and Forestry (SOM-AMAF+3) in August 2018. The survey identifies the objectives and contents of the necessary supports in 3 thematic areas: 1) ASEAN GAP (Good Agriculture Practice), 2) Sanitary and Phytosanitary Measures (SPS), and 3) public-private partnership (PPP) for the development of regional food cluster/value chain.



Source: JICA Study Team.
Figure 1 ASEAN-JICA Cooperation

Survey Area

The survey area includes all the ASEAN Member States. Aiming to diminish the disparity among the AMSs, the survey put special focuses on Cambodia, Lao PDR, Myanmar, and Viet Nam (CLMV) when considering the potential project activities.

Concept of Cooperation

The concept note presented at the SOM-AMAF+3 in August 2018 is shown in the table below.

Table 1 Proposed Project Design for Proposed ASEAN-JICA Food Value Chain Development

Objective	Quality and to secure intra- and extra- export oriented FVC.	
Thematic Area	Output	Activities
Output 1: Strengthening ASEAN GAP	Reliability and compatibility of AMSs GAP are improved.	1.1 To assess and share the bottlenecks of GAP promotion and Market information in AMSs. 1.1 To develop and implement an Action Plan for marketing and promotion to increase recognition and adoption of ASEAN GAP at the buyer and producer level. 1.3 To prepare Policy recommendations to AMSs.
Output 2.1 : Capacity Development on Risk Analysis and Laboratory Diagnosis of SPS measures	Institutional capacity for risk analysis and laboratory diagnosis of SPS measures are strengthened	2.1.1 To share Good practices on risk analysis and laboratory diagnosis of SPS measures among AMSs. 2.1.2 To develop Capacity for obtaining robust data on pesticides residues and hazardous substances. 2.1. To assess Capacity of AMSs' laboratories.
Output 2.2 : Strengthening SPS measures in Fisheries	AMS SPS measures in fisheries are strengthened.	2.2.1 To assess Current AMS SPS measures in fisheries in order to share best practices. 2.2.2 To develop an ASEAN guideline and relevant principles on fisheries inspection mechanism collaboratively between AMSs and international experts. 2.2.3 To harmonize SPS measures in aquatic animal quarantine and health certification for export and import across AMSs.
Output 3.1 : Survey of Regional Food Cluster Development	Draft plans for regional food cluster development to enhance the ASEAN regional capacity are prepared.	3.1.1 To assess and share Bottlenecks and constraints of the FVCs in ASEAN. 3.1.2 To examine possible strategies for developing regional food clusters/value chain in the ASEAN region.
Output 3.2 : Pilot Project(s) for Regional Food Cluster Development	Regional food cluster models in ASEAN are developed.	3.2.1 To identify priority pilot projects. 3.2.2 To implement and monitor priority pilot projects.

Source "ASEAN-JICA Cooperation Project for Food Value Chain Development, August 29, 2018."

Implementing survey

The survey was conducted as shown in the table below.

1 st survey	January 2019	Kick-off meeting with ASEAN Secretariat
2 nd survey	March – April 2019	Study in ASEAN-6 except Singapore (Brunei Darussalam, Indonesia, Malaysia, the Philippines, and Thailand).
3 rd survey	June – July 2019	Study in CLMV (Cambodia, Lao PDR, Myanmar, and Viet Nam) with Singapore.
4 th survey	February 2020	Report to ASEC

The result is compiled as the Progress Report and submitted to JICA and ASEC at the end of July 2019. Based on the information obtained, JICA presented the conceptual framework of the project in the occasion of Special SOM-18th AMAF+3 Meeting on 7 August 2019 in Viet Nam. The concept proposal was welcomed by SOM-AMAF+3 Leaders.

Based on the results of the Progress Report, JICA prepared a proposal to ASEC. JICA Study Team reported the results of the Draft Final Report to ASEC in February 2020.

Responding to the comments made by ASEC in February 2020, JICA Study Team prepared the Draft Final Report and submitted to JICA in March 2020. Final Report was submitted to JICA in May 2020.

Structure of Report

The report reviews the situation of the ASEAN food value chain and ASEAN policies in Chapter 2 and the current situation by thematic areas in Chapter 3. Based on the results, a framework of the project is proposed in Chapter 4. Chapter 5 summarizes recommendations and lessons learned.

Chapter 1 Background and Purpose of the Survey

Chapter 2 ASEAN Food Value Chain Status and ASEAN Policy

Chapter 3 Current status and issues of each theme

3.1 ASEAN GAP

3.2 SPS

3.3 Fisheries

3.4 Wide area cluster development

3.5 Environmental and social considerations

Chapter 4 Project Proposal

Chapter 5 Summary and recommendations / lessons learned

Chapter 2 ASEAN Policies and Food Value Chain in ASEAN

2.1 ASEAN Region

2.1.1 Geography

ASEAN is a regional intergovernmental organization. It is comprised by of ten AMSs, namely Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Viet Nam. The east end of the region is the west of New Guinea (Papua Province, Indonesia), and the west end is the western region of Myanmar. The north end is the northern region of Myanmar, and the south end is the western region of Java. All the countries within the region are the members of ASEAN, except Timor-Leste.

ASEAN region has population of 640 million. Total Gross Domestic Product (GDP) is 2.6 billion United States Dollar (USD), around half of Japan, and average GDP per capita is 4,000 USD. The annual ASEAN average GDP growth rate is around 5%. In 2015, ASEAN Community was established. The region has shown great potential for economic growth and investment opportunities.

Table 2 ASEAN Member States

	Brunei Darussalam	Cambodia	Indonesia	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Viet Nam	Japan (reference)
Area (km ²)	5,765	181,035	1,916,862	236,800	331,388	676,576	300,000	729	513,139	331,231	377,974
Population (000)	421	15,718	261,891	6,753	32,098	53,388	104,921	5,612	67,653	93,672	126,706
Urban population (%)	77	23	55	34	75	30	47	100	49	35	-
Per capita GDP (US\$)	29,986	1,421	3,872	2,531	9,899	1,229	2,992	57,722	6,736	2,389	38,428
GDP growth rate (%)	1.3	6.8	5.1	6.9	5.9	6.8	6.7	3.6	3.9	6.8	1.7

Source : ASEAN Statistical Leaflet 2018.

2.1.2 Diversified Nature of ASEAN

One of the characteristics of the ASEAN is high degree of diversity within the region. GDP per capita ranges from USD 57,722 (Singapore) to USD 1,229 (Myanmar), which is about 47 times difference. Range of that for EU is about five times among the EU member states.¹ Economic disparity among AMSs were nine times higher than that of the EU member states.

ASEAN is also diverse in terms of their culture, language, and religion. For instance, in Indonesia, about 90% of the population is Muslim, while in the Philippines, more than 80% is Christian. In Thailand, more than 95% of the population is Buddhist². Diversification of religion could affect food culture of people living in ASEAN.

¹ eurostat, accessed on 21 February 2020 (https://ec.europa.eu/eurostat/statistics-explained/index.php/GDP_per_capita_consumption_per_capita_and_price_level_indices)

² McKinsey & Company, accessed on 21 February 2020 (<https://www.mckinsey.com/industries/public-sector/our-insights/understanding-asean-seven-things-you-need-to-know>)

2.1.3 ASEAN Policies

(1) ASEAN Charter and ASEAN Community Vision 2025

The ASEAN Charter serves as a firm foundation in achieving the ASEAN Community by providing legal status and institutional framework for ASEAN. It also codifies ASEAN norms, rules and values; sets clear targets for ASEAN; and presents accountability and compliance. The ASEAN Charter entered into force on 15 December 2008. One of the unique features of ASEAN is that decision making in ASEAN shall be based on consultation and consensus (Article 20 of ASEAN Charter).

ASEAN Community consists of ASEAN Political-Security Community, ASEAN Economic Community, and ASEAN Socio-Cultural Community. ASEAN adopted ASEAN Community Vision 2025 and three communities’ blueprints (2016-2025) in 2015. The Master Plan for ASEAN Connectivity (MPAC) 2025, and Initiative of ASEAN Integration (IAI) Work Plan III are also main policy documents for ASEAN integration.

ASEAN Economic Community (AEC) Blueprint is the main policy document related to this project. AEC Blueprint shows Characteristics and related Action Lines. The Characteristics and Action Lines related to this project are shown in the table below.

Table 3 AEC Blueprint related to this Project

Characteristics	Action Line
A. A Highly Integrated and Cohesive Economy	A.1. Trade in Goods. A.6. Enhancing Participation in Global Value Chain
B. A Competitive, Innovative and Dynamic ASEAN	B.4. Productivity-Driven Growth, Innovation, Research and Development, and Technology Commercialisation
C. Enhanced Connectivity and Sectoral Cooperation	C.5. Food, Agriculture and Forestry
D. A Resilient, Inclusive, People-Oriented and People-Centered ASEAN	D.1. Strengthening the Role of Micro, Small, and Medium Enterprises. D.2. Strengthening the Role of the Private Sector. D.3. Public-Private Partnership D.4. Narrowing the Development Gap
E. Global ASEAN	

Source: ASEAN Economic Blueprint

The AEC Blueprint’s Action Line most related to this Project is Action Line C.5.: Food, Agriculture and Forestry (FAF). It shows vision, intervention and strategic thrusts as follows:

Vision of FAF Sector: Going beyond 2015, the vision for the FAF sector will be “Competitive, inclusive, resilient and sustainable FAF sector integrated with the global economy, based on a single market and production base, contributing to food and nutrition security, and prosperity in the ASEAN Community,” with the goals of ensuring food security, food safety and better nutrition, gaining from access to global market as well as increasing resilience to climate change.

Main Interventions: i) enhancing trade facilitation and economic integration; ii) strengthening cooperation and capacity for sustainable production; iii) enhancing agricultural productivity; iv) increasing investment in agricultural science and technology; and v) ensuring the involvement of agricultural producers in globalisation process.

Strategic Thrusts: i) Increase crop, livestock, and fishery/aquaculture production; ii) Enhance trade facilitation, and remove barriers to trade to foster competitiveness and economic integration; iii) Enable sustainable production and equitable distribution; iv) Increase resilience to climate change, natural disasters

and other shocks; v) Improve productivity, technology and product quality to ensure product safety, quality and compliance with global market standards; vi) Promote sustainable forest management; vii) Further enhance cooperation in production and promotion of halal food and products; and viii) Develop and promote ASEAN as an organic food production base, including striving to achieve international standards.

(2) Main Policies in Food, Agriculture and Forestry (FAF) Sector

The Vision and Strategic Plan for ASEAN Cooperation in Food, Agriculture and Forestry (2016-2025) and the ASEAN Integrated Food Security (AIFS) Framework and Strategic Plan of Action on Food Security in the ASEAN Region (SPA-FS) 2015-2020 are the related policy document in the agriculture sector.

The Vision and Strategic Plan for ASEAN Cooperation in Food, Agriculture and Forestry (2016-2025) shows Goals, Priority Area of Cooperation/ Strategic Thrust, and Action Programmes in which related parts to this project is shown the table below.

Table 4 Goals, Strategic Thrust, and Related Action Programmes in Vision and Strategic Plan for ASEAN Cooperation in Food, Agriculture and Forestry (2016-2025)

Goals
1. Ensuring equitable, sustainable and inclusive growth
2. Alleviating poverty and eradicating hunger
3. Ensuring food security, food safety and better nutrition
4. Deepening regional integration
5. Enhancing access to global markets
6. Increasing resilience to, and contributing to mitigation and adaptation of climate change, natural disasters and other shocks
7. Achieving Sustainable Forest Management (SFM)
Strategic Thrust 1: Enhance quantity and quality of production with sustainable, 'green' technologies, resource management systems, and minimise pre- and postharvest losses and waste
To meet the demands of present and future generations for food, agriculture and forestry, the main focus will be placed on: (i) increasing the investment in the infrastructure and application of science and technology in agricultural value chain, (ii) enhancing management systems so as to increase productivity and minimise eco-system damage and (iii) providing incentives for public and private sectors in research and development.
Action Programmes
1.1. Identify infrastructure investment requirements to increase production and reduce post- production losses, and address investment needs.
1.2. Review policies as necessary to ensure that these take account of the value of environmental assets and costs of resource depletion.
1.3. Increase private sector participation in policy discussions, programme and project formulation, research and development (R&D) and provide incentives and foster an enabling environment for public-private partnerships (PPPs) towards enhancing productivity and quality, recognising that the 'private sector' in the context of FAF must refer not only to larger commercial enterprises but must also include the small scale farmers, fishermen and SMEs.
1.4. Develop yield and productivity enhancing technologies and best practices that involve land use intensification in a sustainable manner, bearing in mind that expansion of cultivable land rapidly reaches its limits even in the land-abundant AMS.
1.5. Balance the competing demands for the use of natural resources for food crops, industrial crops and other purposes through land-use planning to ensure ecological sustainability, food security, quality, productivity and producer profitability.
1.6. Develop new and appropriate technologies, best practices and management systems to ensure food safety and address health/disease and environmental issues, particularly in the fast growing aquaculture, livestock and horticulture subsectors
1.7. Invest in developing adequate capacity among the member countries in analyzing trade- offs and implementing specific measures to support more sustainable livestock sub- sector development.
1.8. Carefully balance production increases with conservation objectives and needs of local communities to develop better management systems to minimise eco-system damage and promote sustainable management of forest and aquatic resources management.
1.9. Increase investments in collaborative R&D activities, and strengthen existing regional collaboration among AMS and with key international institutes, such as the International Rice Research Institute (IRRI), to generate sustainable technologies and management and harvesting systems, and effective extension/communication systems for technology diffusion.
1.10. Provide institutional mechanisms and appropriate incentives for PPP in R&D and technology diffusion, collaborating with the private sector to identify priority, high pay off research issues, and utilise it as a channel for both technology generation and diffusion.
1.11. Regularly review the nature of R&D partnerships and strategic partnerships with concerned organizations to ensure that the research and training agendas are aligned with ASEAN goals.

1.12. Identify and document technology success stories and explore new methods of extension including enhanced use of information and communications technology (ICT) and other communication facilities for dissemination of successful technologies and management systems throughout AMS.
1.13. Standardise and harmonise concepts, methods and presentation of national statistics and strengthen technical capacity of AMS to conduct multi country studies and undertake accurate situational analysis and planning.
Strategic Thrust 2: Enhance trade facilitation, economic integration and market access.
Facilitate trade, economic integration and market access through the harmonization of standards, regulations, inspection, certification and accreditation procedures by improving quarantine systems, reducing NTMs and eliminating non-tariff barriers (NTBs).
Action Programmes
2.1 Identify and eliminate NTBs that have no economic or scientific rationale and implement trade facilitation measures.
2.2 Harmonize accreditation, inspection and certification so that uniform requirements will prevail ASEAN-wide, enabling the recognition of equivalence.
2.3 Streamline and improve quarantine systems and procedures, and harmonize standards and regulations.
2.4 Involve the private sector in identifying priority products for harmonisation of standards and regulations to focus scarce scientific and technical resources on high pay-off products.
2.5 Established business linkages among the potential agricultural cooperatives and farmers organisation.
2.6 Promote direct investment and strategic partnership with ASEAN Agricultural cooperatives and farmers organisation, producers, consumer and traders.
2.7 Enhance regional and international cooperation to ensure that all major ASEAN food markets are integrated, and the food trading system is strengthened and utilised to provide stable food supplies.
2.8 Enhance cooperation to prevent illegal activities (e.g. illegal logging and non-timber forest products (NTFP) harvesting; Illegal, Unreported, and Unregulated (IUU) fishing) and promote sustainable use of natural resources, so as to establish an eco-friendly reputation for ASEAN origin products to improve market access.
Strategic Thrust 3: Ensure food security, food safety, better nutrition and equitable distribution
The main priorities will be strengthening regional food security arrangements, implementing ASEAN food safety policies and promoting nutrition education. To achieve the goals of ensuring food security and food safety the following complementary actions required are: (i) increasing food production, (ii) reducing postharvest losses, and (iii) promoting availability and accessibility to agricultural inputs and operationalizing regional food emergency relief arrangement.
Action Programmes
3.1 Effectively implement the ASEAN Integrated Food Security (AIFS) Framework and the Strategic Plan of Action on Food Security in the ASEAN Region (SPA-FS), 2015-2020.
3.2 Strengthen regional food security arrangements by strengthening the AFSRB as food security policy coordination and advisory services unit for the ASEAN, by linking APTERR scheme to national food security programmes, by transforming ASEAN Food Security Information System (AFSIS) into a permanent scheme for food security information sharing and dissemination, strengthening human resources development in the food security information systems, and enhancing the AMAF Private Sector Dialogue.
3.3 Collaborate with relevant ASEAN bodies in finalizing and implementing the ASEAN Food Safety Policy (AFSP).
3.4 Accelerate the establishment of food safety standards, and mobilise resources for effective ASEAN wide adoption. One priority is to respond quickly and positively to increasing consumer demands for better food quality and safety as well as better labelling and information.
3.5 Improve food security and nutrition through diversifying food sources and strengthening the quality and variety of food production and improving the food value chains.
3.6 Establish food or nutrient-based standards for healthy diets and provide information on nutrition, assist transition to more nutritious diets, paying special attention to the role and importance of women in improving nutrition.
3.7 Promote nutrition education and consumer awareness of healthy diets, conduct social marketing campaigns and lifestyle change communication programmes to promote physical activity and dietary diversification, including increased consumption of micronutrient-rich foods.
3.8 Encourage adoption of standards on classification of food products to facilitate appropriate consumer choices and incentivise producers.
Strategic Thrust 4: Increase resilience to climate change, natural disasters and other shocks
Address climate change and its adverse impacts on socio-economic development, health and the environment, in ASEAN Member States through the promotion of appropriate agricultural practices, building competencies, providing access to financial resources and enhancing regional and international collaboration. In post 2015, R&D to develop appropriate technologies and introduce good agriculture practices and improve accessibility to climate finance resources to support climate friendly agriculture remain priorities in ASEAN.
Strategic Thrust 5: Assist resource constrained small producers and SMEs to improve productivity, technology and product quality, to meet global market standards and increase competitiveness in line with the ASEAN Policy Blueprint on SME Development
Support small producers, cooperatives and SME's to improve product quality to meet regional and international standards and ensure competitiveness through appropriate policies and mechanisms. The main focus of ASEAN towards 2025 will be placed on, among others, promoting cooperatives and farmers' organisations, providing credit, insurance, technology and implementing competition policies to protect against unfair competition in the sector.
Action Programmes

5.1 Assist small scale producers and SMEs in the FAF sector to become viable and competitive enterprises by provision of better technology, inputs, finance and extension services, access to higher value markets, and by facilitating integration into modern value chains.
5.2 Promote and strengthen cooperatives and farmers organizations so as to better integrate small producers in the value chains and to provide collective platforms to deal with production and market risks.
5.3 Provide credit, insurance, market information, quality control and certification facilities to enable small scale producers and SMEs to comply with food safety and quality standards in both domestic and foreign markets.
5.4 Encourage larger scale enterprises to perform a mentoring role by linking with small scale producers and SMEs through mechanisms such as contract farming to foster adoption of innovations and participation in high value markets.
5.5 Implement competition policies to ensure a level playing field for producers and SMEs and to prevent unfair exploitation by large firms with market power in integrated supply chains.
Strategic Thrust 6: Strengthen ASEAN joint approaches on international and regional issues
Promote and protect ASEAN interests at international and regional fora by developing ASEAN common positions on relevant issues on trade, climate change, forestry, biodiversity conservation and food safety. In post 2015, ASEAN will continue focusing on enhancing coordination and joint approaches as well as presenting its common position on the issues affecting the food, agriculture and forestry.
Action Programmes
6.1 Enhance coordination and develop joint approaches through consultations among AMS and related ASEAN bodies in regional and international fora in order to gain a better hearing for its views and proposals, and to obtain more favourable outcomes in negotiations and agreements affecting FAF sector.
6.2 Present ASEAN common position on the issues affecting FAF sector in fora such as Conference of Parties on the United Nations Framework Convention on Climate Change (UNFCCC), World Trade Organization (WTO), United Nations Forum on Forests (UNFF), World Organization for Animal Health (OIE), International Plant Protection Convention (IPPC), Codex Alimentarius Commission(CODEX), Convention on Biological Diversity (CBD) and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and International Tropical Timber Organisation (ITTO).
6.3 Engage with regional and international processes to enhance ASEAN cooperation to improve the governance of transboundary fishing and traceability of fishery products in order to combat IUU fishing. In particular, improve the regulation and control of fishing vessels through registries, the use of vessel monitoring systems and effective catch documentation schemes.
Strategic Thrust 7: Promote sustainable forest management
Promote the implementation of sustainable forest management in the ASEAN region, enhancing competitiveness and eradicating unsustainable practices including combating illegal logging and its associated trade through amongst others; capacity building, technology transfer, enhancing public awareness, strengthening law enforcement and governance, and improving the livelihood of communities living in and surrounding the forest. In 2016-2025, ASEAN will continue to enhance the sustainable management of forest resources, including protection and conservation of forests in an ecologically sound and integrated manner through regionally and internationally agreed criteria and indicators for sustainable forest management.

Source: Vision and Strategic Plan for ASEAN Cooperation in Food, Agriculture and Forestry (2016-2025)

The Strategic Plan of Action on Food Security in the ASEAN Region (SPA-FS) 2015-2020 shows its Goal, Objectives, Components, Strategic Thrusts, Action Programmes/ Outputs and Activities. The related parts to this project are shown in the table below.

Table 5 Goal, Objectives, Components, Strategic Thrusts, Action Programmes and Activities of Strategic Plan of Action on Food Security in the ASEAN Region (SPA-FS)

GOAL
The goal of AIFS Framework and SPA-FS 2015-2020 is to ensure long-term food security and nutrition, to improve the livelihoods of farmers in the ASEAN region.
OBJECTIVES
To achieve the goal, the AIFS Framework and SPA-FS has the following objectives:
a) To sustain and increase food production;
b) To reduce postharvest losses;
c) To promote conducive market and trade for agriculture commodities and inputs; d) To ensure food stability;
e) To ensure food safety, quality and nutrition;
f) To promote availability and accessibility to agriculture inputs; and
g) To operationalize regional food emergency relief arrangements.
COMPONENTS /STRATEGIC THRUSTS/ ACTION PROGRAMMES/ ACTIVITIES
The AIFS Framework comprises five Components, which are distinctive but interrelated in nature to facilitate cooperation in addressing food security in the ASEAN region. The AIFS Framework's Components are supported by corresponding Strategic Thrusts as follows:
Component 1: Food Security and Emergency/ Shortage Relief

Strategic Thrust 1: Strengthen Food Security, including Emergency/ Shortage Relief Arrangement
Component 2: Sustainable Food Trade Development
Strategic Thrust 2: Promote conducive food market and trade.
Output 2.1. Regional food trade distributing more diverse and affordable food at more stable prices.
Activity 2.1.1. Convene the Rice (or Food) Trade Forum to discuss: procedures and disciplines to be followed with respect to the use of food rice trade restrictions and operations of state trading entities; food trade facilitation; food value chain strengthening, and food diet diversification, open to participation of private traders, and Dialogue Partners who are also key players in the global rice market.
Activity 2.1.2. Conduct technical meetings of the AFSRB in preparation for ASEAN Food Trade Forum.
Activity 2.1.3. Gather data and conduct analysis thereof to support the AFSRB (ASEAN Food Security Reserve Board) technical meetings, such as policy scenarios for the rice market, impact assessment of contract growing on small-scale farmers, and related studies.
Activity 2.1.4. Based on Forum discussions, recommendations will be submitted to AFSRB for further discussion.
Activity 2.1.5. Convene seafood forum to deliberate specifically on technical barriers to seafood trade with a view to promote movement of fish and fish products intended for human consumption
Output 2.2. Enhanced AFSRB capacity as food security policy advisory unit for SOM-AMAF.
Activity 2.2.1. Conduct capacity building activities (e.g. trainings) for AFSRB Members and Secretariat staff.
Component 3: Integrated Food Security Information System
Strategic Thrust 3: Strengthen integrated food security information systems to effectively forecast, plan and monitor supplies and utilization for basic food commodities
Component 4: Agricultural Innovation
Strategic Thrust 4: Promote sustainable food production
Output 4.1. R&D outputs, improved practices in agri-based and food value chains disseminated and access facilitated.
Activity 4.1.1. Create and use a technology portal to disseminate new technologies and practices in the various stages of agri-based and food value chains and facilitate access to these by ASEAN producers to improve productivity and efficiency of value chains and product and safety standards.
Activity 4.1.7. Expand and promote farmers' knowledge beyond agriculture to include agribusiness and entrepreneurship.
Strategic Thrust 5: Encourage greater investment in food and agri-based industry to enhance food security
Output 5.1. Sustained expansion of investments in food and agri- based industries.
Activity 5.1.1. Prepare roadmaps for demand-oriented agri-based and food regional value chains involving organizations of small-scale farmers, disseminate investment opportunity information particularly for SMEs, and facilitate the coordination of investments based on public – private as well as public – community partnerships along agri-based regional value chains.
Activity 5.1.2. Support the development of agri-based and food regional supply chain through closer public-private sector partnerships.
Strategic Thrust 6: Identify and address emerging issues related to food security
Component 5: Nutrition-enhancing agriculture development
Strategic Thrust 7: Utilize Nutrition Information to support evidence-based food security and agriculture policies
Strategic Thrust 8: Identify policies, institutional and governance mechanisms for nutrition- enhancing agriculture development in AMS
Strategic Thrust 9: Develop and strengthen nutrition-enhancing food, agriculture and forestry policies/programs and build capacity for their implementation, monitoring and evaluation

Source: Strategic Plan of Action on Food Security in the ASEAN Region (SPA-FS)

Currently, in order to respond to the trade globalization, ASEAN cooperation in food, agriculture and forestry is more focused on the enhancement of food, agricultural and forestry products competitiveness in international markets, while sustaining agricultural production. Harmonization of quality and standards, assurance of food safety, and standardization of trade certification are the priorities being addressed, building upon the experience of some Member States and existing international standards.

ASEAN Plus Three Leader's Statement on Food Security Cooperation 2017 also mentions "Enhancing competitiveness and opportunities for small scale producers and MSMEs to enhance their status and role in the higher value markets and modern food value chain".

The various policies related to the food value chain can be summarized as follows.

Purpose: Value chain development contributes to food safety, inclusive growth, trade facilitation, higher value addition, and promotion of modern, regional and/or global value chain participation of small producers and MSMEs (micro, small and medium enterprises).

Policy measures:

i) Improve various business environments (infrastructure & public services; policies, institutions, rules, and regulation; standards and regulation setting, policy implementation mechanisms, licensing, registration & monitoring systems for policy enforcement, etc.). In ASEAN, these business environments need to be harmonized and supported, and regional issues need to be addressed.

ii) Providing support services for producers and businesses (Research & development, market information & business linkage, financing, education, training, extension, human resource development, and public relations, etc.). ASEAN cooperation deals with these with these support services.

iii) Focus on smallholders and MSMEs for further involvement in modern and regional value chain.

(3) Policies related to ASEAN Cooperation Project

The proposed ASEAN-JICA Food Value Chain Development Project has to follow the objectives, requisite and procedures of ASEAN Cooperation Project. The objectives, requisite and procedure of ASEAN Cooperation Project are stipulated in “Handbook on Proposal Development for ASEAN Cooperation Projects”.

1) Objectives of ASEAN Cooperation Project

ASEAN cooperation projects aim at supporting the overall goal of ASEAN integration. Those are one of the implementing vehicles for the various development interventions goals and objectives which are set out under the ASEAN Community Vision 2025.

Basic policy documents are: 1) ASEAN Community Vision 2025 (Forging Ahead Together) & ASEAN Community Blueprint, 2) Master Plan on ASEAN Connectivity (MPAC) 2025, and 3) Initiative for ASEAN Integration (IAI) Work Plan III (2020). Other related documents are: the Vision and strategic plan for ASEAN cooperation in food, agriculture and forestry (2016-2025), and the Strategic Plan of Action on Food Security in the ASEAN Region (2015-2020).

2) Principle of ASEAN Cooperation Projects

ASEAN cooperation projects adhere to the principles of the ASEAN Charter, including the principle of equality of treatment of Member States. It should i) address challenges at the regional level and create synergy with other projects that are addressing the same issues; ii) be of benefit to ASEAN and engage all AMS equally; iii) align with the ASEAN Community Blueprints and other relevant ASEAN documents; and iv) be endorsed by either the relevant ASEAN Sectoral Committee/ASEAN Body or Committee of the Permanent Representatives to ASEAN (CPR), or both.

3) Procedure

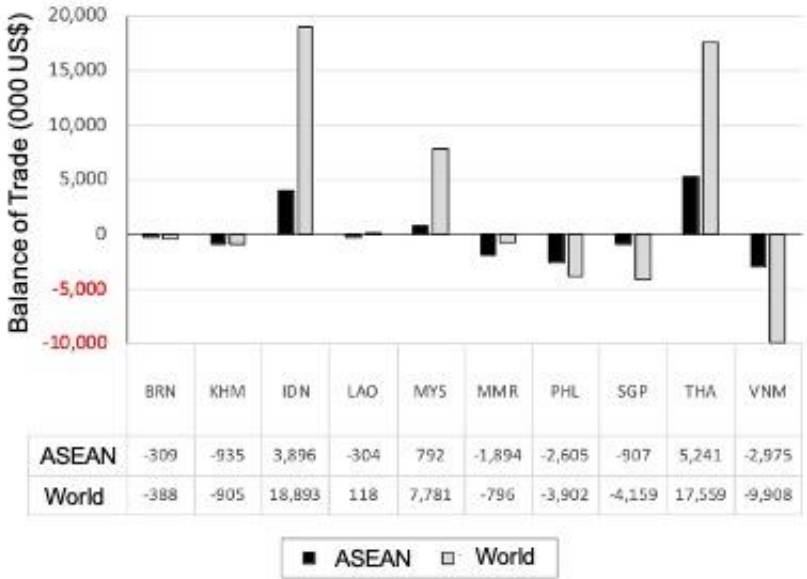
Procedures for ASEAN cooperation projects follow “Standard Operating Procedure on Project Appraisal and Approval (SOP PAA)”.

2.2 Situation of Food Value Chain in ASEAN

2.2.1 Trade Value

(1) Trade Balance of Agricultural and Food Products

Exports of agricultural and food products from ASEAN to the rest of the world reached USD 128,348 million while the value of import was USD 104,055 million in 2016³. Thus, the value of export exceeded import by USD 24,293 million. As shown in the figure below, Thailand, Indonesia, and Malaysia were the only countries in trade surplus (positive trade balance). The other seven countries were in trade deficit (negative trade balance).



Code: BRN: Brunei Darussalam; KHM: Cambodia; IDN: Indonesia; LAO: Lao PDR ; MYS: Malaysia; MMR: Myanmar; PH: Philippines; SGP: Singapore; THA: Thailand; VNM: Viet Nam
 Source : The Observatory of Economic Complexity website, <https://atlas.media.mit.edu/en/>

Figure 2 Balance of Trade (Agriculture Product and Food, 2016)

(2) Intra-ASEAN Trades

The table below presents intra-ASEAN trades of agriculture and food products. It indicates that Thailand leads intra-ASEAN exports at USD 8,400 million in 2016. Brunei Darussalam did not export to other AMSs. The second lowest export trade value was observed in Cambodia (USD 397 million). Even though Thailand and Cambodia are physically adjacent countries, their values of exports were 21 times different.

³ The Observatory of Economic Complexity, accessed between 17-21 February 2020

Table 6 Trade Value of Agriculture Products and Foods of AMSs (2016)

Unit: million USD

		Import										Intra-ASEAN Total	Intra- and Extra-ASEAN Total
		BRN	KHM	IDN	LAO	MYS	MMR	PHL	SGP	THA	VNM		
Export	BRN	-	N/A	0	N/A	0	0	0	0	0	N/A	0	4
	KHM	10	-	1	3	34	0	0	5	293	51	397	816
	IDN	17	251	-	2	2,187	728	885	1,266	599	955	6,890	34,813
	LAO	N/A	5	0	-	0	0	1	4	186	401	597	1,090
	MYS	184	58	594	7	-	256	548	2,200	663	919	5,429	22,812
	MMR	1	6	57	0	101	-	11	75	251	52	554	3,567
	PHL	6	3	46	0	164	6	-	104	137	70	536	6,569
	SGP	62	99	410	13	642	209	456	-	377	1,394	3,662	8,374
	THA	29	803	1,533	836	1,065	1,205	796	558	-	1,575	8,400	31,252
	VNM	N/A	107	353	40	444	44	444	357	653	-	2,442	19,051
	Intra-ASEAN Total	309	1,332	2,994	901	4,637	2,448	3,141	4,569	3,159	5,417	28,907	128,348
Intra- and Extra-ASEAN Total	392	1,721	15,920	972	15,031	4,363	10,471	12,533	13,693	28,959	104,055	-	

N/A: Not Available

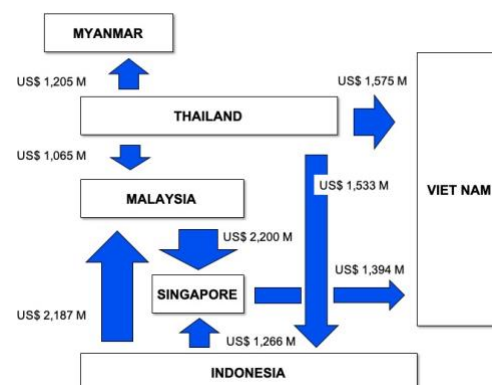
Source: The Observatory of Economic Complexity website, <https://atlas.media.mit.edu/en/>

The cases of export trade value exceeded USD 1 billion were observed in the following eight cases in 2016.

Cases of export trade value exceeded USD 1 billion (in descending order)

1. Malaysia to Singapore (USD 2.2 billion)
2. Indonesia to Malaysia (USD 2.187 billion)
3. Thailand to Viet Nam (USD 1.575 billion)
4. Thailand to Indonesia (USD 1.533 billion)
5. Singapore to Viet Nam (USD 1.394 billion)
6. Indonesia to Singapore (USD 1.266 billion)
7. Thailand to Myanmar (USD 1.205 billion)
8. Thailand to Malaysia (USD 1.065 billion)

Among the eight cases, five were the exports from ASEAN-6⁴ to other ASEAN-6, whereas three cases were exports from ASEAN-6 to CLMV⁵. There were no cases of export from CLMV that reached USD 1 billion.



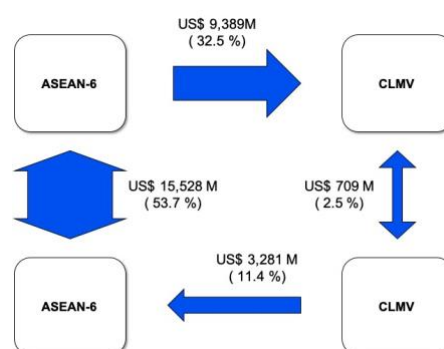
Source: The JICA Study Team based on the Observatory of Economic Complexity website, <https://atlas.media.mit.edu/en/>

Figure 3 Big Trades among AMSs (USD 1 billion or more)

⁴ Brunei Darussalam, Indonesia, Malaysia, Philippines, Singapore, Thailand

⁵ Cambodia, Lao PDR, Myanmar, Viet Nam

Of total amount of intra-ASEAN trades of agricultural and food products which was USD 28.907 billion in 2016, exports from ASEAN-6 to ASEAN-6 was USD 15.538 billion accounted for 53.7%, exports from ASEAN-6 to CLMV was USD 9.389 billion (32.5% of intra-ASEAN trades), exports from CLMV to ASEAN-6 was USD 3.281 billion (11.4% of intra-ASEAN trades), and exports among CLMV was USD 0.709 billion (2.5% of intra-ASEAN trades). Export from ASEAN-6 accounted for 85% of exports in intra-ASEAN trades. Export from CLMV was limited.



Source: The JICA Study Team based on the Observatory of Economic Complexity website, <https://atlas.media.mit.edu/en/>

Figure 4 Trades among ASEAN-6 and CLMV

(3) Major Agricultural and Food Products in Intra-ASEAN Trade

Major agricultural and food products in intra-ASEAN trades were listed in the table below⁶. The list only included the trade value exceeded USD 100 million, or the most traded products between the specific countries. Big trades indicated in the table suggests high needs of such products in intra-ASEAN trades⁷.

Table 7 Agriculture products and food trade within ASEAN (2016)
(Trade value of 100millionUSD and above or the highest traded items of the countries)

Unit: Million USD

		Import									
		BRN	KHM	IDN	LAO	MYS	MMR	PHL	SGP	THA	VNM
Export	BRN	-	N/A	No items (0)	N/A	Bakery (0.04)	No items (0)	No items (0)	Noodles (0.04)	No items (0)	N/A
	KHM	Rice (10)	-	Cigarette (1)	Pork (3)	Rice (25)	No items (0)		Rice (2.7)	Cassava (254)	Unrefined sugar (29)
	IDN	Noodles (4)	Cigarette (244)	-	Tabaco (1)	Stearic Acid (417), Coconut oil (301), Palm oil (297), Cocoa paste (128), Cigarette (117), Other vegetable oil (104)	Palm oil (336), Other vegetable oil (311)	Coffee and tea-extract (279), Nonfood fats and oil (180)	Stearic Acid (240), Cigarette (141), Palm oil (107)	Non filet frozen fish (61)	Pepper (122), Palm oil(122)
	LAO	N/A	Beer (4)	Tabaco (0.06)	-	Other vegetable oil (0.1)	Tabaco (0.01)	Maize (0.3)	Cigarette (3)	Cassava (58)	Flavored water (151)
	MYS	Malt extract (44)	Malt extract (23)	Processed food (66)	Beef (6)	-	Palm oil (129)	Palm oil (113)	Stearic Acid (198), Poultry (176), Water (149), Palm oil (148), Egg (101)	Stearic Acid (66)	Palm oil (346)
	MMR	Non-filet fish (0.3)	Cigarette (5)	Dried beans (36)	Rice (27)	Dried beans (45)	-	Dried beans(10)	Non-filet fish(31)	Non-filet fish (58)	Dried beans (39)
	PHL	Flavored water (2)	Malt extract (1)	Tabaco (12)	Beef (0.02)	Malt extract (45)	Starch (2)	-	Cigarette (38)	Cigarette (53)	Vegetable oil cake (17)
	SGP	Flavored water (13)	Beer(18)	Clove (60)	Cigarette (7)	Processed food (152)	Malt extract (35)	Processed food (244)	-	Malt extract (139), Processed food (121)	liquor/liqueur (521), Cigarette (391), Processed food (145),

⁶ Observatory of Economic Complexity, accessed between 17-21 February 2020 (<https://atlas.media.mit.edu/en/>)

⁷ Products with big trades indicate actualized needs. Latent needs are not discussed.

		Import									
		BRN	KHM	IDN	LAO	MYS	MMR	PHL	SGP	THA	VNM
											Malt extract (142)
	THA	Rice (14)	Unrefined sugar (224), Flavored water (196)	Unrefined sugar (810), Rice (209), Starch (199)	Chicken (108), Pork (106)	Rice (179), Animal Feed (105)	Unrefined sugar (293), Flavored water (186), Processed food (108)	Maize (136), Unrefined sugar (109)	Rice (90)	-	Flavored water (353), Other fruit (260), Dried fruit (173), Crustaceans (138), Unrefined sugar (121)
	VNM	N/A	Animal feed (34)	Rice (198)	Beer (8)	Rice (85)	Animal feed (16)	Rice (94)	Cigarette (59)	Filet fish (107)	-

Source: The JICA Study Team based on the Observatory of Economic Complexity website, <https://atlas.media.mit.edu/en/>

Big trades exceeded USD 200 million were listed below (19 cases). The biggest trade was unrefined sugar from Thailand to Indonesia (USD 810 million). The second biggest trade was liquor/liqueur from Singapore to Viet Nam (USD 521 million). The third biggest trade was stearic acid (food additive) from Indonesia to Malaysia (USD 417 million)⁸. As mentioned in the previous, the highest value of trade by country was found in the export from Malaysia to Singapore; however, Table 7 indicates that the trade is not heavily depending on a specific product; various items were traded.

Major agricultural and food products traded among AMSs (trade value of USD 200 million or more)

1. Thailand to Indonesia: Unrefined sugar (USD 810 million)
2. Singapore to Viet Nam: Liquor/liqueur (USD 521 million)
3. Indonesia to Malaysia: Stearic acid (USD 417 million)
4. Singapore to Viet Nam: Cigarette (USD 391 million)
5. Thailand to Viet Nam: Flavored water (USD 353 million)
6. Malaysia to Viet Nam: Palm oil (USD 346 million)
7. Indonesia to Myanmar: Palm oil (USD 336 million)
8. Indonesia to Myanmar: Other vegetable oil (USD 311 million)
9. Indonesia to Malaysia: Coconut oil (USD 301 million)
10. Indonesia to Malaysia: Palm oil (USD 297 million)
11. Thailand to Myanmar: Unrefined sugar (USD 293 million)
12. Indonesia to Philippines: Coffee and tea extract (USD 279 million)
13. Thailand to Viet Nam: Other fruits (USD 260 million)
14. Cambodia to Thailand: Cassava (USD 254 million)
15. Indonesia to Cambodia: Cigarette (USD 244 million)
16. Singapore to Philippines: Processed food (USD 244 million)
17. Indonesia to Singapore: Stearic acid (USD 240 million)
18. Thailand to Cambodia: Unrefined sugar (USD 224 million)
19. Thailand to Indonesia: Rice (USD 209 million)

⁸ Possibly dominated by palm stearic acid made from palm oil.

Among the above cases of big trades, eight cases were the exports from ASEAN-6 to other ASEAN-6, whereas ten cases were exports from ASEAN-6 to CLMV. There was one case of export from CLMV to ASEAN-6 (the case of cassava from Cambodia to Thailand).

Specifically, Indonesia had eight cases of big trades with USD 200 million or more, and Thailand had six cases. Singapore had three cases, and one case each from Cambodia and Malaysia. The most exported product from Indonesia was palm oil, while the export from Thailand was mostly unrefined sugar. Singapore exported highly processed products, such as processed food and liquor/liqueur. In general, exported items were mostly luxury items (non-necessities), such as cigarette, coffee, tea-extract, and liquor/liqueur (except vegetable oil and unrefined sugar). Grain trade exceeded USD 200 million was observed only in a case of rice export from Thailand and Indonesia.

2.2.2 Value-Added

(1) Value-Added by Agribusiness

Value-added by agribusiness (agriculture and food processing industries) in the output of the economy in 2015 was estimated to be USD 383,230 million in ASEAN (see the table below). It was led by Indonesia, followed by the Philippines and Thailand.

Table 8 Value-Added by Agribusiness in 2015

Unit: Million USD

	BRN	KHM	IDN	LAO	MYS	MMR	PHL	SGP	THA	VNM	ASEAN Total
Value-added by agribusiness	131	5,887	171,183	N/A	35,863	N/A	68,980	3,036	63,077	35,072	383,230
Ratio of value-added to output (%)	35	59	53	N/A	33	N/A	46	33	42	24	43

Note: N/A means data not available

Source: Global Value Chain in ASEAN: Paper15 Agribusiness (ASEAN-Japan Center)

(2) Value-Added Exports by Agribusiness

Value-added exports of goods and services from ASEAN was estimated at USD 1,392,922 million in 2015 (primary, secondary, and tertiary sectors of industries for USD 111,033 million, USD 897,038 million, and USD 314,811 million, respectively)⁹. Of this, value added by countries outside of ASEAN was USD 479,446 million (36%) and value added within ASEAN was USD 843,476 million (64%).

Value added exports by agriculture, hunting, forestry and fishing sector was estimated at USD 34,565 million in 2015 (see the table below **Error! Reference source not found.**). Of this, value added by the AMSs was accounted for 88% and value added by countries outside of ASEAN was 12%. For food, beverages and tobacco industry, value added exports was calculated at USD 67,886 million. Of this, value added within ASEAN was accounted for 76% and value added by countries outside of ASEAN was 24%. In total of two sectors, total value was USD 102,451 million. Of this, value added within ASEAN was accounted for 80%

⁹ Masataka Fujita. "Global Value Chain in ASEAN: Global Perspective". ASEAN-Japan Center. 2019.

and value added outside of ASEAN was 20%. The share of foreign value added is higher for food products than agricultural products.

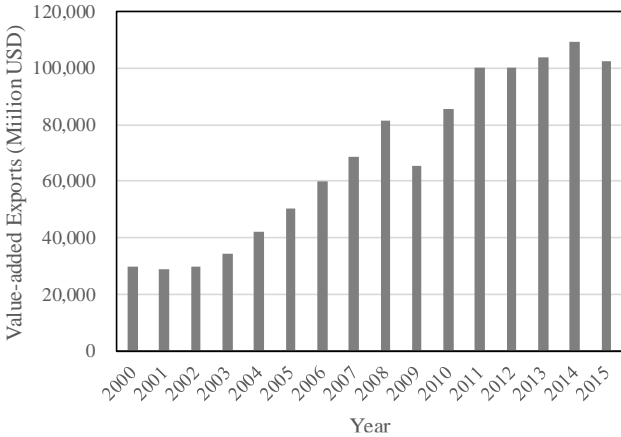
Table 9 Value-Added Exports by Agribusiness in 2015

Unit: Million USD

	Value added within ASEAN	Value added outside of ASEAN (Foreign value added)	TOTAL
Agriculture, hunting, forestry and fishing sector	30,441 (88% of sector total)	4,124 (12% of sector total)	34,565 (100%)
Food, beverages and tobacco industry sector	51,663 (76% of sector total)	16,223 (24% of sector total)	67,886 (100%)
TOTAL	82,104 (80% of total)	20,347 (20% of total)	102,451 (100%)

Source: Global Value Chain in ASEAN: Global Perspective (ASEAN-Japan Center)

The figure in the right presents the trend of value-added exports of agricultural and food products by ASEAN. Value-added exports by agricultural and food products by ASEAN was USD 28,697 million in year 2001¹⁰. It reached to USD 102,451 million in 2015. It showed 3.6 times increase in 15 years. The value-added export shows a steady trend except for year 2009 and 2015. It means that AMSs have already been deeply involved in agribusiness global value chain.



Source: Global Value Chain in ASEAN: Paper15 Agribusiness (ASEAN-Japan Center)

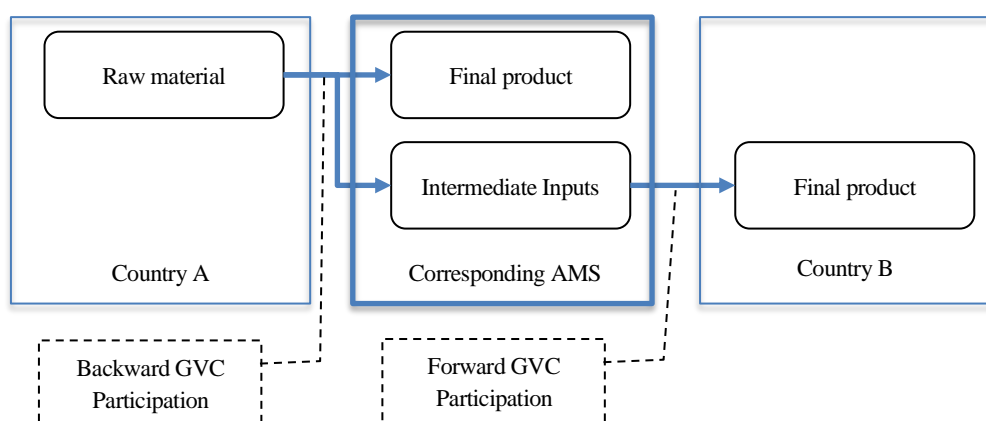
Figure 5 Trend of Value-Added Exports of Agricultural and Food Products by ASEAN

2.2.3 Levels of Country Participation in Global Value Chain

The Global Value Chain (GVC) participation index gives an estimation of how deeply the country’s economy is tied to GVC through its foreign trade. This indicator is based on two components reflecting the upstream and downstream links of the international production chains. Individual economies participate in GVC by importing foreign materials to produce goods and services they export (backward GVC participation) and also by exporting domestically manufactured goods to partners in charge of downstream production stages (forward GVC participation)¹¹ (see Figure 6).

¹⁰ ASEAN-Japan Center. “Global Value Chains in ASEAN: Paper 15 Agribusiness”. ASEAN-Japan Center. 2019.

¹¹ World Trade Organization. “WTO "Trade in Value-Added and Global Value Chains" profiles: Explanatory notes”. World Trade Organization.



Source: Annual Report of Economy and Finance in Fiscal Year 2014, The Cabinet Office of Japan

Figure 6 Concept of GVC Participation Index

The table 10 presents the GVC participation index of agricultural and food & beverages sectors in AMSs. The index is expressed as a percentage of gross exports. As domestically produced inputs can use some of the foreign materials, there is an overlap and potentially some double counting (the indicator is not based on value-added trade)¹². It should be noted that agricultural sectors in Cambodia and Viet Nam present one of the highest percentages of GVC participation in the world. Especially backward participations are high in both the countries. As for food & beverages sector, the GVC participation index of Viet Nam is the highest in the world. Agricultural and food & beverage sectors in Viet Nam and Cambodia are highly integrated in the GVC but most of the participations are backward. Both sectors in Viet Nam and Cambodia are depending on foreign materials.

Table 10 GVC Participation Index of AMSs in 2009

		Unit: %											
Sector	Direction	BRN	KHM	IDN	LAO	MYS	MMR	PHL	SGP	THA	VNM		
Agriculture	Backward	0.2	5.9	0.1	N/A	1.6	N/A	0.1	0.0	0.2	4.9		
	Forward	0.2	2.7	1.8	N/A	1.7	N/A	0.3	0.0	1.0	1.9		
	Total Index	0.4	8.6	1.9	N/A	3.3	N/A	0.4	0.0	1.2	6.8		
Food products and beverages	Backward	0.1	3.6	1.2	N/A	0.8	N/A	0.1	0.5	1.9	5.4		
	Forward	0.0	0.0	1.3	N/A	0.3	N/A	0.2	0.0	0.3	0.1		
	Total Index	0.1	3.6	2.5	N/A	1.1	N/A	0.2	0.5	2.2	5.5		

Note: N/A means data not available

Source: OECD.stat (Organisation for Economic Co-operation and Development.stat) website

https://stats.oecd.org/Index.aspx?DataSetCode=GVC_INDICATORS#

2.2.4 ASEAN-Level Linkage Among Food Value Chain Related Industries

Table 11 shows proportion of intermediate inputs in major FVC industries, such as agriculture, fishing, food & beverages, wholesale trade, retail trade, and hotels & restaurants, came from other AMSs during 2000-2015. The stronger economic ties between an industry in AMS with other industries in other AMSs is indicated by the large numbers. For example, only 5% of intermediate inputs of Cambodian food & beverages industry came from other AMSs. Other 95% are from domestic industry or from rest of the

¹² Koen De Backer et al. "OECD Trade Policy Papers No. 159: Mapping Global Value Chains". OECD. 2013.

world. As it is shown in the table, the level of involvement of ASEAN to food value chain related industries is limited.

Table 11 Proportion of Intermediate Inputs in Major Food Value Chain Industries Came from Other AMSs (2000-2015)

Related Industries	Unit: %									
	BRN	KHM	IDN	LAO	MYS	MMR	PHL	SGP	THA	VNM
Agriculture		0	0	0	1	0	0		0	1
Fishing		0	0	0	0	0	0		0	2 _{g)}
Food & beverages	N/A	5 _{a)}	0	2 _{c)}	3 _{e)}	0	0	N/A	0	2 _{g)}
Wholesale trade		4 _{b)}	0	2 _{d)}	0	0	0		0	1
Retail trade		0	0	0	0	0	0		0	2 _{g)}
Hotels & restaurants		2	0	1	4 _{f)}	0	0		0	2 _{g)}

Note: N/A data not available, a) from agriculture (2%) and food & beverages (3%), b) mainly from wholesale trade, c) from food & beverages, d) from wholesale trade, e) mainly from food & beverages, f) mainly from food & beverages, and g) from wholesale trade (1%) and retail trade (1%) (all the industries are industries in other AMSs).

Source : Overview of Agri-food Industries in ASEAN: Basic Information on the Food Value Chain (ERIA)

2.2.5 Food Value Chain Development Activities in ASEAN by Japan

Japan has been a strong supporter of agribusiness in ASEAN¹³. There are various food value chain development activities in ASEAN led by Japan. The followings are the examples.

(1) Ministry of Agriculture, Forestry and Fisheries in Japan

As a part of global food value chain development, the Ministry of Agriculture, Forestry and Fisheries (MAFF) in Japan has been working hard at ASEAN level. The followings are the example of activities.

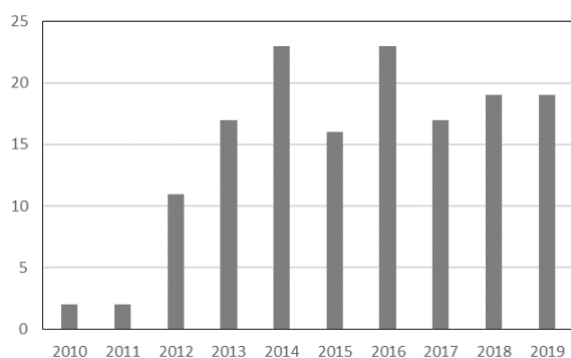
- MAFF in Japan has launched bilateral dialogues with private partners in six AMSs such as Cambodia, Indonesia, Myanmar, the Philippines, Thailand and Viet Nam.
- In addition to the bilateral dialogues, major contribution of MAFF is as shown below.
 - ASEAN Food Security Information System (collaboration project with AFSIS)
 - Project for Human Resource Development in Food-related Areas through Partnership with Universities in ASEAN Region (collaboration project with ASEC)
 - Project for Strengthening Capacity Building in Agriculture Sector in ASEAN Countries (CB Project) - Phase 3 (collaboration project with ASEC)
 - Government-Private Project for Human Resource Development in Food-related Areas through Partnership of Japan and the ASEAN Region
 - Research Project for Policy Recommendations to ASEAN Countries on Realization of Higher Value Added of Agricultural Products (collaboration project with Economic Research Institute for ASEAN and East Asia: ERIA)
 - Promotion of sustainable aquaculture and resource enhancement in Southeast Asia (collaboration project with Southeast Asian Fisheries Development Center: SEAFDEC)

¹³ ASEAN-Japan Center. "Global Value Chains in ASEAN: Paper 15 Agribusiness". ASEAN-Japan Center. 2019.

(2) Overseas Expansion of Japanese Companies in ASEAN and Supports by JICA

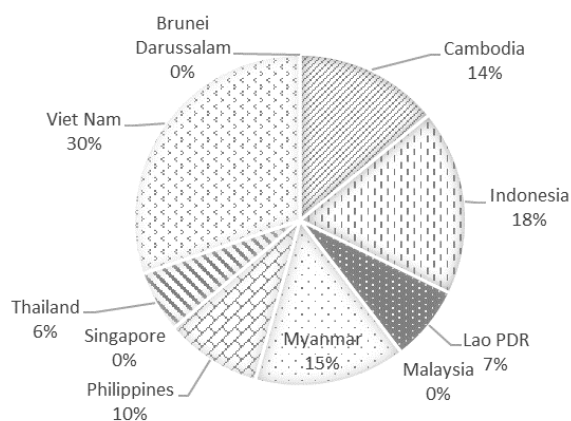
Number of Japanese companies doing food and agriculture related business in ASEAN was estimated at 450 in 2019¹⁴. By country, Thailand received the largest number, which is 194 companies. It is followed by Indonesia (104 companies), Viet Nam (88 companies), the Philippines (around 30 companies), Myanmar (around 20 companies) and Cambodia (around 10 companies). By type of business, the largest number was observed in warehouse and distribution (214 companies), followed by food manufacturing (145 companies), food wholesale (34 companies), restaurant (28 companies), agriculture/forestry/fishery (19 companies), supermarket and department store (10 companies).

JICA is providing supports to Japanese private partners to make their overseas business development possible and successful. Number of agriculture related JICA public-private partnership projects in ASEAN in 2010-2019 reached to 149. In recent years, number of projects in a year is around 20 (see Figure 7). By country, Viet Nam received the largest number of JICA public-private partnership projects (see Figure 8).



Source : JICA website,
https://www2.jica.go.jp/ja/priv_sme_partner/

Figure 7 Number of JICA’s Agriculture related Public-Private Partnership Projects in ASEAN by Fiscal Year



Source : JICA website,
https://www2.jica.go.jp/ja/priv_sme_partner/

Figure 8 Distribution of Agriculture related JICA Public-Private Partnership Projects by Country in Year 2010-2019

¹⁴ Daiwa Institute of Research Ltd. “Survey on International Agriculture and Trade Investment (Services of the Secretariat of the Public-Private Council for Promoting Global Food Value Chain and Policy Dialogues with Southeast Asian Countries) (5) Case Studies of Overseas Business Development, Ministry of Agriculture, Forestry and Fisheries of Japan. 2018

2.3 Situation of Food Value Chain in AMSs

2.3.1 Share of Agribusiness in Total Output

Shares of agribusiness (agriculture and food processing industries) outputs in the total output of all industries is shown in Table 12. The share is highest in Cambodia, followed by the Philippines and Viet Nam.

Table 12 Share of Agribusiness Output in the Total Output in AMSs in 2015

	BRN	KHM	IDN	LAO	MYS	MMR	PHL	SGP	THA	VNM
Share of agriculture, forestry and fishing	0.5	25	10	N/A	6	N/A	12	0.03	7	13
Share of food products, beverage and tobacco	1.2	8	10	N/A	8	N/A	15	1	9	12
Total	2	33	20	N/A	14	N/A	27	1	16	25

Unit: %

Note: N/A means data not available

Source: Global Value Chain in ASEAN: Paper15 Agribusiness (ASEAN-Japan Center)

2.3.2 Agricultural Inward Foreign Direct Investment & International Logistics

Agricultural inward foreign direct investment inflowing to AMSs is summarized in Table 13. The biggest amount was observed in Indonesia, followed by Malaysia.

Table 13 Agricultural Inward Foreign Direct Investment

	BRN	KHM	IDN	LAO	MYS	MMR	PHL	SGP	THA	VNM
Data Year	N/A	2016	2015	2015	2015	2015	N/A	N/A	2016	2016
Amount	N/A	478	4,400	460	2,360	105*	N/A	N/A	335**	6*
Ratio of the total amount	N/A	13%	27%	46%	2%	3%	N/A	N/A	N/A	2%

Unit: Million USD

Note: N/A means data not available, * is for all the primary sector including agriculture, ** is for agro-processing projects

Source: Global Value Chain in ASEAN: Paper15 Agribusiness (ASEAN-Japan Center)

Table 14 presents international logistics performance index (LPI) in AMSs. International LPI is an index developed by the World Bank to analyze performance of international logistics of each country. It consists of six component which are performances of customs, infrastructure, international shipments, logistics quality and competence, tracking and tracing, and timeliness. According to the result in 2018, Singapore shows the best result, followed by Thailand.

Table 14 International Logistics Performance Index in 2018

	BRN	KHM	IDN	LAO	MYS	MMR	PHL	SGP	THA	VNM
International LPI	2.71	2.58	3.15	2.70	3.22	2.30	2.90	4.00	3.41	3.27
World Ranking	80	98	46	82	41	137	60	7	32	39

Source: World Bank website, <https://lpi.worldbank.org/international/global>

2.3.3 Linkage Among Domestic Food Value Chain Related Industries

Table 15 presents proportion of domestic intermediate inputs in major food value chain industries, such as agriculture, fishing, food & beverages, wholesale trade, retail trade, and hotels & restaurants during 2000-2015. Unlike ASEAN-level linkage, domestic linkages among related industries are strong. Especially,

domestic value chain between food & beverages with agriculture as well as hotels & restaurants with food & beverages are strong in many AMSs.

Table 15 Proportion of Domestic Intermediate Inputs in Major Food Value Chain Industries (2000-2015)

Related Industries	Unit: %									
	BRN	KHM	IDN	LAO	MYS	MMR	PHL	SGP	THA	VNM
Agriculture		12	16	6	13	57 _{g)}	7		19	22 _{q)}
Fishing		3	11	1	12	73 _{h)}	7		22 _{n)}	30 _{r)}
Food & beverages		39 _{a)}	52 _{b)}	36 _{d)}	42 _{e)}	72 _{i)}	40 _{l)}		57 _{o)}	47 _{s)}
Wholesale trade	N/A	2	3	1	3	22 _{j)}	0	N/A	10	0
Retail trade		2	3	2	3	2	0		9	1
Hotels & restaurants		18	53 _{c)}	15	26 _{f)}	29 _{k)}	23 _{m)}		39 _{p)}	9

Note: N/A data not available, a) mainly from agriculture (20%), b) mainly from agriculture (27%), c) mainly from food & beverages (21%), d) mainly from agriculture (17%), e) mainly from food & beverages (31%), f) mainly from food & beverages (15%), g) mainly from agriculture (52%), h) mainly from fishing (70%), i) mainly from food & beverages (56%), j) from wholesale trade, k) mainly from hotels & restaurants (11%) and food & beverages (10%), l) mainly from agriculture (25%), m) mainly from food & beverage (17%), n) mainly from food & beverages (13%), o) mainly from agriculture (23%) and food & beverages (20%), p) mainly from food & beverages (22%), q) mainly from food & beverage (12%), r) mainly from fishing (27%), and s) mainly from agriculture (20%) and food & beverages (18%) (all the industries are domestic industries).

Source : Overview of Agri-food Industries in ASEAN: Basic Information on the Food Value Chain (ERIA)

2.3.4 Implementation Mechanism of FVC in AMSs

(1) Key Governmental Stakeholders

Key governmental stakeholders of food value chain development in AMSs is as shown in Table 16.

Table 16 Key Stakeholders of Food Value Chain Development

AMS	Key Stakeholders
Brunei Darussalam	<ul style="list-style-type: none"> <input type="checkbox"/> Agricultural Production: Department of Agriculture and Agrifood, Ministry of Primary Resources and Tourism (MPRT) <input type="checkbox"/> Agro-processing and Food Industry: 1) Department of Agriculture and Agrifood, MPRT, 2) Ministry of Energy, Manpower and Industry (MEMI) <input type="checkbox"/> Foreign Investment: Brunei Economic Development Board (EDB)
Cambodia	<ul style="list-style-type: none"> <input type="checkbox"/> Agricultural Production: Ministry of Agriculture, Forestry and Fisheries (MAFF in Cambodia) <input type="checkbox"/> Agro-processing and Food Industry: 1) Department of Agro-Industry of MAFF in Cambodia, Ministry of Commerce and Ministry of Industry; 2) Ministry of Commerce (for export-oriented crops such as cassava) <input type="checkbox"/> Foreign Investment: The Council for the Development of Cambodia
Indonesia	<ul style="list-style-type: none"> <input type="checkbox"/> Agricultural Production: Ministry of Agriculture <input type="checkbox"/> Agro-processing and Food Industry: 1) Department of Agro-Processing of General Directorate of Food, General Directorate of Horticulture, Ministry of Agriculture (for micro and household industries); 2) Ministry of Industry (for medium and large companies) <input type="checkbox"/> Foreign Investment: The National Investment Board
Lao PDR	<ul style="list-style-type: none"> <input type="checkbox"/> Agricultural Production: Ministry of Agriculture and Forestry (MAF) <input type="checkbox"/> Agro-processing and Food Industry: Ministry of Industry and Commerce (MOIC) <input type="checkbox"/> Foreign Investment: Ministry of Planning and Investment (MPI)
Malaysia	<ul style="list-style-type: none"> <input type="checkbox"/> Agricultural Production: 1) Ministry of Agriculture and Agro-based Industry; 2) Ministry of Primary Industries (for certain crops such as coffee and oil palm) <input type="checkbox"/> Agro-processing and Food Industry: 1) Ministry of Agriculture and Agro-based Industry; 2) Ministry of Primary Industries (for certain crops such as coffee and oil palm) <input type="checkbox"/> Foreign Investment: Malaysian Investment Development Authority <input type="checkbox"/> Marketing of Agricultural Products: Federal Agricultural Marketing Authority (under supervision of the Ministry of Agriculture and Agro-based Industry) <input type="checkbox"/> Halal-related Issues: Halal Industry Development Corporation (HDC) under supervision of the Ministry of Economic Affairs)
Myanmar	<ul style="list-style-type: none"> <input type="checkbox"/> Agricultural Production: Ministry of Agriculture, Livestock and Irrigation (MOALI)

AMS	Key Stakeholders
	<input type="checkbox"/> Agro-processing and Food Industry: 1) Small-Scale Industries Department of MOALI; 2) Ministry of Industry (for sugar, milk, etc.) <input type="checkbox"/> Foreign Investment: Ministry of Investment and Foreign Economic Relations
Philippines	<input type="checkbox"/> Agricultural Production: Department of Agriculture <input type="checkbox"/> Agro-processing and Food Industry: 1) Department of Agriculture; 2) Department of Trade and Investment <input type="checkbox"/> Foreign Investment: Philippine Board of Investment
Singapore	<input type="checkbox"/> Agricultural Production: Singapore Food Agency (SFA) <input type="checkbox"/> Agro-processing and Food Industry: SFA <input type="checkbox"/> Foreign Investment: Economic Development Board, Ministry of Trade and Industry <input type="checkbox"/> Cross-Border Trade: Enterprise Singapore, Ministry of Trade and Industry
Thailand	<input type="checkbox"/> Agricultural Production: Ministry of Agriculture and Cooperatives <input type="checkbox"/> Agro-processing and Food Industry: National Food Institute (under supervision of Ministry of Industry) <input type="checkbox"/> Foreign Investment: The Office of the Board of Investment <input type="checkbox"/> Platform for Food-related Research and Development: Food Innopolis (under supervision of Ministry of Higher Education Science Research and Innovation) <input type="checkbox"/> International Trade: Ministry of Commerce
Viet Nam	<input type="checkbox"/> Agricultural Production: Ministry of Agriculture and Rural Development (MARD) <input type="checkbox"/> Agro-processing and Food Industry: 1) Agro Processing and Market Development Authority (Agrotrade) of MARD; 2) Ministry of Industry and Trade (for milk, food and beverages industry etc.) <input type="checkbox"/> Foreign Investment: Ministry of Planning and Investment

Source: The JICA Study Team

(2) Development Strategies

Table 17 presents summary of agribusiness development strategies of AMS governments.

Table 17 Agribusiness Development Strategies of AMS Governments

AMS	Agribusiness Development Strategies
Brunei Darussalam	It is a high priority of the Government to increase domestic agricultural and food production in order to lessen the heavy dependency on imported food. In 2013, the Government launched a series of initiatives to increase agricultural production, including for livestock, to increase the self-sufficiency rate. In its agricultural investment promotion strategy, the Brunei Darussalam Government aims to “stimulate the growth of agriculture and agrifood-based industry through high-technology and export, encouraging progressive involvement of local and foreign direct investment, while focusing on high-yield production inclusive of primary and processing industry”. Brunei Darussalam is actively attracting foreign investment in the areas of innovation, agriculture production (especially broilers, vegetables, and cut flowers) and advanced food processing.
Cambodia	Under Cambodia’s Industrial Development Policy 2015-2025, the Royal Government aims to increase the export of processed agricultural products to reach 12% of all exports by 2025, from 8% in 2015, as part of a strategy to diversify its export basket. Promoting the agro-processing industry through integration into regional and global value chains is mentioned as the strategic approach of the Policy. The Policy also aims to increase agricultural production to serve both export and domestic markets and encourage various support industries to promote strategic sectors, including agriculture. The IDP also puts emphasis on supporting Small and Medium Enterprises (SMEs) in agro-processing production. As part of the strategy to expand and modernize SMEs, the Government plans to explore the possibility of establishing agro-processing zones, such as for furniture manufacturing, rubber processing, seafood processing, and food processing for domestic use and export through public-private partnerships. It also plans to create a development and promotion fund for export-led product development using agro-processing technology.

AMS	Agribusiness Development Strategies
Indonesia	The Government of Indonesia aims to increase the competitiveness of the agricultural sector and promote job creation and skill development in rural areas under the Grand Strategy of Agricultural Development 2015–2045. In line with the Grand Strategy, the National Medium-Term Development Plan positioned the agriculture sector as a prime engine of economic and social development in Indonesia as well as for ensuring food security. It also focuses on infrastructure development in rural areas, access to financial services, and advanced agricultural research and technology for better productivity. It also included the development of techno parks for agriculture, animal husbandry, fisheries, and post-harvest processing, jointly implemented with private institutions and universities.
Lao PDR	The Lao PDR Government approved the “Agriculture Development Strategy to 2025 and Vision to the Year 2030” in 2015, with a vision to ensure “food security, producing comparative and competitive potential agricultural commodities, developing clean, safe and sustainable agriculture and shift gradually to the modernization of a resilient and productive agriculture economy, linking with rural development contributing to the national economic basis”. Promoting agricultural production and agro-processing and supporting smallholder farmers are also mentioned as high priorities in the 8th Five-Year National Socio-Economic Development Plan (2016–2020). Under the 8th Five-Year Plan, the Government aims to diversify the commercial goods produced from the industrial processing sector using agricultural and forestry raw materials and products as inputs and increasing value addition.
Malaysia	In 2015, the Government of Malaysia launched the Eleventh Malaysia Plan 2016-2020. The Plan has six strategic thrusts for achieving the overall goal of becoming a developed country by 2020. Modernizing agriculture is one of the strategic thrusts, which has seven areas of activities: 1) improving the productivity and income of farmers, fishermen, and smallholders; 2) promoting training and youth agro-preneur development; 3) strengthening institutional support and extension services; 4) building the capacity of agricultural cooperatives and associations along the supply chain; 5) improving market access and logistics support; 6) scaling up access to agricultural financing; and 7) intensifying performance-based incentives and certification programmes.
Myanmar	In 2016, the former Ministry of Agriculture and Irrigation; Ministry of Livestock Fisheries and Rural Development; and Ministry of Cooperatives were merged into the Ministry of Agriculture, Livestock and Irrigation to address the sector’s development in a more integrated and holistic approach. The Ministry has been developing the Five-Year Agricultural Development Strategy and a corresponding Investment Plan, which aims to achieve “an inclusive, competitive, food and nutrition secure and sustainable agricultural system contributing to the socio-economic wellbeing of farmers and rural people and further development of the national economy”. The draft Five-Year Agricultural Plan has three strategic pillars: 1) governance, 2) productivity, and 3) competitiveness. “It aims to promote inclusiveness, sustainability and resilience to climate change, development of private sector and farmers’ organizations, and connectivity to market infrastructure, information and communication technology infrastructure, and power infrastructure”.
Philippines	The Government of the Philippines has positioned agribusiness as the key industry for contributing to the industrial development of the Philippine economy. The national vision for agribusiness is “to transform and upgrade the agriculture sector from traditional farming to agribusiness or industrial clusters to take advantage of opportunities in rubber, coconut, mangoes, bananas, coffee, palm oil, cacao, and other emerging high-value crops.” The transformation of agriculture farming into an agribusiness-driven sector contributes not only to diversifying and increasing the value of agribusiness outputs but also to the inclusive growth and rural development of the Philippines. The Government has set goals in the short run (2014–2017), medium run (2018–2021), and long run (2022–2025), with the ultimate goal of being deeply integrated into global value chains.
Singapore	Due to the scarcity of farmland, Singapore has very limited agricultural production. The Government started the development of agrotechnology parks in the 1980s to maintain self-sufficiency as farmland was decreasing rapidly, and to maximize land productivity. New technologies were constantly developed to help the local agri-industry stay competitive and highly productive, and Singapore continues to invest in R&D in agri-biotechnology to improve its agriculture. In April 2019, the Singapore Food Agency was formed as a statutory board under the Ministry of the Environment and Water Resources to oversee food safety and food security, which was formerly carried out by the former Agri-Food & Veterinary Authority of Singapore, the National Environment Agency, and the Health Sciences Authority.
Thailand	As part of the Government’s strategy to move to smart growth and Thailand 4.0, the Government has adopted a policy to reform the agriculture sector to ease the problems faced by Thai farmers and to support national development by transitioning to “smart farming”. The reform focuses on seven areas: 1) designate agricultural zoning in all provinces in accordance with each area’s geographical and climatic conditions and adopt an “Agri-

AMS	Agribusiness Development Strategies
	Map” to suggest farmers grow crops suitable for their respective farmland; 2) establish 882 learning centres to increase the efficiency of agricultural production; 3) promote the grouping of farmers and farmland for greater efficiencies, which will enhance cooperation between farmers and the public and private sectors in the form of “public-private-people partnerships”; 4) encourage farmers to produce in response to market demand and urge them to upgrade their products, including organic products, to international standards to make them more competitive in world markets; 5) set up banks for agricultural products through the grouping of farmers and their participation in management to better improve farm inventories; 6) promote teamwork through a “single command” system in order to translate and execute the reform plan by improving on the reporting lines with the provinces, overseen by the Ministry of Agriculture and Cooperatives; and 7) reduce agricultural production costs.
Viet Nam	Due to its limited arable land, Viet Nam needs to improve its agricultural productivity in order to address the growing domestic demand for agro-food products as well as to increase exports. Viet Nam’s agro-food sector is well integrated with international markets, and its total agro-food export value to agricultural GDP was 70%–80% in the early 2010s. Although the total value of Viet Nam’s agro-food exports increased rapidly, it is commonly derived from low-value commodity sales and upgrading to higher value-added products is recognized as one of the key priorities under the Government’s agricultural restructuring plan. In 2017, the Government ratified a new agriculture restructuring plan for 2017–2020. The plan aims for a GDP growth of 3% by 2020 for the agriculture sector by improving labour productivity by 3.5% annually. The plan also aims to develop the household livestock and animal husbandry sector and seafood sector, both targeting an annual growth rate of 4.5%–5%. To improve quality and production, the plan aims to increase the use of science and technology in producing high-quality varieties, developing organic farming, reducing the use of pesticides, and growing crops that are more adaptive to climate change.

Source : Global Value Chain in ASEAN: Paper15 Agribusiness (ASEAN-Japan Center)

2.3.5 Examples of Food Value Chain Related International Interventions

Examples of food value chain related international interventions by development partners in AMSs were summarized in Table 18. It should be noted that AMSs do not sort out food value chain development projects from ordinary agricultural development projects. It is impossible to develop complete list of value chain projects in AMSs immediately. The table only presents several examples among many by adopting the following method.

- Project funded by development partners other than JICA were selected based on the result of interview surveys with government officials in AMSs who are in charge of ASEAN issues.
- JICA projects were listed based on the document prepared by JICA and used in “JICA Platform for Food and Agriculture” meeting in October 2019. (note: projects in preparation stage were not included)
- Food value chain related activities of Ministry of Agriculture, Forestry and Fisheries, Japan were listed if project information in English is easily found on the web.

Table 18 Examples of Food Value Chain Related International Interventions

AMS	Project Title
Brunei Darussalam	There is no major international intervention.
Cambodia	<input type="checkbox"/> ASEAN Sustainable Agrifood Systems (German Agency for International Cooperation: GIZ) <input type="checkbox"/> Agricultural Value Chain Infrastructure Improvement Project (Asian Development Bank: ADB) <input type="checkbox"/> Climate-Friendly Agribusiness Value Chains Sector Project (ADB)

AMS	Project Title
	<input type="checkbox"/> Cambodia Agricultural Value Chain Program (Australian Agency for International Development: AusAID) <input type="checkbox"/> Feed the Future Cambodia Harvest II (United States Agency for International Development: USAID) <input type="checkbox"/> Cambodia Export Diversification and Expansion Programme (CEDEP) II - Cassava Component (United Nations Development Programme: UNDP) <input type="checkbox"/> Cambodia Export Diversification and Expansion Programme (CEDEP) II - Marine Fishery Component (UNDP) <input type="checkbox"/> The Project for Rice Seed Production and Distribution (JICA) <input type="checkbox"/> The Cambodia - Japan Food Value Chain Bilateral Dialogue (Ministry of Agriculture, Forestry and Fisheries: MAFF in Japan)
Indonesia	<input type="checkbox"/> Agricultural Value Chain Development in Selected Asian Countries (ADB) <input type="checkbox"/> Regional: Olam International Limited: Inclusive, Sustainable, and Connected Coffee Value Chain (Nonsovereign (Private) Project) (ADB) <input type="checkbox"/> Public-Private-Partnership Project for the Improvement of the Agriculture Product Marketing and Distribution System (JICA) <input type="checkbox"/> 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 Improvement Method by Ripened Compost (JICA) <input type="checkbox"/> Feasibility Survey for the Sixth Industrialization on the Growing Districts through Developing High-Qualified Strawberries' Virus-Free Plants (JICA) <input type="checkbox"/> Bilateral Forum on Agriculture Cooperation Japan-Indonesia (MAFF in Japan)
Lao PDR	<input type="checkbox"/> ASEAN Sustainable Agrifood Systems (GIZ) <input type="checkbox"/> Agriculture Competitiveness Project (World Bank) <input type="checkbox"/> Climate-Friendly Agribusiness Value Chains Sector Project (ADB) <input type="checkbox"/> Clean Agriculture Development Project (JICA) <input type="checkbox"/> The Project for Participatory Agriculture Development in Savannakhet Province (JICA)
Malaysia	<input type="checkbox"/> Industry and SME Promotion by Regional Brand Establishment and Halal Food Development through Food Valley Tokachi (JICA)
Myanmar	<input type="checkbox"/> ASEAN Sustainable Agrifood Systems (GIZ) <input type="checkbox"/> Value Chains for Rural Development Project (USAID) <input type="checkbox"/> Sustainable Agricultural Development and Food Quality Initiative (GIZ) <input type="checkbox"/> Climate-Friendly Agribusiness Value Chains Sector Project (ADB) <input type="checkbox"/> Project on Producing, Promotion and Business Development of Pesticide-Free Herbs and Cereals for Income Improvement of Poor Farmers and Health (JICA) <input type="checkbox"/> Project on Dissemination and Verification of High Value Crop Value Chain Development in Remote Areas by Introducing Processing and Packaging Technologies (JICA) <input type="checkbox"/> Agri-business Development Project through Participatory Irrigation Management in Shwebo Irrigation Area Focusing on Rice (JICA) <input type="checkbox"/> Feasibility Survey for Shrimp Hatchery Technologies (JICA) <input type="checkbox"/> The Project for Improvement on Accessibility of Rice Certified Seed (JICA) <input type="checkbox"/> Verification Survey for Quality Seed Production, Processing, and Sales Project for Intensive Agriculture (JICA) <input type="checkbox"/> Verification Survey with the Private Sector for the Dissemination of Japanese Technologies for the Establishment of a Management System for Rice Moisture by a Traceability System for Moisture Management (JICA) <input type="checkbox"/> Project for Profitable Irrigated Agriculture in Western Bago Region (JICA) <input type="checkbox"/> Irrigation Development Project in Western Bago Region (JICA) <input type="checkbox"/> Japan-Myanmar Cooperation Dialogue (MAFF in Japan) <input type="checkbox"/> Food Value Chain Road Map (2016-2020) in Myanmar (MAFF in Japan)
Philippines	<input type="checkbox"/> Safe Vegetable Production and Marketing Technology Improvement Project (JICA) <input type="checkbox"/> Japan-Philippines Agricultural Cooperation Dialogue (MAFF in Japan)
Singapore	There is no major international intervention.

AMS	Project Title
Thailand	<input type="checkbox"/> The Project on Post-Harvest of Local Product and Regional Development (coffee value chain) (JICA) <input type="checkbox"/> Industry and SME Promotion by Regional Brand Establishment and Halal Food Development through Food Valley Tokachi (JICA) <input type="checkbox"/> Verification Survey with the Private Sector for Disseminating Japanese Technologies for Improvement of Milk Quality Control by introducing Auto Milker and Milk Cooler (JICA) <input type="checkbox"/> Verification Survey with the Private Sector for Disseminating Japanese Technologies for Area-Based Recycle-Oriented Pelletized Livestock Feed/ Fertilizer Production and Utilization (JICA) <input type="checkbox"/> Japan-Thailand Agricultural Cooperation Dialogue (MAFF in Japan)
Viet Nam	<input type="checkbox"/> ASEAN Sustainable Agrifood Systems (GIZ) <input type="checkbox"/> The Project for Dissemination and Verification of Value Chain Coordination of Value Addition on Cut Flowers in Lam Dong Province (JICA) <input type="checkbox"/> The Project on Model Establishment of Aquatic Products Value Chain in Da Nang City (JICA) <input type="checkbox"/> Project for improvement of reliability of safe crop production in the northern region (JICA) <input type="checkbox"/> Project for Agriculture Development in Phan Ri - Phan Thiet Phase 2 (JICA) <input type="checkbox"/> Feasibility Survey with the Private Sector for Utilizing Japanese Technologies in ODA Projects Viet Nam, Extension of a Safe and Secure Farming System (IC-MOCS) (JICA) <input type="checkbox"/> Project survey on improving shrimp farming productivity through natural harmonized aquaculture technology (JICA) <input type="checkbox"/> Feasibility Study on Inverse Beef Cattle Raising System (JICA) <input type="checkbox"/> Small and Medium-Size Enterprise (SME) Partnership Promotion Survey for Improving Added Value of Processed Foods with Hypochlorous Acid Water (REDOXTER) Generator and Sanitary Control Technology (JICA) <input type="checkbox"/> Japan-Viet Nam Agricultural Cooperation Dialogue (MAFF in Japan)

Source: The JICA Study Team

2.4 Potential of Food Value Chain Development in ASEAN

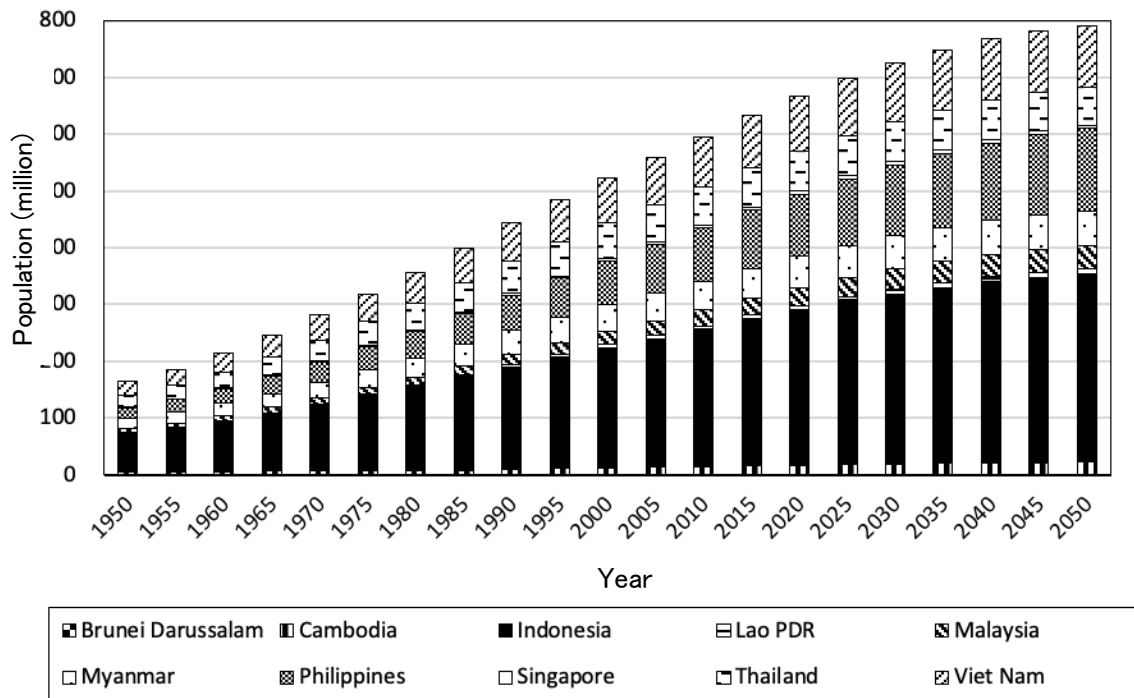
In this section, the potential of food value chain development in ASEAN region was analyzed in the following steps. Firstly, future change in business environment in ASEAN (population and economic background etc.) was analyzed based on the current status and the future forecast. Secondly, general characteristics of food industry were clarified. Finally, the influence of future change in business environment on ASEAN food industry was discussed.

2.4.1 Change in Business Environment

(1) Population Boost

Population in ASEAN was 633.109 million in 2015¹⁵. It is predicted to increase to 667.302 million in 2020 (see Figure 9). The United Nations estimated that population in ASEAN would reach 791.982 million in 2050 (rise by 19% compared to 2020).

¹⁵ United Nations World Population Prospects 2019 Website. accessed between 17-21 February 2020 (<https://population.un.org/wpp/>)



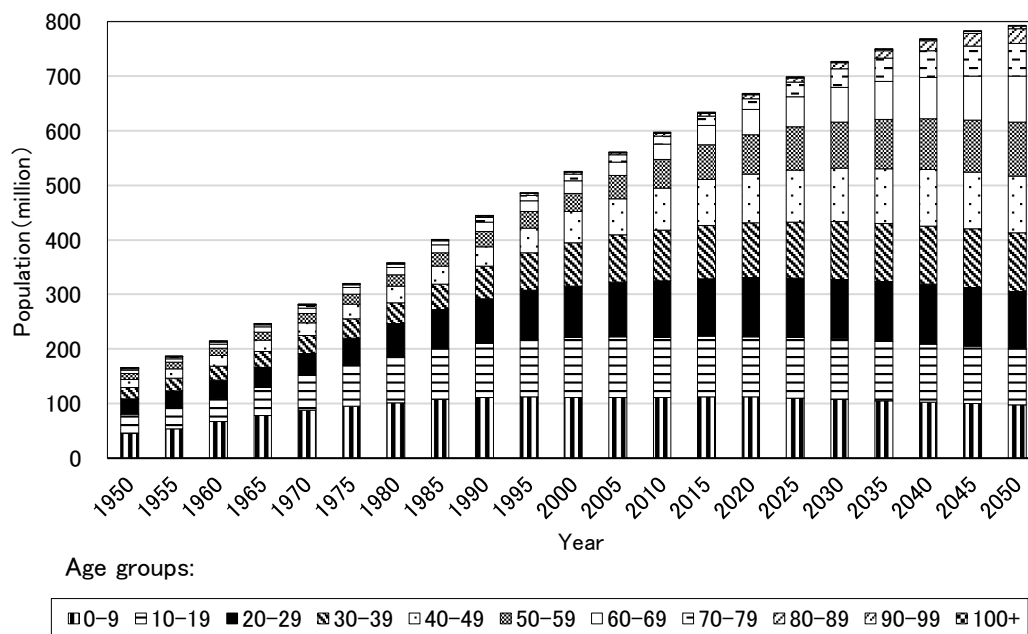
Source: United Nations World Population Prospects 2019 website, <https://population.un.org/wpp/>

Figure 9 Shift in Population by AMSs with Prediction

(2) Increased Longevity and Aging Society

Increased longevity and further aging of the society is expected in ASEAN (see Figure 10). After 2020, age group under 30 years old will start declining, while the group above 70 years old is expected to expand significantly. The situation would differ by countries. PricewaterhouseCoopers categorized AMSs into a) counties with post-demographic dividend (Singapore and Thailand), b) At late-demographic dividend (Brunei Darussalam, Malaysia, and Viet Nam) and c) At early demographic dividend (Cambodia, Indonesia, Lao PDR, Myanmar, and the Philippines). The category was based on the predicted geriatric population index in 2050 as well as the predicted rate of change in the index¹⁶.

¹⁶ PwC Growth Markets Centre. "The Future of ASEAN Time to Act". PwC. 2018.



Source: United Nations World Population Prospects 2019 website, <https://population.un.org/wpp/>

Figure 10 Population Shift and Prediction by Age Groups

(3) Economic Development

Real GDP of ASEAN had risen from 2,200 billion USD in 2011 to 2,900 billion USD in 2017 (by 32%). On average, it was an economic growth of 4.7% yearly. Yearly economic growth of 2.2 to 5.2% is expected to be observed between 2018 and 2035¹⁷. Similar to age group mentioned above, PricewaterhouseCoopers categorizes AMSs into a) Aged high income market (Brunei Darussalam and Singapore), b) Aged middle-income market (Malaysia and Thailand), and c) Aged, low income market (Viet Nam), and d) Non-aged, middle-income market (Indonesia and the Philippines), and e) Non-aged, low income market (Cambodia, Lao PDR, and Myanmar). The category is based on the predicted geriatric population index in 2050 and GDP per capita in 2016. The characteristics of each market differs significantly¹⁸.

(4) Increase in Middle-Class Population

With the continuous economic growth, the population below poverty line is expected to decrease while the middle-income population¹⁹ rapidly increases in ASEAN. The middle-income population was 135 million in 2010 (24% of the total), and by 2030, the number is predicted to rise to 334 million (51% of total)²⁰. Although it is not simple to standardize the middle-income population in the diverse ASEAN region, it is expected that this group has purchasing power for luxuries and home appliances²¹. Also, these middle-income population are predicted to invest more on health than those below poverty line²².

¹⁷ Rebecca Sta. Maria et al. (Eds), "The ASEAN Economic Community Into 2025 and Beyond", Economic Research Institute for ASEAN and East Asia, 2017.

¹⁸ PwC Growth Markets Centre. "The Future of ASEAN Time to Act". PwC. 2018.

¹⁹ Middle-income population here is defined as households with daily expenditures between US\$ 10 and US\$ 100 (at purchasing power parity rate) per person, according to OECD Development Centre.

²⁰ US-ASEAN. "ASEAN Matters for America, America Matters for ASEAN: Growth Projection". US-ASEAN. 2019.

²¹ The Economist Intelligence Unit Limited. "ASEAN cities: Stirring the melting pot". The Economist Intelligence Unit Limited. 2016.

²² Bruno Jetin. "ASEAN Economic Community: the shift from absolute to relative poverty, and the rise of the middle class". Journal of Business and Economic Analysis, Ahmed Masood Khalid, 2019.

(5) Urbanization

Of the total population (633.109 million) mentioned earlier, about 50 % resides in urban area. This figure is predicted to rise by 70 million by 2025 (22% increase between 2015 to 2025)²³.

(6) Change in Mode of Distribution

1) Expansion of Modern Retailer

Traditionally in AMSs, most consumers purchase food related items at wet markets or small stores, which are called traditional retailer (as oppose to modern retailer). One of the major reasons for this is that traditional retailers often set their prices lower than most supermarket and convenience stores (i.e. modern retailers). However, with the increase in middle-income population and number of convenience stores with urbanization, the consumer preference on shopping had changed from traditional to modern retailers in recent years. Although the trend was varying among countries, six countries with relatively large market had shown that modern market reached 16 to 71 % of total retailers in 2014²⁴ (see Table 19). Urbanization and penetration rate of modern retailer are considered having correlation²⁵. Thus, with further urbanization ASEAN counties, it is predicted that modern retailers may take over some of the traditional retailers.

Table 19 Percent of Modern Retailer Compared to Traditional Retailer in ASEAN (2014)

Indonesia	16%
Malaysia	43%
Philippines	28%
Singapore	71%
Thailand	45%
Viet Nam	25%

Source: ASEAN Retail Strategies (Jeffrey Bahar)

2) Expansion of E-commerce

E-commerce (electric commerce) is a new method of distribution. In 2017, the size of e-commerce in ASEAN was 11 billion USD. This is estimated to rapidly rise to 90 billion USD by 2019. Middle-income population in ASEAN generally shows the high interest in digital technology, on-line shopping, and payments through mobile²⁶. Therefore, it is necessary to adapt e-commerce for the business to be appealing to the middle-income population.

(7) Food Related Health Problems

ASEAN is developing rapidly but unevenly. Some areas are not fully benefitted from the rapid economic growth. Some AMSs are still suffering from health and nutrition issues. Malnutrition and related growth impairment of children are not often observed in Thailand and Malaysia currently. Yet in Brunei Darussalam and Viet Nam, the moderate levels of malnutrition are observed. In the Philippines, Cambodia, Myanmar, and Indonesia, malnutrition of children is still highly observed. Lao PDR has the highest malnutrition level.

Table 20 Adult Obesity Rate in ASEAN

Country	Obesity rate of adult in 2014 (%)	Increase rate between 2010 and 2014 (%)
Indonesia	5.7	33
Malaysia	13.3	27
Philippines	5.1	24
Singapore	6.2	24
Thailand	8.5	27
Viet Nam	3.6	38

Source: Tackling obesity in ASEAN (The Economist Intelligence Unit Limited.)

²³ ASEAN. "ASEAN Sustainable Urbanisation Strategy". ASEAN. 2018.

²⁴ Jeffrey Bahar. "ASEAN Retail Strategies". Spire Research and Consulting. 2015.

(<https://www.slideshare.net/spireresearch/2122102015asean-retail-strategiesemerging-markets-in-search-of-sustainable-growth>)

²⁵ PwC. "A new delivery Satisfying Southeast Asia's appetite through digital". PwC. 2016.

²⁶ MIRAE ASSET, "The ASEAN Consumer: Shaping the Future of Global Consumption", MIRAE ASSET, 2018.

On the other hand, the obesity rate below five years old are high at 11 to 12 % in Indonesia and Thailand²⁷. Obesity rate of adults are high in Malaysia and Thailand (13.3 and 8.5 %, respectively), and they show increasing trend²⁸ (see Table 20). ASEAN is facing two of the opposing health issues; malnutrition and obesity at the same time.

2.4.2 Characteristics of Food Industry

It is said that food industry has following characteristics²⁹. Although this analysis was made based on a study in Japan, similar characteristics were observed in ASEAN.

- A) High material cost with low value-added
- B) Small quantity, yet many variety
- C) National brands by large enterprises or local brands with small enterprises; nothing in between
- D) High locality resulting in generation of employment opportunity (especially for women)

Reasons for above characteristic of food industries could be explained as below.

- A) Low value-added: Price setting of the food items for general public has certain limit both in Japan and ASEAN. Thus, the value-addition is hindered by the limit. As a result, the price of an item is largely depending on the price (fluctuation) of the raw materials itself.
- B) Small quantity: yet many varieties: Both in Japan and ASEAN, traditional foods have been developed as local foods in a locally specific way in the long term, and the consumer preferences are diversified depending on the nation or area. In order to respond to the diversified consumer demands, low quantity yet many varieties are present in the market.
- C) National or local brands: with the development of modern trade and supermarket, some large enterprises establish their own integrated value chain from the production of raw materials to processing, packing and sales. These products are called national brands. Since this does not meet all the consumer preference on food, local brands are produced by small enterprises to respond the niche demands. Consequently, the market generally consists of either national brand or local brand. This trend is observed not only in Japan but also in ASEAN³⁰.
- D) High locality: In Japan, to obtain fresh raw materials, the processing facilities are, preferably, located near the site of raw material production. Normally, efficiency of transportation is higher for processed products. It is reasonable to process on site and convey processed products to consumers. It was confirmed that many ASEAN business operators are applying the same business strategy. For these reasons, food industry tends to spread in local areas. This leads to the high locality of the industry. At these facilities, most staff are employed locally, especially local women.

²⁷ ASEAN, UNICEF, and WHO. "Regional Report on Nutrition Security in ASEAN". ASEAN, UNICEF, and WHO. 2016. (* Data on Singapore was no available)

²⁸ The Economist Intelligence Unit Limited. "Tackling obesity in ASEAN: Prevalence, impact, and guidance on interventions". The Economist Intelligence Unit Limited. 2017.

²⁹ Katsuhiko Saito et al. "Research on efficiency and recovery of Japanese economy: Food sector". Policy Research Institute, Ministry of Finance, Japan. 2001.

³⁰ Mizuho Financial Group "Mizuho Research & Analysis: 2017 no.12" Mizuho Financial Group

2.4.3 Prospect

(1) Changes in Demands (Increased Demand and Change in Consumer Preferences)

As the population increases, the market size for food and beverages is estimated to increase in ASEAN. The Policy Research Institute, Ministry of Agriculture, Forestry and Fisheries of Japan had conducted a study on the prospect of food demand in Asia. The study found that by 2030, market size of Asia (13 countries: Indonesia, Thailand, the Philippines, Singapore, Malaysia, Viet Nam, China, India, Korea, Turkey, Taiwan, Saudi Arabia, and Hong Kong) would be 1.9 times larger than that in 2015³¹, far larger than the market size of South America, Oceania, Europe, and North America. The growth rate in 2015-2030 was also estimated to be the largest in the world.

Changes in the demand for food and beverages quality are also expected. For instance, the middle-income population, expected to increase in ASEAN, is generally more health-conscious than the low-income population. For this reason, the demand for healthier and safer foods is predicted to rise in ASEAN. In addition, the demand for processed and ready-to-eat foods is expected to rise due to urbanization, and the demand for food for elderly people is expected to increase due to the trend in the aging of the population. Functional food, such as dieting and beauty promoting food, is also expected to attract the interests of the high-income population.

Thus, with further economic development, demands for value-added agricultural products and food are expected to rise. Yet, due to the diversified background of the ASEAN region, consumer demands for “value-addition” may differ among countries. In contrast to the global trend, some people tend to be more conservative in their eating habits. Therefore, value addition in food in ASEAN is likely to develop gradually overtime.

(2) Change in the Mode of Distribution and Sales

Due to urbanization and rise in middle-income population in recent years, the portion of traditional trade is predicted to shrink as modern trade expands. In ASEAN, remarkable expansion of information technology such as smartphones has been observed, and thus, it is assumed that e-commerce has also been adapted into the societies rather easily. Agricultural and food-related merchandisers must start adopting these technologies. However, in many cases, food processors in ASEAN are still in the early stages of introducing basic sanitary management. These challenges may need to be overcome prior to the adaptation of advanced digital technology. These food businesses will be forced to choose whether to exit the market or to adapt themselves to those changing modes of business.

(3) Conclusions

Agricultural and food industries in ASEAN are expected to increase both in quantity and quality (transformation to safer products, adoption to modern trade etc.). Due to differences in the economic stages and the diverse nature of AMSs, the speed and sequence of changes in the food value chain will differ among countries. One of the challenges for ASEAN is that markets for modern trade in CLMV have already been occupied by neighboring country’s national brands (i.e. international brands for CLMV). In Japan, local brands have a certain level of technologies in food processing, hygiene management and marketing skills to

³¹ Policy Research Institute, Ministry of Agriculture, Forestry and Fisheries (PRIMAFF) “Prediction of food and beverage market shift in the world. 2019.

compete with national and international brands in specific local food markets. Local and national brands then co-exist and provide a wide variety of food choices. For CLMV, national and local brands must compete with international brands without sufficient pre-development in technology to provide safe and quality products. With the further expansion of modern retailers in the countries of CLMV, the above issue may become more prominent.

2.5 Focus of the Study

2.5.1 Importance of the Study

As shown in Table 15, value chains among domestic food-related industries in AMSs remain stable at a certain level. Food and beverage industries are using domestic agricultural products as raw material. Hotels and restaurants procure products from the local food and beverages industry. However, although agricultural and food product trade are increasing in ASEAN, such a value chain rarely exists at the regional level (see Table 11).

There must be many reasons behind the limited international linkages of food value chain related industries. One of the reasons must be the issue of agricultural and food product safety. It is difficult for consumers and buyers in other countries to know how the products were produced and whether the products are safe for consumption. Other reasons must be due to a lack of information. It is difficult to find appropriate business partners in different countries. These bottlenecks have to be solved, otherwise strengthening international linkages of food value chain related industries will not be realized.

This study takes two different approaches to strengthen the food value chain at a regional level. The first approach is securing agricultural and food product safety in trades among AMSs. GAP and SPS are effective measures that can improve food safety. The current situation of GAP and SPS mechanisms at the ASEAN level are analyzed and improvement strategies are proposed in this study. The other approach is to fill the information gap among food value chain related stakeholders in different countries. The formation of a regional food cluster is one of the ideas that can improve the situation. It is expected that advanced technologies and effective business strategies will be transferred from advanced business operators to others through the regional food cluster. The possibility and appropriateness of forming a regional food cluster at the ASEAN level are analyzed in this study.

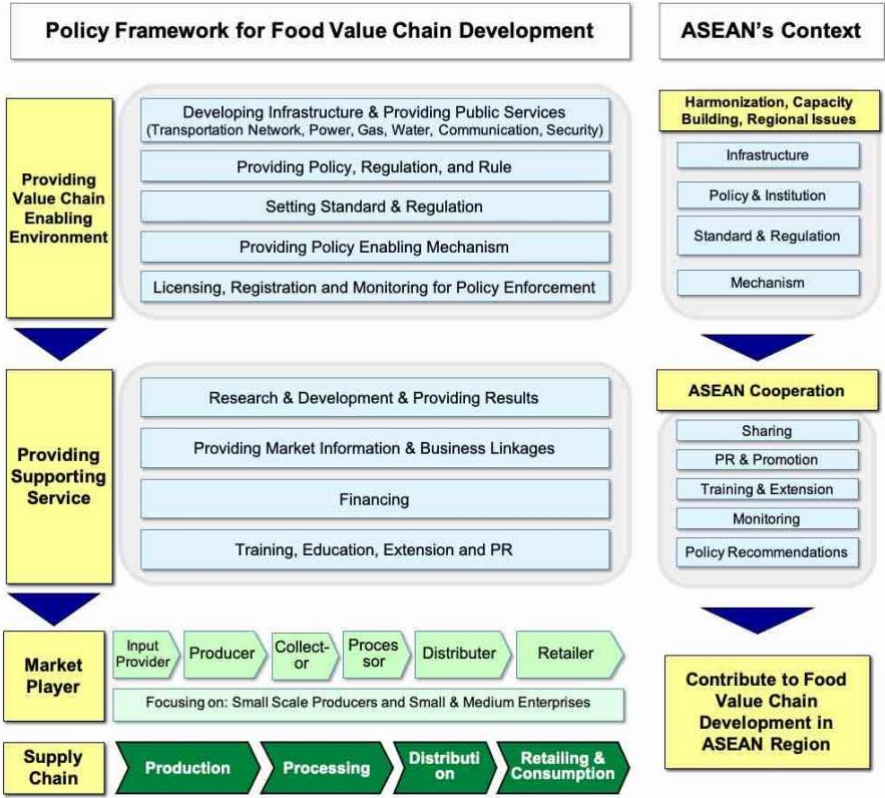
2.5.2 Policies and Cooperation for ASEAN Food Value Chain Development

As mentioned in section 2.1.2, the policy framework for food value chain development in ASEAN contributes to food safety, inclusive growth, trade facilitation, higher value addition, and promotion of modern, regional and global value chain participation of small producers and MSMEs (micro, small and medium enterprises). The following policy measures can be considered (see Figure 11).

i) Improve various business environments (infrastructure and public services; policies, institutions, rules, and regulation; standards and regulation setting, policy implementation mechanisms, licensing, registration and monitoring systems for policy enforcement, etc.).

ii) Provide support services for producers and businesses (Research and development, market information and business linkage, financing, education, training, extension, human resource development, public relations, etc.).

iii) Focus on smallholders and MSMEs for further involvement in the modern and regional value chain.



Source: JICA Study Team based on Yoshimura and Ishikawa. “Toward the Development of and global food value chain”. Regional Trend 2015.

Figure 11 Policy Framework for Value Chain Development and ASEAN Cooperation

It is necessary to harmonize various standards and regulations in ASEAN, in order to improve the environment to foster value chain development, build the capacities of AMSs, and deal with regional issues that a single member state cannot address. As ASEAN cooperation, it is envisaged to share various information and efforts, disseminate them through public relations and promotion, support them through human resource development, monitor the results, and make policy recommendations to AMSs and ASEAN as a whole.

The importance of the two approaches are identified earlier: improving agricultural products and food safety in trades within ASEAN and narrowing the information gap between stakeholders involved in food value chains in different countries.

For the food safety, the focus of the intervention is to strengthen the capacities of AMSs to harmonize standards and regulations among AMSs.

As for the information gap among those involved in the value chain, the focus of the intervention is to strengthen the capacities of small-scale farmers and SMEs to make them more competitive. Different

stakeholders and approaches are assumed to vary across AMSs. It is also possible to consider policy mechanisms on how to strengthen the capacities of small-scale farmers and MSMEs.

In Chapter 3, the situation and efforts in ASEAN for each of the three thematic areas as well as environmental and social considerations have been reviewed. In Chapter 4, the cooperation framework is proposed.

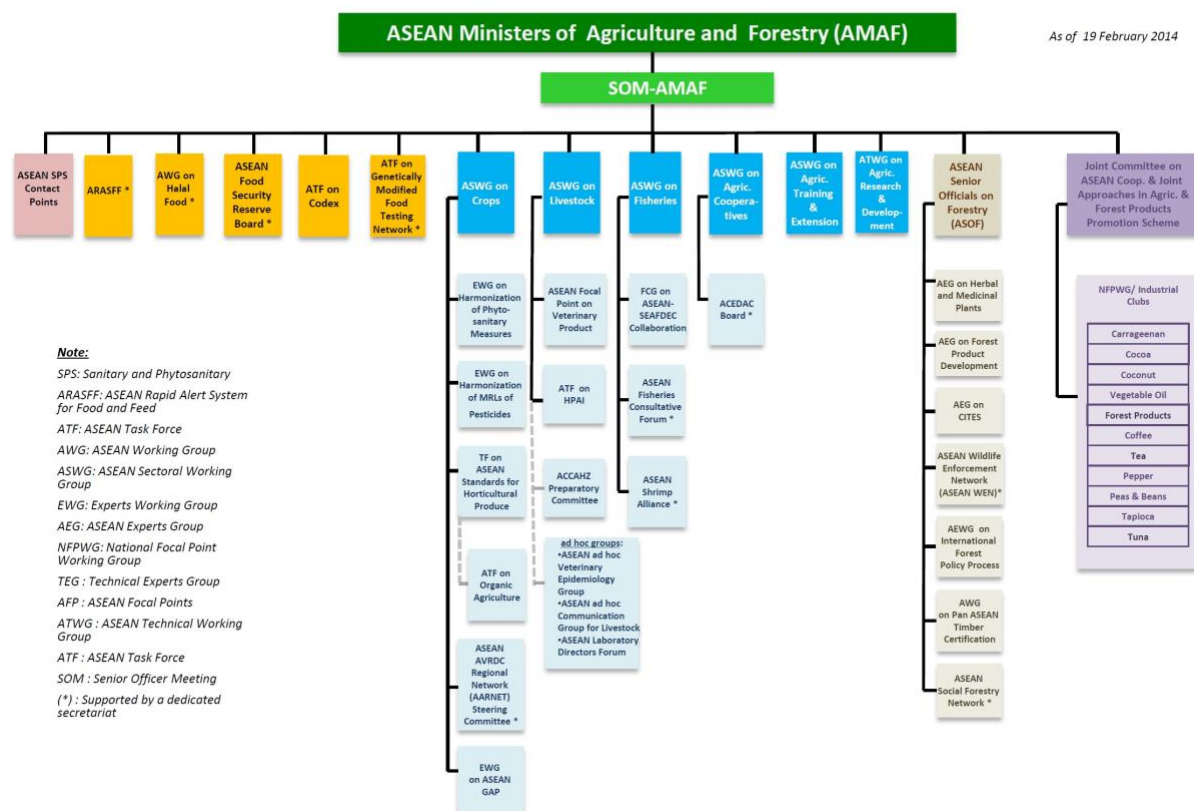
Chapter 3 Current Status of Thematic Areas

3.1 GAP

3.1.1 ASEAN Policies, Plans and Status

In the agriculture sector at ASEAN, the Senior Officials Meeting of the ASEAN Ministers on Agriculture and Forestry (SOM-AMAF) is set under the ASEAN Minister of agriculture and forestry (AMAF). ASEAN sectoral Working groups (ASWG) for each field are set under the SOM-AMAF. As for ASEAN-GAP, Expert Working Group (EWG) of ASEAN GAP is set under ASWG on crops. SOM-AMAF and EWG are normally held once a year.

Structure of ASEAN Cooperation in Food, Agriculture and Forestry



Source ASEAN Secretariat Web site

Figure 12 Structure of ASEAN Cooperation in Food, Agriculture and Forestry

The basic objective of the ASEAN cooperation in food and agriculture is to formulate and implement regional cooperation activities to enhance the international competitiveness of ASEAN's food, agriculture products as well as to further strengthen the food security arrangement in the region from the perspective of regional collaboration.

In order to respond to the globalization, ASEAN cooperation in food and agriculture is more focused on the enhancement of competitiveness in international markets, while sustaining the agricultural production. Harmonization of quality and standards, assurance of food safety, and standardization of trade certification are amongst the priorities being addressed, building upon the experience of some Member States and existing international standards.

Against this backdrop, ASEAN GAP (ASEAN Good Agricultural Practices, Good Agricultural Practices for the Production of Fresh Fruits and Vegetables for the ASEAN Region) were prepared under the ASEAN-Australia Development Cooperation Program (AADCP) in 2006.

ASEAN GAP is a guideline to promote trade within and with outside of ASEAN as well as to prevent risks associated with production, harvesting and handling of fresh fruits and vegetables. Each AMSs has been encouraged to enact national GAP certification system that corresponds to the ASEAN GAP. In the future, each national GAP aligned to ASEAN GAP guidelines will be treated as mutually recognized. It is intended to promote the trade within ASEAN

ASEAN GAP guideline includes not only the farm cultivation practices but also of the following four modules: 1) Food safety, 2) Environmental management, 3) Worker health, safety and welfare, and 4) Produce quality.

In AMSs, GAP have been introduced to AMSs according to their levels of domestic resources and technological capacities. The activities include the formulation of the National GAP standard aligned to ASEAN GAP guidelines and the incorporation of GAP into the national agricultural strategic plans.

In such background, "Global Recognition of Quality Assurance Systems for ASEAN Fruits and Vegetables (ASEAN GAP) (2012-2019)" project has been implemented under AADCP Phase II, a follow-up project to AADCP to draw a road map for monitoring and developing the future development plans.

In this project, a survey was conducted on the current status of the implementation of the GAP system and GAP certification system in AMSs. The contents of the survey are as follows:

- Measures to accelerate the implementation of the GAP program
- Development of ASEAN GAP recognition mechanism and certification system
- Promotion of consistency of national GAP and ASEAN GAP
- Encouraging the private sector on the implementation of the ASEAN GAP, with the social organizations and NGO involvement.

Furthermore, in the above project, the following promotion activities to farmers and retailers were also implemented.

- Comparison of existing national GAP guidelines for determining equivalence
- ASEAN GAP information, education, and communication campaign
- Update of the GAP training module and test operation
- Development of a program to make ASEAN GAP socially acceptable and promoted

However, there was a structural bottleneck. Productions that followed GAP standard don't have a price advantage in the market and besides, GAP certification is a voluntary activity. Therefore, there is no incentive for farmers to comply with GAP standards. These points indicate the need to find practical ways to introduce ASEAN GAP in order to increase buyers' recognition and demand, to promote farm level dissemination, and to promote adequate transactions between trading partners.

To address these concerns, the other project under AADCP Phase II was implemented as the Establishment of the Multilateral Arrangement for the Mutual Recognition of the Agri-food Standards and Conformity Assessment (MAMRASCA) from 2019. This project supports the preparation of the mutual recognition

agreement (MRA) to help establish mechanisms to facilitate the acceptance of trading partners' standards and conformance measures in the production of agri-food products. The mechanism also addresses the issues identified in the earlier study and directs efforts that will contribute in better utilization and sustainability of the ASEAN GAPs. The specific activities include: a) documenting arrangements for mutual certification within AMS, and b) documentation regarding facilities and technologies required to obtain mutual certification.

3.1.2 Current Situation of GAP in AMSs

The policies, plans, systems and efforts in AMSs are described in this section. Regarding the status of the introduction of GAP in ASEAN and Japan, a case study was conducted in order to understand the actual situation on the ground. A summary of the case study results is given at the end of this section.

The status of compliance with ASEAN GAP has been investigated in the Global Recognition of Quality Assurance Systems for ASEAN Fruits and Vegetables (ASEAN GAP)" (2012-2019), and the results will be released shortly.

(1) Brunei Darussalam

GAP standard of Brunei Darussalam of fruits and vegetables is based on the following national laws.

- PBD 28 : 2015 Brunei Good Agricultural Practice - Food Safety Module
- PBD 29 : 2015 Brunei Good Agricultural Practice - Produce Quality Module

The food regulations are also set out below.

- Public Health (Food) Act (Chapter 182) and its Regulations (R1, Chapter 182).
- Public Health (Food) Act (Chapter 182) and its Regulations (R1, Chapter 182).

This regulation describes the sampling procedure (covering preservative, heavy metal, microbial contamination, etc.) and the duty to display the ingredients.³²



GAP in Brunei Darussalam

GAP name, year of establishment	Brunei GAP (BGAP), 2014
GAP Certification Body	Department of Agriculture and Agrifood
GAP accredited body	-
Target crops	Vegetables and fruits
Number of auditors	17
Number of instructors	Many (no qualification)
Certification acquisition cost	free
Water, soil, pesticide residue inspection cost	-
Expiration date	3 years
Whether GAP is included in import requirements	Not included

³² Ministry of health, Brunei Darussalam. <http://www.moh.gov.bn/SitePages/Standard%20and%20Information.aspx>

At present, there is no government policy or target quantitative indicators to disseminate GAP. However, as stated in the Agricultural Strategic Plan 2016-2020, Brunei GAP has been recognized as effective for social implementation of “ecosystems and value chains” for export promotion. Since 2018, the Government of Brunei has encouraged farmers to obtain GAP certification by establishing the Agriculture Development Area (ADA) award.

According to the response to the questionnaire survey by the JICA Study Team, the most important problems in the GAP dissemination in Brunei Darussalam is expenditure of preparation for GAP introduction, such as securing storage location of fertilizer and pesticides after harvesting crops, and the need to spend funds to introduce GAP. Nevertheless, GAP certification does not guarantee the price with value added; the prices of GAP products cannot be sold higher price than general agricultural products and cheap imported agricultural products. In other words, the reason GAP certification is not disseminated is that farmers cannot identify a monetary incentive to acquire GAP certification.

(2) Cambodia

The National GAP Standard has been approved by the Ministry of Agriculture, Forestry and Fisheries in Decree No.099 in 2010 in Cambodia. However, Food Safety Law and Quality and Safety of Agricultural Products Law are under preparation. While improving safety of agricultural products is an important issue of government policy, there are no food sanitation committees that cut across ministries. There are plural ministries about food sanitation: namely, Ministry of Agriculture, Forestry and Fisheries, Ministry of Industry, Science, Technology and Innovation, Ministry of Health, and Ministry of Commerce.

The 2017-2021 Road Map for Cambodian good agricultural practices focuses on four areas: production, certification, sales, and management, and promotes CamGAP. Two farmers have now obtained CamGAP certificates. Their acquisition was supported by the government in terms of cost and trainings of farming techniques. However, because neither the auditor guidance system nor the instructor training system has been developed, it is impossible to obtain certification without external interventions.



GAP in Cambodia

GAP name, year of establishment	CamGAP, Food Safety Module(2006), Produce Quality Module(2006), Worker Health, Safety and Welfare Module(2006), Environmental Management Module(2007)
GAP Certification Body	Department of Plant Protection Sanitary and Phytosanitary (DPPSPS), GDA, MAFF
GAP accredited body	MAFF
Target crops	Vegetable and fruit
Number of auditors	Many (no qualification)
Number of instructors	Many (no qualification)
Certification acquisition cost	Free
Water, soil, pesticide residue inspection cost	-
Expiration date	2 years
Whether GAP is included in import requirements	Not included

In Cambodia, more than 60% of domestic distribution of vegetables is imported. Although a lot of people are concerned with safety of the vegetables, they must rely on low-cost and large amount of imported vegetables mostly from Thailand and Viet Nam. In order to distribute safe vegetables domestically, quarantine system at the border, controlling informal imports and preparation of inspection facilities are necessary, probably more than the improvement of the GAP system in the processing and distribution process.

Based on the responses to the questionnaire, it was found that it is technically difficult for farmers and distributors to control the quality of agricultural products. The only thing farmers can pay attention is to avoid excessive use of pesticides. However, since the skills of government GAP instructors are limited, farmers are not being able to receive trainings on how to grow their products according to GAP.

GAP is almost not recognized by producers, distributors and consumers. Sometimes supermarkets use GAP's traceability to prove the production site of imported vegetables. However, with the economic growth of Cambodia, the demand for safe agricultural products is steadily increasing. Considering the current situation that safe crop supplies could not meet the market demand, the Embassy of Japan in Cambodia provided a vegetable shipping center through a grassroots grant aid. It aims to provide reliable agricultural products to big supermarkets established nearby.

GAP-related activities of development partners in Cambodia are as follows.

GAP related projects	DPs	Activities
Tonle Sap Poverty Reduction and Smallholder Development Project 2009-2016	ADB	The Project continued the assistance ADB, IFAD, and other development partners have provided to support the development of key policies and associated regulations that can increase agricultural productivity by smallholder farmers through several activities. One of the activities is the development of policies related to good agricultural practices (GAP), including the development of national production guidelines for smallholders, development of appropriate regulations for contract farming by smallholders, and their testing on a pilot basis.
The Support of Regional Economic Cooperation in Asia (from 09 to 12 of December 2019)	GIZ	In cooperation with the General Directorate of Agriculture (GDA) of the Cambodian Ministry of Agriculture, Forestry and Fisheries, the project organized a three-day training on Cambodian Good Agricultural Practices (CAM GAP) and plant sanitation and health (phytosanitary) certification procedures for export as a training to export Longans from Cambodia with Good Agricultural Practices.

(3) Indonesia

Before 2005, "PRIMA", a national certification system pertaining to Indonesia for food safety, was in place. Since it had been prepared, GAP is promoted under the name of "PRIMA" not "IndoGAP". PRIMA has three levels from PRIMA1 to PRIMA3. PRIMA1 requires to meet the requirement items related to 4 fields: food safety, produce quality, environmental management, and social environment. PRIMA2 requires to meet those related to 2 fields: food safety and produce quality. PRIMA3 requires to meet those related to only 1 field, food safety. Compliance with ASEAN GAP is currently being addressed.

The promotion of GAP has been described in the 2015-2019 Strategic Plan of Gardening Directorate by the Ministry of Agriculture Ordinance No. 38 Permentan Nomor 38 Permentan R.060 11 2017 RIPH (Recommendation on import of horticultural products). The General Directorate of Horticulture requests the imported agricultural products to obtain GAP, but only MRL (Maximum Residue Limit) is required for import products.



GAP name, year of establishment	PRIMA, 2005
GAP Certification Body	OKKP (Competent Food Safety Authority)
GAP accredited body	-
Target crops	horticultural products
Number of auditors	Many (Hire outsiders as needed)
Number of instructors	16-20 people each divisional office of Directorate General of Horticulture
Certification acquisition cost	Farmers Group: free
Water, soil, pesticide residue inspection cost	Farmers Group: free
Expiration date	3 years, with annual check
Whether GAP is included in import requirements	Not included

A cascade method of Training of Trainers (TOT) named GAP Farmer Field School is carried out. Instructors of the Ministry of Agriculture train the instructors of Agricultural Bureau of each district, and each district's instructors train farmers to improve their knowledge and skills. Also, some Global GAP certification institutions train companies to obtain certification.

According to the questionnaire response, farmers could not feel the significance of acquiring GAP certification because most GAP certified crops are sold without any differentiation. Consumers prefer low-priced items, and few supermarkets sell GAP and other certified crops separately. However, in some cities in Central Java and Bali, foreigners and high-income consumers prefer organic vegetables. There are markets where JAS / Global GAP / organic certification such as ECOCERT certified crops can be sold at high prices. In recent years, in Indonesia, courier services such as TIKI, JNE (long distance) Go Send, and Grab Express (short distance) have been developing remarkably, and food delivery services linked to the courier business are also growing rapidly. Then, certified farmers could sell directly to consumers who are conscious on food safety and demand safe vegetables. This leads to a new possibility that obtaining certification could be beneficial for farmers.

(4) Lao PDR

As part of the "clean agriculture" that has been raised from the 8th National Economic Development Plan (2016-2020), Laos GAP is promoted together with organic farming. GAP is positioned as less for agriculture than of the environmental impact. Agreement documents issued by the Ministry of Agriculture and Forestry were formulated in 2011 for each of the four modules (food safety, environmental management, worker health, safety & welfare and produce quality) described in ASEAN GAP. Also, based on this agreement documents, standards and certification schemes are formulated.

Although about 300 farmers were certified during the completed JICA supported project "Laos pilot program aimed at the development disparities towards ASEAN Integration of safe, high-quality agricultural products promotion component (LPPA) (2010-2015)", there are six current certification holders.



GAP in Lao PDR

GAP name, year of establishment	National Good Agricultural Practice in Lao PDR (Lao GAP) 2011 (general), from 2015 (specific products)
GAP Certification Body	Department of Agriculture (Standard division)
GAP accredited body	-
Target crops	Fruits and Vegetables, Rice, cabbage, cassava, sugar cane, corn, banana
Number of auditors	15
Number of instructors	Many (no qualification)
Certification acquisition cost	Application fee 500,000 kip Inspection fee 300,000 kip (separately, inspector travel expenses)
Water, soil, pesticide residue inspection cost	Farmer's burden, amount of cost is not open to the public
Expiration date	2 years
Whether GAP is included in import requirements	Not included

There are four categories in “clean agriculture”, which is Lao PDR's agricultural policy: 1) organic agriculture, 2) GAP, 3) non-chemical pesticide-based agriculture, and 4) traditional Lao agriculture. However, according to the answer to the questionnaire, both farmers and staff of the Ministry of Agriculture lack knowledge of GAP and do not carry out PR activity. Even if farmers get LaoGAP certificate, there is no sales contact with added value. There is no market. At present, organic farming activities are more active than GAP, and the farmers market, organized by the Organic Farmers Group, is regularly held in Vientiane and several other cities. In the organic market, prices are generally about 20% higher than those of the local market, which has led to an increase in farmers' income.

According to the results of interviews with Lao farmers, Lao farmers often lack knowledge on basic cultivation (ecology of crops, pest management, effects of fertilization, etc.) and have few opportunities to learn. It turned out to be difficult to use pesticide properly. Under such circumstances, it was found that there is no cost for organic vegetable, and it is easy for farmers to work on. Many farmers are working on organic because cultivation techniques and market development support is provided by many projects. These conditions seem to be the reason why the number of certified farmers decreased after the GAP promotion project. Also, many farmers misunderstand that GAP farming uses chemical fertilizers and pesticides to some extent, and organic farming does not use it at all. Then farmers select organic farming because they cannot afford chemical fertilizers and pesticides for GAP farming. As a future issue it is necessary to re-recognize that. In addition, it is necessary to support market development as well as organic farming promotion activities so that farmers can get the merits of expanding their sales contacts by acquiring GAP.

Even without certificate, it was found that many farmers sell their products on social media, etc. on a credit basis after being connected with organic markets or government-sponsored business matching events.

In Vientiane's supermarkets, unsold items are returned to farmers, so it is secure way for farmers to sell the products directly.

GAP-related activities of DPs in Lao PDR are as follows.

GAP related projects	DPs	Activities
Agriculture Competitiveness Project (2018-2024)	WB	The object of project is to enhance the value chain competitiveness of selected crops in the target area. This project has four components. One of them is the improvement of agricultural efficiency and sustainability. One of the activities is promoting the introduction of GAP farming. Other activities include supporting increased adoption of improved varieties and high-quality seeds, providing productive infrastructure and strengthening public service delivery. The target crops were not decided as of June 2019.
Clean Agriculture Development Project (2018-2022)	JICA	The Purpose of the project is to promote of clean agriculture products based on market needs in Pilot Provinces. In this project, about 1,200 farmers of 4 prefectures out of 17 prefectures are targeted. There are activities for farmers and those for the staff of the Ministry of Agriculture and Forestry in the central / prefecture / counties. Farmers are supported to improve the technology such as production of clean agricultural products and quality control. The governmental staff are provided technical guidance for organic farming and system strengthening support. Clean Agriculture in Lao PDR defines Organic Agriculture (OA) and Good Agricultural Practice (GAP), but this project primarily focuses on OA, and main target is vegetable and fruits.

(5) Malaysia

Like Indonesia, Malaysia also has had a food safety certification system called SALM (Skim Amalan Ladang Baik Malaysia) before GAP. However, according to the requirements of ASEAN, the Malaysia government has updated it as MS 1784 (Malaysia standard 1784): 2016-Good Agricultural Practice (GAP)-Crop Commodities.



GAP in Malaysia

GAP name, year of establishment	MyGAP, 2002
GAP Certification Body	Ministry of Agriculture and Agro-based Industry Malaysia, Department of Agriculture, Division Crop Quality Control.
GAP accredited body	-
Target crops	All crops
Number of auditors	258
Number of instructors	677
Certification acquisition cost	Free
Water, soil, pesticide residue inspection cost	Free
Expiration date	2 years (with annual check)
Whether GAP is included in import requirements	Not included

Certification process and contents of GAP are centrally managed by IT system. Farmers can know their GAP acquisition status and farming status by accessing to the website, and buyers can search GAP farmers by area, crop, etc.

The government promotes GAP in a policy and sets an annual target for the GAP certification. It has achieved the goals of 500 farmers in 2014, 600 farmers in 2016, and 700 farmers in 2017, and aimed to obtain GAP certification for 800 farmers in 2019.

As a government policy, it is clear that GAP is used for export expansion of agricultural products. The government supports companies that want to export agricultural products. According to interviews with government agencies, officials expressed a strong desire to obtain international certification at MyGAP to expand exports of agricultural products.

Nevertheless, the responses to the questionnaire indicated that the lack of awareness of GAP by farmers and consumers is the issue for GAP dissemination.

(6) Myanmar

MOALI (Ministry of Agriculture, Livestock and Irrigation) formulated the second short-term plan (2016/17-2020/21) in 2017. To improve food safety, developing and disseminating GAP are parts of goals of this short-term plan.



GAP in Myanmar

GAP name, year of establishment	Myanmar GAP, 2009
GAP Certification Body	Director General, President of Certification Body, Department of Agriculture, MOALI
GAP accredited body	-
Target crops	Rice, Maize, Pulse (Black Gram, Green Gram), Sesame, Groundnut, Mango, Pomelo, Watermelon, Muskmelon, Onion, Tomato, Chili, Cabbage, Coffee, Avocado
Number of auditors	535
Number of instructors	109
Certification acquisition cost	Free
Water, soil, pesticide residue inspection cost	
Expiration date	1 year (Fruit and Beverage Crops) 1 season (Field crops and vegetables)
Whether GAP is included in import requirements	Not included

In some area GAP introduction was supported by DOA, GIZ (German International Cooperation Agency), NAG (Network Activity Groupe, international NGO), and Mysafa (Myanmar sustainable association). Also, some agricultural input dealers provide trainings when distributing the inputs such as seeds and pesticides.

However, at present, the instruction on the label of pesticide is written in Chinese or Thai, so it is difficult for farmers to use the pesticide properly. In addition, there is no inspection agency with appropriate testing equipment. Even if farmers have acquired Myanmar GAP, in order to export their products, farmers have to send the sample to foreign countries. Farmers do not feel that acquiring MyanmarGAP is effective in exporting agricultural products

According to interviews with farmers who have received GAP training, the benefits of GAP are as follows:

1) It is possible to produce safe crops with confidence and avoid the effects of pesticides on the human health during cultivation, 2) the proper use of inputs (seed, fertilizers, pesticides) reduced production costs, and 3) it makes them connect to buyers who are willing to purchase at high prices. At present, the government is providing farm inputs to farmers working on GAP, and the farmers feel the input support is an incentive to work on GAP. However, even without the support from the government, some farmers want to keep working on GAP in the future. There were many fundamental challenges before trying GAP cultivation, such as lack of high-quality seeds and access to agricultural water in many areas.

While many farmers didn't find value in acquiring GAP certificates as mentioned above, some respondents to the questionnaire noted that GAP certified products can be sold at higher prices at the markets of the domestic or overseas. Although the number is limited, some buyers have willingness to buy at higher prices. Therefore, linking GAP farmers to potential buyers properly could add value to GAP certificates, which gives incentives to farmers. This is supported by the cases of farmers who can export their products to Singapore, Germany, etc., with the support of development partners.

On the other hand, some respondents commented that lack of recognition of GAP was still an issue.

(7) The Philippines

The Philippines GAP Standard (PhilGAP) is defined by PNS / BAFS 48: 2017 as the GAP Code for Fruit and Vegetable Agriculture under the Regulations on Certification of Administrative Circular No. 01 Series of 2018 Philippines.

PhilGAP was developed by the Ministry of Agriculture and the Bureau of Agriculture and Fisheries Standards (BAFS) together with the Philippine National Standard (PNS) Code of Good Agricultural Practices. Operation was transferred to the Bureau of Plant Industry (BPI) in 2017 based on the Food Safety Act (2013).



GAP in the Philippine

GAP name, year of establishment	PhilGAP, 2006
GAP Certification Body	Republic of the Philippines Department of Agriculture, Bureau of Plant Industry
GAP accredited body	-
Target crops	Fruits, Vegetables, Grains / Cereals (Except commodities used as animal feeds)
Number of auditors	94
Number of instructors	17 (BPI) (Training is conducted by ATI instructor)
Certification acquisition cost	Free
Water, soil, pesticide residue inspection cost	Farmer
Expiration date	2 years with annual check
Whether GAP is included in import requirements	Not included

The Agricultural Training Institute (ATI) is in charge of GAP extension to farmers. ATI's annual goal is to set the number of training sessions for farmers, which is achieved every year.

With the support of AADCP Phase II, the PhilGAP certification system was improved. But degree of recognition of PhilGAP is still low among retailers, processors and consumers. Therefore, even if farmers get the certification, the certified products cannot be sold with high price.

The challenges in disseminating GAP found from the questionnaire survey include: 1) low awareness of GAP certification by stakeholders, especially smallholders; 2) benefits of GAP are not well recognized by retailers, processors and other stakeholders; 3) GAP certified crops are sold without distinction from other crops.

(8) Singapore

The Singapore Food Agency (SFA) was established in 2019 as an organization capable of developing food hygiene management, production, distribution, sales, and trade as a one-stop service. The operation regarding not only the GAP standard but also the HACCP and other FVC related regulations is implemented by the SFA. However, there is no third-party certification system.



GAP in Singapore

GAP name, year of establishment	Singapore, Good Agricultural Practice for Vegetable Farming (GAP-VF), 2004
GAP Certification Body	Singapore Food Agency
GAP accredited body	-
Target crops	Vegetables (leafy, fruit, root), beansprouts, herbs
Number of auditors	3
Number of instructors	Many (All GAP-VF secretariat staff is qualified as GAP instructor)
Certification acquisition cost	farmers \$500 for new application \$250 for renewal
Water, soil, pesticide residue inspection cost	Farmers
Expiration date	1 year
Whether GAP is included in import requirements	Not included

All information related to GAP certification is published on the web, and a service that allows consultation by chat is also provided. According to interviews, Singapore has only about 100 producers, including livestock farmers, so one-on-one response could be enough to address the demands from the farmers. Currently, there are eight GAP farmers.

There are producers and distributors in other AMSs who believe that GAP certification is required to export to Singapore, but it is not a national requirement but a request from the importing companies. The challenge to GAP dissemination identified by the questionnaire survey was the lack of awareness on GAP among consumers and markets.

(9) Thailand

QGAP which is National GAP in Thailand was enacted by the National Bureau of Agricultural Commodity and Food Standards (ACFS) in 2008 as Thai agricultural standard in accordance with the Agricultural Standards Act B. E. 2551. The actual operation of QGAP is carried out by MOAC (Thai Ministry of Agriculture and Cooperatives).



GAP in Thailand

GAP name, year of establishment	Q GAP, 2008
GAP Certification Body	Public(2): i)Center for Inspection and Certification of Agricultural Product in Land Reform Office, Agricultural Land Reform Office (Crops: Pineapple, Maize, Cassava and Sugarcane), ii)Division of Rice and Rice Products Inspection and Certification, Rice Department (Crops: Rice, Thai Hom Mali Rice),

	Private (5)
GAP accredited body	-
Target crops	Vegetables, fruits, field crops, spices and herbs
Number of auditors	-
Number of instructors	MOAC
Certification acquisition cost	Public: Free Private: Farmers
Water, soil, pesticide residue inspection cost	free
Expiration date	1year
Whether GAP is included in import requirements	Not included. But there are Thai standards for the sorting and packing facilities of export side. Depending on GAP, GAP certification can be used as certification to be matched.

In Thailand, there are ThaiGAP certification systems operated by private organizations and QGAP certification system operated by public organizations. In the past, ThaiGAP was equivalent to the Global GAP (It has not been confirmed that equivalence is still maintained now.). QGAP is used for domestic production and ThaiGAP is used for export. According to the interviews, the National Bureau of Agricultural Commodity and Food Standards (ACFS) does not feel the necessity of upgrading ASEAN GAP to international certification level, since ThaiGAP is already at the international certification level and farmers who want to export could obtain ThaiGAP.

GAP certified farmers are published on GAP DOA online (web site) and can be searched by retailers. In addition, applications such as the farmer's profile and production history can be viewed through QR codes is under preparation.

According to the interviews, more and more Thai people became interested in functional food rather than certificated products focusing on food safety and social impact. To get QGAP certification is an essential condition for shipping. In addition, in Thailand farmers often obtain some certificates required for contract farming or obtain certification as part of the branding .

From the point of view of food hygiene, the Thai government has established regulations on the processing and storage facilities for imported fruits and vegetables since August 25, 2019. When exporting agricultural products to Thailand, exporters needs to present a certificate to meet Thai standards. At that time, it is also permitted to present certifications (GlobalGAP, ASIAGAP, JGAP, etc.) that Thailand recognizes as above Thai standards.

(10) Viet Nam

Viet Nam's National GAP, VietGAP, was enacted by the Ministry of Agriculture and Rural Development (MARD) in 2008 for vegetables and fruits and tea, and in 2010 for rice and coffee. However, due to the large number and complexity of control points, high certification acquisition cost, etc., the dissemination of VietGAP has not progressed so much. Also, the initial VietGAP was defined by MARD, but it is not a national standard by law, so it was necessary to change it to a national standard established by the Ministry of Science and Technology (MOST).

As a solution to these issues, new VietGAP was revised as a provision of national standards in 2018. This Circular No. 48/2012 / TT-BNNPTNT specifies how to assess GAP suitability for the production and processing of agricultural, livestock and marine products.

With this revision the authority which oversees VietGAP was changed from MARD to MOST in 2018. There is no change in the control points, etc. that are required for certification / accreditation agencies and producers; only the institutions that grant certification approval have changed.

Also, in order to solve the problem that the conventional VietGAP did not disseminated sufficiently in the country as mentioned above, a JICA project proposed the concept of the Basic GAP. Basic GAP narrowed down the VietGAP's 65 control points to 26 major control points. This Basic GAP was approved by MARD as technical guidance in 2014 (MARD decision No.2998 / QD-BNN-TT on July 2, 2014). Although this guidance is a lower level official document than the above-mentioned provisions, it is expected to be continued because the content is based on the new national standard and it is effective when GAP is introduced.



GAP in Viet Nam

GAP name, year of establishment	VietGAP, 2018
GAP Certification Body	Public / private certification body (26)
GAP accredited body	Bureau of Accreditation: BOA
Target crops	All crops
Number of auditors	-
Number of instructors	Many (DARD extension worker)
Certification acquisition cost	Farmers (Fees vary by certification body)
Water, soil, pesticide residue inspection cost	Farmers (Fees vary by certification body)
Expiration date	2 years
Whether GAP is included in import requirements	Not included

VietGAP has adopted a third-party certification system, and as of June 2019, 26 organizations have been registered as VietGAP certification bodies. However, consumers recognize that the certification system is not reliable and that it is safer to buy directly from credible producers and sellers.

For farmers, it is difficult to find buyers to purchase the GAP certified products at higher prices. Even if they can find buyers, buyers sometimes buy selectively. Therefore, farmers prefer to produce non-certified products to sell to buyers who do not care about the quality in order to sell all the products.

The challenge to GAP dissemination is the limited recognition among consumers and buyers.

GAP-related activities of DPs in Viet Nam are as follows.

GAP related projects	DPs	Activities
Project for improvement of reliability of safe crop production in the northern region (2016-2021)	JICA	As mentioned above, in the predecessor project “Strengthening the Capacities for the Field of Management of Viet Nam’s Crop Production Sector for Improving the Productivity and Quality of Crop’s Products” that was carried out from 2010 to 2013, Basic GAP, simplified Viet Gap, was formulated, and technical guidance on safe vegetable cultivation was provided. Continuing on the project, this project is implementing activities related to the three components with the aim of further popularizing and expanding GAP (Basic GAP etc.). The first is to improve the monitoring and management capacity of safe crop production in terms of production, and the second is to be presented as a model of the supply chain of safe crops in accordance with GAP (Basic GAP etc.) in

		terms of distribution, the third is to improve the awareness of producers and buyers regarding the safety of crop production and food safety.
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(11) Japan

For the purpose of comparison with ASEAN, the situation of GAP introduction in Japan is outlined below for reference.

There are two GAP standards in Japan, JGAP and ASIAGAP. JGAP is Japanese common GAP system, which has started in 2007. ASIAGAP is global GAP system, which acquired the Global Food Safety Initiative (GFSI) certification in 2019.

Since around 2002, various GAPs have been created in Japan by distributors, agricultural cooperatives, administrative agencies, etc., but the Japan GAP foundation, which was established in 2006, combined these together. JGAP's third-party certification system has started in 2007.

In 2019, the ASIA GAP certification system, which was approved by GFSI, was started with the aim of being an international GAP standard in Asia. That was based on the increasing global demand mainly in Europe and the United States. Many customers and food retailers and manufacturers around the world required certified food by GFSI as the conditions of transaction. With the approval of ASIA GAP by GFSI, it is hoped that the farmers who have acquired ASIA GAP will be internationally evaluated, which contributes to the expansion of the export of Japanese agricultural products.



JGAP、ASIAGAP

GAP name, year of establishment	JGAP:2005、ASIA GAP:2019
GAP Certification Body	JGAP/ ASIAGAP: private certification body (8)
GAP accredited body	JGAP/ ASIAGAP: Japan GAP Foundation
Target crops	JGAP/ ASIAGAP: Fruits and Vegetables, Grains, tea
Number of auditors	JGAP/ ASIAGAP: Not available because it belongs to each private certification body
Number of instructors	JGAP:2089(as of 2018)、ASIAGAP:Not available because it is just beginning
Certification acquisition cost	JGAP/ASIA GAP: Fees vary by certification body (about 100,000 yen + travel expenses)
Water, soil, pesticide residue inspection cost	JGAP/ ASIAGAP:Farmers bear (Fees vary by inspection agency)
Expiration date	JGAP/ ASIAGAP:2years
Whether GAP is included in import requirements	Not included

In Japan, JGAP was not well known. Instead, retailer's private brands and corporate traceability system are well known as guarantee to the food safety.

However, since GAP certification was obligatory as a food procurement standard for the Tokyo 2020 Olympic and Paralympic Games, a number of GAP dissemination measures have been taken since 2017. As a result, the number of certified farmers has increased and reached 2,851 (JGAP) and 1,869 (ASIAGAP) as of end of March 2019.

(12) Summary of case study

During the field survey, the case study was conducted to understand the actual situation on the ground. The countries and business types covered by the case study are shown in the table below.

Table 21 Cases by Country and Business Type

	Producer	Retailer	Distributor etc.	Total
Cambodia	1	1	1	3
Indonesia	1		1	2
Lao PDR	1			1
Malaysia	1		1	2
Myanmar	2			2
Philippines	1	2		3
Singapore			2	2
Thailand		1		1
Viet Nam	1	1		2
Japan		2		2
Total	8	7	5	20

Source: JICA Study Team

The table below shows the results of the 20 cases.

Table 22 Summary of the Result of GAP Case Study

No.	AMS	Case	Business Type	Initiative and Interests
1	Cambodia	Vegetable shipping center	Distributors etc.	<ul style="list-style-type: none"> • The first public vegetable shipping center in Cambodia supported by Japan's Grant Assistance for Grass-Roots Human Resources Security Project. • It can conduct a rapid pesticide-residue testing.
2	Cambodia	Vegetable producer & wholesaler	Producer	<ul style="list-style-type: none"> • The business is producer and domestic wholesaler of fruits and vegetables. • They noted that high-income consumers are aware of safe vegetables. • Their interests are: <ul style="list-style-type: none"> - Producers, processors and distribution networks are necessary. - Most of FVC projects support large companies, and SMEs need support because of no networks and know-how. - For GAP introduction, young producers are to be educated.
3	Cambodia	Large-scale supermarket	Retailer	<ul style="list-style-type: none"> • The company recognizes that the demand for GAP is increasing, but the organic one is more recognized. • Their interests are: <ul style="list-style-type: none"> - Need integration mechanism of producers. Otherwise, they cannot provide the required quantity of GAP certified vegetables by supermarkets even with the help of development partners. - Hope to share successful cases of GAP introduction in other countries. - Need testing laboratories for food safety.
4	Indonesia	Paprika producer	Producer	<ul style="list-style-type: none"> • The business is Produce and supply PRIMA 1 certified paprika to supermarkets, restaurants, and catering. • Their interests are: <ul style="list-style-type: none"> - Need production technology information. - Farmworkers also need education.
5	Indonesia	Vegetable online delivery service company	Distributors etc.	<ul style="list-style-type: none"> • The business is selling directly from farmers to consumers using a matching application. • Their interests are: <ul style="list-style-type: none"> - Hope to play the role of an information platform in the future.

				<ul style="list-style-type: none"> - Hope to educate the young generation to create a brighter future of agricultural business.
6	Lao PDR	GAP-certified Melon producer	Producer	<ul style="list-style-type: none"> • He has received the training from the Asian Productivity Organization and turned into a farmer. He produces GAP-Certified melon. • His interests are: <ul style="list-style-type: none"> - Need GAP training and testing. - Hope high-quality seeds. - Hope to organize a network to learn cultivation techniques. Many young people interested in new techniques for melon cultivation.
7	Malaysia	Producer & exporter of GAP-certified durian	Producer	<ul style="list-style-type: none"> • The business is producing, processing and exporting fruits such as durian. They obtained GAP (SLSM), GMP, HACCP, and HALAR at the request of the export destination. They recognize that the certification is the minimum standard, and demand varies depending on the product type. • They are interested in matching events with customers and exports to the Japanese market.
8	Malaysia	Rice wholesaler	Distributors etc.	<ul style="list-style-type: none"> • The business is procuring, milling, packing and selling GAP-certified rice. • They recognize that demand depends on varieties and packaging rather than certification.
9	Myanmar	Mango producer & exporter.	Producer	<ul style="list-style-type: none"> • He obtained Global GAP with the support of GIZ and exported mango to Germany and the Netherlands. He sends samples overseas for pesticide residue inspection. • He needs support for quality seed production and basic irrigation and other infrastructure.
10	Myanmar	Vegetable producer, processor and exporter.	Producer	<ul style="list-style-type: none"> • Their business is contract farming and processing of vegetables and exporting to Japan. They follow the quality standards of the export destination. Pesticide inspection is conducted overseas. • They are interested in ToT training for young people and other good practices. They need a pesticide residue inspection facility in Myanmar.
11	Philippines	Coffee producer, processor, retailer, and restaurant.	Producer	<ul style="list-style-type: none"> • They introduced GAP to collaborate with farmers to contribute to a good community. • Their interests are: <ul style="list-style-type: none"> - Hope to participate as a resource person in workshops for the sixth industrialization. - Want to cooperate when considering ASEAN blended coffee.
12	Philippines	Supermarket procuring GAP-certified crops.	Retailer	<ul style="list-style-type: none"> • They sell GAP-certified products at the GAP corner responding to the demand from consumers. They recognize that quality, price, and continuity are important. • Their interests are: <ul style="list-style-type: none"> - GAP farmers need continuous crop supply. - GAP needs further recognition among consumers.
13	Philippines	Ordinary supermarket.	Retailer	<ul style="list-style-type: none"> • They sell GAP and organic products. Quality control needs not only GAP but also GMP in distribution, etc. • GAP needs differentiating sales methods such as packaging to raise its awareness.
14	Singapore	Food importer	Distributors etc.	<ul style="list-style-type: none"> • They are importer and wholesaler. They follow government inspection. They do not trust the ASEAN GAP. • They are interested in a partner company (Japanese company) that produces in ASEAN. They hope for business matching.
15	Singapore	Food importer	Distributors etc.	<ul style="list-style-type: none"> • They are importer and wholesaler. They obtained ISO22000 for repacking. Follow the standards and instructions set by the government. They recognize that dealing with ASEAN companies is difficult because of their business practices such as non-fulfillment of the contract rather than quality and safety. • Their interests are:

				<ul style="list-style-type: none"> - No supplier meets the requirements when importing from Myanmar. - Need instruction to local suppliers. - Need processors and distributors network.
16	Thailand	Supermarket procuring GAP-certified crops.	Retailer	<ul style="list-style-type: none"> • They work on spreading safe vegetables as a management philosophy. They own a quality control laboratory and acquire ISO / IEC 17025. They award producers to encourage GAP acquisition. • Their interests are: <ul style="list-style-type: none"> - Interested in learning from Japanese retailers' efforts to GAP. - Can participate as a resource person in ASEAN. - GAP diffusion requires a long period of time.
17	Viet Nam	Vegetable producer, processor, and exporter.	Producer	<ul style="list-style-type: none"> • They export vegetables to Japan, Korea, Malaysia, India, Dubai, China, etc., They introduced their own standard following VietGAP. • They are interested in business matching, branding Vietnam products, and good quality Japanese seeds
18	Viet Nam	Supermarket procuring GAP-certified products.	Retailer	<ul style="list-style-type: none"> • They procure safe vegetables of which samples are inspected with own facilities based on the national MRL. • Their interest is that the volume of safe vegetable production is not enough to respond to increasing its demand.
19	Japan	Supermarket producing safe and secure vegetables.	Retailer	<ul style="list-style-type: none"> • They obtained Global GAP with a view to export. GAP farmers utilize IT application. • They are interested in ASEAN retail business.
20	Japan	Supermarket procuring GAP-certified products.	Retailer	<ul style="list-style-type: none"> • They procure GAP certified agricultural products to connect consumers and producers. They introduce QR code to connect producers and consumers. • Their interests are: <ul style="list-style-type: none"> - They are interested in securing good practice farmers as procurement sources. - Sharing Japanese perspectives with ASEAN businesses.

Source: JICA Study Team

Based on these surveys, trends and interests are summarized below. Although it cannot be generalized due to the sample size, some trends can be observed.

First, the table below summarizes GAP and related trends.

Table 23 Trends in GAP related Businesses

Efforts and Trends	Producer	Retailer	Distributor etc.	Total
Recognition of GAP	8	7	3	18
Demand for GAP	5	4		9
Increasing demand for safe and secure vegetables such as GAP		1		1
Awarding producer to encourage GAP introduction		1		1
Increasing demand for GAP, but organic is important		1		1
GAP certification is the minimum requirement for export	2			2
GAP introduced with the support of the government	2			2
High-income consumers interested in safe vegetables such as GAP	1			1
Obtain Global GAP with a view to export		1		1
No demand for GAP			1	1
Other benefits of GAP	1	1		2
Considerations of the working environment for producers are also an advantage of GAP		1		1
GAP as a collaboration with local communities	1			1
ASEAN GAP			2	2
Dealing with ASEAN is a challenge for fulfilling contracts before quality and safety			1	1
ASEAN GAP not reliable			1	1

Own standard	2			2
Quality standards of the export destination. Sample inspection overseas.	1			1
Setting own standard.	1			1
Low consumer awareness of GAP		2		2
Safety inspection		2	1	3
Public residue pesticide inspection facility established			1	1
In-house inspection		2		2
New initiatives	1	2	2	5
Instructing and training ASEAN suppliers			1	1
GAP farmers deploy IT apps.		1		1
Providing matching services utilizing IT			1	1
Reduce the burden on farmers by collectively managing with QR code.		1		1
Young people's interest in agriculture utilizing new technology	1			1
Total	9	11	6	26

Source: JICA Study Team

It can be said that there is some degree of awareness and demand for GAP. On the other hand, there are challenges around the low recognition of GAP by consumers. Some respondents noted other benefits than the economic benefits, such as working with producers to improve the community (Philippines), and improvement of the working environment of producers (Japan).

One respondent mentioned that the national GAP is not yet reliable. Another pointed out that ASEAN companies need to improve the business practices in general such as complying with the buyers' conditions, before considering the implementation of GAP. Utilizing Information Technologies is also a new business trend.

The table below summarizes the interests of respondents.

Table 24 Concerns and interests of GAP related Businesses

Interests	Producer	Retailer	Distributor etc.	Total
Capacity development and technology	12	6		18
ASEAN Resource Person	2	2		4
Wish to participate in workshops for the sixth industrialization as a resource person	1			1
Interested in working as a resource person in ASEAN		1		1
Want to establish ASEAN blended coffee	1			1
Welcome farm visit from ASEAN		1		1
Requires GAP training and inspection	1			1
Requires GAP promotion with long-term perspective		1		1
Production techniques and information	4			4
Needs production technology information	1			1
Needs Basic infrastructure such as excellent seeds and water	1			1
Needs excellent seeds	2			2
Requires Producer training	3			3
Educate young producers	1			1
Training for young people	1			1
Education is also required for farm workers.	1			1
Wish to share and learn good practices in Japan and other	2	3		5
Want to form a network to learn cultivation methods: Many young people are interested in new techniques for melon cultivation.	1			1
Learning Japanese GAP initiatives		1		1
Sharing best practices for farm and contract farming management	1			1
Sharing Japan's point of view for imported goods		1		1

Hope to share successful examples of GAP utilization in each country		1		1
Sales	5	5	4	14
Matching opportunity	2	1	1	4
Matching with partner companies (Japanese companies) that produce in ASEAN			1	1
Providing opportunities with ASEAN retailers.		1		1
Matching opportunity	1			1
Matching with customers. Export to the Japanese market.	1			1
Needs production Increase of safe vegetables		1		1
Needs Processing & distribution network			2	2
Need networks of processing and distribution companies in ASEAN			1	1
Instruction & training for local suppliers to meet the requirements of importer.			1	1
Needs Mechanisms and networks for collaboration among producers	2	2		4
Quality, price and continuity of GAP farmers are important.		1		1
A network that connects producers and processors	1			1
SMEs need support because they do not have networks or know-how	1			1
Mechanisms for collaboration among farmers		1		1
Wants Sales opportunity	1		1	2
Interested in online sales			1	1
Branding of domestic products	1			1
Securing good farmers		1		1
Safety matters	2	1		3
Need safety testing laboratories.	2	1		3
Other matters related to consumption and information		2	2	4
Needs Awareness among young people			1	1
Needs Increasing consumer awareness		2		2
Wish to be Information platform			1	1
Want to play the role of an information platform in the future.			1	1
Total	19		6	39

Source: JICA Study Team

The interests of GAP related business are summarized as follows.

First, many of them have interests related to capacity building and technology. Many of them are interested in opportunities to share good practices and participate in various training. There is also an interest to be a resource person for training. Also, there are still many concerns for providing production technology. GAP does not provide production technology, but in ASEAN there are countries where GAP is used as a production norm, and it is desirable to disseminate technology when promoting GAP.

Secondly, what was found from both producers and retailers is the need for a network of producers. No matter how well a product can be produced, it cannot be sold if the quantity do not meet the requirement of buyers. The buyers also have to continuously procure an appropriate amount of product in a timely manner. It can also be observed that there is a high level of interest in building business linkages with companies from other countries.

Thirdly, there are many interests in having testing laboratories in a country to ensure the safety of the agricultural products.

Furthermore, some pointed out the needs of further efforts to raise consumer awareness. Although not directly related to GAP, some respondents said that they would like to function as an information platform

in the future, by using a matching app and give hope to young people involved in the agricultural business. Of course, this application will include information such as GAP certification.

3.1.3 Analysis and Common Issues for ASEAN

(1) GAP dissemination Status in AMSs

The GAP certification system and its status of dissemination in AMSs are as follows.

	Cambodia	Lao PDR	Myanmar	Indonesia	Philippines	Viet Nam	Malaysia	Thailand	Brunei Darussalam	Singapore
Number of GAP certified farmer	2 (As of 2019)	6	321	6,156	113	1,574	1,442	139,576	2	8
Auditor's qualification	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Instructor's qualification	No	No	No	No	Yes	No	Yes	Yes	No	Yes
Instructor's training system	No	No	No	Yes	Yes	No	Yes	Yes	No	Yes
Accreditation body	No	No	No	No	No	Yes	No	No	No	No
Whether pesticide testing agencies is accredited	No	No	No	Yes	Yes	Yes	Yes	Yes	(n.a.)	Yes
Whether an inspection laboratory has received ISO 17025 certification	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes

First, as to the status of dissemination, Thailand and Indonesia have a large number of GAP certified farmers. The reason for the large number of GAP certified farmers in Thailand and Indonesia is that the training systems for auditors and instructors for GAP farming are in place. In addition, the number of GAP certified farmers in Thailand is particularly large because the fee for the inspection and certification is free, and QGAP includes only control points regarding the food safety and does not include items such as environmental management and social consideration.

Secondly, as for the system for qualification of auditors and instructors, in many countries, the qualification requirements for auditors are stipulated in the regulations, but there are no qualifications for instructors. The instruction for GAP farming is implemented by officials of the Ministry of Agriculture as part of the public services. If, like Japan, GAP certification system becomes a private certification system and only licensed instructor could instruct farmers and obtain service fees, it may contribute to the dissemination of GAP certification system.

Thirdly, on the certification system, in AMSs, only Viet Nam has a third-party certification system and a mechanism for accrediting certification bodies in place. In order to raise national GAP to a level of GFSI certification similar to Global GAP and ASIA GAP, countries other than Viet Nam must first prepare the mechanism of the third-party certification system.

Fourthly, for the inspection of pesticide residues, general GAP standards require pesticide residue testing to be carried out at an appropriate laboratory. But Cambodia, Lao PDR and Myanmar do not have this requirement. The reason is that there are few domestic inspection agencies with the ability to inspect pesticide residues. In order to disseminate GAP in these countries, it is necessary to increase the number of inspection institutions that can carry out appropriate pesticide residue tests.

There are differences in the development level of the GAP certification system in AMSs. They can be broadly divided into the following four groups based on GAP implementation status.

Group	AMS	GAP implementation status
Group A	Thailand, Malaysia	Implementation system and facilities are in place and it is necessary to utilize the GAP certification as a condition of international transaction.
Group B	Viet Nam, Indonesia, Philippines	The GAP system and infrastructure facilities are at a right level. But the appropriate market is underdeveloped.
Group C	Cambodia, Lao PDR, Myanmar	The system and infrastructure for implementing GAP are immature and it is difficult for farmers to implement GAP.
Group D	Brunei Darussalam, Singapore	The number of producers is extremely small. So, it is less necessary to focus on the spread of GAP.

The issues for GAP promotion in each group are as follows.

Group A

- How to effectively utilize GAP for the export of agricultural products.
- To obtain GFSI certification, which is an international certification, in order to enhance global competitiveness.
- For the preparation for getting GFSI certification, to develop a third-party certification system for GAP certification system.

Group B

- To raise awareness of producers and consumers about the GAP certification system and the safe crop production and food safety.
- To improve safe crop farming.
- To present how GAP leads to sales promotion.

Group C

- Until GAP becomes common, in addition to technical assistance, to provide incentives for farmers to work on GAP, such as provision of agricultural materials and subsidies.
- To increase the number of instructors who have the correct knowledge about GAP farming
- To establish a pesticide residue inspection system that can promote GAP

Group D

- The total number of farmers is extremely small. So, it is less necessary to focus on the dissemination of GAP.

(2) Common Issues on GAP among AMSs

As mentioned in 3.1.1, the main issue is that GAP certified crops are not valued at the market, which gives farmers no incentives to introduce. The review of the status of GAP dissemination in AMSs above also supports this main issue.

Common challenge for all groups are how to link farmers to the potential buyers who are willing to buy GAP certified products with reasonable prices. For that purpose, the first step is to collect, analyze and share information on good practices in AMS where GAP certified farmers are effectively connected to buyers. The second step is to apply the essence of good practice to the other countries. The third step to prepare future GAP dissemination action plan based on the results of the trial.

For the preparation of the action plan, it is necessary to pay attention to the following trends and concerns of private companies. The private companies are divided into three categories: as producer, distributor, and retailer. The following summarizes the trends and interests of each private actor.

	Trends	Interests
a) Involvement as a producer	<p>GAP acquisition is growing among producers because there are several incentives shown on the right side as well as the GAP farming guidance by the governments and private companies.</p> <p>In Cambodia, it is assumed that the number of certified farmers will not increase because in addition un-development of infrastructure such as inspection institutes, there are problems with the government's system operation ability and technical ability.</p> <p>In Lao PDR, the marketability of organic vegetables is higher than GAP. Direct sales system has been established. It seems difficult to disseminate unless discovering GAP incentives that organic vegetables do not have.</p>	<p>Farmers feel the following incentives for obtaining GAP certification.</p> <p>【Cost incentives】</p> <p>i) By participating in the GAP promotion project supported by the government, agricultural materials are supplied, and farming guidance can be received.</p> <p>ii) By implementing GAP, the amount of pesticide can be reduced, and sowing amount can be reduced, so the cost can be reduced.</p> <p>【Incentives on the environment and working environment】</p> <p>iii) Learner about proper pesticide application can protect producers' health.</p> <p>【Incentive for sales promotion】</p> <p>iv) Can be delivered to retailers whose procurement conditions are to obtain GAP certification.</p> <p>v) By obtaining GAP, the public and media's attention will be able to gain public trust, which indirectly leads to sales promotion.</p> <p>vi) Rather than the effect of GAP certification itself, the market can be expanded by having the cultivation history required by GAP and the results of pesticide testing, which is requested from the seller.</p> <p>【Request from the seller】</p> <p>vii) The company does not acquire the certification voluntarily, but because it is under contract terms with the seller.</p>
b) Involvement as a distributor	<p>Global GAP, Thai GAP, etc. are well known to exporters and importers. The number of retailers seeking certification has also increased, and it is expected that the use of transactions will continue to grow.</p>	<p>This survey found t that it would be very effective if there was an organization that bundles small scale GAP farmers when a certain amount of GAP certified products was requested from the seller.</p>

<p>c) Involvement as a retailer</p>	<p>According to the interview results, some retailers had previously purchased GAP products preferentially. The retailers stopped selling because though purchase price is high, consumers did not buy.</p> <p>In many cases there were retailers which procure GAP products because of more social significance than securing of safety.</p>	<p>As most of the GAP farmers are small scale, it is a challenging about shortage of products and few in kind. Although there is an intention to specify procurement of certified products, a system that can supply a certain amount of constant is required.</p> <p>Moreover, according to the interview results, many retailers recognize that traceability could be the minimum requirement for food security.</p>
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In addition, apart from these GAP dissemination issues, common issues regarding agricultural farming in ASEAN are as follows:

- GAP certification is often recognized as a certification for food safety. However, ASEAN GAP also covers the environmental management, working environment of farmers and products quality. It is thus important to have the same level of understandings on all issues, in addition to the food safety. It is advisable to expand the control area to cover not only the food safety but also other areas.
- There are some AMSs who have no provision for penalties when the violation of the regulation is found. These cases include the detection of residual chemicals above MRL and the case of sale of illegal pesticides.
- There is no way to pick up illegal products that misrepresent the origin, certification, and brand.
- The aging of producers is progressing, and there are few young people who want to revitalize agriculture by acquiring certification and selling value-added products.

Furthermore, this survey did not include law and system of food sanitation which is also important as GAP in building FVC. It is also preferable to study the situation on food sanitation law, sampling procedures, facility and store registration, and enforcement.

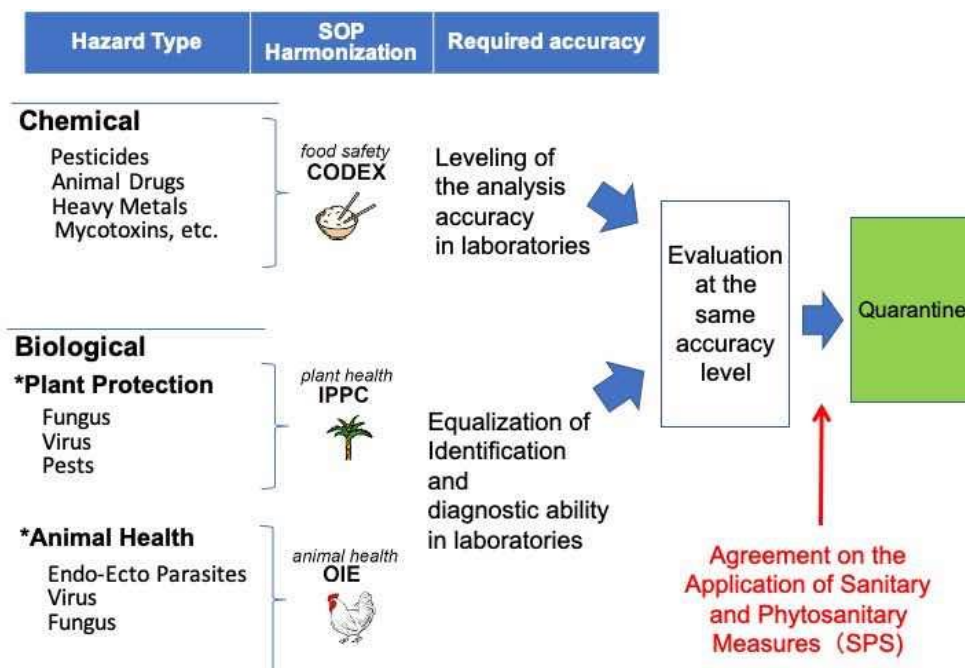
3.2 SPS

Represented by “quarantine” at the borders, the term “sanitary and phytosanitary (SPS) measures” also include food safety/hygiene and plant/animal health protections from pests and diseases. International trade with insufficient SPS measure would result in the crossing and spreading of contaminated food and plant/animal pests/diseases that could threaten human health. To strengthen the food value chain (FVC) across the border, the establishment of reliable SPS measures within each country is mandatory. Therefore, to enhance the ASEAN FVC, initiatives toward leveling of capacity on the related field are required.

3.2.1 ASEAN Policies, Plans, and Status

(1) Commitment to SPS in the World

The international arrangement on SPS covers a wide variety of areas, including human health, animal, and plant protection (Figure below). Codex Alimentarius Commission (CODEX), International Plant Protection Convention (IPPC), and The World Organization for Animal Health (OIE) are the three organizations in SPS, responsible for the harmonization of SOP (standard operating procedure); for food hygienic issues (pesticides, animal drugs, heavy metals, and mycotoxins), plant protection (fungus, virus, and pests), and animal health (endo-/ecto-parasite, virus, and fungus), respectively. As shown in the figure below, the hazard type dealt by CODEX can be defined as “Chemical”. In contrast, hazard type dealt by IPPC and OIE can be defined as “Biological.”



Source: JICA Study Team based on materials of WTO.

Figure 13 Chemical and Biological Inspection in SPS

(2) ASEAN Policies, Plans, and Status

In ASEAN, ASEAN Community Vision 2025, and ASEAN Community Blueprint, together with the ASEAN Integration Initiative III (IAI Work Plan III) ³³ promote further regional integration. It aims to minimize the economic inequality between advanced AMSs (ASEAN-6) and CLMV.

Over the years, elimination of tariff barriers had been almost completed. However, non-tariff barriers remain a significant challenge in ASEAN, and strict restrictions on SPS related standards are often regarded as one of the non-tariff barriers. In this regard, the ASEAN Goods and Trade Agreement (ATIGA) had strengthened and consolidated strategic action (CSAP) of ATIGA incorporates SPS arrangement in its Chapter 8, where it mandates the compliance with WTO's SPS Agreement.³⁴

(3) Constraints to achieving ASEAN Policy and Plans

The following problems still exist among AMSs with respect to SPS.

- 1) Contamination of food: Residual pesticide/veterinary drugs, mycotoxins, and heavy metals are found in an amount exceeding the permissible concentration.
- 2) Plant Protection: Pests and diseases on plants entering to AMSs are further spread to neighboring countries and causing widespread damage to agricultural products.
- 3) Animal quarantine: Transmission of zoonotic diseases are often caused by the plague of animals themselves and through food poisoning from processed food from these ingredients.

These problems are the major obstacles for implementing IAI Work Plan III Consolidated Strategic Action (CSAP) and actions against non-tariff barriers. According to CODEX, potential hazard in food items such as above are referred to as "risks."³⁵ To address these risks, the following actions need to be considered.

- 1) Reducing inaccuracy and uncertainty in the inspection of agricultural products, since improper inspections are causing delays in issuance of export certificate, quarantine disposals, and remand.
- 2) Inspection facility and human resources of the laboratory need to be assessed for conducting accurate and timely risk analysis³⁶.

Understanding the status of the above in each AMS is an essential factor for eliminating non-tariff barriers relating to SPS.

³³ Initiative for ASEAN Integration (IAI) Work Plan (III): <https://asean.org/storage/2016/09/09rev2Content-IAI-Work-Plan-III.pdf>

³⁴ ASEAN Trade Repository 4 Non-tariff measures: <https://atr.asean.org/read/non-tariff-measures/44>

³⁵ Risk: A function of the probability of an adverse health effect and the severity of that effect, consequential to a hazard(s) in food. (from Codex)

³⁶ Consists of 3 elements of Risk Assessment, Risk Management and Risk Communication. (from Codex)

3.2.2 Current Situation of SPS in AMSs

(1) Study Arrangement

1) Survey

Based on the review of existing literature and information, JICA Study Team undertook a questionnaire survey and field survey to obtain the information necessary for identifying the cooperation activities. Outline of the cooperation activities had been agreed on in the concept note of the ASEAN-JICA cooperation on food value chain development (Ch. 1.2. (2)).

Objective	Output
Institutional capacity for risk analysis and laboratory diagnosis of SPS measures are strengthened	Capacity Development on Risk Analysis and Laboratory Diagnosis of SPS measures

Specifically, in the concept note, the following activities are planned to generate the output above.

- To share good practices on risk analysis and laboratory diagnosis of SPS measures among AMSs.
- To develop the capacity for obtaining robust data on pesticide residues and hazardous substances*.
- To assess the capacity of AMSs' laboratories.

*Hazardous substances included in this area are residual agricultural chemicals, residual animal drugs, mycotoxins, heavy metals, food additives, and genetically modified organisms (GMO).

2) Field Survey

A field survey was especially important to understand the real situation. Six countries among AMSs were selected for the field survey due to the time constraint. These are three countries each from CLMV (hereinafter Group B) and from the remaining countries (hereinafter Group A), to delineate the current situation and challenges in each group below.

- Group A (other than CLMV): Indonesia, Malaysia, Thailand
- Group B (CLMV): Cambodia, Myanmar, Viet Nam

These two groups showed a significant difference in export values, as shown in Chapter 2. All countries in Group A had more than one billion USD worth of export to at least one of other AMSs, while none of CLMV countries' export value had reached one billion USD in the trade with other AMSs in 2016 (Table 6).

JICA Study Team conducted interviews with officials in ministries and visited testing laboratories and quarantine offices for observation and further discussion. Especially, discussions with researchers and/or scientists at laboratories were essential to understand their capacities.

The concept note mentions capacity development regarding pesticide residue analysis, thus implied that the main target of the project as the (analytical) chemical field, the area covered by CODEX. However, upon the request from the AMAF at the kick-off meeting at the ASEAN Secretariat in January of 2019, the biological field (i.e. plants and animal health, the area covered by IPPC and OIE), was also included as the subject of the field survey.

(2) Overview of the Analytical System of the Chemical Hazards in Selected AMSs

The table below summarizes the findings on the chemical analysis facilities and technical capacities of the AMSs visited during the field survey. The responsible organizations are listed separately for the analysis of “residual agricultural chemicals and GMO (Genetically Modified Organism)” and “mycotoxin, heavy metals, and food additives”.

Table 25 Findings from the Field Survey (Analytical Systems for Chemical Hazards)

Group A	
Indonesia	National Quality Control Laboratory of Drug and Food (NQCLDF)/ Agricultural Quarantine Bureau / Agricultural Quarantine Standards Test Center (BBUSKP)
<p>Highlight:</p> <ul style="list-style-type: none"> <input type="checkbox"/> NQCLDF in Indonesia is a member of ASEAN Food Reference Laboratories (AFRLs) and is also an ISO/IEC 17025 accredited institute. Analytical instruments in the lab were well equipped and capacitated to perform proper accuracy management on sample analysis. NQCLDF is responsible for generating analytical results for export certificate that is required by the partner (importing) country. <p>Analysis of residual agricultural chemicals and GMO:</p> <ul style="list-style-type: none"> <input type="checkbox"/> The Agricultural Quarantine Bureau / Agricultural Quarantine Standards Test Center (BBUSKP) conduct analysis on veterinary drug and GMO which is performed according to ISO 24276: 2006 (Analytical method for the detection of genetically modified organisms and derivatives of foods), and the lab is renovated accordingly to comply with the ISO 24276:2006. <p>Analysis of Mycotoxin/heavy metals/food additives:</p> <ul style="list-style-type: none"> <input type="checkbox"/> ASEAN countries coordinate on standards setting and inspection methods in AFRL every year. NQCLDF is the chair of the AFRLs food additive sector as well as the testing agency for food additives and heavy metals. <input type="checkbox"/> Mycotoxin inspection is conducted by BBUSKP and is adapting the AOAC-991.31 (Standard set by an NPO in USA, named AOAC International) 	
Malaysia	Pesticides Board, Pesticides Control & Fertilizers Division, Department of Agriculture (DOA), Ministry of Agriculture and Agro-Based Industry, Malaysia (MOA)
<p>Highlight:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Malaysia organizes inter-ministerial corporation on SPS measures that include MOA (subdivision DOA), Ministry of Health, Ministry of Agriculture Research Development Institute (MARDI) and Malaysia Quarantine and Inspection Services (MAQIS). <input type="checkbox"/> Malaysian policy and standards related to SPS follows CODEX standards. <p>Analysis of residual agricultural chemicals and GMO:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Malaysian MRLs for pesticide residues are specified in “Food Regulations 1985” and are under the jurisdiction of the National Public Health Laboratory (NPHL). <input type="checkbox"/> Residual veterinary medicine is conducted by Malaysia Quarantine and Inspection Services. <input type="checkbox"/> Plant Biosecurity Division, Department Agriculture: Bahagian Biosekuriti Tumbuhan (BBT) investigates pesticide residue. BBT is also responsible for confirming the certification of organic vegetables. <p>Analysis of Mycotoxin/heavy metals/food additives:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Malaysian MRLs for heavy metals and food additives are specified in “Food Regulations 1985” and are under the jurisdiction of the National Public Health Laboratory (NPHL). 	
Thailand	Department of Agriculture (DOA), Ministry of Agriculture and Cooperatives (MOAC) National Bureau of Agricultural Commodity and Food Standards (ACFS)
<p>Highlight:</p> <ul style="list-style-type: none"> <input type="checkbox"/> In Thailand, there are many privately recognized inspections agencies as well as public institutions. The registered inspection agencies in Thailand are also analyzing the products to be exported from Cambodia and Myanmar to issue an export certificate. There is no National Reference Laboratory (NRL) or private testing agencies in Cambodia and Myanmar that are accredited for ISO/IEC17025, currently. <input type="checkbox"/> ACFS is the NRL in Thailand and it is also an ISO/IEC 17025 accredited, registered laboratory. <p>Analysis of residual agricultural chemicals and GMO:</p> <ul style="list-style-type: none"> <input type="checkbox"/> ACFS is the largest pesticide testing agency in Thailand. In addition, ACFS produces and sells food reference materials for Proficiency Test (PT) which can be used to evaluate the analytical accuracy of residual pesticide in a sample. <input type="checkbox"/> Thailand had completely banned the trade of genetically modified crops (GMC) that require specified inspection technology. A special department, named the Biotechnology R & D Office conducts GMO analysis in its laboratory. Since 	

<p>neighboring countries trade GMC freely, Thailand face challenges to monitor and prevent inflow of GMC across border.</p> <p>Analysis of Mycotoxin/heavy metals/food additives:</p> <ul style="list-style-type: none"> <input type="checkbox"/> As of 2017, Thailand is chairing the Working Group of three divisions of AFRLs on residual veterinary drugs, heavy metals, trace ingredients, and food contact substances (containers and packaging materials). 	
Group B	
Cambodia	National Agriculture Laboratory (NAL), Ministry of Agriculture Forestry and Fisheries (MAFF)
<p>Highlight:</p> <ul style="list-style-type: none"> <input type="checkbox"/> There is no accredited inspection organizations for ISO/IEC 17025 in Cambodia, neither public nor private, and it does not participate in AFRLs. <p>Analysis of residual agricultural chemicals and GMO:</p> <ul style="list-style-type: none"> <input type="checkbox"/> The Pesticide Residues Laboratory of the National Agriculture Research Institute of Cambodia is equipped with liquid chromatography-mass spectrometry instruments; however, the survey observed that the equipment was not fully utilized in their analysis. For example, the personnel were able to prepare standard curve for detection of the residual pesticides, yet they were having hard time to process and prepare the samples for proper detection. <input type="checkbox"/> The laboratory is short of personnel capable of operating such high-resolution analytical instruments. Thus, at the survey interview, the lab personnel requested for continuous, medium to long term technical guidance from developing partners. Although a training was conducted for just one week in Bangkok, Thailand two years ago, such short training was not sufficient to independently repeat the analysis learnt during the training at their own laboratory. <p>Analysis of Mycotoxin/heavy metals/food additives:</p> <ul style="list-style-type: none"> <input type="checkbox"/> At the time of export, the importer requests neighboring countries such as Thailand and Viet Nam for analysis for an issuance of safety certificate of the crops. Exported produce or food products must be cleared for residue of veterinary drugs and mycotoxin (aflatoxin). 	
Myanmar	Plant Protection Division, Pesticide Analytical Laboratory, (MoALI PPD-PAL), Ministry of Agriculture, Livestock and Irrigation (MOALI) The Department of Commerce / Consumer Affairs Bureau, Center for Total Quality Management (CTQM)
<p>Highlight:</p> <ul style="list-style-type: none"> <input type="checkbox"/> There is no accredited testing laboratory (ISO/IEC 17025) in Myanmar for general residual pesticide. <input type="checkbox"/> Ministry of Education had a research institute that was equivalent to the Japanese Institute of Industrial Technology. The institute is equipped with a collection of analyzers that require advanced technology and techniques such as Atomic Force Microscopy (atomic force microscope) and XRF (fluorescent X-ray analyzer). <p>Analysis of residual agricultural chemicals and GMO:</p> <ul style="list-style-type: none"> <input type="checkbox"/> The Department of Commerce / Consumer Affairs Bureau, Center for Total Quality Management (CTQM) conducts a simultaneous analysis of ten types of organophosphorus and organochlorine pesticides by GC-MS. However, the accuracy of the above analysis was low. <input type="checkbox"/> As mentioned, there is no laboratories equipped to conduct examination for general residual pesticide in Myanmar that are accredited by ISO. Similar to Cambodia, the samples are sent to Thailand for the test for exports that may take up to a month. <input type="checkbox"/> The PPD-PAL Pesticide Residue Research Institute is at the technical stage of operating the equipment and preparing the calibration curve. The institute was receiving guidance (technical assistance) from Japan at the time of the visit. <p>Analysis of Mycotoxin/heavy metals/food additives:</p> <ul style="list-style-type: none"> <input type="checkbox"/> CTQC conducts sesame product analysis and grain quality inspection. In addition, this laboratory is conducting an aflatoxin detection using a fluorescent assay. 	
Viet Nam	Center for Veterinary Hygiene Inspection No 1 (VHI 1), Ministry of Agriculture and Rural Development (MARD)
<p>Highlight:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Center for Veterinary Hygiene Inspection No 1 (VHI 1) is an ISO/IEC 17025 accredited institution. <input type="checkbox"/> The country is a chair of the microbial analysis sector in AFRLs. <p>Analysis of residual agricultural chemicals (pesticides and veterinary drugs) and GMO:</p> <ul style="list-style-type: none"> <input type="checkbox"/> VHI 1 conducts residue analysis on Viet Nam's major export agricultural products (e.g. honey) <input type="checkbox"/> Although the laboratory is equipped with wide variety of analytical instruments, the number of instrument is limited to process large sample volume at once. <p>Analysis of Mycotoxin/heavy metals/food additives:</p> <ul style="list-style-type: none"> <input type="checkbox"/> VHI 1 conducts mycotoxins analysis on Viet Nam's major export agricultural products (e.g. honey) <input type="checkbox"/> There are private analytical institutes that are accredited by ISO/IEC 17025 and can issue an export certificate. Especially, the test accuracy for mycotoxins was excellent. 	

(3) Overview of Biological Hazards (Plants and Animal Health Protection) in Selected AMSs

The table below summarizes the significant issues (and their countermeasures) in the biological field of SPS in the AMSs visited during the field survey. The items are listed for plant and animal related problems, separately.

Table 26 Findings from the Field Survey (Biological Hazards)

Group A	
Indonesia	Ministry of Agriculture (MOA): Department of Horticulture, Agriculture, Quarantine Agency Department of Animal Health National Quality Control Laboratory of Drug and Food (NQCLDF)
<p>(Plants)</p> <ul style="list-style-type: none"> <input type="checkbox"/> Mango (one of the specialty items on export) cannot be exported to Japan due to fruit fly. The fruit fly is also known to damage melon; thus, the export of melon from Indonesia to Japan is banned. <input type="checkbox"/> Coconut (powder) (<i>Salacca zalacca</i>) is one of the major export items, yet it is prohibited to export to Australia and New Zealand due to <i>Salmonella</i> contamination. <input type="checkbox"/> Contamination due to fungi and yeast is the main issues that was preventing an export of cinnamon produced in Indonesia. <input type="checkbox"/> Ginger is prohibited for export to Viet Nam and Sri Lanka due to nematode (<i>Radopholus similis</i>: banana anemone nematode) that can be dwelling in the products. <input type="checkbox"/> Although islands are separated from other countries by the sea, many hazardous substances on plant epidemics have accumulated in the country. <p>(Animals)</p> <ul style="list-style-type: none"> <input type="checkbox"/> The veterinary department was focusing on measures against rabies. Rabies seems to be transmitted via bats on the island of Sumatra, and the veterinary department is conducting epidemic prevention activities. <input type="checkbox"/> As cattle are imported from India to Indonesia, Indonesia takes measures to prevent FMD (foot-and-mouth disease). There is a quarantine period in India before import, and then the cattle are quarantined again as entering Indonesia. 	
Thailand	Department of Agriculture (DOA): Biotechnology Research and Development Office, GMOs Analysis Laboratory) Division of International Livestock Cooperation (DILC), Department of Livestock Development (DLD) Bangkok Port Animal Quarantine (Ship)
<p>Note: In Thailand, the plant quarantine related facilities were not arranged for visit/meeting due to schedule conflict.</p> <p>(Animals)</p> <ul style="list-style-type: none"> <input type="checkbox"/> A study in 2018 found that rabies virus was confirmed in 247 cases between January to March of that year. By September 2018, the number rose to 400 cases. It was in an outbreak state. Therefore, DLD has vaccinated 10 million dogs/cats in total. The country produces vaccine for rabies virus, yet it had not yet been completely eradicated. <input type="checkbox"/> HEV (Hepatitis E Virus: Porcine hepatitis E), which is an emerging zoonotic disease, had gradually spreading and drawing attention for preventative measure. <input type="checkbox"/> Measures against avian flu (AV) are being taken, and the government was alerted for virus derived Newcastle disease (NDTV). DLD has adopted GMP (Good Manufacturing Practice), chicken traceability system, and HACCP as the measures against these avian diseases. <input type="checkbox"/> Thailand's Food and Drug Administration (FDA) is leading the implementation of the "national strategic plan on antimicrobial resistance 2017-2021." <input type="checkbox"/> To prevent spread of FMD, there are five quarantine stations had been established in the country for inspecting the livestock, entering the country across the border. 	
Malaysia	Plant Biosecurity Division, Department Agriculture (DOA) : Bahagian Biosekuriti Tumbuhan (BBT) Malaysian Agricultural Research and Development Institute (MARDI) Malaysia Quarantine and Inspection Services (MAQIS)
<p>(Plants)</p> <ul style="list-style-type: none"> <input type="checkbox"/> The Plant Biosecurity Division (PBD) of DOA is responsible for the risk management for plant protection, and it manages the risk related to plant protection for quarantine for imported plants in cooperation with MAQIS. The risk analysis for plant protection is conducted based on the procedure of FAO's Pest Risk Analysis (PRA). <input type="checkbox"/> Malaysia is focusing on the control of export products such as bananas, coconuts, mangoes, pineapples, and jack fruits, which are the major trading crops. Among them, research for countermeasure on blood disease of banana had been conducted at MARDI and had been reported to IPPC. <input type="checkbox"/> Other plant diseases that are studied at the PBD of DOA include <i>Burkholderia glumae</i> (rice leaf blight fungus), <i>Burkholderia</i> 	

<p><i>plantarii</i> (rice seedling wilt disease), and basal stem rot (BSR) of palm.</p> <p>(Animals)</p> <ul style="list-style-type: none"> <input type="checkbox"/> The most important focus of risk management in Malaysia is rabies virus. Public health in Malaysia is overseen by the Ministry of Health (MOH), and risk assessment is conducted by MOA, MOH, Ministry of the Environment and other related organizations. <input type="checkbox"/> The Veterinary Research Institute (VRI) of DVS (Department Veterinary Services), is capable of responding to inspections in the Laboratory Capability List of OIE member countries, such as avian influenza (AI), mad cow disease (BSE), brucellosis (porcine fever), swine fever (SF), and new castle disease virus, etc. <p>(Processed Food)</p> <ul style="list-style-type: none"> <input type="checkbox"/> Regarding food poisoning, <i>Salmonella typhimurium</i>, <i>Escherichia coli</i> and <i>Staphylococcus aureus</i> were introduced as the major concerns in the country at the meeting. 	
Group B	
Cambodia	<p>National Agriculture Laboratory (NAL)</p> <p>National Animal Health and Production research Institute (NAHPRI)</p>
<p>(Plants/Insects)</p> <ul style="list-style-type: none"> <input type="checkbox"/> Plant pathology and pest control laboratory in the National Agriculture Laboratory collects and preserves insect specimens. The procedure require outside assistance as the specimens were not in the quality to identify the insects in practice. <input type="checkbox"/> African armyworm (<i>Spodoptera exempta</i>) has also invaded the Greater Mekong Sub-region (GMS), yet it is challenging to provide quality specimens for identification and quarantine on these insects at quarantine station. <input type="checkbox"/> Pest on cassava is one of the largest challenges in Cambodia. For the public awareness, a poster on the life cycle of pests was used at the institute to promote early detection and extermination. <p>(Animals)</p> <ul style="list-style-type: none"> <input type="checkbox"/> The veterinary department has a laboratory for virus analysis, and is working on FMD, African swine fever (ASF), and avian influenza (AI). For these, virus isolation and DNA analysis were also performed to contribute to OIE. <input type="checkbox"/> Cambodia was the first country in AMSs that detected ASF, thus much research efforts were given to the disease. <input type="checkbox"/> Fluke (Zoonosis parasite) is widely spread in Cambodia. Thus, the facility collected and prepared the specimens. The environment of the Cambodia is suitable for the life cycle of the parasites due to large number of buffaloes and the large amount of watercress. Increased number of parasites are serious concern due to infections even among human. 	
Myanmar	<p>Plant protection Department (PPD-PAL)</p> <p>Central Veterinary Diagnostic Laboratory (CVDL) , Ministry of Commerce/ Department of Consumer Affair) ,Commodity testing & Quality Control (CTQM)</p>
<p>(Plants and Insects)</p> <ul style="list-style-type: none"> <input type="checkbox"/> The main pests include mango fruit flies (<i>Bactrocera dorsalis</i>: Fruit Fly), African white walrus (<i>Spodoptera exempta</i>: Armyworm), cassava beetle (<i>Pseudococcidae</i>: Mealybug), and beetle (<i>Trogoderma berae</i>: Kroboterra beetles). <input type="checkbox"/> In IPPC, Army worms, Mealybugs, and Khapra beetle are omnivorous pests and are widespread crop pests. <p>(Animals)</p> <ul style="list-style-type: none"> <input type="checkbox"/> Similar to the case of Cambodia, zoonotic parasites had become a problem with fluke (<i>Fasciola spp.</i>) and filamentous worms (<i>Strongyloides stercoralis</i>). These pests affect both human and animals. <input type="checkbox"/> In Myanmar, free vaccination program for the FMD is organized. ASF and Rabies, are also the major issues in the country, thus they are featured in the newspaper. 	
Viet Nam	Department of Animal Health: DAH of Ministry of Agriculture and Rural Development (MARD)
<p>Note: In Viet Nam, the plant quarantine related facilities were not arranged for visit/meeting due to schedule conflict.</p> <p>(Animals)</p> <ul style="list-style-type: none"> <input type="checkbox"/> DAH deals with harmful bacteria, fungi, parasites, and antimicrobial-resistant bacteria. DAH handles samples of animal-sourced meat, milk, animal foods, water, and air pollution, etc. Important microorganisms, in terms of the size of influence, include <i>E. Coli</i> and <i>Salmonella</i>, for which the resistance tests are conducted in the laboratory. <input type="checkbox"/> Viet Nam exports chicken and eggs to Singapore and Sudan. Therefore, chicken respiratory diseases such as Marek's disease and Newcastle disease are also important research subjects for the DAH. <input type="checkbox"/> FMD, AI, ASF and rabies are listed as high risk factors in OIE. Among these, the lab is working to develop a vaccine against rabies for domestic use, but it had not yet been practically used. <input type="checkbox"/> The Northern Pesticide Testing Control Center of Department of Animal Health (DAH), the microorganisms and pesticides residue department were accredited with ISO/IEC 17025. 	

(4) Summary of Current Situation in Chemical Analysis in AMSs

During the field survey, the gap between CLMV and other AMSs in terms of the analytical ability for the targeted hazardous substance was apparent. Below summarizes the current status and challenges which were commonly observed within the two groups (Group A and B).

1) Group A: Indonesia, Thailand, and Malaysia

- National Reference Labs (NRLs) are accredited with the ISO / IEC17025 and the laboratories are equipped with operational, high-tech analyzers. The size of the processing volume was limited by the number of analytical instruments.
- The sample pretreatment technique and calibration curves preparation prior to analysis still require some guidance from outside. Also, uniformity of the process among testing samples appeared to be one of the challenges that causes unreliable results.
- The accuracy of analysis was another concern. For example, an evaluation of outliers on a calibration curve was one of the knowledge lacking at these labs.
- Residual pesticides, residual animal drugs, heavy metals, and mycotoxins were quantified via instrumental analysis. The utilization of test kits on these hazards was also observed in these countries. Quality control (analytical accuracy) of such a kit is concerned.
- In Group A, the number of pesticides targeted for their residual analysis in the lab was about eighty compounds (in Group B, as few as ten pesticides are subjected for quantification). However, the limit of quantification (LOQ) of the laboratory was often appeared to be much larger and unable to detect the threshold quantity (minimum amount allowed) of residual chemicals.
- Certification issuance on pesticide residue and animal drug on export products were often processed at the private analysis institutions since NRLs are limited on the processing capacity.
- Thailand prohibits the import of GMO crops in principle. PCR (polymerase chain reaction) or RT-PCR (real-time PCR) was used for GMO crop detection (mainly soy and maize).
- Disposal of hazardous waste, such as organic solvents and other hazardous substances, was outsourced to industrial waste disposal companies. However, the manifest system had not been established.

2) Group B: Cambodia, Myanmar, and Viet Nam

During the survey, it was found that Viet Nam and other two countries (Cambodia and Myanmar) have differences in analytical abilities. The status/challenges are listed for these countries separately.

(Viet Nam)

- Analytical laboratories were equipped with analytical instruments, and the technical skills of the operators were similar to Group A to conduct practical analysis.
- NRLs of Viet Nam are accredited with ISO/IEC 17025.

(Cambodia and Myanmar)

- Analytical laboratories were equipped with instruments, yet the technical skills of the operators were not sufficient for conducting practical analyses.

- Analytical laboratories were capable of processing the commercial standard reagent on the analytical instruments, yet the practical analysis of pesticide residue from plant samples require guidance from the basis.
- Analytical laboratories were also utilizing test kits for residual animal drugs and mycotoxins.
- Residue analysis for pesticides and animal drugs were outsourced to Thailand due to a lack of reliable analytical laboratory both in public and private sectors in the countries. These NRLs in Cambodia nor Myanmar are accredited with the ISO/ IEC 17025.

*Additional information: Lao PDR had been installed with state-of-the-art analytical equipment with an aid from Hungary, who is also providing technical assistance on the operation of this equipment.

(5) Summary of the Current Situation in Plant and Animal Health

In terms of plant and animal health, all AMSs have issues with similar pests and diseases. Below is the list of common risks among AMSs.

- Plants (epidemic prevention):
 - Fruit flies and cassava mealybugs
- Animal health:
 - Rabies, foot-and-mouth disease (FMD), bird influenza (Flu), African swine fever (ASF), and other parasitic diseases that are on the OIE list.

Other issues are summarized for Group A and B separately.

1) Group A: Indonesia, Thailand, and Malaysia

- System towards epidemic prevention is established with the cooperation from developing partners.

2) Group B: Cambodia, Myanmar, and Viet Nam

- Plant epidemic issues are more prevalent in the GMS such as Cambodia, Lao PDR, Myanmar, Viet Nam and Thailand, and pest control measures on cassava and fruit flies are taken in each country.
- Viet Nam is the most advanced country among CVLM in terms of animal health. Viet Nam is working towards rabies vaccine production. Rabies vaccine from France was used in the eradication campaign, yet the efficiency was low (due to different strains of the virus from French rabies, according to a personal at the lab).
- The research on vaccine production (on FMD) has also been initiated in countries in Group B.
- The research focus of the countries in group B are parasites (hepatic fluke). They mainly investigate parasite distribution.
- Laboratories had not yet established the measures for complete eradication of pests. The labs operate to establish a collection of pests for specimens.

3.2.3 Analysis and Common Issues for ASEAN

Based on the results of the survey, common issues and the needs for cooperation are analyzed below. These are suggested as the steps in strengthening the SPS measures for further development of FVC in ASEAN.

(1) Chemical Analysis

- Harmonization of the number of targeted chemical compounds (pesticides):

To facilitate the trade among AMSs, harmonizing the number of pesticide derived compounds for residual quantification is the first necessary step. Currently, the numbers of compounds that are targeted for pesticide residue inspection differ from country to country. The survey found that around 80 compounds for group A and 10 for group B. (*In the case of Japan, imported agricultural products are tested for a few hundreds of pesticides). For the export quality, quantification of 80 pesticides are necessary to receive certification; thus, for CLMV, the number of target pesticide needs to be increased to level out with the rest of AMSs. This would eliminate the time and cost associated with acquiring certification in neighboring countries.

- Capacity development in analytical laboratories:

After confirming the number of pesticide derived compounds to be tested, then the laboratory capabilities of each AMS need to be strengthened to achieve the general technical level for accurate analysis for MRLs specified by ASEAN. The standard evaluation system for the technical capacity of the sample inspectors, as well as the facility's analytical capability, could be established for AMSs on pesticide residue analysis.

- Maintain the analytical capability and the LOQ (limit of quantification)³⁷:

LOQ should be as low as one tenth of the MRLs for confirmation of the exam results. During the survey, it was observed that Cambodia and Myanmar require technical assistance from outside to level the analytical capabilities with the rest of the countries visited. With the above evaluation system, the inspection and diagnostic capabilities of an AMS are effectively evaluated and promote technical assistance among AMSs to merge existing capacity inequality.

- Awareness for proper pesticide application:

Equipped with technical skills to analyze for residual pesticide, it is expected to increase awareness of farmers in the quantity of pesticide application, which is often reported to be overlooked.

- Adapt Proficiency Test (PT)³⁸ for evaluation of equipment accuracy and technical level:

In ASEAN, sample standards for analytical instruments are manufactured at ACFS in Thailand and distributed. This can be used to evaluate the accuracy and technical level of the instruments and technicians in the laboratory, respectively.

³⁷ The lower limit of quantitation (LOQ) is the minimum amount or concentration at which an analyte can be quantified by a analytical method.

³⁸ The PT test is a test for knowing the mutual analysis accuracy. It is a test system that evaluates whether your analytical institution is different from other analytical institutes or is within the allowable range. When the analytical values obtained by the participating analytical institutions are statistically processed and standardized, and if $Z = \pm 2$, it is judged that the accuracy of analysis is standard. PT is a test of accuracy by comparing the laboratory results with the 'true' value

The z-score, For a normal distribution, approximately 1 in 20 results will have a z-score outside the limits $|z| > 2$ A z-score outside $|z| > 3$ should have an investigative action

- Mandate proper industrial waste management:

Chemical waste from the analytical instruments must be treated appropriately to prevent environmental issues; however, the post-analytical waste treatment certification (manifest) system is not currently available in every AMS.

- Accreditation of all National Reference Labs (NRL):

Some of the NRL had not yet obtained ISO / IEC17025.

(2) **Plant and Animal Health/Quarantine**

1) **Plant Protection Measures**

- Establishment of network to share plant diagnostic information among AMSs:

Accumulation of diagnostic information from multiple countries enhances the knowledge of the pest and disease symptoms commonly found in the region. Therefore, the establishment of a network (information center) among AMS on plant pests and diseases would improve the accuracy and speed of diagnosis.

- Establishment of occurrence prediction system:

The plant protection sector had received a lot of bilateral support so far, yet the same pests are still transmitted throughout ASEAN. Controlling a wide range of pests requires using the same diagnostic system and working with multiple countries for risk analysis. The prediction system helps to narrow down target pests.

- Create practical insect specimens and identification manuals:

Especially in Cambodia, Myanmar, and Viet Nam, the pest sampling technique was requiring improvement to be utilized practically for inspection. Therefore, the technique of preparing insect specimens and the preparation of an identification manual will start the construction of an outbreak prediction system in insect pest control.

2) **Animal Health Measures and Quarantine**

- Technical support on zoonotic testing and diagnostic techniques disseminated by OIE:

Veterinary measures are generally implemented in all countries; however, additional supports are needed for zoonotic testing. Since the target of epidemics is limited by animal species, bilateral technical support for diagnosis, identification, and treatment technology may be desirable.

- Assist multilateral cooperation against zooparasites in Greater Mekong Sub-region (CLMV + Thailand):

The region is home to zooparasites. Measure against zooparasites requires multilateral cooperation since it is connected by land and water.

During the survey, it was found that Thailand, Indonesia, and Malaysia had adapted a digitized quarantine system (ePhyto: electronic plant immunity certificate). Although it is still not adaptable yet for the rest of AMSs due to inequality in inspection ability, it would be a sound system once the ASEAN Joint Economic Zone is completed.

(3) Development Partner Initiative

Below is the list of projects in corporation with development partners regarding SPS in CLMV. As the project title indicates, many projects are driven by import demand on agricultural products in AMSs to the partner countries. As reflected in the current capacity in analytical laboratories, Viet Nam had received more technical assistance in terms of analytical techniques compared to CLM who had been mainly focused on the policy and market access for enhanced trade.

Partners	AMS/ASEAN	Project Titles
STDF*1	Cambodia	SPS Action Plan for Cambodia 2009-2010
Multiple Trade related agencies, WB*2	Cambodia	Trade Sector-Wide Approach (SWAp) since 2000
Multiple	Cambodia	The Trade Development Support Programme (TDSP) 2009-2012
STDF	Lao PDR	Strengthening Lao PDR's capacity to gain and maintain market access for fresh fruit and vegetable produce to the EU and other potential markets 2017
GIZ*3, Thailand office	Cambodia, Lao PDR, Myanmar, and Viet Nam	Regional Training on Regulatory Laboratory and Practice on BCA [Biological Control Agent] and Biofertilizer 2015, two weeks training
WB, AusAID, EU, GIZ	Lao PDR	Lao PDR Trade Development Facility (TDF) Project 2007-2013
STDF	Viet Nam	Strengthening Vietnamese SPS capacities for trade - improving safety and quality of fresh vegetables through the value chain approach 2010-2012
ADB	Viet Nam	Trade facilitation: improved sanitary and phytosanitary handling in the Greater Mekong Subregion trade project 2012-2018
ADB	Cambodia and Lao PDR	Trade facilitation: improved sanitary and phytosanitary handling in the Greater Mekong Subregion trade project 2012-2018
ADB	Myanmar	Support for Sanitary and Phytosanitary Arrangements Development 2014-2015
FAO/ Japan	ASEAN	Support to capacity building and implementation of international food safety standards in ASEAN countries 2016-2021
China	ASEAN	Quality Supervision, Inspection and Quarantine (SPS Cooperation) Since 2016

*1 Standards and Trade Development Facility

*2 World Bank

*3 Deutsche Gesellschaft für Internationale Zusammenarbeit.

(4) Summary

The following table is a summary of the study results*.

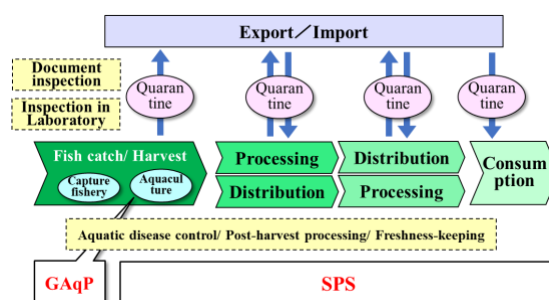
Table 27 Summary of Survey Results

	Country Name	Indonesia	Thailand	Malaysia	Viet Nam	Cambodia	Myanmar	Common issues
Chemical Analysis	Analytical instrument	✓	✓	✓	✓	✓	✓	Small quantity of equipment
	Analytical Skill(Residue Pesticide)	✓	✓	✓	✓	Calibration curve creation	About 10 kinds of simultaneous analysis items	Remains concerned about the fundamental analysis of data
	Heavy metals	✓	✓	✓	✓	✓	✓	ICP/MS is main
	Mycotoxins	AF, Ct, ZEN, DON, NIV	AF (LC)	AF (LC)	AF (LC)	AF (LC)	AF (LC & Kit)	HPLC is main
IPPC Measures	Plant Pathology	✓	✓	✓ (Banana Blood Diseases)	✓	✓	✓	Malaysia studies plant pathology of palms and bananas
	Insect Control	✓	✓	✓	✓	✓	✓	Low measures in their country
		Fruit fly measures	Fruit fly measures	Fruit fly measures	Fruit fly measures	Fruit fly measures JICA support steaming apparatus for control insects	Specimens and storage (Measures are unknown)	Specimens and storage (Measures are unknown)
OIE Measures	OIE Specified infectious diseases (*FMD does not infect humans) (ASF: African swine fever)	(FMD) Rabies Virus	Rabies Virus, (FMD) ASF	(FMD), Rabies Virus, ASF	(FMV), Rabies Virus, ASV AI	(FMV), Rabies Virus, ASV	(FMV), Rabies Virus, ASV	* Wide-area prevention measures for Rabies Virus and ASV are essential. * AI is less effective because the virus type changes.
Animal Safety	Endo-Parasites	Not confirmed			<i>Fasciola hepatica</i> & <i>Schistosoma</i> spp			Wide-area infection via rivers
	Rabies virus vaccine production	In production	In production	In production	In production	Developing production	Developing production	Government-led measures are essential

*Check (✓) indicates that items were surveyed and confirmed basic functionality.

3.3 Fisheries

The scope of the fisheries sector in this survey are “SPS in fisheries” and “GAqP.” The scope of “SPS” varies depending on the interpretation. This survey covers each stage on supply chain of fishery products (not only the quarantine stage), based on the interpretation on the website of MAFF of Japan. In accordance with the overall survey policy, the survey on the fishery sector focuses on the efforts required to ensure the safety and security of fishery products. The priority items of survey are “production stage” and “export and import stage,” and the survey is aiming to grasp the problems and needs of each country.



Source: The JICA Study Team.

Figure 14 Focus of the Survey

3.3.1 ASEAN Policies, Plans and Status

(1) “Strategic Plan of Action on ASEAN Cooperation on Fisheries 2016-2020”

On the “Strategic Plan of Action on ASEAN Cooperation on Fisheries 2016-2020”, the Action Programme are settled based on the 6 ST (Strategic Thrust). The Action Programmes consist of several Activities and Sub Activities.

“SPS in fisheries” and GAqP related activities are included mainly in ST 2 “Enhance trade facilitation, economic integration and market access” of “Strategic Plan of Action on ASEAN Cooperation on Fisheries 2016-2020.” Below table shows the activities and sub activities of each scope.

The scope of “SPS in fisheries” on the draft concept note of this project was made in line with the “Strategic Plan of Action”.

	SPS in fisheries	GAqP
STRATEGIC THRUST	2. Enhance trade facilitation, economic integration and market access	
Action Programme	2.3. Streamline and improve quarantine systems and procedures, and harmonize standards and regulations to facilitate trade.	2.2. Certification, inspection, accreditation and traceability
Activities	2.3.3. Harmonise of the quarantine and inspection/ sampling procedure and Sanitary and Phytosanitary (SPS), biosecurity measures for aquaculture products to secure food safety; and develop one stop inspection system	2.2.2. Harmonise of the accreditation, inspection and certification of aquaculture in enabling the recognition of ASEAN-wide, equivalent requirements
Sub Activities	<ul style="list-style-type: none"> <input type="checkbox"/> Sharing information and best practices on quarantine, inspection procedures and SPS <input type="checkbox"/> Develop regional guidelines and principles on inspection mechanism <input type="checkbox"/> Harmonising SPS measures related to aquatic animal quarantine and health certification for exportation and importation among AMS 	<ul style="list-style-type: none"> <input type="checkbox"/> Conduct regional technical consultations to harmonize accreditation, inspection and certification processes in the Region <input type="checkbox"/> Alignment of the national shrimp GAP with ASEAN Shrimp GAP <input type="checkbox"/> Implementation of the ASEAN GAqP for food fish

Source: The JICA Study Team.

The formulation of regional guideline on “SPS in fisheries” is planned in Sub Activities of 2.3.3. However, the regional guidelines on fishery have not yet been formulated at present according to an interview survey

with ASEC. Currently, there is a movement to formulate "ASEAN Regional Guideline for the Implementation of International Standards related to Sanitary and Phytosanitary (SPS) Measures" with the support of the ASEAN-Australia-New Zealand Free Trade Agreement (AANZFTA).

(2) Efforts by AADCP (Australia Development Cooperation Program)

According to the guidance of "ASEAN Economic Community Blueprint," "Guidelines on ASEAN GAqP for Food Fish" was formulated in 2015. It was formulated to harmonize the program of National GAqP in each AMS. This guideline focuses on "Food Safety," "Animal Health and Welfare," "Environmental Integrity," and "Socio-economic Aspects." The formulation of guideline was made through the workshops with representatives of member countries and "ASEAN Shrimp GAP" and FAO Technical Guidelines were used as reference documents.

In ASEAN Shrimp Alliance (ASA), the discussion on the certification system of Shrimp GAP in the ASEAN region is conducted. But the certification system of ASEAN GAqP for Food Fish has not been established. As an activity on cross certification of GaqP for Food Fish, AADCPII plans to implement "Multilateral Arrangement for the Mutual Recognition of Agri-food Standards and Conformity Assessment (MAMRASCA)."

(3) Efforts by SEAFDEC

1) Outline of SEAFDEC and its relations with ASEAN

Southeast Asian Fisheries Development Center (SEAFDEC) is an autonomous inter-governmental body established in 1967 to promote and facilitate concerted actions among the Member Countries to ensure the sustainability of fisheries and aquaculture in Southeast Asia. The Members of SEAFDEC are 11 countries: 10 AMSs and Japan. The Secretariat (SEC) locates in Thailand and there are five technical departments as listed below.

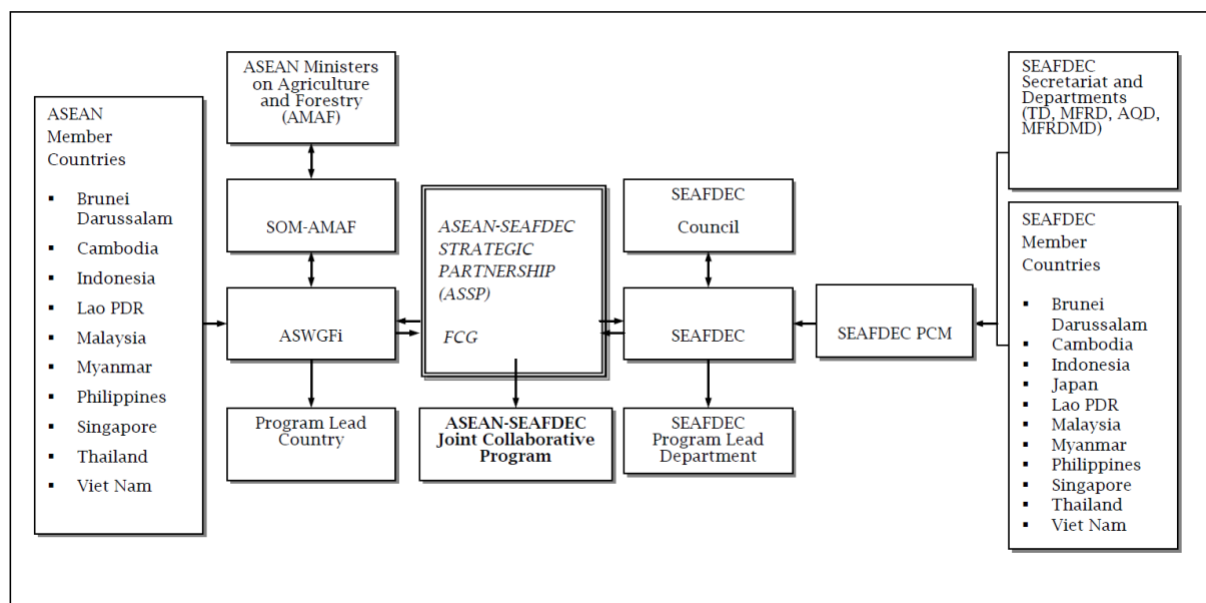
1. Training Department (TD : Thailand)
2. Marine Fisheries Research Department (MFRD : Singapore)
3. Aquaculture Department (AQD : Philippine)
4. Marine Fishery Resources Development and Management Department (MFRDMD : Malaysia)
5. Inland Fishery Resources Development and Management Department (IFRDMD : Indonesia)

In 1999, SEAFDEC and ASEAN developed "ASEAN-SEAFDEC Fisheries Consultative Group (FCG) mechanism" to promote the effective and sustainable development of fishery/aquaculture and the efficient implementation of programs. Under this mechanism, SEAFDEC is viewed as the policy and technical organization, while ASEAN as a political organization. Close cooperation between SEAFDEC and ASEAN enable to identify the regionally common issues, as well as, to develop and implement their solutions. For example, when the needs for a support program are requested from AMSs in ASWGF_i (ASEAN Working Group Fisheries), the proposal is reviewed at the ASEAN side (as needed, and it is put in SOM-AMAF). In parallel, the proposal is reviewed at SEAFDEC Council Meeting through the meeting of ASEAN-SEAFDEC FCG. In addition, the proposal requested from the member state in SEAFDEC Program Committee Meeting (PCM) passes the procedure in both side of ASEAN and SEAFDEC.

Through this mechanism, programs for the key regional challenges are implemented with high executive ability under the agreements on both policy/technical and political aspects. Furthermore, the strategic

partnership between SEAFDEC and ASEAN was established by signing of the letter of understanding of “ASEAN-SEAFDEC Strategic Partnership (ASSP)” in 2007. This partnership is based on the framework of ASEAN-SEAFDEC FCG mechanism and it enables the strengthening of cooperation relationship and the efforts to regional issues for long term. Under ASSP, SEAFDEC implements several efforts, such as the formulation of “ASEAN Regional Fisheries Management Mechanism (ARFMM)” in collaboration with ASWGFi, the formulation of common policies/guidelines and the activities of project support.

As mentioned above, SEAFDEC enables to implement the programs and projects with the close relationship with ASEAN through FCG/ASSP mechanism. The figure below shows the outline of FCG/ASSP mechanism.



Source: figure from meeting material by SEAFDEC

Figure 15 Outline of FCG/ASSP Mechanism

2) Example of activities by SEAFDEC

Since establishment in 1967, SEAFDEC has conducted several projects, workshops and formulation of guidelines/manuals. The table below shows the support example related to GAqP and “SPS in fisheries”.

Table 28 Support Example by SEAFDEC

< Example of GAqP related projects since 2010 >
<input type="checkbox"/> Distance Learning Course on Principles of Health Management in Aquaculture (2010)
<input type="checkbox"/> Sustainable Coastal Resource Management (2010)
<input type="checkbox"/> Mangrove Conservation, Rehabilitation, & Management (2011)
<input type="checkbox"/> Biodiversity Conservation & Resource Enhancement (2012)
<input type="checkbox"/> Food Safety of Aquaculture Products (2012)
<input type="checkbox"/> On-site Training Course on Freshwater Fish Health Management with Emphasis on Detection of Fish-Borne Zoonotic Parasites (2013)
<input type="checkbox"/> Specialized training course on Microbiology (2013)
<input type="checkbox"/> Fish Health Management in Aquaculture (2013,2018,2019)
<input type="checkbox"/> Training course on Aquatic Microbiology (2014)
<input type="checkbox"/> ASEAN Shrimp Good Aquaculture Practice for BMP-EAGA (2015)
<input type="checkbox"/> Enhancement of vaccine efficacy for the prevention of viral nervous necrosis in high value marine fish (on-going)
<input type="checkbox"/> Establishment of protective measures against persistent and emerging parasitic diseases of tropical fish (on-going)
<input type="checkbox"/> Development and acceleration of rapid and effective fish and shrimp health management (on-going)
<input type="checkbox"/> Responsible aquaculture through aqua silviculture (on-going)

<input type="checkbox"/> Withdrawal period of antibiotics in fish species cultured in the tropics (on-going) <input type="checkbox"/> Demonstration and verification of sustainable and efficient aquaculture techniques by combination of multiple organisms (JIRCS) (on-going)
< Example of GAqP related workshops since 2010>
<input type="checkbox"/> International Workshop on Fish Health Management: Accelerating Awareness and Capacity Building in Southeast Asia (2012) <input type="checkbox"/> International Workshop on Food Safety of Aquaculture Products in Southeast Asia (2013) <input type="checkbox"/> Resource Enhancement and Sustainable Aquaculture Practices in Southeast Asia (2014) <input type="checkbox"/> Addressing Acute Hepatopancreatic Necrosis Disease (AHPND) and Other Transboundary Diseases for Improved Aquatic Animal Health in Southeast Asia (2016) <input type="checkbox"/> ASEAN Regional Technical Consultation on Aquatic Emergency Preparedness and Response Systems for Effective Management of Transboundary Disease Outbreaks in Southeast Asia (2018). <input type="checkbox"/> Promotion of Sustainable Aquaculture, Aquatic Animal Health, and Resource Enhancement in Southeast Asia (SARSEA) (2019)
< Example of GAqP related guidelines and manuals since 2010>
<input type="checkbox"/> Health Management in Aquaculture (2010) <input type="checkbox"/> Important Findings and Recommendations on Chemical Use in Aquaculture in Southeast Asia (2015) <input type="checkbox"/> Addressing Acute Hepatopancreatic Necrosis Disease (AHPND) and Other Transboundary Diseases for Improved Aquatic Animal Health in Southeast Asia (2016) <input type="checkbox"/> Regional Technical Guidelines on Early Warning System for Aquatic Animal Health Emergencies (2019)
< Example of “SPS in fisheries” related projects since 2010>
<input type="checkbox"/> Quality Assurance Systems of Small and Medium-sized Fish Processing Establishments in ASEAN member countries (2007-2011) <input type="checkbox"/> Chemical and Drug residues in Fish and Fish Products in Southeast Asia (2009-2017) <input type="checkbox"/> Traceability systems for Aquaculture Farms in ASEAN region (2010-2014) <input type="checkbox"/> Cold Chain Management for Seafood (2015-2018)
< Example of “SPS in fisheries” related guidelines and manuals since 2010>
<input type="checkbox"/> A guide to the Identification and Control of Food safety Hazard in the Production of Fish and Fish Products in ASEAN Region <input type="checkbox"/> Good Manufacturing Practice (GMP) for SMEs Fish and Fish Products Pre-processing Establishments <input type="checkbox"/> Good Manufacturing Practice (GMP) for SMEs traditional fish products processing establishments in ASEAN <input type="checkbox"/> Regional guidelines on Traceability System for Aquaculture Products in the ASEAN region <input type="checkbox"/> Regional Guidelines on Cold Chain Management of Fish and Fishery Products in ASEAN Region

Below show the main activities by SEAFDEC related to “GAqP” and “SPS in fisheries”.

- “Aquatic Emergency Preparedness and Response Systems for Effective Management of Transboundary Disease Outbreak in Southeast Asia”

Consultation was held to evaluate the “Emergency Preparedness and Response Systems: EPRS” for the outbreaks of transboundary disease, which is practiced in the region. This consultation was realized by cooperation among DOF-AAHRDD (Department of Fisheries-Aquatic Animal Health Research and Development Division) of Thailand, NACA (Network of Aquaculture Centres in Asia-Pacific) and SEAFDEC. The laws, SOPs, national aquatic animal health management strategies, etc. of each country were included as the target scope. As a recommendation of the project, it is stated to formulate ASEAN EPRS guideline.
- “Regional Guidelines on Cold Chain Management of Fish and Fishery Products in ASEAN Region”

This project was aimed to assist the cold-chain management, the technical improvement, and the formulation of regional guideline. The regional guideline was finalized and adopted in 2018 through the participatory workshops and discussion led by MFRD. In addition to the general management methods in each process, such as post-harvest fish handling, processing, freezing, packing, etc., the specific technical methods, such as temperature management, thawing methods, etc. are also included.
- “Enhancing Food Safety and Competitiveness of Seafood Products”

“Enhancing Food Safety and Competitiveness of Seafood Products” is planned to be implemented from 2020. In this project, the development of guidelines on “Good Manufacturing Practice: GMP” and “Good Handling Practices: GHP” for Sushi and Sashimi, and the introduction of “High Pressure Processing: HPP” protocols are planned. These activities are parts of efforts toward the quality management of precooked food, such as Ready-to-Cook products and Ready-to-Eat products. It is considered that these activities are at high standards compared to the targets of ASEAN-JICA project.

3.3.2 Current Situation in AMSs

(1) Fisheries and Trade

Since the main target of this survey is agriculture sector, the trends of fishery sector in the world and Southeast Asia are summarized from the viewpoints of “safety and security of fishery products” in this chapter.

1) Trade of fishery products in the world

The increase in the rate of fishery production in the world in the past 60 years is significant. Especially, the increase in production of aquaculture since 1990s has been astonishing. The volume of fish consumption in the world also has been on the increase. In comparison with 50 years ago, the fish consumption per person has been almost doubled. There are various factors which increased the volume of the fish consumption, one of such factors is the internationalization of fish distribution. Fishery products are valuable products as export products, and the volume of export and import is on an increasing trend receiving a benefit from trade liberalization. With the development of international trade of fishery products, the awareness on the quality and freshness management of fishery products, including aquatic animal disease management and the risk analysis, have grown globally.

There are several international agreements on fisheries trade which are obliged to comply with “Agreement on the Application of Sanitary and Phytosanitary Measures” by WTO, some EU-related regulations, “Convention on Biological Diversity (CBD)” by UNEP, “Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES),” formulated by USA and IUCN, etc. Also, there are some international agreements that are recommended to comply with “Code of Conduct for Responsible Fisheries” by FAO, “ICES Code of Practice on the Introductions, and Transfers of Marine Organisms 2005” by ICES (International Council for the Exploration of the Sea). Each country trades fishery products in accordance with the standards of treaties and agreements.

2) Trade of fishery products in Southeast Asia

The development of fishery trade in Southeast Asia has been growing mainly in Thailand, Viet Nam and Indonesia. Export value by these three countries occupies nearly 90% of fishery export of whole ASEAN. For the import of fishery products, Thailand accounts for a large percentage of imports followed by Viet Nam, Singapore, and Malaysia. Although the fishery trade in Southeast Asia has been developing mainly in these countries, each country has its own characteristics depending on their policy, strategy, and natural/social conditions. Some countries put stress on the supply of raw material, while some countries import raw materials from other countries and put stress on trade of processed products. Figure 16 shows the trend in export value, and Figure 17 shows the trend in import value of fishery products in each country since 2000.

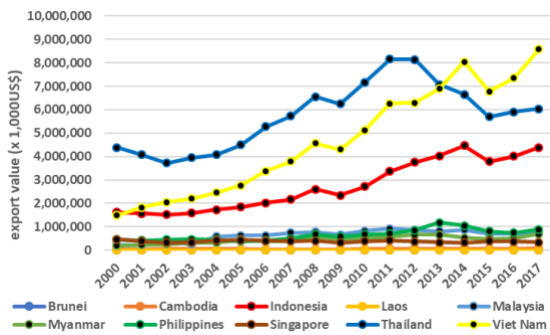


Figure 16 Trend in Export Value of Fishery Products in Each Country (Source: FAO Fish Stat)

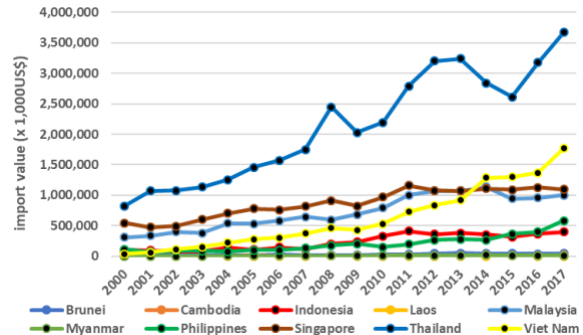
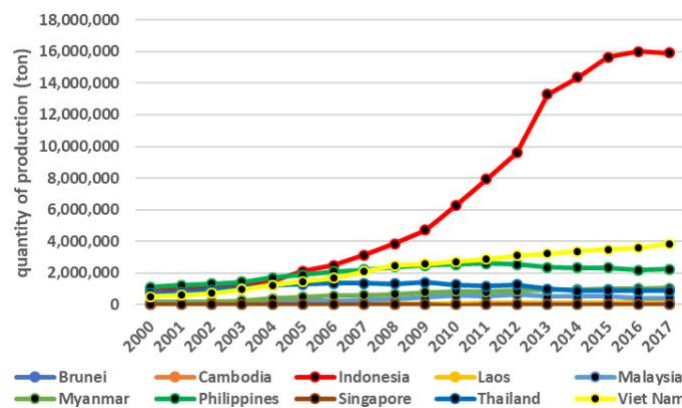


Figure 17 Trend in Import Value of Fishery Products in Each Country (Source: FAO Fish Stat)

The development of aquaculture industry is one of characteristics of fishery sector in Southeast Asia. Aquaculture industry contributes to the supply of protein for citizens of AMS and to the production of export materials. Figure 18 shows the trend in quantity of aquaculture production in each country since 2000. The quantity of production in Indonesia has increased sharply since around 2010. It includes the impact of increased production of seaweeds for industrial.



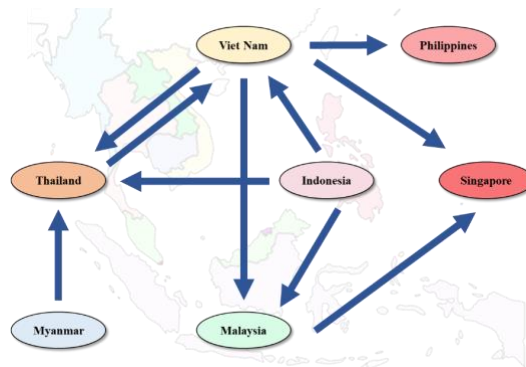
Source: FAO Fish Stat.

Figure 18 Trend in Quantity of Aquaculture Production in Each Country (ton)

As fisheries and aquaculture production has increased and fishery trade has developed, the importing countries such as EU, north America and Japan have begun to require Southeast Asian countries to establish the world standard production/processing system and traceability system. Especially, EU import market has significant impact on fishery trade in the world and there is an analysis which describes “to meet EU standards on production processes and distribution systems is the conditions for growth of export-oriented fisheries.” Under these circumstances, the acquirement of HACCP, GMP (Good Manufacturing Practice), GAqP, etc. by the fish processing companies and aquaculture companies in the Southeast Asia has been spreading.

About the distribution channel of fishery products among AMS, fish distribution among Viet Nam, Thailand, Indonesia, Malaysia, and Singapore is relatively large. In addition to the above five countries, there are some specific distribution channels such as; from Myanmar to Thailand, from Thailand to Cambodia, from Viet Nam to the Philippines, etc. On the other hand, the distribution channels from Brunei Darussalam, Lao PDR, and Cambodia have not yet constructed well. The

appearance of trade on fishery products varies greatly by countries. The figure below shows the main fish distribution channel based on the export value.



Source: UN Comtrade (based on the declaration data of export country). Arrow: over 1 hundred million dollars (annual export)

Figure 19 Main Distribution Channel of Fishery Products among AMS

3) Fishery trade of Japan

Fishery industry of Southeast Asia has an important role on the food industry in Japan. According to the trade statistics of fishery products, there are four AMSs in the top 20 of the Japan's import partner countries and six ASEAN countries in the top 20 Japan's export partner countries. Southeast Asian countries have developed as supply areas and agglomerations areas of fishery products on the back of cheap raw materials and labors. These countries have become a major trading partners of Japan. The table on the right shows the top 20 countries which are trading partners of Japan on export and import of fishery products in 2018.

Table 29 Top 20 Japan's Import Partner Countries and Import Value of Fishery Products

	country	amount (thousand yen)		country	amount (thousand yen)
1	China	324,396,545	11	India	49,453,717
2	USA	157,317,510	12	Canada	46,258,215
3	Chile	152,800,813	13	Australia	31,485,838
4	Russia	140,998,189	14	Hong Kong	22,249,119
5	Vietnam	115,429,859	15	Argentina	20,711,576
6	Thailand	114,344,164	16	Philippines	20,117,765
7	Norway	106,039,394	17	Morocco	18,606,242
8	Indonesia	90,578,972	18	Peru	17,286,106
9	Korea	84,689,915	19	Malta	16,870,562
10	Taiwan	59,906,002	20	Mauritania	16,082,538

Source: MAFF website.

One of the characteristics of fishery products chain of Japan is the international specialization by having overseas production sites. As showed in the table, Viet Nam, Thailand and Indonesia are the important import partner countries for Japan. The food management

Table 30 Top 20 Japan's Export Partner Countries and Export Value of Fishery Products

	country	amount (thousand yen)		country	amount (thousand yen)
1	Hong Kong	89,397,967	11	Netherlands	3,643,621
2	China	48,232,923	12	Philippines	3,407,427
3	USA	33,315,159	13	Malaysia	2,930,772
4	Thailand	23,627,536	14	Gahna	2,875,850
5	Vietnam	18,396,398	15	Canada	2,862,488
6	Taiwan	17,341,951	16	Russia	2,862,142
7	Korea	15,873,952	17	Chile	2,837,344
8	Nigeria	5,658,469	18	Australia	1,577,058
9	Egypt	5,102,972	19	RSA	1,485,766
10	Singapore	4,961,324	20	Indonesia	1,473,388

Source: MAFF website

systems of Southeast Asia are closely related to the “Food (fishery products) security” and “Safety and security of fishery products” of Japan.

(2) Current Situation of GAqP and SPS in fisheries in AMSs

In order to cover the wide scope of ranges and utilize the limited duration of the survey effectively, the questionnaire survey was conducted. In addition, the interview survey was implemented to obtain the complementary information from fishery authorities in each country. The interview survey for local fishery companies, aquaculture companies and fishery laboratories were conducted as appropriate. The efforts and issues on each stage of fishery value chain (production, processing, distribution, quarantine, export/import) in each country are showed as follows.

Production stage

<GAqP>

Status of formulation and operation of National GAqP vary for each country. Nine countries, except for Lao PDR, formulated National GAqP (or equivalent to it), but four countries including Brunei Darussalam and Cambodia have not operated it yet. GAqP certificate which complies with EU criteria is operated in Myanmar but National GAqP is under formulation. The below table summarizes the status of formulation and operation in each country, including the efforts on GAqP by each country.

Table 31 Current Situation on National GAqP in Each AMS

	Formulation of GAqP	Operation of GAqP	Compliance with ASEAN GAqP
Brunei Darussalam	Done	Not yet	Yes
Cambodia	Done	Not yet	Yes
Indonesia	Done	Operated.	Somehow
Lao PDR	Not yet	Not yet	NA
Malaysia	Done	Operated.	Yes
Myanmar	(GAqP certificate which complies with EU criteria is operated, National GAqP is under formulation)		
Philippines	Done	Not yet	Yes
Singapore	Done	Operated.	Yes
Thailand	Done	Operated.	Yes
Viet Nam	Done	Operated.	Yes

Source: JICA Study Team.

Brunei Darussalam
Department of Fisheries (DOF) formulated “Manual of Brunei Darussalam on Good Aquaculture Practices for Shrimp Farms (Shrimp BGAqP)” in 2016 and “Manual of Brunei Darussalam on Good Aquaculture Practice for Fish Farming (Fish BGAqP)” in 2017. BGAqP was formulated in accordance with the ASEAN GAqP. The operation of the certification system has not started yet. The aquaculture companies do not need to burden the cost to obtain certification and the validity period will be one year.
Cambodia
In Cambodia, Fisheries Administration (FiA) started to formulate GAqP guideline (Cambodia GAqP for Food Fish) from 2012 and completed the formulation in 2015. Currently, it is in the approval process of Ministry. FiA intends to finish the approval process until 2020 and start the operation of GAqP. The check list of the GAqP guideline was developed by support of INFOFISH* in 2017, and ASEAN GAqP guideline was used as reference. In parallel with the formulation of National GAqP, Department of Aquaculture Development of FiA implemented pilot program of GAqP two times.

*INFOFISH is an intergovernmental organization for fishery industry in which 13 countries are participating to share market information and to provide technical advisory services.

Indonesia

In 2004, the document of “Prerequisite requirement shrimp” was formulated. In 2007, “IndoGAP Decree of MMAF 02/2007” based on the “Food Law”, “Food Safety Government Regulation”, “Consumer Protection Law” and “Fisheries Law” was published and the operation of IndoGAP was started. The scope of IndoGAP is only food safety and it does not comply with ASEAN GAqP. The number of aquaculture farms which obtained the certificate is 5592 including group certificate. The certification body of IndoGAP is KKP and there is no accreditation body.

In 2015, the following five GAqP standards were formulated as a National Standard: “Shrimp (SNI 8228.1: 2015)”, “Seaweed (SNI 8228.2: 2015)” “Ornamental fish (SNI 8228.3: 2015)” “Freshwater fish (SNI 8228.4: 2015)” and “Marine fish in cage (SNI 8228.5: 2015).” The preparations towards the operation of new certification scheme are under way, KKP intends to start in September 2019 (as of June 2019). To enhance transparency, the certification body will be a third party. To develop the new scheme, “FAO Technical Guidelines on Aquaculture Certification”, “ASEAN Shrimp Alliance” and “ASEAN GAqP for Food fish” were used as references.

Lao PDR

In Lao PDR, the National GAqP is not formulated. DLF (Department of Livestock and Fisheries) translated ASEAN GAqP guideline into Lao language. It is expected to hold the consultation among the government authorities and private sector to formulate the National GAqP. DLF intends to develop the aquaculture sector and export the fishery products to other ASEAN countries. DLF also recognizes that it is important to formulate National GAqP which complies with ASEAN GAqP for Food Fish.

Malaysia

In Malaysia, “myGAP” which covers agriculture, livestock and fishery sector was formulated. Before the formulation of myGAP, there were three certification schemes: “SALAM” for vegetable and fruit, “SALT” for animal husbandry and “SPLAM” for aquaculture. For the aquaculture, there were two detail standard/certification system on the aquaculture for commercial and the small-scale aquaculture. In August of 2013, Ministry of Agriculture and Agro-based Industry formulated myGAP by combining these three certifications scheme. Although myGAP was integrated, there are separate standards according to the sectors (Crop Sector, Aquaculture Sector, Livestock Sector). For the aquaculture sector, myGAP was revised to comply with ASEAN GAqP in 2017 (MS1998:2017).


The accreditation body of myGAP for aquaculture sector is Department of Standards, and the certification body of myGAP is Fisheries Biosecurity Division of DOF (Department of Fisheries). The auditors are 75 DOF staffs who are approved by DOF. The number of aquaculture farms which obtained the myGAP certification is 415.



Myanmar

At present, Department of Fisheries (DOF) has not formulated National GAqP, but DOF started to operate the certification system of aquaculture production management by reference to the guideline of Thailand DOF from 2011. Then, EU requested for Myanmar to develop the GAqP scheme around 2015. EU sent some experts to Myanmar to implement the GAqP related trainings for DOF staffs in Myanmar. Through these activities, EU requires Myanmar to ensure thorough compliance to EU requirement. In 2015, EU formulated “Technical Regulations for Export and Import of Fishery Products” and Myanmar issues the certificate to the aquaculture farms which satisfy the requirement of “food safety” using “Inspection Checklist for Fish and Fishery Products based on SPS requirements” of above EU Regulation and ASEAN GAqP. Currently, the number of aquaculture farms which had obtained the certificate is eight, and seven farms are in the process of application by DOF.

Now, in the “Myanmar Sustainable Aquaculture Programme (MYSAP)” of EU GIZ, National GAqP is under formulation by reference to the “ASEAN GAqP” and “EU Regulation”. MYSAP is a five-year project from

2018 to 2022 and National GAqP is planned to be developed by 2020.	
Philippines	
<p>In 2014, “Bureau of Fisheries and Aquatic Resources: BFAR” and “Bureau of Agriculture and Fisheries Standards: BAFS” formulated “Code of Good Aquaculture practices (GAqP): (PNS/BAFS 135: 2014)” as a Philippine National Standard (PNS). However, the operation of GAqP has not started yet because “Fishery Administrative Order” does not state the operation of PNS GAqP.</p> <p>Currently, BFAR provides the “Certificate of Registration” for the aquaculture farms which satisfy some parts of requirement of PNS GAqP. As of March 2019, five hundred twenty one aquaculture farms are registered by BFAR. Before the development of PNS GAqP, BFAR already formulated “Good Aquaculture Practice Farmers Guidance Workbook” in the EU project “Trade Related Technical Assistance (TRTA)”. The contents of PNS GAqP comply with the Guidance workbook. In addition, the “ASEAN GAqP for Food Fish”, etc. are utilized as reference documents to formulate PNS GAqP.</p>	
Singapore	
<p>In 2014, “Good Aquaculture Practice for Fish Farming (GAP-FF)” was formulated by Agri-Food and Veterinary Authority of Singapore (Singapore Food Agency: SFA). GAP-FF has not been a group certification system. Four aquaculture farms obtained the GAqP certification as of March of 2019. The validity period is one year. The acquisition expense is 600 SGD and the renewal cost are 300 SGD. The auditors who relates to acquiring and renew of GAqP is three staffs of SFA.</p>	
	
Thailand	
<p>In 1999, DOF in Thailand formulated “DOF Standard” as GAqP system. This standard is called “GAP DOF” and the target fish species are “Shrimp” “Tilapia” and “Other (Fish, Shellfish).” In 2003, National Bureau of Agricultural Commodity and Food Standards (ACFS) was established and “Thai Agriculture Standard” whose accreditation body is ACFS was developed. This standard is called “GAP TAS” in distinction from GAP DOF and its certification bodies are DOF and private sector. The target species of GAP TAS is classified into 13 classifications. Among the 13 classifications, six classifications of GAP TAS comply with ASEAN GAqP (ASEAN Shrimp GAP or ASEAN GAqP for Food Fish). In addition, there are “Q shops” which sell the products obtained GAqP certification.</p>	
Viet Nam	
<p>In 2011, Directorate of Fisheries (D-Fish) formulated “VietGAP (Viet Nam aquaculture practice standard)” targeted to Shrimp and Pangasius. In 2014, VietGAP was revised to comply with ASEAN GAqP and it covers all aquaculture species. The accreditation body is D-Fish and the certification body is third body. Currently, the 10 organizations (including private body and public body) are recognized as a certification body. The aquaculture farms must burden the cost to obtain the VietGAP certification. The cost differs depending on the acreage, the cultured species and the area of aquaculture farm. The maximum validity period is two years, but the period differs depending on the cultured species.</p>	

<Efforts and issues on aquaculture operation by private operators>

Private aquaculture operators in each country establish the production and inspection systems by self-help efforts while maintaining cooperation with fisheries authorities to contribute to the improvement of the quality of fishery products. All private operators selected by fishery authorities for interview survey are considered excellent companies, which make various efforts to consider the natural environment and to improve the labor environment. On the other hand, there are some cases that the potential has not been fully utilized due to the constraints, such as lack of technical capacities even though there are policy tailwinds and much room for market expansion.

<p>Example of Cambodia</p> <p><input type="checkbox"/> Aquaculture producers</p> <p>Family-run aquaculture producers of Pangasius, Tilapia, etc. (2 farmers). These farmers attended a GAqP related lectures and trainings by FiA and have an intention to contribute to quality improvement and to increase in production. However, as a facing issue, these farmers point out that the quality improvement does not lead to selling price.</p>
<p>Example of Lao PDR</p> <p><input type="checkbox"/> Aquaculture producers</p> <p>Family-run aquaculture producer of Tilapia, etc. This farmer has a good relationship with fishery inspection center of DLF and able to obtain information and advices (countermeasures for the generation of ammonia and bacteria, improvement of dysoxic environment, method for coping with water environmental issues). Although its scale is small, the farmer continues to make efforts to expand the business scale while maintaining a relationship with government. The facing challenges are the shortage of human resources and materials.</p>
<p>Example of Malaysia</p> <p><input type="checkbox"/> Aquaculture feed producers</p> <p>It is a multinational company which has FQC (Fish Quality Certificate) issued by the fishery authority. It produces and ships aquaculture feed mainly to the aquaculture companies which produce aquaculture products for export. Based on the production standards and procedures set by its headquarters, the plant in Malaysia ameliorates them and operates. In addition to the promotion of automatization and the environmental considerations, this plant prepares the training sessions for employees in specialized fields.</p>
<p>Example of Myanmar</p> <p><input type="checkbox"/> Aquaculture producers</p> <p>Aquaculture and processing operator which produce soft-shell crab, etc. managed by Chinese owner. All products are for export to Japan, Singapore, Australia, etc. This company obtained the GAqP certificate issued by fishery authority and the export permit to EU, and it can be said that it maintains high management standard on operation. However, the issue is the lack of stock for expanding the export to EU. This company has an intention to expand the production, but it has technical and investment issues.</p>
<p>Example of the Philippines</p> <p><input type="checkbox"/> Milkfish aquaculture operator</p> <p>To maintain high quality standard, the own audit and inspection have been conducted in the group firms. It obtains the “Certificate of Registration” issued by BFAR and it supplies the products to fishery processing firms which export to international market. This company offers the adequate working environment for the staffs who manage aquaculture cages by the labor management system. This aquaculture farm was selected as site of pilot project on GAqP by BFAR and scored high evaluation points.</p> <p><input type="checkbox"/> Shrimp aquaculture/ processing firm</p> <p>This firm satisfies HACCP and EU requirement and exports the products to EU, Japan, Korea, USA, etc. It owns the laboratory and some inspections are conducted in accordance with OIE standard. And the laboratory staffs are trained by consultants who specialize the inspection. In addition to the basic inspections such as water quality, plankton, microscopic organism, etc., PCR and aquatic animal disease inspection have been conducted. Also, it sets the inspection protocols according to the occurrence state of aquatic animal diseases.</p>

< Management system on aquatic animal disease >

In Thailand and Malaysia, the management system for target diseases are set. Each country conducts own efforts on specifying causes and prevention of spread of aquatic animal diseases. In case of Myanmar, it had formulated the relevant regulations on aquatic animal health management and this country strengthens the disease management system by utilizing support by development partners (GIZ-MYSAP project).

Example of Brunei Darussalam
The framework of aquatic animal disease control has been made in accordance with “Fisheries Order 2009” and “The Fisheries (Fish Culture Farms) Regulations, 2002”. The management of aquatic animal disease is described in the Manual of GAQP (Fish/Shrimp) and “Action Plan for Shrimp Disease Occurrences.”
Example of Cambodia
The official list of national target diseases for management is not yet available but the tentative disease list has been established. In the case of a disease outbreak or suspicion, the officers of FiA Cantonment (FiAC) of each province must contact the Aquatic Animal Health officers at national level and send suspected/diseased samples for further diagnosis. The result of disease diagnosis is recorded and reported to provincial officers and the disease management is implemented. However, the effective operation has yet to be reached.
Example of Lao PDR
Basically, the aquatic disease management is conducted in accordance with OIE. However, it is recognized that the high standard of aquatic disease management is not necessary in Lao PDR since the fishery products are produced for domestic market.
Example of Malaysia
Target aquatic disease to manage is set on the “National Control and Eradication Plan”. Aquaculture farmers must report to DOF about the occurrence of aquatic disease listed in OIE list.
Example of Singapore
The framework for aquatic animal disease control is stipulated in “Animal and Bird Act”. Also, the competent authority conducts the inspections on diseases and aquatic animals based on the requirement of export counterpart. Fish farmers are obligated to report any occurrence of mass mortality events or poor production to competent authority. The authority proceeds to an investigation to ascertain the cause.
Example of Thailand
“Animal Epidemic Act B.E. 2558 (2015)” and “Royal Ordinance on Fisheries B.E. 2558 (2015)” are principal legislations on the aquatic animal disease prevention and control measures as well as the import/ export control. In the former legislation, it is described that an owner of animals shall notify a competent official, inspector or veterinarian within twelve hours from the time of acknowledgement of following events; 1) the occurrence of infection or dead by epidemics, 2) the animal sick or dead by unknown cause, 3) the animal sick or dead with same symptoms in the same village or adjacent area for past 7 days.

< Post-harvest processing >

The freshness management of fishery products which have characteristics like the rapid deterioration of freshness is directly linked to the safety of products. The awareness on improvement of post-harvest processing technology has been increasing globally because the needs to demand high quality fishery products has been boosting in recent years. It is a critical issue for both types of countries which produce raw materials, and which procures materials for processing. The dissemination of the freshness keeping technology needs the steady and long efforts such as training and awareness activities for fishery relevant

operators. In the interview survey in main fishery countries such as Thailand and Indonesia, the improvement of post-harvest processing technology was pointed out as a most critical issue to realize the quality improvement.

Processing stage

As a hygiene management process of fishery products on processing stage, there is HACCP which is standardized worldwide. The fishery authorities in several countries tries to maintain the production standard of fishery processing companies which handle the products for international market in accordance with HACCP.

Example of the Philippines
<p>BFAR officers evaluate the processing facilities as inspectors of EU requirement and HACCP certificate inspectors. BFAR regional offices are empowered to certify HACCP. BFAR regional officers evaluate each inspection items as “Minor”, “Major”, “Serious” and “Critical”, and set the period of validity.</p> <p>Also, BFAR regional office implements the training about HACCP and the instruction on method for creating HACCP Plan for the fishery processing factories which supply for domestic market. BFAR intends to improve the quality of products for domestic market.</p>

<Efforts by private processing operators>

Example of Malaysia
<p><input type="checkbox"/> Shrimp/prawn processing factory</p> <p>The products are divided into 2 categories depending on the quality; products for international market and domestic market. The main export destinations are China and Taiwan. When this factory exports the products to China, China requires HACCP certificate and COO (Certificate of Origin). This factory sets various quality management process for exporting products. It conducts the water quality inspection and chemical inspection based on the standards set by own company, in addition, it outsources specific type of analysis to laboratories.</p>
Example of the Philippines
<p><input type="checkbox"/> Processing and Distribution operator of Milkfish</p> <p>It purchases raw materials from local registered aquaculture farms. When it obtains and sustains HACCP certificate, it must pass some audit such as “System audit” and “Compliance audit”. It conducts processing operation under the strict standard while supported by BFAR regional office.</p>

Distribution stage

<Traceability>

To ensure the reliability of fishery products, the efforts on the traceability management in each country have been proceeding. In the Southeast Asian country, there are some countries which implement the advanced traceability management with online systems. Also, SEAFDEC proceeds the traceability on the electronic system as a part of Illegal, Unreported and Unregulated (IUU) fishing countermeasures by developing eACDS (electronic ASEAN Catch Documentation Scheme). On the other hand, although there are some cases that the multiple authorities engage in the fishery traceability systems, the roles of each authority is disordered in one country.

Example of Cambodia
<p>The traceability system of aquaculture products has not been fully developed and the system is scattered within relevant agencies. The record of feed suppliers is managed by GDAHP, that of hatcheries and farms is managed by FiA-DAD and that of processors and distributors is managed by FiA-DFPTQ. DAD and DFPTQ intend to mainstream the traceability system into GAqP and Quality Seal (QS) certification system respectively. The guidelines of both systems are in-place, but the enforcement has not reached.</p> <p>*GDAHP: General Directorate of Animal Health and Production</p> <p>*DAD: Department of Aquaculture Development</p> <p>*DFPTQ: Department of fisheries Post-harvest technologies and Quality control</p>
Example of Malaysia
<p>DOF has been established the traceability system for ornamental and food fish. Its methods are roughly divided into following 4 stages; 1) Use of traceability form, 2) Inspection Prior to Export, 3) Post Import Inspection, 4) Border Inspection. The traceability system on the food processing premise is provided under “Food Hygiene Regulations 2009”. It is stated that “a proprietor, owner or occupier of food premises shall provide a food traceability system in the food premises which able to identify one step back from where the food came and one step forward to where the food went at any specified stage of a food chain from production to distribution (excerpt from answer of questionnaire)”.</p>
Example of the Philippines
<p>“BFAR Administrative Circular No. 251 Series of 2014 (Traceability System for Fish and Fishery Products)” sets the provision and the punishment about traceability. “Fisheries Administrative Order No. 233 (Aquatic Wildlife Conservation)” mandates the issuances of various permits used in traceability such as “Aquatic Wildlife Collector’s Permit (AWCP)”, “Aquatic Wildlife Farm Permit (AWFP)”, “Aquatic Wildlife Special Use Permit (AWSUP)” and “Local Transport Permit (LTP)”. Especially, LTP issued by BFAR is recognized to be an essential risk management tool which realize the identification of problems on each stage of supply chain and the quick information dissemination for relevant persons.</p>
Example of Thailand
<p>The relevant regulations about traceability of fishery products are described on the “Royal Ordinance on Fisheries B.E. 2558 (2015)”. The method of effective monitoring, surveillance and control on fishing activities and the operative provisions for effective traceability from fishing activity to consumers are prescribed. As evidence documents which realize the food safety and traceability, there are MD (Movement Document), APD (Aquatic Animal Purchasing Document) and MCPD (Marine Catch Purchasing Document). The online management is being pushed.</p>

Export/import and Quarantine stage, etc.

<Export/import inspection>

Each section of fishery authority takes a role and manages about the issuance of relevant documents (hygiene health certification, etc.), the inspection mechanism of fishery processing facilities, the quarantine and the quality inspection mechanisms, etc. to manage the fishery export/import. Ministry of Health and Ministry of Commerce have a part of above function in some countries. The operation mechanism differs by countries. In advanced countries, the online system has been introduced for the document inspection. For example, the online document inspection system has been established in Brunei Darussalam. All importers and/or exporters of fish and fishery products should be registered as a user of “Brunei Darussalam National Single Window (BDNSW)” In Thailand, the issuance of permits on export/import of fishery products and the control and audit of export/import are implemented using Fisheries Single Window (FSW) which followed

National Single Window (NSW) utilized by Ministry of Finance. On the other hand, fishery authority in Myanmar recognizes that the inspection mechanism of importation is vulnerable compared with export management. In addition, Cambodia and Lao PDR have the issues on the practical operation of inspections even though these countries have established the inspection mechanism institutionally.

Example of Cambodia
The export/ import management mechanism (issuing system of necessary document) is established. However, it is recognized that there is still room for improvement on the formulation of national mechanisms and Standard Operating Procedure (SOP) for health inspection and the mechanism of quarantine facilities/ premises and aquatic animal health inspection. The awareness to follow laws and regulations on aquatic animal health management has not been raised. In addition, these rules have not been performed strictly since the motivations and incentives to comply with them are low. Also, there are some other issues such as “the fishery officers and aquaculture operators do not acquire the knowledge and skills of SPS”, “the lack of facilities and laboratories to perform diagnosis related to SPS”, etc.
Example of Lao PDR
Lao PDR imports many fishery products from China, Viet Nam and Thailand. The import procedures and import systems have been established but the inspection mechanisms do not function practically. About the export, the comprehensive procedures on export have not been established/ operated because the quantity of exportation is not large.
Example of Malaysia
In the “Malaysian Quarantine and Inspection Services Act 2011 (Act 728)”, it is described that any importation or exportation of fish or fish product shall comply with any import or export conditions as specified in the permit, licenses or certificate. In the SOP of MAQIS (Malaysia Agriculture Quarantine and Inspection Services Department), the inspection procedures and requirement of export/import of fishery products are stated as followings, 1) Declaration of Customs, 2) Declaration by agent/exporter to MAQIS officer at entry point, 3) Documents checking by MAQIS officer, 4) (Import/export conditions stated in the permit must be complied by importers/exporters), 5) Physical inspection by MAQIS officer, 6) Sampling procedure by MAQIS officer based on import/export conditions or any SOP, 7) Collection of inspection fees, 8) Record and release of consignment.
Example of the Philippines
“Fisheries Inspection Section”, “Fisheries Quarantine Section”, “Fisheries Certification Section” and “Fisheries Audit Section” take a role in the export/import inspection and management. As a basic export management steps, the inspection mechanism and registration/ certification systems from capture/ harvest stage to border inspection stage are set. The regulations and rules on the requirement of export/ import are revised as necessary.
Example of Singapore
Importers and exporters of fish and fishery products are requested to acquire the “SFA license”. In case of importation, operators must obtain import permit from SFA, and in case of exportation, operators must obtain export health certification. Also, there are specific restrictions on importation such as “import of chilled shucked raw oyster is prohibited”, “live oysters may only be imported from countries that meet SFA’s requirements for a shellfish sanitation programme”.
Example of Viet Nam
“Circular 26/2016/TT-BNNPTNT” stipulates relevant provisions on fishery export and import. And, the procedures of pre-export inspection and certification for fishery products are described on the “Circular 48/2013/TT-BNNPTNT of 12 November 2013”. Also, the procedures of importation are described on the “Decree 15/2018/NDCP” and “Circular 36/2018/TT-BNNPTNT”. DAH (Department of Animal Health) and NAFIQAD (National Agro-Forestry-Fisheries Quality Assurance Department) implement the export/import

management by type of products.

<Case examples, issues and needs>

Example of Cambodia

When the fishery products are exported to Viet Nam and Thailand by land, followings are recognized as issues: “the lack of inspection mechanism” and “lack of inspection facilities in local areas along the border”.

Example of Myanmar

EU removed the economic sanctions in 2013 and US removed it in 2016, and the export environment of fishery products was changed. In addition, EU allowed Myanmar to export aquaculture products to EU from May 2019. 23 fishery processors are permitted to export the products to EU. The interest from foreign countries is high, especially for Vannamei, Tilapia and Soft-shell crab. Private fishery companies in Myanmar also intend to expand the export, however there are some issues to be overcome such as; the promotion of aquaculture technology to increase the production amount for satisfying the demand. As well as, it is recognized that the followings are important; the technology improvement on production, aquatic animal disease prevention, production of feed for aquaculture, value-addition, etc. and the attracting of investment.

<Inspection in laboratory>

Several countries set up the fishery laboratory under the fishery authorities. The research, inspection, risk assessment, etc. has been implementing.

□ Inspection system of laboratory

Advanced countries such as Thailand, Singapore, Malaysia, etc. own the laboratory which covers necessary inspection items and the staffs with expertise implement each inspection. Although some countries have national laboratories which obtained ISO/IEC 17025 for specific parameter, some countries like Lao PDR operate under the vulnerable inspection mechanism. These countries show the support needs on both in terms of hardware and software. The state of implementation of capacity building for laboratory staffs differs by countries, some countries establish the training system in their countries and some countries receive the support from development partners.

Example of Indonesia

FQI SEL (Fish Quarantine Inspection Standard Examination Laboratory) of KKP obtained ISO/IEC 17025 and implements the aquatic animal disease control of domestic based on the inspections and systems which complies with OIE standard. The operation of SIMSON (Information system of standard methods online) which enables national laboratories to utilize the aquatic disease diagnostic standard via online is proceeded. The opportunities of capacity building for laboratory staffs are provided well. As well as, the collaborative trainings with other countries and the training supports to other counties are also implemented.

Example of Lao PDR

The issues are the lack of laboratory staffs with specialized abilities and the vulnerability of inspection mechanism of laboratory. Also, it can be said that the environment of laboratory is not developed because the introduction of inspection equipment is not enough. Although Hungary and Japan continue the support for the laboratories on water quality inspection, quality inspection of aquaculture feeds, aquatic animal diseases inspection, the needs on dispatch of experts and provision of training by development partners are high. The importance of fishery sector in domestic industry is recognized low and the supports by government is insufficient.

Example of Malaysia

<p>“Fisheries Biosecurity Centre Kuala Lumpur” is one of six centers under the DOF and it consist of five laboratories such as microbiology laboratory, molecular biology laboratory, pesticide laboratory, etc. This center obtains the MS ISO/IEC 17025 in five scopes (other five centers also obtain ISO/IEC 17025). There is enough government budget and it is possible to procure the necessary laboratory equipment. Also, the government offers extensive education system. The relevant trainings such as aquatic animal health, export/import requirement, audit, record management, biotoxin analysis, other biosecurity items, etc. are prepared.</p>
<p>Example of Myanmar</p>
<p>“Aquatic Animal Health and Disease Control Section” of DOF and “Analytical Laboratory unit” under “Quality Control and Research Section” take a role of aquatic animal disease inspection and sample inspection of fishery trade products. It is recognized that there is room for improvement on the implementation mechanism of import inspection compared with export. There is strong relationship with EU and Thailand, Myanmar receives the support such as training program from these countries.</p>
<p>Example of the Philippines</p>
<p>The inspection on water quality of local aquaculture farms and aquatic animal diseases is implemented in the laboratories of regional office of BFAR. In case of that BFAR does not have function of some disease inspections (both central and region), BFAR outsources inspection to private foreign laboratories. BFAR shows high needs on the training for laboratory staffs of BFAR.</p>
<p>Example of Thailand</p>
<p>Aquatic Animal Health Research and Development Division (AAHRDD) under DOF is a competent organization for the research on aquatic animal health and disease control, the monitoring of drugs and chemicals used in aquatic animals, the diagnosis of aquatic animal health, the issuance of aquatic animal health certificate, etc. AAHRDD consists of eight laboratories (parasitic disease laboratory, bacteriological laboratory, mycological laboratory, histopathological laboratory, pharmacological laboratory, virological laboratory, molecular biological laboratory, aquatic animal wet laboratory). Bacteriological laboratory has ISO/IEC 17025.</p>

□ Risk management

As a hazard of fishery products, heavy metals, natural toxin, residual chemicals, parasitic organism, etc. are recognized in general. Each country manages these hazards based on their own institutions. Some countries established the expert committee on risk management, and the measures on invasion preventing and the response to occurrences of aquatic animal disease are taken by collaboration with relevant organizations and universities. Also, there is ASEAN Risk Assessment Centre for Food Safety (ARAC) which coordinates the risk analysis for the food safety in ASEAN.

<p>Example of Brunei Darussalam</p>
<p>Department of Fisheries has setup an “Aquatic Animal Health Service Centre Laboratory” composed of experienced officers in aquatic animal disease control. And Department of Scientific Laboratory, Ministry of Health conducts the food safety parameter analysis, which consist of chemistry analysis and microbiology analysis.</p>
<p>Example of Cambodia</p>
<p>FiA conducted “fishery value chain assessment” in 2017 and UNIDO conducted “Value Chain assessment of marine fisheries” in 2013, but the risk assessment has never been conducted. FiA has a plan to conduct a comprehensive risk assessment under the program by EU from 2019 to 2020. Consequently, the official committees will be established. FiA focuses on the monitoring of the transboundary diseases listed in OIE</p>
<p>Example of Malaysia</p>
<p>Inspections and analysis for target substances are conducted in the national monitoring program. Technical Committee for the export control of fish and fishery products are chaired by Ministry of Health (MOH), and the members are the representatives of</p>

MOH, DOF, MAQIS, LKIM (Lembaga Kemajuan Ikan Malaysia: Fisheries Development Authority of Malaysia), etc. The committees have been conducted at central and state level.
Example of Myanmar
DOF decides the risk category based on the Hazard Plan and assesses the risk tolerance and seriousness of risk.
Example of the Philippines
The risk management of food is addressed in conformity with “Codex Alimentarius Commission” and that of aquatic animal disease is addressed in conformity with OIE standard. The list of substances monitored (Organochlorines, heavy metals, dyes, etc.) is indicated in the “National Residue Monitoring Program”. BFAR has been established the consultation to discuss about risk management with universities, experts, research institutions. This consultation is not permanent conference but BFAR convenes the members depends on the case of occurrences of disease. Also, the red tide monitoring in shellfish growing areas has been implemented.
Example of Thailand
In accordance with “Animal Epidemic Act”, the official committee on risk management is established. The Chairperson is Deputy DG of DOF, and the members are management position and/or experts of relevant division such as Fish Quarantine and Inspection Division and Aquatic Animal Health Research Center. DOF established “early warning system” and lets staffs attend to the relevant meetings and workshops to obtain the knowledge of new disease and information of diseases detected abroad. In addition, as an “early detection system”, DOF conducts the training course for aquaculture farms, traders and DOF staffs to have them recognize the signs of national-listed aquatic animal disease, emerging disease, unexplained mortality, etc.

3.3.4 Analysis and Common Issues for ASEAN

The following priority issues and support needs were confirmed through the field survey and interview survey.

(1) Evaluation, Analysis and Information Sharing on GAqP Operations and Systems of Each Country are Insufficient

Each country promotes the establishment of National GAqP systems (formulation and operation) which complies with ASEAN GAqP. Currently, the status of formulation and operation vary for each country and the systems of operation and certificate systems are established based on the own policies. Although the regular/irregular meetings related to GAqP are held, it was revealed that each country only has fragmentary information about the operation status and system on National GAqP of other countries.

As the countermeasures against transboundary aquatic disease on a regional scale, the technical consultation has been implemented. But practically, the access to information on aquatic animal diseases which occurs in other countries is limited.

(2) Ability of GAqP Auditors Differs by Country

Although almost all AMS formulated National GAqP which complies with ASEAN GAqP, the status of operation varies for each country. In one instance, the establishment situation of accreditation body and certification body differs by countries. Some countries set up a third-party body as certification body, on the other hand, the officers of fishery authority take a role of GAqP auditor in some countries. In addition to such situation, the trainings for auditors have not been implemented well in some countries due to the vulnerability of policies and systems. Consequently, it is considered that the ability of GAqP auditors differs by country.

(3) Evaluations and Analysis of Systems Related to “SPS in fisheries” of Each Country are Insufficient

Through the interview survey, some issues such as “there is no information about systems and implementation mechanism of other countries”, “it is not able to grasp the degree of own system compared to other countries”, etc. were revealed. It is considered that these issues consist of two factors; 1) there is no system which evaluate each country horizontally, 2) the information sharing is insufficient. The fact is that each country implements the fishery related production, management, distribution, quarantine and export/import based on the rules of each country in compliance with international rules.

(4) Inspection Systems at each Point on Supply Chain Differs by Country

The status of development on "SPS in fisheries" related inspection system (especially laboratory inspection mechanism, quarantine mechanism and export/import system) differs by each country. It is recognized that Singapore, Thailand, Malaysia, Indonesia, Brunei Darussalam and Viet Nam implement relevant efforts under relatively high standard. The Philippines and Myanmar follow above group and Cambodia and Lao PDR have comparatively weak development status.

Also, each country has different situation on fishery traceability such as “some countries digitize the records”, “some use paper-based records”, “some do not establish and/or operate the record mechanism”, etc. The way of intervention by fishery authorities at each point of supply chain differs by countries. It is not operated by unified rule. Especially, it is recognized that the traceability system of capture fishery is insufficient.

(5) Method on Post-harvest Fish Handling by Fishery Operators is not Well Managed.

Regarding quality management of fishery products, there is common issue that the technology on post-harvest fish handling about capture fisheries is immature. Although GAqP, etc. ensure a certain degree of management on aquaculture, it is recognized that the quality management of capture fishery is insufficient. Because the post-harvest processing is an important stage which effects on the following all stages on supply chain, the improvement on post-harvest processing technology is recognized to be necessity.

(6) It is Difficult to Grasp the Export/Import Systems of Each Country from Other Countries.

Each country has established the original export/import and quarantine systems based on their own laws and regulations. From the viewpoint of importing countries, the point that it is difficult to obtain information about the quarantine mechanism and the inspection ability of laboratory of exporting countries was raised. On the other hand, from the viewpoint of exporting countries, some issues which arose by the lack of information sharing and the one-sided change of import requirement by importing countries were pointed out. The access to the information about export/import systems, quarantine systems and laboratory inspection mechanisms is limited and the information sharing to confirm the safety of fishery products from other countries is insufficient.

3.4 Regional Food Cluster

3.4.1 ASEAN Policies, Plans and Status

(1) Policies and Plans

Although some AMSs are applying cluster development policy, ASEC has not introduced a cluster development policy as far as the food value chain is concerned.

(2) Status

Currently, there is no regional cluster development activity.

3.4.2 Situations of Cluster Development in AMSs

(1) Definition of Cluster Development by UNIDO

United Nations Industrial Development Organization (UNIDO) defined cluster as “geographical concentrations of inter-connected enterprises and associated institutions that face common challenges and opportunities³⁹”. There are two essential features of clusters, as shown below.

- Clusters consist of a critical mass of enterprises located in geographical proximity to each other.
- Enterprises within clusters share many common features.

(2) Cluster Development by AMSs

Situations of cluster development in AMSs on food value chain development were surveyed. It was found that the concept of cluster development differs from AMS to AMS. Situations of cluster development in each country are shown in the table below.

Table 32 Situations of Cluster Development in AMSs on Food Value Chain Development

AMS	Situations of Cluster Development
Brunei Darussalam	Based on the government policies, five clusters are focused. These are 1) Halal, 2) Business marketing support (for SME), 3) High technology, 4) Tourism, and 5) Downstream industries of oil and gas. In this case, cluster means sector or field. The government is under preparation of the “industry road map”. Related issues of FVC such as halal, supply chain, global value chain will be parts of the road map.
Cambodia	There is no cluster development policy in Cambodia, but the term “cluster” is being used when the government supports farmers to sell their products collectively. Cluster, which consists of farmer group and buyer, is a mechanism to encourage farmers towards group selling. Cluster related activities are recognized as one of the activities under agricultural cooperative law in Cambodia. Clusters are formed mainly for export-oriented crops such as mango, banana, vegetable, rice, maize, soybean, etc. according to the General Directorate of Agriculture, MAFF in Cambodia.
Indonesia	As far as agriculture and agro-processing concerned, “cluster” means a producer group. JICA have implemented a cluster development project for industrial sector but not for agriculture.
Lao PDR	There is no cluster development policy in Lao PDR. The term “cluster” is not being used by the MAF. Although the MAF is currently working on similar activities with Cambodia and Myanmar which they are calling as “cluster”, the MAF is not calling such activities as “cluster”.
Malaysia	The Government has been developed “Halal Cluster” as a mechanism to promote Halal-related economic activities. The cluster is not commodity-based but a kind of forum for networking of business operators who are interested in Halal business. It could be said that it is a theme-specific cluster. HDC is playing central role of the Halal Cluster and there are several Halal activities related government agencies at state level, such as Penang International Halal Hub (PIHH). PIHH is an organization of state Government of Penang. It is actively working for providing information on Halal Park (a kind of industrial park for Halal business operators) to business operators.
Myanmar	There is no cluster development policy in Myanmar, but the term “cluster” is being used when the government

³⁹ United Nations Industrial Development Organization. ” The UNIDO Approach to Cluster Development.” UNIDO, 2013.

	supports farmers to sell their products collectively. There are several commodity-based clusters in Myanmar, such as coffee cluster and mango cluster. Most of them are community-based activities, according to the Department of Planning, MOALI. Especially, Value Chains for Rural Development Project funded by USAID is actively working for forming clusters for soybean, coffee, etc.
Philippines	The National Industry Cluster Capacity Enhancement Project (NICCEP) supported by JICA developed coffee, cacao and banana clusters. In those clusters, crops are collected from small producers and exported. In this case, cluster means a group of farmers to sell products collectively.
Singapore	Cluster development is not applied as a policy. However, the term “cluster” is used when SFA works with producers and traders on certain issues. It is similar with Theme-Specific Cluster, but topics are based on commodity. Definition of cluster in Singapore is in the middle of Theme-Specific Cluster and Commodity-Based Cluster but it is more similar to Theme-Specific Cluster.
Thailand	Thailand introduced cluster development policy for industry development in 2015. For agro-processing cluster, commodities and areas which already had certain level of industry accumulation were selected. The clusters were commodity-based. A purpose of cluster formulation is to develop innovative products, so that participation of research institute was one of the criteria to be selected as an industrial cluster. As a result, five clusters with various types of target crops were selected. However, the policy was terminated in 2016 without visible results on the ground.
Viet Nam	There is no cluster development policy in Viet Nam. The term “cluster” is not being used by MARD. Although MARD is currently working hard on similar activities with Cambodia and Myanmar which they are calling as “cluster”, MARD is not calling such activities as “cluster”.

Source: The JICA Study Team

(3) Grouping of Cluster Development Definitions

As far as food value chain development is concerned, the definitions of cluster development by AMSs could be classified into the following three types.

1) Commodity-Based Cluster (Type-1: Food Industry Development)

Cluster development policy had been introduced in Thailand in 2015. The definition of “cluster” was the same as that of UNIDO in this case. Clusters were formed based on commodity, and the importance of developing innovative products through intensive communication among stakeholders, including research institutes, is stressed. However, Thailand had canceled the cluster development policy in 2016. According to the Thai Government, the impact of the cluster development was limited as it was canceled only after one year.

2) Commodity-Based Cluster (Type-2: Group Selling)

Cluster development is not adopted in Cambodia and Myanmar as a development policy. However, the term “cluster” is commonly used when the government supports farmers to sell their certain products collectively, especially for export. “Cluster” in those countries is a commodity-based group selling mechanism between farmers and buyers. In Cambodia, a cluster is a community and farmer-based activity forming a part of farmer cooperative activities. It is not an activity of enterprises nor industry development policy. The situation is similar in Myanmar.

3) Theme-Specific Cluster

Malaysia and Brunei Darussalam have been applying “Halal Cluster” as one of the development policies. It is not a commodity-based cluster but a theme-specific cluster. Although it is named as a cluster, geographical proximity is not required in Halal Cluster, according to Halal Development Corporation of Malaysia. A cluster is a group of people who are dealing with halal business. It could be said that a theme-specific cluster is a platform or forum of stakeholders.

(4) Summary of Results

The table below shows the summary of the results. The definition of a cluster in Singapore is in the middle of Theme-Specific Cluster and Commodity-Based Cluster (Type-1), but it is more similar to Theme-Specific Cluster.

Table 33 Classification of Definitions of Cluster Development in AMSs on Food Value Chain Development

AMS	Commodity-Based Cluster		Theme-Specific Cluster	No Application
	Type-1 (Food Industry Development)	Type-2 (Group Selling)		
Brunei Darussalam	-	-	√ (Halal)	-
Cambodia	-	√	-	-
Indonesia	-	√		
Lao PDR	-	-	-	√
Malaysia	-	-	√ (Halal)	-
Myanmar	-	√	-	-
Philippines	-	√	-	-
Singapore	√ (middle of Commodity-Based Type-1 and Theme-Specific but close to Theme-Specific)		√ (same as the left)	
Thailand	(√) passingly introduced but cancelled	-	-	√
Viet Nam	-	-	-	√

Note: √: applicable. Source: The JICA Study Team

3.4.3 Analysis of Regional Cluster Development and Common Issues for ASEAN

(1) Concept of Regional Cluster Development

The purpose of this study is to analyze the potential of establishing “regional cluster development” in ASEAN. Although the term “cluster” is commonly used in some AMSs, the term “regional cluster” is new for all the AMSs. The concept of the regional cluster development is to expand domestic cluster development up to the ASEAN level. In other words, a regional cluster can be defined as an international cluster implemented among several ASEAN member countries. The following two types of regional clusters can be considered.

1) Commodity-Based Regional Cluster

The basic idea of the commodity-based regional cluster is to connect a commodity-based cluster in some country with a commodity-based cluster in another country for value addition. Those two types of clusters must handle the same commodity. It should be noted that one of the important features of cluster development, which is geographical proximity, is not considered in “regional cluster” as it is physically impossible.

2) Theme-Specific Regional Cluster

The idea of the theme-specific regional cluster is rather simple. It is an international group of theme-specific clusters dealing with the same topic in several countries.

(2) Potential Analysis of Commodity-Based Regional Cluster Development

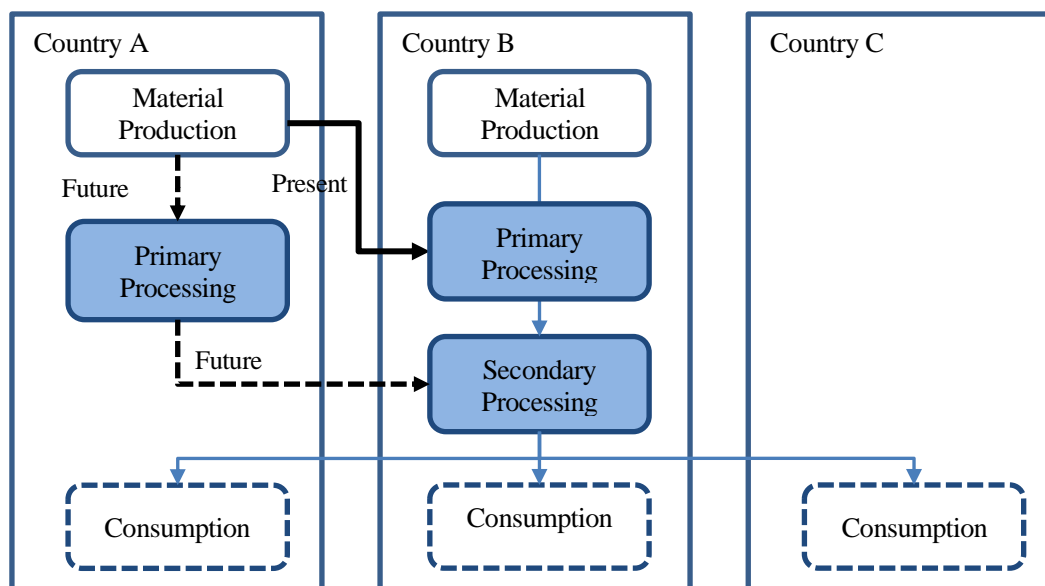
Four models of commodity-based regional cluster development were developed. The advantages and disadvantages of those models were discussed with AMSs during the study.

1) Agro-Processing with Domestically Available Material (Model-A)

a) Definition

Model-A is a model for an AMS with a strong agro-processing industry (importing country: Country B in the figure below) to expand its business by importing raw materials or primarily processed material from other AMS for secondary agro-processing and final products. Normally, agro-processing industries are processing agricultural products that are locally available. Processing local agricultural products might be the top priority for the agro-processing industry, but the industry can increase output by processing additional imported material. Processed products could be exported to another country (Country C). The benefit of the other AMS, which exports the raw material (exporting country: Country A), is primarily to increase export to other AMSs. Value addition is possible for Country A by applying primary processing before exporting the product. The conceptual framework of Model-A is illustrated in the figure below. The characteristics of suitable crops for Model-A are as follows.

- i. suitable for agro-processing
- ii. processing requires high-tech (i.e. it is difficult for the exporting country to produce a final product)
- iii. tolerable for long time international transport
- iv. segment of related industries has a certain scale (otherwise, one or both of the countries are not interested in forming the cluster)



Source: The JICA Study Team

Figure 20 Commodity-Based Regional Cluster (Model-A)
Agro-Processing with Domestically Available Material
(import for business expansion)

b) Crop for Case Study

Cassava was selected as a crop for the case study.

Currently, Thailand is the biggest producer of cassava and the major place of cassava processing in ASEAN. It corresponds to “Country B” in Figure 20. Recently, cassava export from Cambodia and Lao PDR to Thailand with minimum processing is increasing. Cambodia and Lao PDR fall into “Country A” in the said figure. The major destination of the most important product of cassava, which is cassava starch, for Thailand is China. “Country C” in the said figure must be China.

The basic idea is to strengthen the connection between the Type-2 commodity-based cluster (group selling) in Cambodia or Lao PDR with Type-1 commodity-based cluster (industry development) in Thailand.

c) Food Value Chain Analysis

The general flow of cassava from Cambodia to Thailand could be summarized as the figure below. It presents the cassava value chain focusing on cross-border trade from Cambodia to Thailand^{40, 41}.

d) Business Environment of Private Stakeholders

Nakhon Ratchasima is a center of the cassava industry in Thailand. The JICA Study Team visited a cassava processing company at Nakhon Ratchasima to understand the business environment of the Thai cassava industry. The interview was attended by the North Eastern Tapioca Trade Association, which is a cassava industry group.

i) Transport and Infrastructure

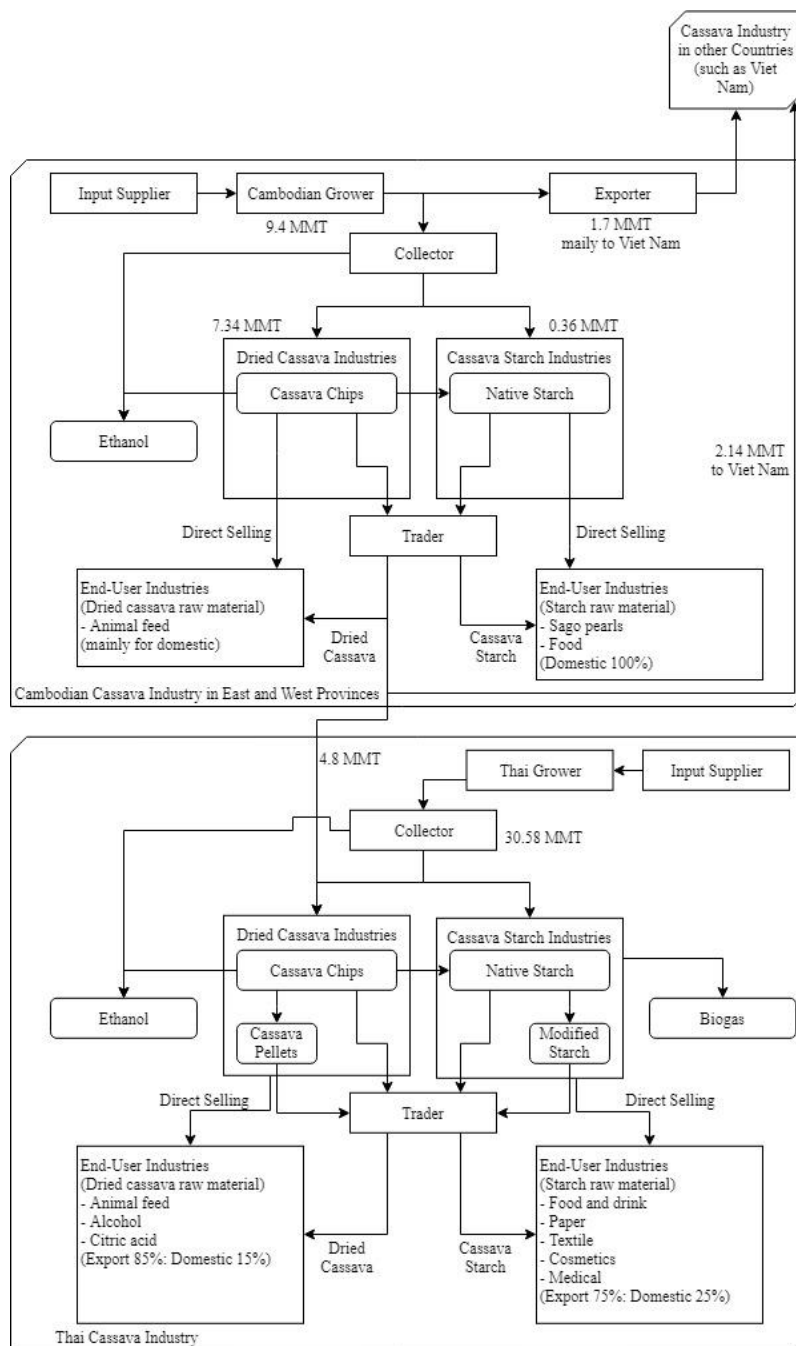
Currently, the Southern Economic Corridor is a major route of transporting cassava from Cambodia to Thailand. Cassava products are exported from the Laem Chabang port. According to the cassava processing company and North Eastern Tapioca Trade Association, there is no infrastructure-related problem on the Thai side. For the Cambodian side, identifying an appropriate exit port is an issue. The feasibility of exporting Cambodian cassava products from Cambodian Sihanoukville port was studied by UNDP Cambodia⁴². The study concluded that the shipping of cassava products from Sihanoukville is not very feasible for the western provinces of Cambodia. It is mainly due to their geographical location, which is closer to the Leam Chabang port than Sihanoukville. In addition, since keeping good trade relations with Thailand is important for cassava farmers in the western Cambodia⁴³, Leam Chabang port in Thailand is the most appropriate exit for cassava products produced in western Cambodia.

⁴⁰ Chetchuda Chuasuwan. “Thailand Industry Outlook 2018-20, Cassava Industry.” Krungsri Research, 2018.

⁴¹ UNDP Cambodia. “A Study of the Value Chains for Cassava in Cambodia; Main Report (draft)”. UNDP Cambodia, 2016.

⁴² UNDP Cambodia. “A Study of the Value Chains for Cassava in Cambodia; Main Report (draft)”. UNDP Cambodia, 2016.

⁴³ According to UNDP Cambodia, the eastern cassava producing provinces of Cambodia dealing cassava products with Viet Nam could consider changing the main exit port from Ho Chi Minh to Sihanoukville. Investment in Sihanoukville port could assist this strategy.



Note: MMT (Million Metric Ton of roots)

Source: The JICA Study Team based on “Thailand Industry Outlook 2018-20, Cassava Industry” (Chetchuda Chuasuwan) and “A Study of the Value Chains for Cassava in Cambodia” (UNDP Cambodia)

Figure 21 Value Chain of Cassava Focusing On Cross-Border Trade from Cambodia to Thailand

ii) Others

See the following interview results.

Box 1	Situation of cassava industry in Thailand
(Interview with a cassava processing company in Nakhon Ratchasima Province)	
<ol style="list-style-type: none">1) The company was established in 1974. Currently, there is about 800 number of staff.2) Cassava market is "high demand" but "high competition". There are about 20 cassava processing factories around the area.3) Farmers in the area are producing cassava, sugar cane, corn and rice. Farmers analyze price of crops and decide which crop they are going to cultivate. When price of cassava is low, cassava processing companies face difficulty since number of farmers who cultivate cassava decreases.4) Farmers can sell their products (cassava) to any processing companies. There is no contract farming system. It is important for processing company to present favorable conditions to farmer, otherwise farmers would sell their products to other companies.5) About 10% of cassava are being imported from Cambodia. Documentation and disease control are the major constraints in importing cassava from Cambodia. Price of Cambodian cassava is lower than Thai cassava.6) The company is not interested in importing more amount of Cambodian cassava. There is no plan of business expansion.7) The company is interested in purchasing cassava from Thai farmers. It is very important to protect Thai farmers. It is important to improve productivity of cassava, so that farmers can cultivate cassava but not sugar cane or corn. The company is providing technical supports to cassava farmers by establishing demo farm and collaborating with universities.8) The company is not dealing with cassava chips and pellets.9) The company is not having problems on land, fund, electricity, water supply, waste management, import, export. Only the difficulties are collecting cassava from Thai farmers and unstable exchange rate of foreign currency.10) The company is generating electricity from biomass (cassava waste) and selling it to the government.11) The company is interested in working with Japanese partners to improve cassava productivity in Thailand.12) Thai farmers are aging but their agriculture has not been mechanized. It is good if Japanese private partners can develop appropriate machines for cassava cultivation.13) The company is providing various types of training programs for its staff. However, it is possible to improve the program more and more. It is good if the company can work with Japanese private partners to develop human resources in the private sector (not only the government staff). <p>Note: The interview was attended by the North Eastern Tapioca Trade Association. It was confirmed by the association that most of cassava processing companies are having same view with the company.</p>	

e) Discussions and Opinions of Stakeholders

i) Government in exporting country (Country A: Cambodia)

An intensive discussion was made with officials from the following departments of the Cambodian Ministry of Agriculture, Forestry and Fisheries (MAFF in Cambodia) during the study.

- Department of International Cooperation
- Department of Horticulture and Subsidiary Crops, General Directorate of Agriculture
- Department of Industrial Crops, General Directorate of Agriculture
- Department of Agro-Industry

The policy of Cambodia is to increase the export of processed products via enhancing the domestic value addition. Cambodia is aiming at producing final products (value-added products), such as cassava starch, in Cambodia rather than only exporting raw material or primarily processed products to be further processed in exporting countries. Although Cambodia is currently exporting cassava to Thailand as raw materials, the

Government is planning to enhance the value addition within the country, according to the MAFF officials. In this regard, it was mentioned that the concept of the Model-A regional cluster might not correspond to the government policy.

ii) Government in importing country (Country B: Thailand)

According to the interview, it was found that the concept of the Model A regional cluster may raise some concerns on the relations with domestic producers.

iii) Processing company in importing country (Country B: Thailand)

According to the companies interviewed, many processing companies mentioned that it is important for the companies to work closely with local Thai farmers. According to the North Eastern Tapioca Trade Association, most of cassava processing companies in the region do not have plans to expand their cassava processing businesses and most of them do not intend to import additional cassava from Cambodia, showing low interests in establishing a commodity-based regional cluster.

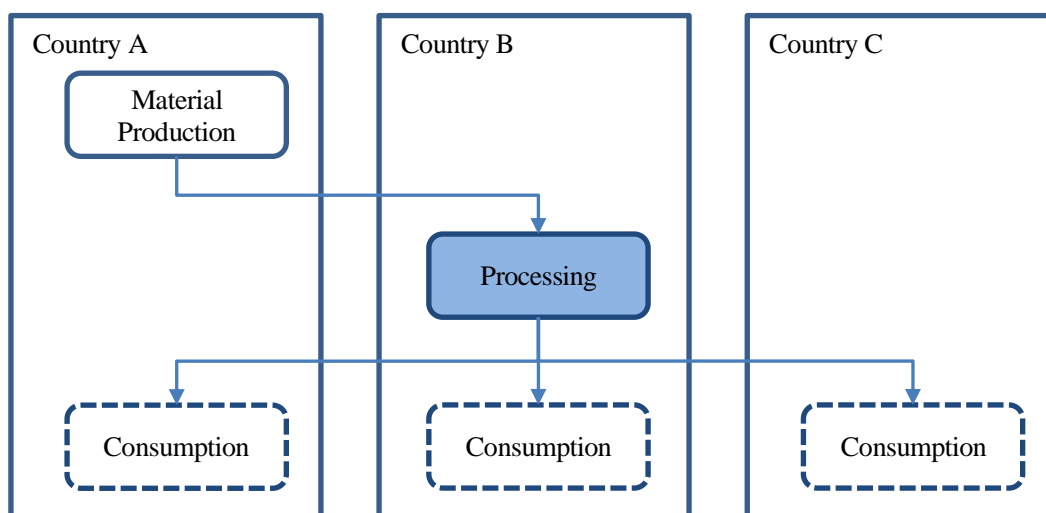
iv) Other governments

Opinions of the Myanmar, Viet Nam and Lao government officials were the same with those of the Cambodian Government. Some concerns were raised that the concept may not correspond to the government policies.

2) Agro-Processing with Domestically Non-Available Material (Model-B)

a) Definition

Model-B is a cluster which processing companies use raw materials not domestically available. Characteristics of suitable crops for Model-B must be the same as Model-A. The difference between Model-A is that Country B is not producing material in the country. It is not necessary for the government or industry in Country B to protect local farmers since no farmers are producing raw materials in the country. The conceptual framework of Model-B is illustrated in the figure below.



Source: The JICA Study Team

**Figure 22 Commodity-Based Regional Cluster (Model-B)
Agro-Processing with Domestically Non-Available Material
(import for material procurement)**

b) Crop for Case Study

The strawberry was selected by Cambodia for the Model-B case study.

It was difficult to identify appropriate crop for case study of Model-B. Natural conditions of AMSs are similar, and AMSs are producing similar types of crops. The agro-processing industry is normally situated near the agricultural production areas. However, there are some special products which are almost not produced in a country. There are a few products that are suitable for Model-B. For example, strawberry is a type of such product, according to MAFF officials. Cambodia corresponds to “Country-B” of the figure above.

c) Discussions and Opinions of Stakeholders

i) Government in importing country (Country-B: Cambodia)

A discussion was held with officials from the following organizations of MAFF in Cambodia by several separate sessions.

- Department of International Cooperation
- Department of Horticulture and Subsidiary Crops, General Directorate of Agriculture
- Department of Industrial Crops, General Directorate of Agriculture
- Department of Agro-Industry

It was confirmed that establishing a regional cluster with Model-B crops, such as strawberry, will not harm Cambodia. However, the scale of business is not big enough to form a specific cluster. The demand for the Model-B crops is limited.

ii) Other governments

Additional discussions were held with officials of the Ministry of Agriculture and Agro-based Industry in Malaysia. Malaysia is importing coffee beans from Indonesia for processing (roasting) and exporting them

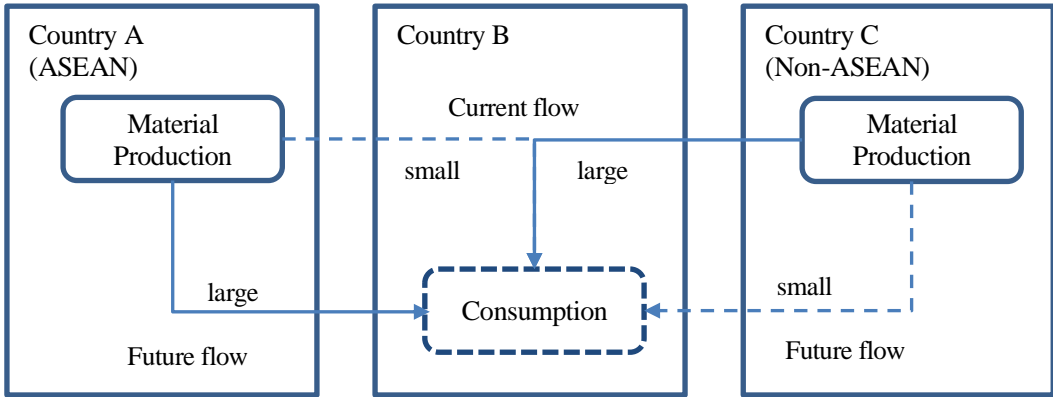
after roasting. As the coffee production in Malaysia is currently limited, it could be a good product for Model-B regional cluster for Malaysia. However, Malaysian government officials mentioned that the roles of the ministry are unclear and/or limited in this model, since no Malaysian farmers could get involved in Model-B regional cluster.

Results of discussion in Cambodia and Malaysia were shared with officials of the Ministry of Agriculture, Livestock and Irrigation of Myanmar, and similar opinion was shared from Myanmar officials.

3) Replacing Non-ASEAN Import with ASEAN Import (Model-C)

a) Definition

Model-C is a cluster aiming at replacing Non-ASEAN products with ASEAN products. Some crops are imported from both ASEAN country and Non-ASEAN country. If ASEAN products can replace Non-ASEAN products, the benefits of ASEAN could be conceptually increased. The conceptual framework of Model-C is illustrated in the figure below.



Source: The JICA Study Team

**Figure 23 Commodity-Based Regional Cluster (Model-C)
Replacing Non-ASEAN Import with ASEAN Import
(import for ASEAN solidarity)**

b) Crop for Case Study

The apple was selected by Cambodia for the Model-B case study.

According to the statistics, there is not much production of apple in Cambodia. It imports a large number of apples from non-ASEAN countries. It also imports some amount of apple from ASEAN countries. Cambodia corresponds to Country B in Figure 23

c) Discussions and Opinions of Stakeholders

i) Government in importing country (Country B: Cambodia)

A discussion was held with officials from the following organizations of Cambodian Ministry of Agriculture, Forestry and Fisheries by several separate sessions.

- Department of International Cooperation
- Department of Horticulture and Subsidiary Crops, General Directorate of Agriculture
- Department of Industrial Crops, General Directorate of Agriculture

- Department of Agro-Industry

According to the Cambodian government officials, apples imported from non-ASEAN countries and ASEAN countries are not recognized as the same products by Cambodian consumers as quality and price are very different. It is difficult for ASEAN apples to replace non-ASEAN apples since the quality of ASEAN apples is normally lower than non-ASEAN apples, although the price of ASEAN apples is lower, according to Cambodian officials. It is also difficult for the Cambodian government to navigate Cambodian consumers to choose ASEAN apples. It is purely dependent on the preference of consumers. The role of the government in Country-B is not clear in this model.

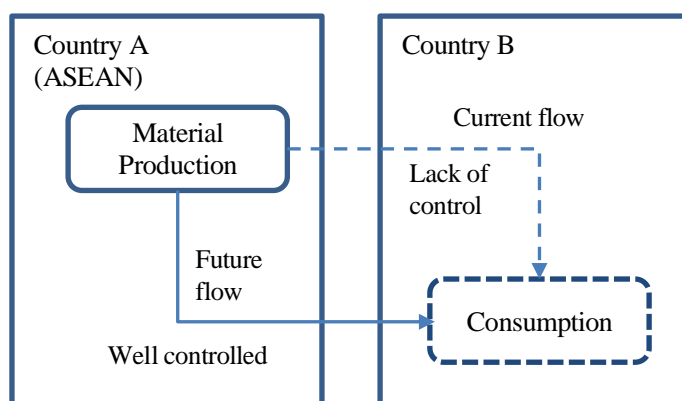
- ii) Other governments

Results of discussion in Cambodia was shared with the Ministry of Agriculture, Livestock and Irrigation (MOALI) of Myanmar and the officials said the situation is the same in Myanmar.

4) Intensifying ASEAN Import for Food Consumption (Model-D)

- a) Definition

Model-D is a cluster among AMSs for stabilizing food consumption of importing countries in the figure below. In some cases, importing agricultural products from a neighboring country is essential to stabilize food consumption. There are cases in ASEAN that such import is done without appropriate control of food safety. Model-D is aiming at improving this situation by applying better control of the quality of agricultural imports. If the quality of imports is satisfactory, the importing country will import more products from the exporting country.



Source: The JICA Study Team

**Figure 24 Commodity-Based Regional Cluster (Model-D)
Replacing Non-ASEAN Import with ASEAN Import
(import for stable consumption)**

- b) Crop for Case Study

The seasonal vegetable was selected as a crop for the case study in Cambodia.

Cambodia lacks fresh vegetables in some season. It is important for Cambodia to import vegetables from ASEAN countries. In this case, Cambodia corresponds to Country-B in Figure 24.

- c) Discussions and Opinions of Stakeholders
- i) Government in importing country (Country B: Cambodia)

A discussion was held with officials from the following organizations of Cambodian Ministry of Agriculture, Forestry and Fisheries by several separate sessions.

- Department of International Cooperation
- Department of Horticulture and Subsidiary Crops, General Directorate of Agriculture
- Department of Industrial Crops, General Directorate of Agriculture
- Department of Agro-Industry

Cambodian governmental stakeholders acknowledge that it is essential for them to import vegetables from ASEAN countries in the off season and Model-D is acceptable to a certain degree. However, Cambodian stakeholders emphasized the importance of maximizing domestic vegetable production for food security. The Model-D regional cluster could be considered if JICA and ASEC could help the government to maximize off-season vegetable production in parallel with Model-D regional cluster development.

- ii) Other governments

Results of discussion in Cambodia were shared with MOALI, and the officials said the situation is the same in Myanmar.

5) Result of Analysis

It was found that it would be difficult to form a commodity based regional cluster, as all Models have some concerns to raise to the policy makers in AMS.

(3) Potential Analysis of Theme-Specific Regional Cluster Development

The potential of the theme-specific regional cluster was analyzed by extracting the common interests of private business partners.

1) Needs of ASEAN Private Business Operators

An interview survey with ASEAN private business operators was conducted to identify challenges of ASEAN food value chain development. Theme-specific regional cluster could be developed based on the common interests of ASEAN private operators. The table below shows the results of the survey.

In summary, most of ASEAN business operators placed high expectations on business matchmaking with advanced foreign businesses including from Japan, technical collaboration and human resources development by business partners. Not many companies requested infrastructure and/or financial supports, since interviewees were given explanation that the purpose of the interview was to formulate the technical cooperation project by JICA.

Table 34 Results of Interview Survey with ASEAN Private Business Operators

Business Outline/Characteristics of Business	Challenge/Expectation/Request	Interest
Cassava processing company in Thailand <input type="checkbox"/> The company was established in 1974. Currently, there is about 800 number of staff. <input type="checkbox"/> Giving greater importance to procure cassava from Thai farmers.	<input type="checkbox"/> Cassava market is "high demand" but "high competition". There are about 20 cassava processing factories around the area.	<input type="checkbox"/> Collaboration with international private partners <input type="checkbox"/> Improvement of agricultural productivity

Business Outline/Characteristics of Business	Challenge/Expectation/Request	Interest
<ul style="list-style-type: none"> <input type="checkbox"/> The company is providing technical guidance to farmers. 	<ul style="list-style-type: none"> <input type="checkbox"/> It is difficult to secure amount of cassava when its price is low. Farmers refuse to cultivate cassava. <input type="checkbox"/> Exchange rate of foreign currency is unstable. It creates problems in importing material and exporting products. <input type="checkbox"/> The company hopes to collaborate with Japanese partners to improve productivity of cassava for farmers. <input type="checkbox"/> Thai farmers are aging. Agricultural mechanization is required. Hope to collaborate with Japanese partners. <input type="checkbox"/> The company is interested in collaboration with Japanese partners to develop capacity of staff. 	<ul style="list-style-type: none"> <input type="checkbox"/> Agricultural mechanization <input type="checkbox"/> Development of private human resources <input type="checkbox"/> Technical guidance to farmers
<p>Halal flavorings company in Malaysia</p> <ul style="list-style-type: none"> <input type="checkbox"/> SME in Selangor State. <input type="checkbox"/> The first Halal food flavorings company (addressing niche market with advanced technology) 	<ul style="list-style-type: none"> <input type="checkbox"/> Absence of Halal ingredients must be the biggest problem for foreign companies to produce Halal food in foreign countries such as Japan. <input type="checkbox"/> The company hopes to collaborate with foreign SMEs interested in Halal flavorings but does not know how to find partners. <input type="checkbox"/> The company once linked with Nestle but it failed. <input type="checkbox"/> SMEs are doing business based on trust and relationship. It is different from large-scale companies. 	<ul style="list-style-type: none"> <input type="checkbox"/> Collaboration with international private partners (SME to SME) <input type="checkbox"/> Halal foods <input type="checkbox"/> Product promotion in foreign countries
<p>Durian processing company in Malaysia</p> <ul style="list-style-type: none"> <input type="checkbox"/> SME in Selangor State. <input type="checkbox"/> Dealing with all the process of durian value chain (production-processing-promotion). The concept is similar with Sixth Industrialization in Japan. <input type="checkbox"/> Set up factories near the agricultural production areas to secure fresh products. <input type="checkbox"/> Family Mart (Japanese convenience store chain which started their business 3 years ago) changed mindset of Malaysian food producers from mass production to small-lot production with more variety of products. 	<ul style="list-style-type: none"> <input type="checkbox"/> The company is stressing importance of developing “story” on their products. <input type="checkbox"/> Collaboration with Japanese partners can increase reputation and add value. Hoping to collaborate with Japanese partners but does not know how to find them. <input type="checkbox"/> In the process of developing new product with other fruits. Excessive dependence on Durian creates concentration of work in a certain season. <input type="checkbox"/> The company hopes to develop new products with Japanese private partners. 	<ul style="list-style-type: none"> <input type="checkbox"/> Brand establishment <input type="checkbox"/> Collaboration with international private partners <input type="checkbox"/> New product development with international partners <input type="checkbox"/> Dealing with modern trade <input type="checkbox"/> Sixth industrialization in Japan
<p>Fruit pickles producing company in Malaysia</p> <ul style="list-style-type: none"> <input type="checkbox"/> SME in Penang State. <input type="checkbox"/> The company minimizes mechanization. Employing local people is more important. <input type="checkbox"/> Developed fruit pickles hoping that people consume more amount of fruit to stay healthy. <input type="checkbox"/> Taking good care of company staff. They are local inhabitants and losing their belief could lose local business. <input type="checkbox"/> Set up factories near the agricultural production areas to secure fresh products. <input type="checkbox"/> The company is importing some fruits but wants to minimize it. Exchange rate is unstable and process takes time. Moreover, they want to contribute local society in sustainable way by procuring local products. <input type="checkbox"/> Manual processes, such as fruits cutting, is dominant by female workers. 	<ul style="list-style-type: none"> <input type="checkbox"/> It is difficult to secure required amount of fruits since they are seasonal products. The company is diversifying products. <input type="checkbox"/> The company has diversified products but wants to develop more new products. <input type="checkbox"/> Hopes to collaborate with Japanese private to partners to learn each other. 	<ul style="list-style-type: none"> <input type="checkbox"/> Collaboration with international private partners <input type="checkbox"/> New product development with international partners <input type="checkbox"/> Safe agricultural/food products <input type="checkbox"/> Development of private human resources
<p>Duck Processing Company in Malaysia</p> <ul style="list-style-type: none"> <input type="checkbox"/> Company in Penang State. <input type="checkbox"/> The company is working hard to produce ready-to-eat product to accommodate with modern trade. 	<ul style="list-style-type: none"> <input type="checkbox"/> The company is not interested in quantity but quality. Interested in niche and/or premium markets. 	<ul style="list-style-type: none"> <input type="checkbox"/> Dealing with modern trade <input type="checkbox"/> Halal food <input type="checkbox"/> Safe agricultural/food products

Business Outline/Characteristics of Business	Challenge/Expectation/Request	Interest
<ul style="list-style-type: none"> <input type="checkbox"/> Muslims in Malaysia are potential customer since their products are Halal certified. <input type="checkbox"/> “Healthy food” is a key for development. <input type="checkbox"/> The company is providing technical guidance to farmers. 	<ul style="list-style-type: none"> <input type="checkbox"/> The company is not interested in working with large-scale company. Wants to work with reliable SMEs. 	<ul style="list-style-type: none"> <input type="checkbox"/> Niche/premium market <input type="checkbox"/> Technical guidance to farmers
<p>Snack Food Processing Company in Malaysia</p> <ul style="list-style-type: none"> <input type="checkbox"/> SME in Penang State with 20 staff. <input type="checkbox"/> The company is considering benefit of consumers which is health. Products are “Healthy Food” which is trans-fat free, no artificial flavors and no artificial colors. <input type="checkbox"/> The company is interested in niche market for Malaysian company. Exporting 90% of products to middle east countries, China, etc. Malaysian market is dominant by large-scale companies and difficult to penetrate. 	<ul style="list-style-type: none"> <input type="checkbox"/> The company is working hard for new product development. <input type="checkbox"/> The company is supporting Cambodian students to grow macadamia nuts there and wants to buy it. 	<ul style="list-style-type: none"> <input type="checkbox"/> Safe agricultural/food products <input type="checkbox"/> Development of private human resources <input type="checkbox"/> Corporate Social Responsibility (CSR) <input type="checkbox"/> Niche/premium market
<p>Frozen Vegetable Company in Myanmar</p> <ul style="list-style-type: none"> <input type="checkbox"/> The company is receiving supports from Japanese company. <input type="checkbox"/> The company is procuring vegetable from partner farmers by contract and export it to Japan after freezing. <input type="checkbox"/> Farmers are requested to follow specific cultivation method provided by the company. <input type="checkbox"/> The company staff are providing technical guidance to farmers. 	<ul style="list-style-type: none"> <input type="checkbox"/> It is important to secure safety requirements of foreign customers. <input type="checkbox"/> It is not easy to provide intensive technical guidance to farmers. 	<ul style="list-style-type: none"> <input type="checkbox"/> Safe agricultural/food products <input type="checkbox"/> Technical guidance to farmers
<p>Tea Processing Company in Viet Nam</p> <ul style="list-style-type: none"> <input type="checkbox"/> The company is procuring tea from farmer groups and export it to West Asia etc., after processing. <input type="checkbox"/> Major product is specialty tea which is a good product for premium market. <input type="checkbox"/> The company is a member of tea companies’ network of Viet Nam. 	<ul style="list-style-type: none"> <input type="checkbox"/> Having difficulty in marketing. <input type="checkbox"/> Lack of government support. <input type="checkbox"/> Difficult to change mindset of farmers. <input type="checkbox"/> It is a good idea to link Vietnamese tea company network with other ASEAN countries. <input type="checkbox"/> The company hope to have a Japanese partner to learn processing technology, marketing, and brand establishment. 	<ul style="list-style-type: none"> <input type="checkbox"/> Marketing <input type="checkbox"/> Supports from the government <input type="checkbox"/> Technical guidance to farmers <input type="checkbox"/> Networking with international partners <input type="checkbox"/> Brand establishment <input type="checkbox"/> Processing technology <input type="checkbox"/> Development of private human resources
<p>Vegetable Processing Company in Viet Nam</p> <ul style="list-style-type: none"> <input type="checkbox"/> The company is procuring vegetable from farmers and sell them to domestic and international buyers after cleaning and packing. 	<ul style="list-style-type: none"> <input type="checkbox"/> The company noticed that issues in the future are 1) securing land and human resources for agriculture and 2) brand establishment of Vietnamese products. <input type="checkbox"/> The government should support private sector in 1) participating agro-product exhibition, 2) business matching, 3) land rights and 4) tax incentive. <input type="checkbox"/> The company expects to have Japanese partners to learn about 1) technology and knowhow to reduce production cost and 2) suitable vegetable variety. 	<ul style="list-style-type: none"> <input type="checkbox"/> Brand establishment <input type="checkbox"/> Promotion <input type="checkbox"/> Matching <input type="checkbox"/> Land rights <input type="checkbox"/> Tax incentive <input type="checkbox"/> Collaboration with international private partners <input type="checkbox"/> Cost reduction <input type="checkbox"/> New variety development
<p>Organic Vegetable Farmer Group in Lao PDR</p> <ul style="list-style-type: none"> <input type="checkbox"/> The group is producing more than 40 types of organic vegetables according to the market prices. <input type="checkbox"/> The group consists of 44 members (30 women). <input type="checkbox"/> The farmers sell their products by themselves in the market or sell them in supermarkets after packing. 	<ul style="list-style-type: none"> <input type="checkbox"/> Challenge for the group is marketing. <input type="checkbox"/> The group is promoting their products through Facebook. 	<ul style="list-style-type: none"> <input type="checkbox"/> Marketing <input type="checkbox"/> Promotion
<p>Vegetable and Fruit Processing Company in Lao PDR</p> <ul style="list-style-type: none"> <input type="checkbox"/> The company is producing various types of juice and packaged products. <input type="checkbox"/> The company owns two factories. One of them employs 150 staff (70% female). 	<ul style="list-style-type: none"> <input type="checkbox"/> The followings are the challenges. <input type="checkbox"/> procuring qualified and safe agricultural products from farmers <input type="checkbox"/> high price of packing material as Lao PDR is an inland state <input type="checkbox"/> marketing 	<ul style="list-style-type: none"> <input type="checkbox"/> Safe agricultural/food products <input type="checkbox"/> Cost reduction <input type="checkbox"/> Marketing <input type="checkbox"/> Lack of finance

Business Outline/Characteristics of Business	Challenge/Expectation/Request	Interest
<input type="checkbox"/> The company sell their products locally and internationally. <input type="checkbox"/> Exporting products is done together with a Thai partner.	<input type="checkbox"/> funding <input type="checkbox"/> The company hopes to identify a Japanese partner to export their products to Japan.	<input type="checkbox"/> Collaboration with international private partners
Vegetable Importer A in Singapore <input type="checkbox"/> Although agricultural land is limited in Singapore, there is a demand on producing a certain type of Japanese mushroom (shiitake mushroom) in Singapore.	<input type="checkbox"/> The company expects technology transfer from a Japanese partner on shiitake mushroom production in Singapore.	<input type="checkbox"/> Collaboration with international private partners <input type="checkbox"/> Advanced farming technology
Vegetable Importer B in Singapore B <input type="checkbox"/> The company imports most of the products from Non-ASEAN countries, such as USA and Australia. <input type="checkbox"/> There are 150 employees. <input type="checkbox"/> The company imports mango from Myanmar. For this purpose, the company staff visited Myanmar to train local farmers on post-harvesting technology.	<input type="checkbox"/> A reason of less import from AMS is concern of safeness. <input type="checkbox"/> The company is happy to expand a success case in Myanmar to other countries, especially if the government assists them.	<input type="checkbox"/> Safe agricultural/food products <input type="checkbox"/> Collaboration with partners in other AMSs <input type="checkbox"/> Support on transferring technology to other AMSs

Source: The JICA Study Team

2) Discussion with AMSs

The ASEAN project formulation process needs to be agreed upon by consensus among all AMSs. The topics of the theme-specific regional cluster also need to be accepted by all AMSs. Discussions with AMS governments (Malaysia, Cambodia, Myanmar, Viet Nam, Lao PDR, Singapore) were held to generalize the results of the interview survey with ASEAN private business operators and to select appropriate topics for the ASEAN theme-specific regional cluster. The followings are the results of discussions.

a) Discussion on safe agricultural/food product

- Safe agricultural/food products are important for everyone and all AMSs. It is easy to accept this topic.
- Meaning and definition of safe agricultural/food products could differ from country to country. Thailand is working hard to develop functional foods and food products for the elderly (so-called “silver food”). Malaysia is using Halal certificate to secure food sanitation. For CLMV countries, GAP and organic certification are measures to secure safeness.
- Safe agricultural/food products could be an appropriate topic for the regional theme-specific cluster at the ASEAN level, if each AMS can work based on their own definition of “safe agricultural and food products”. It is good for some AMSs to know the results of the advanced activities of other AMSs for future consideration.

b) Discussion on needs for business development techniques (marketing and promotion etc.)

- Capacity development of private human resources is a key to improve business development techniques of ASEAN private operators.
- It is difficult for AMS governments to improve the capacity of private operators as far as business development techniques are concerned. For example, AMS governments cannot provide training on marketing, promotion, brand establishment etc. If it is agricultural production technique, the Ministry of Agriculture can provide support.
- As stated by ASEAN private operators, business development techniques should be transferred from advanced private operators. Capacity building by business partners is essential.

- The role of AMS governments and ASEAN is creating a network among ASEAN private operators and foreign private operators such as Japanese. It must include international study tours for ASEAN private business operators.
- c) **Discussion on PPP implementation mechanism**
- Although AMS governments are working hard on PPP issues for food value chain development, it is difficult to satisfy the huge demand.
 - Many AMS governments do not have a sophisticated method to create a network with foreign advanced private operators with ASEAN operators as far as food value chain development is concerned. It is especially difficult for SMEs, as the number of SMEs is significant.
 - Food value chain related government ministries are scattered, and coordination among agencies are limited in many AMSs. Typically, the Ministry of Agriculture oversees agricultural production issues. Ministry of Industry is responsible for agro-processing, and the Ministry of Commerce is in charge of product promotion. The Investment Promotion Board is responsible for inviting investments. The sole effort of the Ministry of Agriculture is insufficient.
 - Many of AMS governments does not have PPP implementation strategy and implementation mechanism as far as food value chain development concerned.
 - It is important to strengthen the PPP implementation mechanism in ASEAN to respond to the needs of ASEAN private operators.
 - Some AMS governments are interested in the PPP implementation policy of other AMSs. It is worth sharing knowledge and experiences of PPP implementation with other AMSs.

3) **Common Interests**

Based on the above discussion, the following three issues were selected as common interests in ASEAN. Supports on various types of business development techniques are integrated into one, which is “Human resource development of ASEAN private business operators”.

- Safety agricultural products/food
- Human resource development of ASEAN private business operators
- Strengthening the PPP mechanism

Based on the identified three common interests, the necessity of a theme-specific regional cluster was analyzed in Chapter 4.

3.5 Environmental Social Consideration on the JICA Technical Corporation Projects

With the initial concept of regional food cluster development, JICA considered necessity of conducting an assessment on environmental and social impacts from the cluster establishment. Therefore, Environmental and Social Consideration (ESC) was one of the components in the current survey. This Chapter provides overview of the ESC measures practiced by JICA prior and during the projects. The chapter also examine how it could potentially contribute to the “ASEAN Guidelines for Responsible Investment in Food, Agriculture and Forestry (2019).”

JICA had been responsibly conducting pre-survey for environmental and social impacts during their project development. It was initiated as the establishment of “environmental consideration guideline” in 1990. The guideline is aimed to screen for any potential impacts and then conduct scoping for the environmental review procedure to be implemented. Environmental reviews must include suggestions for alternative or recovery procedures to the project. JICA then proceed with decision making on the project implementation. Finally, the guideline calls for post-implementation review to monitor the selected items for any necessary actions to be taken.

The current version of the Environmental Social Consideration guideline (hereinafter “the guideline”) was circulated in April 2010 which was initiated in July of the year⁴⁴. JICA also provides financial and technical assistance on ESC related procedures as necessary.

3.5.1 JICA Efforts Taken Prior to the Project Implementation to Minimize Adverse Impact

(1) Preparatory Survey

Implementation of most development projects require physical transformation of the environment to some extent. However, conducting environmental reviews for every project is not feasible. To determine the necessity, the project team will initially collect enough related information during JICA-assisted planning phase of the project formulation. At this stage, laws and regulations that are related to the project at the host country are also considered thoroughly to avoid any conflicts. The survey will be concluded with classification of the situation into Categories A, B, C, D⁴⁵. For the Categories A and B projects, the Advisory Committee for Environmental and Social Considerations are established to provide guidance to full scale project development.

The key survey components of the projects are as following.

- Physical transfer of residence, involuntary resettlement, and infringement of people’s rights
- Presence of protected area

44 The Basics of Environmental and Social Considerations -Introduction to the JICA Guidelines for Environmental and Social Considerations- (2013) https://www.jica.go.jp/english/our_work/social_environmental/guideline/c8h0vm0000013gbd-att/esc_rev.pdf * The requirements in the latest JICA guideline is raised to the same level as World Bank guideline.

45 Category A: Proposed projects are classified as 1) Category A if they are likely to have significant adverse impacts on the environment and society, and Environmental Impact Assessment (EIA) will be conducted, 2) Category B if their potential adverse impacts on the environment and society are less adverse than those of Category A projects, and Initial Environmental Examination (IEE) to be conducted, 3) Category C if they are likely to have minimal or little adverse impact on the environment and society.

- Impacts on natural ecology

If the information suggests conducting an environmental review, then the scoping will be carried out to finalize the assessment procedure. Consultation with local stakeholders are encouraged for categories A and B projects.

(2) Environmental Review

For the Environmental Review to be conducted, the guideline suggests the following basic procedure.

- Identify in detail on the possible negative impacts on human life/habitat and natural environment (pollutions, loss of natural habitat etc.)
- Develop an alternative procedure to mitigate or minimize the implacts
- Plan environmental recovery or habitat reconstruction for unavoidable impacts

Consequently, the results of the review will be disclosed at JICA website to the public. (there is non-mandatory preparatory survey prior to the Environment Review).

(3) After Project Approval and Project Implementation

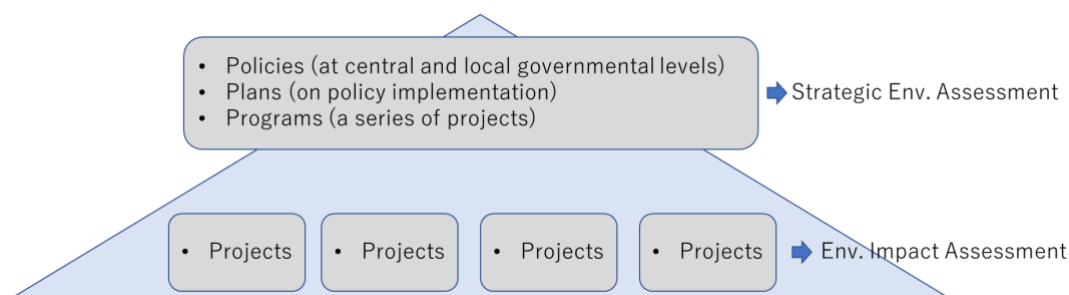
The results of the Environmental Review will be then reviewed for the necessary actions for the stakeholders. Once the project is approved, it will be implemented with “Post-Assessment Monitoring.” The monitoring verifies that impacts are as predicted and/or permitted, and it also confirms whether the mitigation measures are working as expected or not. Necessary actions can be taken to manage any unforeseen changes.

(4) Objection Procedure

Annual reports of the examiners and the objection procedures (any findings and any (non-) compliance could be reported to the JICA president) are avaiable in the website. If the negative impact of the project cannot be avoided or mitigated to an acceptable level, JICA will not support its implementation.

3.5.2 Types of the Assessment at Different Stages of the Planning and Implementation

There are roughly two different types of assessments which are conducted at different stages of the development planning as shown in the diagram.



Source: JICA Study Team

Figure 25 Stages of Environmental Assessment

“Environmental Impact Assessment” is carried out prior to the individual project implementation. “Strategic Environmental Assessment (SEA)” is conducted during the earlier stages of the development planning. Although the purpose of the assessment are the same for the above two, SEA a) covers wider area, b) considers not only the environment, but also social and economic impact, c) examines the cumulative impact from multiple projects, d) has involvement of the wide-range of stakeholders and disclose the information from the earlier stages of the assessment.

3.5.3 JICA ESC Guideline Contribution for ASEAN Guidelines for Responsible Investment in Food, Agriculture and Forestry (FAF)

JICA ESC may contribute to some of the ASEAN Guideline for Responsible Investment in Food, Agriculture and Forestry as follows.

FAF Guideline 3: Contribute to equality, engagement and empowerment for women, young people, indigenous peoples and marginalized groups.

JICA strictly follows the principles of human rights standards (e.g. International Convention on Human Rights) Women, indigenous peoples, persons with disabilities and minorities are considered vulnerable groups in the society; thus, JICA provide special attention to these people. For instance, JICA encourages to held separate stakeholder meetings during the environmental review. This aims to include opinions from those in decision-making and to verify the equality of benefits and loss generated from the development projects.

FAF Guideline 4: Respect tenure of land, fisheries and forests, as well as access to water.

During the Environmental review, utilization of land and local resources are surely some of the assessed items. If large-scale involuntary resettlement is planned in the project, the assessor must submit Resettlement Action Plan (RAP) to be approved, along with the Indigenous People Plan (IPP) as appropriate. Change in water availability in quality and quantity is closely examined at pre-survey, environmental review, and during monitoring. The assessment also considers cross country impacts.

FAF Guideline 8: Respect the rule of law and incorporate inclusive and transparent governance structures, processes and grievance mechanisms.

JICA guideline ensures the compliance with the ESC related laws and regulation of the host country during pre-survey. Moreover, as described (3.6.1. (4)), the Objection Procedure is clarified in the ESC guideline.

3.5.4 Global FVC Development and ESC

Establishment of FVC across countries and regional food cluster could be associated with the consolidation of land and building of facilities that could cause negative impacts on environment. Global FVC are generally traded in bulk quantity to be more cost effective than small-scale trade. During the process of integration and scaling up of the trading quantity, small-scale farmers and small to medium scale enterprises (SMEs) tend to be excluded from the development. These potential negative impacts on environment and society from establishment of global FVC establishment must be taken into consideration.

According to “ASEAN-JAPAN Center. Global Value Chains in ASEAN Agribusiness”, without appropriate policy measures, negative aspects may arise from increasing trade of agricultural products via global FVC, such as 1) environmental degradation, 2) excessive shift to the production of cash crops, and 3) exclusion of small-scale farmers and SMEs from FVC. Needless to mention, excessive shift to production of cash crops may threaten the food security of the farmers.

In ASEAN, countermeasures to these potential negative impacts are listed in the strategic plans and guidelines. For example, “Goals, Strategic Thrust, and Related Action Programmes in Vision and Strategic Plan for ASEAN Cooperation in Food, Agriculture and Forestry (2016-2025) (Ch2, 2.1.3. Table 4,)” mentions socially inclusive development and environmental consideration during development (excerpt below).

Table 35 Policies related to Environmental Considerations in Goals, Strategic Thrust, and Related Action Programmes in Vision and Strategic Plan for ASEAN Cooperation in Food, Agriculture and Forestry 2016-2025

Strategic Thrust	Action Programmes (a few examples)
1. Enhance quantity and quality of production with sustainable, ‘green’ technologies, resource management systems, and minimise pre- and postharvest losses and waste	1.3. Increase private sector participation in policy discussions, programme and project formulation, research and development (R&D) and provide incentives and foster an enabling environment for public-private partnerships (PPPs) towards enhancing productivity and quality, recognising that the ‘private sector’ in the context of FAF must refer not only to larger commercial enterprises but must also include the small scale farmers, fishermen and SMEs.
	1.4. Develop yield and productivity enhancing technologies and best practices that involve land use intensification in a sustainable manner, bearing in mind that expansion of cultivable land rapidly reaches its limits even in the land abundant AMS.
4. Increase resilience to climate change, natural disasters and other shocks	4.2. Promote good agriculture practices to minimize the negative effects on natural resources such as soil, forest and water and reduce the greenhouse gas emission.
	4.5. Expand resilient agro-forestry systems where ecologically and economically appropriate.

Source: JICA Study Team

3.5.4 Conclusions

Number of investments in FAF sector along with community development projects are expected to increase in ASEAN due to the expansion of its economy and population. Public sector often supports the rural infrastructure development and enhancement of technology, while private sectors are expected to increase productivity and competitiveness and generate employment opportunities. Sustainable use of natural resources while considerations given to environmental and social aspects are necessary for substantial economic development. As the details are introduced in this chapter, JICA responsibly ensures appropriate consideration for environmental and social impacts of their project implementation. The current proposed project aims to promote GAP and GAqP, along with involvement of SMEs and small-scale farmers in FVC development by PPP. Therefore, the project contributes to sustainable FVC that is one of the agenda of ASEAN.

Chapter 4 Draft Proposal for the Contents of Cooperation

The following outline of the draft proposal for the contents of cooperation was developed based on the results of the survey conducted by the JICA Study Team. It aims to feed into the discussions by ASEC and JICA to determine the contents of the actual project. The activities proposed hereinafter will be further discussed and finalized by ASEC and JICA.

4.1 Framework of Cooperation

4.1.1 Status and Issues of FVC in ASEAN

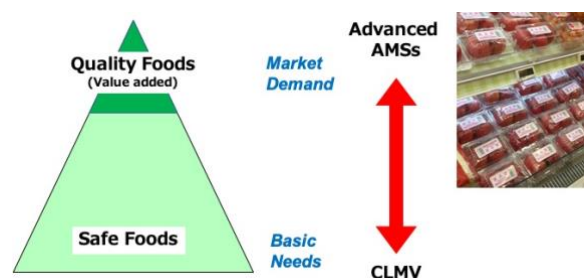
The status and needs in the food value chain in ASEAN are highlighted below.

AMSs have diverse demands for agricultural products and foods. While some AMSs, such as Singapore, has larger demands of high-quality foods, CLMV countries have basic needs for safer food (See Figure 26).

Food Safety and FVC

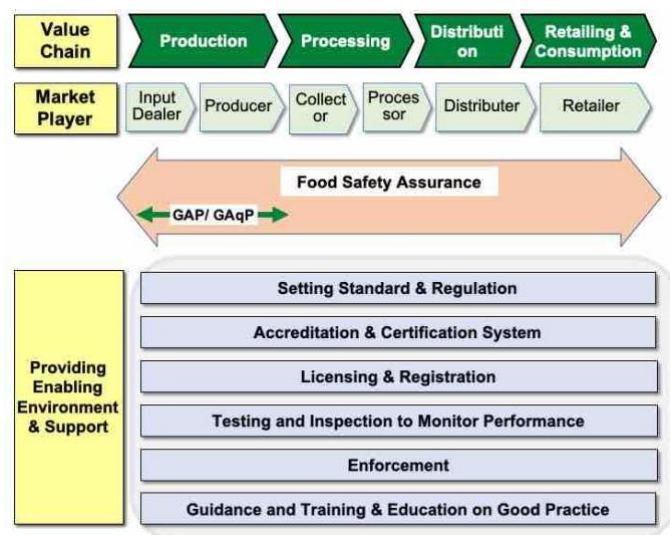
Agricultural products and foods without secured safety are sold in some AMSs and traded among some AMSs. Undoubtedly, food safety is the most important issue for the human health; unsafe foods should be controlled. It is also an important challenge to establish the safe food system to achieve the economic integration in ASEAN. Yet currently, some AMSs have challenges in ensuring food safety and it also becomes one of the bottlenecks to expand regional and international trade of agricultural and food products produced in ASEAN.

One of the challenges is that food safety assurance system is not yet fully developed in many of the AMSs. There are also different systems in different AMSs, which hinders AMSs to efficiently align food safety standards in the region.



Source: JICA Study Team.

Figure 26 Demands and Needs for Foods in ASEAN



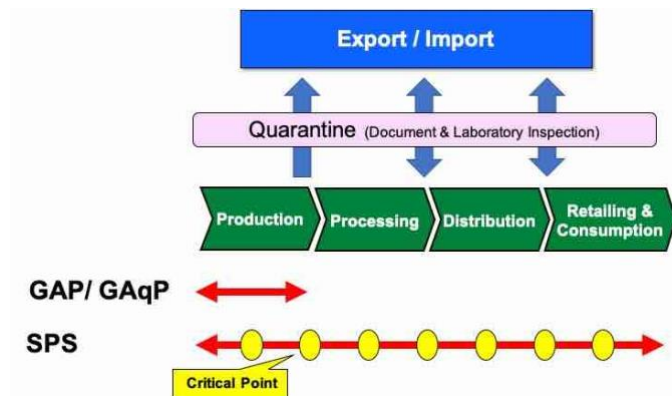
Source: JICA Study Team based on SFA materials and “Toward the Development of and global food value chain”. Regional Trend 2015.

Figure 27 Food Safety Assurance System

Food safety assurance system is composed of setting standards and regulations at each stage of the value chain and enforcing them. Food business operators, such as processors, distributors, and retailers, are registered and/or licensed, and monitored whether they comply with the food safety standards and

regulations. Samplings and inspections are conducted as part of the monitoring of food safety. Food business operators are also trained and provided with solid guidance by government agencies to follow. Figure 27 shows a food safety assurance system that ensures food safety in the value chain.

ASEAN has taken food safety as an important issue not only in food safety policies but also in trade facilitation. ASEAN Vision and Strategic Plan of Action (SPA) for ASEAN Cooperation in Food, Agriculture and Forestry (FAF) 2016-2025 raises the issue of “ensuring food safety” as Strategic Thrust 3. Harmonizing accreditation, inspection and certification systems, and improving quarantine systems are also parts of Action Program in Vision and SPA Cooperation in FAF. These are for the improvement of the agriculture and food management system as well as trade facilitation. Accordingly, ASEAN is currently taking initiatives such as promotion of ASEAN GAP, strengthening of SPS measures, and managing hygiene throughout the supply chain of fishery products to ensure the food safety in the region (See Figure 28).



Source: JICA Study Team.

Figure 28 GAP and SPS in FVC Crossing Border

ASEAN GAP was introduced by ASEAN as a standard to prevent and minimize the risks at the production, harvesting, and post-harvest handling stages of fresh fruits and vegetables. ASEAN encourages aligning AMSs’ national GAPs to the ASEAN GAP guidelines in order to promote trade within ASEAN and with rest of the world. Yet, among AMSs, there are differences in the operational status and the certification system of national GAPs. Systems and standards of pesticide residue inspection also differ among AMSs. Besides, ASEAN GAP is not recognized as a standard that could bring commercial benefits to buyers and producers.

As for food hygiene issue in Sanitary and Phytosanitary Measures (SPS), it is necessary for AMSs to foster ability to detect hazardous substances in order to prevent food contamination, distribution, and trades of unsafe food within ASEAN. However, there are still some challenges for the National Reference Laboratories (NRLs) of AMSs in analyzing hazardous substances, such as pesticide residues. The analytical capability varies across the countries and there are differences in numbers of pesticide-derived compounds to be analyzed.

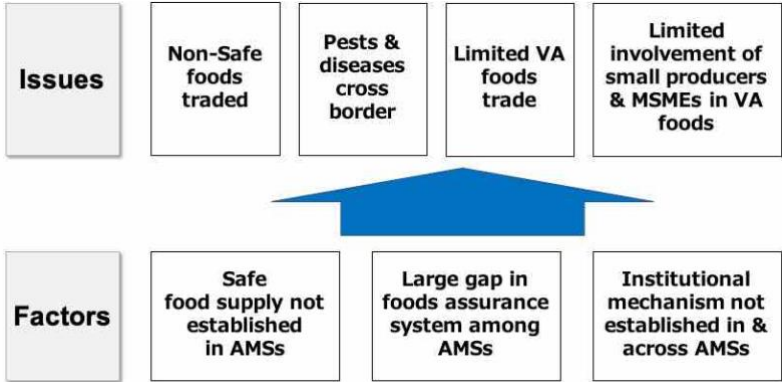
On the animal and plant quarantine in SPS, ASEAN has an environment where pests and diseases could easily be transmitted via plants and animals, and it poses threats to the stable supply of agricultural products and human health in the region. One of the reasons for this is the lack of harmonized SOP (standard operating procedure) in SPS measures in ASEAN. In some countries, pest control system is not yet fully established, and the different levels of the control among AMSs make it difficult to prevent epidemics spreading across the borders. ASEAN needs to standardize pest identification and diagnosis procedures among its members for the prevention of future epidemics.

In the fishery sector, since fishery products deteriorates quickly, it is necessary to manage hygiene throughout the supply chain. ASEAN has introduced Good Aquaculture Practices (GAqP) and SPS related efforts to AMSs to enhance reliability of fishery products in ASEAN and to facilitate both regional and international trade. Nevertheless, there are some challenges including lack of information sharing among AMSs on operational status of GAqP, insufficient assessment of the management systems to monitor hygiene in the whole supply chain, and the different systems and inspection mechanisms in AMSs, which make it difficult to have standardized safety assurance system in ASEAN.

Value Added Products and FVC

The amount of trade of high-quality and value-added (VA) foods are still limited in ASEAN. Production and trade of such agricultural products and foods are expected to increase in the future, and small-scale producers and micro, small and medium enterprises (MSMEs) in ASEAN could play important roles as the main players in FVC, although not many of them are currently being involved in the production and trade of high-quality and value-added agricultural products and foods. ASEAN has been focusing on strengthening the competitiveness of small-scale farmers and MSMEs to achieve the inclusive development of FVC. Furthermore, many business owners in ASEAN, including MSMEs, are looking for partnerships with investors and businesses from other countries, but many of them do not have adequate information on potential business partners.

There are also no government agencies responsible to oversee whole FVC, from the production, processing, distribution, to the consumption. Collaboration between public and private sectors is still limited to strengthen capacities of small-scale farmers and MSMEs. Thus, it is necessary to promote public-private partnership (PPP) to achieve the inclusive FVC at ASEAN level. Figure 29 shows the summary of the issues mentioned above.



Source: JICA Study Team

Figure 29 Issues and Factors in ASEAN FVC

4.1.2 Proposed Outline of the Contents of Cooperation

Based on its policies, ASEAN cooperation project shall: i) address regional issues; ii) be beneficial to ASEAN and engage all AMSs equally; iii) align with ASEAN Community Blueprints and other relevant documents; and iv) be endorsed by AMSs based on consensus.

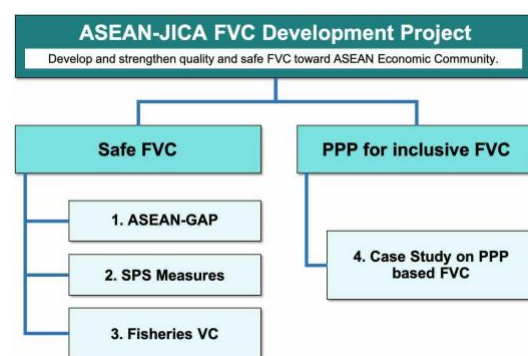
Taking the above in consideration, the following issues to be addressed.

- ASEAN GAP: further recognition among buyers and producers
- SPS: strengthening capacities of NRLs to be accredited
- Fisheries: hygiene management throughout the supply chain
- PPP based FVC: PPP mechanism to develop FVC in ASEAN

Activities in ASEAN GAP, SPS and Fisheries especially contribute to harmonization of food safety assurance systems among AMSs.

Components

The proposed framework the ASEAN-JICA cooperation consists of two pillars and four main thematic areas of cooperation (See Figure 30). The first pillar is the safe food value chain (FVC), which consists of three components: i) ASEAN GAP (Good Agricultural Practice), ii) Sanitary and Phytosanitary measures (SPS) measures, and iii) Fisheries. The second pillar is public-private partnership (PPP) for inclusive FVC with the component: iv) study on PPP based FVC.



Source: JICA Study Team.

Figure 30 Structure of Cooperation Activities

Regarding ASEAN GAP, the proposed activities will support the update of the ASEAN GAP in order to increase the food safety to protect both producers and farmers, including through enhancing the recognition of ASEAN GAP which reflects the needs of the producers and buyers. Activities under this thematic area include studying and sharing the bottlenecks in promoting national GAPs in AMSs as well as conducting buyers' assessment on AMSs' national GAP. The cooperation will also include the design and implementation of the action plans to increase awareness on national GAPs and to promote its application by buyers and producers in AMSs. Based on these results, the cooperation will plan to upgrade ASEAN GAP and provides recommendations to AMSs to promote ASEAN GAP.

Regarding SPS, proposed activities will provide short-term support to some of the National Reference Laboratories (NRLs) in AMSs to accelerate their efforts in obtaining ISO / IEC 17025 in the future. Proposed activities include providing step-by-step trainings on pesticide residue analysis, assessing analytical capacities of NRLs, along with recommendations to AMSs.

In the fisheries sector, proposed activities will support AMSs in improving hygiene management throughout the fishery value chain. Activities include assessing and sharing the hygiene management systems of the fishery value chain in AMSs, supporting ASEC in preparing GAqP operational guidelines, and preparation of the inspection guidelines for each stage of value chain. As medium to long term issues, smart fisheries and regional fisheries ecolabels will also be considered.

As for PPP for inclusive FVC, which is relatively new area in ASEAN, proposed activities include studies on PPP based FVC in AMSs and drafting policy recommendations to promote PPP when developing FVC in ASEAN. In the medium to long term, PPP mechanism for FVC in ASEAN will be studied.

Expected Outputs of Activities

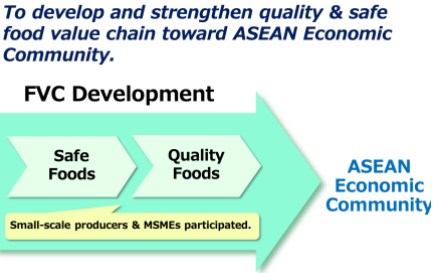
The following outcomes are expected from the above cooperation activities.

- i) In ASEAN GAP, policy recommendations are prepared for the promotion of further dissemination and upgrades of ASEAN GAP for expanding recognition and application of the national GAP of each AMS among buyers and producers.
- ii) In SPS, policy recommendations are prepared for the all NRLs of AMSs to become accredited inspection bodies as recognized by ISO / IEC17025 in the future.
- iii) In the fisheries sector, the hygiene management system at each stage of the supply chain is assessed and shared among AMSs, GAqP operational guidelines are discussed, and inspection guidelines for each stage of the value chain is prepared.
- iv) In the PPP for inclusive FVC, good practices of FVC in ASEAN are studied and shared, policy recommendations for strengthening the PPP mechanism for ASEAN FVC development are provided.

As a result of the cooperation as a whole, a policy paper for quality and safe FVC development in ASEAN will be prepared, which integrates four expected outcomes and other experiences gained through the implementation of the ASEAN-JICA cooperation.

The proposed cooperation activities benefit many actors involved in FVC in ASEAN. These are 1) ASEAN Secretariat, 2) government agencies involved in FVC in AMSs, 3) officials and inspectors engaged in SPS, especially in CLMV, 4) producers and actors related to FVC, and 5) distributors and traders in AMSs.

Proposed cooperation activities contribute to the future vision set as “To develop and strengthen quality and safe food value chain toward ASEAN Economic Community”, as shown in Figure 31.



Source: JICA Study Team.
Figure 31 Direction of Proposed Project

Outline of Cooperation

The framework of the contents of cooperation in the next three years is proposed as shown the table below.

Table 36 Proposed Outline of Cooperation

Title: ASEAN-JICA Food Value Chain Development Project		
Objective/ Outputs	Indicators (to measure the project's achievement)	Means of Verification
Project Objective: To develop and strengthen quality and safe food value chain toward ASEAN Economic Community.	A policy paper for quality and safe FVC development in ASEAN will be prepared	Annual Progress Report and Project Completion Report.
Output 1: Policy recommendations are prepared for the promotion of further dissemination and upgrades of ASEAN GAP for expanding recognition and application of the national GAP of each AMS among buyers and producers.	1-1 GAP market information in AMSs is collected. 1-2 Action plan for marketing and promotion of ASEAN GAP is prepared. 1-3 Policy recommendations are prepared.	Annual Progress Report and Project Completion Report.
Main Activity 1.1 To assess and share bottlenecks of GAP promotion and GAP market information in AMSs. 1.2 To prepare and implement an action plan for marketing and promotion of the national GAP of each AMS, conforming to ASEAN GAP, so as to expand its recognition and application among buyers and producers. 1.3 To prepare policy recommendations to AMSs.		
Output 2: Capacities of SPS are strengthened through improvement of pesticide residue analysis.	2-1 Capacity on pesticide analysis is improved. 2-2 Recommendation for aligning National MRLs (Maximum Residue Limits) with ASEAN MRLs is developed.	Annual Progress Report and Project Completion Report.
Main Activity 2.1 To conduct regional training on pesticide residue analysis. 2.2 To assess and level analytical abilities of national reference laboratories (NRLs) in AMSs. 2.3 To prepare recommendation.		
Output 3 Food safety on fishery sector is improved by promotion of GAqP and development of ASEAN guidelines and relevant principles on fisheries inspection mechanism.	3-1 Hygiene management system of fishery products is assessed and shared. 3-2 Issues on Certification and Accreditation Systems for ASEAN GAqP are identified and shared. 3-3 ASEAN guideline for inspection of fish and fisheries products is developed.	Annual Progress Report and Project Completion Report.
Main Activity 3.1 To assess and share information on hygiene management system of fishery products. 3.2 To strengthen the implementation of ASEAN Good Aquaculture Practices (ASEAN-GAqP) (through the EWG ASEAN GAqP). 3.3 To formulate ASEAN guideline for inspection of fish and fisheries products at each point on supply chain.		
Output 4: Strategies for promoting PPP based FVC is developed.	4-1 Good practice(s) of PPP based FVC in ASEAN region are identified. 4-2 Policy recommendation is developed.	Annual Progress Report and Project Completion Report.
Main Activity 4.1 To conduct case studies in order to identify good practice of PPP based FVC in ASEAN region (through partnership with JIRCASA). 4.2 To prepare Policy recommendations to AMSs.		

4.2 Components of Thematic Areas

4.2.1 ASEAN GAP

(1) Direction of Cooperation

ASEAN GAP is a guideline for AMSs to achieve food safety, environmental conservation and increased competitiveness in agriculture. Introducing ASEAN GAP guideline facilitated each AMS to design and introduce own national GAP.

Currently, dissemination of ASEAN GAP is limited in AMSs. One of the factors is that ASEAN GAP provides little price incentive to producers since it is not fully recognized by the markets. Thus, this project will focus on the marketing and increasing recognitions of ASEAN GAP. Through the study and pilot activities, policy recommendations will be prepared on how to increase the recognition of ASEAN GAP by consumers and stakeholders in FVC.

The approach for the ASEAN GAP component is as follows:

- 1) Implement the activities in collaboration with other development partners, while avoiding duplication.

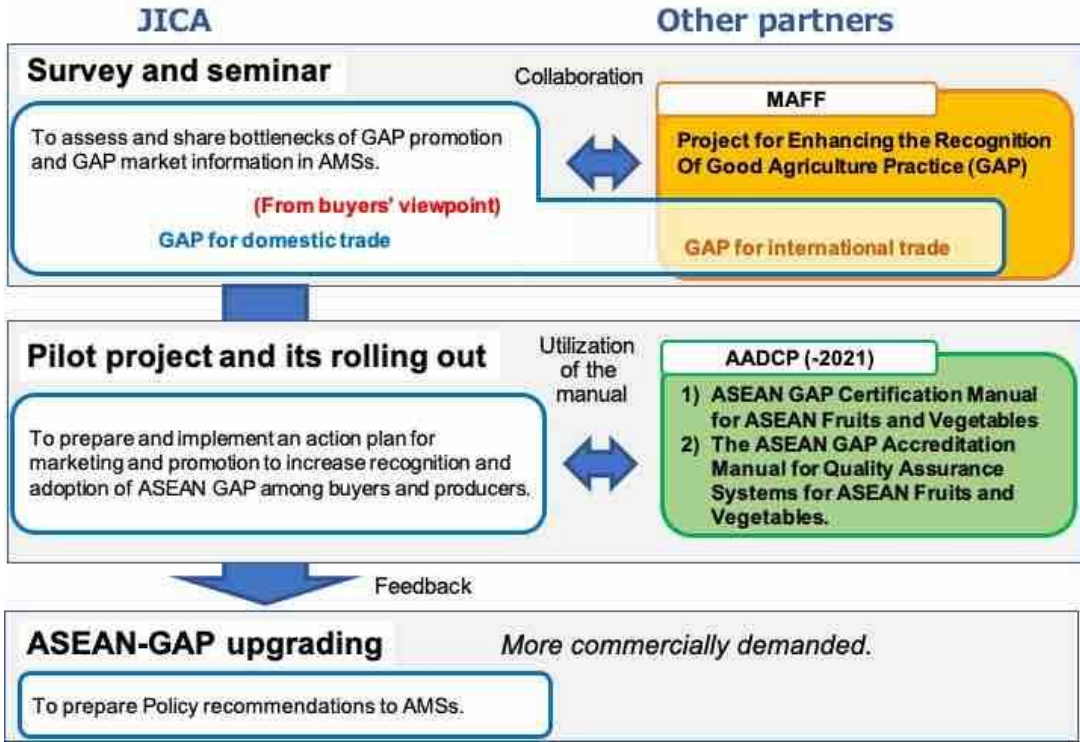


Figure 32 Collaboration with Other Development Partners

- 2) Establish common platforms of AMSs on web site and share the current status and good practices of GAP. Prepare and implement an action plan for marketing and promotion of the national GAP of each AMS, conforming to ASEAN GAP, so as to expand its recognition and application among buyers and producers. Share the knowledge and experience with the private sector.

- 3) Disseminating GAP according to the level of AMSs.

Group	AMSs	Approach
Group A	Thailand, Malaysia	Connect to the international market, consider mutual certification
Group B	Viet Nam, Indonesia, Philippines	Create a mechanism to connect GAP farmers to appropriate buyers

Group	AMSs	Approach
Group C	Cambodia, Lao PDR, Myanmar	Support the implementation of GAP
Group D	Brunei Darussalam, Singapore	Promote trade with AMS as a consumer

(2) Proposed Activities

The proposed activities for GAP component are as follows.

Output 1	Policy recommendations are prepared for the promotion of further dissemination and upgrades of ASEAN GAP for expanding recognition and application of the national GAP of each AMS among buyers and producers.
Main Activity 1.1	To assess and share bottlenecks of GAP promotion and GAP market information in AMSs
Activity	1.1.1 Survey on GAP required by buyers in AMSs 1.1.2 Sharing survey results in a forum and discussing proposals for improvement of GAP operation system 1.1.3 Development of Web content
Detail activity	1.1.1.1 Identification of multinational companies such as retailers and food service chains 1.1.1.2 Country survey 1.1.1.3 Summary of national survey results and proposal formulation 1.1.2.1 Examination of forum participants 1.1.2.2 holding a forum 1.1.2.3 Summary of forum results and proposal for improvement of GAP operation system 1.1.3.1 Examination of WEB content 1.1.3.2 Trial operation and improvement of WEB platform 1.1.3.3 Planning for operation of WEB platform
Main Activity 1.2	To prepare and implement an action plan for marketing and promotion of the national GAP of each AMS, conforming to ASEAN GAP, so as to expand its recognition and application among buyers and producers.
Activity	1.2.1 Observation of good practices and preparation of action plans. 1.2.2 Pilot activities in a selected CLMV country. 1.2.3 Sharing experience and lessons learnt of the pilot activities among AMSs for its spreading out.
Detail activity	1.2.1.1 Selection of good country inspection target country 1.2.1.2 Inspection of good practice 1.2.1.3 Activity plan development of Step 2 trial activity 1.2.2.1 Selection of CLMV One Country 1.2.2.2 Trial of best practices in one selected country 1.2.2.3 Summary of consideration from trial 1.2.3.1 Formulation of other AMS action plans 1.2.3.2 Implementing other AMS dissemination activities 1.2.3.3 Holding an information sharing forum for learning obtained from the implementation of extension activities
Main Activity 1.3	To prepare Policy recommendations to AMSs
Activity	1.3.1 Prepare an ASEAN GAP improvement plan. 1.3.2 The GAP-WG discusses the possibility of ASEAN GAP improvement. 1.3.3 Prepare policy recommendations to AMSs.
Detail activity	1.3.1.1 organize the current status of the general rules, group certification, product recall test, and third-party certification system. 1.3.1.2 Create an ASEAN GAP expansion plan 1.3.2.1 The GAP-WG will discuss (probability of) the expansion of the ASEAN GAP. 1.3.3.1 Formulate policy recommendations for AMS. The policy includes action plan for marketing and promotion of ASEAN GAP

Under this component, good practices of GAP will be collected and shared among AMSs. Furthermore, trainings will be conducted to support participants from AMSs to prepare action plans to improve marketing and promotion activities to increase recognition of ASEAN GAP among producers and buyers. Based on the action plans, selected pilot activities will be implemented in some AMSs.

Although it is not directly related to GAP, it is also important to undertake surveys on the management of food safety laws, such as the abilities to execute food safety laws, as well as methodologies and implementation arrangements of law enforcement. These include impartiality of control, sampling procedure, facility and distributor registration, and treatment method when an accident occurs. It is advisable to assess how well this is maintained in AMSs, and to propose step-by-step responses to address the current problems.

The following issues were found as regional characteristics.

- 1) The level of safety inspections set by ASEAN GAP guideline should be standardized as the regional standard.
- 2) For the purpose of increasing the reliability of ASEAN agricultural products and promoting exports outside the region, it is expected that national GAPs of AMSs that are fully compliant with ASEAN GAP will also be given the ASEAN GAP logo.
- 3) It is necessary to create a forum for information sharing, so that AMSs could obtain information on producers and market demands of both ASEAN and outside of ASEAN

The followings should be considered when implementing the activities.

- It is desirable that the GAP-WG focal points will serve as a liaison between AMSs and the ASEAN Secretariat.
- Exchange information and communicate with 2 projects; AADCP II, the Establishment of Multilateral Arrangement for the Mutual Recognition of the Agri-food Standards and Conformity Assessment (MAMRASCA) and the Project for Enhancing the Recognition of the GAP by Partnership with ASEAN by MAFF of Japan, when implementing the project.

(3) Work Plan

Output/ Main Activity/ Activity	Y1	Y2	Y3
1. Policy recommendations are prepared for the promotion of further dissemination and upgrades of ASEAN GAP for expanding recognition and application of the national GAP of each AMS among buyers and producers.			
1.1 To assess and share bottlenecks of GAP promotion and GAP market information in AMSs			
1.1.1 Survey on GAP required by buyers in AMSs.	■		
1.1.2 Sharing survey results in a forum and discussing proposals for promotion of GAP.		■	
1.1.3 Development of Web contents to be uploaded.	■	■	
1.2 To prepare and implement an action plan for marketing and promotion of the national GAP of each AMS, conforming to ASEAN GAP, so as to expand its recognition and application among buyers and producers.			
1.2.1 Observation of good practices and preparation of action plans.		■	
1.2.2 Pilot activities in a selected CLMV country.		■	
1.2.3 Sharing experience and lessons learnt of the pilot activities among AMSs for its spreading out.			■
1.3 To prepare Policy recommendations to AMSs.			
1.3.1 Prepare an ASEAN GAP improvement plan.			■
1.3.2 EWG on ASEAN GAP discusses the possibility of ASEAN GAP improvement.			■
1.3.3 Prepare policy recommendations to AMSs.			■

4.2.2 SPS measures

(1) Direction of Cooperation

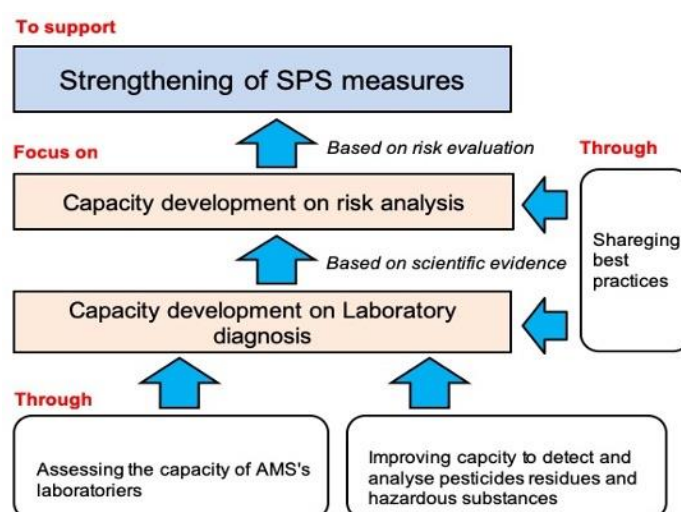
Among the wide range of subjects in SPS, pesticide residue analysis was selected as the focus of the proposed cooperation, following the concept notes agreed in 2018. Pesticide residue analysis is the basis in the field of analytical chemistry related to SPS. Among the food contaminant/hazards dealt by CODEX, pesticide residues category is associated with the most significant number of chemical compounds. The JICA Study Team proposes a project to improve SPS measures related to biological hazards (plant protection and animal health) for medium to long-term approaches.

Short Term Measures: Strengthening SPS measure related to human health (pesticide residue).

Short term measure of the activities focuses on providing technical assistance on pesticide residue analysis of some of the most common pesticides in the region. The target countries are namely, Cambodia, Lao PDR, Myanmar, Viet Nam, Thailand, and the Philippines.

Medium to Long Term Measures: Strengthening SPS measures related to plant and animal health.

Medium to long term measure of the project focuses on providing technical assistance on identification and diagnosis technique for pests and diseases. The target countries are Cambodia, Lao PDR, Myanmar, Viet Nam, and Thailand.



SPS Measures in Concept Note

To protect human, animal and plant life and health

Source: JICA Study Team

Figure 33 Cooperation Areas in Concept Note & Proposed Activity

(2) Proposed Activities

The proposed activity is supporting human resource development in the field of pesticide analysis technology in CLMV, Thailand and the Philippines.

Output 2	Capacities of SPS are strengthened through improvement of pesticide residue analysis.
Main Activity 2.1	To conduct regional training on pesticide residue analysis.
Activity	2.1.1 Conduct country survey on current analytical functions. 2.1.2 Prepare common curriculum for laboratories from the survey results. 2.1.3 Conduct step-by-step training according to the curriculum.

Main Activity 2.2	To assess and level analytical abilities of national reference laboratories (NRLs) in AMSs.
Activity	2.2.1 Evaluate analytical ability using matrix. 2.2.2 Conduct pesticide residue test and evaluate it based on the ASEAN MRL (Maximum Residue Limit). 2.2.3 Participate in the FAPAS*1 Proficiency Test (PT) and evaluate the results 2.2.4 Review Standard Operating Manuals (SOPs) and conduct activities towards obtaining ISO / IEC 17025 certification in the future.
Main Activity 2.3	To prepare recommendations to AMSs.
Activity	2.3.1 Prepare recommendations to AMSs.

These activities shall be carefully coordinated with planned JICA technical cooperation projects in Cambodia and Myanmar.

Although pesticides used are different in each AMS, there are pesticides which are widely used in the region. The MRLs are defined for these commonly used pesticides in ASEAN. Therefore, it is necessary to standardize analytical capabilities targeting those common pesticides.

During the survey, it was confirmed that all NRLs could conduct basic pesticide residue analysis and were operating based on their standard operating procedures (SOP). There are two major benefits to further improve the analytical techniques of NRLs to be accredited with ISO/IEC 17025. Firstly, in ISO/IEC 17025, the requirements for the labs are clearly defined, and it is easier to delineate the areas which need improvement. Secondly, with the accreditation, there will be no needs for obtaining export permit from the inspection lab in the neighboring countries. Simplification of the export procedures could promote further export of the agricultural products and lead to stronger FVC. ASEC also agreed that accreditation of the NRLs by international standards is one of the priorities in promoting SPS measure in ASEAN.

For the first three years of the project, activities aim at enhancing understanding of NRLs on the international quality standards. Since Thailand had already equipped with ISO/IEC 17025 accredited NRL, Thailand is suggested to be the leader of the project to guide the non-accredited NRLs. Countries without the accredited NRLs will be divided based on the current levels of analytical capacities and will gradually improve their analytical skills through trainings, which the leader country will provide guidance. The details on the training content are explained in the box 2.

The following goals are expected to be achieved through the activities: i) common evaluation system for technical capacity of the sample inspectors, as well as the facility's analytical ability will be established for AMSs on pesticide residue analysis; ii) with the above evaluation system, inspection and diagnostic capabilities of an AMS is effectively evaluated, and promote technical assistance among AMSs to narrow down the existing capacity gaps. As shown in the Figure 33, ASEC and JICA had agreed that capacity development on risk analysis to be the step after strengthening the laboratory diagnostic capacity.

The primary beneficiaries of the SPS component are ASEC, CLMV governments' inspectors. Traders of AMSs will also be benefited indirectly.

The followings are the challenges to be addressed.

- i There are substantial differences in the level of analytical instruments and analytical accuracy between CLMV and the rest of AMSs.
- ii The number of facilities and equipment is limited and outdated. It has negative impacts on laboratory operation and human resource development.

- iii Lab operators need to be aware of the importance of meticulous detail and hygiene to avoid contamination during micro-level chemical analysis.
- iv Human resources, especially the field technicians are limited. When someone returns from studying abroad, s/he assumes managerial positions. There are scarce human resources that could provide education and training.
- v While laboratories in advanced ASEAN countries have obtained ISO/IEC 17025 accreditation, those in CLMV have not yet received the accreditation, except for Viet Nam. In certain countries, the Reference Laboratories do not have the required ISO/IEC 17025 accreditation as a Certified Testing Laboratory. It delays the issuance of certificates and it becomes one of the causes of non-tariff trade barriers.
- vi Statistical analysis is required for risk analysis and risk assessment. Statistical data for forecasting pests and market basket surveys⁴⁶ is lacking.
- vii There is financial support from FAO and IAI member countries to AMSs. However, these supports are not enough to cope with many risks, as they are limited to bilateral, short-term, and non-continual supports.
- viii In order for ASEAN to fill in the technical gaps, it is necessary to simultaneously support human resource development to a group of countries classified according to the level of analytical capacities.
- ix In order to evaluate the technical level, it requires an ASEAN technician evaluation system.

The details of the proposed technical training are shown in the box.

Box 2 Framework of the proposed technical training on pesticide residue analysis

1) Framework of participating countries and support contents

During the survey, it was found that technical level of the pesticide residue analysis varies among AMSs. Therefore, it is more effective to group the AMSs of the similar technical levels together to conduct separate trainings for each level. For each group, lectures and lab practice class will be provided. The participants will continue practicing the learnt skill at their home labs. Monitoring and evaluation of the lab performance will be conducted within the group. The proposal of pesticide residues technical support is summarized in Figure 34.

First group: Cambodia, Myanmar
Currently, the analysis from the commercial standard reagent is properly conducted. The training will be firstly provided to conduct analysis of pesticide residues from crop derived samples in matrix.

Second group: Viet Nam, Malaysia
Currently, an individual pesticide analysis is properly conducted from a sample. The training will be provided to improve their efficiency by introducing “multi-

Source: JICA Study Team based on SFA materials.

Figure 34 Proposal for technical support for residual agricultural chemicals

⁴⁶ Market basket study refers to the data analysis that delineates items of high possibility to be purchased together.

component, simultaneous analysis” and methods for accommodating different crops and matrix changes. They will be also supported for more precise low concentration (0.01mg / kg) detection technology*.

*Note that both countries have already established the procedure of analyzing ASEAN MRL compounds. However, the degree of precision had not yet reached to the practical level for detection. (0.01 mg /kg).

2) Place and participants

The location of the training will be selected from one of the participating countries or rotate within participating countries to better understand the situation of each country.

Participants are NRL pesticide residue analysis engineers in each country with practical experience. Ideally, the participants continue their service at their NRLs until the completion of three years training and/or the day of their labs to be accredited with ISO/IEC17025. Unlike the short-term lectures, consisting of lectures, this training encourages participants to practice continuously to improve their technical skills to become leading engineers of their countries.

3) Equipment to be used

It is recommended to use NRL equipment in each country. The reason is that it takes time for the newly installed equipment to be stabilized.

4) Curriculum

1. Lectures on pesticide residue analysis followed by lab exercise will be given in Thailand to all the participating AMSs.
2. Based on the current level of the analytical techniques, tasks will be given with the deadlines (ex. Quantification in smaller scale in an individual analysis followed by the simultaneous analysis). Monitoring and evaluation will be conducted among the group members (NRLs).
3. The above tasks will be repeated until the mid-term of the training period. At the mid-term of the training, each group will present the progress in Thailand through which the remaining challenges for each NRL will be delineated. Additional lectures and lab exercises will be given for preparation to meet requirements for ISO/IEC 17025 accreditation while in Thailand.
4. Each group will continue working on their final tasks, including the re-organization of their SOP in preparation for the accreditation.

The leader country and the development partners will have close communication with all groups to provide necessary technical assistance during the entire period of the training. At the end of the training, all NRLs should be capable of quantifying all the target pesticides in ASEAN MRLs. Based on the results of the project, each AMS will continue their effort toward accreditation with ISO/IEC 17025.

5) Expected outcomes

The initial goal:

All participating NRLs will achieve the results of the PT test to be within $Z \pm 2.0$ (statistical confidence level of around 95%), performed at the final evaluation of the project. This PT test is conducted with the participation of the NRL and ISO/IEC17025 accredited organizations from each country.

The mid-term goal:

Continuous support, including the proper data recording and analytical quality management will be provided to the NRLs, to reach for the goal to obtaining ISO/IEC17025 accreditation in the future.

The long-term goals:

Mutual inspection certificate is established among AMSs that can be issued by any AMSs (achieved upon ensuring the same level of analytical skill across all NRLs). With the certificate, no quarantine inspections are required when crossing borders within ASEAN. This will greatly enhance the trade.

An e-certificate system using ePhyto (electronic phytosanitary certification) will be established.

NRLs of all Member States can join the AFRL Working Group to improve the setting of standards and regulations.

6) Beneficiary

ASEC, participating countries and their NRLs, traders

Notes:

In GMS including CLMV, pesticide resistance is an issue. Counterfeit or illegal pesticides with prohibited chemicals accelerating the pesticide resistance issues. One way to prevent this is to implement sub-project on technical assistance for pesticide product analysis. The analysis of the pesticide itself deals with much higher concentration compared to the residual analysis; thus, only requires much simpler and inexpensive analyzer. This makes the sub-project implementation to be much attainable.

Contamination (occurrence of error due to contamination) must be avoided since pesticide residue analysis is trace analysis.

(3) Work Plan

Output/ Main Activity/ Activity	Y1	Y2	Y3
2. SPS: Capacities of SPS are strengthened through improvement of pesticide residue analysis.			
2.1 To conduct regional training on pesticide residue analysis.			
2.1.1 Conduct country survey on current analytical functions.	■		
2.1.2 Prepare common curriculum for laboratories from the survey results.		■	
2.1.3 Conduct step-by-step training according to the curriculum.	■	■	■
2.2 To assess and level analytical abilities of national reference laboratories (NRLs) in AMSs.			
2.2.1 Evaluate analytical ability using matrix.	■		
2.2.2 Conduct pesticide residue test and evaluate it based on the ASEAN MRL (Maximum Residue Limit).		■	
2.2.3 Participate in the FAPAS*1 Proficiency Test (PT) and evaluate the results		■	
2.2.4 Review Standard Operating Manuals (SOPs) and conduct activities towards obtaining to obtain ISO / IEC 17025 certification. in the future		■	
2.3 To prepare recommendations to AMSs.			
2.3.1 Prepare recommendations to AMSs.			■

* FAPAS ® Proficiency Testing provides the confidential assessment of the performance (accuracy) of an analytical laboratory.

(4) Medium to Long Term Measures

The study team suggest “strengthening of SPS measures related to animal and plant quarantine” as a medium to long term measures. Similar to the pesticide residue analysis, during the survey, it was found that the technical level of the pest identification and diagnosis varies among AMSs. Therefore, the suggested activities aim to enhance and align the technical level of the pest identification of each AMS. For these activities, the project focus on CLMV and Thailand (Greater Mekong Sub-region: GMS).

ASEAN holds both inland and island areas. For island states, quarantine at ports is relatively effective in preventing the incursion of risk from other countries. However, for inland areas such as the GMS, the incursion of the animal and plant pests and diseases is much harder to control and the challenge is how to reduce risks efficiently where pests and diseases of animals could easily cross the borders.

Effective prevention of the incursion of pests and diseases across borders requires extensive measures involving neighboring countries. GMS, especially CLMV with Thailand, is plagued by similar pests and diseases listed in the OIE and IPPC. As in CLMV and Thailand, it is easier to work in the area with similar climate and dietary habits. As the first step for coordinating to eradicate common pests and diseases in the region, it is suggested to try to establish a common inspection and diagnosis methodologies for major pests and diseases. This will assist establishing prediction system by collecting data from uniform analysis.

It is desirable to develop a system to identify common hazards of plant protection and animal health in CLMV and Thailand to evaluate the risks. It is efficient to start eradicating higher rated, a common threat in

the region through risk assessment. To that end, it is important to use common testing techniques and have similar diagnostic capabilities to analyze hazards and to assess risk using common statistical methods.

The prediction system would increase the effectiveness of the use of chemicals in agriculture production. It is expected to generate benefits such as a reduction in the use of medicines for epidemic prevention while increasing yield.

Below is the list of activities proposed for plant protection (IPPC field) and animal disease protection (OIE field).

Work Plan for the SPS measure improvement for plants and animal quarantine

Output 1: Extraction of risks owned by public institutions in CLMV countries

- 1.1. Sharing of plant and animal quarantine data held by CLMV +Thailand and narrowing down risk targets.
- 1.2. Evaluation of the judgment method of each laboratory from the survey results
- 1.3. Work along with the curriculum (preparation and creation of a diagram for identification).

Output 2: Evaluation of analytical ability by CLMV and supporting countries

- 2.1. Conduct of field survey
- 2.2. Tabulation and evaluation of survey results
- 2.3. Creation of an outbreak prediction program
- 2.4. Creation of an outbreak prediction program

Box 3 **Proposal in the SPS measure related to plants and animal quarantine for middle to long term measure:** Support leveling of pest identification and diagnosis methods for CLMV + Thailand

1) Proposals in the IPPC field

Area: CLMV + Thailand is a country in the Greater Mekong Sub-region (GMS).

Background: The main crops in this area include rice, sugar cane, cassava and corn. *Spodoptera spp.* (Lepidoptera) is an important insect that damages these crops. Among them, *Spodoptera frugiperda*, Army worms (*Spodoptera exigue*) and other worms of same family widely harm agricultural products.

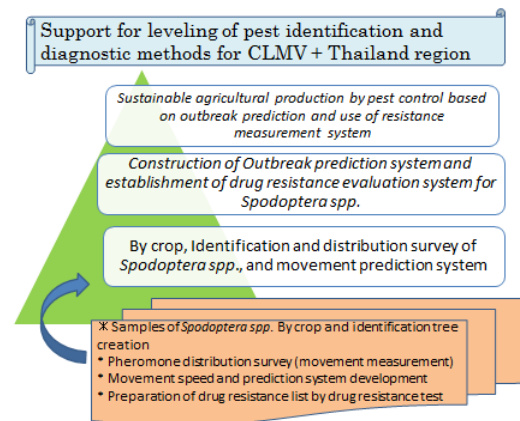
In particular, from EPPO Global Database reports that in recent years, this kind of pest had been widely distributed and had become a problem worldwide. MAFF (The Ministry of Agriculture and Fisheries of Japan) also reported that this type of pest had landed in Kyushu. MAFF is conducting quarantine under a special system.

Effect: By grasping the occurrence and movement of this pest, it is possible to know which crop has suffered how much damage, and it becomes possible to take precautions before being damaged.

Survey method: For the occurrence survey, the pheromone attracting method can be used, and systematization using the survey results is expected. Furthermore, by using the pesticide resistance evaluation method by the Insecticide Resistance Action Committee (IRAC), it is expected to control with appropriate pesticides. Appropriate use of pesticides leads to IPM, so it can be applied to GAP.

By using both systems, sustainable control and production can be expected. Figure in the right shows how to proceed with the project.

Note: JICA together with Kyusyu University and others had been implementing “The Project for Development and Dissemination of Sustainable Production System Based on Invasive Pest Management of Cassava in Viet Nam, Cambodia, Thailand (2016-2021).” The proposed project is ensured that the selected topics do not interfere with the other project.



Source: JICA Study Team based on SFA materials.

Figure 35 Proposal in the IPPC field

2) Proposals in the OIE field

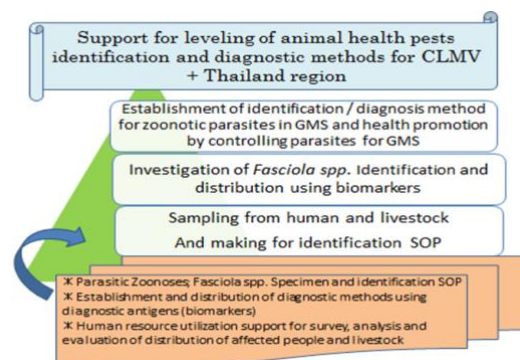
Background: CLMV and Thailand are countries in the GMS area. Moreover, this area leads to land and rivers, and the climate, and people's eating habits are similar. From the results of the previous research project, it was found that hepatic disease spread as a zoonotic parasite in these areas. Although it is a plain theme among zoonosis, it occupies an important position in this region. This had not yet become a pandemic, but it remains in an epidemic state.

Among them, Fascioliasis is also transmitted in the food chain, so it is important to investigate the state of contamination in the area. First of all, it is important to create a SOP and grasp the life cycle of specimen preparation and identification.

Effect: Veterinary involvement is also important for distribution studies, parasite biomarkers (crude protein antigens) can be used to diagnose infection status with kits based on the ELIZA method. It is also possible to conduct surveys that also serve as human resource development. It is expected that this will be investigated in each country to provide comprehensive control and treatment by grasping the infection situation along rivers and lakes in the GMS area.

Note: This project is in the field of veterinary parasitology, and the biology students can participate to receive lessons. Therefore, this project can be implemented without requiring many veterinarians.

Figure in the right shows how to proceed with the project.



Source: JICA Study Team based on SFA materials.

Figure 36 Proposal in the OIE field

4.2.3 Fisheries

(1) Direction of Cooperation

Fisheries component is to “contribute to the improvement of the safety and security of fishery products” and this component will implement the activities which fit with the contents of Activity 2.3.3 on “Strategic Plan of Action on ASEAN Cooperation on Fisheries 2016-2020”. The activities will contribute to enhance the quality of fishery products and strengthen the export capacities of AMSs.

1) Background and Current problems

In recent years, the needs for safety and security of fishery products has increased. The safety of fishery products is secured by reliable data and the security of fishery products is ensured through the recognition of information by consumers. Because fishery products have characteristics like the rapid deterioration of freshness and its supply chain is established on the complicated and specialized networks, the analysis and assessment of hazards at all stages of the supply chain should be done, and their countermeasures should also be identified.

Especially in developed countries, various efforts such as construction of traceability system on the process from production to sales, introduction of GAqP which is the management of a production process, and introduction of hygienic control system such as HACCP in processing stage are implemented. Efforts are being expanded to control the quality in some countries in ASEAN as well. On the other hand, in some countries, food safety management is not implemented well due to the lack of capacity of fishery authorities, lack of infrastructure and weak awareness on quality control.

2) Regionality

The purpose of this component is to strengthen the “SPS in fisheries” in ASEAN. The scope of the “SPS in fisheries” is broad. The activities will be conducted based on the strategy to contribute to ensure the food safety of fishery products. Through the activities at each stage of the supply chain, it is expected that the safety and security of fishery products will be strengthened.

Especially, it is considered that regional efforts under the project will produce the following benefits.

- a) Method on information sharing is improved to conquer the barrier of distribution promoting of fishery products.
- b) Learning from other countries so that the quality of fishery products produced in each country is improved.
- c) Cooperation and knowledge sharing among member states is strengthened and reliability of fishery products among member states is upgraded.
- d) Along with the enhancement of reliability, the distribution intra-ASEAN is promoted.
- e) Reliability of fishery products “produced in ASEAN” is enhanced and the export to extra-ASEAN is promoted.

As described above, the supply chain of fishery products has a vulnerability. The safety of whole supply chain will be collapsed if one of chain is damaged. By implementing the regional-wide project in AMS which are much more like supplier countries, the outcomes which lead to the food security of fishery importing countries including Japan will be expected.

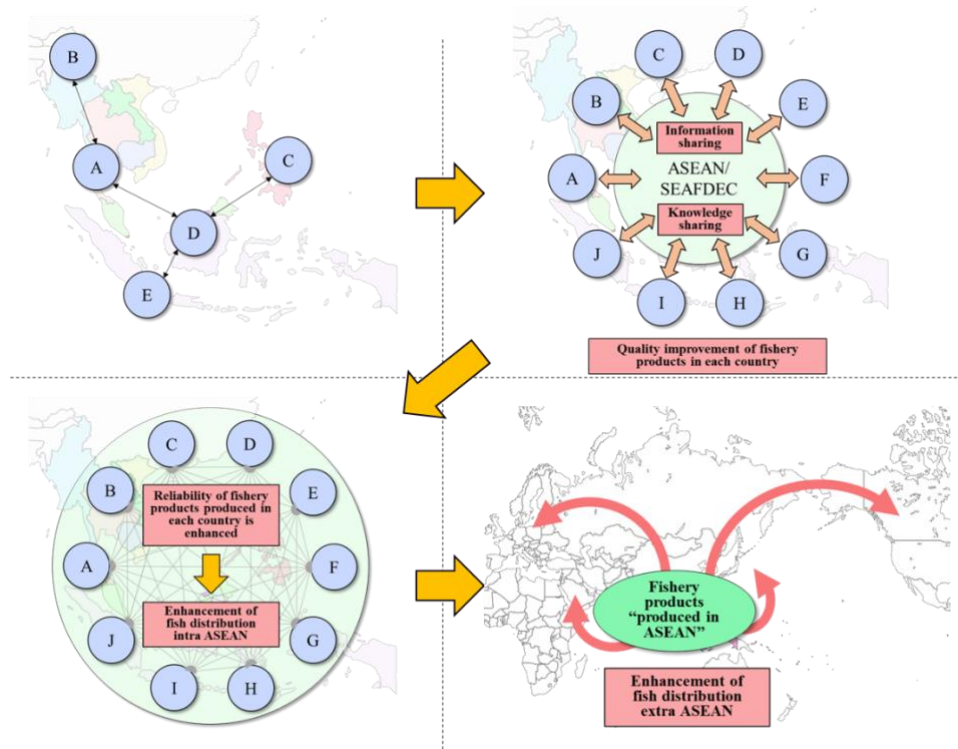


Figure 37 Conceptual diagram of expansion of activities

(2) Proposed activities

1) Policy of activity

The issues discussed on 3.3.4 are reviewed from the perspective of “adequacy of regional-wide support” (Table 37).

Table 37 Sorting out of issues

	Issues	Characteristics of issues (adequacy of regional-wide support, support by other development partners, etc.)
1	Evaluation, analysis and information sharing on GAqP operations and systems of each country are insufficient.	[adequacy of regional-wide support] Certification system (function of AB and CB), acquisition procedures, relations with export requirement differ by each country. Equalization of each National GAqP will be promoted by adopting related information of other countries through information sharing. [support by other development partners] AADCP has supported the development the ASEAN Guidelines on Good Aquaculture Practices for Food Fish (ASEAN-GAqP) and training curriculum for ASEAN-GAqP. On the other hand, it is desirable to hold more opportunities of information sharing on GAqP systems and status of operation.
2	Ability of GAqP auditors differs by country.	[adequacy of regional-wide support] It is desirable that the capacity building of auditors in each country is conducted by bilateral cooperation which fit to each status of operation. However, the information sharing about efforts on capacity building and auditing methods among each country should be actively implemented.
3	Evaluations and analysis of systems related to “SPS in fisheries” of each country are insufficient.	[adequacy of regional-wide support] Regional-wide project will realize the effective implementation of horizontal analysis and evaluation of “SPS in fisheries” in each country. Also, it fit with the purpose that is to secure the safety and security of fishery products in whole ASEAN.

	Issues	Characteristics of issues (adequacy of regional-wide support, support by other development partners, etc.)
4	Inspection systems at each point on supply chain differs by country.	[adequacy of regional-wide support] From the viewpoint of “secure the safety and security of fishery products”, level enhancement of inspection systems of each country is a priority issue. It is effective to formulate guidelines for securing the operation of traceability in each country by taking account of feasibility. The efforts to secure the safety of fishery products “produced in ASEAN” fit the purpose of regional-wide project.
5	Method on post-harvest fish handling by fishery operators is not well managed.	[adequacy of regional-wide support] The efforts on enhancement of post-harvest processing technology in full coordination among region leads to improve the quality of fishery products “produced in ASEAN”. However, considering the benefit effectivity, it is considered that the intensive support such as trainings which fit to the situation of each country by bilateral cooperation is adequate.
6	It is difficult to grasp the export/import systems of each country from other countries.	[adequacy of regional-wide support] As well as issue 3, the regional-wide support is considered to contribute to effective improvement. Although the introduction of unified SPS system in ASEAN was proposed by interview survey, it is untimely because there is a great institutional difference among each country. Also, the support needs about improvement of inspection capacity of laboratory staffs are requested. To conduct level-specific training in regional-wide project is one of countermeasures but it is appropriate to conduct the activities which fit to current situation and needs of each country by bilateral cooperation.

Source: JICA Study Team.

In the view of characteristic of issues, status of support by other development partners and nature of this project (intention by ASEC and resources by SEAFDEC), following three activity principles are summarized.

a) Hygiene management system of fishery products is assessed and shared

Hygiene management mechanism and system at each point of fishery supply chain in each country will be analyzed, evaluated and shared. Priorities are post-harvest processing on capture fishery, countermeasures for transboundary aquatic disease outbreak, traceability system, export/import and quarantine system and laboratory inspection mechanism.

The improvement of post-harvest processing technology on boards and in fish landing sites is seen as a challenge from the viewpoint of quality management in each country. The capacity building for staffs of fishery authorities will be implemented to evaluate adequately the status of fish handling.

In addition, the workshop towards the formulation of regional ecolabel will be implemented. The regional ecolabel is assumed to be formulated in the second phase. The overall goal of formulation of ecolabel is to enhance the fishery distribution intra and extra ASEAN, as well as, to realize the sustainable utilization of fishery resources and the quality improvement of fishery products which produced in ASEAN. The status of operation, certificate system and status of penetration of MSC (Marine Stewardship Council), ASC (Aquaculture Stewardship Council) and FOS (Friend of the Sea) which are developing in the world will be shared. In addition to that, the knowledge of experience in Japan such as MEL (representative example of fishery ecolabel in Japan), the knowledge of “SH“U”N project: Sustainable, Healthy and “Umai” Nippon seafood project” and “Multi-task support System for Ecolabelling and Seafood Certification (MuSESC)” will be utilized. “SH“U”N project” and “MuSESC” are implemented by Japan Fisheries Research and Education Agency

Box 4 Trend of the fishery ecolabel

The “Code of Conduct for Responsible Fisheries” was adopted by FAO general meeting in 1995. As an effort on the sustainable development and utilization of fishery resources and ecosystem protection, the consideration on fishery ecolabel was proceeded. After that, a lot of certificate scheme on fishery ecolabel was emerged in the world such as MSC (Marine Stewardship Council) and ASC (Aquaculture Stewardship Council). It is said that there are more than 140 fishery ecolabels in the world. In 2013, GSSI (Global Sustainable Seafood Initiative) was established and it takes a role to recognize the scattered fishery certifications. As of March 2019, four capture fishery certificates and four aquaculture certificates are recognized by GSSI. In addition, MEL from Japan was recognized in December 2019.

Table 38 Certificate scheme recognized by GSSI (as of March 2019)

Name of Scheme	Country	YY/MM of recognition
Certificate scheme on capture fishery		
Alaska RFM (Alaska Seafood Marketing Institute)	USA	July. 2016
IRF (Iceland Responsible Fisheries)	Iceland	October. 2016
MSC (Marine Stewardship Council)	UK	March. 2017
G.U.L.F. (Gulf United for Lasting Fisheries)	USA	October. 2018
Certificate scheme on aquaculture		
BAP (Best Aquaculture Practices)	USA	October. 2017
GLOBALG.A.P. (Good Agricultural Practices)	Germany	April. 2018
ASC (Aquaculture Stewardship Council)	Netherland	September. 2018
CQA (Certified Quality Aquaculture)	Ireland	February. 2019

As fishery ecolabel established in Japan, MEL (capture fishery ecolabel) and AEL (aquaculture ecolabel) are famous. It was agreed in 2018 that these two certificates will be integrated. Current MEL certificate is divided into three categories: Production Stage Certification (Capture Fisheries), Production Stage certification (Aquaculture) and Chain of Custody (CoC) Certification. The scheme owner of MEL is Marine Eco-Label Japan Council and the audit/ certificate is implemented by the third parties which are accredited by Japan Accreditation Board (JAB). To obtain the international reliability on fishery ecolabel, MEL applied for GSSI’s recognition on September 2018 and GSSI has provided formal recognition of MEL on December 2019.

b) Issues on Certification and Accreditation Systems for ASEAN GAqP are identified and shared

It is expected that the aquaculture industry will further develop in ASEAN region and the further increase of export is also estimated. Aquaculture is the fastest growing industry in the fisheries sector and the expansion of aquaculture production needs to take place in a sustainable manner. Hence, this component will include the GAqP related activities. Through the interview survey for ASEC, following seven points were raised as support contents about ASEAN GAqP (as of September 2019).

- Formulation of certification system, including certification process, protocols, audit checklist, auditor’s qualification, etc.
- Training for auditors
- Development of standards for aquatic plants and ornamental fishes
- Aligning of national standards on GAqP to ASEAN standards
- Development of accreditation system for certification bodies
- Establishment and/or strengthening of testing laboratory
- Market promotion in collaboration with export markets (product branding)

ASEC has already established the expert working group on ASEAN GAqP and the discussion points include above issues. The first working group is planned to be held on June 2020.

Accordingly, some workshops, field surveys and technical meetings will be implemented in collaboration with EWG-ASEAN GAqP in order to consider the development of guidelines on certification, accreditation and auditing of ASEAN GAqP in the future.

c) ASEAN guideline for inspection of fish and fisheries products is developed

Based on the result of Activity 1 and 2 which analyze and evaluate the inspection mechanism and the trend on fishery sector of each country, the regional inspection guideline which can be utilized for regional-wide will be formulated. The assumed range of this activity is to ensure the accuracy of whole traceability system from the viewpoint of macro, not from viewpoint of micro which tries to set the criteria value of each inspection procedure. Also, the status of utilization and the issues on utilization of the “Regional Guidelines on Cold Chain Management of Fish and Fishery Products in ASEAN Region” which SEAFDEC adopted in 2018 will be shared and feedbacked to this project. The guideline is assumed to be utilized by officers of fishery authorities of each country. By showing the standard which will be utilized in regional-wide, the quality of fishery products “produced in ASEAN” will be improved.

Six issues described in 3.3.4 and three proposed principles of activities are summarized in the figure below.

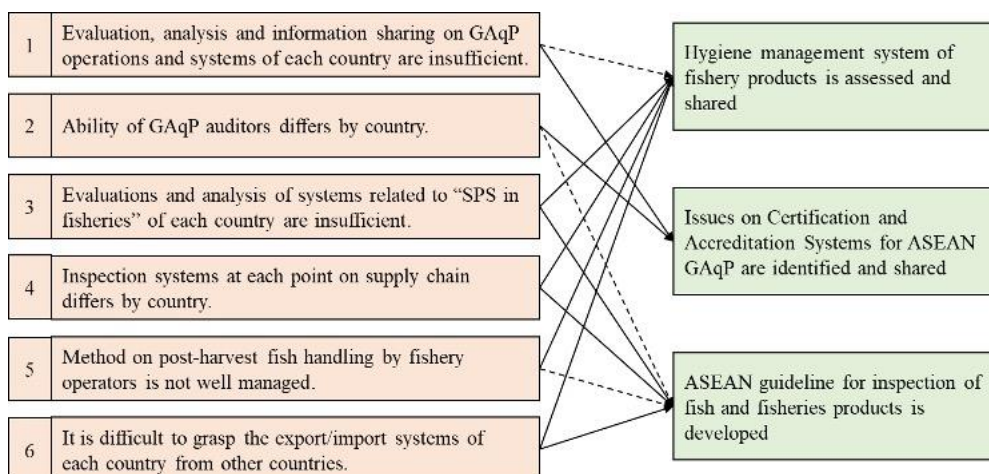


Figure 38 Relation between issues and activity principles

2) Proposed detail activities

The following table shows the proposed activities. In addition to the ASEC (EWG-ASEAN GAqP), it is assumed that the Activity Implementer will be SEAFDEC which has a lot of knowledge and experience on the implementation of seminars and trainings in ASEAN region and the formulation of guidelines. It is proposed that a project coordinator with fishery expertise will be dispatched. This coordinator will take the role of accounting and operation management to contribute the facilitation of the communication between JICA and SEAFDEC.

Output 3	Food safety on fishery sector is improved by promotion of GAqP and development of ASEAN guidelines and relevant principles on fisheries inspection mechanism.
Main Activity 3.1	To assess and share information on hygiene management system of fishery products.

Activities	3.1.1 Identify roles and relationships of food value chain stakeholders in AMSs. 3.1.2 Study good practices on FVC development in AMSs. 3.1.3 Knowledge sharing seminar on fishery supply chain of each country including capacities of national laboratories to address fish quality and safety management issues and perform risk analysis. 3.1.4 Information sharing workshop on countermeasures for transboundary aquatic disease outbreak 3.1.5 Workshop toward the formulation of regional fisheries ecolabel.
Main Activity 3.2	To strengthen the implementation of ASEAN Good Aquaculture Practices (ASEAN-GAqP)
Activities	3.2.1 Workshop for the assessment of operation status of GAqP in AMS (clarification of the issues and problems) 3.2.2 Prepare policy recommendations including follow-up activities on PPP based FVC development in AMSs. 3.2.3 Technical workshop toward the development of draft guidelines
Main Activity 3.3	To formulate ASEAN guideline for inspection of fish and fishery products at each point on supply chain
Activities	3.3.1 Information sharing on the status of utilization of Regional Guidelines on Cold Chain Management of Fish and Fishery Products. 3.3.2 Develop draft ASEAN guideline for inspection of fish and fisheries products. 3.3.3 Organize technical workshop to discuss the draft guideline and to formulate of ASEAN guideline.

The basic framework of this activity has agreed in principle in the “the Forty-second Meeting of the Program Committee of the Southeast Asian Fisheries Development Center” which was held in November 2019. The below statement is the excerpt of draft record of the meeting.

“The 42PCM took note and endorsed of the project “ASEAN-JICA Food Value Chain Development Project” (Annex 8) as presented by the representative from the SEAFDEC Secretariat.”

Then, the draft activities were modified in February 2020 based on the comments and input from ASEC.

3) Priority countries

Although the target countries of this project is all ten countries of ASEAN, a greater impact will be achieved by varying the intensity of supports taking into consideration the following points; the degree of the development of fishery sector, the living standard of consumers, the trends on export/import, etc. The below table shows the grouping of AMSs into four groups based on the survey results and the degree of the development of fishery sector. Also, the intensity of supports for each group are showed in the table.

Table 39 Current situation of each country and intensity of supports

	Country	Current situation	Intensity of supports
Group 1	Cambodia	These countries have vulnerability on infrastructure and institutional aspects for ensuring the safety of fishery products. These countries relatively highly depend on the support by development partners.	The focused assistance is needed to these countries. The implementation of the activities which are expected to benefit to these countries will enable the quality enhancement of fishery products produced in ASEAN.
	Lao PDR		
Group 2	Philippines	The fishery sector of these countries is relatively active. Main fishery related systems were established. On the other	Both countries have potentials of development in the future. By analyzing the specific issues which each country

	Country	Current situation	Intensity of supports
	Myanmar	hand, compared with Thailand and Malaysia, the necessity of supports by other countries and development partners is high.	has and conducting adequate activities, the effective outcomes will be gotten.
Group 3	Indonesia	These countries are the main producers in Southeast Asia as well as the keystone on the fishery trade. These countries establish the fishery related systems and mechanisms with relatively high standard by individual country.	These countries take an important role in a fishery value chain. The enhancement of impact on the whole project is expected by implementing the activities which benefit to these countries.
	Malaysia		
	Thailand		
	Viet Nam		
Group 4	Brunei Darussalam	These countries are consuming countries of fishery products. There are many consumers who demand fishery products with relatively high quality.	For the knowledge sharing seminar, it is anticipated that these countries provide the good examples of mechanism establishment and the information by view of consumers.
	Singapore		

Although all activities will be implemented as a participatory style from all AMSs, the needs from Group 1 and 3 will be covered mainly. By implementing the workshops and seminars which will benefit preferentially to these countries, the whole impact of project will be enhanced. On the other hand, the benefits to Group 2 and 4 will be low. It is necessary to satisfy the regional benefit by taking the contribution for these countries to the extent possible into consideration. For example, it is expected to discuss about the characteristics and specific issues which these groups have in knowledge sharing seminar.

(3) Work Plan

Output/ Main Activity/ Activity	Y1	Y2	Y3
3. Fisheries: Food safety on fishery sector is improved by promotion of GAqP and development of ASEAN guidelines and relevant principles on fisheries inspection mechanism.			
3.1 To assess and share information on hygiene management system of fishery products among AMSs.			
3.1.1 Review workshop on hygiene management on fishery supply chain in AMS.	■		
3.1.2 Workshop on the assessment of appropriate post-harvest and processing technologies (fish handling).		■	
3.1.3 Knowledge sharing seminar on fishery supply chain of each country including capacities of national laboratories to address fish quality and safety management issues and perform risk analysis		■	
3.1.4 Information sharing workshop on countermeasures for transboundary aquatic disease outbreak.		■	
3.1.5 Workshop toward the formulation of regional fisheries ecolabel.			■
3.2 To strengthen the implementation of ASEAN Good Aquaculture Practices (ASEAN-GAqP) (through the EWG ASEAN GAqP).			
3.2.1 Workshop for the assessment of operation status of GAqP in AMS (clarification of the issues and problems).	■		
3.2.2 Desk research to develop ASEAN GAqP certification, accreditation and auditing guidelines		■	
3.2.3 Technical workshop toward the development of draft guidelines.			■
3.3 To formulate ASEAN guidelines for inspection of fish and fishery products at each point on supply chain.			
3.3.1 Information sharing on the status of utilization of Regional Guidelines on Cold Chain Management of Fish and Fishery Products.		■	
3.3.2 Develop draft ASEAN guideline for inspection of fish and fisheries products.			■
3.3.3 Organize technical workshop to discuss the draft guidelines and formulate ASEAN guideline.			■

(4) Proposed activities on long-term perspectives (for second phase)

1) From a standpoint of Smart Fishery

Technology application is brought to fishery sector with the spread of IoT (Internet of Things) and ICT (Information and Communication Technology) in recent years. The efforts to manage the catch information, etc. as an electronic information is tested by SEAFDEC and USAID Oceans (“eACDS: electronic ASEAN Catch Documentation Scheme”). It is considered that the smart fishery will be introduced sequentially to AMS which includes the more developed country.

In the second phase, the adopting of standpoints on smart fishery will be considered and the following effects are expected to be derived; 1) the feasibility survey on introduction of advanced technologies which are operated in Japan to ASEAN region, 2) the verification test of promising technology, 3) the consideration of expansion of overseas operation by Japanese companies which have fishery related IoT and ICT technologies. Below technologies are proceeded in Japan.

Information collection of seawater temperature and ocean waves by utilizing oceanographic observation buoy/ Data collection by utilizing drone (occurrence of red tide and aquatic animal disease, detection of fish school, bird damage prevention)/ Feeding management and Sink-float operation of aquaculture cages by utilizing tablet and/or smart phone/ Measuring number of fishes in the cages and Surveillance of poaching boat by utilizing AI technology/ Prediction of fishing ground based on marine data, etc. (source: Written by survey team based on the case examples on the White Paper on Fisheries)

2) From a standpoint of regional ecolabel in fishery sector

It is expected that the consumers who demand fishery products which are produced by considering sustainability and environment will be increased with an increase of the number of middle-income groups. In addition to that, the necessity of ecolabel certificate in fishery sector will be further enhanced when these fishery products will be exported to North America and Europe from the standpoint of strengthening international competitiveness. On the other hand, there is an aspect that it is difficult for micro, small and medium-sized enterprises to apply for MSC and ASC which are diffused in the world in regard of the cost, period of examination, administrative procedures, etc. As a measure of enhancing the development of fishery sector in ASEAN (both of intra-region and extra-region), the formulation of regional ecolabel which has an international reliability and enables small and medium-sized enterprises in ASEAN to apply is considered.

The information sharing on status of dissemination, recognition by consuming countries and administrative procedures on certificate acquisition of main fishery ecolabels will be conducted on the workshop in Activity 3.1.5. In the second phase, some activities which head to the formulation of regional ecolabel will be implemented, as well as, the detail countermeasures for the obstacles on the dissemination of ecolabel will be considered (see Box). In the future, these activities will aim to be approved by GSSI and lead to the strengthening of the export competitiveness of fishery products which are produced in ASEAN.

Box 5 Recognition of ecolabel in fishery sector in Japan

According to the survey by MAFF in 2018-2019, the percentage of recognition on the mark (meaning) of fishery ecolabel is as followed; 7.6% of consumers, 11.5% of fishermen, 22.2% of distribution/ processing operators. On the other hand, the survey result of user’s buying incentive of consumers shows that 7.9% selected “even if the price is higher more than 10% than original price, I will buy the products with fishery ecolabel” and 22.9% selected “even if

the price is higher less than 10% than original price, I will buy the products with fishery ecolabel". It can be said that about 31% of consumers are active consumers for fishery products with ecolabel. By adding the percentage of consumers who selected "will buy the products with fishery ecolabel if the price is same with original price", around 80% is potential consumers of ecolabel products.

On the other hand, only 25.7% of fishermen and 36.2% distribution/ processing operators have intention to acquire the fishery ecolabel. The top 2 reasons that fishermen and distribution/ processing operators do not want to acquire the fishery ecolabel are "it is not necessary" and "do not think the acquisition will lead to the improvement of the sales".

From these reasons, there is huge gap between consumers and operators (fishermen, distribution/ processing operators). Accordingly, "1) to show the merits of acquisition of certification for the operators" and "2) to continue the public relations activities of ecolabel products for the consumers" are important. As well as, the results of above survey show that "the administrative procedures are troublesome" and "cost is high" are the negative reasons of acquiring certificate for fishermen. So, it can be said that the fishermen recognize that the merits of acquisition are too small compared to the acquisition cost, effort and period. "3) establishment of system towards the simplification of procedures and reduction of burden on cost" is also important issue.

4.2.4 PPP for FVC (Theme-Specific Regional Cluster)

(1) Direction of Cooperation

1) The Topic of Theme-Specific Cluster

Throughout the cluster development study, three issues such as 1) safety agricultural and food products, 2) human resource development of ASEAN private business operators, and 3) strengthening PPP mechanism were recognized as common interests of ASEAN food value chain stakeholders. The most appropriate issue for the theme-specific cluster was identified from the above-mentioned three issues by two screening processes.

a) First Screening: Analyzing Needs of ASEAN Project

The needs of the ASEAN Project were analyzed for the selected three topics.

i) Safety agricultural and food products

Needs are low to medium.

Promoting safety agricultural products/food is in line with ASEAN policy. ASEC is already working on this issue. There are existing ASEAN mechanisms, as shown below.

- ASEAN Task Force on CODEX
- ASEAN Task Force on Genetically Modified Food Testing Network
- Prepared Foodstuff Product Working Group (PFPWG)
- Expert Working Group on Good Agricultural Practice (EWG-GAP)
- ASEAN Trade in Goods Agreement Committee on Sanitary and Phytosanitary (AC-SPS)

Many of AMSs recognized GAP, organic and Halal certification systems as effective measures to ensure the safety of agricultural and food products. To support such activities, ASEC has already developed related guidelines.

The safety of agricultural products/foods is an important issue. However, the need to establish a theme-specific cluster on safety agricultural products/foods is low to medium, considering that ASEC is already working on this issue.

ii) Human Resource Development of ASEAN Private Business Operators

Needs are high.

The human resource development of ASEAN private business operators is in line with ASEAN policy. There are several existing initiatives for the human resource development of ASEAN private business operators. “ASEAN-Japan Cooperation Project for Human Resource Development in Food-related Areas through Partnership with Universities in ASEAN Region” is providing students of ASEAN universities with opportunities for advanced learning about the food industry, information on employment with existing and future local affiliates of Japanese companies and experience of Japanese food culture. Under this initiative, opportunities for the human resource development are limited to students. The project is not responding needs of ASEAN SMEs directly, which is the capacity development of company staff.

iii) Strengthening the PPP mechanism

Needs are high.

Strengthening PPP is in line with ASEAN policy. There are several guidelines related to SME and PPP development, as shown below.

- ASEAN Public Private Partnership Guidelines (Economic Research Institute for ASEAN and East Asia, 2014)
- The Reference Guidebook for ASEAN SME Exporters (Tra and Anh)
- Handbook for MSME Access to Alternative Sources of Finance in ASEAN (The ASEAN Secretariat, 2017)

It is obvious that such guidelines could be used effectively. However, none of the above is directly explaining about PPP in food value chain development. For example, “ASEAN Public Private Partnership Guidelines” mainly discusses the principles and mechanisms of PPP. It must be difficult for food value chain stakeholders to understand how to achieve successful PPP from this document. It is necessary to develop specific guidelines for PPP in food value chain development with good practices.

There are several platforms in AMSs which can develop a business network of stakeholders. For example, Grow Asia has developed the following five platforms.

- Cambodia Partnership for Sustainable Agriculture
- The Myanmar Agriculture Network (MAN) (established in 2013)
- Partnership for Indonesia’s Sustainable Agriculture (PISAgro) (established in 2012)
- Partnership for Sustainable Agriculture in Viet Nam (PSAV) (established in 2010)
- Philippines Partnership for Sustainable Agriculture (PPSA) (established in 2015)

Although such platforms have been established, there are needs for strengthening their functions. The necessity of strengthening the mechanism of existing platforms was agreed by Grow Asia. For example, Five AMSs do not have a platform yet. The existing platforms are not recognized as a part of the ASEAN mechanism. The platforms are not linked with other platforms nor ASEC. Inter-ministerial coordination among government stakeholders is still poor.

b) Second Screening: Analyzing the Possibility of Providing Appropriate Supports by JICA

Possibility of providing appropriate supports by JICA was analyzed for 1) Human Resource Development of ASEAN Private Business Operators and 2) Strengthening the PPP mechanism, which are recognized as topics with high needs.

i) Human Resource Development of ASEAN Private Business Operators

Appropriateness of providing supports from JICA is low.

JICA currently does not have an appropriate scheme to develop human resources in the private sector, especially for providing long-term and intensive training by Japanese companies, which is requested by many SMEs in ASEAN

ii) Strengthening the PPP mechanism

Appropriateness of providing supports from JICA is high.

Japan has rich experience in developing the food value chain by applying PPP. Japanese business partners could also work together with ASEAN partners by transferring knowledge and technologies.

c) Conclusion

Based on the above-mentioned analysis, “strengthening PPP mechanism” was proposed to be the target activity of the ASEAN-JICA Project. Using the term “cluster” in the project formulation process was avoided as it might confuse some stakeholders in the ASEAN food value chain, as AMSs are using the term “cluster” in different ways.

2) **Brief of the Component**

It is important to strengthen the PPP implementation mechanism in ASEAN food value chain development. It should be noted that most AMSs have not yet developed strategies for PPP development and that PPP in food value chain development is still in an early stage in many countries.

As the first step of strengthen PPP implementation mechanism, JICA Study Team proposes the following two activities, considering that the JICA-ASEAN technical cooperation project period will be three years. The first activity is conducting good practice survey on PPP related activities and the second is formulating policy recommendations on strengthening PPP implementation mechanism.

The good practice survey includes a survey and review of on-going JICA PPP projects such as “Public-Private-Partnership Project for the Improvement of the Agriculture Product Marketing and Distribution System in Indonesia” and “Project for improvement of reliability of safe crop production in the northern region in Viet Nam”. According to the interview survey by the Study Team, common challenges of PPP projects in ASEAN is on sustainability. This is mainly due to the lack of a PPP implementation mechanism in ASEAN. Ministry of Agriculture is commonly nominated as the counterpart agency of agriculture-related PPP projects. However, departments in charge of promoting agricultural products in the Ministry of Agriculture are new and relatively weak as compared to departments in charge of production. In some countries, agro-processing and food industry are under the supervision of the Ministry of Industry, and the promotion of agricultural products are under the supervision of the Ministry of Commerce. Nevertheless, close coordination between ministries is often limited. Foreign experts of PPP projects are obliged to work hard by themselves to create network between farmers and (international) buyers, but it is often challenging to ensure the sustainability of those projects after completion. This point should be duly considered in the good practice survey.

As it is indicated in Figure 8, the number of JICA Public-Private Partnership Projects is the largest in Viet Nam. It indicates that many Japanese private operators are planning to start or expand their businesses in Viet Nam. It could be said that the establishment of the Global Food Value Chain by Japan is successful in Viet Nam. It must be interesting to clarify the reasons for this in the good practice survey.

Policy recommendations should be practical and pragmatic both for ASEC and AMSs. Performance goals and periods need to be indicated clearly.

(2) Proposed Activities

The proposed activities for PPP for FVC component are as follows.

Output 4	Strategies for promoting PPP based FVC is developed.
Main Activity 4.1	To conduct case studies to identify good practices of PPP based FVC in ASEAN region.
Activities	4.1.1 Identify roles and relationships of food value chain stakeholders in AMSs. 4.1.2 Study good practices on FVC development in AMSs.
Main Activity 4.2	To prepare Policy recommendations to AMSs.
Activities	4.2.1 Share the study results among AMSs. 4.2.2 Prepare policy recommendations including follow-up activities on PPP based FVC development in AMSs.

(3) Work Plan

Output/ Main Activity/ Activity	Y1	Y2	Y3
4. FVC: Strategies for promoting PPP based FVC is developed.			
4.1 To conduct case studies to identify good practices of PPP based FVC in ASEAN region.			
4.1.1 Identify roles and relationships of food value chain stakeholders in AMSs.	■		
4.1.2 Study good practices on FVC development in AMSs.	■	■	
4.2 To prepare Policy recommendations to AMSs.			
4.2.1 Share the study results among AMSs.			■
4.2.2 Prepare policy recommendations including follow-up activities on PPP based FVC development in AMSs.			■

(4) Medium to Long Term Measures

The objective of the component is to strengthen the PPP mechanism for food value chain development. PPP mechanism for FVC development is in the initial stage for most of AMSs. To create tangible benefits from the project, implementing activities with medium to long term perspective is necessary, in addition to the activities for the three years. “Establishing PPP development mechanism for the food value chain, utilizing knowledge and experiences of the private sector, especially for marketing and promotion,” is an ultimate goal of medium to long term activity.

4.3 Management of Cooperation Activities and Others

4.3.1 Proposed Management structure of the cooperation

(1) Management Arrangement

Sponsoring ASEAN Body: The Senior Officials Meeting of the ASEAN Ministers on Agriculture and Forestry (SOM-AMAF) is the Sponsoring ASEAN Body for the project. It is responsible for overseeing the project's overall implementation.

Proponent: Department of Food, Agriculture and Forestry of ASEAN Secretariat.

Implementing Agency (IA) : Department of Food, Agriculture and Forestry (FAF) of ASEAN Secretariat, plays a role of focal point. JICA Japan International Cooperation Agency (JICA) , in collaboration with Depart of FAF, provides technical assistance to ASEC.

The IA is responsible for the following:

- Preparation of necessary documents as well as other logistical arrangements which relate to the Project activities.
- Coordination with all of the relevant sectoral bodies and stakeholders.
- Submission of annual progress report to the ASEC.
- Submission of the project's completion report to the ASEC at the time of project completion.

(2) Human-Resource Inputs

JICA as the Implementing Agency procures the implementing personnel according to JICA procurement procedures.

(3) Monitoring and Evaluation Arrangements

The monitoring and evaluation of the project is undertaken by the ASEAN Secretariat with the assistance of JICA. M&E follows the JICA Evaluation Guideline and/or ASEAN procedures. IA prepares project completion and financial report and submits to ASEC.

4.3.2 Sustainability

- The number of participants of workshops and trainings is limited. Therefore, Project confirms the mechanism on knowledge sharing in each country (GAP).
- Mutual evaluation can be carried out continuously through exchange of human resources (SPS).
- It is important to substantialize the policy recommendations to ensure sustainability of the project impact. It is a responsibility of ASEC to monitor the progress of application of policy recommendations. It is important for ASEC to develop an effective monitoring system even during the ASEAN-JICA technical cooperation project (PPP).
- It is important to identify female leaders such as business owners and include them in the PPP good practice survey (PPP).

4.3.3 Gender, Cross-Cutting Issues

(1) Gender

- Gender balance of participants in seminars and trainings is considered for all components.
- In agricultural processing plants, most of workers are female. Gender disparities in the agro-processing sectors should be considered when conducting the PPP related studies.

(2) Cross-Cutting Issues

- The proposed activities promote the involvement of MSMEs and small-scale farmers in FVC development by PPP. The project contributes to inclusive development that is one of the agenda of ASEAN.
- GAP dissemination activities contain social and environmental consideration.
- GAP dissemination contains the promotion activities utilizing ICT.
- Capacity building of SPS testing laboratories contains environmental consideration aspect such as treatment of waste disposal.
- Good practices are corresponding to “The ASEAN Guidelines on Promoting Responsible Investment in Food, Agriculture and Forestry” should be focused in the PPP good practice survey.

4.3.4 Risks

Components	Risk and Threat	Mitigation measures
GAP	<ul style="list-style-type: none">• Not many buyers and producers are interested in GAP.	<ul style="list-style-type: none">• Public relation effect by obtaining GAP.
SPS	<ul style="list-style-type: none">• Availability of special equipment such as heavy metal analysis and consumables used• Inadequate maintenance of machines.	<ul style="list-style-type: none">• Checking the availability prior to the training.• Selecting the proper training venue.• Training starting from basic skill.
PPP	<ul style="list-style-type: none">• Private partners are not interested in studies and policy formulation.	<ul style="list-style-type: none">• Plan and execute activities which can bring benefit to private partners outside the framework of the proposed ASEAN project.

Chapter 5 Conclusion, Recommendations and Lessons Learned

5.1 Conclusion

The outline of cooperation of "ASEAN-JICA FVC Development Project" was proposed in Chapter 4. The proposed activities should be implemented as early as possible, since these activities are essential for the strengthening of ASEAN FVC.

5.2 Recommendations

The activities on 1) Marketing and Promotion of ASEAN GAP, 2) Strengthening capacities of SPS measures on pesticide residue, 3) Strengthening food safety on fishery products through GAqP and improved inspection mechanism, and 4) Study on PPP based FVC were selected for the initial three years of the cooperation, based on the consultations between ASEC and JICA, in considerations of available resources and the project period.

Although not included in the above activities, it is recommended to implement other activities identified as medium to long term activities as early as possible. These activities are shown in the table below.

Table 40 Short and Medium to Long Term Activities

Component	Sub-Component	Short-Term	Medium to Long Term
ASEAN-GAP	Marketing and Promotion of ASEAN GAP	X	
SPS	Strengthening capacities of SPS measures on pesticide residue.	X	
	Strengthening capacities of SPS measures on animal and plant quarantine.		X
Fisheries	Strengthening food safety on fishery products through GAqP and improved inspection mechanism.	X	
	Promoting smart fisheries and regional ecolabel in fishery sector.		X
PPP based FVC	Study on PPP based FVC.	X	
	Strengthening the PPP mechanism.		X

Note: X: applicable.

Source: JICA Study Team.

Strengthening SPS measures related to animal and plant quarantine: To avoid risks of animal and plant diseases spreading across the border in the region, it is recommended to start medium to long-term activities “strengthening capacities of SPS measures on animal and plant quarantine” as soon as possible as during the implementation. The contents are detailed in Section 4.4.

Medium to Long Term Activities for Strengthening the PPP for FVC: For this three-year project, PPP development policy formulation was proposed as a short-term activity. It is obvious that only short-term activity is insufficient to develop food value chain in ASEAN effectively. Medium to long term activities based on the PPP development policy are essential. JICA Study Team proposes “Establishing the PPP development mechanism for food value chain, utilizing knowledge and experiences of the private sector, especially for marketing and promotion” as an ultimate goal of medium to long term activity. Details of the idea is summarized in the box below. It should be noted that medium to long term activities can be implemented before completion of the proposed short-term activity. Both of short-term and medium to

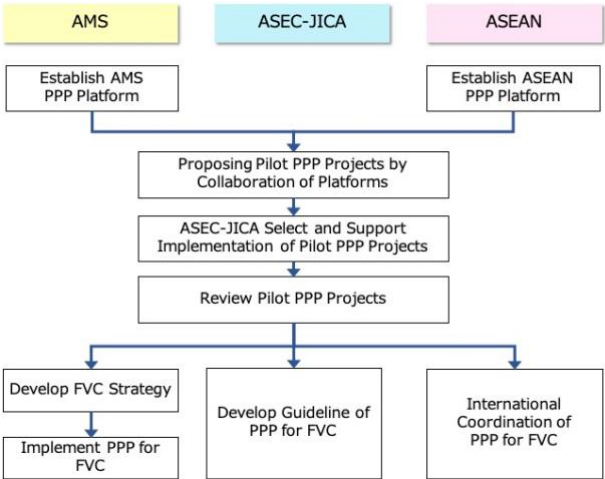
long-term activities can be conducted in parallel. It is recommended to initiate medium to long-term activities as soon as possible since implementation of those activities takes time.

Box 6: Medium to Long Term Activity for Strengthening PPP

Establishing PPP development mechanism for food value chain, utilizing knowledge and experiences of private sector, especially for marketing and promotion

The primary objective of the medium to long term approach is to strengthen implementation ability of PPP in ASEAN food value chain development. Project is to develop PPP mechanism for government agencies to develop food value chain, utilizing knowledge and experiences of private sector, especially for marketing and promotion. The details are as follows.

- 1) Establishing national and ASEAN platforms which play core roles in intra- and extra ASEAN coordination, implementing pilot PPP projects and developing PPP mechanism.
- 2) Based on project proposals from platforms, ASEC-JICA project selects pilot PPP projects and implement these.
- 3) Reviewing the pilot PPP projects to feedback the project results to FVC development strategies, operational PPP mechanism development, and the preparation of ASEAN guideline of PPP for FVC.



Source: JICA Study Team.

Figure 39 Flow of PPP for FVC Component

AMS: Establish a National PPP Platform to facilitate food value chain development at national level. If there is an existing similar platform in the country, upgrading of the existing platform should be considered. The Project is aiming at establishing National PPP Platforms and linking them at ASEAN level PPP Platform. Expected functions of National PPP Platform are as follows.

- Function of National PPP Platform**
- 1) Interlinking National PPP Platform with ASEAN mechanism by nominating national focal point etc.
 - 2) Strengthening inter-ministerial coordination
 - 3) Providing one stop service to buyers and investors (especially for foreign partners)
 - 4) Secure equity and transparency which are critically important in PPP implementation
 - 5) Linking food value chain related projects being implemented in AMS for information and knowledge sharing
 - 6) Communicating with private stakeholders including commerce and industry association and food valley to facilitate business networking
 - 7) Identifying good practice SMEs and small producers to prepare business directory of stakeholders for business matching
 - 8) Facilitate cross-border trade among AMSs
 - 9) Comparing and analyzing situations of AMSs to obtain lessons and learned.
 - 10) Develop national food value chain development strategy with PPP.

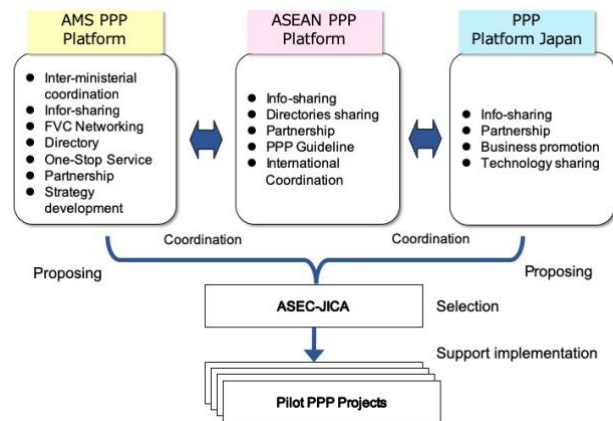
ASEAN: Establish an ASEAN level platform (ASEAN PPP Platform) to connect National PPP Platforms at ASEAN level to increase connectivity and information/knowledge sharing. Introduce advanced technology, ideas and knowledge even from non-ASEAN countries. Example of ASEAN level activities are as follows.

- Harmonization of nutrition labeling on packaged food (Importance of this activity is stressed by ASEAN Food and Beverage Alliance)
- Harmonization and mutual authentication of registration of agrochemicals (Importance of this activity was

raised by a private Japanese company at JICA Platform for Food and Agriculture meeting held in October 2019)

Pilot PPP Project: In collaboration with food value chain PPP platforms, implement pilot projects to establish good practice models of PPP food value chain development probably with Japanese business partners. The project might focus on SMEs and small-scale farmers, CLMV, safe foods (including GAP, organic and SPS), innovative foods, brand establishment, sixth industrialization, etc. according to the ASEC policy.

Develop PPP guidelines or compilation of good practices to achieve effective, fair and transparent PPP activities in food value chain development. Evaluate performance of National PPP Platforms to motivate them to compete in a good way.



Source: JICA Study Team

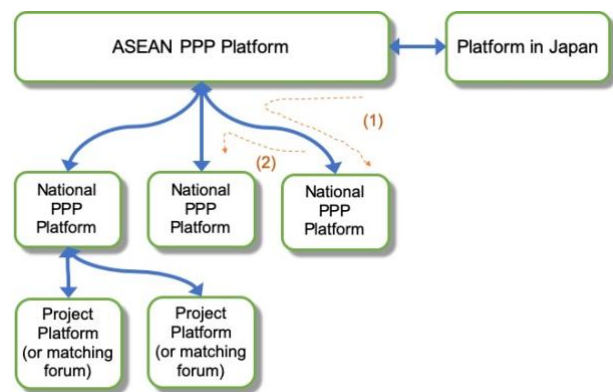
Figure 40 Platform and Pilot PPP Project

Collaborations between platforms can be illustrated as follows. It is expected that National PPP Platform will collaborate with a platform in Japan (see (1) in the figure). In other case, cross-border trade will become reality through collaboration between National PPP Platforms (see (2) in the figure below).

Regionality

The proposed project is considered relevant to all the AMSs and will be truly regional in nature.

- The ASEAN food value chain includes domestic and intra-ASEAN value chain with connection to extra-ASEAN value chains.
- It is important for AMSs to understand their strengths and weaknesses when they prepare national PPP food value chain development strategy. To do so, AMSs need to compare their situation with other AMSs. With this reason, AMSs are encouraged to share information and their knowledge throughout the Project activities.



Source: JICA Study Team

Figure 41 Collaborations Between Platforms

Beneficiaries

- 1) SMEs and/or small-scale farmers: There are two types of beneficiaries. One is SMEs and/or small-scale farmers who join National PPP Platform activities as members. The other is SMEs and/or small-scale farmers' group who are members of National PPP Platform as well as selected as target groups of a pilot project.
- 2) Government Officials: To be invited to ASEAN level meetings as well as study tours in Japan/AMSs from each AMS.
- 3) The ASEAN Secretariat
- 4) Japanese Private Partners

5.3 Lessons Learned

Through the study, the following lessons are learned.

- ASEAN project has to be based on consensus among AMSs. The project has to be identified to address regional common benefit or at least with no conflict of benefits among AMSs.
- ASEC coordinate all AMSs based on consensus for ASEAN as regional intergovernmental organization. It sometimes cost time and efforts to coordinate all AMSs. Most of ASEAN project is implemented under the supervision of the working groups.

During the designing of the project, it is desirable to identify regional common or public benefits regardless of concern of funding bodies, as described below.

Understanding Degree of Public Benefit in Food Value Chain Development

It was confirmed by the JICA Study Team that although concept of commodity-based regional cluster development was discussed during the study, it was not fully endorsed by some of the officials from AMSs. It is probably because the concept of commodity-based regional cluster is based on international specialization. One of the characteristics of international specialization is that business decision-making is made at far places from agricultural land, typically at offices of company that produces and sells final products. It is likely that some Governments of AMSs acknowledged that international specialization may not improve livelihood of farmers and contribute to national/public benefit, especially if technical competitiveness of the country is relatively low.

Learning from this experience is that it is essential to understand degree of public benefit in food value chain development. Food value chain development generates benefits for both the private and the public sectors. It is obvious that the public sector should prioritize food value chain development which can produce high public benefit.

As far as limited information obtained during this study, public benefit is higher when raw material production (agricultural production) and business decision making are practiced in the same place. Private companies involved in this type of business are having close communication with local farmers. Local farmers can see what the private companies are doing with their own eyes. Private companies feel pressure to share profit with farmers appropriately. Otherwise, companies cannot procure raw materials from farmers which is essential to continue business. As a result, public benefit of this type of business becomes high. Same situation is observed in Japan. Large-scale enterprises tend to focus on profitability, while less consideration is provided to publicity, environment, and sustainability as compared with community-based business. Whereas community brands tend to stick to the uniqueness and traditional value of the region, and to be expected to create local demand⁴⁷. It is expected that this important issue will be analyzed in detail by the proposed case study on the good practices of PPP based FVC.

⁴⁷ Arihiro MUROYA, "Sixth Industrialization* in rural area" *Combination of agriculture, food processing, and retail. Soushinsya. 2014.

