The Democratic Socialist
Republic of Sri Lanka

DATA COLLECTION SURVEY ON PROMOTION OF AGRICULTURE AND ENHANCEMENT OF LIVELIHOOD FOR BETTER NUTRITION IN SRI LANKA

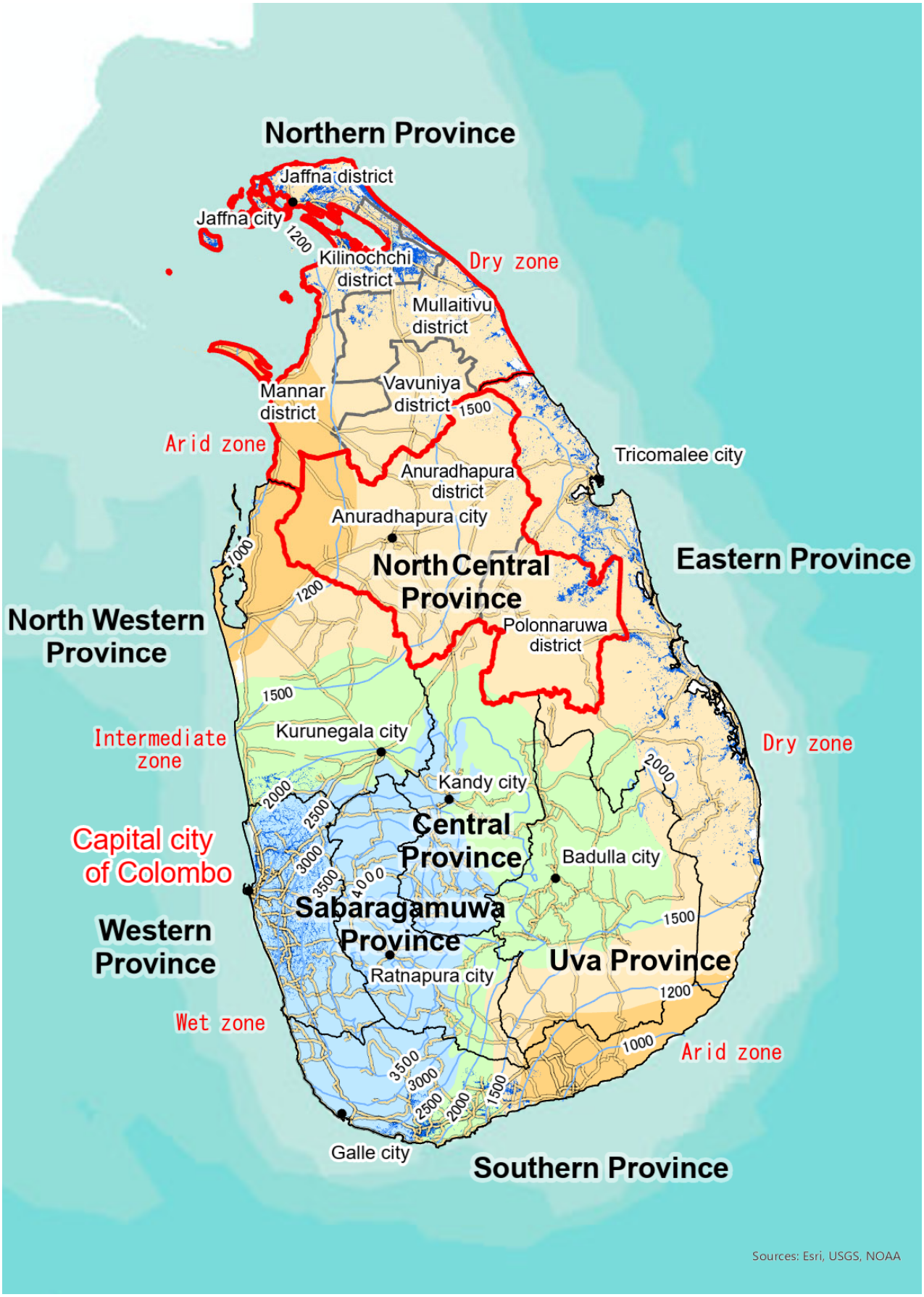
FINAL REPORT

DECEMBER 2023

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

SANYU CONSULTANTS INC. (SCI)
DELOITTE TOHMATSU FINANCIAL
ADVISORY LLC. (DTFA)

Location Map of the Survey Area



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ACRONYMS AND ABBREVIATIONS

ABB	Full Spelling
ADB	Asian Development Bank
AI	Agricultural Instructor
AI	Artificial Insemination
ASEAN	Association of Southeast Asian Nations
ASMP	Agriculture Sector Modernization Project (WB)
BOI	Board of Investment
CAPI	Computer-Assisted Personal Interview
CBO	Community-based Organization
CBSL	Central Bank of Sri Lanka
CEPA	Center for Poverty Analysis
DAPH	Department of Animal Production and Health
DB	Database
DEC	Dedicated Economic Center
DFR	Draft Final Report
DOA	Department of Agriculture
DOEA	Department of Export Agriculture
DOI	Department of Industries
DTFA	Deloitte Tohmatsu Financial Advisory LLC
DX	Digital Transformation
EDB	Export Development Board
EDS	Export Development Strategy
EPZ	Export Processing Zone
FAO	Food and Agriculture Organization
F&B	Food and Beverage
FGD	Focus Group Discussion
FVC	Food Value Chain
GAP	Good Agricultural Practice
GDP	Gross Domestic Product
GI	Geographical Indication
GSP+	Generalized Scheme of Preferences Plus
HARTI	Hector Kobbekaduwa Agrarian Research and Training Institute
HIC	(Poverty) Head Count Index
HORDI	Horticultural Crop Research and Development Centre
ICT	Information and Communication Technology
IDB	Industrial Development Board
IFAD	International Fund for Agricultural Development
ILO	International Labour Organization
IMF	International Monetary Fund
IPHT	National Institute of Post-Harvest Technology (Same as NIPHM)
IPO	Initial Public Offering
IPS	Institute of Policy Study
ISB	International Sovereign Bond
ITC	International Trade Centre
JETRO	Japan External Trade Organization
JICA	Japan International Cooperation Agency
JOCV	Japan Overseas Cooperation Volunteers

ABB	Full Spelling
JV	Joint Venture
KII	Key Informant Interview
KKS	Kankesanthurai (Port)
LAN	Lankan Angel Network
LFVPPEA	Lanka Fruit & Vegetable Producers, Processors and Exporters Association
LMFC	Licensed Micro Finance Company
LMFPA	Lanka Microfinance Practitioners' Association
MOA	Ministry of Agriculture
MOE	Ministry of Education
MOF	Ministry of Finance
MOI	Ministry of Industries
MOP	Ministry of Plantation
MSMEs	Micro, Small & Medium Enterprises
NAP	National Agricultural Policy
NCGI	National Credit Guarantee Institute
NCP	North Central Province
NES	National Export Strategy
NGO	Non Governmental Organization
NIPHM	National Institute of Post Harvest Management
NLDP	National Livestock Development Board
NP	Northern Province
NPO	Non Profitable Organization
OAP	Sri Lanka Overarching Agricultural Policy
ODA	Official Development Assistance
PFI	Participating Financial Institute
pH	Potential Hydrogen
SCI	Sanyu Consultants Inc.
SDGs	Sustainable Development Goals
SHEP	Smallholder Horticulture Empowerment and Promotion
SLCRP	Sri Lanka Council for Agricultural Research Policy
SME	Small and Medium-sized Enterprise
SNS	Social Networking Service
SPS	Sanitary and Phytosanitary (measures)
TA	Technical Assistance
TOR	Terms of Reference
TSL	Two Step Loan
UNICEF	United Nations Children's Fund/ United Nations International Children's Emergency Fund
UNIDO	United Nations Industrial Development Organization
USAID	United States Agency for International Development
VC	Value Chain
VC	Venture Capital
WB	World Bank
WHO	World Health Organization
WFP	World Food Program

UNIT CONVERSION

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

CURRENCY CONVERSION (AS OF DECEMBER 2023)

1 US$ =	147.298 JPY
1 JPY =	0.450090 LKR
1 US$ =	327.263 LKR

CHAPTER 1 OUTLINE OF THE SURVEY

1.1 Background and Objectives of the Survey

(Background)

The Democratic Socialist Republic of Sri Lanka, commonly known as “Sri Lanka”, witnessed a sustained economic growth since the end of its internal conflict in 2009. However, due to the multilayered effects from factors such as excessive borrowing, fiscal deterioration, and significant tax cuts, the country defaulted on its external debt in 2022, leading to an economic crisis caused by insufficient foreign exchange reserves. The impact of the foreign exchange reserve shortfall also affected the abundance of agricultural inputs such as seeds, pesticides, and fertilizers. This, combined with the impact of the issuance of a ban on the use of chemical pesticides and fertilizers, resulted in a sharp decline in the production of agricultural and livestock products in 2022.

An example of the profound transformation in the agriculture and food industry, triggered by an economic crisis, can be observed in the adoption of structural adjustment policies amid the Asian currency crisis of the 1990s. This period witnessed a consequential shift in agricultural promotion policies and farmer support measures across various countries. Indonesia, for instance, where subsidies for farmers, particularly in the rice sector, and irrigation investment were curtailed to restore fiscal stability in the aftermath of the crisis. The emphasis then shifted towards the promotion of export crops, which were considered more cost-effective. Consequently, the government's role has shifted toward fostering an environment conducive to agricultural investment.

The Sri Lankan government is aiming to overcome the economic crisis, and for that, it is crucial to revitalize the agricultural sector, which employs a large workforce. Despite ongoing challenges such as the rising prices of energy and goods, there is a need to shift away from a reliance on primary products. In the future, strategies to promote exports, including the development of new agricultural products and spices, are expected to play a role in earning foreign currency and diversifying the economy.

In 2019, JICA conducted a basic information-gathering survey on the agriculture sector to compile essential data concerning the broader landscape of agriculture and rural development in Sri Lanka. The survey encompassed an assessment of the capacity and structure of government and research institutions engaged in agricultural and rural development, the current state of the agricultural machinery sector, measures taken in response to climate change, food safety, the feasibility of implementing market-oriented agriculture, and an analysis of the supply chain situation.

Since then, it is presumed that the dynamics of the value chain have undergone significant changes due to the impact of the COVID-19 pandemic and the economic crisis. Factors such as production constraints arising from import restrictions, shifts in demand prompted by the economic downturn, and the stagnation of the tourism industry have likely contributed to alterations in the value chain. In fact, the necessity for domestic production of dairy products has increased due to import restrictions. However, the shortage of feed, also impacted by import restrictions, has hindered the growth of milk production, leading to disruptions in the supply-demand balance. Given these recent societal changes, there is a need to assess the current state of the value chain and address both short-term and structural challenges, as outlined in Chapter 2 of this report.

Since the previous efforts have predominantly centered on the producer/supplier side, there are challenges where the products may not necessarily meet market needs, leading to a lack of growth in production due to inferior quality or pricing. Additionally, delays in the development of processing and distribution sectors have resulted in missed opportunities for earning foreign currency in overseas

markets.

It is now imperative to shift focus towards identifying demand in overseas/domestic markets. This involves analyzing the value chain not only from the perspective of producers but also encompassing the collection, wholesale, transportation, related manufacturing, and retail industries, as well as considering the viewpoint of consumers. This comprehensive approach is essential for pinpointing impediments to identifying the most crucial factors for its improvement in agricultural production, exportation, and food business as a whole.

(Objectives)

The objective of this survey is to identify agricultural and livestock products in the Northern Province (comprising 5 districts) and the North Central Province (comprising 2 districts) of Sri Lanka, which can be expected to contribute to the enhancement of agricultural activities and livelihoods of the people in these areas through strategic promotion, and to examine medium- to long-term support measures by JICA.

(Target area)

The Northern Province and the North Central Province, recognized as disadvantaged areas for agriculture in Sri Lanka due to factors such as low rainfall, concentrated rainfall at specific times of the year, lack of irrigation and drainage facilities, frequent flooding, drought in the dry season, and low water holding capacity of soil, are the primary focus of this survey. While both the provinces serve as production bases, the survey also extends to Colombo and other provinces where the processing, retail, and export sectors are situated. This comprehensive approach allows for a thorough examination of the food value chain (FVC).

1.2 Structure of the Report

This report is based on the information obtained from the literature review and field surveys conducted between June and October 2023. Comprising of seven chapters, Chapter 2 summarizes the overall socioeconomic situation in Sri Lanka, key policies, challenges and structural issues associated with the economic crisis, and the status of support from other donors. Chapter 3 presents the main institutions and organizations involved in the production, distribution and business environment of agricultural and livestock products. This encompasses the financial environment, business entities, land, logistics, and human resources.

Chapter 4 of this report concentrates on the Northern and North Central Provinces, offering a summary of key statistics, issues in the agriculture and livestock sector, and relevant organizations. In Chapter 5, the focus shifts to identifying recommended agricultural and livestock products with potential to increase profits in the target areas. This chapter describes the process in selecting the recommended products based on the results of the demand survey.

Chapter 6 provides a summary of issues and measures pertaining to the promotion of the recommended agricultural and livestock products selected in Chapter 5. These findings are derived from the results of the “Detailed FVC analysis” of recommended agricultural and livestock products along with various interview surveys conducted by the survey team. This section offers detailed insights into the challenges of the FVC by commodity and outlines the direction of measures to address these challenges. The final chapter, Chapter 7, presents proposals for development cooperation based on the findings discussed in Chapter 6. It outlines the envisioned future trajectory of Sri Lanka's agri-food sector and provides recommendations on how JICA can support this sector.

1.3 Survey Process

The first field survey was conducted from June 20 to August 3, 2023. During this period, the demand survey involving 20 items was conducted by a subcontractor, and the survey team conducted interviews with government agencies and private sector organizations related to the study purpose. The second field survey was conducted from September 12 to October 18, 2023. During this period, a detailed Food Value Chain (FVC) analysis of seven recommended agricultural and livestock products was conducted by the subcontractor, while simultaneously engaged in discussion and confirmation on the direction of the issues and draft measures with the government officials from key organizations and key players in the private sector.

The survey team has personally visited and engaged in discussions with a total of 106 organizations (excluding duplicate visits) throughout the first and second field surveys. Among these, 46 were government-related organizations, while the remaining entities comprised organizations supported by any projects, including farmers' organizations, and companies associated with the Food Value Chain.

Table 1.3.1 Number of Organizations Interviewed by the JICA Survey Team by Category

Category	No of Meetings
Central Government Institutions	46
Government Projects and Project Supported Entities	10
CBOs	6
Private Companies	27
Private Farmers	6
Provincial Government Institutions	10
NGO	1
Total	**106**

CHAPTER 2 SOCIOECONOMIC SITUATION IN SRI LANKA

2.1 Macroeconomic Conditions

(1) Long-term Economic Conditions

Sri Lanka had been experiencing a stable GDP growth of around 5% per year since the early 2000s. However, economic growth had been modulating since 2018 due to political confusion, predating the impacts of COVID-19 and the economic crisis in 2022. The convergence of COVID-19 pandemic in 2020 and the subsequent economic crisis in 2022, which will be discussed later, has placed the country in a challenging economic environment.

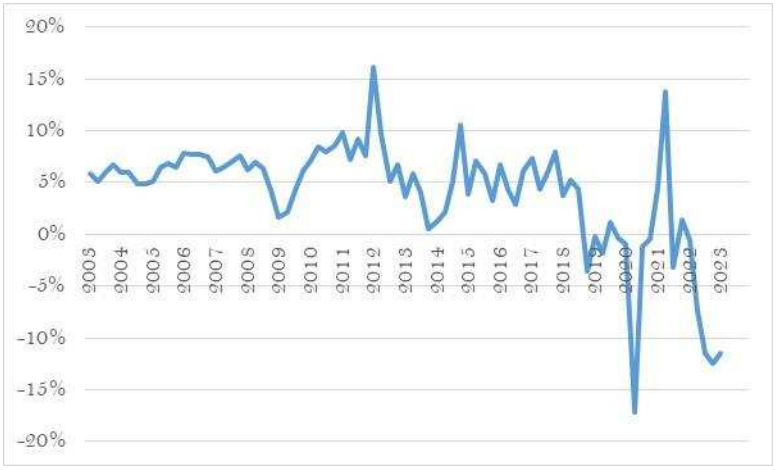


Figure 2.1.1 Quarterly GDP Growth of Sri Lanka (constant price base)
Source: Compiled by JICA Survey Team based on the data from Central Bank of Sri Lanka

Analyzing the GDP by industry, the agricultural sector had faced negative growth from 2016 to 2017, attributed to a drought, and once more experienced negative growth from the fourth quarter of 2019. Additionally, it encountered negative growth again from the second half of 2021, mainly due to the ban on chemical fertilizer imports in the same year, coinciding with a decrease in foreign currency reserves.

The manufacturing sector, predominantly led by the garment industry, experiences significant fluctuations tied to preferential tariffs from the EU and other nations. The EU's Generalized Scheme of Preferences (GSP) Plus (hereafter GSP+) was temporarily suspended due to allegations of war crimes against human rights during the civil war. However, it resumed in May 2017, marking a breakthrough. Subsequently, the sector began to modulate in late 2018, followed by a further downturn prompted by the impact of COVID-19.



Figure 2.1.2 Quarterly GDP Growth of Sri Lanka by Sector (constant price base)
Source: Compiled by JICA Survey Team based on the data from Central Bank of Sri Lanka

(2) Economic Crisis after 2021

Sri Lanka has long been in a recurring trade deficit, which was offset by the contributions from the tourism sector and remittances from immigrants. Simultaneously, the government has been facing a continuous budget deficit, often bridged by external debt, primarily through International Sovereign Bonds (ISB). Against these circumstances, economic activity came toa standstill due to the global spread of COVID-19 pandemic, starting from the first half of 2020. Major industries, notably tourism, were severely impacted, coupled with declining exports, resulting in a significant shortage of foreign currency.

Sri Lanka's economic crisis was triggered by a decline in foreign exchange reserves, which began in late 2020 and ultimately led to default in 2022. The decline in foreign exchange reserves can be attributed to a decrease in travelers following the 2019 Easter bomb attack and the subsequent impact of COVID-19, along with a decline in remittances from overseas workers due to the pandemic. Additionally, the persistent trade deficit (approximately USD 3,000 mn), stemming from excessive imports with the repercussions of the former government's significant tax cut policy during the 2019 elections, which resulted in a reduction of tax revenues by USD 1,400 mn contributed to the crisis.[1]

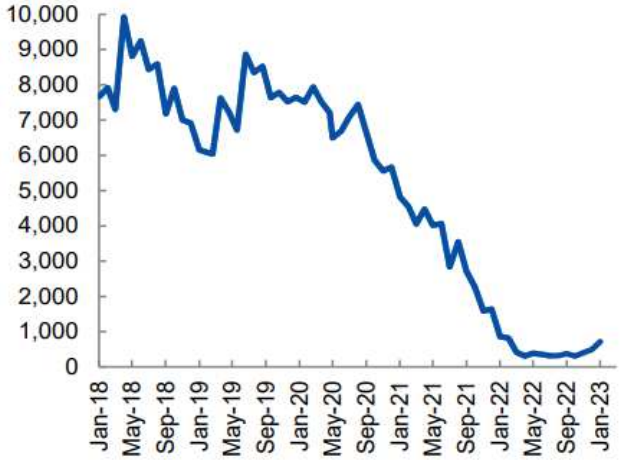


Figure 2.1.3 Foreign Exchange Reserves of Sri Lanka (mn USD)
Source: World Bank, "Sri Lanka Development Update - Time to Reset", April 2023
(Note) Excluding foreign exchange swap transactions with the People's Bank of China

The central bank had persistently controlled inflation by supporting (buying up) the exchange rate against the dollar through monetary policy. However, this approach became unsustainable, leading to a rapid increase in inflation. The Inflation rate surpassed 10% in Q4 2021 and surged to 69% in Q3 2022[2].

In response to this challenging situation, the government implemented various measures to curb imports, aiming to alleviate the foreign currency shortage. These measures included restrictions on the import of automobiles, electronic items, fertilizers, and other products, which have caused social and economic turmoil, sparked nationwide protests and ultimately, leading to a change of government in March 2022. In response to this unprecedented economic crisis, the International Monetary Fund (IMF) had decided to extend the support programme with USD 3 billion, and creditor countries, including India, China, and Japan, have been discussing on restructure of their debt. Despite these efforts, the latest inflation rate in Q1 2023 remained high at 49%, and people continue to face challenging living conditions.[3, 4] As discussed in Chapter 3 regarding the financial environment, loan interest rates are exceptionally high,

[1] BBC, "Sri Lanka: Why is the country in an economic crisis?", 29 March 2023
[2] Here we use the GDP deflator y-o-y as the inflation rate
[3] https://www.ide.go.jp/Japanese/IDEsquare/Eyes/2022/ISQ202220_009.html
[4] https://www.nippon.com/ja/in-depth/d00840/

ranging from 20-40%. However, real interest rates are rather negative when accounting for inflation, creating a difficult economic environment for financial institutions.

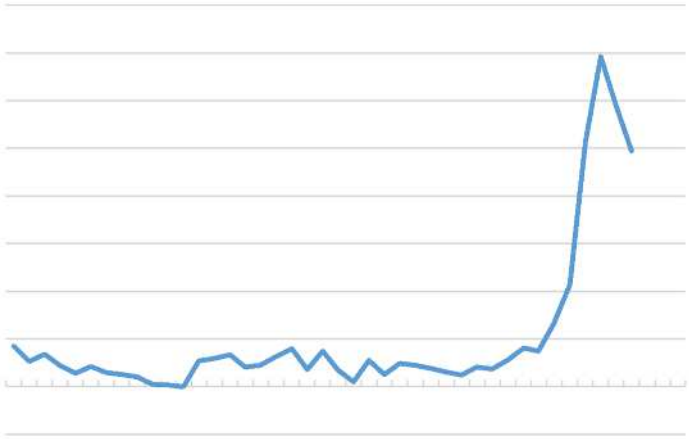


Figure 2.1.4 Inflation Rate of Sri Lanka (GDP Deflator Escalation)
Source: Compiled by JICA Survey Team based on the data from Central Bank of Sri Lanka

2.2 Agricultural Sector Overview of Sri Lanka

(1) Outline of Sri Lankan Agriculture

Sri Lanka, predominantly an agricultural country, sees 26.5% of its employment in the agricultural sector as of 2022 (CBSL, 2022). However, the contribution of the agricultural sector to GDP is expected to be 7.5% in 2022, with the livestock sector accounting for only 0.6%. Moreover, significant regional disparities in income distribution are apparent; for instance, the Western Province holds a 48% share of GDP, whereas the Northern and North Central Provinces in the survey area collectively contribute only 10% to the GDP.

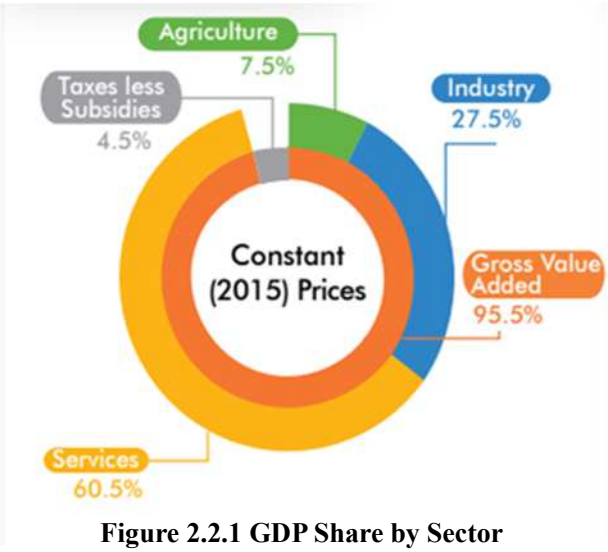


Figure 2.2.1 GDP Share by Sector
Source: 2022: CBSL Annual Report

Agriculture in Sri Lanka is divided into two distinct seasons: the Maha season (October to March, northeast monsoon) and the Yala season (April to September, southwest monsoon). The Maha season receives rainfall across the entire island, while the Yala season brings rainfall primarily to the Southwest. Agriculture in Sri Lanka can be broadly classified as follows: (1) Wet (lowland) (WL, blue): rainfed or small-scale irrigated rice cultivation, rubber plantations; (2) Semi-humid (lowland)(IL,green) : rainfed or small-scale irrigated rice cultivation, coconut plantations; (3) Wet (midland) (WM,blue), (4) Wet (highland) (WU, blue), (5) Semi-humid (midland)(IM, green), (6) Semi-humid (highland) (IU, green): vegetables, fruits, potatoes, tea plantations; (7) Dry (lowland) (DL, orange): large irrigated rice, onions, and peppers (dry areas are only in the lowlands). [5] Rice cultivation is generally grown, with two cropping seasons in the wet zone and two cropping seasons involving irrigation and rainfed water in the dry zone. In Dry (lowland) areas (category 7), irrigation rates are high,

[5] https://www.maff.go.jp/primaff/koho/seminar/2006/attach/pdf/061219_01.pdf#

supported by numerous reservoirs known as tanks.

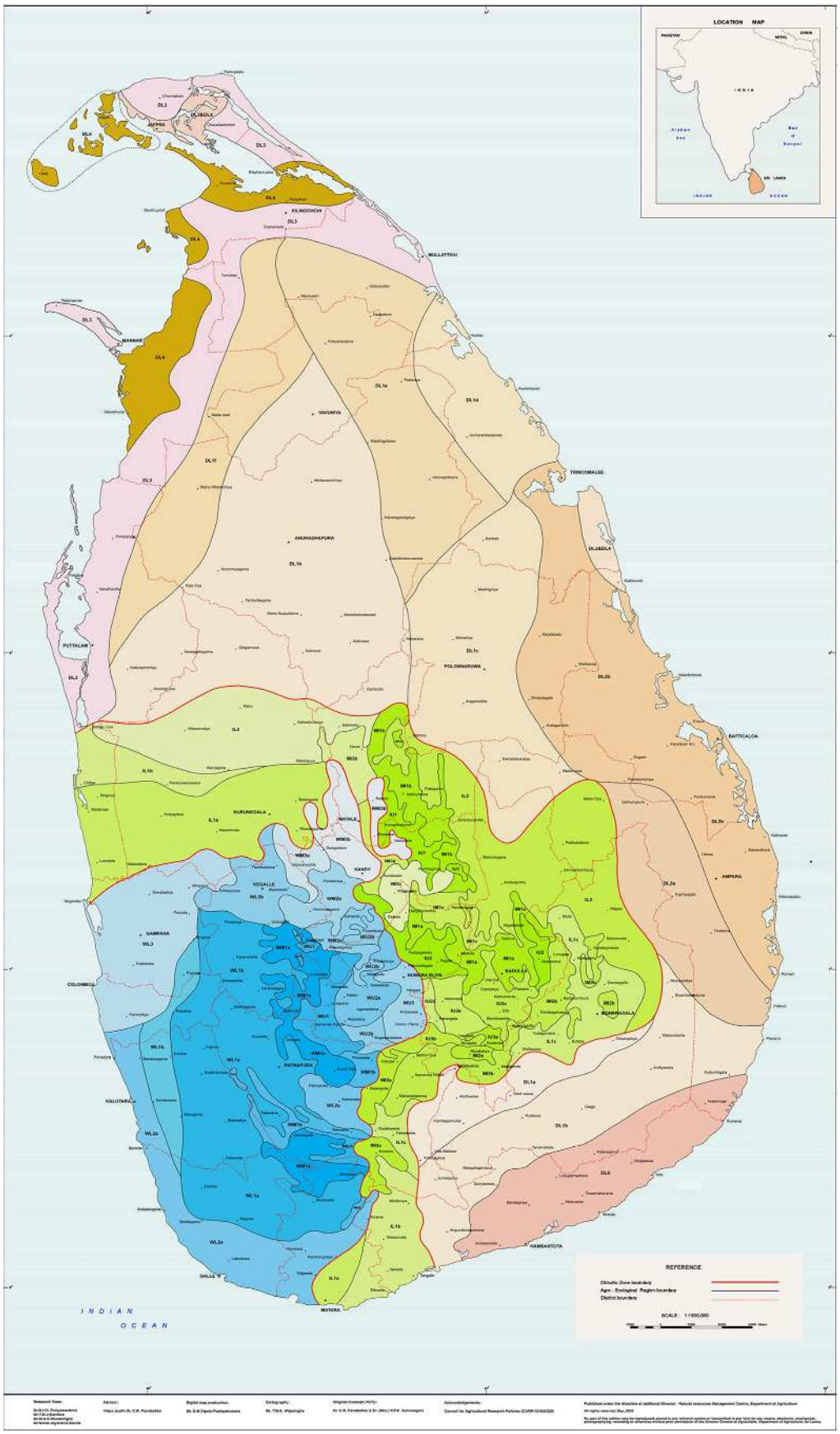


Figure 2.2.2 Agricultural Zone Classification of Sri Lanka

Source: National Spatial Data Infrastructure

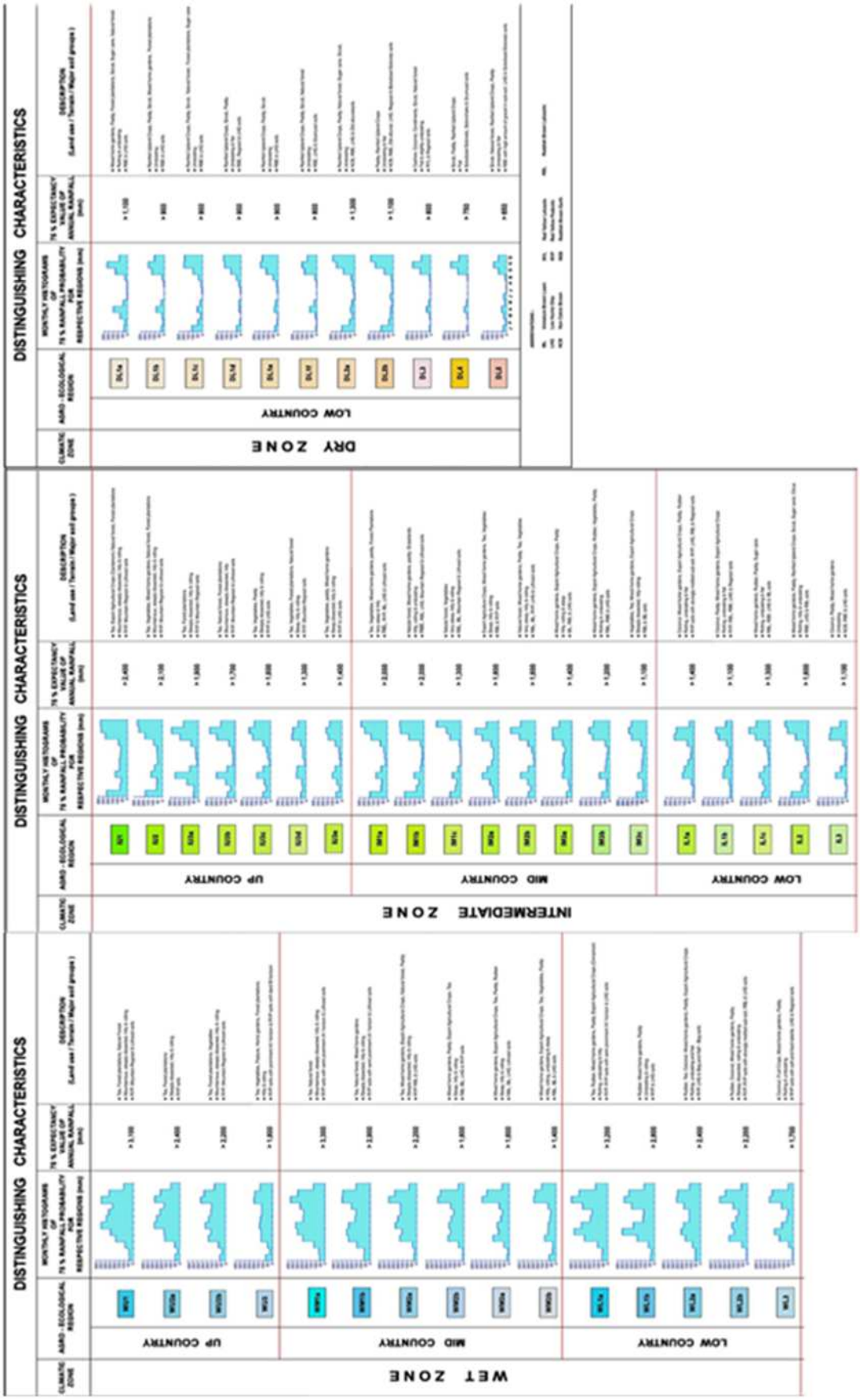


Figure 2.2.3 Agricultural Zone Classification of Sri Lanka (Legends)

Source: National Spatial Data Infrastructure.

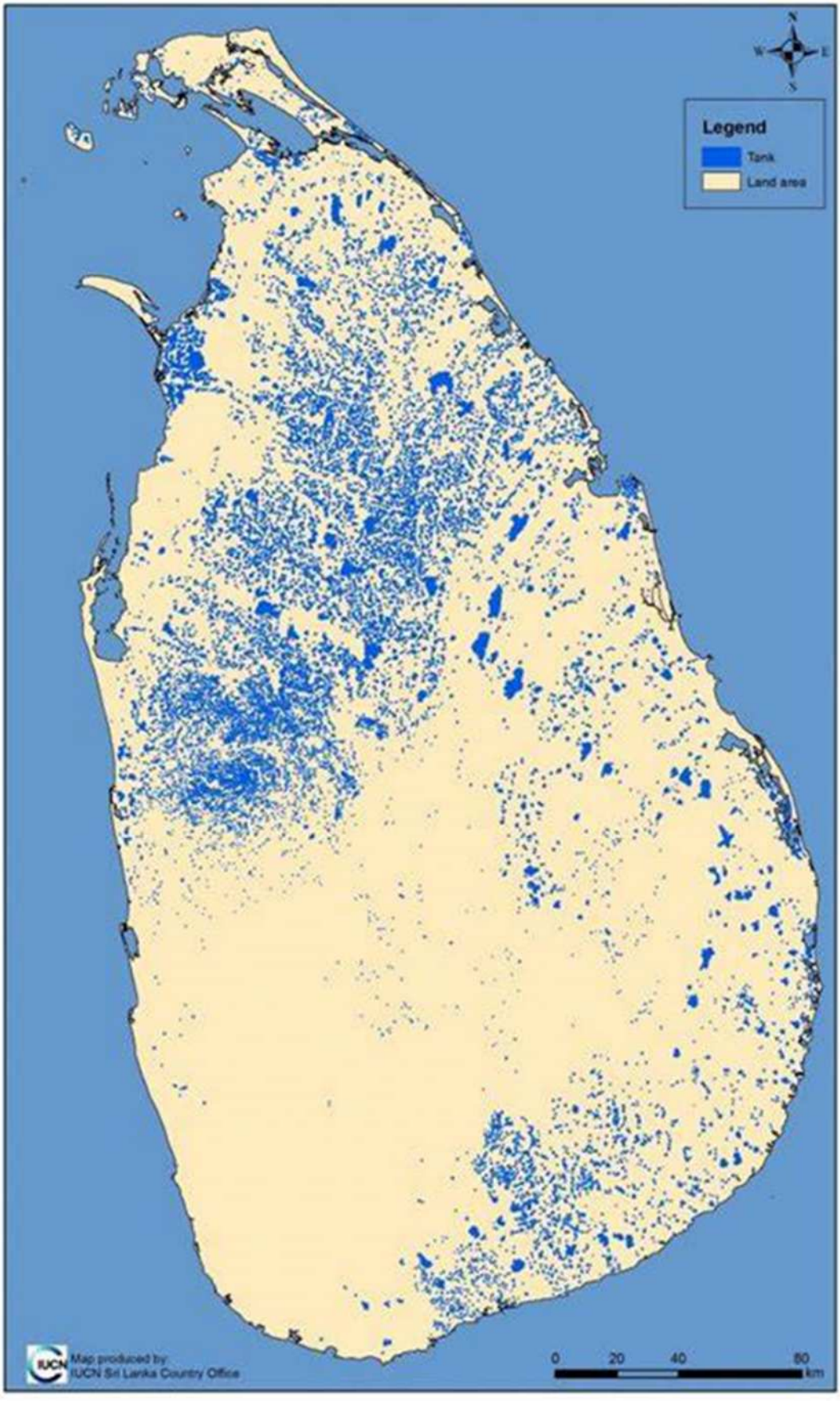


Figure 2.2.4 Distribution of reservoirs in Sri Lanka

Source: IUCN Sri Lanka

In 2022, agricultural products constituted 19.6% of Sri Lanka's total exports[6], ranking second only to industrial products. The Agricultural sector plays a pivotal role in Sri Lanka's key export-oriented industries. The key agricultural products include tea, rubber, coconut, and rice. Rice, serving as the staple food, occupied approximately 15%[7] of land use as of 2018. Tea and coconut also significantly contribute to the Sri Lankan economy as primary export crops. Additionally, the country is known for producing a variety of spices such as cinnamon, pepper, ginger, and turmeric, along with fruits such as mangoes, papayas, bananas, and pineapples.

While meat consumption is limited in Sri Lanka for religious and other reasons, dairy products are consumed in substantial quantities. In addition to dairy cattle, buffalo milk is also produced. Corporate dairy farmers with more than 50 head of cattle are scarce in Sri Lanka, with the majority being smallholder farmers who manage less than 10 head of cattle.[8] These smallholder farmers are primarily composite farmers engaged in the production of various crops, and only a few rely on livestock production as their main source of livelihood.[9]

Table 2.2.1 Production of major agricultural products

Crop Type	Unit	2016	2017	2018	2019	2020	2021
Paddy	MT '000	4,420	2,383	3,930	4,592	5,121	5,150
Tea	KGS. Mn	293	307	304	300	279	299
Rubber	KGS. Mn	79	83	83	75	78	77
Coconut	Nuts mn	3,011	2,450	2,623	3,086	2,792	3,120
Chilies.	MT	72,311	51,827	79,003	60,593	79,325	68,565
Pumpkin/ squash	MT	98,303	82,934	123,261	97,473	113,322	110,150
Eggplant	MT	14,499	17,231	19,792	14,467	16,404	16,878
Red Onion	MT	63,675	57,747	61,073	58,242	65,874	53,784
Big Onion	MT	65,223	53,603	28,047	18,603	43,018	65,907
Pepper (Pepper)	MT	32,145	35,142	48,253	41,429	43,557	42,485
Cinnamon	MT	24,503	24,680	24,020	24,821	22,910	23,730
Ginger.	MT	23,184	16,326	14,208	15,687	42,019	56,842
Turmeric	MT	25,204	10,267	1,055	11,103	39,726	51,945
Banana and Plantain	1000 Number	54,395	62,548	72,010	56,139	75,610	62,090
Mango	1000 Nuts	432,755	433,523	493,527	444,136	529,528	496,488
pineapple	1000 Number	40,339	42,230	34,651	35,834	42,516	39,285
Papaya	1000 Number	49,661	57,481	48,520	52,562	87,122	86,414
Groundnut	MT	24,200	22,475	27,602	26,922	36,376	36,947
Sesame	MT	12,414	7,754	8,589	6,085	8,223	11,999
Maize (corn)	MT	243,960	196,900	270,041	245,647	313,521	472,444

Source: Compiled by JICA survey team based on the data from Department of Census and Statistics

Table 2.2.2 Production of major livestock products

Item		2017	2018	2019	2020	2021
Cattle	Number	1,000,880	1,110,740	1,086,010	1,103,570	1,131,080
	Milking at Present	296,250	329,380	323,490	338,350	351,410
	Average Daily Milk production (Ltrs.)	27,417,663	32,627,550	31,167,996	34,469,627	35,447,470
Buffaloes	Number	283,550	308,790	298,430	323,000	333,210
	Milking at Present	86,490	94,200	91,790	102,050	105,600
	Average Daily Milk production (Ltrs.)	5,741,964	6,346,722	6,130,530	6,491,925	7,327,988
Poultry	Number of Chickens	21,275,820	20,531,000	20,411,050	24,277,830	24,310,690
	Average Monthly Egg Production	172,739,190	164,350,980	173,684,230	155,807,870	162,809,310

Source: Compiled by JICA survey team based on the data from Department of Census and Statistics

Agriculture, forestry, fishery and food products accounted for 19.6% of Sri Lanka's total exports in 2022, second only to industrial products. Agriculture, forestry and fishery products and food products are one

[6] https://www.mofa.go.jp/mofaj/area/srilanka/data.html#section1

[7] https://doa.gov.lk/sepc-downloads_en/#1583822518501-4cd250c2-4e98

[8] http://www.statistics.gov.lk/Agriculture/StaticalInformation/MilkProducingFarmers

[9] https://agriknowledge.affrc.go.jp/RN/2030830989.pdf

of Sri Lanka's important export industries. Tea accounts for much of Sri Lanka's agricultural, fishery and food exports. Tea is the world's fourth largest producer (2017) after China, India and Kenya, and is an important export item.[10] More than 90% of the approximately 300,000 tonnes of domestic production in 2021 was exported, with most of the domestic production destined for export. Coconut products are the second largest export item after tea, accounting for around 10% of the total. Coconut products are an item whose export value is growing, with a compound annual growth rate of about 14% since 2012. In recent years, agricultural, forestry and fishery products other than traditional major products such as tea and coconut have increased their share of agricultural exports, and the average annual growth rate of other products since 2012 has been about 11%.

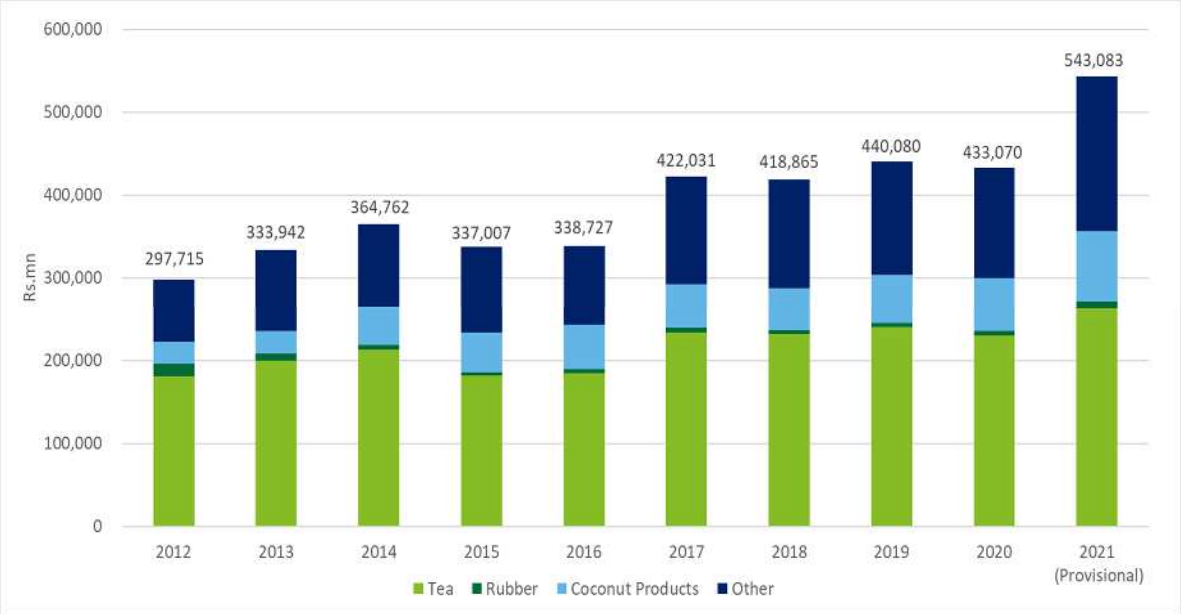


Figure 2.2.5 Breakdown of Sri Lanka's Agricultural Exports and Trends

Source: Compiled by JICA survey team based on the data from Central Bank of Sri Lanka

Sri Lanka's main export markets for agricultural, forestry and fishery products are Europe, the Middle East and North Africa. In addition to tea and spices, it also exports many seafood products to Europe. The largest export market in Europe is Russia, which exports mainly tea. The second largest exporters in Europe are Germany and the Netherlands, which export mainly spices and seafood. Many fruits are also exported to the Middle East and North Africa, and it is the largest export destination for agricultural products excluding fishery products. Exports to Saudi Arabia and the United Arab Emirates are particularly high, with bananas and papaya being the main items. Central and South Asia is the largest export destination for horticultural crops such as vegetables and fruits, with many exports to India and the Maldives. The main export item to India is areca nut, while fresh vegetables and fruits are mostly exported to the Maldives.

[10] https://www.maff.go.jp/j/kokusai/pdf/asia/srilanka_gaikyou.pdf

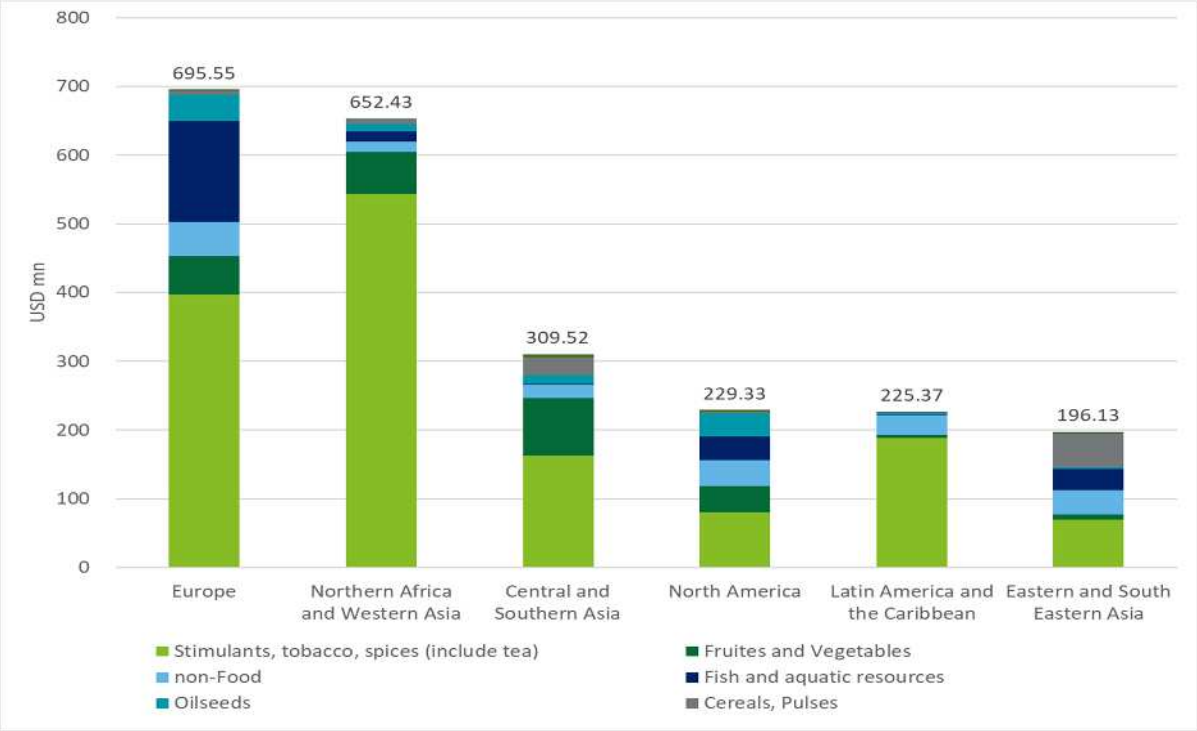


Figure 2.2.6 Sri Lanka's Major Export Destinations for Agricultural and Fishery Products (2020)
Source: Compiled by JICA survey team from Resource Trade.
Note: Excludes regions with export value below USD 100mn.

Sri Lanka imports a lot of sugar and dairy products, which are in great domestic demand, and the import value is also increasing. With an annual per capita demand for sugar reaching about 30 kilograms per year, totaling approximately 600,000 tons for the country, the annual production is limited to about 50,000 tons. As a result, a significant portion is imported from India and other foreign countries.[11] The demand for dairy products has surged since the economic liberalization in 1977, leading to a corresponding increase in imports.[12] Dairy products, mostly powdered milk, are predominantly imported from New Zealand.[13] Rice is one of the items whose import volume fluctuates rapidly. In 2017, when domestic production declined, the import volume increased rapidly, and the import volume changed according to the trend of domestic production.

[11] https://www.alic.go.jp/joho-s/joho07_002118.html
[12] https://www.researchgate.net/publication/344120157_Impact_of_Milk_Powder_Imports_on_Local_Milk_Industry_and_Consumers'_Welfare_in_ Sri_Lanka
[13] https://resourcetrade.earth/

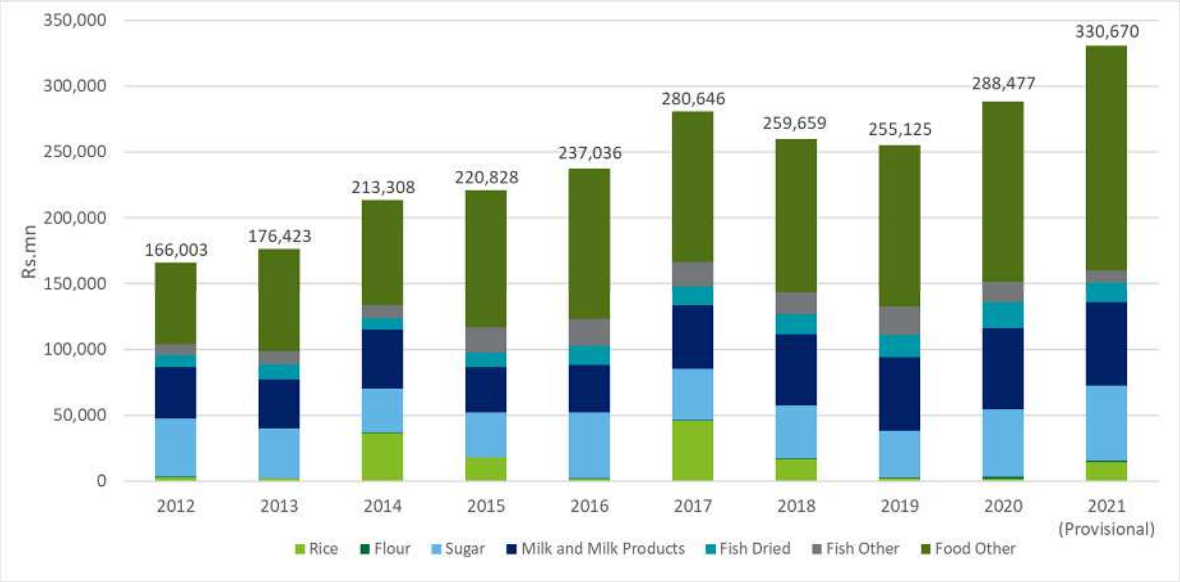


Figure 2.2.7 Breakdown and Trends of Sri Lanka's Food Imports (2020)
Source: Compiled by JICA survey team from Central Bank of Sri Lanka

(2) Overview of FVC Sector of Sri Lanka

Most of the agricultural products produced in each region are collected in wholesale markets such as the 12 Dedicated Economic Centers (DEC) nationwide and distributed to various regions. Dambulla DEC, the largest DEC in the country, is a gateway to agricultural products in northern Sri Lanka, and many agricultural products are brought to DEC. There have also been cases of agricultural products being brought directly from all over the country to the public market established in 2020 in Peliyagoda near Colombo. Most of the traders are small and medium sized, so small and medium sized trucks and motor-tricycle are mainly used for distribution. In some cases, farmers bring them directly to the market without involving traders..

The food processing industry stands as a significant industry in Sri Lanka and prominent players in the food processing landscape include Nestle (General Food Company), Prima (the major wheat producer), Ceylon Biscuits Ltd (a major sweets and snacks producer) and Kotmale (a major dairy products producer). Approximately 40% of the Small and Medium-sized Enterprises (SMEs) in the country are in the food processing industry. There are a substantial number of microenterprises (less than 4 people engaged) , estimated at around 5,000, [14], in comparison to the 355 in food processing SMEs (Companies with no more than 300 employees and no more than Rs. 750 mn in revenue) as of 2022.

While there are still many small retailers in Sri Lanka, the landscape also features large retailers such as supermarket chains, particularly prevalent in urban areas. Prominent supermarket chains include the Cargills Group, Keels Group and Arpico Supercentre. These supermarket chains establish their own distribution networks, engaging in direct transactions with farmers and food processors. By setting their own quality standards and differentiating themselves from existing retailers, they purchase higher quality products from farmers at higher prices compared to the market norm. Additionally, these supermarket chains implement efficient management through their proprietary supply management system.

[14] https://www.industry.gov.lk/web/wp-content/uploads/2023/03/FB-sector.pdf

(3) Food Self-Sufficiency and Nutrition in Sri Lanka

1) Food self-sufficiency situation

The poverty ratio in the agricultural sector is notably high, with a poverty ratio (HCI: Headcount Index) of 20.6% surpassing the rates of 13.5% and 8.3% in the industrial and service sectors, respectively. This disparity can be attributed to the concentration of the poor in rural areas, where agriculture serves as the primary industry. Projections indicate a rise in poverty levels from 13.1% in 2021 to 25.6% in 2022, equivalent to more than 2.5 million people falling into poverty during the period (Thibbotuwawa, 2023). The latest food security assessment conducted by the World Food Program (WFP) reveals that approximately 30% (6.26 million people) of the population, totaling about 22.16 million, are grappling with food insecurity.

To project the future development potential of Sri Lankan agriculture, an overview of food self-sufficiency and per capita nutritional intake for the entire country is provided. Table 2.2.3 illustrates the food self-sufficiency and utilization in Sri Lanka. The self-sufficiency rate for cereals, the most widely produced food, is at 75%. However, the self-sufficiency rate of wheat, comprising over 20%, is only 8%, slightly lowers the overall self-sufficiency rate of cereals. This implies that further expansion of rice production will not be a policy focus for the country as a whole. Instead, consideration of the feasibility of substituting wheat imports will be a significant issue. However, it can be inferred that its promotion will not be easy from the standpoint of environmental suitability and comparative advantage.

Table 2.2.3 Food Self-Sufficiency and Utilization in Sri Lanka

Category	Domestic Supply (1,000MT)					Domestic Utilization (1,000MT)				
	Production	Import	Export	Total	Self Sufficiency	Food	Waste	Other Use	Loss in %	Ratio of Food per Total Supply
Cereals (excl. beer)	3916	1539	107	5394	75%	4214	246	934	6%	78%
Starchy roots	495	125	8	612	82%	549	52	11	9%	90%
Sugar crops	826	0	0	826	100%	17	0	809	0	2%
Sugar & Sweeteners	159	578	21	716	25%.	572	0	144	0	80%
Pulses	45	267	11	300	19%	290	9	1	3	97%
Tree nuts	10	2	0	12	83%	11	0	1	0	92%
Oil crops	1082	7	216	873	149%	444	2	427	0	51%
Vegetable oils	43	185	19	209	30%	168	0	41	0	80%
Vegetables	2296	324	18	2602	89%	2246	329	27	15%	86%
Fruits	1265	58	47	1278	103%	1008	154	116	15%	79%
Stimulants	306	8	289	25	2380%	25	0	0	0	100%
Spices	185	57	48	194	120%	108	0	86	0	56%
Alcoholic beverages	241	3	15	228	112%	228	0	0	0	100%
Meat	279	1	1	279	100%	279	0	0	0	100%
Animal fats	10	1	0	10	100%	10	0	0	0	100%
Milk (excluding butter)	562	89	2	649	87%	342	26	281	8%	53%
Eggs	109	0	0	109	100%	97	5	7	5%	89%
Fish & sea food	497	56	27	526	100%	526	0	0	0	100%
Miscellaneous	0	8	2	6	33%	6	0	0	0	100%

Source: Department of Census and Statistics (2021) Note: Classification names follow the source.

On the flip side, there is an exceptionally high self-sufficiency rate of 2,380% for “Stimulants (stimulants and stimulating beverages),” which includes coffee, cacao, and predominantly black tea. These agricultural products are mainly for export, and their export volume far exceeds domestic demand, resulting in high self-sufficiency figures. Excluding these export-oriented agricultural, livestock, and fishery products, where domestic demand is generally met, the potential for import substitution becomes evident in items such as sugar, beans, nuts, and vegetable oil.

Among animal products, only “milk,” consisting of fresh milk, dried milk, condensed milk, yogurt etc., has not attained self-sufficiency, with more than 10% being imported. Beyond potential issues of

insufficient production, this might be linked to problems in the value chain, such as the state of facilities for processing, preservation, and transportation. Instances exist in other countries, where the import of skim or long-life milk becomes necessary due to problems with domestic distribution and preservation technology. Indeed, detailed statistical information reveals that while self-sufficiency in milk and buffalo milk consumed as fresh milk has already been accomplished, but self-sufficiency in powdered milk is less than 30%. This suggests that likelihood of considerable improvement and investment needs in the production of fresh milk in this sector.

In the right side of the same table, the utilization of agricultural and livestock products is presented. Within this, "Loss in %" indicates the extent of food loss when the amount used as "food" is set at 100. While this metric is not exactly a percentage (as Food Loss is not included in 100), it is expressed as a ratio in percentage form. According to this data, the percentage of loss in vegetables and fruits is notably high, standing at 15% each, followed by potatoes at 9% and milk at 8%. Notably, both vegetables and fruits exhibit the highest percentage loss values for items classified as "vegetables, others," or "fruits, others." Except for these items, tomatoes in vegetables and pineapples in fruits register the highest percentage of food loss (value of these specific items are not included in the table).

Tomatoes, one of the soft fruit and vegetable crops, are inherently susceptible to cargo damage. Pineapples, transported in large piles on trucks and occasionally stored in the sun for extended periods of time at trading posts, are believed to experience high losses. It is deemed necessary to consider the intervention with a focus on reducing food loss for these types of crops.

Finally, the ratio of Food per Total Utilization is presented. In this context, the ratios are relatively low for sugar crops, oil crops, spices, and milk. However, the elevated ratio of milk used for processing indicates that a high percentage of milk is used in the food processing sector, encompassing highly processed foods such as confectionery. As a result, milk may emerge as a crucial commodity for future FVC development, presenting a strong likelihood of becoming a key focus in the future evolution of FVC development.

2) Nutritional Status

Table 2.2.4 illustrates the per capita food intake in Sri Lanka. As the table shows, plant foods dominate the caloric intake, constituting 90% of the total in Sri Lanka. Among these, rice contributes approximately 40%, and when combined with wheat, cereals collectively contribute nearly 60% to the caloric intake. The low proportion of animal foods in protein (27%) and fat (25%) intake[15] also suggests potential for the expansion of meat, fish, and dairy product intake in terms of nutritional intake in terms of nutritional intake, i.e., increased access to such animal products will be required in the context of strengthening FVC.

Table 2.2.4 Per Capita Food Intake in Sri Lanka

A) Calorie intake by vegetable and meat

Item	Calories		Proteins		Fats.	
	(Kcal)	(%)	(g)	(%)	(g)	(%)
Vegetable product	2839	91% of	58	73%.	45	75% of
Animal product	269	9%.	21	27% of	16	27% of
Grand total	3108	100%.	79	100%.	60	100%.

Source: Department of Census and Statistics (2021) Note: Classification names follow the source.

In fact, while milk production is on the rise (from 397 mn liters in 2017 to 506 mn liters in 2022)[16], domestic milk production contributes only about 40% to the recommended goal of 200 ml of dairy

[15] In Japan, for example, the proportion of animal foods in protein and fat are 54.3% (2019) and 57% (2018) respectively, accroding to the National Health and Nutrition Surrvey condcuted by the Ministry of Health, Labor and Welfare of Japan.

[16] https://www.industry.gov.lk/web/wp-content/uploads/2023/03/Sector-overview-milk-and-milk-based-products-.pdf

products per person per day (including 100 ml of milk). The potential demand for dairy products is extremely high, given the fact that the rest of the demand relies on imports of powdered milk, which is "inferior in terms of nutritional value"[17].

B) Calories by item category

Category	Per Year	Per Day		
	Food	Calories	Proteins	Fats.
	(kg)	(kcal)	(g)	(g)
Cereals (excl. beer)	190	1770	38	4
Starchy roots	25	85	1	0
Sugar crops	1	1	0	0
Sugar & Sweeteners	26	234	0	0
Pulses	13	124	8	0
Tree nuts	0	3	0	0
Oil crops	20	191	4	16
Vegetable oils	8	184	0	21
Vegetables	96	84	4	0
Fruits	46	83	1	0
Stimulants	1	3	0	0
Spices	5	41	2	1
Alcoholic beverages	10	30	0	0
Meat	13	48	4	5
Animal fats	0	7	0	1
Milk (excluding butter)	15	109	5	6
Eggs	4	15	1	1
Fish & sea food	24	91	10	3
Miscellaneous	0	5	0	1

Source: Department of Census and Statistics (2021) Note: Classification names follow the source.

In this regard, according to The State of Food Security and Nutrition in the World 2021 (FAO, IFAD, UNICEF, WFP, and WHO, 2021), among several key indicators of national nutritional status, Sri Lanka has performed well in most indicators, comparing favorably with the South Asian average. However, the percentage of Wasting among infants under 5 years of age is 15.1% in 2020, slightly higher than the South Asian average of 14.1%.

Wasting disease is considered a relatively acute or severe form of malnutrition[18] and is inferred to be caused by a sudden change in access to food. In fact, the report classifies Sri Lanka as one of the countries where "deteriorating economic conditions accompanied by weather-related disasters" have affected the nutritional situation, indicating that the recent economic recession and vulnerability of the agricultural sector to climate change are remote causes of malnutrition among the population particularly affecting infants.

According to local interviews, school snacks (milk and sweets) that used to be provided in the past have been discontinued due to financial difficulties, and newspapers and other media have reported an increase in the number of children and students suffering from hunger and malnutrition, with incidents of fainting occurring during class. In light of this, it is believed that promoting agriculture as an industry in rural areas and improving the livelihoods of local farmers will eventually contribute to improving nutrition in Sri Lanka through improved dieting enabled by the increased income.

[17] http://npd.gov.lk/images/publications/PIP_2021_2024.pdf（p.72）

[18] www.unicef.or.jp/about_unicef/about_act01_02.html

2.3 Related Organizations

(1) Administrative Organization Structure of Sri Lanka

Figure 2.3.1 shows the national administrative structure of Sri Lanka.

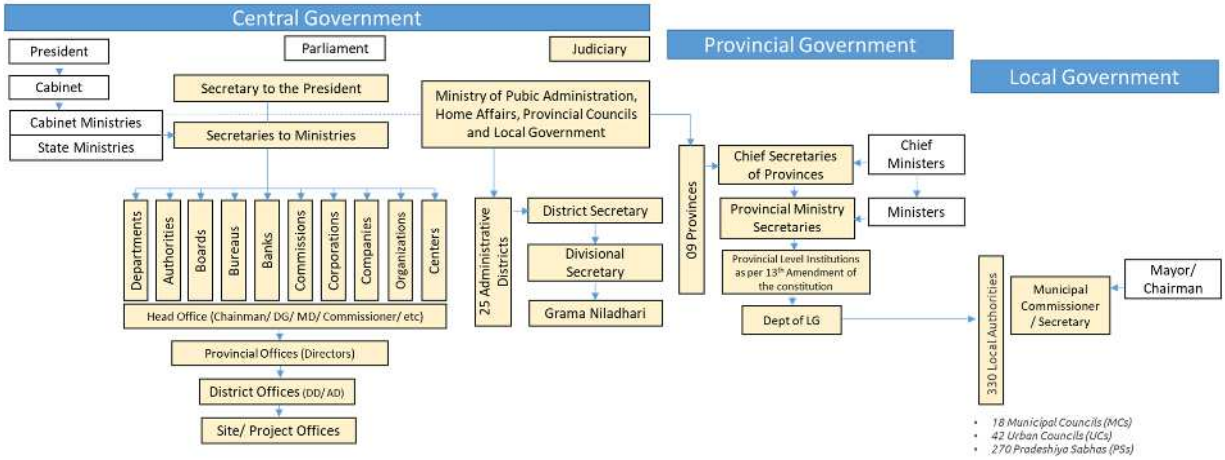


Figure 2.3.1 Administrative Organization Structure of Sri Lanka (central, provincial, and municipal)

Source: Prepared by JICA survey team based on various interviews

Sri Lanka's administrative structure consists of the central government, provincial governments, and local governments. Within the central government system, the Ministry of Agriculture and other ministries and agencies have their offices both at the provincial and district levels. It is worth noting that some ministries deviate from this pattern by establishing regional offices and research centers that cover several provinces. For an instance, the Irrigation Department operates 14 watershed divisions nationwide, each with its management office. Additionally, various research institutes under the Ministry of Agriculture have established multiple research centers across the country, providing administrative services in areas distinct from the administrative districts mentioned earlier.

Provincial governments include ministries under the Provincial Council, and these ministries bear names similar to those of central government ministries, such as the Ministry of Agriculture and the Department of Agriculture. However, they are not identical. Unlike central ministries, which have irrigation “ministry”, Provincial Councils have irrigation “department” under the Ministry of Agriculture. These departments fall under the jurisdiction of the Provincial Councils and are basically not in the chain of instructions from the central government. In this report, unless otherwise noted, central ministries are referred to as the “Ministry of Agriculture,” etc., while provincial-level ministries are referred to as "Provincial Ministry of Agriculture," "Provincial Department of Agriculture," etc., to distinguish between the two.

Local governments[19] are divided into three categories: Municipal Councils (MCs), Urban Councils (UCs), and Pradeshiya Sabhas (PSs). Local governments are responsible for overseeing regulatory and administrative functions, promotion of public health and sanitation, environmental health, and managing public roads and utilities. Despite having had relatively strong powers in the past, local governments have been positioned under the jurisdiction of the provincial government since the establishment of the provincial government following the 1987 amendment of the law. [20]

Table 2.3.1 shows the number of local governments by provinces and districts with 24 MCs, 41 UCs,

[19] Although the state government and the following three types of councils may be referred to as local governments together, only the latter are referred to as local governments here for the sake of simplicity.

[20] https://www.mpclg.gov.lk/web/index.php?option=com_content&view=article&id=38&Itemid=219&lang=en

and 276 PSs established throughout the country in each of the three categories, respectively. There are 34 local authorities in the Northern Province, while North Central Province has 27 local authorities.

Table 2.3.1 Number of Local Governments by State and Group

Province	District	Municipal Councils	Urban Councils	Pradeshiya Sabhas	Total
Central	Kandy.	1	4	17	22
	Matale.	2	0	11	13
	Nuwara Eliya	1	2	9	12
eastern	Ampara	2	1	17	20
	Batticaloa	1	2	9	12
	Trincomalee	0	2	11	13
northern	Jaffna	1	3	13	17
	Kilinochchi	0	0	3	3
	Mannar	0	1	4	5
	Mullaitivu	0	0	4	4
	Vavuniya	0	1	4	5
North Central	Anuradhapura	1	0	18	19
	Polonnaruwa	1	0	7	8
North Western	Kurunegala	1	1	19	21
	Puttalam	0	2	10	12
Sabaragamuwa	Kegalle	0	1	11	12
	Ratnapura	1	2	14	17
Southern	Galle	1	2	17	20
	Hambantota	1	1	10	12
	Matara.	1	1	15	17
Uva	Badulla	2	1	15	18
	Monaragala	0	0	10	10
Western	Colombo	5	5	3	13
	Gampaha	2	5	12	19
	Kalutara	0	4	13	17
Total 9	**25**	**24**	**41**	**276**	**341**

Source: http://www.clgf.org.uk/default/assets/File/Country_profiles/Sri_Lanka.pdf

In the provincial government, various departments overseeing agriculture, health, and other sectors are placed under the supervision of a top administrative officer called as the Chief Secretary. This role involves coordinating functions among these departments. Monthly Agricultural Committee Meetings are held, where the relevant departments gather to report on the status of activities and issues at the divisional secretariat level. Agricultural committees are also established at the district level. Matters that cannot be solved at the divisional level or have broader significance are reported to the district-level Agricultural Committee.

(2) Related Ministries

At present, Sri Lanka has 30 ministries under 22 cabinet ministers, including the president, along with an additional 38 ministers in charge (State Minister). The ministries under the jurisdiction of the cabinet minister are officially designated as ministries.[21] The country's characteristics and challenges include the large number of ministries, frequent changes in the number of ministries due to changes in government and changes in the political party affiliations of legislators, etc., and the regular alterations in the ministries to which departments belong.[22] Ministries and agencies related to agriculture, livestock, and FVC are as follows:

Table 2.3.2 Major Government Agencies Related to Agriculture, Livestock, and FVC

Ministry, Department and Other Relevant Institutes
Ministry of Agriculture
Department of Agriculture
Rice Research and Development Institute (RRDI) - Bathalagoda
Regional Rice R & D Center – Bombuwela
06 Nos of Rice Research Stations - Ambalantota/ Labuduwa/ Bentota/ Sammanthurai/ Murunkan/ Paranthan
Seed and Planting Material Development Centre (SPMDC) - Peradeniya
15 Nos of Regional Deputy Director Offices (Seed and Planting Material)

[21] Government information center (2023.7.19)

[22] Inquiries to the Government Information Center have been unable to obtain an up-to-date number of provinces.

Ministry, Department and Other Relevant Institutes
29 Nos of Government Seed and Planting Material Production Farms
35 Nos of Government seed and planting Material Sales Centers
Field Crops Research and Development Institute (FCRDI) - Mahailluppallama
Grain Legume and Oil Crops research and Development Center (GLORDC) - Angunakolapelessa
Regional Agriculture Research and Development Centers (Kilinochchi and Aralaganvila)
Agriculture Research Station – Thirunelvely
Farm Mechanization Research Center (FMRC) - Mahailluppallama
Adaptative Research Centre – Vavuniya
Seed Certification and Plant Protection Centre (SCPPC) - Peradeniya
National Plant Quarantine Service (NPQS) - Katunayake
Office of the Registrar of Pesticides (ROP) - Peradeniya
Plant Genetic Resource Center (PGRC) - Peradeniya
Seed Certification Service (SCS) – Peradeniya
Plant Protection Service (PPS) – Peradeniya
Horticultural Crops Research and Development Institute (HORDI) - Peradeniya
Regional Agriculture R & D Center – Bandarawela
04 Nos of Agriculture Research Stations (ARS) - Seethaeliya/ Girandurukotte/ Kalpitiya/ Thelijjawila
04 Nos of Adaptive Research Units (ARUs) - Wagolla/ Wariyapola/ Thibbatumulla/ Thabbowa
Food Research Unit – Gannoruwa
Fruit Research Development Institute (FRDI)
Fruit Crop R & D Station – Peradeniya
Plant Virus Indexing Center – Homagama
Rambutan Research Unit – Eraminigolla
National Fruit Variety Conservation Center - Kundasale
Agriculture Research Station - Rahangala, Boralanda
Natural resources Management Center (NRMC) - Peradeniya
Knowledge Management Sub Unit – Kundasale
Socio Economic and Planning Center (SEPC)
Extension and Training Center (ETC)
National Agricultural Information and Communication Centre (NAICC)
Progress Monitoring & Evaluation Unit
Department of Agrarian Development - Colombo 07
Department of Animal Production and Health – Peradeniya
Provincial DAPH and District DAPH
Veterinary Hospital
Divisional Veterinary Offices
Agriculture and Agrarian Insurance Board – Nugegoda
Paddy Marketing Board
National Agricultural Diversification and Settlement Authority
National Livestock Development Board and affiliated companies
Milco (Pvt) Ltd.
Mahaweli Livestock Enterprises Ltd.
Ceylon Fertilizer Company Limited
Colombo Commercial Fertilizer Company
Janatha Fertilizer Enterprises Limited - Colombo 15
National Fertilizer Secretariat
Hector Kobbekaduwa Agrarian Research & Training Institute
National Institute of Post Harvest Management (NIPHM)
Sri Lanka Council for Agricultural Research Policy
National Hunger Eradication Campaign Board of Sri Lanka
Ministry of Irrigation
Department of Irrigation
Mahaweli Authority of Sri Lanka
Central Engineering Consultancy Bureau (CECB)
Irrigation Management Division
Central Engineering Services Private Limited (CESL)
Kothmale International Training Institute
Ministry of Plantation Industries
Tea, Rubber and Coconut Plantation Fragmentation Control Board
Sri Lanka Tea Board
Tea Research Institute of Sri Lanka
State Plantation Corporation
National Institute of Plantations Management
Kalubovitiya Tea Factory Limited
Tea Small Holdings Development Authority
Elkaduwa Plantation Ltd.
Rubber Development Department
Rubber Research Institute of Sri Lanka
Sri Lanka Rubber Manufacturing Export Corporation Ltd
Kurunegala Plantation Company Ltd
Chilaw Plantation Company Ltd.

Ministry, Department and Other Relevant Institutes	
	Palmyrah Development Board
	Coconut Cultivation Board
	Coconut Development Authority
	Coconut Research Institute
	Sri Lanka Cashew Corporation
	Lanka Sugar Company (Pvt) Ltd
	Kantale Sugar Company Ltd
	Sugarcane Research Institute
	Galoya Plantation (Pvt) Company
	Spices and Allied Products Marketing Board
	Department of Export Agriculture
	National Cinnamon Research Station and Training Center
	Department of Cinnamon Development
Ministry of Industries	
	Lanka Mineral Sands Limited – Rajagiriya
	Kahatagaha Graphite Lanka Limited - Colombo 05
	National Paper Company Limited - Colombo 05
	Industrial Development Board – Moratuwa
	National Enterprise Development Authority - Colombo 05
	Industrial Technology Institute - Colombo 07
	Lanka Phosphate Limited - Colombo 14
	National Design Centre
	Department of Registrar of Companies
	Vidatha Centers
Ministry of Investment Promotion	
	Export Development Board
	Board of Investment Sri Lanka
Ministry of Finance, Economic Stabilization & National Policies	
	Department of development finance
Ministry of Education[23]	
	Higher Education Sector
	Sri Lanka Standards Institution
	Information and Communication Technology Agency
Ministry of Wildlife and Forest Resources Conservation	
	Department of Forest Conservation
Ministry of Power and Energy	
Ministry of Trade, Commerce and Food Security	
	Department of Commerce

Source: Prepared by the survey team based on government websites, etc.

It is reported that there are a total of 420 state-owned enterprises in Sri Lanka. In the agricultural sector, as depicted in the table above, numerous state-owned enterprises and semi-private organizations have been established, such as boards, authorities, and companies, which are responsible for the production, processing, and marketing of agricultural products. For instance, the National Livestock Development Board (NLDB) is a government-majority-owned company engaged in milk production, processing, and marketing while operating its own farms. Additionally, it is involved in coconut cultivation within a mixed farming system. Another similar company is MILCO, which procures milk from dairy farmers, processes and sells various dairy products such as milk, yogurt, ice cream, and other products.

In contrast, the Department of Animal Production and Health (DAPH), a government agency, primarily offers services related to nationwide livestock production, such as artificial insemination, and livestock health management. Consequently, Sri Lanka is characterized by the involvement of various institutions, both public and private, within a single field, resulting in significant overlap. Despite this situation, in 2022, the government has decided to accept financial support from the IMF, raising the possibility of reorganization towards full privatization for some of government enterprises involved in production and marketing in the future.[24] Below is a brief description of the ministries closely related to agriculture,

[23] According to a hearing with the Ministry of Education, there had been four ministries related to education, but they were merged into the Ministry of Education. The original four ministries were the Ministry of General Education, the Ministry of Higher Education (which oversees universities), the Ministry of Vocation Training, and the Ministry of Science and Technology.

[24] https://island.lk/imf-led-privatisation-land-and-resource-grab-in-sri-lanka/

livestock, and FVC.

<Agricultural Production>

- Department of Agriculture: The department focuses on research and development on superior varieties, agricultural technologies, sustainable farming, etc.; implementation of programs for pest and disease management; promotion of land management techniques such as soil fertility improvement, erosion control, and watershed management; agricultural education and capacity building; production and quality control of high-quality seeds. As part of the Ministry of Agriculture, the department serves as the executing agency for Sri Lanka's agricultural policy.

- Department of Animal Production and Health: It conducts research and development on livestock production such as livestock health management, breeding, implementation of programs for livestock development, technical guidance, stable supply of livestock feed, safety and quality control of livestock products. It is also responsible for livestock feed and the import and export of livestock and other animals.

<Agricultural Products Export>

- Department of Export Agriculture: Actively involved in promotion of export-oriented agriculture, identification of international market trends and opportunities for Sri Lankan agricultural products, research and development of agricultural products for export, and establishment of quality standards and certification. The export agricultural crops overseen by the department include cinnamon, pepper, cardamom, clove, nutmeg, coffee, cocoa, vanilla, betel, citronella, lemongrass, ginger, turmeric, goraka and areca nut.

- Export Development Board: It is responsible for export promotion in Sri Lanka; serving as a policy advisor, and actively monitoring, promoting, and coordinating with relevant agencies. It provides essential information and advice to exporters. Additionally, the board operates an online service (Online Directory of Sri Lankan Exporters) which profiles active exporters. Moreover, it runs an e-marketplace to promote products from Sri Lankan companies, facilitating connections between suppliers and buyers.

<Fertilizers and Pesticides>

- Sri Lanka National Fertilizer Secretariat: This entity formulates and implements policies for the production, import, distribution, and use of fertilizer in Sri Lanka. It is responsible for establishing quality control measures, standards, and specifications as well as overseeing the registration and licensing process. Additionally, the secretariat plays a pivotal role in managing and administering the fertilizer subsidy program.

<Irrigation Development>

- Mahaweli Authority: The Authority is responsible for planning, design, construction and management of irrigation schemes in the Mahaweli River basin, including construction of reservoirs, canals and irrigation infrastructure. Development and operation of hydroelectric power plants along the Mahaweli River also falls under the purview of the authority. It was established with the aim of expanding agricultural production in the northern region of Sri Lanka.

- Department of Irrigation: It is responsible for planning, development and management of irrigation infrastructure for the entire country of Sri Lanka, excluding the Mahaweli Areas. It is involved in the construction, maintenance and operation of irrigation systems including reservoirs, canals, tanks (reservoirs) and other irrigation structures.

- Department of Agrarian Development: The department is tasked with the management of agricultural land, which includes allocation and redistribution of farmland. Its responsibilities extend to the development of irrigation systems, land clearing, soil conservation, and infrastructure construction such as roads and farm facilities to improve farmland productivity. The department is also dedicated to strengthening farmer organizations and cooperatives, while conducting various extension activities with agricultural service centers serving as contact points. Additionally, it plays a key role in managing irrigation equipment, particularly those used for rice cultivation.

<Development of SMEs and food-related industries>

- Industrial Development Board: It is the organization under the Ministry of Industry responsible for the promotion of industry in Sri Lanka. It provides support for the formulation of business ideas, technical support for startups, management improvement support for existing businesses, export facilitation, and finance support related to these activities. Additionally, the board conducts various workshops and facilitates business matching. Moreover, it assists SMEs in preparing documents for bank loans and land leasing.

- Industrial Technology Institute: It is engaged in industrial technology research and development (including food technology). It plays a crucial role in technology transfer to the private sector, collecting and dissemination of advanced technology-related information, and monitoring environmental pollution. Additionally, the institute recommends mitigation measures and collaborates with other research institutions including universities.

<Accreditation and Inspection>

- Sri Lanka Standards Institution: It covers development of national and international standards, overseeing standardization and quality control in industry and commerce. It conducts inspections of products, products and materials, engages in research on standardization and quality control, provides inspection equipment, operates a certification mark system, and offers quality certification services.

< Financial Access >

- Department of Development Finance: The department serves as planning, a financial support organization mainly for the development of Micro, Small and Medium Enterprises (MSMEs) and the development of the primary industry sector. It is involved in program developments for MSMEs, management of various subsidy programs, support for the microfinance sector, and collection of data related to MSMEs. The National Credit Guarantee Institute (NCGI), a credit guarantee system, is also under the jurisdiction of the Department of Development Finance.

<Entrepreneurial Development>

- Ministry of Education Higher Education Sector: It has the mandate to oversee Sri Lanka's higher education institutions, primarily universities. It is responsible for the enhancement of higher education, the developing scholarships and student loan systems, improving university facilities and facilities, fostering the development of world-class universities, the strengthening international partnerships among domestic universities, and promoting entrepreneurship.

As mentioned above, both the central government and state and local governments dedicated departments related to agriculture and livestock production. The central government agencies are predominantly responsible for Research &Development (R&D) and technology transfer to government officials. Conversely, the state and local governments are tasked with facilitating technology transfer to farmers, though at times, the central government research institutes may provide training directly to

farmers. In this context, when a donor such as JICA implements a project, it becomes crucial to select an appropriate counterpart organization according to the type of project activity (R&D or extension) and the target area (whether it covers multiple regions or a specific province).

2.4 Summary of Major Policies, Development Strategies, and Other Issues in the FVC Sector

(1) National Agriculture Policy (NAP)

The NAP, developed with the support of FAO, outlines the overarching agricultural policy direction of the government until 2030. It delineates focus areas and policy statements geared towards achieving this vision, emphasizing modernization, innovation, and inclusive growth. Key priorities include enhancing productivity, developing value chains, promoting sustainable resource management, and improving farmers' livelihoods. The NAP identifies eight focal points: 1) crop production and productivity enhancement, 2) achieving self-sufficiency in basic food and feed requirements, 3) planned resource use, 4) market competitiveness, 5) climate resilience, 6) minimizing risk and uncertainty, 7) mainstreaming gender and youth in agriculture, and 8) maintaining central-local relationships.

(2) Export Development Strategy (EDS)

The EDS is a framework that integrates the country's export priorities for each sector. It stands as the most important document that defines the country's export strategy. Key export products encompass a range, including Pimento, Vanilla, Cinnamon, Cloves, Nutmeg, Mace, Cardamoms, Anise, Badian, Fennel, Ginger, etc.

(3) National Physical Planning Policy and the Plan – 2048

This policy and plan were published in June 2023 by the National Physical Planning Department of Sri Lanka. The Plan aligns with the Agriculture and Livestock Development Strategy, complimenting the existing policies and plans of relevant agencies. The relevant strategies are:

- **S63.** Monitor the use of lands suitable for cultivation based on soil fertility, water availability and climatic conditions.
- **S64.** Achieve an equitable and sustainable agriculture development, ensuring nations food and nutrition security.
- **S65.** Gradual shift from inorganic fertilizer-based agriculture to a mixed fertilizer based agriculture.
- **S66.** Strengthen technical and social research activities in agricultural sector.
- **S67.** Promote domestic crop cultivation.
- **S68.** Ensure a disaster-resilient agriculture sector.
- **S69.** Utilize the proposed economic axes for agriculture development.
- **S70.** Develop marketing data base and strengthen a marketing mechanism for agro-products.
- **S71.** Promote export agriculture based on international demand.

(4) Sri Lanka Overarching Agricultural Policy (OAP)

The OAP, a policy document crafted collaboratively by the Department of National Planning and the Ministry of Agriculture, is a pivotal component of the European Union's Agricultural Modernization Programme. Formulated with precision, its overarching objective is to optimize the multifaceted functions of agriculture. This involves addressing challenges such as population growth, provision of raw materials for industrial and bioenergy sector expansion, conservation of the natural environment and biodiversity, and rural employment. The OAP is anchored in major themes notably supporting agricultural production and expanding agriculture-related education and research.

(5) National Agricultural Research Policy 2018-2027

Developed by the Sri Lanka Council for Agricultural Research Policy (SLCRP), this policy document delineates policies comprehensive guidelines primarily focused on agricultural research and development. It encompasses key areas such as breeding, biotechnology, plant protection, postharvest technology, climate change, organic agriculture, forestry, floriculture, fisheries, animal husbandry, and agriculture-related policy evaluation.

(6) Major Laws and Regulations in the Agricultural Sector

Important laws and regulations in the agricultural sector include the following:

Table 2.4.1 Major Laws and Regulations in the Agricultural Sector

Laws and Ordinances	Summary
The Agrarian Development Act No 46 of 2000	Mechanisms for transferring and redistributing land to small farmers and landless individuals to promote equitable access to agricultural land, establishment of agricultural development committees at the regional level, addressing issues related to farmers' land ownership and land rights, land lease rights, dispute resolution, and other mechanisms to protect and secure farmers' rights.
Seed Act No, 22 of 2003	Establishment of a seed certification system to test and inspect seeds to meet specified quality standards, issuance of quality certificates, regulations on import and export of seeds, registration and issuance of licenses for seed producers, registration system for new varieties, accreditation system for seed testing laboratories, etc.
Fertilizer Control Act 2021	Licensing system, quality standards, registration, inspection and sampling, and penalties for contractors involved in the manufacture, export, and sale of fertilizers.
Irrigation Ordinance, No 32 of 1946	Allocation and distribution of irrigation water, management of irrigation infrastructure, conservation of water resources, conflict resolution mechanisms, etc.
Land Development Ordinance, No. 19 of 1935	Land use and zoning (agricultural, residential, commercial, industrial, conservation, etc.), land surveying and mapping procedures, land improvement projects, land ownership, etc.
National Physical Plan	It defines land use, transportation, environmental protection, social development, etc., including the preservation of paddy areas and the designation of special economic zones.
The Control Pesticide Act, No 33 of 1980	Registration of pesticides, regulation of imports and sales, licensing system, safety labeling requirements (labels), use and application of pesticides, storage and disposal methods, monitoring system by authorities
Water Resource Act	Protection of paddy fields, regulation of conversion, land ownership, construction of irrigation systems.
Livestock Entrepreneurs Empowerment Act	Provisions pertaining to the registration of livestock producers, the protection of livestock producers, and producer society

2.5 Temporary Challenges Posed by the Crisis and the Structural Challenges in Agricultural Sector

(1) Challenges Posed by the Complex Crisis

The economic crisis and policy turmoil, as outlined in section 2.1, have significantly impacted the agriculture and livestock sectors. A typical example is the consequence of “fertilizer import restrictions”: in May 2021, the Minister of Finance issued Regulation No. 07 of 2021 on Imports and Exports (Regulations), which imposed restrictions or prohibitions on the import of fertilizers and agricultural chemicals, including insecticides and herbicides. Consequently, rice production experienced a sharp decline from 3.39 million tons in the previous year to 2.92 million tons in the 2021-2022 season representing a 14% decrease. Similarly, production of maize for animal feed is projected at 272,100 tons for the 2022/23 Maha season, which is also 13% lower than the average for the previous five years. [25]

25

https://www.fao.org/giews/countrybrief/country.jsp?code=LKA#:~:text=Yields%20of%20the%202022%2F23%20main%20%20E2%80%9CMaha%E2%80%9D%20 20crops%2C%20harvested,272%20100%20tonnes%2C%2013%20percent%20below%20the%20average.

While the restrictions on chemical fertilizer imports were initially implemented to prevent foreign currency outflows, the outcome has been a reversal of the intended situation, requiring imports of 1.16mn tons of wheat, 130,000 tons of maize, and 465,000 tons of rice, surpassing the previous average. This situation, compounded by food shortages and a decline in consumer purchasing power amid the economic crisis, has resulted in estimates indicating that 3.9 mn people (17% of the population) are experiencing a moderate acute food crisis, with an additional 10,000 in an extreme acute food crisis.

Enormous Impact of Fertilizer Import Restrictions

According to organizations involved in the production, processing, distribution, and export of agricultural products, the first two common issues cited, are lack of (1) stable supply of products (securing volume) and (2) policy stability. The stable supply of products to consumers at stable prices is the overriding concern of those involved in FVCs.

However, the shortage of fertilizers has impeded production, leading to severe disruptions in supply system. Furthermore, FVC players typically aim to optimize their activities based on the current condition. However, they face challenges in responding to sudden policy changes with limited lead time, ultimately resulting in adverse consequences for consumers.

An additional illustration of the policy's substantial impact is the stringent import restrictions on powdered milk, and the resulting significant structural changes in the FVC. Despite 60% of Sri Lanka's milk demand being met by imports, the introduction of import taxes (powdered milk: 175 Rs/kg) and restrictions on open account transactions resulted in considerable limitations on imports. These compelled dairy processors rely more on domestically produced milk, but the local supply was proved insufficient, causing in shortages and subsequent price hikes in the retail sector, which provoked a major backlash from consumers[26]/[27]. In this scenario, the policy not only widened the supply-demand gap, but also imposed a substantial burden on the parties involved, necessitating significant short-term changes to the supply chain structure.

The key lesson derived from this situation is that when restrictions are imposed on agricultural inputs and raw materials, which constitute the most upstream inputs in the agriculture and livestock sectors, the negative spillover effects are substantial. Such restrictions not only diminish crop production, but also have a profound impact on related sectors that utilize these inputs as raw materials, as observed in the case of feed and livestock production. While these measures might have been deemed unavoidable amid the economic crisis, it is crucial to fully recognize that major policy changes channel secondary effects beyond their intended purpose. As a result, the entire population, as consumers, becomes affected through FVC. Provide that Sri Lanka's public finances are not yet stable at the moment, the potential for another major economic crisis in the future cannot be discounted.

Restrictions on milk powder imports, etc.
~Transformation of Supply Chain Structure~

Sri Lanka's milk supply had previously accounted for only 40% of total demand, with the country highly reliant on imports, especially powdered milk, for dairy product production. The abrupt enforcement of import restrictions under these circumstances compelled dairy product processors to change their suppliers, resulting in a distortion of the supply chain structure.

The consequences included, an excessive competition among processors for raw milk, which was already in short supply to begin with. Moreover, maize production, a crucial feed for dairy cows, also faced challenges due to shortages of fertilizers and seeds.

Processors faced with the issue of dairy farmers, who had traditionally supplied to a particular processor, started redirecting their sales to other companies, resulting in a great deal of confusion in the market.

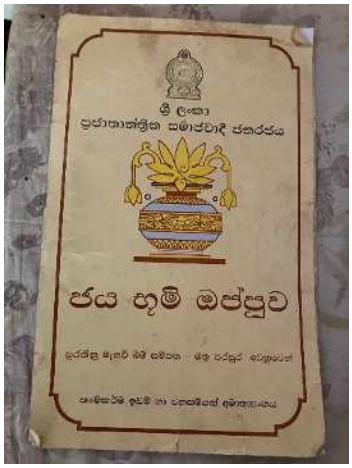
(2) Structural Issues

Beyond the challenges associated with short-term changes in social conditions as described above, i.e., drastic changes in socioeconomic conditions and the resulting shortages of goods and fluctuations in demand, following are some of the permanent and structural challenges in Sri Lankan agriculture.

[26] https://economynext.com/sri-lanka-abolishes-tax-on-milk-powder-import-to-maintain-prices-84731/

[27] https://economynext.com/sri-lanka-allows-milk-powder-import-under-open-account-amid-central-bank-concerns-101647/

1) Land issues: The reduction in arable land per household due to intergenerational land division is hindering the productivity gains. Furthermore, land tenure issues and lack of policy coordination among government agencies, particularly the challenge of balancing forest protection and agricultural land development, are significant concerns. For instance, in farmland under the jurisdiction of the Department of Agrarian Development, ownership cannot be divided below a certain size. In some cases, relatives jointly share one plot of land in joint names making land consolidation difficult and serving as hinderance to efficient land use. Additionally, having multiple landowners complicates long-term investments, as there is less incentive to apply fertilizers and improve the soil when the landowner changes every year.



An example of land rights document: An old female farmer in northern Anuradhapura had acquired a total of 4 acres of farmland since 1983, but after her husband's death, she transferred the cultivation right of paddy fields (2ac) to her daughter, which is now leased out. She transferred 1acere of upland to her son and owns the remaining 1ac by herself, both of which are now leased too. Likewise, farmland is often sub-divided, and the cultivator and owner are often different.

2) Water Shortage: Water scarcity, exacerbated by climate change, is a serious concern for agriculture in Sri Lanka. Especially during the dry season, the amount of water available for irrigation is constrained, further compounded by aging irrigation infrastructure leading to inefficient water use. Currently, the country has over 40,000 small schemes, including tanks, which are managed by farmers in principle. However, concerns have been raised about the adequacy of this management. Despite government subsidies, their impact is limited due to the sheer number of tanks, highlighting the challenge of providing sufficient support in this context.

3) Food loss: Significant post-harvest losses of agricultural products persist in Sri Lanka due to lack of storage, transportation, and processing facilities. Historical reports indicated nearly 40% of loss in production, and though there have been marginal improvements, the loss of perishable products remains notably high, representing a major challenge in Sri Lankan food business. For instance, in vegetables, items like cucumbers and eggplants, prone to spoilage compared to carrots and squash, that can be stored for relatively longer periods, face higher margins for distributors in anticipating losses. This, in turn, is believed to contribute to elevated consumer prices (Ao, Itagaki 2015[28]). Despite government efforts, such as the introduction of plastic trays, the adoption rate is still not sufficiently high.



DEC (Dedicated Economic Center) in Dambulla: Food losses, including those caused by damaged cargo and unsold products, amount to an average of 20-30% of the total. Even the vegetables still in bags are dumped in the waste area on the premises.

4) Labor Shortage: It is widely recognized trend of an aging agricultural workforce, coupled with lack of interest among younger generations in pursuing careers in farming. in farming. The outflow of labor to urban areas has exacerbated labor shortages in the agricultural sector compared

[28] A Study on Vegetable Pricing Initiative in Sri Lanka (Rural Studies, Society for Food, Agricultural and Rural Economics (No. 121) 2015)

to other sectors. The agro-processing sector, in particular, grapples with challenges in securing skilled workers, often necessitating the training of inexperienced workers from scratch. Securing human resources with higher education is also a challenge, and despite the government initiatives to address this issue, the outcomes have not proven sufficient.

5) Lack of materials: In rural areas, obtaining access to quality seeds, fertilizers, and pesticides have been a persistent challenge. In recent years, the government has implemented strict standards for pesticide use, restricting the distribution and use exclusively to “green” pesticides, from a classification system includes three colors (red, yellow, and green) based on the safety of the compound. Consequently, farmers now have fewer options, and an increasing number of farmers have expressed dissatisfaction with the perceived reduced effectiveness of the available pesticides. Furthermore, there are cases where regulated pesticides are imported illegally, and it has been pointed out in various places that the quality of these pesticides is low compared to their past efficacy.

6) Lack of modern farming methods and technology: Many farmers in Sri Lanka have limited access to modern farming techniques, equipment, machinery and technology and still rely on traditional farming methods, resulting in low agricultural productivity and efficiency. This is attributed partly to the small area under cultivation per household and the inadequate supply of productive varieties and quality seeds. For instance, in rice cultivation, harvested rice is frequently used as seed for the following year. In field cultivation, such as with sesame seeds, minimal attention is given after sowing. Processing facilities typically utilize simple drying equipment, and next-generation drying methods (e.g., freeze-drying), which are commonly employed in other countries, are not widely adopted.

7) Farmers' Access to Finance: Small farmers in Sri Lanka face challenges in accessing finance and often find themselves burdened with high levels of indebtedness. Challenges such as, limited access to credit, high interest rates, and volatile market prices contribute to this predicament. Microfinance loans, which do not require collateral, are available but provided with limitations on loan amounts. Agricultural loans often necessitate lump-sum repayment within a short period, such as six months. Many farmers in Sri Lanka have no/clear land ownership, further hindering access to finance due to the absence of collateral. This situation makes it difficult to promote farm investment and the adoption of new technologies and modern agricultural practices.

8) Lack of investment: Beyond the challenges outlined above, the lack of financial services in rural areas, and the lack of private investment in agriculture, driven by uncertain prospects, including policy uncertainties, are reportedly impeding the expansion of the agricultural sector. Specially, in the processing industry, which demands new capital investment, there has been limited entry of new firms except for some firms with sufficient funds.

9) Unstable agricultural commodity prices: Beyond low productivity in agriculture, the modernization aspects of diversification, commercialization, and value addition has not progressed significantly, resulting in stagnant incomes for those who involved in the FVC. Notably, there are many cases of farmers concurrently growing crops in which the prices surged one year, only to witness the prices plummet the following year. This lack of coordination in the production areas contributes to unstable prices. Another issue lies in under-utilization of surplus agricultural products, primarily due to the lack of a flourishing processing industry.

10) Lack of Government Personnel: Amidst a prolong economic recession and budget deficit, the government has adopted a policy refraining from hiring new civil servants. These measures

appear to have been implemented uniformly regardless of sector, and many of the agencies related to the Ministry of Agriculture have not hired new employees for about 10 years (new employees are scheduled to be hired in FY2023). This shortage of human resources not only hinders the provision of administrative services but is also a major problem in terms of technology transfer and human resource development, and there are concerns that the effects of this will be long-lasting.

11) Difficulties associated with policy implementation: As highlighted in section 2.5.1, extreme policies have the potential to generate confusion in society, particularly at the field level when any regulations undergo changes (see Box). The magnitude of the confusion can be escalated if the policy shift is not accompanied by careful administrative services, such as the presentation and dissemination of alternative technologies.

Confusion over changes in pesticide classifications

Global Hazard System (GHS) of the International Code of Conduct on Pesticide Management classifies pesticides according to hazard level. In accordance with this system, the use (import) of pesticides classified into specific hazard levels was banned by the government of Sri Lanka.

This was a sudden decision for farmers who had been using those pesticides until then, and there were difficulties in obtaining information on alternative pesticides and their proper usage, which caused confusion (e.g., the use of pesticides with different category did not yield the expected results).

In addition, with the distribution of products that appeared to have been smuggled in, many farmers complained that their pesticides were no longer effective enough due to the use of inferior products or products with different active ingredient content.

12) Complex administrative system: As indicated in section 2.3 on *Related Organizations*, the fragmentation of administrative organizations has led to the overlapping of duties, resulting in inefficiencies. For example, presence of laboratories responsible for analyzing the composition of agricultural products and soil are located in several departments creates confusion for farmers in determining the appropriate department for their request. Similarly, in obtaining the necessary permits and licenses for export, applications must be submitted to many organizations, resulting in huge transaction costs. Furthermore, the establishment of Cinnamon Development Department, separated from the Department of Export Agriculture (DEA) in September 2023, raises concerns about potential inefficiencies due to overlapping responsibilities in terms of spice export promotion.

In the domain of agricultural extension, it is reported that the staff of the DOA sometimes conducts extension even for spices that are originally under the jurisdiction of the Department of Export Agriculture. In the meantime, the office of the Department of Agrarian Development is used as an interface to farmers for agricultural extension, thus flexibly complementing each other in various capacities at the field level.

According to the Climate Risk Country Profile: Sri Lanka (2021) prepared by the World Bank and ADB, the minimum temperature is rising at a rate faster than the global average, the number of annual hot days exceeding 35°C is increasing, and rainfall patterns are becoming irregular and extreme. The risk of human and infrastructure losses due to natural disasters such as droughts, riverine floods, and flash flood are increasing. Notably, many target areas are semi-arid, facing perennial problems of heat and water shortages. Surprisingly, floods still occur in these regions.

2.6 Policies of Donor Organizations

Trends in past JICA and other donors' assistance to Sri Lanka's agricultural sector will be summarized with reference to the earlier sector information collection and confirmation survey. Examples of projects

and surveys conducted in recent years that are highly relevant to this survey include the following:

Table 2.6.1 Major Projects and Studies by Other Donors (examples)

International organization	Classification.	Projects and surveys
JICA	survey	Information gathering and confirmation survey on agricultural and livestock logistics and markets in Sri Lanka
	survey	Information gathering and verification survey on the agricultural sector in Sri Lanka
World Bank	Project	Agriculture Sector Modernization Project (2016-2023)
	survey	Policy Brief: Food prices: an effective way of shifting diets towards healthier habits in Sri Lanka (2019)
	survey	Support to Establishment of Geographical Indication System (2022)
	survey	Sustainable agricultural development for food security and nutrition (2016)
IFAD	Project	Development of Agricultural Value Chains for Poverty Reduction in Sri Lanka (2014)
ILO	survey	Gender and Employment in Agricultural Value Chains in Sri Lanka (2018)
ADB	survey	Value Chain Analysis of Key F&B Products in Sri Lanka (2017)
	Project	Value Chain Development for Tea Sector (2020)
World Food Programme	survey	Market Assessment of Agricultural Products and Agricultural Services in Batticaloa, Mannar, Matale, Monaragala, and Mullaitive Provinces (Case of Horticulture VC in Drylands of Northern and Eastern Provinces) (2020)
USAID and others	survey	Sri Lanka's Agri-Food Trade: Structure, Opportunities, Challenges and Impact of COVID-19 (2021)
HARTI	survey	Value Chain Analysis of the Milk Industry in Sri Lanka (2021)
Government of Sri Lanka	Related Documents	Exporting to the European Union- A Practical Guide for Sri Lanka Suppliers of Agricultural Products
Government of Sri Lanka	Related Documents	National Export Strategy of Sri Lanka 2018-2022

The following are summaries of the major JICA/other donor initiatives that are highly relevant to this survey.

Table 2.6.2 Project Summary: Northern Province Dairy Development Project (Baseline Survey)

Donor: Japan International Cooperation Agency (JICA)
Target Products: Dairy development (milk production)
Target Area: Northern Province, Sri Lanka
Implementing Agency: Department of Animal Production and Health of the Northern Province (DAPH-NP)
Year of Issue: January 2020
Survey period: March 2019 - September 2024, of which April 2019 - December 2019 (baseline survey)

1) Objective
The survey was conducted to gather information necessary for project implementation. The main objectives of the survey were to understand the concurrent status and challenges of dairy development, identify appropriate dairy technologies, establish a training system and extension system for Private Sector Community Livestock Technicians (PCLTs), select core farmers, and determine equipment requirements, Define quantitative indicators for the Project Design Matrix (PDM), and plan for the involvement of Japanese experts.

2) Project Activities/Survey Summary
A baseline survey was conducted with the help of counterparts and re-contractors. Interviews with dairy farmers and artificial insemination (AI) technicians were conducted by the local re-contractor (Sri Lanka Center for Development Facilitation).

3) Results and Achievements
Several major challenges facing dairy development were highlighted, including policy and organizational challenges, technical challenges, and social challenges. Specific challenges identified include the need for extension services, lack of access to quality feed, limited access to veterinary services, and gender disparities in dairy farming. The report also outlines an action plan to address these challenges to ensure the success of the project.

4) Lessons Learned, etc.
Lessons learned from this survey include the importance of stakeholder participation and cooperation, the need for effective extension services and training programs, and the use of monitoring tools to track progress and make decisions based on it.

Table 2.6.3 Project Summary: Value Chain Analysis of Cinnamon, Pepper, and Cardamom in Sri Lanka

Donor: Japan International Cooperation Agency (JICA)
Eligible Products: Cinnamon, Pepper, Cardamom
Target Areas: Matale, Kandy, Galle, Matara
Implementing Agency: Sri Lanka Institute for Policy Studies, Ministry of National Planning, and Ministry of National Policy and Economic Affairs

Publication Year: March 2017
Survey Duration: Unknown

1) Objective.
This survey was conducted to better understand the structure and functioning of the spice sector in Sri Lanka. The main objectives are as follows.

1. Mapping of the value chain actors, functions, and implementation environment
2. Application of value chain analysis to clarify information on the distribution of benefits and constraints facing the spice sector in Sri Lanka, including quality and hygiene-related standards.
3. Policy recommendations at various points in the chain to improve the spice sector and expand production and export opportunities based on value chain analysis.

2) Project Activities/Survey Summary
The survey attempted to understand the various issues faced by stakeholders in the value chain, with a particular focus on the quality aspects, and to make a series of policy-level recommendations to transform those issues and threats into opportunities. Using a standard Value Chain Analysis (VCA) methodology, developed by the U.S. Agency for International Development (USAID), the survey consisted of four steps: data collection, value chain mapping, analysis of opportunities and constraints, and verification of results leading towards recommendations. The final report highlights that relevant information was collected from both primary and secondary sources and analyzed using both qualitative and quantitative methods.

3) Results and Achievements
The spice sector in Sri Lanka faces a variety of challenges, including low productivity, inadequate quality control, and limited market access. Multiple actors are involved in the value chain for cinnamon, pepper, and cardamom, yet are disparities in benefit sharing, with farmers and collectors receiving a minimal share of the final price. In order to increase the competitiveness of the spice sector, it is proposed to improve production and processing technologies, improve quality control, and explore new markets. Policy interventions are also recommended, such that providing credit and technical assistance to farmers, promoting good agricultural practices, and strengthening quality control and certification systems.

4) Lessons Learned, etc.
The importance of using the value chain analysis methodology developed by USAID, which is widely recognized and standardized as a method of value chain analysis, is mentioned. This ensures that the analysis is comprehensive and consistent, and that findings can be compared across different value chains and geographical regions.

Table 2.6.4 Project Summary: Needs Assessment for the Northern Province of Sri Lanka

Donor: United Nations Development Programme (UNDP) Sri Lanka Office
Target Areas: Socio-economic, environmental and other development needs
Target Area: Northern Province
Implementing Agency: Center for Poverty Analysis (CEPA), Sri Lanka
Publication Year: September 2019
Survey Period: 2018/2019

1) Objective.
The ultimate goal of this survey is to improve the welfare, security, and protection of vulnerable communities in the Northern Province. The purpose of the needs assessment is to identify socioeconomic, environmental, and other development needs in the Northern Province in order to enhance economic growth and sustainable development in the province.

2) Project Activities/Survey Summary
The report summarizes a series of processes, including identifying gaps and vulnerabilities, presenting an approach for needs assessment, developing an analytical framework, conducting household surveys and focus group discussions, analyzing data, and presenting findings and recommendations to stakeholders.

3) Results and Achievements
The findings and recommendations include improving welfare, safety, and protection; stimulating employment and livelihoods; ensuring basic services to improve welfare; availability and sustainable management of natural resources; and institutional mechanisms for building and providing trust between government and citizens. The report also makes specific recommendations on topics such as reviewing social protection systems, promoting entrepreneurship, and improving access to basic services. The report also includes resource allocations based on interviews with key stakeholders and estimates based on state and provincial plans.

4) Lessons Learned, etc.
The importance of participatory approaches that involve communities and stakeholders into reflect their needs and priorities in the assessment is cited. It also emphasizes building trust between government and citizens and the inclusive involvement of vulnerable groups.

Table 2.6.5 Project Summary: Potential Industries for Future Regional Economic Development in Emerging Markets Consulting Services for a Data Collection Survey on Potential Industries for Future Regional Economic Development in Emerging Economies

Donor: Japan International Cooperation Agency (JICA)
Target commodities: Palmyra (palm), peanuts, fisheries, **ICT**
Target regions: Northern, Eastern, North Central and Uva Provinces
Implementing Agency: Industrial Services Board (ISB), Sri Lanka
Year of Issue: March 2022
Survey period: 2021/2022

1) Objective.
The purpose of this survey is to identify opportunities in four key industries (palmyra, groundnut, fisheries, and ICT) for local economic development in the emerging regions of Sri Lanka. The three specific objectives are: 1) identification and analysis of potential sector products in the designated key industries; 2) value chain analysis of selected products; and 3) analysis of the potential of the ICT industry for job creation in the emerging regions.

2) Project Activities/Survey Summary
The survey consisted of two separate components: a value chain (VC) analysis component and an ICT industry analysis component. The VC analysis component included the identification of potential sector-specific products or VCs and an analysis of the selected VCs. This component is supposed to follow a market system development approach; qualitative and quantitative data were collected to conduct the VC analysis and the ICT industry analysis. Key informant interviews (KIIs) and Focus Group Discussions (FGDs) were the primary data collection methods.

3) Results and Achievements
The survey identified key bottlenecks and recommendations for improving VC in specific commodities. Groundnut cultivation in emerging areas was identified as a bottleneck, including lack of/inconsistent supply of certified seed and farmers' lack of knowledge on seed and water management. Recommendations included seed availability, improved farmer practices, irrigation, and processing techniques, in addition to private sector involvement.

Bottlenecks in the palmyra (palm) industry were identified as sap supply, storage, processing capacity, and quality issues. Recommendations included were; encouraging youth to involve, improving tools and equipment, establishing cooperatives and processing centers, obtaining certification, and developing an industrial development plan. To sustain the sea cucumber industry, it was recommended to promote aquaculture, expand hatcheries, standardize processes, involve stakeholders in lagoon resource management, and conduct comprehensive assessments.

In ICT, limited efforts, lack of access to new technologies, and concentration on dominant English-speaking markets were identified as bottlenecks. Recommendations included were; capacity building of human resources, technical assistance for new technologies, sharing of best practices, Japanese language education, apprenticeship programs, consideration of hardware and software solutions, comprehensive research, support for incubation networks, and establishment of scale-up centers for local entrepreneurship.

4) Lessons Learned, etc.
The survey illustrates several important lessons, including the value of examining the market and value chain. The steps followed in the survey facilitate a better understanding of the problem, including the identification of gaps, and proficient in assisting in the consideration of long-term solutions.

Table 2.6.6 Project Summary: Sri Lanka SME Financing Project (Value Chain Analysis of Major Food and Beverage Products in Sri Lanka)

Donor: Japan Poverty Reduction Fund (Asian Development Bank).
Eligible Products: Pineapple, Mango, Pepper
Areas covered: All of Sri Lanka
Implementing Agency: PricewaterhouseCoopers Sri Lanka
Publication Year: July 2017
Survey period: November 2016 - February 2017

1) Objective.
The survey aims to conduct a comprehensive gender-sensitive value chain analysis of the most promising commodities in the food and beverage (F&B) sector, with an emphasis on their export potential. It also focuses on analyzing and identifying key gaps that exist throughout the value chain.

2) Project Activities/Survey Summary
The survey identified canned pineapple, mango pulp, and pepper as commodities with high potential. This report analyzed the concurrent status of exports of these commodities, trends, key destination countries/markets, and opportunities to expand in overall exports. However, this survey is based primarily on secondary data.

3) Results and Achievements

The survey concluded that limited processing capacity, technology, and entrepreneurial knowledge is what is slowing market expansion. To address this, governments need to incentivize technological upgrading and implement capacity building programs. Furthermore, the report states that overcoming challenges in the food and beverage sector will require the formulation and implementation of policies and programs, as well as infrastructure support, based on a stable economic environment and growth prospects. The introduction of technological upgrades and capacity building programs to strengthen value chain linkages is critical for future development.

4) Lessons Learned, etc.

The survey showed the importance of analyzing the current state of the market and the value chain. It also depicts the importance of government support for pineapple, mango, pepper, and other products considered pertinent to the survey.

Table 2.6.7 Project Summary: Agricultural Sector Modernization Project Component I

Donors: World Bank and EU (co-financing)
Eligible Products: Sugarcane, maize, cashew nuts, pepper, cinnamon, cloves, betel, etc.
Target Regions: World Bank Portion: Northern Province (Jaffna and Mullativu), North Central Province (Anuradhapura and Polonnaruwa), Eastern Province (Batticaloa), Central Province (Matale), Uva Province (Monaragala)
EU Portion: Northern Province (Kilinochchi, Vavuniya), Eastern Province (Ampara), Uva Province (Badulla), Central Province (Kandy)
Implementing Agency: Ministry of Plantation Industries
Implementation period: 2016 - 2023 (including the extension due to the suspension caused by the Corona disaster, for a period of 5 years in effect)
Budget: Total budget of the project USD 125mn (for component I: USD 58.63mn) (WB) and USD 28mn (EU), of which the EU portion is free

1) Objective.

Support smallholder farmers throughout the project to produce competitive yet high-valued agricultural products, enhance their capacity in responding emerging market needs, access national and international markets and become efficient and sustainable market participants.

Component I aimed at promoting commercial and export-oriented agriculture. Its primary objectives include attracting investment from agricultural producer organizations and agribusiness to increase high-value agricultural production and value addition. The component seeks to establish an enabling environment by offering incentives and access to financing through matching grants, technical assistance, commercial banking sector linkages and partial credit guarantee (PCG) facilities..

2) Project Activities/Survey Summary

The industrial sector modernization project is divided into two main components. Component I is under the jurisdiction of the Ministry of Plantation Industry and is responsible for agricultural value chain development. There are three sub-components:

i) Support for preparation of investments (matching grants)

To establish a board of directors, provide training to stakeholders, design and publicize programs and program evaluation methods, organize operating expenses, provide technical assistance to applicants for matching grant programs, and provide technical assistance for environmental and social assurance measures.

ii) Matching grants to farmers, producers, organizations and agribusinesses

Provide matching grants for investments made by agricultural producer organizations and agricultural value chain companies.

iii) Partial credit guarantee

Provide partial credit guarantees to interested financial institutions to conduct businesses using matching grants.

3) Results and Achievements

In agricultural value chain development, support for the establishment of new farmers' unions and the commercialization of enterprises is provided by the proposed method, and processors for various products (Banana, mango, etc.) are trained. There was also a case in which a farmer-based company established by Component II expanded its business to processing by utilizing Component I.

4) Lessons Learned, etc.

Monitoring and evaluation are being conducted by the PMUs established in each of the two ministries and the Provincial PMUs (PPMUs) in each of the targeted provinces. Although initially initiated as a Ministry of Agriculture project, the Ministry of Plantation Industries is now in charge of activities in the downstream sector of FVC. The allocation policy of these implementing agencies will serve as a reference for future project implementation. In terms of commercialization support, the project will be implemented on a matching basis, and the project will be required to be self-financed. This is expected to lead to sustainability.

Table 2.6.8 Project Summary: Agricultural Sector Modernization Project Component II

Donors: World Bank and EU (co-financing)
Eligible Products: Banana, Capsicum, Peanut, Cucumber, Sesame, Turmeric, Mango, Potato, etc.
Target Regions: World Bank Portion: Northern Province (Jaffna and Mullativu), North Central Province (Anuradhapura and Polonnaruwa), Eastern Province (Batticaloa), Central Province (Matale), Uva Province (Monaragala)

EU Portion: Northern Province (Kilinochchi, Vavuniya), Eastern Province (Ampara), Uva Province (Badulla), Central Province (Kandy)

Implementing Agency: Ministry of Plantation Industries

Implementation period: 2016 - 2023 (including the extension due to the suspension caused by the Corona disaster, for a period of 5 years in effect)

Budget: Total budget of the project USD 125mn (for component I: USD 58.63mn) (WB) and USD 28mn (EU), of which the EU portion is free

1) Objective.

Support smallholder farmers throughout the project to produce competitive, high-value agricultural products, enhance their capacity to respond to market needs, access national and international markets and become efficient and sustainable market participants.

In component II, the objective is to help smallholder farmers improve their capacity to produce competitive marketable commodities, in response to market requirements and act towards increased commercialization.

2) Project Activities/Survey Summary

The agricultural sector modernization project is divided into two main components. Component II is under the jurisdiction of the Ministry of Agriculture and is responsible for "demonstrating productivity improvement and diversification". The four subcomponents are:

i) Extension of agricultural technology to producers and capacity building

In addition to providing technical assistance to smallholder farmers, it will help producers respond to market opportunities by supporting the establishment of farmer organizations.

ii) Agricultural Technology Demonstration Park (ATDP)

Support the establishment of agricultural technology demonstration parks in seven districts of the project scope to encourage producers to adopt, demonstrate and scale up innovative agricultural technology packages. The park will demonstrate an approach across the agricultural value chain, including agricultural production, post-harvest processing and/or processing, and marketing.

iii) Development of production and market infrastructure

Improve small-scale irrigation infrastructure and existing water tanks and irrigation systems, transport agricultural machinery, improve roads used to access markets, and establish village-level storage and product handling facilities.

iv) Analysis and policy advice

Develop sectoral and sub-sectoral strategies to provide an appropriate environment for sustainable and competitive modern agriculture and food systems.

3) Results and Achievements

Upon the establishment of ATDP, clusters were organized by selecting promising areas and subsequently mobilizing farmers in those areas. A company was established by farmers belonging to the cluster, and now the company itself operates cultivation and post-harvest processing facilities using advanced technology. Some of the established companies have expanded their business to include processing crops.

4) Lessons Learned, etc.

By clustering farmers, it is possible to compensate for the difficulty of intensifying agricultural land in Sri Lanka. In addition, farmers themselves become owners of enterprises, creating an inducive environment in which farmers actively participate in the operation of their own crop production and processing facilities. Furthermore, since the share of a company is distributed equally among participating farmers, the lack of incentives for management is perceived a problem.

Table 2.6.9 Small Business Development Project (III) (JICA)

Donors: Japan International Cooperation Agency (JICA)

Eligible Sector: Small enterprise

Target Regions: All of Sri Lanka

Implementing Agency: Ministry of Small and medium enterprise development

Implementation period: 2004- 2008

Budget: JPY 9,619 mn

1) Objective.

To contribute to the balanced economic growth of Sri Lanka by (1) developing and expanding the production base of micro and small enterprises, (2) enhancing the technical and financial management capabilities of micro and small enterprises, and (3) enhancing the financial capabilities of participating financial institutions through the provision of low-interest funds to micro and small enterprises

2) Project Activities/Survey Summary

Lending capital investment funds for small and micro enterprises at low interest rates (general loans), and financing expenses necessary for training in technical and financial management aspects necessary for small and micro enterprises and hiring consultants at low interest rates (technology transfer loans)

3) Results and Achievements

Loans of Rs 1.95 million per loan were extended to 4,749 end-users. It also created 66,312 jobs for micro, small and medium enterprises. The loan has now been repaid and a subsequent revolving fund project called SMILEIII is under way by the

Ministry of Industry.

4) Lessons Learned, etc.

The operational knowledge of the loan scheme has been used for the subsequent loan scheme, SMILE, which continues to operate with its own funds after the loan period ends. The SMILE project has continued to operate during the COVID-19 pandemic and is considered one of the most successful loan schemes in Sri Lanka. Currently, it is being used in conjunction with the FOUR i project, which is a SME technical assistance project of the Ministry of Industry. This combination of technical assistance and loan schemes is considered to be important in supporting SMEs that are willing to invest but are short of funds.

Table 2.6.10 EU-Sri Lanka Trade-Related Assistance

Donors: EU, United Nations Industrial Development Organization (UNIDO)
Eligible Sector: Product sectors and service providers in the value chain of spices, processed foods and beverages
Target Regions: All of Sri Lanka
Implementing Agency: Ministry of Commerce
Implementation period: 2016- 2021
Budget: EUR 8mn

1) Objective

It aims to enhance the competitiveness of Sri Lankan small and medium-sized enterprises (SME) in the regional and EU markets and support inclusive, trade-led growth.

2) Project Activities/Survey Summary

i) Improved quality management infrastructure to meet quality and SPS requirements in regional and EU markets.
- Conduct of training for national quality infrastructure and conformity assessment bodies
- Promotion of new conformity assessment services

ii) Enhancing the competitiveness of SMEs in export-related sectors (processed foods, beverages and spices)
- Training on organic certification and use of agricultural chemicals
- Technical Assistance for Ceylon Cinnamon GI Certification
- Establishment of standards and curriculum for cinnamon production and processing
- Implementation of export compliance programs

3) Results and Achievements

National standards adapted to food safety and quality standards were developed to meet the needs of the export market, and many SMEs received training to enable them to become products. Ceylon Cinnamon officially received GI certification from the EU in 2022

4) Lessons Learned, etc.

The acquisition of GI certification is expected to generate socio-economic benefits for at least 30,000 integrated value chain actors by promoting increased market share, quality differentiation and investment in the cinnamon industry. Disseminating standards and certification systems adapted to overseas markets will promote the entire food industry.

Table 2.6.11 Mainstreaming Standards-based Best Practices for Agrifood Sector Development

Donors: EU, United Nations Industrial Development Organization (UNIDO), Food and Agriculture Organization (FAO)
Eligible Sector: Agriculture and Food Sector
Target Regions: All of Sri Lanka
Implementing Agency: Ministry of Trade, Ministry of Agriculture, Ministry of Health
Implementation period: 2021- 2025
Budget: USD 7.4 mn

1) Objective.

Improve food safety and quality compliance through the adoption of sustainable agriculture and sanitation technologies by food producers and processors and an updated risk-based and well-organized food management system.

2) Project Activities/Survey Summary

ER1: Operate an effective food management system in line with international best practices for consumer protection.
- Support for the formulation of national food safety policies
- Development of food safety-related standards and training for compliance of business operators

ER2: Agri-Food Value Chain Inspection Facility Meets Conformity Assessment Demand of Food-related Companies.
- Support to promote understanding of international standards among personnel involved in testing facilities.
- Technical support for inspection to personnel at inspection facilities

ER3: Value chain actors respond to food safety measures and better comply with food safety and quality requirements.
- Support for the establishment of national food safety standards
- Establishment of public-private partnership networks in the food safety field
- Food safety-related technical support for value chain stakeholders
- Help build relationships between buyers and sellers.

ER4: Increase literacy in food safety and quality by consumers, businesses, institutions and other stakeholders.
- Implementation of food safety education for consumers

- Implementation of a manufacturer-based food safety campaign

3) Results and Achievements
Unknown due to ongoing implementation

4) Lessons Learned, etc.
Unknown due to ongoing implementation

CHAPTER 3 INSTITUTIONS AND ORGANIZATIONS FOR BUSINESS ENVIRONMENT OF FOOD SUPPLY CHAIN

This chapter outlines the existing situations and challenges of the FVC business environment, mainly focusing on finance, business entity, land, logistics, human resources, packaging, industry-university cooperation, and startups. Finance stands out as a major challenge affecting productivity and added value for all players in FVC. The optimal business entity, whether a company or partnership, is discussed in relation to considerations for obtaining loans and investments along with strategic capital investments. Land issues, specifically farmland fragmentation prevents efficient large-scale farming. Logistics, excluding complicated and time-consuming export procedures, show no major problems. Human resources are facing a problem in supply aspects in some factories. Importing raw materials for packaging raises cost and quality concerns.

In response to these issues, there is a movement of industry-university cooperation, which encourages commercialization of university technology and development of new products through joint research. In addition, there is a movement by startups to solve FVC issues with innovative solutions, like matching farmers with retailers, and the chapter also outlines the supporting organizations for these startups.

3.1 Finance

Finance is a major challenge for all FVC players. It acts as the bottleneck to raise productivity and added value. This limitation is particularly evident in procurement of working capital for essential aspects such as the purchasing highly productive seeds and seedlings, purchasing of fertilizers and pesticides, and making capital investments such as irrigation, and the introduction of processing and storage facilities. This section provides a comprehensive overview of finance in the FVC context, covering both indirect financial revenues, such as banking and microfinance, as well as direct finance. The discussion explores the potential to support entrepreneurs and emphasizes the advantages inherent in Sri Lanka, a country with an established stock exchange.

3.1.1 Indirect Financing

(1) Banks

The banking industry is regulated by the Banking Act (No. 30 of 1988) and the Monetary Law Act (No. 58 of 1949) and is supervised by the Bank Supervision Department of the Central Bank. There are a total of 24 licensed commercial banks. With total asset evaluated at Rs 17,225 bn, they constitute the majority of Sri Lanka's financial system.[29]

In the examination of the loan portfolio by sector, the agriculture, forestry, and fisheries sector holds 6th position, accounting for 8% of total loans. Notably, this is higher than the agriculture sector's contribution to the GDP, standing at 7.5%. This is distinctive is noteworthy as the agriculture, forestry, and fisheries sector is generally considered a less active lending target due to the perceived low credit capacity of borrowers and elevated business risk associated with this sector. This anomaly can be attributed to the Central Bank's policy of promoting agricultural lending, which is mandated by the Bank Supervision Department's notice on August 21, 2006, which requires that agriculture-related loans account for at least 10% of total loans[30]. It is important to highlight that agricultural loans, as per this

[29] Licensed commercial banks account for a majority of assets (55%), with the central bank (14%), employee funds (11%), licensed special banks (7%), and licensed financial institutions such as leasing companies (5%) as the major players. Microfinance companies, discussed below, still account for less than 1% of assets.

[30] To be precise, a notice issued by Bank Supervision Department on August 21, 2006 indicated a gradual increase in the ratio. 3% by the end of 2007, 6% by the end of 2008, and 10% by the end of 2009.

directive, include not only loans directly associated with agriculture but also directed towards food processing and trading including the purchasing of agricultural products.

Table 3.1.1 Loan Portfolio by Sector

Sectors	Amount Rs. bn (a)	Share of Total Loans %	Stage 3 Loans to Total Loans %
Consumption	1,864.4	16.4	4.7
Construction	1,795.5	15.8	16.1
Wholesale & Retail Trade	1,716.3	15.1	12.8
Manufacturing	1,243.9	11.0	14.7
Infrastructure Development	1,115.3	9.8	4.8
Agriculture, Forestry & Fishing	920.3	8.1	11.8
Lending to Overseas Entities	593.4	5.2	6.1
Tourism	525.7	4.6	23.4
Financial Services	458.9	4.0	5.5
Health Care, Social Services & Support Services	400.2	3.5	7.4
Transportation & Storage	302.7	2.7	26.1
Professional, Scientific & Technical Activities	133.2	1.2	7.0
Lending to Ministry of Finance	109.2	1.0	-
Information Technology and Communication Services	81.0	0.7	10.9
Education	65.1	0.6	12.5
Arts, Entertainment & Recreation	12.8	0.1	12.7
Total Loans	**11,337.9**	**100.0**	**11.1**

(a) Provisional Source: Central Bank of Sri Lanka

Note: Total portfolio of licensed commercial banks and licensed special banks; Stage 3 ratio is equal to NPL ratio
Source: Central Bank of Sri Lank, "Annual Report 2022."

The prevailing economic crisis has led to a substantial increase in lending interest rates, reaching levels between 20% to 30%. However, given the inflation rate of several tens of percent year-on year, the theoretical real interest rate is near 0% or negative. From the borrower's perspective, there may be a tempting prospect to aggressively borrow and channel the funds into capital investment, yet no farmers and SMEs reveal any interest in such strategy during the interviews.

Despite the absence of dedicated development banks catering specifically for agriculture or SMEs, there exists policy finance for farmers and SMEs. A special loan program is designed by the central bank and implemented as a PFI (Participating Financial Institute) by banks that opt to engage in this program. Under this arrangement, in the case of low-interest loans, the government provides a certain amount of interest compensation to the PFI. Unfortunately, since the economic crisis of 2021, all special loan programs have been suspended due to the priority of the government budget.

Collateral is essentially mandatory. In interviews with farmers and SMEs, many commented that collateral is a bottleneck for borrowing. Cargills Bank is offering unsecured loans on the condition of a mutual guarantee by a three-person group. This kind of initiative can be widely promoted by other banks for further expansion of loans schemes dedicated to farmers and SMEs. However, it is crucial to recognize that Cargills Bank is promoting loans to agriculture because it is a subsidiary of a major Sri Lankan supermarket chain. This aligns with the bank's broader strategy aimed at fortifying its supply chain. Other banks are not likely to have incentives to bolster loans directed towards agriculture or SMEs.

The table below summarizes the unsecured financing by Cargills Bank. It is a very distinctive and good case study in terms of its interest rate levels and its strategy to fortifying its supply chain.

Table 3.1.2 Unsecured Loans by Cargills Bank

Bank founded:	Licensed in 2014. Relatively new bank
Founding Philosophy:	To contribute to rural agricultural development
Unsecured Loan Service Name:	Microfinance Loan
Loan Eligibility:	All industries, not just farmers
Interest Rate:	**16% (special program lower than the interest rate for general loans[31])**
Loan Term:	Up to 5 years
Collateral/Guarantee:	Collateral required for above Rs 1,00,000 loans. For Loans less than Rs 1,00,000, a **mutual guarantee among 3-borrowers is required** instead.
Loan Amount:	Rs 100,000 to 5,000,000 depending on the usage of funds.
Other Agricultural Loans:	There used to be low-interest loan programs such as NEDeP by IFAD and the government-led Sangamaya. Currently inactive due to fiscal compression caused by the economic crisis.
Agricultural Financing Strategy:	Cargills is a major supermarket chain in Sri Lanka that has local field staff to build relationships with farmers in terms of procuring agricultural products. This project is positioned as a tool to utilize such a network and strengthen relationships with farmers.

Source: JICA survey team, based on interviews with Central Bank

With ADB's support, NCGI (National Credit Guarantee Institution) was established under the Ministry of Finance. The Government of Sri Lanka invested USD 50mn, while 13 financial institutions (10 banks and 3 non-bank institutions) invested USD 5mn in total. The Government of Sri Lanka's investment consists of loans from ADB. NCGI plans to start operations in early 2024, and is currently in the process of hiring staff, constituting its organization, and developing its operational policies.

NCGI guarantees 2/3 of the loan amount while a financial institution bears the remaining 1/3. Financial institutions are the ones applying for credit guarantees, and NCGI reviews the loans that the financial institutions deem loanable to determine whether NCGI can provide credit guarantees. The guarantee-fee is 1~2%, and is determined by NCGI after the careful evaluation of the prevailing business conditions of the borrower company and past interactions with banks. While the financial institution is responsible for covering the guarantee-fee, the decision on whether to pass this fee on to the borrower rests with the financial institution, providing flexibility in fee allocation.

(2) Microfinance

The microfinance industry is regulated by the Microfinance Act (No. 6 of 2016) and supervised by the Monetary Board of the Central Bank. Additionally, there is a self-regulatory industry association, namely the Lanka Microfinance Practitioners' Association (LMFPA).

Only four Licensed Micro Finance Company (LMFC) have licenses as required by the Microfinance Act. Their total assets are as small as Rs 9.9 bn, less than 1/1000 of licensed commercial banks.[32] In contrast, there are several thousand so-called informal finance companies in Sri Lanka that operate without licenses. Despite lacking formal authorization, their collective market size is considered to be relatively large.

Microfinance is characterized by its ability to provide unsecured loans. In contrast, it requires a group of three or more borrowers to mutually guarantee the loan. The interest rates are higher than those of formal banks, with interest rates of 35% or higher being in effect as of July 2023, whereas the bank lending rates are around 20-30%. The maximum interest rate seems to be set at 35% by the industry

[31] The interest rate for general loans is 3.5-4.0% above the Average Weight Prime Lending Rate (AWPR), a risk-free rate published weekly by the central bank. 18.69% as of July 14, 2023.
[32] Central Bank of Sri Lanka, "Annual Report 2022."

association LMFPA[33].

The loan period varies among LMFCs, with durations ranging from two years to four to five years particularly for capital investment purposes. In terms of capital investment, the loan period is considered sufficient.

The maximum loan amount is approximately Rs 500,000, and it appears that the ceiling is set by the Microfinance Act (interview with LMFC). However, there are no supporting clauses in the act, and it is possible that the ceiling is stipulated in regulations, etc. Some LMFCs request for relaxing the ceiling regulation. Note that a microfinance license allows for the handling of deposits, which is an advantage in terms of fundraising. However, the ban on deposits is not fully lifted, and the act requires that deposits be collected as mere collateral from borrowers, which limits the efficacy of fundraising efforts.

As a future topic, there has been discourse surrounding the amendment of the Microfinance Act. Informal finance that claims to be microfinance has been a problem for moral hazard implications in debt collections. To correct this, the Central Bank drafted an amended act in 2019, and parliamentary deliberations have been ongoing since 2021.[34] It is expected that the law will be passed by the end of 2023. The revised law would make all informal finance illegal, as well as loans encompassed from wholesalers to farmers. We will keep a close eye on the impact of the final bill, including its contents.

3.1.2 Direct Financing

(1) Angel Investors

For seed and early-stage startups, angel investors are a source of funding. The Lankan Angel Network (LAN) is the largest angel investor network in Sri Lanka and was established in 2012 as a network organization of angel investors. The network has invested more than Rs 700 mn in more than 20 startups.

There are no agriculture, food processing, or wholesale-related businesses facilitated in the past investments, except for only one food delivery company. In many cases, investors' interest does not match the perspective of farmers and FVC players in terms of technology adoption and growth speed. Despite these disparities, there is still potential depending on the viability and innovation inherent in the business idea presented.

The number of investments has fallen in recent years. Significantly, investment activities ceased after February 2022, which suggests that investment opportunities have been lost due to macroeconomic factors such as the economic crisis.

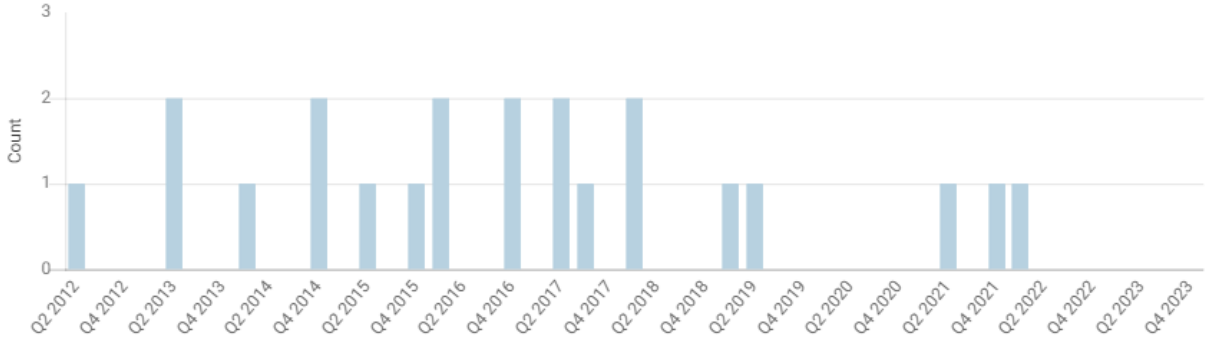


Figure 3.1.1 Number of Investment by LAN

Source: Crunchbase

[33] Lanka Microfinance Practitioners' Association (LMFPA) website

[34] Ibid.

(2) Venture Capital

For early and mid-stage startups, venture capital ("VC") is a source of funding. In Sri Lanka, there are VC firms such as Asia Capital, Third Lane Ventures, Hatch, Ironwood Capital Partners, and Bluestone Capital. These VCs aim to invest in Sri Lankan companies. John Keels X was active as a Corporate VC. John Keels X had made 10 investments in the past, the most prolific compared to other VCs. However, it has not made any new investment since 2019 and has been stagnant. Similar to angel investors, the investments are mostly in the digital sector. An example of an exit was RBL Bank, acquired by Asia Capital and subsequently went public on the stock exchange described below.

(3) Stock Exchange

The Colombo Stock Exchange is an institution with a long history, having its origin in 1896 when the Colombo Share Brokers Association (CSBA) began trading stocks. Contrary to its long history, only 289 companies are listed on the exchange (as of July 25, 2023) due to being operated in a small country. The total market capitalization of all companies amounts to Rs 3,847 bn. [35]

One of the key criteria for listing is the amount of net profit, which must be at least Rs 10 mn for listing on the Empowering board and at least Rs 50 mn for listing on the Main/ Dirisavi board, which is dominated by large companies. [36] Net profit is only one of the typical criteria, and the listing is also reviewed based on various other indicators in addition to net profit.

The criteria for listing are not very high, and exit seems not difficult for VCs. However, the number of equity IPOs in 2022 was 4 (total fundraising Rp 4 bn), and even in 2021, before the economic crisis, there were 13 (Rp 12 bn), not so many. [37]

3.2 Business Entities

Who is the right person to obtain loans and investments and make capital investments? It is not feasible for small-scale farmers to acquire loans and to operate and maintain processing and storage facilities. In some countries, farmers form a cooperative, which serves as model cases. In this section, we compare the systems and practices of companies and cooperatives in Sri Lanka and explain that a company is the most appropriate business entity.

(1) Company

A company is the most common business entity and is governed by the Companies Act (No. 7, 2007). Considering the governance aspects and the fact that the lead person will receive legitimate benefits, we believe that the company is a more appropriate business entity among the other alternatives discussed below.

Government organizations responsible for entrepreneurial and SME support include the local branch of the central government's BOI, the state government's Department of Industry, and Industrial Development Board (IDB). Specifically, they offer a wide range of technical support, such as assistance in selecting machinery for capital investment, marketing support, consulting, and entrepreneurship education.

As discussed in detail in Chapter 4, the Northern and North Central Provinces are facing challenges in

[35] Colombo Stock Exchange, "Annual Report 2022."
[36] Assuming a P/E ratio of 20x, this is equivalent to a market capitalization of 100-500 million yen.
[37] Colombo Stock Exchange, "Annual Report 2022" and Colombo Stock Exchange, "Annual Report 2021".

attracting warehousing and food processing businesses. The compelling exploration of the role on "*Who should play the role of warehousing and food processing in strengthening FVC?*" remains. We will discuss the possibility below, that farmers start their own businesses and establish their own companies, because some kinds of companies already exist in the Northern and North Central Provinces currently do not fill this role and because this is a business area where farmers' knowledge can and need to be utilized.

An example of a farmer starting a business is a grape farmer in Jaffna. He not only took over his father's grape fields, but also became a farmer and trader, buying grapes from neighboring farmers and shipping them to markets such as Dambulla. He has also expanded his farmland through leases, leaving the cultivation and harvesting to his employees, and has grown the company to 20 employees. He has a strong desire to build a wine factory if he can obtain a license for wine production. The reason for the creation of a farmer with such management skills may be due to the fact that he is a graduate of the University of Moratuwa and has a high level of education.

On the other hand, we should pay attention to the composition of shareholders and the nature of leadership. As an example, we cite the World Bank's agricultural modernization project, in which farmers were brought together to establish a company (public unlisted company). Farmers who agree with the project invest Rs 10,000 per share to establish the company, and the World Bank supports the start-up by providing grant assistance to the company.[38] 253 farmers have already agreed to invest in the company, and the target number of shareholders is 600.[39] The business is banana collection, packaging, and joint shipping. Farmers participate across several villages (tracks), and representatives are elected from five representative villages, with five members serving on the board of directors. The board also selects the chairman. In terms of governance, the company is managed by a resolution of the board of directors, which is equivalent to that of an ordinary company.

While emphasizing fairness through the equal distribution of one share per farmer, regardless of the size of each farmer, is problematic. In such a start-up company, it is essential to have a system in which those who put in a lot of effort are rewarded accordingly, but if shares are equally distributed, future dividend income and capital gains cannot be expected. In this case, the elements of Cooperative Society, which will be discussed later, and the elements of a company have become confused, and the advantages of the company as an entity have not been fully utilized.

(2) Cooperative Society

The cooperative society is a rural organization that has existed in Sri Lanka for a long time. It began in 1906, during the British rule, for the purpose of providing loans to farmers. Later, elements such as poverty alleviation were added, and the Cooperative Order (No. 7, 1911) was promulgated in 1911. During the war, they played an important role in the distribution of goods, and their numbers increased rapidly. In 1957, the cooperatives were consolidated into a Multi-Purpose Cooperative Society in each administrative district.[40] In Sri Lanka, the word "cooperative" sometimes evokes this Multi-Purpose Cooperative Society.

In this section, we focus on cooperatives formed voluntarily by farmers by industry, such as agriculture, livestock, and fisheries, rather than Multi-Purpose Cooperative Society. Such cooperatives can

[38] We have not been able to hear the details, and it is possible that the company is providing free support in the form of equipment and other supplies.

[39] Even after achieving the target number of shareholders, his total capitalization is only Rs 6 mn. In light of the equipment and machinery he has, it appears that most of it was grant aid from the project.

[40] Katsuji Watanabe, "Socioeconomic Situation, Agricultural Structure, and Farmers' Organization (Agricultural Cooperative) in Sri Lanka," Kagoshima Economic Review, Vol. 60, No. 4, March 2020.

cooperate to conduct business. For example, they can provide technical guidance such as soil management services to expand agricultural production, supply production materials, and jointly sell agricultural products. In reality, however, there have been few successful cases of marketing of agricultural products by groups. There are only a few cases where milk cooperatives have established collecting points and jointly sold agricultural products.

The governance of the cooperative is rational to a certain degree. Board members of which number is specified by the articles of incorporation[41] are selected, and decisions are made by the board members. The system in which board members make decisions is no different from that of a company, but since board members are selected by cooperative members, a major challenge is that board members are often renewed, resulting in major changes in management policy or sudden suspension of business operations.

Compared to a company, there are three advantages to operating a business through a cooperative. First, the company can receive zero-interest loans through the Cooperative Fund. In principle, the loan period is one year (depending on the use of the funds), and the loan amount is around Rs 0.2- 4.0 mn, with an average loan amount of Rs 1 mn. The loan amount is attractive compared to the microfinance loans. However, the Cooperative Fund is managed by each respective cooperative association, which contributes 10% of its annual net income. It should be noted that although loans are available, there is also an obligation to make contributions.

The second advantage is the low interest loans offered by the Cooperative Rural Bank to cooperative members only. Since the Cooperative Rural Bank is a specialized financial institution for mobilizing rural savings and channeling credit to the rural sector, significantly low interest loans of 4% to 12% are provided on an unsecured basis. However, the maximum loan amount is only Rs 0.25 mn, thus the benefits are limited. Cooperatives have legal personality and can receive loans from private commercial banks as well as from cooperative banks.

The third advantage is the various types of support from the government. If a business model is presented to the state government's cooperative bureau and passes the screening, the government may provide equipment and machinery, such as a dryer free of charge. The BOI also has a program called Productive Village, which provides machinery to cooperatives that pass a screening process and encourages them to commercialize their business.

A cooperative as a business entity has a challenge in providing incentives to leaders. Even if the business grows, it only contributes to the cooperative's assets, and is not a mechanism that directly benefits the leader. A company may be more appropriate as a form for conceiving and implementing a certain business model. On the other hand, if a business model can be implemented even with loose solidarity, such as joint shipping, strong leadership is not necessary, and utilizing a cooperative instead would be sufficient.

(3) Farmers Organization (Water Users' Group)

The organization is under the jurisdiction of the Department of Agrarian Development of the Ministry of Agriculture and exists only in rice-growing areas. Its main role is to coordinate water rights, and it also has the function of allocating cultivators irrespective of land ownership, in achieving the optimal solution for the water users' group in its entirety. We consider it unsuitable as a business entity, responsible for food processing and trading, as it is not intended to carry out business.

[41] Generally, there are about 7 people.

(4) Others

The Department of Agriculture (DOA) has two groups of farmers under its jurisdiction. One is the Young Farmers Association, which is made up of young, growing farmers under the age of 40. It is not clear if this organization is involved in any business. Another one is Producer Society. When participating in the World Bank's Agriculture Modernization Project in the agricultural sector, a Producers Society is established. Since one of the objectives of the project is to incorporate the organization into a corporation in the future, the Producers Society can be considered a step before a corporation. While it is appropriate as a business entity, it should be noted that this concept is limited to the modernization project.

3.3 Land

(1) Agricultural Land

In the agricultural sector, the fragmentation of each farmland was identified as a major issue. Not only from the farmers' perspective, but also from the perspective of companies entering the agricultural sector, it is difficult for them to secure large tracts of farmland, which presents obstacles in expanding and scaling their operations leading to undesirable cost increases. This section details the systems and other factors that provide the background.

Farmland is regulated by the Agrarian Development Act and is administered by the Department of Agrarian Development. The history of subdivisions dates back to the Farmland Reform Act (No. 1, 1972). The act was promulgated to redistribute farmland to landless farmers and small farmers. This 50-acre cap is still in place, and no farmer can own more than 50 acres of farmland. If farmland is scattered, the total area must not exceed 50 acres.

The sale and purchase of farmland is generally allowed, but only for "privately owned" farmland. For example, "former government-owned" land, such as that redistributed by the government as described above, is limited to intra-family transfers and prohibited from being sold to outside parties. Thus, former government-owned land is divided among several children each time, then it is inherited[42], and farmland has been subdivided over time. Although this was a reasonable policy at the time, given the background that land was given by the government on the promise that it would be cultivated for the purpose of redistributing farmland. This has become one of the bottlenecks preventing land consolidation at the present time. The Department of Agrarian Development is still in the process of compiling a database on the percentage of “privately owned” and “former government-owned land,” so an approximate number is not yet available.

Foreign companies are not allowed to own farmland in the first place. They conduct plantations and agriculture by leasing farmland. There is a case where farmers lease farmland privately, while there is also a case where the government leases government-owned farmland. There are no restrictions on the content of the lease agreement, as long as it is based on an agreement between the two parties, such as a lease for only the rainy season, as well as a lease for a certain period of time. There is no restriction for the size of the farmland if the sizable lands are available.

There is still a lot of government land left. Table 3.3.1 shows government land and total land area by province and district. Government land is not limited to agricultural land, but is calculated by deducting privately used land, irrigated land, forest and wildlife land from the total land area. It is necessary to pay

[42] It is possible to jointly own farmland with several relatives without dividing it upon inheritance.

attention to the fact that it includes places unsuitable for farmland such as mountainous areas.

Table 3.3.1 Government Land and Total Land Area by Province/ District

Province/District	Total Government Land (1,000 ha)	Total Land (1,000 ha)
Northern Province	**252**	**829**
Kilinochichii	55	120
Mullaitivu	85	241
Vavuniya	68	186
Mannar	35	188
Jaffna	7	92
North Central Province	**572**	**1,047**
Anuradhapura	293	717
Poronnaruwa	278	329

Source: JICA survey team

(2) Industrial Land

This section describes factory locations for starting food processing plants, warehouses, and other businesses as midstream and downstream businesses in the FVC. However, based on interviews with factory operators, traders, and distributors, we consider that securing land is not a major issue.

When constructing a factory, the preliminary planning clearance and subsequently the development permit to be obtained from Urban Development Authority (UDA) (if it is a UDA declared area) or the respective Local Government Institution. During this statutory approval process, the application is reviewed based on the size of the factory, noise, waste/ dust, and other conditions. Based on the nature of the development, different mandatory/ statutory approvals need to be obtained from Central Environment Authority, Coast Conservation Department, Department of Agrarian Development, National Building Research Organization, etc.

One of the easiest options for securing land is to build factories in industrial parks. There are several types of industrial parks, in order of size: (1) Export Processing Zone (EPZ) (managed by the BOI), (2) Industrial Park (managed by the Ministry of Industry), (3) Industrial Estate (managed by the IDB), and (4) Industrial Village (managed by the provincial government) (5) Industrial Zone (managed by Urban Development Authority). Industrial Villages are classified as A, B or C, and the Vavuniya Industrial Village in the Northern Province that the survey team visited was classified as C. As shown in the photo in Figure 3.3.1, the C-class Industrial Village looks more like an area with a concentration of town factories than an industrial park.



Main gate of the industrial park



Scenery in the industrial park

Figure 3.3.1 Vavuniya Industrial Estate (Class C)

Source: JICA survey team photo

In industrial parks, each manager develops land and leases it by plot. Basically, there is no shortage of supply of industrial parks, but some EPZs are already full.[43] Infrastructure development is done by each manager after tenants are selected. In the case of Vavuniya Industrial Estate, it seems that sometimes infrastructure development is not completed in time for the factory to open due to lack of budget allocation.

3.4 Logistics

(1) Road Infrastructure

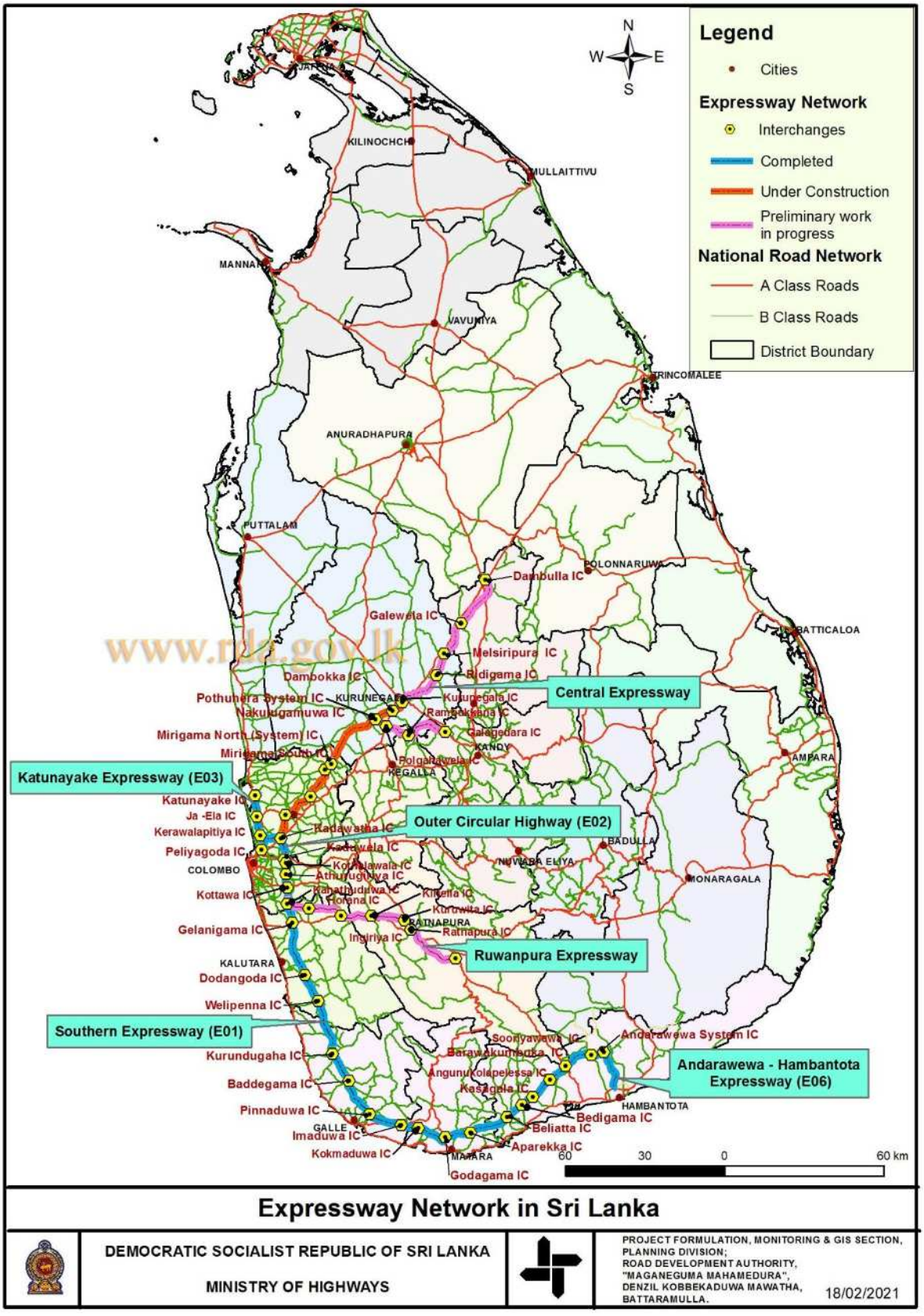
There are no major road infrastructure issues. In this section, we will summarize the status and future plans for highways from the perspective of transport times from the Northern and North Central Provinces to Colombo and describe the road surface conditions of the rural roads.

Given that the export bases are the Port of Colombo and Bandaranaike International Airport, it would be desirable if the transportation time from the Northern and North Central Provinces to Colombo is reduced. Nevertheless, the current transport time from Colombo to Jaffna in the Northern Province is about 8 hours, so transport time is not a bottleneck.

The highway related to the Northern Province and North Central Province is the Central Expressway (E4). It runs 137 km from Kadawatha near Colombo to Dambulla in the geographical center of Sri Lanka. The Central Expressway was scheduled to be completed in July 2020, yet still as of July 2023, it has not been completed and no completion date has been revised. Once completed, just under half of the route from Colombo to Jaffna will be covered by the expressway, which is expected to reduce transportation time by about 2 hours.

According to interviews carried out with foreign logistics companies, there are no critical concerns with the road conditions. In the Northern Province and the North Central Province, arterial roads such as Class A and Class B are paved, and there is no problem with the road surface conditions. Unpaved roads can be seen here and there, around the fields and factories, which are located off the main road, yet no complaint was mentioned by interviewees about road conditions, perhaps because of the short mileage.

[43] EPZs near Colombo such as Katnayake and Vyagama are already fully booked.



Expressway Network in Sri Lanka

DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

MINISTRY OF HIGHWAYS

PROJECT FORMULATION, MONITORING & GIS SECTION,
PLANNING DIVISION;
ROAD DEVELOPMENT AUTHORITY,
"MAGANEGUMA MAHAMEDURA",
DENZIL KOBBEKADUWA MAWATHA,
BATTARAMULLA.

18/02/2021

Figure 3.4.1 Expressway Planning Map
Source: Ministry of Highways

Table 3.4.1 Expressway Plan (Detailed)

	Existing			Plan			
	From	To	km	From	To	km	Construction complementation year (plan)
Southern Expressway (E01)	Kottawa	Andarawewa	200				
Outer Circular Highway (E02)	Kottawa	Kerawalapitiya	29				
Katunayake Expressway (E03)	New Kelani Bridge (Peliyagoda	Katunayake (airport)	26				
Andarawewa - Hambantota Expressway (E06)	Andarawewa	Hambantota	17				
Central Expressway (E04)	Mirigama	Kurunegala (Mallawapitiya)	40				
				Kadawatha	Mirigama	37	July 2020
				Mirigama	Ambepussa	9	
				Pothuhera	Galagedara	33	
				Kurunegala	Dambulla	60	
Ruwanpura Expressway (E05)				Kahathuduwa	Ingiriya.	26	2023
				Ingiriya.	Pelmadulla	48	2023 (Project is hold)
Elevated Port Access Road (E08)				New Kelani Bridge	Galle Face	5	2023
Elevated Highway from NKB to Athurugiriya (E09)				NKB	Rajagiriya	7	2025
				Rajagiriya	Athurugiriya	10	2025

(2) Small and Inefficient Logistics

Intensive Transport by Farmers and traders

A large grape farmer in Jaffna grows grapes on 14 acres of land, buys grapes from neighboring farmers, and transports and sells them to markets in Dambulla. The farmer employs 20 people, including 5 harvesters and 5 packers and transporters.

Grapes are difficult to retain fresh, and damage can occur three days after harvest. The need to transport quickly, efficiently, and with high quality makes it particularly advantageous to utilize an Intensive transport method instead of moving by seldom farmers individually.

Since most of the traders are small to medium size, mainly small and medium size trucks are used at the wholesale market in Dambulla and the New Manin Wholesale Market in Colombo. Even in the case of intensive transportation, such as the one in the right box, which can be said to be a success story, the volume of goods will not be so large, and the distribution is by medium-size trucks. In some cases, farmers may transport small trucks for several hours to Dambulla. The small size of the farmer-trader-wholesale market players results in inefficient logistics due to the lack of cohesion in the volume of goods. There is also no mechanism confirmed that any logistics companies specialized in consolidating and transporting the cargo of many small shippers/intermediaries.

However, major supermarkets such as Keels and Cargills are exceptions. Keels, for example, has nine collection points scattered nationwide and a large distribution center near Colombo. Cargills also established a new distribution center near Colombo in February 2023. Cargills deals with about 20,000

farmers and is looking to build an efficient logistics system through collection points and traders.[44]



Figure 3.4.2 Cargills' Distribution Center
Source: JICA survey team

(3) Export Procedures

Formalities required for export are a Customs Clearance Form (CUSDEC) and a commercial invoice. These are done through BOI and Customs, which can also be done online.[45] The latest ASYWORLD is used as an online system, logistics companies said that the procedures are smooth.

Various other procedures are also required, e.g. the proof of origin and other supplementary documents depending on the nature and type of the product. For an instance, for cinnamon, an application for a license from the Export Development Board (EDB) is required to obtain the "Pure Ceylon Cinnamon" logo and a quality inspection certificate by Sri Lanka Standard Institution (SLSI) or other quality inspection agencies is required. For vegetables and fruits, a phytosanitary certificate from the National Plant Quarantine Service is required.

Except for CUSDEC and commercial invoice, an exporter must visit each administrative agency and complete the procedures at separate locations. These procedures take from one to several days. Especially for items with a short shelf life, such as vegetables, this time loss in procedures shortens the sales period, resulting in missed profit windows.

Considering these challenges, the Sri Lankan government has set up a committee to establish a One-Stop Service (hereafter OSS) to implement export procedures on a one-stop basis (around May 2023). The Ministry of Finance will head the committee, and members are likely to include the BOI, Ministry of Trade, Ministry of Health, and Ministry of Agriculture.[46]

3.5 Human Resources

(1) Labor Cost

In interviews with factory managers, it was pointed out that labor costs had risen, solemnly due to the inflation. In real terms, discounted by the inflation rate based on the consumer price index, labor costs had rather decreased, and we consider that this is not a major problem for business management.

[44] Sunday Observer, "Cargills opens centralised distribution centre", 12 February 2023
https://www.sundayobserver.lk/2023/02/12/business/cargills-opens-centralised-distribution-centre
[45] BOI, "Guide for Investors on Imports and Exports,"
[46] From interviews with logistics companies

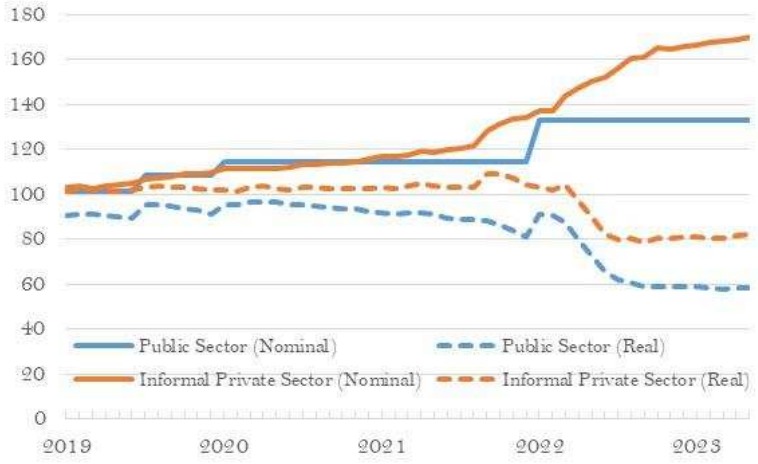


Figure 3.5.1 Transition of Labor Costs
Source: Compiled by JICA Survey Team based on Central Bank statistics.

In fact, unemployment rate is not high, and the labor market is stable with supply and demand. Compared to the pre-COVID-19 unemployment rate of 4.5% (three-year average from 2017 to 2019), unemployment rate has been decreasing as 5.5% in 2020, 5.1% in 2021, and 4.7% in 2022 (provisional figures), as the impact of COVID-19 subsides. This suggests that, despite the economic crisis, the impact on the labor market was limited. Yet, there is a concern about the medium- to long-term impact of increased outflow of human resources from Sri Lanka[47].

(2) Recruitment

In interviews with factory managers, they also pointed out the issues to attract job seekers. Regarding the recruitment of human resources, there are several matching platforms provided by private companies, which are utilized by various companies including small and medium-sized factories. In addition, BOI provides a public matching platform called "Job Bank". Companies are making various efforts to secure human resources, such as establishing dormitories in cooperation with neighboring factories in order to expand the target areas for recruitment.

3.6 Packaging

Paper and plastic, the raw materials for packaging, are basically imported, contributing to high costs. There are domestic manufacturers that produce paper bags and cardboard boxes for packaging and packaging based on imported paper. Although domestic manufacturers are developing, still the Swiss company Tetrapak monopolizes the beverage paper packs.

In addition, as in the case on the right box, it is crucial to critically manage not only the price and quality of packaging materials but also the packaging process, which cannot be simply entrusted to third parties/ other companies.

Insects are Mixed in a Tea Bag

A tea manufacture processes tea leaves and sells them domestically and internationally. Mainstream products are packaged in large quantities such as 200 grams, but a client required triangular tea bags. Since the company did not have a triangular teabag packaging machine, it asked another company that owned the machine for the packaging process. However, the client canceled the order due to a problem that insects were in a teabag.

In the end, they purchased a packaging machine priced at USD 12,000 and solved the problem by making packaging their own process. In addition to the quality of the packaging materials, the packaging process cannot be conveniently entrusted to other companies. It indicates the severity of the business environment.

In September 2023, the EDB and the Ministry of Industry jointly established a packaging center, because the promotion of exports requires improvements in packaging. In addition to consulting on packaging

[47] https://jp.reuters.com/article/sri-lanka-crisis-economy-idJPKBN2PP06O

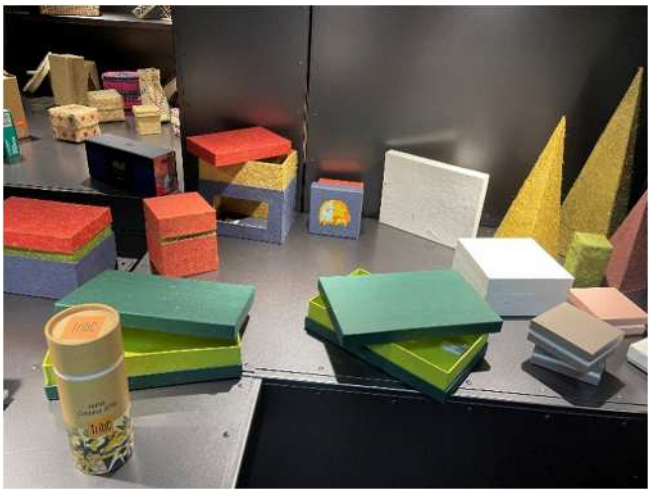


Figure 3.6.1 Packaging Center
Source: JICA Survey Team

methods and materials suitable for their products, SMEs can be introduced to suitable packaging companies based on the database, comprising of 120 packaging companies, maintained and owned by the packaging center. SMEs can use these services free of charge. Locally produced packaging materials, developed using domestic materials by the universities and other research institutions, are also promoted by the packaging center, which will contribute to the improvement of packaging quality and cost reduction in the future. Since packaging companies are concentrated in the Colombo area, it is inconvenient to hold meetings and check samples depending on the location of small and medium-sized enterprises such as food manufacturers scattered nationwide.

3.7 Industry-University Cooperation

Through the efforts of the Ministry of Education, each university across the country has established an institution called University Business Linkage Cell to promote industry-university cooperation[48]. There are two main categories of industry-university cooperation activities: human resource development and commercialization support.

Human resource development includes the development of courses catering industry-specific skills and knowledge, such as agriculture and tourism, and courses on corporate management, such as accounting, human resources, marketing and advertising. In North Central Province, more than 100 members of the chamber of commerce and industry took the business course as a trial, and the perceived value on the course of the participants seems to be good. However, due to budget constraints, it is not possible to open the door to outside members of the chamber of commerce and industry.

Commercialization is an effort to sell universities' patents and licenses to companies for commercial intend and to jointly develop new products through collaborations. In the case of Rajarata University in the North Central Province, it has commercialized various technical licenses, including foot cream, soap, shampoo, omega-3 ice cream, sauces, jams and ayurvedic sauces. In the case of Jaffna University in the Northern Province, it has developed a yogurt drink with bael fruit, which is rich in vitamins and minerals.

3.8 Startup

Industry-university cooperation is basically a support for existing enterprises, and the purpose and target are different from supporting startups. Entrepreneurial development in the Northern and North Central Provinces will be important as companies situated in Colombo are less likely to invest in the Northern and North Central Provinces. In addition, in order to take advantage of new business opportunities such as matching retailers with farmers and the formation of new food processing businesses, it is important to develop entrepreneurs.

[48] Jaffna University and Vavuniya University are in Northern Province, and Rajarata University is in North Central Province. According to Ministry of Education, Colombo University and Moratuwa University are especially active in industry-university cooperation.

(1) Startup Support Organization

Under the Ministry of Education, ICTA (Information and Communication Technology Agency) organize workshops, mentoring and providing grants to a variety of startups including AgriTech, EduTech and LogiTech. It runs StartupSL, an online startup platform that has attracted more than 880 startups. As for mentors, ICTA has requested professors and investors to be a mentor rather than hiring a mentor. It has particularly strong ties to the University of Moratuwa, with 20~30 professors participating in ICTA programmes as mentors.

There are examples of private agencies to support startup such as the Yarl IT Hub in Jaffna. An NPO founded in 2011 to form a startup community. More than 70 startups have launched thus far. Seminars, workshops and technology education (science education, programming, robot creation, etc.) for young students before and after junior high school are being organized under this purview. Technology education (digital marketing, data science, project management, etc.) is also provided to entrepreneurs. Entrepreneurs will be offered an acceleration program (mentoring, network formation support, etc.), pitch opportunities and co-working spaces. The winner of the pitch also has the opportunity to be matched with potential investors.

ICTA works with the University of Jaffna. The university plans to launch Incubator Cell for budding student entrepreneurs. Rajarata University in North Central Province also supports student entrepreneurship. The lack of employment in the North Central Province is also one of the reasons for encouraging entrepreneurship.

There is a seed fund that allows students to start their own businesses under NEDA (National Enterprise Development Authority). Though the amount, Rs 400,000 per student, is not sufficient for starting a new business, it is given as a subsidy to encourage the hardship.

CHAPTER 4 OVERVIEW OF NORTHERN AND NORTH CENTRAL PROVINCES

4.1 Key Statistics

(1) GDP Share and Poverty Rate

The North Central and Northern Provinces collectively contribute a modest 11% to the national GDP. A comparative analysis reveals a notable disparity with the Western Province, which has the capital city of Colombo, boasting a GDP approximately 7.7 times greater than the Northern Province and about 6.2 times greater than the North Central Province. And a significant GDP gap between the North Central Province and Northern Provinces collectively is observable when positioned with other provinces. The agricultural sector accounts for 17% and 16% of GDP, for these provinces respectively, which is higher than in the other provinces, distinguishing that the agricultural sector is a major industry in the region.

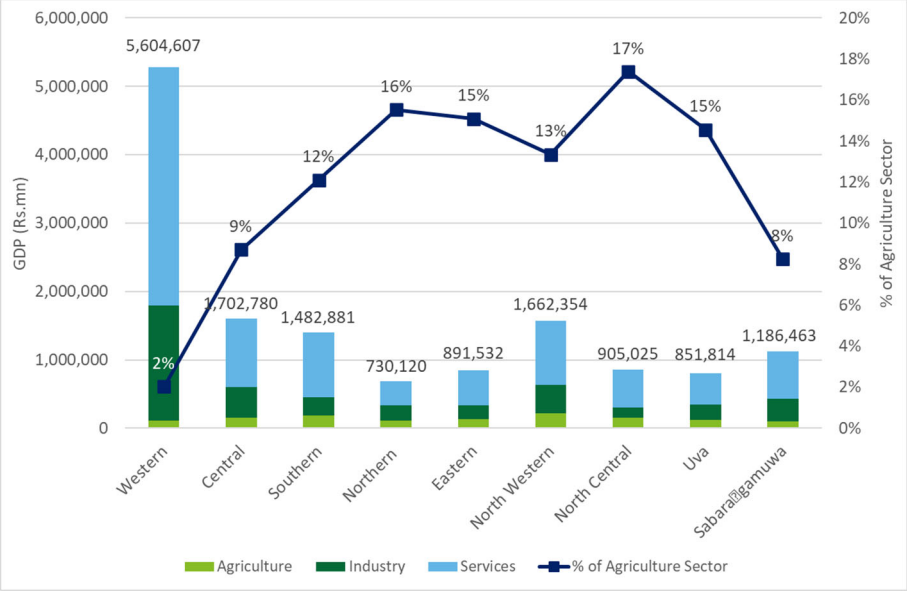


Figure 4.1.1 Share of GDP and Agriculture Sector by State (2021)

Source: Compiled by JICA survey team based on data from Central Bank of Sri Lanka

The regional disparities in GDP are also reflected in the percentage of the population living in poverty. In particular, the Northern Province, which was affected by the civil war, still has more than 20% of the population living in poverty, with Mullaitivu (44.5%), Kilinochchi (26.4%), and Jaffna (25.8%) districts having highest rates recorded in the country. [1]

Table 4.1.1 Percentage of the Poor Population, Poverty Population, and the Percentage Contribution to Total Poverty, by Province (2019)

Province	Headcount (%)	Number of poor people	Contribution to total poverty (%)
Western	5.7	342,200	11.2
Central	18.7	503,500	16.5
Southern	12.6	327,100	10.8
Northern	23.8	267,200	8.8
Eastern	18.6	316,300	10.4
North Western	11.8	294,400	9.7
North Central	11	144,900	4.8
Uva	28.3	378,500	12.4
Sabaragamuwa	23.1	468,100	15.4

Source: Compiled by JICA survey team based on data from Department of Census and Statistics. Note: Based on 2012/13 poverty line

[1] statistics.gov.lk/Poverty/StatisticalInformation/PovertyIndicators-2019

(2) Major Agricultural and Livestock Commodities

Tea and rubber, the major export crops of Sri Lanka, are not produced in the North Central and Northern Provinces. Conversely, vegetable production is flourishing in the North Central Province and the Northern Province because field cultivation is often practiced as a secondary crop to rice cultivation during the Yala season. The production of onions is substantial, with big onions in the North Central Province and red onions in the Northern Province each accounting for most of the national share. In addition, sesame production is also thriving in the North Central Province, accounting for 60% of the total share.

Livestock production is also widespread in the North Central and Northern Provinces, especially in dairy cattle production, where the number of producers is higher than in other provinces. Although there are a certain number of medium-sized producers with 10-50 head of cattle, the majority of producers are small-scale producers with 10 head or less, similar to other provinces.

Case Study of a Mango Farmer

The farmer has 5 sites in the Northern Province covering a total of 48 acres and grows organic mangoes. In addition to growing mangoes, the farmer buys mangoes from nearby farmers.

Drip irrigation is used, but the materials are imported from India. Other technologies and knowledge are collected by exchanging information with private companies in India.

In addition to irrigation, there is a cost of putting bags over the fruit to maintain its quality. Organic certification also costs about Rs. 1mn.

In addition to using a drying facility (pump dryer) to prevent aflatoxins, fruit is stored in storage to maintain quality, and temperature is controlled to keep the temperature below 8°C.

The fruit is shipped to Colombo and then transported by air to the United States, the United Kingdom, Dubai, Malaysia and other countries. Improvements in packing and mango quality are expected to increase shipments.

Table 4.1.2 Production of Major Agricultural Commodities in the North Central and Northern Provinces and their Share of National Production

Crop Type	Unit	North Central Province		Northern Province		National Production
		Total	%	Total	%	Total
Paddy (2021/2022)	MT '000	821,773	24%	292,075	9%.	3,392,905
Tea (2020/2021)	KGS. mn	-	0	-	0	300
Rubber (2020/2021)	KGS. mn	-	0	-	0	77
Coconut (2020/2021)	Nuts mn	114	4%	358	11%.	3,120
Chilies (2022)	MT	8,583	14%.	9,759	15%.	63,035
Pumpkin/squash (2022)	MT	10,665	24%	4,083	9%.	44,665
Eggplant (2022)	MT	2,835	21%.	1,690	12%.	13,602
Red Onion (2022)	MT	88	0	26,428	53%.	49,468
Big Onion (2022)	MT	11,336	64% of	493	3	17,800
Pepper (2020/2021)	MT	164	0	0	0	42,485
Cinnamon (2020/2021)	MT	1	0	-	0	23,730
Ginger (2022)	MT	693	1	126	0	71,931
Turmeric (2022)	MT	1,125	1	279	0	92,831
Banana and Plantain (2020/2021)	000 Number	10,182	16%	8,970	14%.	62,090
Mango (2020/2021)	000 Nuts	133,490	27% of	21,456	4%	496,488
Pineapple (2020/2021)	000 Number	3	0	389	1	39,285
Papaya (2020/2021)	000 Number	27,603	32%	7,157	8%	86,414
Groundnut (2021)	MT	3,643	13%.	5,496	20%.	27,180
Sesame (2022)	MT	6,441	63%.	972	10% (%)	10,230
Maize (corn) (2022)	MT	112,247	43%.	1,367	1	259,040

Source: Compiled by JICA survey team based on data from Department of Census and Statistics

Table 4.1.3 Production of Major Livestock Products in the North Central and Northern Provinces and their Share of National Production (2021)

Category	Item	Northern		North Central		National Total
		Total	%	Total	%	Total
Cattle	Total Number	321,680	28%	138,550	12%.	1,131,080
	Milking at Present	93,210	27% of	45,610	13%.	351,410
	Ave Daily Milk production (Ltrs.)	189,975	16%	150,019	13%.	1,181,584
Buffaloes	Total Number	21,780	7%	47,750	14%.	333,210
	Milking at Present	6,460	6%	15,280	14%.	105,600
	Ave Daily Milk production (Ltrs.)	14,612	6%	39,720	16%	244,267
Poultry	Number of Chickens	931,370	4%	981,440	4%	23,610,690
	Ave Monthly Egg Production	7,519	5% (of the total)	4,702	3	162,809

Source: Compiled by JICA survey team based on the data from Department of Census and Statistics

Table 4.1.4 Number of Dairy Cattle Producers by State and Size (2022)

Province	Number of farmers producing cow milk			Number of farmers producing Buffalo milk		
	Less than 10 Animals	10-50 Animals	More than 50 Animals	Less than 10 Animals	10-50 Animals	More than 50 Animals
Western	6,721	333	7	1,539	203	8
Central	15,252	436	25	132	9	1
Southern	5,131	535	46	2,556	1,047	101
northern	23,188	3,561	523	451	262	35
eastern	11,705	2,950	546	2,917	978	245
North Western	21,491	2,455	116	897	430	65
North Central	13,377	2,756	217	1,270	745	164
Uva	10,550	477	34	453	342	159
Sabaragamuwa	3,026	176	6	303	149	23
Sri Lanka	110,441	13,679	1,520	10,518	4,165	801

Source: Compiled by JICA survey team based on the data from Department of Census and Statistics

(3) Cropping System

As shown in 2.2, Sri Lanka has diverse agro-ecological zones, each with different cropping systems. As an example, Table 4.1.5 shows the main cropping systems in Mannar District, Northern Province. As illustrated in Table 4.1.5, various crops are cultivated in two seasons: the Yala season from April to August and the Maha season from September to March. In the Northern Province, the Yala season receives limited rainfall, necessitating the use of irrigation. Therefore, rice is cultivated in paddy fields and vegetables in upland irrigated areas during the Yala season.

Table 4.1.5 Major Cropping Systems in Manner District, Northern Province

Crop	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Paddy												
Chilli												
Green Gram												
Black Gram												
Cowpea												
Groundnut												
Maize												
Manioc												
Vegetable												

Note: Cultivation Harvesting

Source: Department of Agriculture, Mannar district

(4) Status of Middle-Down Stream of FVC

Most of the businesses in Sri Lanka are concentrated in the Western Province, where Colombo is located, and in the Southern region of the country. The number of companies in the North Central and Northern Province is comparatively small, and both small and medium to large businesses account for only a marginal percentage to the national share. This suggests that the region struggles to attract a substantial investment and companies.

Table 4.1.6 Number of Enterprises, Number of Employees and Percentage of the National Total by Province (2013/14)

Province	Establishments less than 25 employees			Establishments more than 25 employees		
	No. of Establishments	Persons engaged	% of No. of Establishments	No. of Establishments	Persons engaged	% of No. of Establishments
Western	857	12,477	50%	2,122	629,610	63%.
Central	124	1,527	7%	314	52,433	9%.
Southern	230	3,898	13%	247	32,425	7%
northern	52	669	3%	12	478	0%
Eastern	27	368	2%	8	9,413	0%
North Western	200	3,114	12%.	367	60,705	11%.
North Central	84	1,227	5%	35	3,320	1%
Uva	43	787	2%	69	8,629	2%
Sabaragamuwa	105	1,540	6%	218	37,455	6%
Sri Lanka	1,722	25,607	100%	3,392	834,468	100%

Source: JICA survey team from B. Nishantha (2018)

Although the number of companies in the North Central and Northern Provinces is limited, there are various companies.

As an illustrative example of a food processing company in North Central Province is the rice mill located in Anuradhapura. Operating under the umbrella of a large corporation headquartered in Colombo, this company is extensively engaged in the retail, wholesale and export of rice and spices. The Anuradhapura rice mill was established to procure and process rice from farmers around the North Central Province. The rice milling capacity is 8 tons/hour. Other companies operate 2~3 other rice mills with the similar capacity in Anuradhapura, and they generally categorized as medium-scale operations. Given the diversity of rice varieties handled with one processing line, it is necessary to clean the inside of the rice mill machines during every transition to a different rice variety in which limits the number of operational hours to 5 hours per day.

Situated in proximity to Anuradhapura is a banana company functioning as a wholesaler, which was established under ASMP by the World Bank, as mentioned in section 3.2 (1). The company was established by a joint investment of 253 farmers. Its business profile consists of collecting, packaging, processing (banana chips and banana powder), and collective marketing of bananas. With the financial support of the World Bank, a collection point and packaging machine were introduced. Farmers themselves played a pivotal role as brokers and wholesalers, thereby improving their incomes. In addition, the company has succeeded in making exports and establishing partnerships with major supermarkets, such as Cargills, its main destination by increasing the volume of shipments.

Dairy manufacturer YARLCO is one example of food processing and wholesaling in Northern Province. It is a dairy cooperative established in 1963. It has over 6,000 dairy farmers as members and 56 employees. It has 24 raw milk collection centers in Jaffna district and 26 outlets. The amount of milk collected is 4,000 liters/day, of which 3,000 liters are sold as fresh milk and the remaining 1,000 liters are designated for processing. The purchase price of raw milk is 190 Rp/liter, which is a few percent to 30% higher than other companies, but competition for raw milk is severe, as competitors subsidize

capital investment such as milking machines, calves and provide loans for feed procurement. In addition to fresh milk, YARLCO extends its product line to cheese, yogurt and ice cream.

4.2 Challenges Facing the Agricultural Sector in the North and North Central Provinces

As shown in section 4.1 for basic statistical information, following issues are found to be significant in the Northern and North Central Provinces in addition to issues common throughout the country, such as the small size of plots per household.

1) Relatively dry weather conditions (cultivation concentrated in the Maha season): Although Sri Lanka has two rainy seasons, the Maha (fall/winter) and Yala (spring/summer) seasons, the target area is located north of the Central Highlands, where rain clouds are being obstructed leading to relatively lower rainfall during the Yala season. As a result, the rainy season is concentrated once a year during the Maha season. The annual rainfall in the areas is less than 1,500 mm, which is considered drier than in the southern region, where more than 2,000 mm precipitation levels were recorded.[2] (However, this is not an arid region in the global sense, but rather a relative position in the country).

   Under these conditions, rice cultivation is concentrated in one rainy season (Maha season), and agricultural productivity, including other crops, is largely determined by the availability of irrigation facilities, mainly by reservoirs. In the field areas, crops with low water requirements (sesame, etc.) are often cultivated in a coarse manner, with rainfall being a limiting factor.

Rainfall-Dependent Sesame Cultivation

According to a farmer in the Northern province, sesame is a relatively low water demanding crop, but when grown during the Yala season, yields are highly dependent on the rainfall pattern of the year.

Of particular importance is the flowering period, during which yields increase if there is adequate rainfall; if there is no rainfall at that time, yields drop, and conversely, if rainfall is excessive, yields drop significantly or even totally devastated.

2) Impact of the civil unrest (destruction of basic infrastructure and sluggish investment): The 30-year civil war that lasted until 2009 had a devastating impact, not mere destruction of basic infrastructure of agriculture, such as irrigation, warehouses, and roads, but also deserted farmlands in ruins due to displacement of people and other problems (see box[3]). Since the end of the civil war, numerous stakeholders including the government, various donors, NGOs, and others have actively participated in supporting several reconstruction projects. As of now, considerable level of reconstruction has been accomplished. However, despite these efforts, private investment remains somewhat subdued, and the development of processing and other industries in the FVC have

Human Resource Outflow Due to Conflict

In 1990, during the civil war, the number of refugees recorded reached 200,000, and thereafter, approximately 100,000 people fled the country annually. Similarly, the number of internally displaced persons increased dramatically in 2001, with a primary increase to about 700,000. Sri Lankans who have fled the country often remain as the diaspora, and the exodus of human resources has established their communities in some areas.

On the other hand, there are movements such as the establishment of foundations and donations by the expatriate community. A woman, been interviewed, was under the jurisdiction of an armed group when she was a child and did not have the access to education, later with support, has established a company to produce and sell herbal teas by a group of women.

There are not many cases like this, and as the diaspora becomes second and third generation, they tend to be less attached to their homeland and less likely to offer support for the needy.

[2] https://wepa-db.net/jp
[3] https://www.worldvision.jp/children/crisis_23.html

not experienced significant progress.

3) Lack of gravity irrigation facilities and water quality (Northern Province): In Sri Lanka, many large-scale irrigation facilities have been constructed over the years, especially under the irrigation development in the Mahaweli River basin. In addition, many irrigation facilities have traditionally been built surrounding the reservoirs, well-known as cascade irrigation systems. There are many such small- and medium-scale reservoirs, especially in the North Central Province. In Contrast, Northern Province lacks large-scale irrigation schemes. The responsibility for overseeing large-scale irrigation schemes falls under the Mahaweli Authority, highlighting a notable absence in the Northern Province. Thus, the lack of gravity irrigation facilities poses a significant bottleneck in the region's agricultural development. Additionally, the pH level of the groundwater is high, especially around the coastal areas, presenting water quality challenges for well-based irrigation.

Water Quality and Certification

When targeting high-end markets, it is necessary to obtain certification such as organic certification. However, in the case of reservoir (tank) irrigation, there is a challenge of not being able to obtain certification due to the unspecified number of users of the water, which makes it impossible to guarantee safety in terms of water quality.

4) Underdevelopment of the mid- and downstream sectors of the FVC: In addition to being a less-developed area to begin with, the civil war in the target area have impeded the growth of the industrial sector, including agricultural processing. Consequently, the supply chain for key products, such as milk and rice, experiences inefficiencies. For instance, milk produced in the Northern Province is transported to other provinces for processing, and a portion is later returned to the Northern Province at the retail stage. The same is true for rice, which is processed outside the region due to the concentration of large rice mills in the Western region. This external processing results in the lack of value-addition within the province, characterizing the area as a production hub. Compounding this issue, processors located in and around Colombo, a major consumption center, display little inclination to expand into the Northern and North Central Provinces. Therefore, it is necessary to develop local small and medium enterprises in order to strengthen the midstream and downstream sectors of FVC in this region.

5) Distance from major consumption centers and export bases: Overall, transportation is not a major issue in Sri Lanka, as the country is not that large in land area and has been improving its trunk roads in recent years. However, Jaffna in the Northern Province is the furthest from Colombo, and the travel time is about 8 hours by car, which gives it a lower comparative advantage. The long distance is a disadvantage, especially for perishable agricultural products, which are subject to severe cargo damage if not transported properly. While postharvest losses are generally estimated to exceed 30%[4], the combination of improper transportation methods and long distances results in a

Improper transportation of cabbage

When the cabbage is transported to the wholesale market, dozens of cabbages are pushed into a bag, which are then piled high on the back of the truck. Cabbage in the lower part on the carrier suffers damage, and cabbage outside the bag also suffers damage due to impact during transportation. In such a situation where cabbage is transported using itself as shock absorber, the transportation distance greatly affects the loss.

[4] Harumi Ao and Keishiro Itagaki, “A Study of Vegetable Price Initiative in Sri Lanka” (2015) said that

relative disadvantage. Reducing losses during transportation is one of the central issues in the region, including improvements in transportation modes and handling methods. Furthermore, Jaffna in the Northern Province does not have a large port that can moor large container ships, and most export items are generally shipped once to Colombo before being shipped. This is due in part to the fact that the necessary export procedures are carried out in the suburbs of Colombo, but the lack of options is also behind the disadvantageous conditions.

In this chapter, the general FVC issues are presented. Chapter 7 summarizes specific issues associated with the seven commodities selected as recommended ones.

4.3 New Attempts in FVC Development

As discussed in the previous section, the Northern and North Central Provinces are constrained by the impact of conflict and the distance from large consumption areas and export bases, therefore investment is not flourishing and the development of the middle and downstream sectors of FVCs is limited. This situation also affects the link between retail and farmers, making it difficult for farmers to develop favorable marketing channels. In this context, new attempts to link retail and farmers have emerged. Two such examples are presented in this section.

The first case is SenzAgro; the company formed a matching platform for farmers and buyers. Buyers' procurement requests are presented to farmers (basically farmers' groups) to encourage matching. The company's strength is that it can predict which crops and how much will be harvested based on its database of farmers it deals with. By providing farmers with yield forecasts and farmer management platforms (where farmer groups manage individual farmers) with free of charge, it has increased the number of participating farmers, having expanded the database.

Another example is the collection center of the supermarket chain Cargills. The company has 10 collection centers nationwide. In the case of the collection center near Kandy, about 300 farmers are registered with the collection center. Although it does not have a legitimate contract with farmers, it is registered in the system and registers transaction information such as previous shipments and location information. There are no specific restrictions on the farmers who are allowed to sell at the collection point freely, except the restrictions to purchase only the first-grade products from the farmers and the farmers themselves have to perform the quality control. Therefore, the situation itself avoids long queues of farmers expecting to sell their products at the collection centers.

When purchasing, farmers have to report the next day’s shipment the day before, compile it and contact Cargills’ distribution center in Colombo; they basically buy everything. Farmers’ meetings are held every season in each region to inform registered farmers regarding the expected demand for the season and provide technical assistance. It is done in cooperation with the Agricultural Instructor (AI) and the DOA.

The common denominator both company showcase is the use of farmers' cultivation information to control procurement volume. SenzAgro focuses on large farmers, such as farmer groups, while Cargills does not exclude small farmers. The reason to be able to successfully deal with the farmers, even at the small-scale, is considered as both existence of a physical base called a collection center and custom-built logistics where farmers bring in their own produce.

postharvest loss of vegetables was 36%, of which 13% occurred during transportation, and was a major factor of postharvest loss. Other factors were sales (12%), harvest (9%) and others (2%).

4.4 Relevant Organizations (Northern and North Central Provinces)

As mentioned in section 2.3, Sri Lanka has a diverse range of departments in the central ministries, and in the agriculture and livestock sectors. The central government-affiliated organizations are primarily responsible for research and development. In contrast, the Provincial Council (Provincial Government) occupies an important position as the provincial level enforcer at the ground level. As shown in Table 4.4.1, the Provincial Ministry of Agriculture includes the Provincial Department of Agriculture and the Provincial Department of Animal Production and Health, which are responsible for various extension activities and policy implementation. In the agricultural sector, there are no so-called agricultural extension agents under the central government, but rather extension agents called "Agricultural Instructors" are assigned to the provincial government to conduct extension activities at the grassroots level. However, there is also a service center of the Department of Agrarian Development, the central government, which oversees agricultural extension, and complement each other in carrying out extension activities.

According to the Department of Agrarian Development, in terms of the number of staff conducting extension activities at the grassroots level, the number of service center staff of the Department of Agrarian Development is larger than that of the state extension workers. However, the professionalism of agricultural extension workers is higher (e.g., graduates of agricultural universities), while many service center staff lack the necessary educational proficiency. Therefore, when conducting extension activities in various donor-supported projects, it is necessary to consider the ease of outreach (number of people) and the expected effectiveness (background and ability) before establishing counterparts and a system for implementation.

In the livestock sector, the work related to artificial insemination used to be handled by provincial departments. However, in recent years, this work has been centralized in central government departments. In the past, semen for artificial insemination of livestock was temporarily stored and utilized at centers owned by state departments, but since these centers only had refrigerated facilities, the semen could only be stored for a few days. In contrast, since ultra-low temperature storage using liquid nitrogen became available at central government departments, this distribution and dissemination system was established at the county level, and refrigerated storage is no longer in use.

According to the information available so far, Provincial Irrigation Department is under the Provincial Ministry of Agriculture in the Northern Province, while it is under the Provincial Ministry of Land, Irrigation, Road Development, Rural Development, Housing and Women Affairs in the North Central Province. Thus, different organizational systems in different provinces are a characteristic of Sri Lanka, leading to its unnecessary complexity.

Table 4.4.1 Relevant Organizations in the Northern and North Central Provinces (State Government Organizations)

Ministry	Department and Other Relevant Institutes
North Central Province	
Ministry of Agriculture	**Provincial Department of Agriculture**
	Provincial Department of Animal Production and Health
Ministry of Land, Irrigation, Road Development, Rural Development, Housing and Women Affairs	Provincial Land Commissioners' Department
	Provincial Irrigation Department
	Provincial Road Development Authority
	Provincial Rural Development Department
	Provincial Industrial Development Authority
Northern Province	
Ministry of Agriculture	**Provincial Department of Agriculture**
	Provincial Department of Irrigation
	Provincial Department of Animal Production & Health

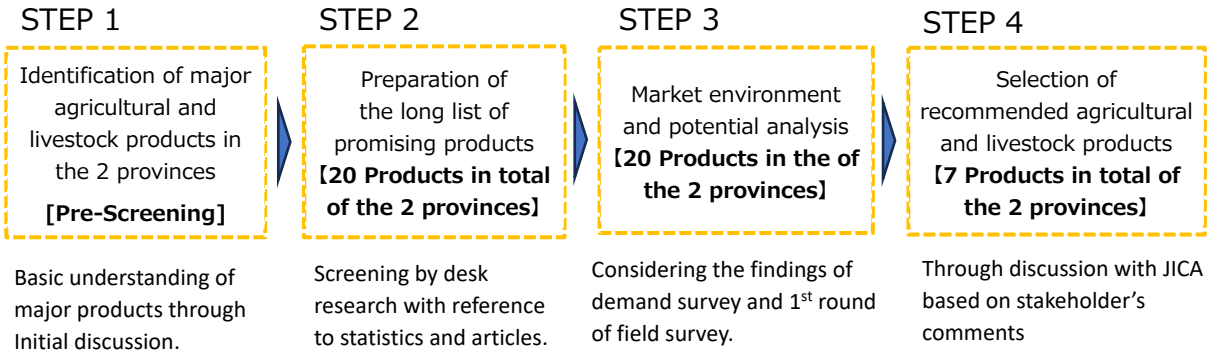
Ministry	Department and Other Relevant Institutes
Ministry of Women Affairs	**Provincial Department of Industries**
	Provincial Department of Social Service
	Provincial Department of Cooperative Development
	Provincial Co-op Employees Commission

Source: Prepared by JICA survey team based on various interviews

Other important organizations in the target area include universities. In Sri Lanka, 17 national universities have been established throughout the country, of which 8 universities have agricultural faculties. The University of Peradeniya (one of the two oldest national universities, established in 1942), located near Kandy, where the Ministry of Agriculture is located, is particularly well known. However, there are the University of Jaffna (established in 1979) in the Northern Province and the University of Rajarata (established in 1996) in the North Central Province in the target area. At the University of Jaffna, "The Project for Establishment of Research and Training Complex at the Faculty of Agriculture, University of Jaffna " has been implemented since 2016. With the aim of contributing to the promotion of dryland agriculture in the northern region by making effective use of the facility, "The Project for Research and Education Capacity Improvement in Dry Zone Agriculture at University of Jaffna" is being implemented.

CHAPTER 5 IDENTIFICATION OF AGRICULTURAL AND LIVESTOCK COMMODITIES WITH POTENTIAL FOR INCREASED PROFITABILITY

This survey identifies agricultural and livestock commodities which possess the potential to increase agriculture profit in the Northern Province (NP) and North Central Province (NCP). First, "promising agricultural and livestock commodities" were selected for the target of conducting the demand survey and the first field survey. Subsequently, "recommended agricultural and livestock commodities" were selected, from which the target of the FVC detailed survey and second field survey was formulated. The selection procedures are as follows:



5.1 Agricultural and Livestock Commodities Produced in Northern and North Central Provinces (Step1)

Before dispatching the first field survey, a few of the Japanese survey team members conducted key informant interviews with government officials, private companies, and academics who are closely related to this survey for implementing an initial assessment regarding the production situation, domestic and export market potential. The following shows the results. See section 4.1 (2) for the primary information and production statistics of the two provinces.

Table 5.1.1 Summary of Initial Assessment of the Commodities produced in NP and NCP

Category	Recommended Item	Potential	Potential and challenges based on demand trends and suitability for cultivation in target provinces
Vegetables and Pulses	Onion	Import substitution	Red onions are mostly produced in NP. Imports are also high and import substitution can be aimed at.
	Pulses	Import substitution /domestic demand	The production base for black gram is in NCP, where demand is particularly high from the consumers of NP. Underdevelopment of processing industry and heavy imports from India are the challenges. The mung bean used for 'dal' is dependent on imports from India and its suitability for cultivation is low.
	Chilies	market growth potential	Capsicum varieties of chilies have high market growth potential due to increasing demand in urban areas in recent years.
	Other	Import substitution/ domestic demand	Anuradhapura in NCP is a production base for lowland vegetables (e.g. eggplants, radishes, long beans, pumpkins, bottle guards, bitter guards, cucumber, etc...), which are transported to Colombo and other parts of the country. The area has high potential as a production base, as it has good access to major markets in the country, such as Colombo and Kandy.
Fruit	Mango	Value addition	Each province has its own local varieties of Mango. Due to low production, the challenges are commercialization and value addition by introducing and scaling up import-oriented varieties that are highly appropriate in the region.
	Banana	Potential demands / technical	It can be grown all year around, providing a stable income. Large domestic and international demand. Post-harvest handling is an issue

Category	Recommended Item	Potential	Potential and challenges based on demand trends and suitability for cultivation in target provinces
		improvement	for exporting to East Asian countries due to strict quality standards. A specific higher-priced variety is susceptible to Panama disease.
	Grape	Local suitability of production /new markets	It has been cultivated in the Jaffna region and is considered promising. However, there are issues with the taste and flavor, etc., and commercialization requires medium- to long-term measures such as variety improvement.
	Other	Value addition/ Technological improvement	Papaya, pineapple and guava are in great demand in the food processing industry for juices, canned products, jams and ingredients for prepared foods, but their potential is not being exploited due to the low quality of the fruit as raw material (freshness, eating quality, etc.).
Industrial Crops	coconut	Value addition	The export performance is going well, including to Japan. As it can contribute to farmers' income stability, further promotion is required.
Spice	Cinnamon	Novelty for target areas / Market growth potential	Southern part of Sri Lanka is the main production area, but it can also be grown in NCP in irrigated areas. It has been confirmed that although the climate differs from that of the south, there is no significant difference in the composition. Ceylon cinnamon is known as a high-quality variety with a good aroma, whereas more than 80% of cinnamon sold on the international market is Cassia cinnamon. Cinnamon is also a national priority crop, with efforts to introducing GI (Geographical Indications) and the newly establishment of the Department of Cinnamon Development.
	Other	Domestic demand / export promotion	Many varieties of spices have export potential with stable domestic demand and have been selected as one of the government's strategic commodities for export promotion. (e.g. pepper, clove)
Medicinal plants	Aloe vera	Novelty for target areas / local suitability of production	Contract farming is successful but stable markets are needed for further promotion.
	Others	Novelty for target areas / potential demands	Ginger, moringa and bitter gourd have been cultivated, but the market is unstable, and commercialization has been slow. A wide range of medical plants, such as amaranth and senna, are potential candidates.
Oilseeds	Sesame	Novelty for commercial cultivation / potential demands	The domestic production base of sesame is in the NCP, but production is insufficient due to significant export demand. The main production is through extensive cultivation; thus, technology dissemination and direct investment are important for commercialization. People of the NP are the main consumers of sesame oil and domestic demand is high, but there is still insufficient supply for processing.
Feed crop	Maize	Import substitution / social impact	It can be grown in NCP during the Maha rainy season. The supply is inadequate due to fertilizer and seed shortages, and policy responses are needed. competition with other crops should be taken into account since the maize is a land intensive crop.
Animal husbandry	Dairy farming (cattle milk)	Import substitution/nutrition improvement	More than half of domestic demand is met by imports, thus a significant demand for import substitution is available. There are challenges in feed supply, dissemination of breeds suitable for the dry zone, livestock hygiene and many other issues.

Source: JICA Survey Team based on interviews with key informants.

5.2 Selection of the Promising Agricultural and Livestock Commodities (20 items) (Step2)

Based on the initial assessment and existing statistical data and strategy documents, the following points were taken into consideration in the tentative selection of the 20 *promising agricultural and livestock commodities*.

1) The crop should be suitable for the soils of the Northern and North Central Provinces.

2) Agricultural and livestock commodities that are produced throughout the country of Sri Lanka and are in great domestic demand.
3) Items listed in the national export promotion strategy, etc. should be promoted.
4) The value of exports or imports is the highest among agricultural and livestock commodities and can contribute to the country's foreign currency earnings by export promotion or import substitution.
5) A wide range of commodities such as general crops, spices, livestock, and feed crops should be included in the survey.

After tentatively selecting 25 items at the beginning of the first field survey, the list was narrowed down to 20 items based on discussions with key government agencies and JICA, such as Mahaweli Authority, Export Development Board (EDB), Sri Lanka Agricultural Research Policy Board, Industrial Development Board (IDB), Department of Agriculture (DOA), Department of Export Agriculture (DOEA), and several food business stakeholders.

Table 5.2.1 illustrates the final list of 20 *promising agricultural and livestock commodities*. Crops that are not widely grown in the target region, such as turnips and carrots, were excluded from the long list, even though they are among the top production statistics. In addition, several crops such as cabbage, potatoes, and tomatoes were mentioned as candidates for import substitution, but in order to narrow down the list, eggplant, which belongs to a similar category but is more suitable for local cultivation, was selected as a representative.

In addition, a number of spices were initially considered as specific items but based on discussions with the Department of Export Agriculture (DOEA) and others, these were narrowed down to three items. At this stage, however, ginger and turmeric were left as “others” to give the survey a broader scope. The beef-related category was excluded because there is no significant demand for beef due to its cultural background. For the same reason, there is not much room for the development of an export-oriented cattle industry (e.g., people tend to avoid slaughtering cattle).

Table 5.2.1 Twenty Promising Agricultural and Livestock Commodities

Categories	Commodities	FVC Player's Recommendation	Soil Suitability	Production in NP	Production in NCP	Domestic Production	Listed in NES	Export in Value (Top 30)	Import in Value (Top 30)
Cereals	Rice		○	○	○				
Field Crops	Chili	○	○	○	○	○	○		
	Pumpkin/ squash		○	○	△	○			
	Eggplant		○	○	○				○
	Red onion/ big onion	○	○	○	○				
Spices	Pepper (Pepper)					○	○		
	Cinnamon	○				○	○	○	
	Spices general (ginger, turmeric)					○	○	○	
Fruits	Banana and Plantain	○	○	○	○	○			
	Mango	○	○	○	○	○			
	Pineapple		○			○			○
	Papaya		○	△	△	○			○
Oilseed	Groundnut			○	○	○			
	Sesame	○		○	○	○		○	
Livestock	Meat of chicken					○			
	Raw milk of cattle and buffalo	○				○			

Categories	Commodities	FVC Player's Recommendation	Soil Suitability	Production in NP	Production in NCP	Domestic Production	Listed in NES	Export in Value (Top 30)	Import in Value (Top 30)
	Hen egg					○		○	
Plantation Crops	Coconut	○				○			
Feed and Forage	Maize (corn)	○	○	△	○				
Medicinal plants and herbs	Aloe vera	○				○			

(Remarks) "○" applied, "△" applied some.

5.3 Demand Survey (Step3)

5.3.1 Implementation of Demand Survey

Demand survey for agricultural and livestock commodities was conducted by a local subcontractor to ascertain demand in the Sri Lankan domestic market and overseas markets. The answers to the following questions were collected and tabulated by CAPI (Computer-Assisted Personal Interview).

Table 5.3.1 Questions to be Included in the Demand Survey (about 20 items)

Survey Items	Questions
<Common Items>	
(1) Factors that are important when purchasing (procuring) agricultural and livestock commodities	Quality (color, shape, taste), price, origin, freshness, pesticide/non-pesticide, etc.
(2) Terms and conditions of transactions when purchasing agricultural and livestock commodities	Form of contract, procurement terms, frequency of transactions, pricing, quantity, quality and safety standards, timing, payment methods, payment terms, methods of price negotiation, risk burden
(3) Demands to domestic producers and distributors	Quality, price, method of transport, items (varieties) to be produced
(4) Issues related to production, distribution, policies and systems from the consumers' perspective	Issues related to import tariffs, regulations, R&D (especially seeds), extension administration, certification systems, public markets and government-owned sales offices, and institutions (especially food safety and SPS), and the impact of these issues on the business
(5) Methods for understanding the needs of end consumers and communicating them to producers and distributors	Availability of websites and social networking sites, availability of resources and resource persons to identify needs, means of collecting price information, and means of communicating with producers and distributors,
<Demand in International Market>	
(1) Sri Lankan agricultural and livestock commodities in high demand in overseas markets	Form of end product, reasons for high demand, future market potential
(2) Domestic constraints and impediments to exports	Factors related to production, such as quality and stable supply; factors related to distribution, such as collection, transportation, and packaging; quarantine and customs procedures
(3) Restrictive factors in overseas markets	Import regulations, barriers to entry, competing countries, etc.
(4) Terms and conditions with counterparty (importing company)	Form of contract, procurement terms, frequency of transactions, pricing, quantity, quality and safety standards, timing, payment methods, payment terms, methods of price negotiation, risk burden

The survey subjects and numbers of respondents are shown in the table below. The sample size was determined based on the following approach. First, as a precondition, the quantity of the "demand survey" was defined by the number of companies to be interviewed, which was set at 150 in total: 50 companies for demand in international markets and 100 companies for demand in the domestic market. Since the survey required to identify demand for approximately 20 agricultural and livestock commodities, it was decided to conduct the survey for multiple products from a single company.

The target number of responses was set to obtain an average of three responses from each company, i.e., 150 companies × 3 items = 450 responses. Targets were also set according to the FVC stage classification to prevent bias toward specific firms. Specifically, the survey targets in the table below were categorized into "A: International Market Related," "B-1: Retail Industry," "B-2: Processing Industry," and "B-3: (public) Market." The following targets were set by these categories to ensure that information on 20 items in each category can be obtained without compromise. Yet, the survey was conducted with the understanding that these figures may vary depending on the availability of appointments and the commodities handled by individual companies.

Category A: At least 3 companies per category
Category B-1: Minimum 1 firm per item
Category B-2: No limit on minimum number of companies
(since it is assumed that some items will not be processed)
Category B-3: Minimum 3 companies per item

Table 5.3.2 The Numbers of Respondents Completed the Survey (covering about 20 items)

Target	Sample Size
A: [International market demand]	
Export companies (raw agricultural products, processed agricultural products, raw livestock products, processed livestock products)	38
Agribusiness companies	12
Total	**50**
B [Domestic market demand]	
B-1 Major Retailers	2
B-1 Hotels and restaurants	4
B-1 Other large purchasers (e.g., manufacturers of prepared foods, company cafeterias, food wholesalers to airlines, school lunches, etc.)	3
B-2 Food processing companies	5
B-2 Dairy product processors and distributors	4
B-2 Livestock Products Processors/Distributors	1
B-3 Wholesale markets (wholesalers)	19
B-3 Public Markets (Retailers), Bora (Local Market) (Retailers)	57
B-3 Lak Sathosa (government-owned sales office)	5
計	**100**

The subcontractor's team has completed the demand survey in early August 2023, covering interviews with 50 exporters and 100 domestic market participants as per the initial plan. The number of commodity-wise responses covered in the interviews was 96 for export and 222 for domestic for the total of the 20 items.

Table 5.3.3 Number of Samples by Item covered in the Demand Survey

No.	Commodity	Completed	
		Export	Domestic
1	Rice	4	6
2	Chii	5	26
3	Pumpkin	4	18
4	Egg plant	3	23
5	Onion	3	21
6	Cinnamon	9	5
7,8	Ginger/Turmeric	8	7
9	Banana	7	14
10	Mango	9	15
11	Pineapple	10	9
12	Papaya	5	13
13	Ground nut	1	11
14	Sesame	4	5
15	Chicken	5	12
16	Raw milk	1	18
17	Egg	2	4
18	Coconut	12	8
19	Maize	0	4
20	Aloe Vera	3	3
Total		**96**	**222**

Source: Prepared by JICA Survey team based on reports from the sub-contractor

Note: As the representative of spice general, Ginger/Turmeric were covered by the same interviewees.

5.3.2 The Analysis of Demand-Supply Gap in Domestic and Overseas Markets

The demand survey was conducted from early July to early August 2023 for 20 promising agricultural and livestock commodities. Then, the features of "high" potential were specified and summarized as the following checklist based on the feedback from the subcontractor team. Market potentials for the 20 *promising agricultural and livestock commodities* were assessed by the criteria included in the checklist.

Table 5.3.4 The Checklist for Potential Assessment

Market	The Criteria of "High" Potential
Domestic	Large scale of domestic production (as the indicator of the market scale). The domestic supply shortage / low self-sufficiency rate. **Wide range of final forms of products. (Not only food products, also industrial usage such as medicinal ingredient)** **Opportunities of value addition and diversified food demands (e.g., health functions, ayurvedic products, emerging fast-food industries)**
Overseas	**Market scale in major foreign markets for Sri Lankan products.** Good market growth in the last 10 years and upward tendency of the growth. Current export in value. Enough domestic supply/ high self-sufficiency rate (availability of surplus) **Export performance of value-added products, exporter's idea/plan for future value addition.** **Unique feature(s) to enroll in "niche" market.** **Acceptance by international markets in terms of the features of Sri Lankan products (e.g., color, shape, tastes, smell, chemical composition)**

For each of the checkpoints, quantitative and qualitative indicators were set to rate on three scales: "High" (◎), "Relatively High" (○), and "Fair" (△). For example, for the checkpoint "Large scale of domestic production," "High" is defined as USD 3 mn or more, "Relatively High" is defined as USD 0.1 mn to less, and "Fair" is defined as less than USD 0.1 mn. Then, overall assessments were conducted based on the average rate of all checkpoints, and the following are the results.

Table 5.3.5 The Results of Market Potential Analysis for Domestic and Overseas Markets.

Items	Domestic Market	Overseas Market
Rice	◎	○
Chili	◎	○
Pumpkin	○	△
Eggplant	△	△
Onion	○	△
Cinnamon	◎	◎
Turmeric/Ginger	○	◎
Banana	○	◎
Mango	◎	◎
Pineapple	◎	◎
Papaya	○	○
Groundnut	○	○
Sesame	○	○
Chicken	◎	○
Milk	◎	△
Egg	○	△
Coconut	◎	◎
Maize	○	△
Aloevera	△	○

Note: "◎" the market potential is High, "○" the market potential is Relatively High, "△" the market potential is Fair

The following shows the main quantitative and qualitative analysis results. For more details, see Table 5.4.2 *Data Tables of 20 Promising Agricultural and Livestock Commodities*, and Appendix *Commodity Profile based on the Demand Survey*.

(1) Agricultural and Livestock Products with High Demand in Major Overseas Markets

With the intention of identifying agricultural and livestock commodities posing high demand in overseas markets, the most recent import values and import growth rates of 20 commodities were referred and summarized by four markets: the United States, EU countries plus the United Kingdom (28 countries), South Asian Association for Regional Cooperation (SAARC) countries, and the Middle East. In 2022, these four markets accounted for approximately two-thirds of Sri Lanka's agricultural exports. Since the objective of the survey was to examine the future export potential in terms of market size and market growth, consideration was given not only imports from Sri Lanka but also imports from the rest of the countries.

The agricultural and livestock commodities with the most prominent market scale and the fastest growth in the four markets are listed below.

1) USA: Rice, banana plantain, mangoes, and pineapple were the commodities with particularly high import value in the US market. Items with higher import growth rates (export growth for Sri Lanka) included peppers, eggplant, cinnamon, chicken, milk, and eggs.

2) EU + UK: Banana plantain, mangoes, chicken, and maize were the commodities with particularly high import values in the EU and UK markets. Rice, peppers, milk, and maize were the items with the higher import growth rates (export growth for Sri Lanka).

3) SAARC Countries: Rice, milk, and maize were the most important import commodities in SAARC countries in terms of import values. A wide range of commodities mark higher import growth rates of more than 10%, including eggplant, onions, and papayas.

4) Middle East: Rice, chicken, milk, and maize were particularly large import items in Middle Eastern

countries in terms of import values. Chili is one of the commodities with the highest import growth rate (export growth for Sri Lanka) among them.

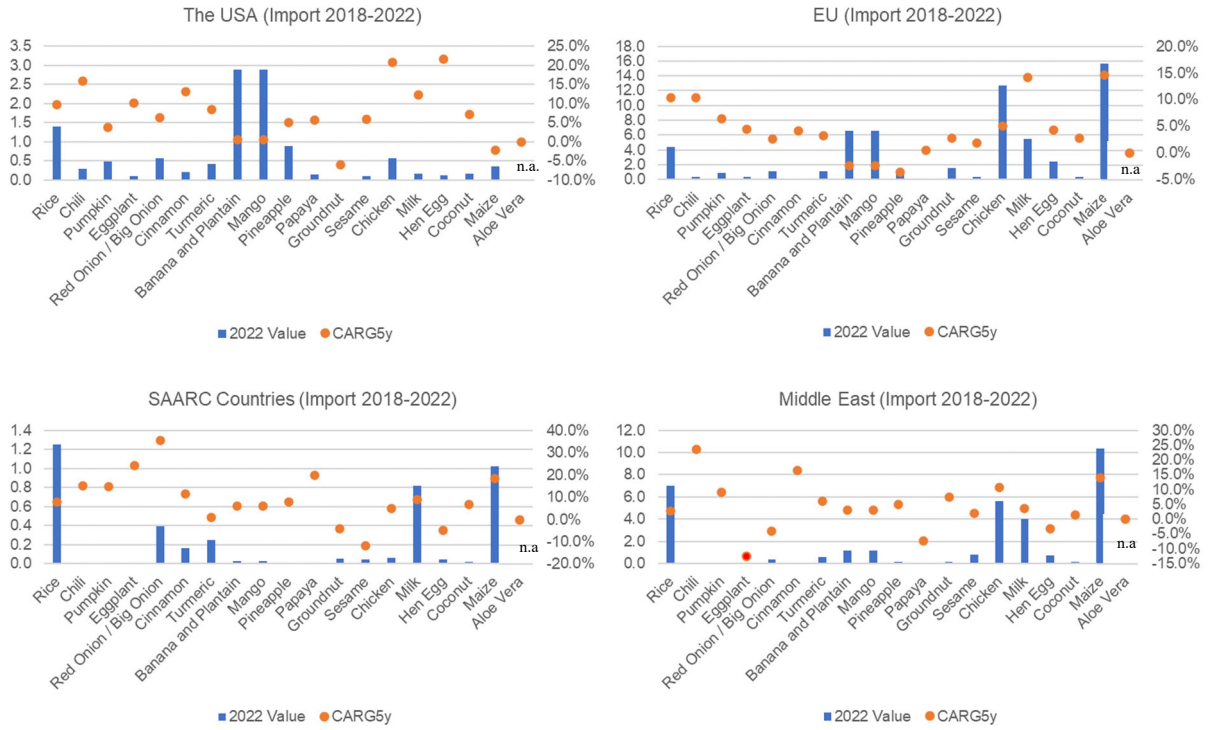


Figure 5.3.1 Import Volumes and Growths in the Key Markets (2018-2022; in USD mn)

Source: ITC Trade Map

(2) Opportunities for Value Addition

In general, the wider the range of final forms of product, the greater the opportunity for value-addition. And it is consistent with the use of the commodities, not only in food products but also in other industries such as medical products and cosmetics. A typical example is coconut, of which is used as raw materials in such a wide range of industries: the liquid endosperm can be used for coconut juice; the endosperm for coconut cream, coconut milk, and coconut oil; the stem for timber; the bark for brushes, brooms, geotextiles, coco peat; and the hull for activated charcoal. From the perspective of regional economic development, the production of these versatile items should be promoted to encourage processing industries within the production areas and in the country in general.

The usefulness of the commodity as a raw material depends on various factors, including its availability in stable quantities to optimize factory utilization, cost competitiveness over competitors, conformity to prescribed quality standards encompassing attributes such as color, shape, taste, flavor, and chemical composition, as well as possessing unique strengths. In general, it is difficult for Sri Lankan agricultural products to take advantage of economies of scale when compared to neighboring countries such as India and China, and thus, it is difficult to have a price advantage. Therefore, differentiation in terms of quality and uniqueness is particularly important.

A typical example of "uniqueness" is the feature of cinnamon. Ceylon cinnamon from Sri Lanka contains higher cinnamaldehyde, the substance for its aroma, which makes a high reputation for the product's flavor. In addition, the low content of coumarin, which is harmful to the human body when consumed excessively, can be a differentiating factor for health-conscious consumers. As another example, many varieties of chilies are grown in the country with varying degrees of spiciness. It can be advantageous for food processors to utilize thse products because it is easier to find a variety close to the desired taste.

However, note that for export markets, maintaining a certain level of quality control is mandatory by the market standard. For example, export for Europe requires organic certification as for moringa. Still, in the Northern and North Central Provinces, moringa is generally produced on a small scale, and it is difficult to conduct thorough organic cultivation that requires systematic management, which is a constraint for export. In such cases, it is reasonable to promote commercial farming by enterprises and to conduct farming operations under manualized production processes.

Table 5.3.6 Opportunities for Value Addition by Items

Items	Forms of Final Products	Opportunity
Rice	·Rice flour, Biscuits, Noodles, Rice fortification with Vitamin A, Rice wine	・Rice fortification-genetically modified rice varieties for low glycemic index rice targeting health focus consumers as a preventing diet for non-communicable diseases. ・Potential of Pre-cooked rice, rice flour. ・Availability of traditional verities with high medicinal value (Suwadel ,Kalu heenati)
Chili	· Dried chili and chili powder, sauce, chili paste, Pickles	・The existence of various varieties with different degrees of spiciness. ・The increase in the demand for chili sauce.
Pumpkin	· Pulp, powder, sauce	・Use as an ingredient in various types of desserts and bakery products (pulp, powder).
Eggplant	· Pickles	N/A
Red Onion / Big Onion	· Powder, pickles	N/A
Cinnamon	· Quills, oil, food supplements, nutraceuticals, pharmaceuticals, beverage (e.g., Cinnamon-cola)	・ R&D has been conducted for automated systems for bottling and packing. ・A plan for producing cinnamon water (extraction of cinnamaldehyde for producing soda)
Turmeric	· Powder, dried pieces	・Food supplement, nutraceutical, pharmaceutical (ex: essential oil), for cosmetics industry
Banana and plantain	· Dehydrate rings / halves, dried and frozen form, powder-sour banana	・As banana is essential fruits in middle east, the demand for the banana is always high in the region. ・Implement IQF (Individual Quick Freezing) method for fruit processing. ・The "sour banana" variety is not found in other countries than to Sri Lanka and has a uniqueness.
Pineapple	· Pulp, juice, powder, dehydrated, sliced, jam	・Implement IQF (Individual Quick Freezing) method for fruit processing.
Papaya	· Pulp, juice, pickles	・Use in home delivery fresh products pack. ・Various types of processing.
Groundnut	· Butter, oil, snacks	N/A
Sesame	· Oil, powder	・Although the processing industry is currently underdeveloped, there is much room for value addition such as oil extraction.
Mango	·Pulp, juice, drink dehydrated, sliced, powder, jam	・Increasing demand for bites items specially from Maldives ・Various types of processing. ・Development of new products has been conducted such as mango powder, mixed-fruit powder.
Chicken	· Frozen chicken, spicy chicken, sausages, meat balls, chicken parts	・Emerging needs of chilled chicken in domestic market. ・Sri Lanka is bird-flu free country that contribute to stable supply to international market and good brand image of Sri Lanka. ・Potential for value addition in following products; spicy chicken, mini cubes, chicken fries, chicken base soup, sausages, nuggets & ham. ・Growing demand by multinational fast-food companies.
Milk	· Pasteurized milk, flavored milk ghee, yoghurt milk powder, butter, cheese, Ice cream	・Raw milk production is not sufficient to meet domestic demand. ・Different international markets depending on the final form of products; Ghee in India, Milk powder for China and plan to enter into Japanese market for Butter.

Items	Forms of Final Products	Opportunity
Hen Egg	· Liquid egg, egg powder	・R&D for new chemical compositions such as enhanced Vitamins and Omega 3. Looking for value addition in liquid form of eggs
Coconut	· Coconut milk, desiccated coconut, powder, coconut water, virgin oil, coconut, snacks, coconut cream, VCO capsules	・High range of value addition in coconut products such as coconut milk, coconut water, virgin coconuts oil. ・Increasing demand for coconut water and coconut milk. ・Sri Lanka's King Coconuts is unique in international market. ・Since domestic demand is high, there is a shortage of supply as raw materials for coconuts processing industry and a need to increase production.
Maize	· Breakfast cereals, food supplement, canned products, animal feed ingredient	・Needs for small and medium feed suppliers and factories of nutritional supplements.
Aloevera	· Aloe Vera Gel, Aloe Vera cubes, Aloe Vera pulp, Aloe Vera Power, beverage	・Famous for its excellent health functions. ・A raw material of shashe pack for individual consumption as wellness product. ・Sri Lankan variety contains low aloine level than other varieties.

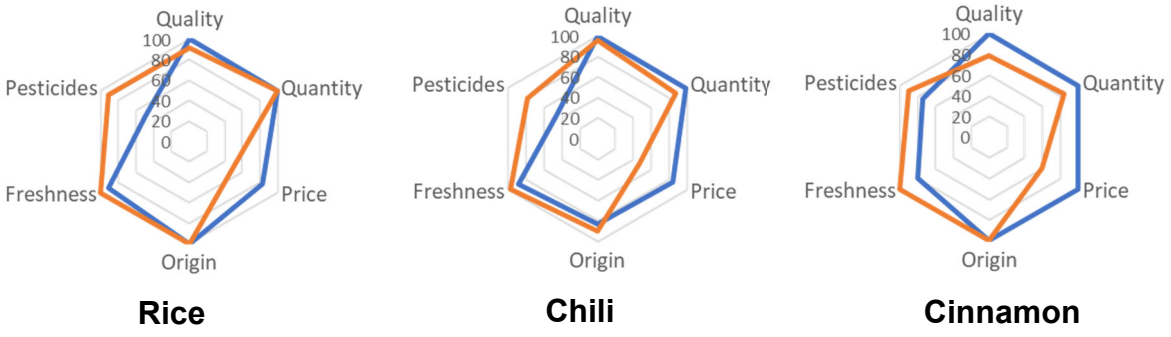
Source: JICA Survey team based on the interviews from 150 target companies during the demand survey.

(3) Factors Considered Important when Purchasing Agricultural and Livestock Commodities and the Gaps between the Needs and the Actuals.

In assessing the demand-supply gap, it is imperative to consider not only quantity disparities but also the gap in qualitative factors such as quality, price, origin, freshness, and the use of pesticide or non-pesticide. These qualitative factors are particularly important when approaching high-end markets or engaging in export activities. To address these considerations, data collection methodology focused on addressing two key questions: 1) what qualitative factors are deemed important by the demand players, and 2) whether the demand players handling each product express satisfaction with the qualitative factors associated with them.

In the demand survey, the demand players (buyers) were asked about the importance of six factors, namely, quantity, quality, price, origin, freshness, and pesticide when purchasing agricultural commodities. Furthermore, respondents were asked to express their satisfaction with each factor a binary choice: Yes or No.

The indicator “importance of the factor” represents the percentage of the demand players who deem a specific factor as important. On the contrary, the indicator “level of satisfaction from buyers' point of view” signifies the percentage of the demand players satisfied with the purchased item in relation to their requirements. The following figure shows the results of the selected nine products out of the total 20 under consideration.



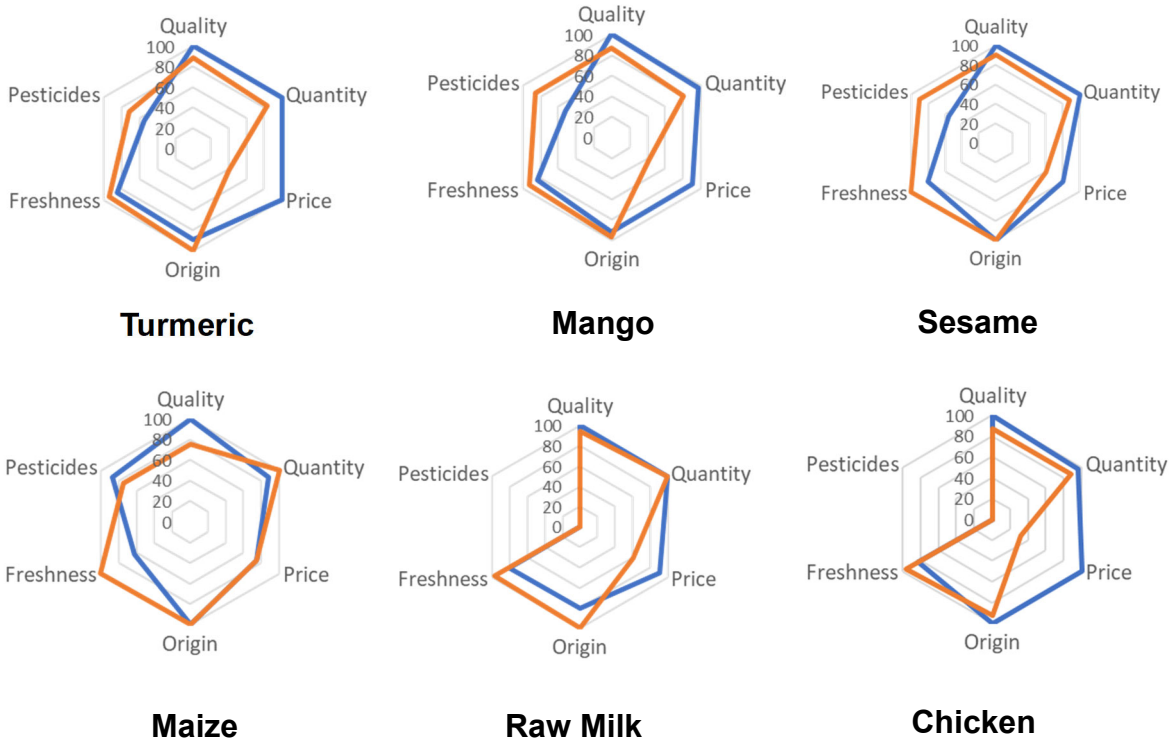


Figure 5.3.2 Factors Considered Important when Purchasing Agricultural Commodities and the Fulfillment (%; results of interviews with 150 companies in the demand survey)

Reference: Importance of the factor; Level of satisfaction from buyers' point of view.

Source: demand survey (a total of 322 responses)

Table 5.3.7 lists the factors assessed as "important" yet with "low satisfaction". A factor that overlaps between "important" and "low satisfaction" is assessed "with a large qualitative gap."

Table 5.3.7 Assessment on Factors considered as Important and with Low Satisfaction (Qualitative Gap Analysis)

Product	Factor considered as important	Factor with low satisfaction	With a large qualitative gap (importance x low satisfaction)
Rice	quality, quantity, origin	price, pesticide	No factor
Chili	quality, quantity	price	No factor
Pumpkin	quality, quantity, price	price	Price
Eggplant	quality, quantity	quantity, price	quantity
Onion	quality, quantity, origin	price, pesticide	No factor
Cinnamon	quality, quantity, price, origin	quality, price	quality, price
Turmeric/Ginger	quality, quantity, price	price, pesticide	Price
Banana	quality, quantity, origin	quantity, price, pesticide	quantity
Mango	quality, quantity, origin	price	No factor
Pineapple	quality, quantity, origin	price, quality, pesticide	quality
Papaya	quality, quantity	price	No factor
Groundnut	quality, quantity, price	price, pesticide	price
Sesame	quality, quantity, origin	price	No factor
Chicken	quality, quantity, price, origin	price	price
Milk	quality, quantity, price	price	price

Product	Factor considered as important	Factor with low satisfaction	With a large qualitative gap (importance x low satisfaction)
Egg	quality, quantity, price	price	price
Coconut	quality, quantity, price	price	price
Maize	quality, origin	price	No factor
Aloevera	No factor	price	No factor

Source: JICA Survey Team

Upon analysis of all selected products, it is evident that factors such as, "quality," "quantity," and "price," followed by "origin" consistently emerged as factors of importance. This observation suggests that these factors are of broad interest to many demand players. In terms of satisfaction criteria, "pesticides" and "price" were the two items receiving lower satisfaction ratings from demand players.

The “quality” factor revealed a significant gap, particularly for cinnamon and pineapple. These products are raw materials for the processing industry and export commodities to Europe and neighboring countries. According to interviews with exporters, the issue is procuring the desired quality product in the appropriate shape and size despite the relatively high reputation of Sri Lankan pineapples. Incidentally, Pineapple cultivation is mainly in the wet southern region and is not popular in the Northern and North Central provinces. Cinnamon also has a high reputation in the international market. Still, the shape and thickness of the raw material affect the grade when processed into sticks, leading to more stringent quality requirements compared to other crops (see Chapter 6 for details).

Regarding the "quantity" factor, the gap was significant for eggplant and bananas. These are mainly for the domestic market, and since they are consumed daily regardless of region, domestic demand is relatively large.

Regarding the "price" factor, we found significant gaps in many commodities, particularly in pumpkin, turmeric, groundnuts, chicken, milk, eggs, and coconut. The findings from the field survey substantiate these observations. For example, the milk sector operates on a thin-margin business model, and recurrent rise in input prices frequently pose a threat to profitability. Unsurprisingly, the FVC players in turmeric production exhibit heightened sensitivity to price fluctuations stemming from the government import restrictions.

The factor “price” refers to the purchasing price at which demand players (e.g., retailers, wholesalers, and processors/distributors) purchase agricultural and livestock commodities from farmers. Since a lower purchasing price for demand players implies a lower selling price for the farmer, it is not always desirable for all FVC stakeholders. However, it is crucial to understand why the purchase pricing is unsatisfactorily higher than the demand players’ expectations.

One reason is that many types of production materials, such as fertilizers, seeds, pesticides, agricultural machinery, and packaging materials, depend on imports, and the recent economic situation has increased the cost on imported inputs, leading to an increased overall farming expense. In this case, the profit margin with respect to price is shallow, and the profit pie is tiny. Therefore, the direction of development could be to break away from the high-cost structure by improving the efficiency of the agricultural production system and production technology to increase the size of the profit pie.

While the above analysis focused primarily on differences by products, it is worth considering the difference by markets. Figure 5.3.3 compares demand players involving domestic and international markets. Although it is not always appropriate to lump different commodities together, the average value of all commodities is used to compare for convenience. It was found that domestic consumers placed more importance on “freshness” and international consumers placed more importance on “origin”. It was found that “price” was commonly cited as a factor with low satisfaction both domestic and

international players. “Quality” and “pesticide” factors were rated as low satisfaction for domestic and international market players respectively.

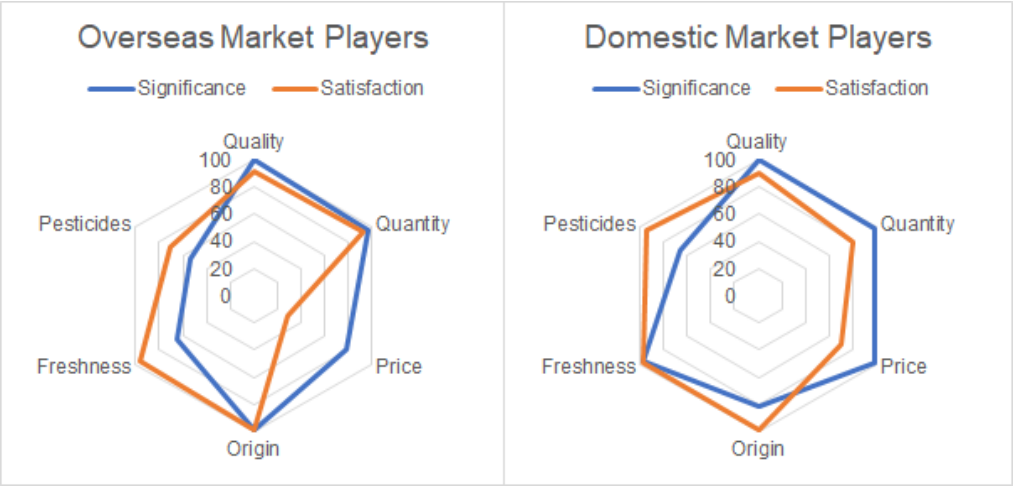


Figure 5.3.3 Comparison of Domestic and Market Players (%; results of interviews with 150 companies in the demand survey)

5.4 Selection of the Recommended Agricultural and Livestock Products (5-6 commodities) (Step4)

Based on the findings of the market environment and potential analysis (Step3), *recommended agricultural and livestock commodities* were selected considering the following items:

1) Ensure a wide range of commodities such as general crops, spices, livestock, feed crops, etc.
2) The crop must be suitable for soils in the Northern and North Central Provinces.
3) Ensure a wide range of items suitable for different strategies, such as import substitution and value addition, for exports and for the domestic market.
4) The crop which has a somewhat novel characteristic.

Although it was initially planned to select five to six commodities which are common to the Northern and North Central Provinces, one distinct commodity was selected in each province to allow for a wide selection of commodities based on the characteristics of each agroecosystem. The selected commodities and the main reasons for their selection, including the strategies and the potentials, are shown in the table below. Five commodities (chilies, mango, cinnamon, maize (for animal feed), and milk) were selected as common commodities for each province, and moringa was added in the Northern Province and sesame in the North Central Province. We finalized the list through discussion with JICA and the relevant organization. Then, we conducted the detailed FVC survey with the final selected items.

Table 5.4.1 Selection of the Recommended Agricultural and Livestock Commodities (6 commodities per province)

Classification	Northern Provinces	North Central Province	Reasons for selection (main strategies and potential)	Export	Domestic
Vegetables & Beans	Chilies (Capsicum annuum, esp. the cultivated chili peppers)		Large domestic demand and import substitution	○	◎
Fruit	Mango (Mangifera indica)		Existence of high-end market and possibility of value-added improvement	◎	◎
Spice	Cinnamon		High recognition in export markets	◎	◎
Medicinal plants	Moringa (plant) (Moringa uniflora)	-	Growing global demand and the advantages of organic farming for health food	◎	○
Oilseed crops	-	Sesame (seeds)	Large export market and domestic value-added	○	○

Classification	Northern Provinces	North Central Province	Reasons for selection (main strategies and potential)	Export	Domestic
			sesame oil market		
Feed crop	Maize		High importance and necessity in livestock VC	△	◎
Animal husbandry	(cow's) Milk		Expectations for the promotion of the processing industry based on the large production volume	△	◎
Total	6	6			

(Remarks) ◎: Particularly applicable, ○: Somewhat applicable, △: Not much applicable

Sri Lanka has a population of approximately 21.4 million, which is only 1/60th of India's population and about 1/5th of Japan's population, thus the scale of food demand in the country is limited. Since the government also aims to promote exports and increased value addition, the decisions were made to place particular emphasis on value-added and export potential in the basic strategies indicated above.

In considering export potential, it is essential to understand the size of the global market. Still, the size of the market does not necessarily mean the size of the export opportunity to Sri Lanka. For example, major grains such as maize, soybeans, and rice are land-intensive crops, and the international market is dominated by products from a few countries, such as the U.S. and Brazil, who utilize vast agricultural lands, leaving marginal space for counties such as Sri Lanka to enter the market. Therefore, one of the possible strategies is to target some “niche” market.

For instance, Sri Lanka could target the food demand of the “diaspora” migrant workers in Europe and America or strengthen exports to neighboring countries with a comparative advantage in the lead time for transportation, for example, to the Maldives. The point of the discussion is to consider both the size of the market and Sri Lanka's advantages.

Furthermore, according to demand surveys and interviews with exporters, the biggest challenge is “securing the quantity” of commodities demanded by end-consumers regardless of raw materials or processed commodities. For this reason, the scale of domestic production and expectations for future expansion, especially the potential of production in the two target provinces, are considered important. Therefore, quantitative and qualitative information on production volume, export volume, export growth, and potential for value-added improvement were considered.

Table 5.4.2 shows the primary data for the 20 target commodities. (Ginger and Turmeric, which were grouped as “Spices General”, were separated, and Moringa, a crop with novelty, was added to the total of 22 crops). The items presented include soil suitability in the target region, major agricultural and livestock commodities in each province, the top 40 commodities in terms of production in Sri Lanka, whether they are listed in the National Export Strategy, and whether they are among the top 30 commodities in terms of export value, etc. These are indicated with “◯” or “△” symbols.

Note that soil suitability and the major crops applicable in each province indicate the likelihood of the item being listed in the referenced government-issued documents. In addition, the following information are filled: domestic production value scale, export value scale and growth rate, export volume and growth rate, major export destinations, global market scale (values in 2019 before the COVID-19 pandemic), and other relevant information.

Table 5.4.2 Data Table of 20 Promising Products

Categories	No.	Commodities	Soil Suitability	Production in NP	Production in NCP	Domestic Production in Value (Top 40)	Listed in NES	Export in Value (Top 30)	Import in Value (Top 30)	Domestic Production (1,000USD)	Export (Value, 1000 USD)			Export (Volume, t)			Export Destination (2020, Top5)					Significance of World Trade (1,000USD) (2019)		Typical Harvest Season in NP and NCP	Donor's Engagement
										2021	2021	CAGR 10y	CAGR 5y	2021	CAGR 10y	CAGR 5y	1	2	3	4	5				
Cereals	1	Rice	○	○	○					3,039,531	14,065	(5%)	13%	12,803	(16%)	11%	Canada	Australia	Germany	UAE	UK	24,202,162	*	Feb-Mar, July-Aug	ASMP (WB)
Field Crops	2	Chili	○	○	○	○	○			687,350	2,487	12%	15%	671	8%	11%	UAE	Switzerland	Saudi Arabia	Kuwait	UK	1,462,776	*	Jan-Mar, Aug-Oct	ASMP (WB)
	3	Pumpkin	○	○	△	○				185,173	166	n.a	27%	152	n.a	19%	n.a	n.a	n.a	n.a	n.a			Year around	
	4	Eggplant	○	○	○				○	120,935	12	n.a	(15%)	6	n.a	(23%)	Switzerland	UAE	Australia	Kuwait	Saudi Arabia			Year around	
	5	Onion	○	○	○					72,695	0	(100%)	(100%)	0	-	(100%)	UAE	Qatar	Kuwait	Switzerland	Oman		**	Dec-Mar, May-Aug	ASMP (WB)
Spices	6	Pepper				○	○			506,831	122,228	6%	10%	17,959	6%	8%	India	Germany	USA	Spain	Norway	1,310,735	*	May-Oct, Dec-Apr	
	7	Cinnamon				○	○	○		463,258	247,368	7%	5%	18,814	3%	3%	Mexico	US	Peru	Colombia	Ecuador	719,524	**	Jun-Jul, Nov-Dec	
	8	Ginger				○	○	○		150,543	541	(6%)	(3%)	114	(6%)	9%	Germany	UAE	UK	USA	New Zealand	2,877,579	**	Jan-Feb, May-Sep	
	9	Turmeric								n.a.	10,117	17%	27%	1,325	24%	36%	France	Canada	Other Asia .nes	UK	Germany			Jan-Feb, May-Sep	
Fruits	10	Banana	○	○	○	○				209,591	13,726	9%	(5%)	19,005	2%	6%	Saudi Arabia	Qatar	UAE	Kuwait	Bahrain	14,906,979	*	Year around	ASMP (WB)
	11	Mango	○	○	○	○				148,047	1,819	21%	23%	666	18%	23%	UAE	Qatar	Saudi Arabia	Oman	USA			May-Dec	ASMP (WB)
	12	Pineapple	○			○			○	47,081	2,517	6%	(16%)	1,363	12%	3%	Germany	Austria	USA	UAE	Netherland			Year around	ASMP (WB)
	13	Papaya	○	△	△	○			○	n.a.	6,949	28%	19%	16,075	34%	33%	UAE	Qatar	Kuwait	Saudi Arabia	Oman			Year around	ASMP (WB)
Oilseed	14	Groundnut		○	○	○				76,884	13	23%	n.a	2	7%	n.a	Switzerland	India	Australia	Sweden	Netherlands	3,016,324	*	Jan-Mar, Aug-Oct	ASMP (WB)
	15	Sesame		○	○	○		○		33,807	3,962	5%	18%	2,737	3%	13%	Italy	Maldives	Denmark	Canada	Sweden	3,136,291	*	Jan-Apr	
Livestock	16	Chicken meat				○				1,172,974	1,107	7%	6%	770	(3%)	(21%)	Maldives	n.a	n.a	n.a	n.a	23,368,068	*	Year around	
	17	Raw milk				○				360,217	26	27%	39%	25	32%	67%	Maldives	Canada	USA	Italy	UK	9,284,264	*	Year around	JICA
	18	Hen egg				○		○		307,838	846	1%	(2%)	211	(4%)	(10%)	Maldives	Seychelles	UAE	Qatar	n.a	4,155,269	*	Year around	
Plantation Crops	19	Coconut				○				1,656,232	127,325	6%	7%	62,812	1%	9%	UAE	Pakistan	Canada	UK	Australia	3,336,829	*	Year around	
Feed and Forage	20	Maize (corn)	○	△	○					310,900	47	(16%)	85%	11	(36%)	54%	Japan	UK	Senegal	Qatar	Maldives	32,733,795	*	Jan-Feb, Sep-Oct	
Medicinal plants and herbs	21	Aloe vera				○				n.a.		-	-		-	-	n.a	n.a	n.a	n.a	n.a			Year around	
	22	Moringa								n.a.		-	-		-	-	n.a	n.a	n.a	n.a	n.a			Year around	

Note: "○" applied, "△" applied some; trade data of turmeric is from UN Comtrade; export of maize (corn) is mainly seeds of maize.

Source: "Soil Suitability": soil suitability map (names of crops are listed in the map; production in NP and NCP: suitability map in which names of major crops are listed; production, export and import: FAOSTAT,"significance of world trade" * FAOSTAT, ** ICT

There were some discussions on the selection of specific commodities within the same category. For an example, for oilseed crops, the question was raised as to whether groundnut or sesame should be selected. The following is a brief description of the discussions and reasons for selection of the seven commodities:

(1) Oilseed crops (groundnut and sesame)

Both groundnut and sesame are among the top 40 oilseed crops in Sri Lanka in terms of overall production. Sesame is among the top 30 oilseed crops in terms of export value. The value of domestic groundnut production is about twice that of sesame that indicates the significant domestic demand for groundnut. Considering the fact that the value of sesame production is also higher in terms of export value and quantity, groundnuts can be selected in the view of domestic demand or sesame in the view of export promotion.

In terms of the scale of global trade (in value), both commodities are worth approximately USD 3 bn per year. However, Sri Lankan sesame production has a potential for excel the exportation owing with past export performance.

When consider the quality of groundnut production, the size is relatively small than the size that required by the international market. On the other hand, the market players have favorably revealed the fact that sesame production uses a small amount of pesticides. However, existing sesame production requires a significant involvement since production is still happened at a cottage/ home garden level (not as mass production). Therefore, sesame was recommended as an oilseed crop by considering its future export potential.

(2) Feed crop (maize)

The availability of feed is crucial factor in livestock sector value chain (VC). The recent importation restrictions on fertilizers and pesticides issued in 2021 had a significant impact on maize production. For an example, in poultry farming and egg production, the renewal of parent birds was canceled due to difficulties in obtaining feed, resulting in a significant decrease in the egg production and made pressure for importing eggs from India. Accordingly, the importance of maize as a feed crop is not disputed.

Maize as being an internationally traded agricultural product, the major maize producing countries such as the U.S. and Brazil have comparative advantages. Many countries (even Japan) rely on imports, and it can be inferred that maize production is highly affected by import policies and strategies rather than production policies and strategies.

Figure 5.4.1 shows the trends in domestic production and imports of maize. It shows that maize production has been growing steadily since the early 2000s, with exceptional fluctuations in 2021 and 2022 (from previous achievements of around 300,000 tons/year to 450,000 tons/year and then back to the milestone level of the earlier years). Excluding the two exceptional years, we can see that “import substitution” has progressed to some extent, with a demand of around 350,000 tons/year, as the production line intersects with the import line around 2007.



Figure 5.4.1 Domestic Production and Import Volume of Maize

Source: FAOSTAT (Accessed in August 2023, unit: ton/year)

Although there is no such data obtained that shows the connection between the import volume of seeds and fertilizers for maize and its production volume, the relevant officials said the central issue of maize production is to secure locally suitable seeds (varieties) and fertilizers. In this regard, the challenge in maize VC seems to be more policy-related (import restrictions and tariffs) rather than technical. In such cases, what JICA can do for maize VC may be limited. In addition, regarding the detailed FVC analysis on the selected recommended agricultural and livestock commodities, the appropriateness of choosing maize, which is mainly used for feed, as a target commodity for future promotion is also questionable. Therefore, it was considered preferable to treat maize as an input in the livestock sector (dairy).

(3) Spices (cinnamon, ginger, turmeric)

Compared to other agricultural commodities, spices have a higher price per weight, making it easier to expand the market even in these days of high fuel costs. In addition to cinnamon, which has an international reputation, it is important to select another new commodity for exportation to promote value addition and to harness the potential of Sri Lanka's reputation in terms of spice production.

The data table in Table 5.4.2 shows that pepper has the largest domestic production and the second-largest export value after cinnamon. However, pepper has a relatively high water requirement, and a major challenge is that it can only be grown in irrigated areas in the target provinces.

A comparison of ginger and turmeric reveals significant differences between the two. Although data on the domestic production of turmeric is not available, its export value is nearly 20 times that of ginger. Compared to ginger, which has been declining in both volume and value in recent years, the average annual growth rate of turmeric over the past 10 years has been 36% in export volume and 27% in export value, overwhelmingly larger than other spices. In terms of international trade value, although separate data for turmeric are unavailable, the combined value of turmeric and ginger is more than twice that of pepper and nearly four times that of cinnamon, indicating a large potential for the international market.

Most of the 20 promising agricultural and livestock commodities are under the jurisdiction of the DOA (Department of Agriculture), but spices are under the DEA (Department of Export Agriculture). Unlike cinnamon, which has a certain degree of established market and global recognition, turmeric is expected to be a good model as a representative of spices that require technological innovation for value-added improvement.

More specific reasons and considerations for the selection of the above items are as follows:

Table 5.4.3 Reasons for Selection of Recommended Agricultural and Livestock Products

Classification.	list of articles	Reasons for selection (Details)
Vegetables & Beans	Chili	As for vegetables and general crops, eggplant, pumpkin/ squash, and onion (red onion/big onion) were mentioned as candidates and received overwhelming requests from relevant organizations concerned due to their high local appropriateness, large demand in the domestic market, and the fact that they are essential as foodstuffs in Sri Lanka. As for pumpkin, many cases were pointed out, such as over-planting due to price hikes caused by lack of systematic cultivation, which led to a price collapse (there is a need for support). Onion (Red Onion) is widely cultivated mainly in Jaffna, and it was hoped that marketing through warehouses would help improve farmers' livelihoods, but due to the strong requests for chili, priority was given to chili. Although there is a similar need for import substitution for potatoes and large onions called "Big Onion", priority was given to chili for the above reasons.
Fruit	Mango (Mangifera indica)	Banana, mango, pineapple and papaya were considered as candidates. Bananas have a large export market, especially in the Middle East. There are (popular and established) varieties suitable for both export (sour banana) and domestic use (koli kuttu). The fact that they can be harvested year-round is also a major advantage. In contrast, there are various varieties of mangoes for both export and domestic markets. The TJC variety, for example, has a long harvesting period (up to 6 months) and is popular in export markets. The Karthakolamban variety, on the other hand, does not last as long, but is popular in the domestic market for its taste (although it has the disadvantages of high fiber content and large seeds). However, by considering the potential exportation opportunities, mango was shortlisted to be considered during the FVC survey.
Spice	Cinnamon	In the spices category, pepper, turmeric, ginger and cinnamon were remained as candidates. Sri Lankan cinnamon is highly recognized in the international market and is expected to further promotion for exportation. At present, the main cultivation is taking place in the Southern part of Sri Lanka. Although the current production volume is insignificant in the target area, it is evident that the cinnamon can be cultivated in study area without significant difference in composition between cinnamon produced in this region and cinnamon produced in the Southern part of the country. The fact that there is room for further development in the extraction of cinnamon oil and research and development of more suitable varieties for the target region, as well as the fact that suitability maps have been prepared in some districts by the Department of Export Agriculture, were also considered as positive factors. Although there are existing studies on cinnamon, it was judged that the potential for the formation of a new production area was worth considering by clarifying issues related to production and distribution in the region through a detailed FVC analysis. On the other hand, pepper is a good candidate because it requires less labor input than cinnamon, research on cultivation methods is being conducted by the Department of Export Agriculture, and it is expected to be in sufficient demand for export. In the end, it was decided to give priority to cinnamon because of its high local suitability, as pepper requires a lot of water and can only be promoted in irrigated areas.
	Turmeric	Turmeric is suitable in the target provinces. As its production had been declined during the war period in the northern part of the country, it can be one of the symbols of the post war recovery, tapping the potential of the area like before. World trade is rather big and the exportation of turmeric is increasing trend more than other spices. For more promotion of export of spices, value-addition must be addressed for which turmeric is a good model.
Medicinal plants	Moringa (leaves) (Northern Province)	Moringa has high potential because the demand is growing worldwide as a food with high nutritional value. Moringa is traditionally cultivated in Sri Lanka and is highly suitable for production. The promotion of organic cultivation of moringa in Sri Lanka is relatively easier where the present use of chemical fertilizers and pesticides is considered minimal. Moring can be promoted as a healthy food due to its proven medicinal and nutrient attributes. Initially, aloe vela was candidate as a medicinal plant. But there were some objections from related organizations, as there had been a pilot cultivation attempt in the past, which failed to succeed in terms of market development. Accordingly, it was decided to give priority for moringa owing with recommendations several related organizations.

Classification.	list of articles	Reasons for selection (Details)
Oilseed crops	Sesame (seeds) (North Central Province)	Sesame and groundnut were the candidates for oilseed crops. However, many farmers have incorporated groundnut, sesame, green gram, cowpea, and other crops into their crop rotation system. There is no conflict between groundnut and sesame as cultivation options. Whilst the cultivation of groundnut is particularly suitable in the target area, there is room for development in the processing sector. The Agricultural Modernization Project is providing support for the construction of drying facilities. Sesame is recognized as oilseed that possess a significant export market potential. Since sesame is generally cultivated without the use of pesticides, there may be enough interest from high-end markets such as Japan if the quantity can be secured. In fact, Japanese trading companies in Sri Lanka have expressed strong interest in purchasing the product. In addition, given the demand for sesame oil, especially from Tamil communities, the promotion of processing through support for SMEs could be a candidate for future support.
Feed crop	Maize	Maize is grown in large quantities, especially in the North Central region. Although soybean is an alternative as a feed crop, maize is considered more superior because of its versatility in dairy and poultry farming and its high utilization in feed. The recent shortage of maize supply resulted a significant impact on the livestock sector. As mentioned above, the high price of feed has prevented poultry farmers from renewing their parent birds, resulting in a drastic decrease in egg supply, which has forced to import eggs from India. The detailed analysis of FVC reveal various issues, such as aflatoxin generation associated with drying methods, storage conditions, etc., and distribution issues.
Livestock	(cattle) Milk	Cattle and buffalo milk, poultry for eggs, poultry for chicken meat, were the candidates for the livestock sector. Beef was given a lower priority because it was evident that market expansion and industrial development could not be expected due to religious and cultural reasons. In addition, chicken meat was judged to have a low priority because major companies have already integrated all processes from production to market distribution. It was recognized that dairy farming has very low productivity and there is much room for improvement throughout the VC including improvement in feeding patterns, improvement in hygiene conditions, and processing. Although the demand for powdered milk has been the larger proportion until now, the demand for fresh milk has been expanding in recent years. It shows a change in the demand side. Therefore, it is appropriate milk to be selected for the FVC detailed survey in the sense of confirming the current situation.
Industrial crop	-	The selection of King Coconut as one candidate was considered due to potential plantation in the target area. King coconut has an export potential owing with its inherent qualities such as taste, chemical composition and purity. This fact has been proven by different project proposals that received by the MoI. However, the maintaining taste of the product tends to change depending on the cultivation environment, and there are significant issues to be addressed for further commercialization. Hence, priority was given to the medicinal plant Moringa as a highly novel product.

Source: JICA survey team

CHAPTER 6 CHALLENGES AND MEASURES FOR THE PROMOTION OF RECOMMENDED AGRICULTURAL AND LIVESTOCK COMMODITIES

The "demand survey" was conducted in the first field survey by considering 20 number of potential agricultural and livestock commodities to identify their demand in both domestic and overseas markets. The FVC detailed analysis was conducted during the second field survey on seven shortlisted agricultural and livestock commodities with potential for increasing profits. The purpose of this chapter is to summarize the challenges from the production and supply side and challenges from the demand side, and to examine measures to resolve these challenges.

6.1 The Scale of Businesses of FVC Players in the Promising Agricultural and Livestock Products (Employees, Sales, and volume of handling)

The target group (producers and intermediaries) for the detailed FVC survey was defined as players considering the distribution channel of seven promising agricultural and livestock products. However, FVC players outside the region could be selected as interviewees in case of any shortlisted agricultural product is currently not widely produced and midstream and downstream of the distribution channel are not completed within in the Northern and North Central Provinces but have potential for future growth within the region. The following section summarizes the survey results related to the scale of businesses of the FVC players responsible for the midstream and downstream of the chains.

Intermediaries provide various services, including collection, wholesaling, transportation, agricultural inputs, processing, retailing, and exporting. Mostly, it was difficult to distinguish the boundaries between players since the one player is engaging in several services, both collection and transportation or a producer may be responsible for midstream and downstream roles (See 6.2 for the functions of each actor and their interrelationship).

Table 6.1.1 Target Group - Detailed FVC Survey

Product	Northern Province		North- Central province		Other provinces	
	Producers	Intermediaries	Producers	Intermediaries	Producers	Intermediaries
Chili	26	37	26	44	0	9
Mango	23	40	24	26	1	6
Cinnamon	14	0	38	5	1	79
Milk	24	30	14	46	1	6
Moringa	20	34	N.A.	N.A.	N.A.	N.A.
Sesame	N.A.	N.A.	25	31	0	7
Turmeric	4	1	24	13	1	65
Total	**111**	**142**	**151**	**165**	**4**	**172**

Source: JICA Survey Team

The scale of businesses of intermediaries is summarized in Table 6.1.2 with reference to the "number of permanent employees" and "estimated annual turnover". According to interviews with the BOI, small and micro enterprises are defined depending on sales and number of employees as shown in Table 6.1.3. For an instance, an enterprise in the manufacturing sector with an annual turnover of Rs. 15 mn or less, or has 10 or fewer employees is categorized as a micro scale enterprise. Accordingly, most of the survey targets selected from FVC players in the Northern and North-Central provinces could be classified as micro and small enterprises.

Table 6.1.2 Scale of Business - Intermediaries

the Number of Permanent Workers

Category	Interval	n	%
Micro	0	165	65.0%
	1~10	54	21.3%
Small	11~50	17	6.7%
Small or Medium	51~200	6	2.4%
	201~300	4	1.6%
Large	More than 300	8	3.1%
-	N.A	181	-
Total		435	100%

Estimated Annual Turnover in Rs

Category	Interval	N	%
Micro	Less than Rs 15 mn	280	81.4%
Small	Rs 16 mn ~ 125 mn	43	12.5%
	Rs 126 mn ~ 250 mn	5	1.5%
Medium	Rs 251 mn ~ 500 mn	4	1.2%
	Rs 501 mn ~ 750 mn	4	1.2%
Large	More than 750 mn	8	2.3%
-	N.A	91	-
Total		435	100%

Source: JICA Survey Team

Table 6.1.3 Definition of SMEs

Sector	Indicator	Medium	Small	Micro
Manufacturing	Annual Turnover (mn Rps)	251-750	16-250	＜15
	Employees	51-300	11-50	＜10
Service	Annual Turnover (mn Rps)	251-750	16-250	＜15
	Employees	51-200	11-50	＜10

Note: Sales and number of employees “OR” conditions (Micro if sales are 100 and number of employees is 5)
Source: http://www.industry.gov.lk/web/images/pdf/framew_eng.pdf

The below table shows the annual volume of inputs handled by intermediaries. It was considered that differences in the volume handled depend more on the type of service than on the commodity. Hence, based on the type of business of the intermediary, the commodities have been classified into two broad categories: as agricultural products (6 commodities) and dairy products (milk).

Table 6.1.4 Annual Volume Handling of Promising Commodities

Intermediaries	Agricultural products (Chili, Cinnamon, Mango, Moringa, Sesame, Turmeric)					Dairy Products (Milk)				
	Average (Tons)	the number of intermediaries by annual volume handling				Average (liters)	the number of intermediaries by annual volume handling			
		Less than 10 ton	10 ton ~ 99 ton	100 ton ~ 999 ton	1000 ton or more		Less than 1000 litter	1000 ~ 9999 litter	10000 ~ 99999 litter	100000 ton or more
Intermediate / collection	229	46	60	36	0	77,753	19	2	14	5
transport	29	10	16	2	0	61,878	2	0	4	2
Wholesale	197	76	40	6	0	51,741	3	0	6	2
Process	561	34	14	4	8	49,969	5	5	7	4
Retail	19	10	10	0	0	3,100	1	2	0	0
Export	391	4	2	8	2	N.A	N.A	N.A	N.A	N.A

Source: JICA Survey Team

The below table shows the number of producers and collectors/brokers who have business relationships with intermediaries for the shortlisted agricultural and livestock products. The average number of farmers/producers with whom one intermediary has a business relationship was about 10~100, depending on the commodity (731 for milk). For Moringa, the number of farmers with whom one intermediary has a business relationship is lower than for other crops, probably because there are fewer farmers producing it and the market is at the high end of the market.

Table 6.1.5 Number of Producers/Farmers and Collectors/Middlemen who Supply Raw Material to the Intermediaries

Product Handled by the intermediary	the number of producers/farmers who supply Raw materials to the intermediaries					the number of collectors/middlemen who supply Raw materials to the intermediaries				
	Average (entity)	Interval				Average (entity)	Interval			
		1~10	11~50	51~300	301~ above		1~10	11~50	51~100	101~ above
Chili	23	32	19	4	1	7	54	12	0	0
Cinnamon	107	26	28	18	6	24	20	11	3	2
Mango	72	22	12	5	4	9	47	15	0	0
Milk	731	20	40	14	10	58	65	11	0	4
Moringa	10	29	4	1	0	4	32	2	0	0
Sesame	104	16	6	9	2	8	25	2	1	0
Turmeric	42	25	37	10	2	10	28	2	1	1

Source: JICA Survey Team

6.2 Distribution Channels of Recommended Commodities (Value Chain Diagram)

Prior to the analysis of the challenges, the structure of the value chain (distribution channels) for each commodity were illustrated as value chain diagrams by identifying the major FVC players based on the results of the FVC detailed analysis survey. The diagrams were typically organized in the following order (from bottom to up): input → production → processing → distribution → sales.

(1) Chili

The main distribution channels of chilies are shown below. Chilies are classified into green chilies, which are distributed unprocessed, and red chilies, which are dried or powdered.

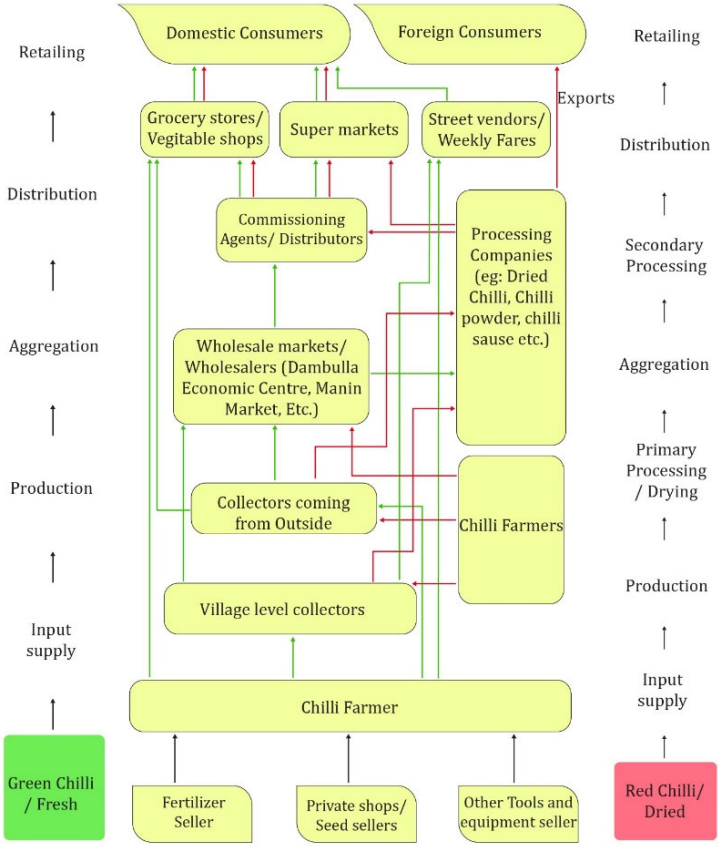


Figure 6.2.1 Major Value Chain Diagram - Chili

Source: JICA Survey Team

Chili farmers basically sell chilies to brokers at the village level or outside the village. Some green chilies are sold directly by private farmers to nearby markets and shops. Green chilies are distributed by brokers to retailers through Dedicated Economic Center in Dambulla and/or Manin Market (Whole Sale Market) in Colombo. Red chilies go from a broker to a processor, where they are dried and powdered and distributed to retailers via wholesalers.

(2) Mango

The main distribution channels of mangoes are shown below:

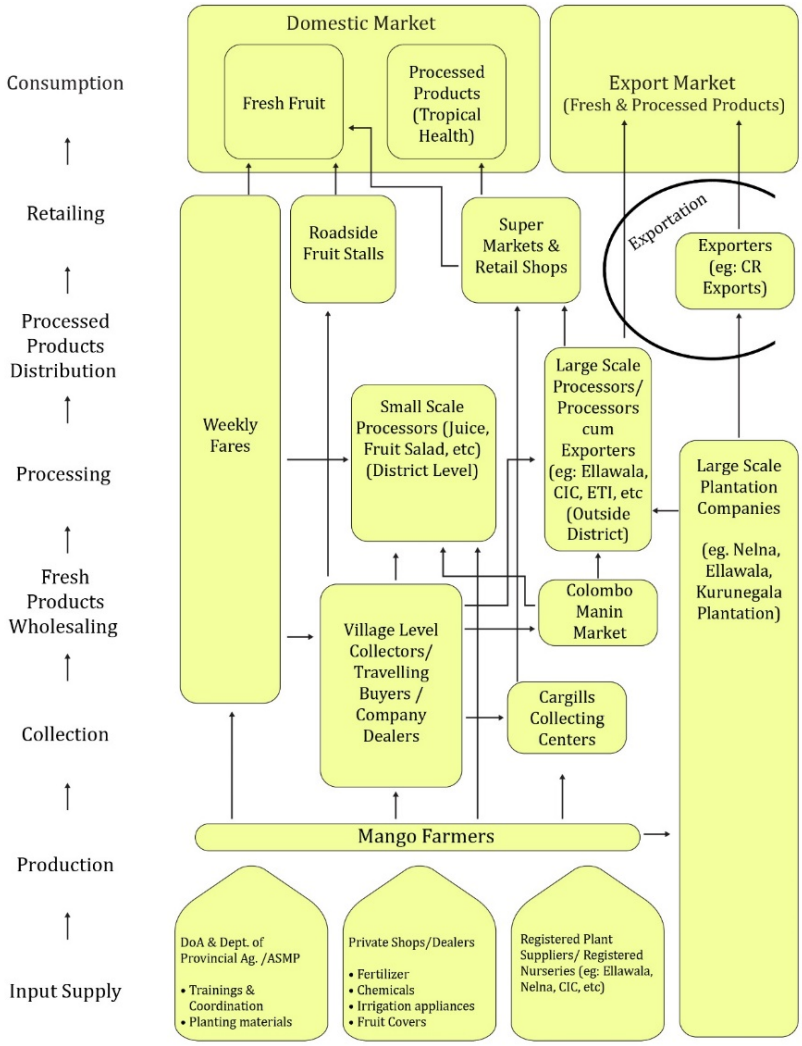


Figure 6.2.2 Major Value Chain Diagram - Mango

Source: JICA Survey Team

The ordinary farmers sell and/or distribute the products to processing companies, the Manin Market, and/or retail stores through brokers. There are several types of brokers, classified as village-level brokers, out-of-village buyers, and corporate brokers. Additionally, farmers have options of selling at fairs (pola), selling to small processors at the local level, selling to supermarkets' collection points, and selling to large plantation companies.

Mostly the large-scale plantation companies have their own mango plantations, and they tend to purchase mango (quality products) from neighboring farmers. There are many instances of forming cluster farming in order to maintain continuous/ guaranteed supply. In addition to fresh fruit sales, the companies handle and vertically integrates processing of products such as dehydrated mango, jams and

juices. For export, these channels are either from large plantations companies or from large processing plants.

(3) Cinnamon

The main distribution channels of cinnamon are shown below:

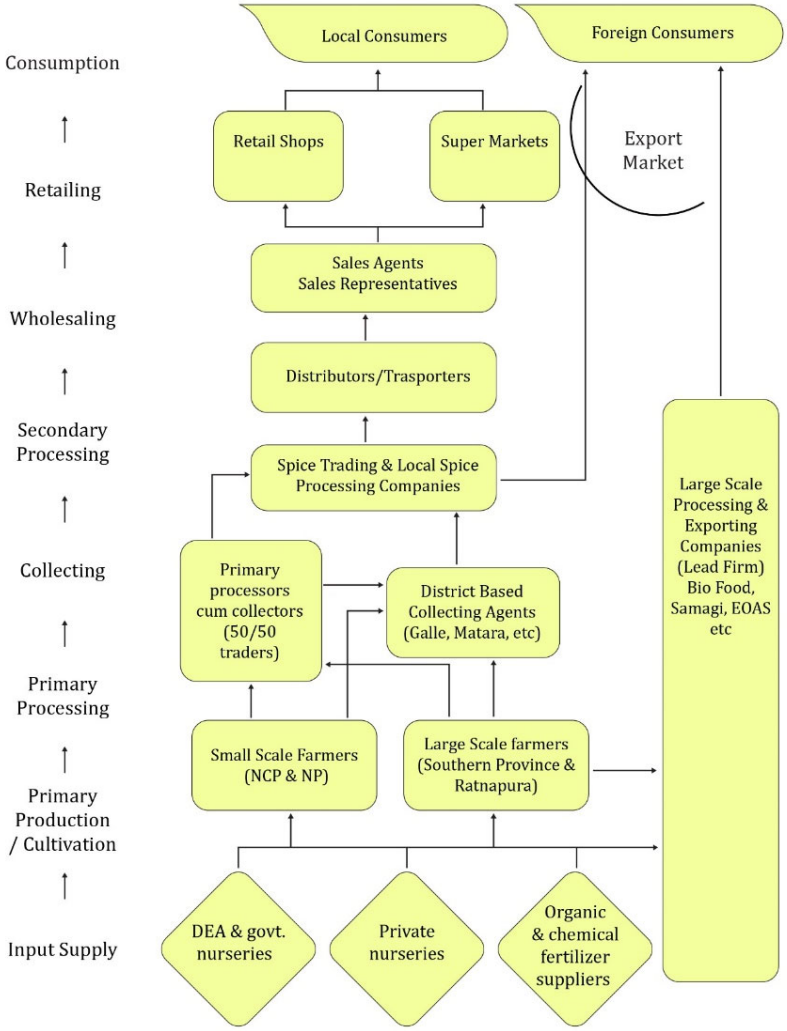


Figure 6.2.3 Major Value Chain Diagram - Cinnamon

Source: JICA Survey Team

Cinnamon seedlings are supplied by government laboratories or private sector seedling producers. In the south, many farmers cultivate on a large scale, but in the Northern and North Central Provinces, small-scale farmers are the mainstream because cultivation has only been started recently. Some companies do everything from partial production to processing and transportation.

The produced cinnamon is collected by collectors and subjected to primary processing. In the Southern Province, where the value chain has already developed, there are organizations that collect products for exportation. Some cinnamon from the Northern and North Central Province is also collected by collection agencies in the Southern Province.

(4) Turmeric

The main distribution channels of turmeric are shown below:

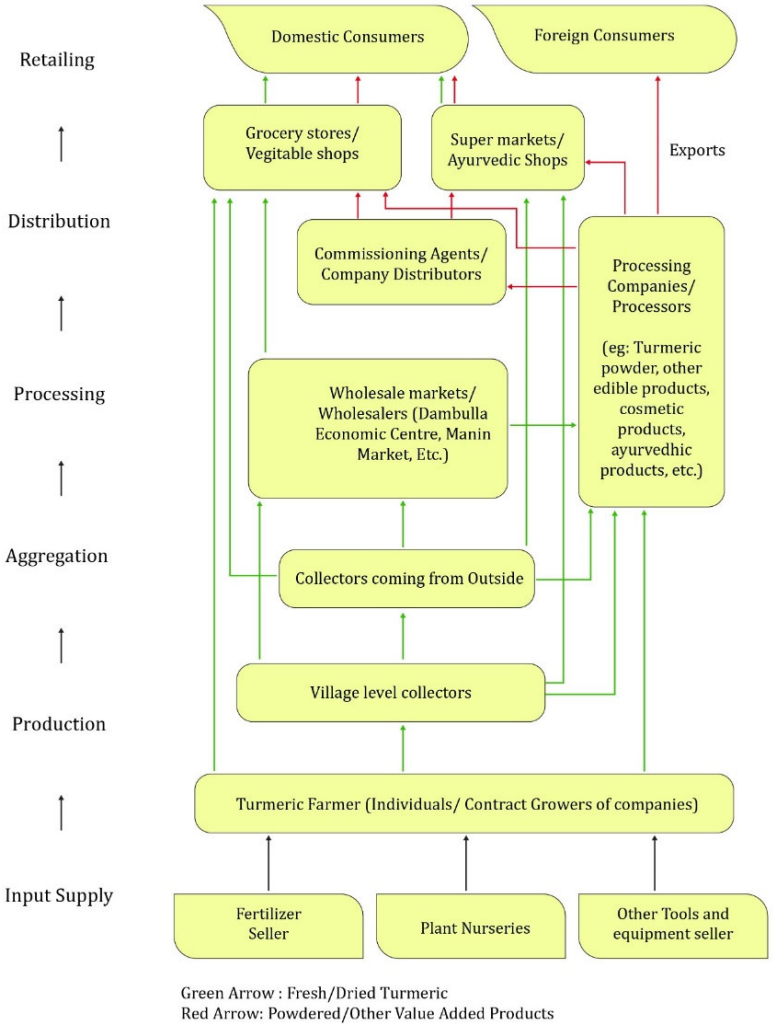


Figure 6.2.4 Major Value Chain Diagram - Turmeric

Source: JICA Survey Team

Turmeric is produced by farmers in each region and then collected at the village level. Some contract farmers sell the products directly to retail and processing companies. The collected turmeric is sold to retailers through collectors who come to collect them from outside the region. Processed products are distributed directly from processing companies to retailers and sold to domestic and overseas markets.

(5) Sesame

Sesame cultivation is conducted mainly by informal Chena cultivation (during Maha Season in Jaffna/ Yala Season in North Central Province) using extensive farming methods. The harvested sesame seeds are sorted by the farmers themselves, and then purchased by buyers within or outside the village. The sesame seeds are either brought to processors of sesame oil or sold directly to the wholesale market (in some cases, farmers bring the seeds directly to the processing plant).

Sesame seeds and especially processed products are sold at supermarkets and local retailers, whilst sesame seeds and processed products sorted by intermediaries are exported to overseas markets. The main distribution channels of sesame are shown below:

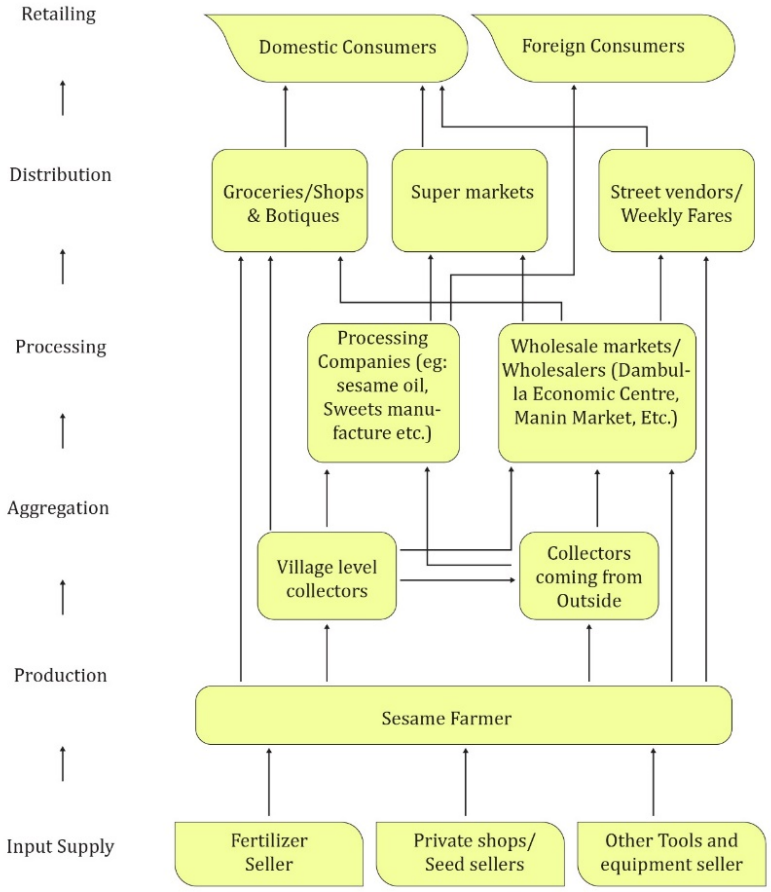


Figure 6.2.5 Major Value Chain Diagram - Sesame

Source: JICA Survey Team

(6) Milk

The main distribution channels of milk are shown on the next page:

Both the government and private sectors are involved in the supply of input materials, providing services such as vaccinations and artificial insemination, as well as selling livestock medicines and feeds. Producers, primarily small-scale dairy farmers, are prevalent, but government-owned NLDB possesses its own farms and takes charge of production, processing, and sales. The survey revealed that majority of buyers/ intermediaries have threshold of below 20 number of farmers whilst only 15% has a threshold more than 120 dairy farmers.

The milk collection is conducted in two steps: (i) Village-level collection (usually managed by collectors or farmers' cooperative societies, where the cold chain is not well-developed), and (ii) Bulk collection (processing companies conduct the second stage of collection at collection centers they own). Then, the milk is transported with refrigerated trucks to central chilling centers or processing centers or particular companies/ processors. Majority of the intermediaries are handling more than 15,000 liters of milk annually, whilst same percentage of intermediaries are handling less than 3,000 liters annually. The average amount of milk handled by each collector annually is around 16,000 liters. Majority of the buyers represent "other" category in the sample. It includes LIBCO, hotels, schools, etc. Similarly, milk processing companies and shops/ boutiques are popular buyers of milk in the value chain.

Various players are involved in milk processing industry: major national and international companies, like Nestle Lanka, Pelwatte Dairies, Cargills (Kothmale) and RichLife, as well as government-affiliated enterprises like MILCO (Ambewela) and NLDB, and cooperatives at the provincial and district levels.

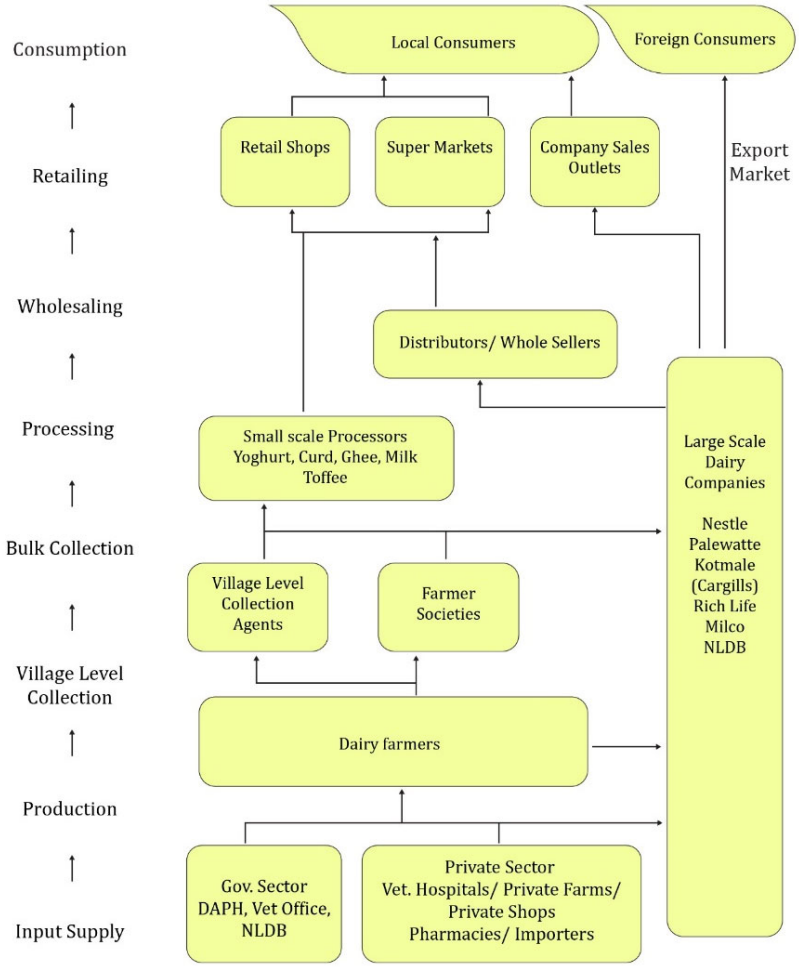


Figure 6.2.6 Major Value Chain Diagram - Milk

Source: JICA Survey Team

Due to underdeveloped cold chains at the retail stage, most milk is sold as long-life milk (this case is different in Northern Province since the fresh milk consumption is relatively high). Various processed products such as yogurt, cheese, curd and ghee are also manufactured. Products are distributed through wholesalers to retail stores and/ or supermarkets, and/or processing companies may sell directly through their retail outlets. While most dairy products are for domestic consumption, some are exported to overseas like the Maldives. Additionally, milk produced in the Northern and North Central Provinces may be processed in other states and circulated back to the region.

(7) Moringa

Most farmers grow moringa for producing drumsticks, not Moringa leaves. On the other hand, the growing demand for powdered Moringa leaves in the world market had triggered the cultivation of moringa for harvesting the leaves. In most cases, pesticides and fertilizers are not used in the production, and organic fertilizers made from cattle manure and other materials are used. Hence, input supply does not play a major role in the moringa value chain.

With the increasing demand for moringa in the global market, the cultivation of hybrid varieties has gradually started in the Northern Province. However, the majority of farmers are either using stems separated from the mother plant and/or purchasing hybrid seeds from the market. The survey revealed that more than 90% of farmers grow less than 1 acre and only 8% grow more than 1 acre for commercial purposes.

Drumsticks are sold by collectors and wholesalers at the village level who sell their products to wholesalers in Dambulla, Tambuttegama, and Manin markets, and to various stakeholders such as street vendors and retail supermarkets. Moringa leaves are exported to foreign markets through processors/exporters. There are also two such processors/exporters in the Kilinochchi region. One of them produces moringa leaf powder in Mannar district and sells it in local supermarkets. They obtain the leaves from village-level collectors in the region.

The main distribution channels of moringa are shown below:

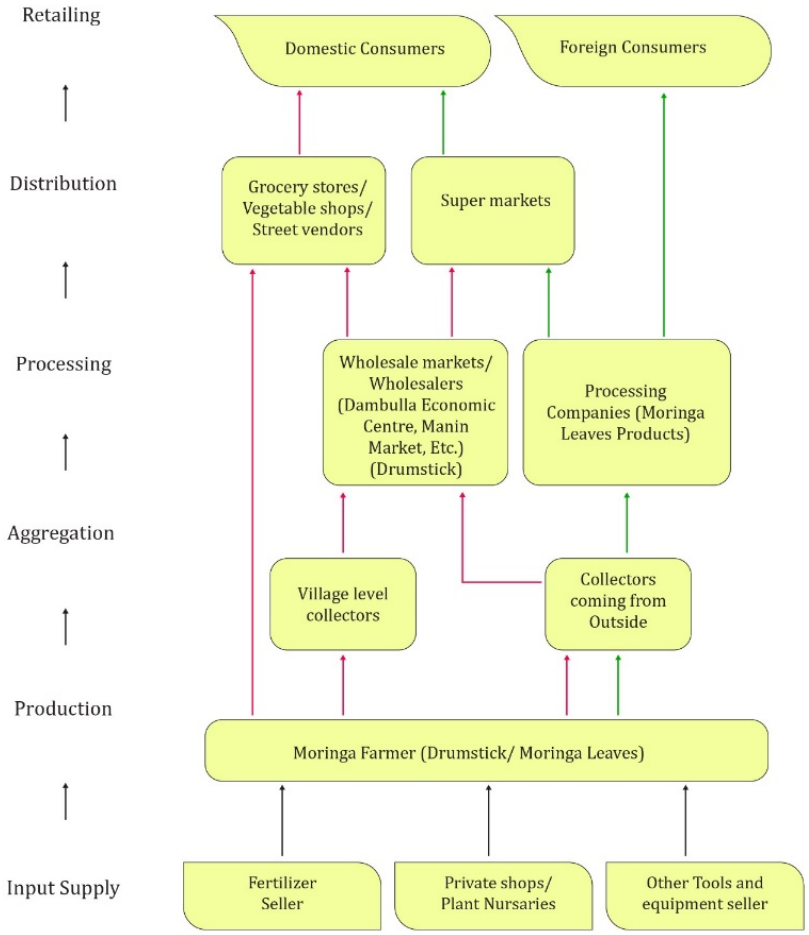


Figure 6.2.7 Major Value Chain Diagram - Moringa

Source: JICA Survey Team

6.3 Challenges for Promotion of FVC of Recommended Agricultural and Livestock Commodities

The specific challenges related to the seven shortlisted agricultural and livestock commodities, of which six are common in each province, are summarized below:

(1) Chili

Green chilies are almost 100% domestically produced, while dried red chilies are mostly (95%) imported. Red chilies are imported from overseas and basically processed domestically. 20 years ago, approx. 50% of red chilies were domestically produced, but farmers tend to prefer to harvest as green chilies due to comparative high yield.

As a government initiative, the ASMP has been making efforts to promote Chile clusters where 1st, 2nd and 3rd harvest are for green chilies and next harvests are for red chilies. ASMP has demonstrated the

drip irrigation, introduction of guidelines for chemical fertilizers and pesticides usage, introduction of net cultivation (net fence) for the prevention of pests and diseases, and the improvement of yield by dense planting.

Prices of chilies fluctuate significantly. By introducing dryers and warehouses to dry and store chilies when prices are low, it is possible to control supply and optimize the supply-demand balance. Currently, many chilies are dried under the sun, and there is a risk of mold growth due to insufficient drying and contact with soil. In this perspective, it is reasonable to strengthen red chilies production by adequately addressing the acceptable drying and storage facilities.

Knowing is One Thing, Doing is Another

According to a farming instructor at the chili cluster under the ASMP, there are some cases where the appropriate cultivation method is not always followed even if the cultivation method is taught.

Reasons are as follows: Inaccurate operation such as ridges being lower than the appropriate height, failure to properly repair the damage to the infrastructure given at the beginning of the project, different cultivation methods from those of agriculture extension staffs of the Ministry of Agriculture in which it is difficult for farmers to stick to a different way, farmers join the project in the middle and right technology is not fully disseminated.

It is suggested that knowing the technology and doing the technology have different mechanisms, and that it is necessary to consider the measures for each.

Table 6.3.1 Challenges in Chili Value Chain

FVC	Challenge
Finance	- Struggling to finance working capital due to increased labor and transportation costs. - Shortage of funds required for capital investment for drip irrigation, sprinkler irrigation and net around the field to increase productivity. - Shortage of funds required for capital investment for a dryer to improve postharvest quality.
Input	- High cost of chemical fertilizers and pesticides to prevent diseases. - High cost of house cultivation and net cultivation to prevent pests and diseases.
Production	- A prevalent disease that causes the leaves to curl up and production is declining. It also causes spoiled appearance and less competitive quality comparing to imported products. Chemical fertilizers, agricultural chemicals, house cultivation and net cultivation can prevent diseases, but their use is limited from the viewpoint of high cost and limited cash flow. - The height of the ridges is also an important factor for disease prevention, but mostly the height guidelines were not appropriately followed. - The contradiction between cultivation methods recommended by extension staff of ASMP and the Ministry of Agriculture is a hindrance to thorough stipulated cultivation method. - Less competitiveness of domestic dried red chilies comparing to imported chilies from India and/or Pakistan. The color of local production degrades during drying, storage and transportation. - Sun-drying being not sufficient way to dry chilies. It may result in generating considerable amount aflatoxins, discoloring and post-harvest loss. - Significant price fluctuations. - Production losses due to heat in Northern Province (can be controlled by sprinkler irrigation). - No thorough application of appropriate variety, MICH2, which is the small, drought-tolerant and preferred in the Northern Province rather than the large, mainstay variety.
Processing	- Limited application/ access of dryers.

Source: JICA Survey Team

(2) Mango

Irrigation facilities are essential that requires an initial investment. Further, there is a requirement of maintaining a fund that requires to cover-up essential maintenance and other recurrent expenditures, since there is no income for several years (approx. 3 years). There is also room for improvement in cultivation methods. For example, there are cases where the importance of pruning is not recognized and is not done properly. The usage of fruit covering bag is a necessity. Failing with usage of fruit covering bags owing with limited availability and increased price are challenges recently. There are also challenges such as the lack of technical know-how for large-scale production and the high cost to obtain organic certification for small-scale farmers.

Use of overseas experience

An organic mango growing company in Northern Province, operates five plantations. The total agricultural land area, including leases, is 48 acres, and the field is still being expanded. The company's president is a Sri Lankan, but he started his own business in the United States and Malaysia, and then in Sri Lanka. The company is using the president's overseas network to develop export markets. It has already exported to the United States, Europe, Dubai and Malaysia. According to the buyer, if the quality of mango and packing is improved, the shipment can be increased.

The Sri Lankan government does not have the technical know-how for large-scale commercial cultivation, and the know-how for large-scale cultivation came from information exchanges with Indian companies. Drip irrigation equipment is also imported from India.

It can be said that the key to the success of the business was to network with overseas countries, collect needs through such networks, and utilize knowledge of overseas cultivation techniques.

Lack of training programmes for processors is also a challenge. Although some mango juice and dehydrated mango processors exist, the number is insufficient. Currently, there is a limitation of exporting fresh fruit directly to many countries due to fruit flies and local varieties (such as Karthakolomban) cannot keep a considerable time that required for long distance shipments. Hence, it is important to develop more numbers of processors and expand sales channels.

Regarding exports, there are problems such as insufficient laboratory equipment for detecting pesticide residues and high user fees for it. As mentioned above, fruit cannot be exported to Japan due to the risk of fruit flies' contamination. To overcome fruit flies, it is necessary not only to introduce vapor fumigation facilities, but also to confirm that all species of fruit flies present in Sri Lanka can be treated completely by the facility. The establishment of a quarantine system is required.

Table 6.3.2 Challenges in Mango Value Chain

FVC	Challenges
Infrastructure	- Necessity of drip irrigation though water usage is limited in Northern and North Central Provinces.
Finance	- High initial cost involved in introducing drip irrigation which is essential for mango cultivation. - Requirement of a fund for several years from planting to harvesting since no income is available during this period.
Input	- Shortage of fruit covering bags because bags are imported (foreign currency shortage) and the bag cost also increased. Without using bags, the fruit color will not unique that requires for grade as export quality.
Production	- Lack of awareness of importance of pruning, which specifically important for TJC varieties. With production at GAP reaching 10 ton/ac, there is much room for improvement in productivity. - Lack of research and development and thereby lacking the know-how for large-scale commercial production in the government and others. - Expensive electricity cost for operating irrigation. - Large post-harvest losses since the fruits are stored at room temperature. - Short freshness date of the Karthakolomban variety (it gets overripe in about 3 days). - Lack of farmer awareness to obtain organic certifications, appropriate use of fertilizers and pesticides, knowledge of soil science, etc.

FVC	Challenges
	- High cost of organic certification which is about one million rupees. It is particularly inefficient for small individual farmers to acquire. It is possible to apply as a farmer group, and it is rational to organize and commercialize farmers.
Processing	- Few processors (Some processors exist, such as JACHUFI in Jaffna, produce mango juice)
Distribution	- Low selling price to other buyers, while Keels and Cargills offer higher prices for first-class products (Retail price 650Rp/kg). The issue is to expand high-priced sales channels, including exports. - Shortage of packaging materials and appropriate storage facilities.
Exportation	- Lack/shortage and high cost of labs such as pesticide residue testing. A company uses government-affiliated labs, but since the user fee is 2~3 times higher than in India, it has introduced small-scale testing facilities into its own factories. - Export ban due to fruit flies. Due to the possibility of contamination of fruit flies, some countries, including Japan, banned importing the fresh fruit under the quarantine system.

Source: JICA Survey Team

(3) Cinnamon

Cinnamon is one of the main spices used in Sri Lankan cuisine and has long been a crop produced in Sri Lanka. In addition to domestic consumption, there is international market share nearly 10% of world cinnamon supply. There are different surveys by various donors have been conducted in addition to surveys conducted by JICA. The Government of Sri Lanka is also making efforts to promote exports as a major export item due to the expected long-term demand. In September 2023, the Cinnamon Development Department was established as a government department independent from the Department of Export Agriculture under the Ministry of Plantation Industry.

Presently, the main cinnamon production area in Sri Lanka is the Southern Province. In the Northern part of the country, pilot cultivation started around 2019, and harvesting has started in recent years. Cinnamon requires irrigation for three years since plantation, but after that it can grow under minimal irrigation. There is a significant potential for cultivation of cinnamon in the Northern and North Central Provinces. Before promoting commercial cultivation in the Northern Province and the North Central Province, it is necessary to establish guidelines and best practices for cultivation systems such as varieties and fertilizers that take into account that suit with the local soil and climate conditions.

Potential of new crops (cinnamon)

Although cinnamon has long been produced in Sri Lanka, its production is centered in the south and it is a new crop in North. Therefore, in addition to cultivation systems suitable for northern climates and soils, new value chains need to be established. In terms of distribution, the farmers who conducted the interviews were farmers who had moved from the south, and they brought the products to the south by themselves from neighboring farmers and sold them through the value chain in the south. In addition, as for the processing, we have hired peeling skilled labors from the south, whose wages are as much as half of the cinnamon selling price.

Although the cultivation of cinnamon produced in the Northern Province is still in its infancy, some people say that it is possible to produce a cinnamon that is higher in flavor and comparable in quality to the one produced in the south, and that it is possible to introduce a technology to directly press oil without peeling. Therefore, it is possible to consider not only following the shape of the value chain in the south, but also using the strengths of the Northern Province where the value chain will be built.

Cinnamon requires peeling to remove the bark after harvesting. This labor-intensive peeling considered as a specialized skill, and those skilled workers are presently concentrated in the Southern Province. The peelers from the Southern region are invited for peeling when cinnamon is harvested in the Northern Province and the North Central Province. The training of Peelers in the Northern Province and the North Central Province is a challenge. The majority of cinnamon is exported as peeled cinnamon sticks without any value addition. There is a lack of facilities and inspection equipment available on commercial basis

for processing such as cinnamon oil.

Cinnamon grown in Sri Lanka is an indigenous Sri Lankan variety called Ceylon true cinnamon. Although, Ceylon true cinnamon has superior quality characteristics compared to Cassia (approx. 90% of the market share). Ceylon cinnamon has properties such as high aroma and low content of coumarin (harmful ingredient). However, the difference between Cassia and Ceylon true cinnamon is not fully recognized in the market, and it is not competitive with Cassia, which is low in price. 60% of Sri Lankan cinnamon is exported to Mexico. In order to promote Ceylon true cinnamon in the high-end market, Geographical Indication (GI) certification has been obtained for Ceylon true cinnamon with the support of EU-Sri Lanka Trade Assistance Project by UNIDO and the EU.

The main challenges in the cinnamon value chain are shown in the table below:

Table 6.3.3 Challenges in Cinnamon Value Chain

FVC	Challenges
Infrastructure	- Irrigation is essential for initial three years after plantation. - The soil must be at least 1 meter deep enough for cinnamon to take firm roots.
Finance	- Insufficient access to low-interest loans required for initial investment such as land preparation and purchasing seedlings. An initial operating fund is also required (during first 3 years) between the period of plantation and harvesting.
Input	- Lack of research and facilities for vegetative propagation and breeding. - Non-availability of proper fertilizer recommendations which suitable for the Northern and North Central Provinces.
Production	- No processing has been carried out in the Northern and North Central Provinces, and no suitable production system has been formally established. - Since the cinnamon is a perennial crop and it takes some time to make income from planting, the promotion of cinnamon cultivation is extinctive for non-cinnamon traditional farmers (reluctance for changing from traditional crop cultivation to new cinnamon cultivation).
Collection	- As VC is not developed in the Northern and North-Central Provinces, the peeled cinnamon is transported and distributed through VC developed in the Southern Province. - In some cases, farmers from the Southern Province who migrated to the Northern and North Central Provinces collect cinnamons from neighboring farmers and selling to traders in the Southern Province.
Processing	- Peelers are concentrated in the Southern Province, and there is a shortage of peelers. The wages of peelers who come to work from the Southern Province are very high, which hinders the income of farmers. - Peeling is done by traditional methods, and there is no progress in passing the technology onto the younger generation. - Most cinnamon is exported as unprocessed (cinnamon sticks, etc.) cinnamon, and processing such as oil extraction is not much developed at the commercial level. - There is a delay in payment from the buyers.
Distribution	- High transportation cost.
Exportation	- The price difference between Cassia and Ceylon true cinnamon is several folds, and less competitive in the market. - Ceylon cinnamon is not sufficiently differentiated from Cassia in terms of its chemical ingredients, medicinal values. There is a lack of efforts to reach market segments that who are affordable with high-quality products.
Retail	- High price volatility.
Others	- Geographical Indication (GI) has been obtained in 2022 for Ceylon true cinnamon; however, export promotion using GI has to be mainstreamed. - When an exporter buys directly from a producer, the exporter set buying price and the producer's profit is limited.

Source: JICA Survey Team

(4) Turmeric

Like cinnamon, turmeric is an essential spice in Sri Lankan cuisine and is widely distributed in Sri Lanka. Although it was originally an imported crop, the price of domestic turmeric soared after it became subject to import regulations in 2020. The cultivation area and production of turmeric increased rapidly in combination with the promotion of cultivation by the government. Although domestic production increased to meet domestic demand in 2021, the price of domestic turmeric collapsed due to a rapid increase in production and the resumption of imports.

Because turmeric is an annual crop, it can be grown as an alternative to other crops (Beans, maize, peppers, onions, etc.). The cost of production of Sri Lankan turmeric is very high and is losing ground in price competition with other countries, particularly India. The main cost factors are productivity, production scale and labor costs. Due to the distribution of imported turmeric, some farmers have withdrawn from turmeric production because the selling price could not match with the cost of production.

Importance of Marketing (Turmeric)

There was a rapid increase in Turmeric production owing with import restrictions in 2019. Although so much turmeric is being produced in Sri Lanka, imported turmeric is dominating the market, and there is a need to expand its sales channels.

Although Sri Lankan turmeric is inferior to imported turmeric in terms of size and price, it has an advantage in terms of chemical composition and pesticide residues. Some processors are producing processed products such as turmeric tea, turmeric capsules, and syrups. Promotion to Sri Lankan turmeric to markets that are particularly health conscious.

Turmeric is often dried and traded in powder form, but basic processing facilities such as drying and slicing are in great demand. There is also a lack of equipment for the commercial use of high-tech technologies such as oil extraction and capsules. The imported turmeric is particularly popular for its bright yellow color (due to low curcumin), and many people prefer imported turmeric than domestic turmeric.

Sri Lankan turmeric is high in quality because it contains many nutrients such as curcumin and piperine. Although there is demand for such ingredients in Europe and other countries, export flows have not been established and there has been no progress in the expansion of such ingredients into overseas markets. Another problem is that there are only a few dealers who handle turmeric, and it is necessary to find new sales destinations including related processed products.

Table 6.3.4 Challenges in Turmeric Value Chain

FVC	Challenges
Infrastructure	- Some irrigation is required.
Finance	- There is a lack of funds for scaling up production and implementing GAP. - The period until harvest (8 months) is long and cash flow is difficult.
Input	- Input cost is high.
Production	- High production costs (Especially compare to India). - During the import ban in 2019, production surged, and sales prices plunged. It is necessary to promote systematic cultivation. - Since the land occupation period of the crop is ling, there is significant opportunity cost. - The yield depends on the weather conditions. - There is a shortage of producers.
Collection	- N/A
Processing	- Lack of equipment for basic processing (drying and slicing). - The short supply of commercial-level high-tech equipment such as oil extraction and capsules. - Low interest in value-added and product development. - Lack of Knowledge of proper processing for export.
Distribution	- N/A

FVC	Challenges
Exportation	- Compared to the Indian product, it is outperforming in size and price competitiveness. - Although Sri Lankan turmeric is superior to the Indian variety in terms of chemical composition and the amount of pesticides used, but it does not have sufficient promotion. - There is no established export route for turmeric, such as Europe, which is highly interested in its nutritional contents. - There are no user-friendly laboratories for testing chemicals residuals (testing is done in overseas).
Retail	- The price of imported turmeric from India is low and it is difficult to create demand for domestic turmeric. - Indian yellowish turmeric is much preferred than Sri Lankan orange color (dark yellow) even in the domestic market. - The number of vendors is small.
Others	- It is necessary to expand exports by taking advantage of the nutritional content of Curcumin and Piperine and the quality of the production. - Production and prices are heavily influenced by policy.

Source: JICA Survey Team

(5) Sesame

Sesame is mainly produced in the Northern Province and North Central Province. Sesame oil is the preferred cooking oil in Northern Province which has a large Tamil population. Also, there are traditional sesame confectionery available in NP that resulted in a large demand for sesame. Sesame VC is characterized by the fact that it is grown as a subsidiary crop to the main field crops (maize and rain-fed rice). The cultivation is done with limited inputs and thereby investment. The rainfall is the major factor that decides the volume of harvest.

On the other hand, sesame has high potential for exportation due to the tight global supply-demand balance. Although Sri Lanka is not a major sesame exporter, Japanese trading companies operating in Sri Lanka consider it as one of the commodities with high export potential. However, it is necessary to meet the quality standards (color, acidity, grain quality, pesticide residues, moldy smell, etc.) required for the international market, especially for Japan. Further, it is necessary to broaden the base of VC by providing farmers with technical (cultivation and post-harvest processing) and financial support to shift to a more commercial form of cultivation in the event trying to expand the exportation. This includes encouraging the production of highly homogeneous sesame through the dissemination of superior varieties.

Market Size and Price Stability (Sesame)

There is a close relationship between market size and price stability. According to a Japanese trading company, there have been cases of traders using warehouses to buy up sesame seeds from specific regions in order to drive up prices, resulting in sales prices in Sri Lanka deviating from international price trends. This is considered to be an indication of the high volatility of the market, which is significantly influenced by the movements of specific traders due to the small size of the market.

Under these circumstances, expanding the market to an appropriate size through production expansion is expected to lead to price stabilization (in line with international prices), which in turn is expected to have a positive effect to the farm management of farmers and FVC-related parties.

Another common challenge to all export items is the lack of user-friendly laboratories to test for pesticide residues and fungal toxins, etc. Although there are international laboratories such as SGS, they send samples to other countries for some test items, which ultimately leads to high costs. In addition, government-affiliated inspection laboratory such as ITI are avoided because the time required for testing is unreadable.

The challenges in terms of production are to break away from the extensive cultivation style and improve technology to ensure quality and quantity suitable for export. The challenges in terms of demand includes ensuring traceability and improving inspection systems to monitor proper management by such

producers. The main challenges in the sesame value chain are listed in the table below:

Table 6.3.5 Challenges in Sesame Value Chain

FVC	Challenges
Infrastructure	- Plantation sites larger than 50 ac are mainly limited to domestic companies. - Chena cultivation is common, but there are restrictions on new land development (deforestation) for Chena.
Finance	- Limited access to funds for land development, purchase of quality seeds, and machinery for farmland maintenance.
Input	- Many farmers are using seeds from the previous cropping and are not utilizing quality seeds. - Seed is not much available in the market at the beginning of the cropping season. - DOA recommends white sesame, but black sesame is commonly used in Jaffna (white sesame in Kilinochchi). In addition, DOA seed distribution tends to be delayed and may not be available in time of cultivation. - It has been pointed out that white sesame varieties recommended by DOA had low yields. This was due to the higher plant height and different seed maturity at the top and the bottom, which lowers the real yield that can be sold.
Production	- Yields are highly dependent on the rainfall pattern of the year, with yields increasing significantly when there is moderate rainfall during the flowering period, but yields drop significantly or are devastated when there is no rainfall or excessive rainfall at that time. - Wind damage is prevailing if sowing is delayed. - Post-harvest processing (drying and simple winnowing) is done by farmers, so quality is dependent with methods used by individual farmers.
Collection	- Payments to farmers sometimes delayed for several months.
Processing	- The processing sector is not fully commercialized, as farmers themselves bring the oil to the market after they have processed at the mill.
Distribution	- Processors sell their products to restaurants etc., and many of these products are sold within a small commercial area (Northern Province). - The risk of food loss is not high because the sesame is distributed in dried condition (although there is an effect of oxidation and deterioration of quality). - Since the overall distribution volume of the country is not so large, some buyouts may occur and thus the market price behaves differently from the international market.
Exportation	- Since products are carried by container for export, it is necessary to secure enough sesame seeds to fill at least one container. - For products that are consumed in the form of sesame seed, such as roasted sesame, color and other factors are also important (darker black sesame). - Sesame is traded as the lower-priced “mixed” category, which is used only for oil extraction, since there are no color sorters available in Sri Lanka, - Sesame seeds with a high acid value are rejected. This is affected by post-harvest processing methods, and appropriate drying methods must be practiced. - In the international market, the pesticide residues and traceability are important (in some cases, sesame seeds from other countries have been found to contain pesticide residues and fungal toxins exceeding the standards in Japan, resulting in a ship-back). - Some pesticide inspections for export are conducted in other countries, such as India (there are no laboratories in Sri Lanka that can fully meet the needs of companies in terms of cost, delivery time, inspection items, etc.).
Retail	- N/A
Others	- In terms of exports to Japan, there is a record of exporting brown sesame seeds as a raw material for sesame oil pressing. The Japanese market (total demand) for black sesame is 7,000mt/year, while that for raw materials for oil extraction is about 100,000mt/year.

Source: JICA Survey Team

(6) Milk

Being the major dairy producing region in Sri Lanka, dairy farming is one of the most important agricultural and livestock commodities in the Northern and North Central Provinces. Various donors are providing assistance to strengthen the dairy industry, including a technical cooperation project by JICA. However, the dairy farming in the area is extensive. More than 90% of dairy farms are being characterized with “farming as their main occupation”, “the number of cows per household is only 2-3 heads”, “free grazing on open land and not much use of concentrated feed”, “no cattle shed are used but only fencing”, and “low productivities of the cattle”.

Aforementioned low productivity (2-3 liters/head/day) caused due to many factors such as shortage of maize feed, inadequate artificial insemination services associated with the impact of the economic crisis that resulted in import restrictions. Further, there have been incidents of significant health problems (and even deaths) of cows due to the smuggling in of inferior mash feed.

As for the structure of the milk supply chain for processors, there are no refrigeration facilities up to the primary collection facilities, and the cold chain is developed from the secondary collection facilities called collection centers. Since there is no inspection of each individual farmer's milk (due to the small volume, milk from several farmers must be collected in one container), there are many cases where milk is adulterated by mixing water, sugar, salt, etc. (In the case of a dairy cooperative in the Northern Province, about 300 liters per day is discarded).

In addition, the dairy farmers do not milk their cows in the afternoon due to lack of chilling facilities. From the processor's point of view, the evening milking is not cost effective to collect. To overcome this problem, it is necessary to refrigerate evening milk, but the lack of such refrigeration facilities is a challenge.

With recent import restrictions of powdered milk from other countries, demand for domestic raw milk for consumption as fresh milk and as a raw material for the production of variety of dairy products has been increased. The competition to secure this raw milk supply has become competitive among several processors. However, domestic milk supply is insufficient to meet the processing capacity of processors (although the purchase price from dairy farmers is increasing, the increase in retail price is detrimental to consumers and demand will fall).

In addition to this supply chain to processors, there is also a local consumption channel, especially in the Northern Province. Kiosks in town (stores run by dairy cooperatives, etc.) collect (pick up) and retail milk at the same place. Producers come to sell milk in plastic bottles and transfer it to 40-liter containers. When consumers come to buy milk, the milk is scooped out of the container and sold in the required quantity. Since the milk is literally raw, consumers must boil it before consuming it. But this is not a very desirable form of milk production from a hygiene management standpoint.

In addition to the issues listed here, further improvement of administrative services, such as strengthening the system of artificial insemination

Selection and Concentration for Dairy Sector Modernization (Milk)

In the dairy sector, the production system has not yet been established to meet the growing demand, and the production sub-sector is the biggest bottleneck. This is symbolized by the current situation where crop farmers are raising cows as a “dual occupation”, with only 2-3 cows on free pasture. These traditional farmers are unable to break out of their current situation because of their limited willingness to invest and ability to expand production.

In response, a major dairy manufacturer is proposing to select motivated dairy farmers and provide them with various types of support for breeding, feeding methods, and rearing environment improvement. The private sector can reasonably provide support and investment to those producers who are working toward such modernization.

Although there may be tradeoffs in the context of poverty reduction and FVC development, “selection and concentration” shall be considered for the improvement of the FVC.

services and sanitary management of dairy cows (including vaccination and improvement of the environment), is also an issue. The challenges in the dairy sector are wide-ranging. On the demand side, the immediate challenge is to secure sufficient quantities of high-quality milk (enough to meet processing capacity). The main challenges in the milk value chain are listed in the table below:

Table 6.3.6 Challenges in Milk Value Chain

FVC	Challenges
Infrastructure	- Pastureland is limited, and thus farmland, and open forests, etc. are used as grazing lands.
Finance	- Limited access to finance makes it difficult to introduce improved varieties and apply productive technologies. - Some processors offer subsidies or technical assistance for the purchase of goods, but no companies have been identified that offer loans (because it is difficult to recover the money if milk is sold to other traders).
Input	- Many feed items, such as soybeans, are dependent on imports, and foreign currency fluctuations/ shortage does a large impact. - Even maize is produced domestically, the price is significantly determined with cost involved in importation of seeds and fertilizers. Hence, there is a significant impact of price hikes for such materials. - Maize is dried under the sun, which has a risk in aflatoxin outbreaks (high demand for dryers). - The quality of feed is unreliable, as there have been cases of cows dying after feeding some feed (mash feed) (mold toxin outbreaks, etc., are suspected).
Production	- More than 90% of the dairy farmers have an extensive system; the number of cows is small (often about 2-3 cows per household), and productivity of dairy cows is low (about 3 liters/cow/day) due to lack of progress in introducing improved breeds and improving feeding and management methods. - Dairy farmers have undesirable rearing conditions, such as no roof over the rearing area and no facilities for 24-hour water supply. - Many dairy farmers are mainly engaged in agriculture and cannot manage and milk their cows during the high farming season (from May to August), resulting in a drop in milk production. - Since grazing on farmland is prohibited during the farming season, cows are evacuated to other areas during this time (e.g., non-cultivated land along the coast) and therefore they are not milked. - Evening milking is not practiced since milk is collected during morning and the unavailability of chilling facilities for storing of evening milk (which require lower temperature control than a typical refrigerator). - The economic crisis has reduced the number of artificial inseminations performed. - Lack of understanding among dairy farmers on the importance of vaccination and lack of progress in free vaccination. - Securing pastureland, expanding feed production, and introducing improved breeds are necessary to expand production.
Collection	<Collection from producers to processors> - There are no chilling facilities at primary collection points (collection centers at secondary collection points have chilling facilities). - Containers brought in by farmers are not adequately cleaned and there are hygiene concerns. - Adulteration with water, sugar, salt, etc. is common, making quality control difficult (if found during inspection, all milk in the container will be discarded, resulting in losses). - Few farmers milk in the evening, so there is no advantage to collecting milk in the evening (demand side viewpoint). - No advantage to evening milking due to lack of evening collections and no chilling facilities (producers' viewpoint)
Processing	- The challenge is to secure volume due to the shortage in milk production and the

FVC	Challenges
	significant decrease in milk powder imports. There is excessive competition among processors to secure raw milk supply (processing capacity is not being met). - Packaging technology is old (no new investment). - Need to collect milk from small dairy farmers and economies of scale are low. - Not much production of milk for refrigerated use, concerning the lack of refrigeration facilities.
Distribution	<Distribution from processors to retailers> - Cold chain is not sufficient (some companies transport yogurt and other products by reefer truck. But milk is mainly long-life products). - Some amount of milk produced in the Northern and North Central Provinces is processed in the other provinces such as the Western Province, etc., and then distributed back to the area (not all though).
Exportation	- N/A
Retail	- Imports of milk powder are decreasing, and retail prices are increasing. - The economic crisis has reduced the purchasing power of customers, resulting in lower demand. - Quality control is not stable due to the fact that milk is collected from producers and retailed at the same store, lack of quality inspection, and lack of chilling facilities (in Jaffna, Northern Province, it is common to buy unpasteurized raw milk and pasteurize it at home for consumption).
Others	- The milk value chain is changing due to import restrictions on powdered milk.

Source: JICA Survey Team

(7) Moringa

Moringa, also called “drumstick” because of the shape of its fruit, is often consumed in Sri Lanka as an ingredient in curry, sambal, and other dishes. In many households, one or two trees are planted in the fences, and the “drumstick” fruit is a familiar part of the tree. On the other hand, its “leaves” have been attracting attention in recent years as a super-food with high nutritional value, but this VC is still immature, making it a highly novel item. In recent years, there have been some new businesses in the target area that utilize the leaf part of the moringa plant. This part is a summary of the issues based on the information obtained from these few business players for predicting the potential for VC development in the future.

Moringa leaves are used as an ingredient in healthy products, so it is necessary to obtain certification to ensure safety and to prove it. If an organic certificate is required, the water source must be identified/evaluated, and therefore cultivation using gravity irrigation from reservoirs is restricted (i.e., not certified). Similarly, certification does not allow the use of pesticides and fertilizers, which requires a great deal of labor for weed management, and its management is not easy because of the damage caused by insect pests. Furthermore, commercial cultivation requires the securing of organic fertilizers to replace the chemical fertilizer.

In addition, because the product is intended for overseas consumption, the materials required for processing (tea bags, etc.) must be of high quality, and the cost is also high because of the need to rely on imported products. Procurement of leaves from existing drumstick farmers could be considered in order to secure sufficient production, but this is discouraged because the production of fruits (drumsticks) is reduced when the leaves are harvested.

Thus, the challenge is the high level of requirements in both the production and processing sectors, as moringa (leaves) is a commodity for the high-end market, especially for export. While it is acknowledged that the market is growing, the cost of certification and laboratory testing are significant challenges.

Table 6.3.7 Challenges in Moringa Value Chain

FVC	Challenges
Infrastructure	- Water sources must be limited for organic cultivation. Water cannot be drawn from reservoirs (common water sources) due to the possibility of mixing pesticides and chemical fertilizers. As a result, it is difficult to obtain organic certification in areas such as the Mahaweli irrigation schemes. - As the land ownership and leasing procedures are complicated, it is difficult to secure a cultivation area. Especially in the Chena area, it takes time to confirm the ownership of the land use rights.
Finance	- Different banks have different attitudes toward lending (some are reluctant to lend to women business owners, while some banks are proactive in supporting women business owners).
Input	- There is damage by caterpillars in certain periods of the year, which requires the use of insecticides, but the cost of these insecticides is increasing dramatically. - The cost of triangular tea bags is high: USD 0.09 per nylon bag is subject to a 78% tariff. - There is high demand for plant-fiber tea bags, but they are twice the price of nylon tea bags.
Production	- Cultivation by individual farmers is a challenge due to increased production costs; difficult to pass on to retail prices. - Harvesting the leaves reduces the yield of the fruit (drumsticks), so there is competition between the two. - Weed management is difficult because pesticides cannot be used for export. - Technical support from the government cannot be immediately expected because it is a new type of crop. - Some farmers use fertilizers and pesticides, but in such cases, they cannot sell to companies that trademark “organic” or “natural-grown”. Since the products are mostly for export, there are restrictions on the form of cultivation. - It is difficult to obtain organic certification in the cultivation sector, and thus certification is limited only to processing at this moment.
Collection	- N/A
Processing	- The off-season is from November to January, which means lower machine utilization in the processing plant. Processing of other items is possible and should be incorporated into the processing plan. - Quality control issues when packaging (enclosing tea leaves in triangular tea bags) was outsourced, the client cancelled the order because of insect infestation. - Smaller processing plants are developing their business by trial-and-error manner, selecting processing machinery and establishing protocols by themselves. - Organic certification must be renewed every year, and a renewal fee is costly, which forces companies to focus on organic certification for a specific market only (a hindrance to market expansion).
Distribution	- Matching between suppliers and buyers is important because transactions are on negotiation basis not through wholesale market. - High price fluctuation (prices rise and fall between 50 and 1,500 rps/kg).
Exportation	- High cost involved in certification, since most of the products are for export to the US, Maldives, Canada, UK, etc., or for the domestic high-end market, it is necessary to obtain various certifications such as ISO, HACCP, CMP, EU Organic, USDA Organic, etc. - The overseas organic market is expected to see an increase in demand in the future, but supply is not keeping up with demand. - Japan is also seen as an important market, but there is a lack of market information on what kind of demand is there. - There are no laboratories nearby to conduct microbiology tests or ingredient analysis tests, and private laboratories in Colombo are expensive.

FVC	Challenges
Retail	- The capsules are large and thick, so it is questionable whether they are suitable for the tastes of consumers in the high-end market.
Others	- N/A

Source: JICA Survey Team

6.4 Summary of the Challenges

(1) Summary of the Challenges by Commodity

In 6.3, the challenges at each stage of the FVC for each of the recommended/ shortlisted agricultural and livestock commodities were presented. Table below summarizes the essence of the challenges for each commodity based on those complex and multi-layered issues/ challenges.

Table 6.4.1 Summary of the Challenges for the Recommended/ Shortlisted Seven Commodities

Commodity	Summary of the Issues
Chili	There are various efforts to import substitution. While there are many positive attributes of domestic production in terms of taste, such as a strong pungent taste, the quality (color, spotting, etc.) and the price is inferior to imported products. Post-harvest processing and drying are important for improving quality and value addition, but mechanization of drying is lagging behind.
Mango	There are locally developed varieties such as TJC varieties, which have potential for export since they can be shipped during the off-season in India. Sales in high price are expected, but the production system is not comprehensive (i.e., pruning and bagging) and quality shall be improved. High cost involved in fumigation and laboratory testing is a bottleneck for promotion of exportation.
Cinnamon	Although it is a new crop in the survey area, its potential is recognized through pilot cultivations. The key is to establishment cultivation guidelines suitable for the area. Ceylon cinnamon's superiority (high active ingredients) has not been well publicized in the international market, and it is inferior to Cassia from other countries (due to price advantage). A bottleneck is the lack of peeling technicians.
Turmeric	The policy to prevent outflow of foreign currency affected; it left a bad image for producers. The product has a low comparative advantage in terms of color, being inferior to Indian (yellow) products. Poor quality due to sun-drying is also a cause of low sales prices, which further reduces the motivation for production.
Sesame	Production is unstable due to dependence on rainwater. There is much room for improvement in quality through the use of improved varieties. Lack of color sorting machines hinders market expansion (sales in high price range). The small size of the market in the country creates instability in price formation.
Milk	The production sector is a bottleneck and there is excessive competition in the processing industry. Low productivity due to high prices of feed, which is highly dependent on imports, and an extensive production system (low number of animals, free-range grazing, crossbred breed, secondary source of income, and inadequate facilities). There is also a loss of opportunity due to adulteration at collection and lack of evening milk collection. Maintaining proper hygiene is also a major concern.
Moringa	It is new for processing using its leaves. The market is expanding internationally, but securing land is an issue for commercial production. The high technical standards required for the high-end market (e.g., organic certification) are difficult to meet (weed management). In addition to foreign exchange rates, there is a large tariff burden for obtaining equipment and materials.

(2) Summary of Common Challenges (Analysis of the Factors of the Issues)

In addition to the above-mentioned challenges by commodity, this section summarizes the challenges for FVC in the Northern and North Central Provinces, common for several or all commodities. The commonalities among the major challenges for each commodity are explored and generalized as "challenges" in Figures 6.4.2 and 6.4.3. The "factors" behind these challenges are listed on the right side of the figures. There are challenges those related to climate and geographic factors, which are difficult to solve. The other types of challenges are mainly discussed for making the countermeasures.

Figure 6.4.1 summarizes the challenges and factors related to production. The first issue is cost of production and access to finance. The high cost of production, including fertilizers and pesticides, was pointed out for many commodities. In addition, cash flow problems, such as slow payment by brokers/ buyers, were also pointed out. Factors contributing to high production costs include temporary factors such as import restrictions and the economic environment, as well as the current reliance on imported packaging materials, which directly contribute to the high cost of agricultural and livestock commodities in Sri Lanka. Other factors are derived from the climate of the Northern and North Central Provinces, which are insufficient rainfall.

Excluding these factors difficult to solve, the high cost of production is attributed to the small scale of farmers (including middlemen), and as mentioned in section 2.5, the complexity of farmland ownership and land use constraints as basic infrastructure hinder the promotion of efficient agriculture. Issues (2) to (4) are also productivity-related issues and are closely linked to production costs.

The second issue is low productivity. The limited availability of quality seeds/ breed and locally suitable varieties hinders productivity improvement. In the dairy sector, the biggest challenge is the lack of fodder-grass such as Napier grass as well as maize. There is a lack of supply of quality and locally adapted seed due to inadequate seed storage facilities and seed multiplication systems. Difficulty in obtaining such seed due to import restrictions and other reasons, and avoidance of high-priced quality seed due to inadequate working capital were also addressed in the survey. The shortage of feed is a direct result of inadequate and unstable maize and soybean production, but it can also be traced back to a lack of fertilizer due to import restrictions. Farmers do not grow their own feed due to the small scale and they practice extensive raring systems.

The third issue is the lack of knowledge. Even if farmers are aware of farming methods, they do not always practice them, for example, they do not understand the importance of pruning mango plants and do not follow recommended cultivation methods. In some cases, farmers are reluctant to take on new initiatives that involve risks due to their vulnerability, or because of the trade-off between productivity improvement and time and effort. The similar factors have been pointed out with regard to the underutilization of artificial insemination and vaccines.

The fourth issue is the lack of infrastructure. There are cases in which greenhouse cultivation or net cultivation (including only for fencing), which can prevent pests, is not practiced; irrigation cannot be introduced due to financial factors; and maintenance of existing irrigation facilities is left to farmers and is not properly managed[5], and high yielding cattle breeds cannot be introduced. In the case of irrigation, even if financing is possible, if the scale of the project is not commensurate with the scale of investment possible, the investment will be impractical. For many of these challenges, the small size of the farmers is often a fundamental factor.

The fifth challenge is weather. In sesame, the yields dependent on rainfall and unstable. For these challenges that are completely rooted with the external environment, and hence it is difficult to find

[5] This information is mainly from rice farmers, but this is a common issue in irrigated areas.

simple solutions.

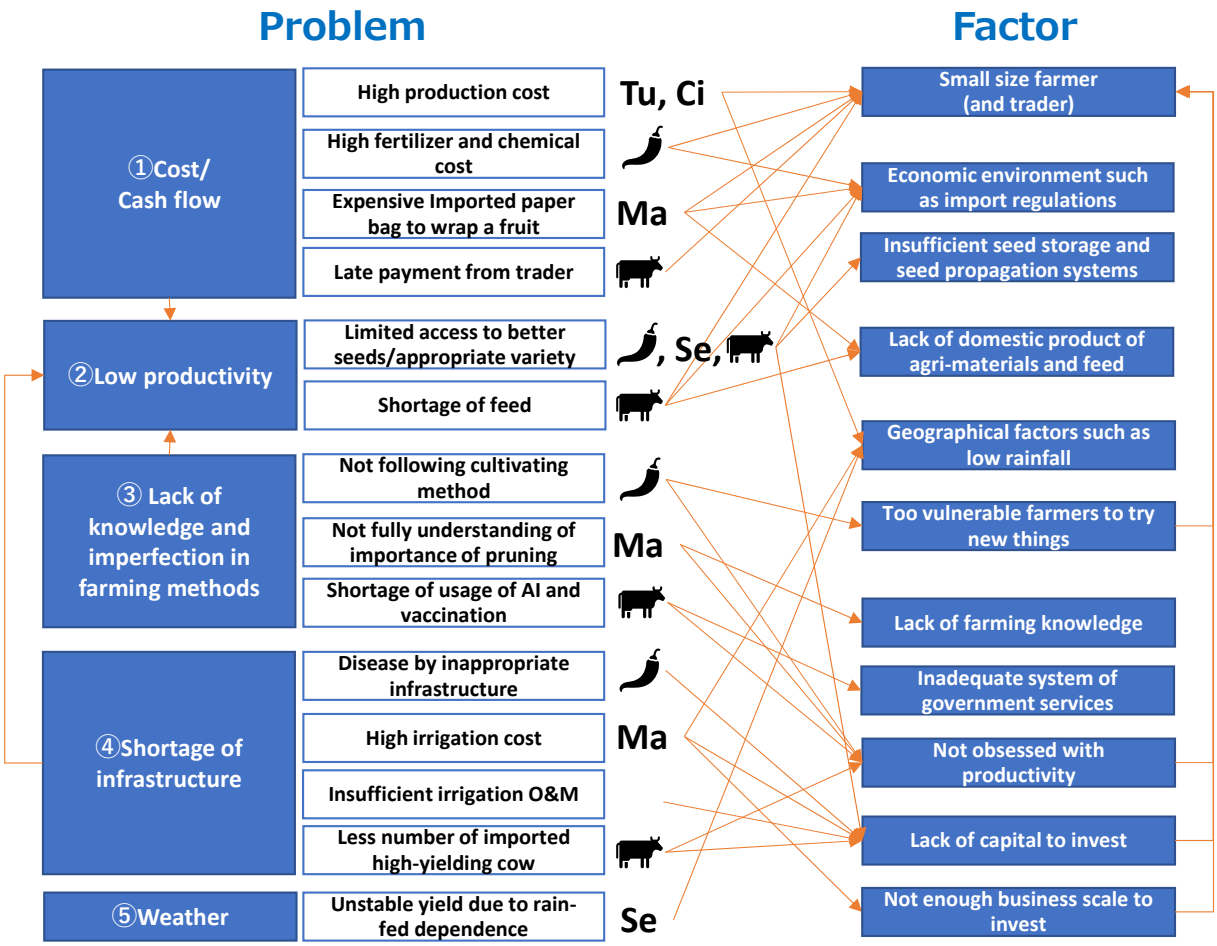


Figure 6.4.1 Common Challenges Related to Production

Source: JICA Survey Team

Figure 6.4.2 summarizes the challenges and factors related to processing, wholesaling, and distribution.

The first issue is the lack of processing plants. The processing industry is not well developed in the target area, as the number of processing companies is limited to a small scale. Since business opportunities exist, the availability of business entities is the key. There are only a limited number of small and medium-sized enterprises (especially those with food-related expertise) in the Northern and North Central Provinces. Even if farmers recognize business opportunities, they lack the knowledge, experience, and financial resources to act as entrepreneurial entities. Companies in other regions could be considered as potential business entities, the possibility is low. It is difficult for many companies who would actively invest in the Northern and North Central Provinces, where profitability is relatively low due to geographical constraints and other factors.

The second issue is the lack of warehouses and other storages. Dryer is necessary to alleviate the supply-demand imbalance by allowing for adjustments in the timing of agricultural product shipments. Factors contributing to the shortage of warehouses and other storage facilities are basically the same as the above.

The third issue is the shortage of skilled workers. The shortage of skilled worker for peeling in Cinnamon is a good example. Given the presence of peelers in the Southern Province, the number of peelers can increase as production increases and business opportunities expand in the Northern and North Central Provinces.

The fourth challenge is the inadequate number of wholesalers and exporters. Although some supermarkets and exporters have established refrigeration facilities, the lack of warehouses is a common problem in the distribution sector, both in terms of quality control and in raising farmers' incomes. The situation is fixed due to the low willingness of distributors to invest. The lack of proper temperature control and cargo handling during the post-harvest to distribution stage is also a cause of the high food loss rate. In addition, emergence of aflatoxin has been reported especially in sun-dried commodities such as maize and chili.

The export sector has a limited number of players with sufficient capacity and is limited to large companies. There are many legal procedures and requirements for export operations, including certification, which create high barriers to entry and make it difficult for new players to enter the market. While agricultural products are mainly exported to the Middle East, which is relatively close to Sri Lanka, there are high expectations for market expansion to more profitable markets in Europe, the United States, and East Asia in the future. However, this will require a constant supply of higher quality agricultural products.

The fifth issue is the lack of large-scale farmers. In many cases, both processors and wholesalers/ distributors are concerned about stable procurement and the unstable quality of raw materials. In the case of sesame, when the scale of production of raw materials is small, market prices can be easily fluctuated. These problems can be attributed to the lack of large-scale farmers.

The sixth issue is the high cost of exportation. There are insufficient facilities in Sri Lanka to test for pesticide residues, and the procedures for exporting are complicated and time-consuming, and some products have to be discarded as a result of the time required for export procedures. This high-cost structure, coupled with high production costs, hinders the price competitiveness of Sri Lankan agricultural and livestock products.

The seventh issue is quarantine. In order to prevent damage from fruit flies, mangoes need to be treated with vaper fumigation when exported to Japan. In addition to installing necessary facilities for this purpose, it is necessary to prove that the facilities can eliminate all types of fruit flies in the country. This is an issue that will be difficult to achieve unless the project is undertaken over a long period of time.

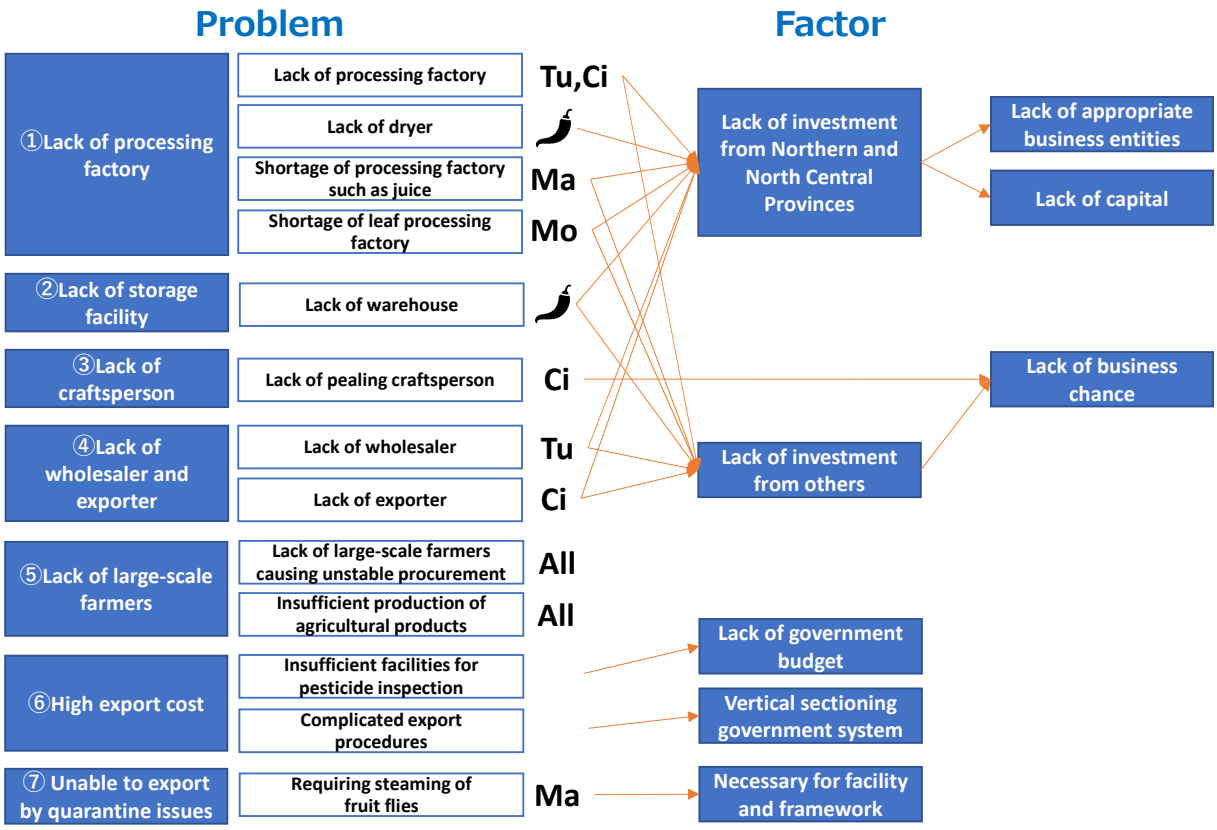


Figure 6.4.2 Common Issues Related to Processing, Wholesaling, and Distribution

Source: JICA Survey Team

In addition to the issues related to the recommended agricultural and livestock commodities listed above, there are also issues common to the food industry in Sri Lanka. As mentioned earlier, Sri Lanka has many government-affiliated companies, which in some cases are responsible for production, processing, and sales. This may put pressure on the private sector and hinder private investment. Conversely, it is also pointed out that government-affiliated enterprises are unable to accumulate sufficient capital, which does not lead to new investment. There are also problems in the management of organizations at the grassroots level, such as farmers' cooperatives, due to the political appointment of their leaders.

The relationship between farmers and buyers in FVCs is also an issue: contract cultivation or a similar system of verbal agreement has been introduced as a way to strengthen FVCs. However, there are still issues regarding its effectiveness, such as farmers selling to other buyers when the market price rises. Similarly, the direction of securing volume through clustering also increases transaction costs when dealing with a large number of small farmers.

Another issue that needs to be addressed is the technical capacity of government organizations. Although basic technical information has been accumulated and R&D is being conducted, there is little accumulation of know-how at the commercial level, especially in the processing sector. Companies that intend to develop commercial operations have few opportunities to receive technical and managerial advice.

6.5 Approach to Solving the Issues/ challenges

Figure 6.5.1 simplifies the problems and factors summarized in the previous section. With regard to the problem of small-scale farmers including traders, approaches such as organizing and corporatizing agriculture are effective. Business entities has been discussed in Section 3.2, and companies are more appropriate than partnerships for organizing. Clusters as practiced by ASMP are also optional candidate

of business entity. In order to organize and commercialize agriculture, it is also necessary to discuss agricultural land consolidation.

For each factor, there is an approach to strengthen the distribution of good seeds, an approach to nurture domestic producers of agricultural materials, an approach to disseminate farming technology and strengthen the system of administrative services, an approach to provide financial support, and an approach to infrastructure development by government agencies. The specific measures for each are discussed in Chapter 7.

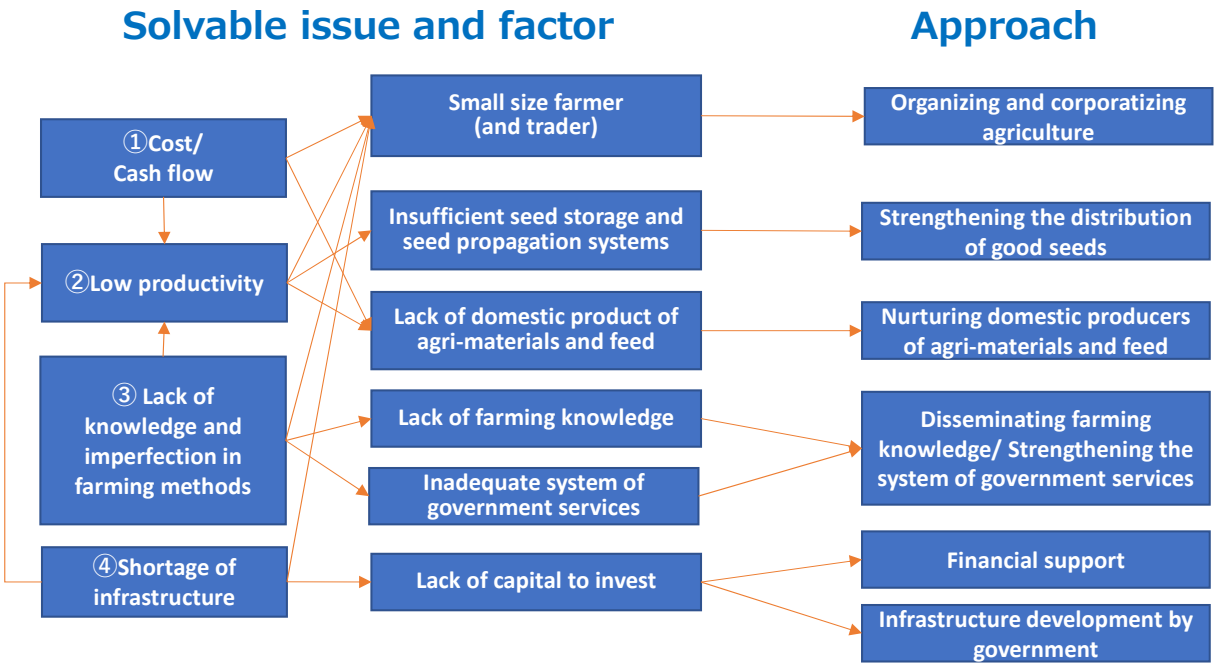


Figure 6.5.1 Issues, Factors and Approaches Related to Production

Source: JICA Survey Team

Figure 6.5.2 simplifies the issues and factors of processing, wholesaling, and distribution. Problems and factors related to lack of business opportunities are omitted because they are difficult to resolve through governmental policy. With regard to the shortage of appropriate business entities, the entrepreneurship and management support approach is effective as an investment promotion measure in the Northern and North Central Provinces. The aim is to establish new business entities such as processing plants, warehouses, wholesalers and exporters, or to strengthen existing companies. The second is the financial support approach, which is also effective in terms of production.

Warehouses, unlike processing plants, are simple to use and can be dealt with in a cross-product manner. In addition to supporting the warehousing industry through entrepreneurship and management support, there is room for special consideration of the warehousing industry development approach. As an approach to the shortage of large-scale farmers from the viewpoint of middle and downstream in FVC, we propose a distribution platform approach to summarize commercial and logistics.

With regard to inadequate pesticide residue inspection facilities due to budget shortfalls by government agencies and cumbersome export procedures due to involvement of multiple government organizations, it is important to take an approach to develop export infrastructure by publicly, establishing and strengthening pesticide inspection labs and one-stop export services. The export infrastructure development approach includes the establishment of a quarantine system for fruit flies. The specific measures of each approach are discussed in Chapter 7.

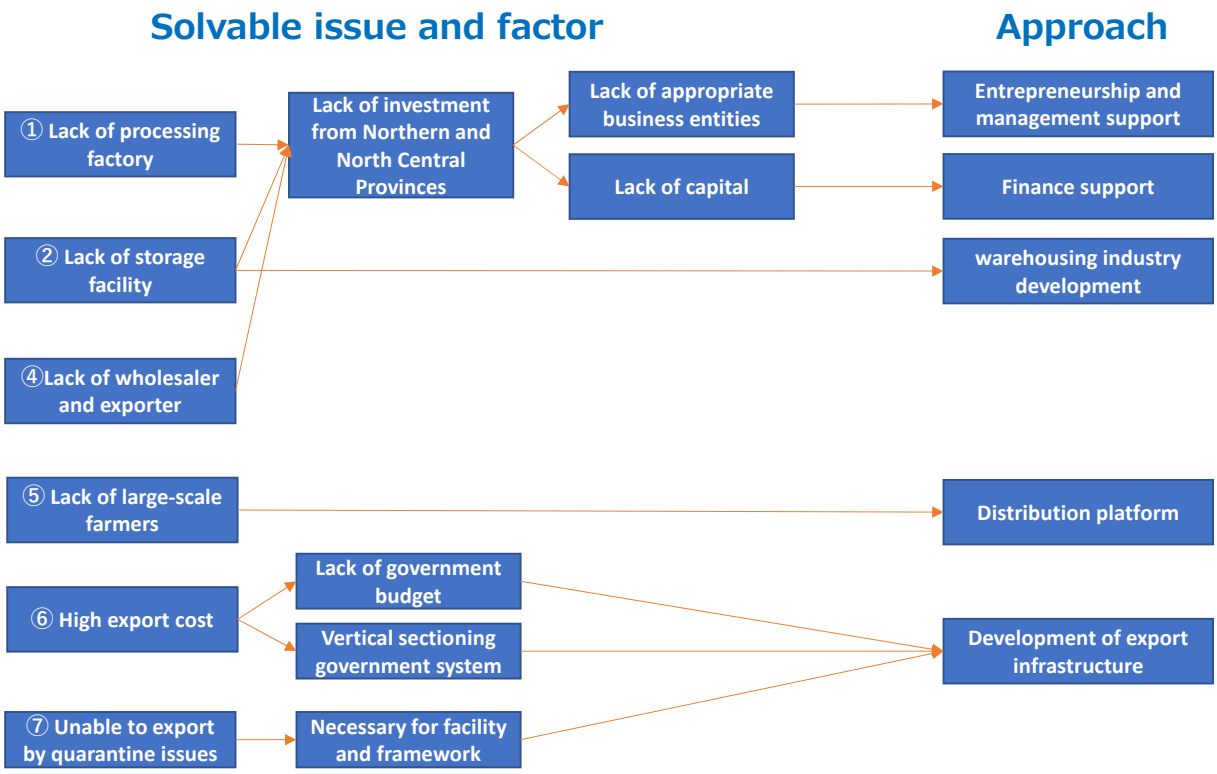


Figure 6.5.2 Issues, Factors and Approaches Related to Processing, Wholesaling, and Distribution

Source: JICA Survey Team

CHAPTER 7 RECOMMENDATIONS FOR COOPERATION POLICY

7.1 Directions for strengthening FVC in the targeted areas

In this survey, we identified agricultural and livestock commodities with certain potential for increased profitability based on an analysis of demand and supply of agricultural and livestock commodities. It includes analysis of domestic and overseas markets, and clarification of issues to be resolved through a detailed analysis of the current status of the recommended agricultural and livestock commodities. The following recommendations are made for promoting the strengthening of FVCs for agricultural and livestock commodities, especially those produced in the Northern and North Central Provinces. These recommendations include both the direction that the Sri Lankan government could take and the references to JICA for its future support.

(1) Promoting Exports and Increasing Value-Addition

Sri Lanka, with a land area of 65,610 km^2, and a total population of 22.18 million (in 2022), less than one-fifth the size of Japan's population, has limited domestic demand. With a small area of less than 1 ha of cultivated area per household and a limited government budget for agricultural subsidies, it will not be easy for Sri Lanka to compete with neighboring countries such as India in term of agriculture production. Therefore, a reasonable strategy for export promotion is to strengthen exports of higher value-added agricultural and livestock products, rather than exports of raw materials of land-use crops.

Therefore, in promoting the strengthening of FVCs in the Northern and North Central Provinces, support should be focused on export promotion. At present, Sri Lanka's main agricultural exports are tea, rubber, coconut, and spices, and according to the International Trade Center (ITC), tea (bulk) (USD 317 mn), cinnamon (USD 101 mn), and pepper (USD 127 mn) have particularly high potential (The figures in parentheses are estimated value of additional export potential). Many of the spices can also be grown in the Northern and North Central Provinces, and the demand survey in this survey confirmed the large international demand gap on these crops.

In order to promote value-added agricultural products, especially spices, there is an urgent need to strengthen the processing sector among the FVC sub-sectors. In Sri Lanka, where food loss is one of the most serious issues, the development of agro-processing sector will lead to the reduction of such loss, and agro-processing is also highly important for absorbing the large price fluctuation caused by high production in particular time. Thus, value addition especially for export promotion should be positioned as the top priority for strengthening FVC in the area.

(2) Marketing Support for Export Promotion

A market-in approach is important for export promotion. Currently, many companies are working on their own to develop markets in each of designation countries. Examples include, introductions to buyers through diaspora communities, getting connections when studying abroad or working as a migrant worker, and business negotiations through participation in international food exhibitions such as ANUGA in Germany. Although government agencies such as the EDB provide support for participation in exhibitions, support is limited. In fact, many of the companies interviewed in this survey claimed that they are having difficulty finding buyers.

Among the high export potential countries cited by the ITC for cinnamon are India (USD 24 mn), Bangladesh (USD 5.6 mn), and the U.S. (USD 11 mn); Bangladesh has almost no export yet, while India is expected to have a huge demand unmet of around USD 30 mn. Marketing to capture such remaining demand is essential.

Therefore, even if the objective is to support agro-processing and exporting companies in the target provinces, consideration should be given to providing marketing support at the export destination. In

particular, since many agro-processing and exporting companies wish to export to Japan, providing a one-stop system for matching them with Japanese companies, introducing information on Japanese import regulations, etc. is also a consideration.

(3) Export Strategies in Consideration with Location and Technological Capabilities

Among the challenges in exportation, the distance and the high safety standards and other requirements demanded by each export destination are important. Therefore, it is necessary to develop an export strategy taking into account of Sri Lanka's geographical characteristics and technological capabilities. For example, transportation costs are lower in areas where distances are closer: such as the Maldives.

Yet, Sri Lanka's agricultural and livestock products are not price competitive. In the case of the Maldives, some agricultural products are imported from other countries than Sri Lanka, such as India for its cheaper prices. However, supply and demand conditions are constantly changing, and when new procurement is needed in the short term, the company in the Maldives purchases from neighboring countries such as Sri Lanka, where it can respond quickly from order to delivery. It is essential to establish a system that reliably captures such specific needs of importing countries.

On the other hand, barriers such as safety standards need to be resolved in a gradual manner. Currently, many agricultural products are exported to the Middle East. This is not only because of the proximity and demand from the Sri Lankan community there due to migrant workers. It is also because it is easier to meet the requirements given by the destination countries compared to Europe, Japan, etc. (in short, organic and GAP certificates are not required). Therefore, it is necessary to take a step-by-step strategic approach, such as providing support for certification acquisition and improvement of management capacity, in order to enter higher-end markets (i.e., higher standards required) in the future, while selecting appropriate export destinations based on the current capabilities of individual companies.

(4) Expanding Production to Enable Value-Added Products

One of the important findings of this survey was that the primary need cited by processors and exporters was not the need to improve their processing technology, but the need to secure enough amount of raw materials. For example, the Lanka Fruit and Vegetable Producers, Processors and Exporters Association indicated that the biggest challenge is to secure raw materials that are “reasonably priced and of a certain quality”. As a conclusion of this survey, we recommend that efforts be made to provide well-balanced support for both “promotion of high value-added products for expanding exports” and “expansion of production of agricultural and livestock products as raw materials for value addition”.

Producers in the Northern and North Central Provinces should recognize these market needs as a good opportunity. However, in expanding production, it is necessary to address the environmental and social conditions of the area. The selection of locally suitable agricultural products is a prerequisite; possible measures may include: 1) development of new farmlands (including utilization of unused arable land), 2) farmlands consolidation (forming a foundation for mechanization and efficient practice), and 3) clustering of farmers. In addition, 4) increasing production volume in conjunction with improving land productivity is important as productivity is generally considered low. 5) quality control (reduction of losses) should be emphasized along with the improvement of land productivity.

Since buyers are seeking for the quantity of agricultural products that meet their own required standards, the quality that meets those standards can effectively be the “production quantity” that can be sold. For example, in the case of dried chilies, there is a reality that Indian chilies are preferred by processors over those from Northern and North Central Provinces, even though they are recognized as superior in eating quality, because they often contain discolored ones due to disease spots and are not sufficiently dried. Among the priority items for production expansion, measures to overcome the limiting factors related to land ownership are proposed below.

(5) Strengthening R&D in the Agricultural Production Sector

More research and development are needed to commercially grow agricultural products that can be used as raw materials for processing for export markets. For example, moringa, aloe vera, and many indigenous plants (herbs and rare varieties) have not been well studied and developed in terms of cultivation management, pest management, proper agricultural practices of new varieties, cultivation suitability according to environmental parameters (soil, rainfall, temperature, moisture, slope, etc.), and chemical composition in different growing regions.

For example, cinnamon is being newly cultivated in parts of the Northern and North Central Provinces, but there is no literature or research on the soil and climate suitability, quality (chemical composition), and suitable cultivation methods, and thus farmers in the area are following the cultivation practices used in southern Sri Lanka where cinnamon is traditionally grown. The development of appropriate cultivation methods in this region, where soil and weather conditions are different, is considered to be an essential area for strengthening FVC for export in the future.

(6) Overcoming Constraints Related to Land Ownership and Land Use

The average farmland size in Sri Lanka is relatively smaller in extent, and the land holdings are quite complex. This makes it difficult for even farmers who are willing to expand the area under cultivation of the relevant crops. One solution is to consolidate farmland among willing farmers through farmland consolidation. But this is not easy to implement because the landholding rights is often complicated by the fact that a single farmland is owned and/or managed by multiple family members. The next option would be to develop government-owned farmland and invite farmers/companies to enter the area in the form of agricultural production zone, which would include an element of development of new farmland.

In agrarian reform areas, it is difficult to secure such land due to the long-standing distribution of agricultural land, but there is potential for some sub-optimally used upland areas that are/ were used as Chena cultivation. The challenge will be coordination among government agencies, as some of the land under Chena cultivation may be under the jurisdiction of Mahaweli Authority, Department of Wildlife Conservation or Department of Forest.

One possible approach is to secure a certain level of production by linking individual farmers as a cluster. This would be a more realistic measure, as it would involve the aggregation of products rather than farmland. In fact, the World Bank's Agricultural Modernization Project has adopted such a cluster approach, which can be a good reference. It is important to establish any kinds of hubs to link such dispersed farmland as a supply chain. Although there is no easy solution to complexity of land ownership, it is a key factor when promoting agriculture in Sri Lanka.

(7) Efforts to Overcome High-Cost Structure

It is undisputed that the high-cost structure of Sri Lankan agricultural and livestock products is a major problem which hinders the expansion of the market. This problem was also identified as a major problem in the detailed analysis of FVCs in this survey. For example, in the case of cinnamon, harvesting, peeling, and stick formation are all done by hand, which requires skilled labor, resulting in a shortage of skilled workers and high labor costs. Also, in the domestic market, big-onion market is dominated by the imported products due to the high price of onions produced in the Sri Lanka (especially in Jaffna district). Therefore, emphasis should be placed on efforts to break out of the high-cost structure.

In general, higher selling prices alone can be a positive factor for farmers, but for consumers, it is negative and puts pressure on demand. Also, the high-cost leads to lower competitiveness in export markets too. What is important is to ensure that players at each stage of VC earn enough profits commensurate with the values added at each stage.

In order to break out of the high-cost structure, it is necessary to consolidate farmland as mentioned above and thereby improve the efficiency of agricultural production systems (including mechanization) and production technology to increase the productivity. If conditions permit, introduce more commercial oriented agriculture by appropriately introducing agricultural inputs shall be promoted. As of 2023, the effects of various measures to prevent foreign currency outflows remain and the prices of agricultural inputs (fertilizers, pesticides, and seeds) remain high. Hence, there are significant risks associated with high input cost in the short term. In the long run, any support should be considered to improve price competitiveness by introducing market-oriented agricultural and improved cultivation techniques. This will pave the way for farmers to improve their livelihood.

(8) Initiatives Considering the Complex Administrative Structure

Sri Lanka's administrative structure is complex, characterized by the many similar organizations. While general agricultural products such as horticultural crops, rice, field crops, and fruits are handled by the Department of Agriculture of the Ministry of Agriculture, spices and other products intended for export are under the responsibility of the Department of Export Agriculture of the Ministry of Plantations. Furthermore, in September 2023, the Cinnamon Development Department was newly established being separated from the DOEA. In addition, other important products such as tea and coconut, which are exported in large amounts, have their own departments and institutions for each product category.

There might be various tasks that are common to all these departments, such as research and development and agricultural technology extension, resulting in inefficiencies. When JICA provides cooperation, appropriate counterparts should be selected in accordance with the objectives and the scope of the project.

In addition, under the austerity measures, the recruitment of new personnel had been suspended for years in many government agencies, and there are reports that the provision of government services has been delayed due to the tight personnel situation, and that there are difficulties in passing on skills from senior staff to junior staff. It is worried that the morale of government employees is declining under these circumstances. In the mid- to long-term restructuring, it is likely that support needs will emerge for the training of newly hired technical staff, and it will be necessary to consider how to respond to such needs, including training programs in Japan. In the short term, it will be also necessary to train mid-career government employees, who will be among the few who will be able to take on this role.

As pointed out by government officials themselves during the survey, the continuous and wide-ranging provision of administrative services is under a big challenge, so the private sector is seen to lead in strengthening FVC through support for tie-ups with private companies and fostering entrepreneurs. In particular, if the policy is to strengthen the midstream and downstream sectors of FVC in order to achieve high value-added, it is important to involve entrepreneurs with a strong business mindset.

(9) Initiatives Considering Each of the Traditional and Modern Markets

In the market, there are two types of food value chains so-called “traditional market” and “modern market”. A typical traditional market is the FVC of vegetables, which is traded through wholesale markets such as the DEC (public market for agricultural products) in Dambulla. What is characteristic here is that these traditional markets involve many producers and intermediaries, which can easily lead to imperfect information between the two and thus supply-demand imbalances. There was a case where pumpkin acreage has increased (mainly in the North Central Province) after a temporary price increase, only to see the price plummet the following season. In addition, such imbalances in supply and demand and inadequate distribution infrastructure tend to cause food loss.

On the other hand, in modern markets, a unique distribution system by supermarket chains such as Cargills and Keels is found. Here, an unwritten agreement is made between the selected farmers and the

supermarket or its suppliers, and transactions are limited to the parties involved. The advantages for the farmer include some guarantee of a buyer and relatively high selling prices. On the other hand, a major hurdle is the high level of technology required to meet the high quality requirements of the buyers (i.e., process control for the use of pesticides and other chemicals). In addition, market trends are considered to be more volatile than in traditional markets, and the risk of instability in the trading of certain commodities must also be considered.

Of course, there are various types of transactions in traditional markets, and there are also various types of transactions in modern markets. What is important here is that the distribution system differs depending on the targeted final consumption area and each has different issues. For traditional markets, support for distribution improvement and processing promotion with food loss reduction is required, while for modern markets, technological improvement to enable market entry and support for the expansion of modern markets themselves are necessary. In addition, in the context of improving the livelihood of farmers in the target areas, it is desirable to strengthen FVCs as a whole by providing support more focused on the entry and expansion of modern market.

In recent years, start-up companies that provide platform-type services for ICT-based matching have been created in Sri Lanka (see section 3.8), and the country should consider taking advantage of these companies.

7.2 Proposed Projects and Project Components for Future Cooperation

Based on the issues for FVC promotion of the recommended agricultural and livestock commodities and the approach to solving them described in Chapter 6, project concepts for FVC promotion are proposed by the Survey team, which focuses the Northern and North Central Provinces as the main production areas. First, Table 7.2.1 provides a general list of themes and activities, of which project concepts that are considered to be particularly necessary are discussed. Currently, some projects are considered to be difficult to realize in the short term, but they are described as cooperation plans that will be necessary from a medium- to long-term perspective.

Table 7.2.1 Proposed Measures to Resolve the Issues

No.	Theme	FVC Phase and Contents	Expected cooperation scheme
1.	Strengthen distribution of superior seeds	**FVC phase: Upstream (input)** The "input" stage, which is the most upstream stage of agricultural FVC, has another VC within it: seed production and dissemination. Since land productivity in the target areas is low, the dissemination of new and superior varieties is essential to increase yields. The production of certified seeds (CS) is partially outsourced to private entities (farmers), but while government farms achieve a certification rate of around 90%, the private sector lags behind with a lower certification rate (around 75-80%). The government may continue to play a significant role in this domain. However, government VC for seed multiplication and dissemination is still weak too, with the lack of storage facilities being the biggest bottleneck. Therefore, the construction of additional government-controlled warehouses for storing quality seeds in locations throughout the country will improve the seed dissemination system not only in the targeted areas but also nationwide.	Grant aid
2.	Irrigation	**FVC Stage: Upstream (production)**	Grant aid/ Yen

No.	Theme	FVC Phase and Contents	Expected cooperation scheme
	rehabilitation	One of the bottlenecks in agricultural production is the availability of irrigation water. Although farmers are required to manage their own irrigation facilities, such as small-scale irrigation facilities using reservoirs as their water source and terminal canals, they are not able to carry out large-scale repairs, which is one of the main reasons for low productivity. For this reason, it is proposed to support small-scale irrigation sector projects through yen loans, or grant aid projects in high-priority areas. However, since specific information is not available at this time, this will be the subject of additional study in the future, if necessary.	loans and technical cooperation
3.	Special agricultural zone	**FVC phase: Upstream (production)** In some cases, midstream and downstream companies in the FVC take on farming themselves for the purpose of stable procurement and productivity improvement. However, in Sri Lanka, farmers are not allowed to own more than 50 acres of land, and therefore even leases are basically 50 acres or less. Therefore, it is proposed that the Sri Lankan government to prepare large-scale farmland in advance and publicly invites companies to cultivate it. In addition to leasing farmland from the government to companies, a variety of schemes could be considered, such as establishing a JV between the government and the companies. The farmers in this scheme are positioned as agricultural laborers employed by the companies, which is the opposite of what is expected in terms of support for small farmers. While this is an effective policy from the viewpoint of attracting foreign companies, the scheme needs to be devised and considered from the viewpoint of gaining the cooperation of the Ministry of Agriculture.	Grant aid and technical cooperation
4.	Warehousing industry development support	**FVC phase: Midstream** One of the reasons for the low profitability of small farmers in the target area is that they have low bargaining power and are underbid by buyers. This is partly due to the imminent repayment of loans, but another strong reason is that they have no means of storage and are therefore forced to sell immediately after harvest. For this reason, it is proposed to focus on players in the production sector (individual farmers, Cooperative Societies and Farmers' Organizations) to support the development of warehouses. However, unlike the construction of a limited number of warehouses required for the distribution of quality seeds, the spread of warehouses for the storage of production is not easy. Therefore, this could be achieved through the fostering of small and medium-sized enterprises and farmers' associations engaged in warehousing. As an example, the company could focus on supporting entrepreneurial development schemes such as the one described in No.4 below, or launch a logistics-related REIT to attract private investment funds, or provide low-interest loans through TSL as described in No.9.	Technical cooperation/Yen Loan (Agricultural Finance)
5.	Support for FVC-related entrepreneurship development	**FVC phase: Midstream** In the Northern and North Central Provinces, the lack of mid- and downstream players in the FVC, such as food processors, warehouse operators, and exporters, were noted. On the other	Technical cooperation

No.	Theme	FVC Phase and Contents	Expected cooperation scheme
		hand, for operators in other provinces such as Colombo, the region is not a target for daring to develop business due to small demand. From the perspective of overall optimization, it is reasonable to gather goods in Colombo, the place of greatest demand, or in Dambulla, the physical center of the country. However, from the perspective of consumers in the Northern and North Central Provinces, it is inefficient for what is produced here to be consolidated and processed in Colombo and then returned to retail in the Northern and North Central Provinces. Therefore, it is proposed support measures to encourage the start-up of FVC-related businesses in the Northern and North Central Provinces. For the seed stage, support for demonstration projects and sales destination matching may be considered. For the early stage, support may include sales destination matching and business consulting. In both cases, selecting support recipients through a business contest and publicizing the event as an event will help foster an entrepreneurial mindset. A further step could be to specialize in supporting entrepreneurship by farmers. Since there are not many cases of farmers starting their own businesses, it is important to first foster an entrepreneurial mindset by creating awareness of entrepreneurship through business contests and entrepreneurship education in cooperation with entrepreneurship support organizations (e.g., Ministry of Industries). It will also be important to publicize successful cases. In the Agricultural Modernization Support Program supported by World Bank, approximately 4,600 applications were received from individuals and SMEs for grants, loans, and other support opportunities, suggesting that there is sufficient latent demand.	
6.	Reinforcement of agro-processing technology development system	**FVC phase: Midstream (processing)** The future direction of development of Sri Lanka's agricultural sector should focus on increase the added value of agricultural and livestock products and to promote exports rather than increasing more agricultural land areas. Agro-processing is important for value-adding, but the system for research and development is not sufficiently developed. In particular, as is common to all agencies (e.g., Department of Export Agriculture, National Institute of Post-harvest Management, and Industrial Development Board), there are processing machines at the laboratory level, but no agency has been identified that has the equipment to handle at the commercial level. There is also a need to introduce a higher level of technology for drying food products, for example, by introducing vacuum freeze-drying technology in addition to hot air drying technology. Since the need for processing technology at the commercial level is strongly requested by the private sector, it is proposed to equip several institutions with appropriate equipment/ machineries along with required technical know-how. As an example, a need has been identified in the Department of Export Agriculture, which is responsible for the processing and packaging of spices.	Grant aid and technical cooperation
7.	Dairy VC Reinforcement	**FVC phase: Upstream (feed production)** The livestock sector FVC in the target area faces several challenges, including securing feed and attracting processing facilities. With regard to feed production, a major challenge in	Technical cooperation

No.	Theme	FVC Phase and Contents	Expected cooperation scheme
		recent years has been securing feed maize. Unlike soybeans, whose use among feed crops is generally limited to cattle feeding, maize is used for a variety of purposes, including poultry and dairy feed, and is in high demand due to its high rate of use. Conversely, it is still fresh in our minds that the shortage of maize has caused a slump in the poultry industry and a shortage of egg supply, as well as social turmoil due to the lack of supply from India. Therefore, as part of efforts to strengthen dairy VC, the Department of Agriculture and the Department Animal Production and Health will cooperate to promote the expansion of maize production. Among these, the bottleneck in maize production is the securing of quality seeds, for which technical cooperation to relevant departments of the Ministry of Agriculture, support for the expansion of seed production, and support for the expansion of warehouses for distribution are to be considered. On the other hand, since it is difficult for the government to unilaterally promote the expansion of production of specific crops, support for the development of seed production companies within the framework of the SME support described in "5" above is important. The possible interventions could be the support for the promotion of contract farming through public-private partnerships in tie-ups with dairy farmers and milk processors/ buyers.	
8.	Distribution platform construction (logistics hub and spoke)	**FVC phase: All processes** The target area is dominated by small-scale farmers, and there are many regulations governing land ownership and land sales make it difficult to consolidate farmland and efficient land use. This denotes that buyers must deal with a large number of farmers, and the transaction costs are excessive. Therefore, instead of consolidating farmland, one possible solution is to improve efficiency by consolidating commercial distribution and logistics. For this purpose, the project will support the establishment of a platform that handles the purchase and consolidation of agricultural products from farmers, their storage and transportation, distribution to supermarkets, other retailers, and consumers. Specifically, a PPP model could be developed to establish an information platform to centralize commercial distribution, with a matching function with logistics providers to offer logistics in line with this, or to establish its own logistics system.	Public-private partnerships (PPP) and technical cooperation
9.	Pesticide Testing Laboratory	**FVC phase: Downstream (export)** There is no doubt that value addition and export promotion will play a central role in the future direction of the Sri Lankan agricultural sector. In order for agricultural products to be destined at the international market, especially for high-end markets (e.g., Europe and Japan), it is necessary not only to ensure basic food hygiene quality, but also to obtain various certifications such as organic certification and GAP. However, few laboratories in Sri Lanka have facilities to analyze pesticide residues. Testing via private laboratories such as SGS is relatively expensive. In this context, the laboratory functions of government agencies	Grant aid and technical cooperation

No.	Theme	FVC Phase and Contents	Expected cooperation scheme
		(such as the Industrial Development Board and the Field Crop Research Institute) will be enhanced, and the focus of government services in the agriculture and livestock sectors will be actively expanded beyond production subsidies (subsidies for fertilizers) to the food business sector. The above could be achieved via supporting to development of a laboratory function in the agriculture and livestock sectors. However, since there are several organizations with such laboratory functions, strategic consideration should be given as to which organizations should be equipped with what equipment.	
10.	Development of export system for fruits (mangoes) (steam heat treatment facility)	**FVC phase: Downstream (export)** Sri Lankan fruit is currently exported mainly to the Middle East, where quality requirements are relatively low. But exports to East Asia, including Japan, and Europe are expected to expand in the future. In order to export to these high-end markets, it is necessary to establish a strict quarantine system in addition to obtaining required certifications. In particular, strict measures must be taken against fruit flies when exporting fruit to Japan. Although there is information that a steam heat disinfection facility has been introduced through a grass-roots grant by the Japanese Embassy. But, there has been no initiative to obtain certification from the Japanese Ministry of Agriculture, Forestry and Fisheries of Japan. With a view to exporting high-quality Sri Lankan fruits (mangoes, papayas, etc.) to high-end markets in the future, it is proposed to introduce the demanding equipment and provide the necessary technical support to obtain certifications. The necessary items for certification include confirmation of all species of fruit flies present in Sri Lanka, and confirmation that they can be completely treated by steam heat treatment.	Technical cooperation (in collaboration with MAFF)
11.	Development of one-stop center for exports	**FVC phase: Downstream (export)** The procedures required for export are diverse, and for example, quarantine certificates and certificates of origin must be obtained from different agencies, which requires many days to complete. Especially in the case of perishable foodstuffs, there is a need for a centralized facility to carry out these procedures since they cannot store for a long period. Currently, for companies registered with the BOI (companies with large transaction sizes), the BOI provides intermediary services or allows them to go through procedures at special economic zones. But other small and medium-sized companies has no such facilities which make these entities hindered from expansion of exports. In this context, it is proposed to establish a one-stop service center with such functions that placed at the Port of Colombo and possibly at the Kankesanthurai (KKS) Port, which is being renovated in the Northern Province. Further, the required assistance for operational functions will be provided. In Phase 1, a facility will be built to house representatives of each organization, and technical assistance will be provided for facility operation. In Phase 2, a system will be established to enable a single department to carry out these procedures with authority, and digitalization will also be promoted. However, the KKS Port has the low volume of cargo handled. We need to consider priority port. In addition, since the digitization of customs clearance operations is still underway, it is necessary	Grant aid and technical cooperation

No.	Theme	FVC Phase and Contents	Expected cooperation scheme
		to fully assess the scope of support for implementation and carefully select a department to serve as the lead manager (at present, the Export Development Board is a possible candidate).	
12.	FVC Financial Assistance (Two-Step Loan)	**FVC phase: midstream and downstream (processing and distribution)** Industrial revitalization in the midstream and downstream sectors of the FVC is essential to promote exports and increase the value-added of Sri Lankan agricultural products. As mentioned above, there are bottlenecks in each sector on the FVC, but a common issue is the lack of funds as a limiting factor. Therefore, the project aims to revitalize these sectors by providing loans at low interest rates, mainly targeting the processing and distribution sectors of agricultural and livestock products. The scheme will utilize TSL, which will support financing by private financial institutions and MFIs through the central bank and facilitate loans to the final borrowers. Since it is also reported that there are issues related to the credit guarantee system, support in combination with such a system and efforts to provide substantial support for specific items as indicated in "No. 4" above are also possible.	Yen Loans (agricultural finance)
13.	FVC Financial Assistance (Two-Step Investment)	**FVC phase: midstream and downstream (processing and distribution)** Two-step loans are designed to support lending by local banks. Support for investment by angel investors and VCs could also be considered. The project purpose is the same as two-step loans. It replaces PFIs in two-step loans with angel investors and VCs, loans with investments, and end borrowers with startups. Compared to two-step loans, the selection of investment targets will be much stricter, and the number of companies to be supported will be overwhelmingly smaller. In particular, from the viewpoint of entrepreneurship by farmers, it is important to conduct PR activities and educational activities to increase the number of farmer entrepreneurs.	Yen Loans (agricultural finance)

Source: JICA Survey Team

The following is a proposal in the form of a project concept on topics considered to be of particular importance.

(1) Consolidation of Agriculture Production (Land Consolidation)

1) Background

One of the major challenges at the production stage is the fragmentation of farmland over a generation due to the subdivision of farmland upon inheritance. The policy of transfer and redistribution of agricultural lands, represented by the Agrarian Development Act, was appropriate and contributed greatly to landless and small farmers when enacted. However, the situation has changed in recent years as Sri Lanka has faced new challenges, such as the aging of the farming population and the declining attraction of young people to the agricultural sector. In this context, a shift is needed to achieve intensive agricultural production, higher farm income, and increased value addition by concentrating agricultural land in the hands of commercially motivated farmers. In addition, the mechanization of agriculture, the introduction of production technology to increase productivity, and rationalization based on economies of scale are needed to eliminate the current "high-cost structure."

In some cases, companies in the midstream and downstream stages of the FVC take on farming for stable procurement and productivity improvement of their final products. However, in Sri Lanka, farmers/companies can own farmland up to 50 acres even for leases (in order to lease farmland of 50 acres or more, one must submit a proposal with financial and business plans to the supervising government agencies and obtain necessary approvals). Therefore, we propose that the Sri Lankan government prepare large-scale farmland in advance and publicly invite commercial farmers/companies to cultivate.

2) Objective

To promote commercial farming by consolidating farmland to commercial scale farmers/companies.

3) Contents

A variety of components could be considered, such as collaboration with a local government to invite companies (investors) that want to start mass-scale agriculture production and value addition in the Northern and North Central Provinces or establishing a Joint Venture between the government and the company. One possible measure that JICA can support is providing TOT training for agriculture instructors in collaboration with DOAs and provincial councils who supervise extension services in their technology dissemination.

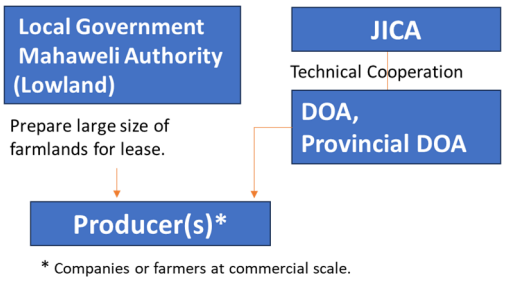


Figure 7.2.1 Project Concept for Consolidation of agriculture production (Land Consolidation)

Source) JICA Survey Team

Note: DOA; Department of Agriculture

Another component could be the readjustment of farmland through exchange and consolidation. Farmland readjustment has an advantage of increasing the size of each parcel of farmland, increasing work efficiency by reducing the need for water management work, and making it easier to operate agricultural machinery. JICA may support a model district by formulating project plans, managing construction works, establishing and strengthening farmer organizations, and assisting in the implementation of the exchange of farmland (e.g., obtaining consents from landholders, etc.).

4) Supporting Scheme

A technical cooperation project is considered. For the case of land readjustment, various schemes could be considered depending on the component to be adopted, such as the project implementation in a model district as grant aid.

5) Remarks

One example of inviting investors to promote large-scale production is "block farm", one of the activities of the BBT-YIA Program (2022-2030), a project implemented by USAID in Tanzania to support youth and women. Since one of the constraints for youth and women on farming is the accessibility of farmland, the Ministry of Agriculture identified and prepared arable lands in advance, developed basic infrastructure such as irrigation, electricity, and roads, and then invited investors to invest in a total of 162,492 ac of farmland in four target regions. The project will offer 1,000 to 2,000 acres of farmland in the form of long-term leasing contracts to investors who are selected on their business plans, experiences, and ability to buy farmer's produce and provide extension services to out-growers. Young people and women will participate as contract farmers or out-growers in farm blocks of 1-10 acres, and investors will engage in mass-scale production, procure agricultural products from out-growers/ contract farmers and also value-addition.

One of the advantages of forming such farm blocks is that it is easier to build and maintain long-term

relationships by connecting investors with small farmers (in this case, young people and women). The former benefit from the reliability of quality compared to buying produce from public markets or individual farmers, while the latter benefit from support in the form of inputs, credit, technology dissemination, and machinery investment, as well as the sale of produce at higher prices than existing distribution channels, such as public markets. However, the trust between the two parties can be broken down by dishonesty, such as breaking the terms of the agreement and selling to other sellers, failing to pay the purchase price on time, etc. Therefore, good implementation arrangements are required, such as clarification in the form of written documents, the involvement of experienced persons, and good management bodies.

To implement such a scheme, a strong initiative by the Sri Lankan government for farmland intensification is needed. In addition, the actual status confirmation and legal procedures related to farmland ownership may take time. Therefore, an alternative scheme for encouraging individual farmers to participate in intensive farming while maintaining their land ownership, like the cluster-type scheme shown below, should be worth considering.

(2) Consolidation of Agriculture Production (Farmers Cluster)

1) Background

As one of the directions to achieve a stable supply of agricultural raw materials, private companies are taking the initiative in building out-grower systems. Some of them have been successful through the effective use of IT tools. There is a strong request from the buyer's side to empower the producers since the quality control is not easy when the product comes from individual out-growers. From the producer's point of view, only a few farmers can participate in the out-grower system due to the strict quality standards and the requirement that groups rather than individuals must arrange the supply. Therefore, the approach will support the enhancement of the out-grower system by promoting the organization of farmer clusters in the Northern and North Central Provinces.

2) Objective

To organize agriculture clusters and promote the food processing industry through enhancing private-driven out-growers system in the Northern and North Central Provinces.

3) Contents

To organize farmers' clusters to jointly produce and sell the promoted crops selected by each cluster. JICA can provide technical cooperation to introduce new technologies, post-harvest processing, packaging, and support for matching with buyers. Also, a joint processing hub will be constructed to carry out primary processing and value-addition by the cluster. The joint processing hub will be operated by private companies or by establishing a new company from the farmers as shareholders.

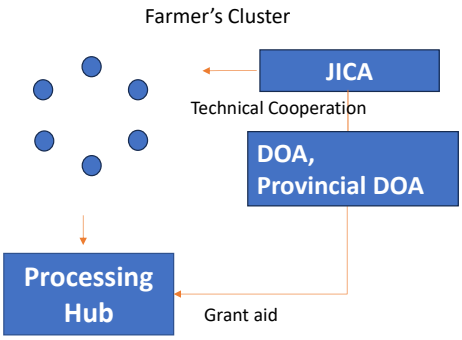


Figure 7.2.2 Project Concept for Consolidation of Agriculture Production (Farmers Cluster)

Source) JICA Survey Team

Note: DOA; Department of Agriculture

4) Supporting Scheme

A technical cooperation project could be considered on production and post-harvest techniques, business matching, and a grand aid project to construct a new joint processing hub.

5) Remarks

The World Bank's "Agricultural Sector Modernization Project" and JICA's "The Project for Livelihood Enhancement of Small and Medium Scale Agri Producers through Strengthening Supply Chain Structure" are similar in that they include activities to increase linkages between producers and middle- and downstream players in addition to disseminating agricultural technology to producers. However, the former uses a different approach, such as collective marketing through the establishment of new companies, and the latter promotes smallholder farmers, as represented by SHEP, to conduct agricultural production using a market-in approach. It is important that these activities do not end up as one-off projects, but rather combine the various technologies (content) and resources that have been introduced, and incorporate them successfully into the "structure" of the DOA.

The proposed component basically aims to broaden existing efforts to strengthen the supply chain. However, the management of the organization is likely to be a hindrance in "grouping" farmers. Hence, it is necessary to take full account of the experiences of other countries' successes and failures (lessons learnt) in similar projects. Taking the World Bank's ASMP as an example, as described in 3.2 (1), the companies established under the project contain potential problem in that they have a large number of participating farmers and place an emphasis on equity, with one share per person, regardless of the contribution of each farmer. The elements of a cooperative society are mixed up with the elements of a company, and there is a lack of incentive for presidents and directors to promote business. Therefore, for "grouping," it is recommended to build a cluster with a small number of willing farmers (around a few to 10). Controlling the number of participants is an effective approach to improving production quality across the entire cluster.

In terms of collective sales, there are examples of success in other countries by using cooperatives. However, as mentioned in 3.2 (2), cooperatives in Sri Lanka have not been established by crops and existing cooperatives are difficult to utilize. The establishment of a new crop-specific cooperative is an option. It should be noted, however, that because board members are selected by cooperative members, there are often cases in which board members are renewed, management policies are drastically changed, or business operations are suddenly suspended. In addition, there is no incentive such as a large reward for board members, so it is difficult to expect strong leadership from board members.

Need for Strong Leadership

ODA tends to focus on the expansion of the number of recipients and fairness, as it is intended to provide relief to the vulnerable on behalf of human security. However, in the context of corporate management, the optimal allocation of resources (human and financial) and rapid decision-making in response to changes in the business environment are required.

An herb tea processing and production company based in the Northern Province is run by a female leader, whose management philosophy is "women's independence," and she does not allow her husband, who is a partner, to run the company. This leads to the gathering of supporters and contributes to business stability. However, in order to carry out this "commitment," it is often more effective to have people with strong leadership concentrate their efforts than to run the business in a collegial manner.

Strong leadership may not be necessary if collective sales are only implemented through loose solidarity. But it is more effective to promote a business entity called a company rather than a cooperative, given that the goal is to introduce new technologies, improve packaging, and invest in joint processing plants.

(3) Strengthening of the R&D Supporting System for Agro-processing Technology

1) Background

With the exception of a few, most of the enterprises involved in agro-processing are small, medium, and micro enterprises, which suffer from a lack of technical know-how as well as capital to start up their business. This has led to a lack of progress in the establishment of agro-processing enterprises. For example, companies are still trying to figure out what kind of equipment they need for drying

agricultural products, the size and specifications of each machine, and what kind of processed products they can produce using the equipment.

As for the government support system, the Spice Research Institute in Matale for spices, the Horticultural Crops Research and Development Institute (HORDI) in Peradeniya for horticultural crops, and the National Institute for Postharvest and Management (NIPHM) in Anuradhapura, National Cinnamon Research and Training Centre, Matara and Industrial Development Board are supposed to provide technical assistance for agro-processing. However, some of their equipment are outdated, and according to private sector officials, most of the equipment and know-how possessed by these institutions is at the so-called "laboratory level," and they are unable to provide the "commercial level" assistance and consultation that the companies are looking for.

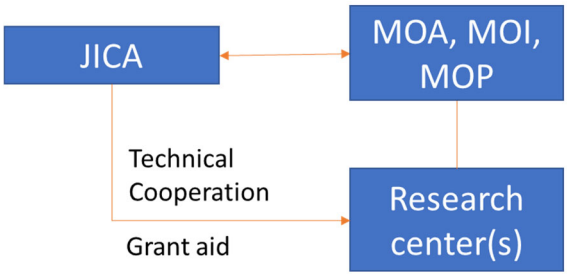


Figure 7.2.3 Project Concept for Strengthening of the R&D Supporting System for Agro-processing Technology

Source: JICA Survey Team

Note) MOA: Ministry of Agriculture, MOI: Ministry of Industry, and MOP: Ministry of Plantation

In order to promote future value-added products in the region, it is necessary to strengthen the agricultural processing sector. Further, there is a need to strengthen the existing technical support system to support product development and business promotion of small and medium enterprises in the processing sector in addition to expanding agricultural production.

2) Objective

To strengthen the Research and Development (R&D) and technical support system for agro-processing at the commercial level.

3) Contents

To add and update equipment and materials required for research and development on agro-processing at the commercial level in government agencies and/or private institutes. And to establish a system that can provide technical support and product development support to agro-processing companies through technical training for the staff of such organizations (including Training of Trainers). At the same time, practical training is provided to companies that actually operate or wish to enter into the agro-processing industry.

4) Supporting Scheme

The agricultural processing equipment and materials are procured by a grant aid project. A technical cooperation project on agricultural processing technology is implemented along with the grant aid project.

5) Remarks

In addition to HORDI, NIPHM, and the Spice Research Institute mentioned above, the IDB, which is positioned in the industrial development sector, provides training using agro-processing equipment in its establishment in Colombo. Since it is not realistic to provide equipment to all of these institutions, it is necessary to narrow down the target institutions. For example, if the immediate target of the support is spices, the Spice Research Institute could be a candidate.

On the other hand, it is also possible to target such support to private organizations rather than government agencies, which may include the establishment of an agro-processing facility with commercial production as its core, possibly shared by small and medium-sized enterprises. Another

possibility, which would be difficult under the Japanese ODA scheme, is to expand the processing facilities of certain companies in some way and provide them with training functions.

(4) Support for FVC-Related Entrepreneurship

1) Background

Although the Northern Province and the North Central Province are the main production areas of several types of low country vegetables in Sri Lanka, FVC-related businesses responsible for their processing, distribution, retail and export are concentrated around Colombo. The FVC enterprises are not being attracted by the region, and the value addition of FVC is not being sufficiently nurtured in Northern Province and the North Central Province.

There are also inefficiencies in distribution channels, such as agricultural products produced in the Northern and North Central Provinces being transported once around Colombo and then again to the Northern and North Central Provinces, as well as post-harvest losses during transportation in between. While the Northern and North Central Provinces have excellent educational institutions, especially in the field of IT, there is no place for local use of the acquired skills, and therefore many talented people are leaving Colombo and overseas.

To promote the FVC industry in the region, it is important to create opportunities for highly motivated personnel and to develop FVC players who are active in the region. Particularly, the Northern Province has the second largest number of startups after the Western Province, where Colombo is located, and many farmers are interested in advanced technology and new business ideas. It is required to encourage the creation of FVC industry-related businesses and startups and promotion of the FVC industry in the Northern and North Central Provinces by providing people who are willing to start such businesses with business opportunities to learn about entrepreneurship and business, as well as the necessary support for starting businesses.

The Sri Lankan rural areas persistent with lack of access to financial resources, lack of know-how on advanced technologies, lack of entrepreneurial education, and lack of infrastructure facilities, that hinders the forming of FVC entrepreneurs. In Sri Lanka, the center of entrepreneurial activities is Colombo, where the environment is good, and only few entrepreneurs are activated in rural areas. In addition, the option of starting a business in rural areas as a career for young people is not often considered in the first place. To overcome these bottlenecks, the government could consider providing infrastructure for entrepreneurs, matching investments, and offering courses to foster the entrepreneurship skills.

2) Objective

Promotion of the FVC industry in Northern and North Central Provinces by supporting the identification, training and commercialization of FVC-related entrepreneurs.

3) Contents

Entrepreneurship training lectures and programs will be held at universities in Northern and North Central Provinces, and idea-sessions and hackathons will be held to identify promising entrepreneurial candidates for FVC promotion. For potential entrepreneurs, there will be an incubation program in collaboration with angel investors and venture capital firms, as well as investor matching events.

4) Supporting Scheme

Conduct technical cooperation projects related to the operation and implementation of entrepreneurship training programs, ideathons, hackathons, and incubation programs.

5) Remarks

Although the scheme is designed to work with universities, prospective entrepreneurs are not limited to students, but are targeted at a wide range of people, including farmers and those working in FVC-related businesses. Universities provide opportunities for program implementation, design and manage programs, and utilize knowledge on human resource development and course management based on experience in entrepreneurship programs already in place and joint research with FVC-related research institutions, and know-how on industry-university collaboration. In implementing the program, the Ministry of Agriculture and the Ministry of Industries can collaborate with universities and consider establishing a system that can support entrepreneurs in terms of technology and social implementation.

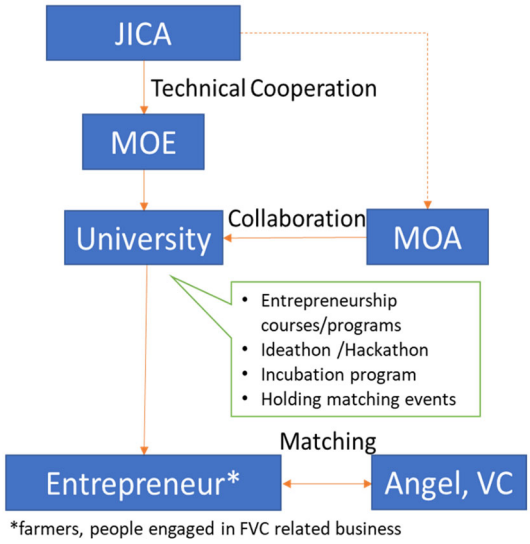


Figure 7.2.4 Project Concept for FVC-Related Entrepreneurial Development Support

Source: JICA Survey Team

Note：MOE：Ministry of Education

MOA：Ministry of Agriculture

The implementation agencies in Sri Lanka will differ depending on the ultimate goal, but the Ministry of Education will be at the forefront of encouraging top level entrepreneurs who will seek funding from angel investors and venture capital firms as described above. The ICTA mentioned in 3.8 (1) utilizes university professors as mentors for startups. Universities are well suited to provide comprehensive support for management expertise in marketing, finance, and human resources, and for advanced digital and FVC-related technologies.

On the other hand, if we broaden the scope of the target audience rather than fostering top-level entrepreneurs, the implementing agencies are different. For example, if the main focus is on farmer clustering, the Ministry of Agriculture, which has knowledge of farming techniques and a network with farmers, would be the appropriate implementing agency. In addition, if the main focus is on supporting SMEs in the middle and downstream of FVCs, the Ministry of Industries would be the appropriate implementing agency. However, if the target audience is widened, the average quality of entrepreneurs will decrease, and the possibility of obtaining bank loans as well as financial support from investors will become troublesome. It is important to note that, like the World Bank's ASMP, the financial support for initial investment will need to increase.

(5) FVC Financial Support (Two-Step Loan)

1) Background

There is high need for capital investment in the middle and lower FVC players such as food processing plants and wholesale warehouses as well as for capital investment for irrigation and dryers, by the farmers. These investments will enhance agricultural productivity, whilst defusing various other effects, such as increasing value addition, reducing postharvest losses, and price stabilization through improved demand-supply balance. In addition to capital investment, the issue of working capital (i.e.: dairy farming) is persistent in many FVCs. Accordingly, the support for acquiring of necessary working capital is also to be considered. The Central Bank's previously implemented special lending program, to address aforementioned financial needs, has been suspended due to the prevailing economic crisis.

Additionally, it is necessary to provide support for the financial needs of startups in the spectrum of supporting entrepreneurs. However, from the perspective of private banks, lending to high-risk entities such as startups is a hurdle and requires policy support/s.

2) Objective

Promotion of capital investment and startup.

3) Contents

Through ODA loans to the Sri Lankan Ministry of Finance, sub-loan is provided to Sri Lankan banking sector/ financial institutions. Low-interest loan schemes could be introduced to SMEs, farmers and startups via these banks and financial institutions. It is articulated as a Two-Step Loan program.

It is recommended to collaborate with the National Credit Guarantee Institute (NCGI), which was established in 2023, to form a financing channel for startups and also provide financing opportunities for businesses without collateral.

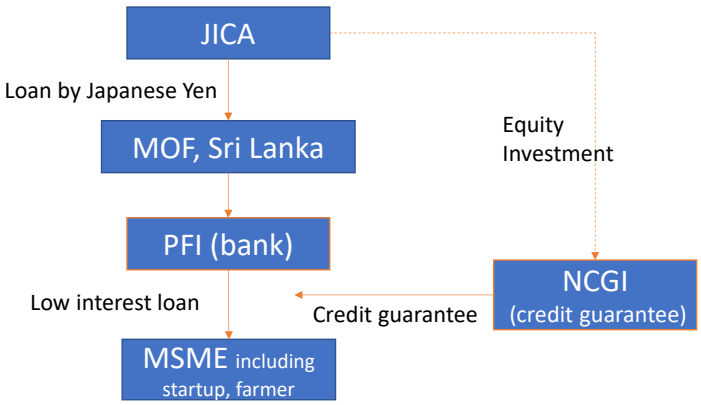


Figure 7.2.5 Project Concept for Two-Step Loan

Source: JICA Survey Team

Note：MOF: Ministry of Finance

PFI: Participating Financial Institute

NCGI: National Credit Guarantee Institute

4) Supporting Scheme

ODA loans for Two-Step Loan.

5) Remarks

As noted in section 3.1, banks must promote agriculture-related loans, which are required to account for at least 10% of total loans. As a result, the agriculture, forestry and fisheries sector accounts for 8% of loan amount, which is higher than the 7.5% of GDP of the agricultural sector. In general, agricultural sector lending tends to be suppressed because of the high risk in the sector. We can say that the above policies have distorted portfolios. In the implementation of two-step loans, efforts should be made to avoid excessive loans to the agricultural production sector and ensure that funds are provided in a balanced manner to the middle and downstream of FVCs.

In addition, although banks are assumed as participating financial institutions (PFIs), microfinance may be involved as PFIs. However, the involvement of microfinance is not essential because there are still only four registered microfinance institutions, the number of customers and outstanding loans is limited, and banks have a history of lending to farmers and have a channel to farmers.

(6) FVC Financial Support (Two-Step Investment)

1) Background

Start-ups are high-risk entities that seek new businesses are less likely to obtain loans from financial institutions and are generally backed by direct financing such as equity investment. On the other hand, investor activity is limited in Sri Lanka such as angel investors and venture capital firms. Only few avenues exist for investment support.

2) Objective

Fostering startups and promoting entrepreneurship by farmers through equity investment. Fostering investors.

3) Contents

Sub-loan is provided to Sri Lankan angel investors and venture capital through ODA loans to Ministry of Finance, and equity investment is provided from them to farmers to establish a company and startups. It is an investment version of the so-called two-step loan project and is called Two-Step Investment.

It is necessary to utilize curators such as angel investors and venture capital to identify promising startups. Curators are to be strengthened more by getting chances to invest through the project.

4) Supporting Scheme

Two-step investment with ODA loans. In addition, it is desirable to execute "Support for FVC-Related Entrepreneurship" project through technical cooperation in parallel.

5) Remarks

Angel investors and venture capital firms invest in equity as shareholders. In order to make a profit from a high-risk investment, the investee must grow significantly in the future. For this reason, if we look at the past investment cases of angel investors and venture capital firms, there are many cases such as retail and D2C even in the case of food business. Even if it is a new business, investors may not be motivated to invest in typical food processing or wholesaling. It is necessary to keep in mind that the project focuses on a promising startup, for example SenzAgro (Pvt) Ltd. introduced in Sections 3.8 and 4.3.

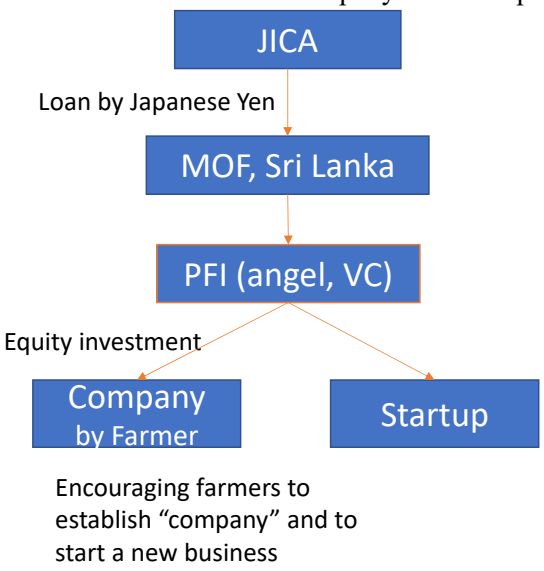


Figure 7.2.6 Project Concept for Two-Step Investment

Source: JICA Survey Team

Note：MOF: Ministry of Finance

PFI: Participating Financial Institute

7.3 Recommendations to JICA

The purpose of this survey was to clarify the current status of the value chains and their short-term and structural challenges aftermath of COVID-19 pandemic and the economic crisis. Since previous studies and assistance have mainly focused on the producer/suppliers' side. However, this survey analyzed the value chains not only from the producers' perspective, but also from the consumers' perspectives, through collection, wholesaling, transportation, related manufacturing and retailing industries. The survey tried to analyze and examine the issues and countermeasures based on such detailed information in the FVC.

(1) Adopt a comprehensive approach in consideration with previous FVC support approaches

The following is the understanding of the Survey Team with regard to the trend in the focus and approach of JICA assistance in the agriculture and food sector. As shown in the table below, early assistance in the agricultural sector focused more on supporting farmers (who are often relatively poor) by providing technical assistance and infrastructure development support to improve productivity. In contrast, market-oriented agriculture has been introduced as an approach to improve the effectiveness of the farmers' activities shifting from "produce and sell" to "produce to sell". This approach introducing the FVC perspective by addressing the two perspectives of production and market.

Subsequently, surveys and projects targeting the entire FVCs, including distributors, had begun in many countries. The underlying concept of these surveys/ projects was that it would be difficult for producers to benefit from FVCs unless bottlenecks in FVCs are eliminated and the value of FVCs as a whole is improved. This survey, which aimed to unravel the issues of FVC stakeholders one by one from the demand side, can be considered having the characteristics of the second and third generations.

Table 7.3.1 Changes in focus and strengthening perspectives in support of agriculture and food industry (hypothetical)

Generations	Characteristics
First	Technical assistance to farmers (to increase productivity and thereby reduce poverty) (e.g., disseminating R&D results through a training and visit system, as in the Green Revolution)
Second	Market-oriented agricultural support (positioning the production sector as one portion of FVC and promoting its effectiveness to meet the demand) (e.g., SHEP[6] approach, which aims to improve farmers' profits by identifying and responding to market needs)
Third	Support for strengthening FVCs (to increase the added value of FVCs as a whole and to benefit producers). (e.g., to expand the support to midstream and downstream stages of FVCs to build an efficient VCs, with a particular focus on eliminating bottlenecks)
Fourth	Multi-layered coordination and strengthening of FVCs (now being considered) (e.g., to address specific issues of each player in the FVC which includes the financial, technical, and institutional issues)

Source: JICA survey team. Note: This is the survey team's own analysis, not a widely accepted idea.

Importance of analyzing FVCs in a multilayered manner to consider in the next generation approach is emphasized. The FVC is mutually involved by different parties, with a mixture of cases where individual businesses are engaged in production, collection, wholesaling, transportation, processing, retailing, and other sectors depending on the product (e.g., fresh vegetables) or where one company integrates many business sectors (e.g., poultry). Furthermore, there are multilayered challenges for each stakeholder, including specific issues related to factors such as land, capital, and labor (technology and workforce).

In these understanding, comprehensive support is needed first to address challenges related to stakeholder coordination (connecting the players in the Food Value Chain) and second to address the specific challenges faced by each stakeholder (individual challenges in each of various FVC stages).

In section 7.2 of this report, several project components are proposed as examples of specific supports. However, implementing just one of these components does not guarantee overall improvement in the entire Food Value Chain (FVC) for the respective product. Particularly in the Northern and North Central Provinces, challenges such as land ownership constraints, low rainfall, shortage of small and medium-sized enterprises, lack of funds and technology, and the vulnerability of support systems create bottlenecks. Therefore, comprehensive support addressing multiple challenges should be implemented to effectively address these issues.

The survey confirmed the existence of NGOs working on the formation of IT platforms in the agricultural sector and emergence of production of new crops for the exportation (moringa, cinnamon, etc.). It is expected that comprehensive efforts to maximize these potentials will lead to the establishment of an efficient and robust FVC.

[6] SHEP approach: https://www.jica.go.jp/english/activities/issues/agricul/shep/index.html

(2) Strengthening FVCs with the Private Sector at the Core

Compared to support in promoting specific products and technologies, there are many more players involved when targeting FVCs as a whole, and the issues involved vary accordingly. In particular, it is important to focus on supporting the self-reliance of the private sector, since in most cases the private sector is responsible for later stages of the FVCs. Since providing support only to specific firms is problematic from the standpoint of fairness, a universalized approach is more feasible to implement.

For example, FVC finance, matching support, and technical assistance that is accessible to all parties that meet the conditions are suitable. A further idea could be to nurture individual companies that could serve as drivers of FVC development in a manner based on a fair selection process through business contests. It is desirable to target to a wide range of private companies, especially if the goal is to add values to FVCs as a whole.

In recent years, the presence of NGOs and private companies as business supporters in FVCs has been increasing. Typical examples include IT applications that deliver agricultural technology and IT platforms that connect producers and buyers. In the context of strengthening FVCs, emphasis should be placed on supporting private companies as service providers in addition to direct players in FVCs.

(3) Establishment of an Appropriate Implementation Structure

When implementing project-type assistance, the implementation structure should be carefully designed. As mentioned above, even in the agricultural sector, there are a wide range of related government agencies, making it difficult to define a focal point for implementation of any of the project themes, and therefore, cross-sectoral coordination is essential. In addition, support from the private sector is also necessary to support the FVC, which requires the involvement of several ministries in addition to the traditional ministries in charge of production, such as the Ministry of Agriculture and the Ministry of Plantation. For example, the Ministry of Industries (support for SMEs) and the Ministry of Education (support for entrepreneurship through universities). This point needs to be kept in mind more than ever.

More specifically, consideration should also be given to making the provincial councils as the decision-making body when establishing a Project Implementation Units (PIUs). In this survey, it was pointed out that placing the PIU in the central ministries would stagnate activities in the field (requiring more time for decision-making and coordination among multiple ministries/departments). The advantages of placing the PIU in a provincial council, where centralized decision making is established with multiple departments under one umbrella, may well outweigh the advantages than placing PIUs under the government central ministry.

(4) Support for Policy Planning

With the restructuring of Sri Lanka's debt, several structural reforms are expected to take place, including a review of existing policies, and the restructuring and privatization of government-owned enterprises may be included. Given that the agriculture and livestock sectors have been severely affected by policy changes in recent years, appropriate and prudent policy formulation is required. In particular, it is recommended that lessons be compiled from an objective perspective. Furthermore, policy formulation shall be pursued in the review and restructuring of agricultural policy, land policy, fertilizer and chemical pesticide policy, and trade policy. To this end, it is effective for governments to seek support from donor agencies, and JICA’s technical assistance should be actively considered.

Appendix

Criteria for Potential Assessment

	Criteria	Assessment		
		High	Relatively High	Fair
Domestic Market	Large scale of domestic production (as the indicator of the market scale).	Domestic Production in Value is more than 300 million USD.	Domestic Production in Value is between 300 million and 10	Domestic Production in Value is less than 10 million USD
	The domestic supply shortage / row self-sufficiency rate.	Supply shortage is continously affecting demand player's business and/or less than 60% of self-sufficiency rate.	Supply shortage is occasionally affecting demand player's business and/or less than 80% of self-sufficiency rate.	Supply shortage is not affecting demand player's business and/or more than 80% of self-sufficiency rate.
	Wide range of final forms of products. (Not only food products, also industrial usage such as medicinal ingredient)	At least 5 forms of final products, with relatively high-value addition (oil extraction, processed foods, industrial usage etc).	At least 5 forms of final products, with mostly primaly processing (e.g., peeling, powdering, sun- drying).	Less than 5 forms of final products, with mostly primary processing or raw material.
	Opportunities of value addition and diversified food demands (e.g., health functions, ayuruvetic products, emerging fast-food industries)	At least 1 value addition opportunity and/or diversified food need is identified, which is already somewhat realized.	At least 1 value addition opportunity and/or diversified food need is identified, which is still unrealized.	No opportunity and need is identified.
International Market	Unique feature(s) to enroll "niche" markets.	At least 1 unique future is specified, which already has high reputation in international market.	At least 1 unique future is specified, which is currently not well known for international market.	No unique future is specified.
	Acceptance by international markets in terms of the features of Sli Lankan products (e.g., color, shape, tastes, smell, chemical composition)	No specific feature is identified which is not acceptable for international market. Penetrate to developped markets (e.g., EU, USA, Japan, Korea)	Relatively less acceptance by international markets due to some specific features of Sli Lankan products. Penetrate to neighboring markets(e.g., Mordives, India, Pakistan, Middle east countries).	Less acceptance by international markets due to some specific features of Sli Lankan products.
	Good market growth in tha last 10 years and upward tendency of the growth.	More than 5 % of growth in the last 10 years and upward growth tendency.	Less than 5 % of growth in the last 10 years and the growth tendency is upward or flat.	The growth tendency is downward.
	Current export in value.	More than 10 million usd.	Between 10 million usd and 1 million usd.	Less than 1 million usd.
	The domestic supply shortage / row self-sufficiency rate (as the indicator of availability of surplus for exporting).	Supply shortage is continously affecting demand player's business and/or less than 60% of self-sufficiency rate.	Supply shortage is occasionally affecting demand player's business and/or less than 80% of self-sufficiency rate.	Supply shortage is not affecting demand player's business and/or more than 80% of self-sufficiency rate.
	Export performance of value-added products, exporter's idea/plan for future value addition.	Exporting at least one value-added products.	A potential for the future value- addition of exporting is idenfitied by exporters.	No value addition or identified potential for exporting

Commodity Profile based on the Demand Survey

Product Name	Rice
Final Product	Rice, Rice flour, Biscuits, Noodles, Vitamin A Fortified Rice, Rice wine

1. Demand Assessment

Domestic Market

Assessment; High

- More than 90 % of the Sri Lankans consume rice as their staple food.
- The prevailing shortage of production.

Production & Food Balance 2021				
Domestic Supply ('000 MT, paddy)	Self-Sufficiency (%)		Per Capita Food (kg/capita/year)	
5,150	95%		132	
% of Supply	NCP	24%	NP	9%

Source: Department of Census and Statistics and "Food Balance Sheet 2021"

International Market

Assessment; Relatively High

- Demand for some traditional rice varieties with herbal characteristics. (Suwadel ,Kalu heenati, etc.).
- The characteristics of Sri Lankan rice varieties (color, texture, appearance) are less accepted in international market

Export (Value, 1000 USD), FAOSTAT 2012-2021				Global Share	World Rank
CARG10y	CARG5y	2021	Trend (2012-2021)		
(5%)	13%	14,065		0%	56
Export Destination; Canada, Australia, Germany, UAE, UK					

Source: FAOSTAT 2012-2021, ITC Trade map - 1006 Rice as of August 2023
Note: CARG; Compound Annual Growth Rate. Contraction is shown in parentis.
Global share and world rank are based on the reported trade value.

2. Needs Assessment



a. Significance

"Quality", "Quantity", and "Origin" are relatively important factors for demand players.

b. Satisfaction

"Price", "Pesticides" are less satisfactory to demand players.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)
Note: Significance; percentage of players who consider relevant criteria are important.
Satisfaction: percentage of players who satisfied the product in terms of relevant criteria.

3. Strength and Opportunity for value addition

- Availability of traditional varieties with high medicinal value.
- High potential for rice-based food items: rice flour, noodles, biscuits, etc.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)

Commodity Profile based on the Demand Survey

Product Name	**Chili**
Final Product	Raw, dried , powder, sause, paste, and pickles.

1. Demand Assessment

Domestic Market

Assessment; High

• An essential condiment of the daily meal preparation.
• High potential for import subsitution - only 30-40% of dried chili production cater by the domestic production.

Production & Food Balance 2021				
Domestic Supply (MT)	Self-Sufficiency (%)		Per Capita Food (kg/capita/year)	
68,565	N.A.		N.A.	
% of Supply	NCP	14%	NP	15%

Source: Department of Census and Statistics and "Food Balance Sheet 2021"

International Market

Assessment; Relatively High

• Unique spicy taste.
• Quality improvement (appearance) is needed to attract international buyers/clients.

Export (Value, 1000 USD), FAOSTAT 2012-2021				Global Share	World Rank
CARG10y	CARG5y	2021	Trend (2012-2021)		
12%	15%	2,487		0.1%	45
Export Destination; UAE, Australia, Kuwait, Saudi Arabia.					

Source: FAOSTAT 2012-2021, ITC Trade map - 090422 **Fruits of the genus Capsium or of the genus Pementa, crushed or ground** as of August 2023
Note: CARG; Compound Annual Growth Rate. Contraction is shown in parentis. Global share and world rank are based on the reported trade value.

2. Needs Assessment



a. Significance

"Quality", "Quantity" are relatively important factors for demand players.

b. Satisfaction

"Price" is less satisfactory to demand players.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)
Note: Significance; percentage of players who consider relevant criterias are important.
Satisfaction: percentage of players who satisfied the product in terms of relevant criterias.

3. Strength and Opportunity for value addition

• Availability of wide range of chili varieties in deferent spice level.
• The demand of chili sauce is recently increasing.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)

Commodity Profile based on the Demand Survey

Product Name	**Pumpkin**
Final Product	Raw, pulp, powder, sause.

1. Demand Assessment

Domestic Market

Assessment; Relatively High

• Lower price during the season due to the excess production.
• Availability of other vegetables at reasonable price during the off season of pumpkin.

Production & Food Balance 2021				
Domestic Supply (MT)	Self-Sufficiency (%)		Per Capita Food (kg/capita/year)	
110,150	N.A.		N.A.	
% of Supply	NCP	24%	NP	9%

Source: Department of Census and Statistics and "Food Balance Sheet 2021"

International Market

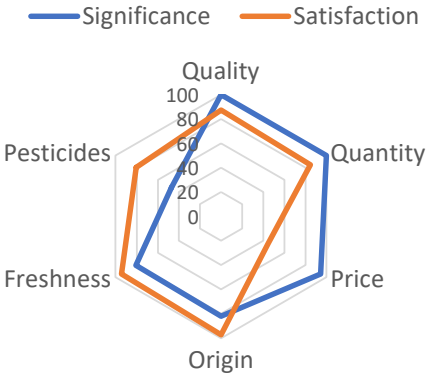
Assessment; Fair

• Unavailability of internationally high demand pumpkin varieties.
• Low demand for the raw pumpkin
• Unavailability of value-added products even though some potentials identified: pumpkin powder, pulp, etc.

Export (Value, 1000 USD), FAOSTAT 2012-2021				Global Share	World Rank
CARG10y	CARG5y	2021	Trend (2012-2021)		
n.a	27%	166		0.0%	71
Export Destination; n.a.					

Source: FAOSTAT 2012-2021, ITC Trade map - 070993 **Fresh or chilled pumpkins, squash and gourds "Cucurbita spp."** as of August 2023
Note: CARG; Compound Annual Growth Rate. Contraction is shown in parentis. Global share and world rank are based on the reported trade value.

2. Needs Assessment



a. Significance

"Quality", "Quantity", and "Price" are relatively important factors for demand players.

b. Satisfaction

"Price" is less satisfactory to demand players.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)
Note: Significance; percentage of players who consider relevant criterias are important.
Satisfaction: percentage of players who satisfied the product in terms of relevant criterias.

3. Strength and Opportunity for value addition

• Powder and pulp can be used to prepare various kind of desserts and bakery products.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)

Commodity Profile based on the Demand Survey

Product Name	Eggplant
Final Product	Raw, Pickles.

1. Demand Assessment

Domestic Market

Assessment; Fair

- Island wide year around demand at a lower price.
- Comparatively good demand for its unique color & taste.

Production & Food Balance 2021				
Domestic Supply (MT)	Self-Sufficiency (%)		Per Capita Food (kg/capita/year)	
16,878	N.A.		N.A.	
% of Supply	NCP	21%	NP	12%

Source: Department of Census and Statistics and "Food Balance Sheet 2021"

International Market

Assessment; Fair

- Appearance does not comply with the export standards- skin color/shape.
- Difficulties in maintaining the freshness due to absence of cold chain facilities.
- No continuous supply of products due to its seasonality.

Export (Value, 1000 USD), FAOSTAT 2012-2021				Global Share	World Rank
CARG10y	CARG5y	2021	Trend (2012-2021)		
n.a.	15%	12		0%	106
Export Destination; Switherland, UAE, Australia, Kuwait, Saudi Arabia					

Source: FAOSTAT 2012-2021, ITC Trade map - 070930 **Fresh or chilled aubergines "eggplants"** as of August 2023
Note: CARG; Compound Annual Growth Rate. Contraction is shown in parentis. Global share and world rank are based on the reported trade value.

2. Needs Assessment



a. Significance

"Quality", "Quantity" are relatively important factors for demand players.

b. Satisfaction

"Price", "Quantity" is less satisfactory to demand players.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)
Note: Significance; percentage of players who consider relevant criterias are important.
Satisfaction: percentage of players who satisfied the product in terms of relevant criterias.

3. Strength and Opportunity for value addition

- No specific strength / opportunity was identified by the demand players.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)

Commodity Profile based on the Demand Survey

Product Name **Red Onion / Big Onion**

Final Product Raw, powder, pickles.

1. Demand Assessment

Domestic Market

Assessment; Relatively High

• Essential condiment in Sri Lankan meals.
• Insufficient production to fulfill the domestic demand. Therefore, the rest of the demand met by the imports.

Production & Food Balance 2021				
Domestic Supply (MT)	Self-Sufficiency (%)		Per Capita Food (kg/capita/year)	
Red Onion: 53,784 Big Onion: 65,907	Onions: 31%		Onions: 16	
% of Supply	NCP	Red: 0% Big:64%	NP	Red: 53% Big: 3%

Source: Department of Census and Statistics and "Food Balance Sheet 2021"

International Market

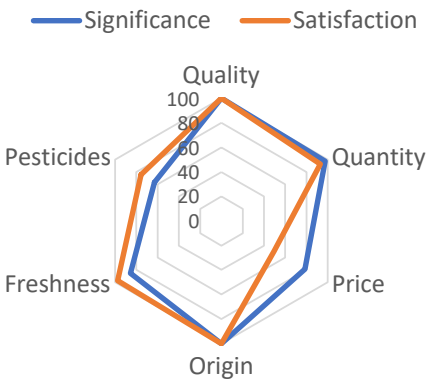
Assessment; Fair

• Lack of domestic production even to satisfy the local demand.

Export (Value, 1000 USD), FAOSTAT 2012-2021				Global Share	World Rank
CARG10y	CARG5y	2021	Trend (2012-2021)		
(100%)	(100%)	0		0.0%	98
Export Destination; UAE, Quatar, Kuwait, Switzearland, Oman					

Source: FAOSTAT 2012-2021, ITC Trade map - 070310 **Fresh or chilled onions and shallots ,** as of August 2023
Note: CARG; Compound Annual Growth Rate. Contraction is shown in parentis. Global share and world rank are based on the reported trade value.

2. Needs Assessment



a. Significance

"Quality", "Quantity", "Origin" are relatively important factors for demand players.

b. Satisfaction

"Price", "Pesticide" are less satisfactory to demand players.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)
Note: Significance; percentage of players who consider relevant criterias are important.
Satisfaction: percentage of players who satisfied the product in terms of relevant criterias.

3. Strength and Opportunity for value addition

• No specific strength / opportunity was identified by the demand players.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)

Commodity Profile based on the Demand Survey

Product Name	**Cinnamon**
Final Product	Quills, powder, oil, food supplements, nutraceuticals, pharmaceuticals

1. Demand Assessment

Domestic Market

Assessment; High

- Specific herbal characteristics and the medicinal value.
- High price and use in low quantities by households.

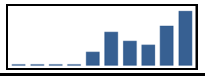
Production & Food Balance 2021				
Domestic Supply (MT)	Self-Sufficiency (%)		Per Capita Food (kg/capita/year)	
23,730	N.A.		N.A.	
% of Supply	NCP	0%	NP	0%

Source: Department of Census and Statistics and "Food Balance Sheet 2021"

International Market

Assessment; High

- Higher “Cinnamaldehyde” concentration and the unique brand image for Sri Lankan cinnamon.
- Higher potential for value added products- essential oil extraction, cinnamon powder, cinnamon cola, nutraceuticals and cosmetics etc.

Export (Value, 1000 USD), FAOSTAT 2012-2021				Global Share	World Rank
CARG10y	CARG5y	2021	Trend (2012-2021)		
7%	5%	247,368		21.5%	3
Export Destination; Mexico, USA, Peru, Colombia, Ecuador					

Source: FAOSTAT 2012-2021, ITC Trade map - 0906 **Cinnamon and cinnamon-tree flowers** as of August 2023

Note: CARG; Compound Annual Growth Rate. Contraction is shown in parentis. Global share and world rank are based on the reported trade value.

2. Needs Assessment



a. Significance

"Quality", "Quantity", "Price", "Origin" are relatively important factors for demand players.

b. Satisfaction

"Price", "Quality" are less satisfactory to demand players.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)

Note: Significance; percentage of players who consider relevant criterias are important.
Satisfaction: percentage of players who satisfied the product in terms of relevant criterias.

3. Strength and Opportunity for value addition

- Extracting cinnamaldehyde from cinnamon to be use in the Coca-Cola industry. (E.g.: Cinnamon-Cola)
- Developing a product of Cinnamon water.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)

Commodity Profile based on the Demand Survey

Product Name	**Ginger / Turmeric**
Final Product	Powder, dried pieces, costmetics.

1. Demand Assessment

Domestic Market

Assessment; Relatively High

• Essential condiment for Sri Lankan foods.
• Higher usage for medicinal and herbal characteristics and cultural value in Northern area.

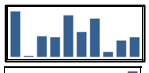
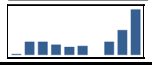
Production & Food Balance 2021				
Domestic Supply (MT)	Self-Sufficiency (%)		Per Capita Food (kg/capita/year)	
(Ginger) 56,842 (Turmeric) 51,945	N.A.		N.A.	
% of Supply	NCP	1% 1%	NP	0% 0%

Source: Department of Census and Statistics and "Food Balance Sheet 2021"

International Market

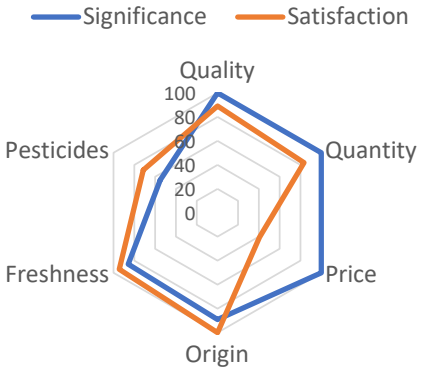
Assessment; High

• Good color, aroma, and its unique taste.

Export (Value, 1000 USD), FAOSTAT 2012-2021				Global Share	World Rank
CARG10y	CARG5y	2021	Trend (2012-2021)		
(6%)	(3%)	541		0.1%	93
17%	27%	10,117			
Export Destination; (Ginger) Germany, UAE, UK, USA, New Zealand (Turmeric) France, Canada, UK, Germany					

Source: FAOSTAT 2012-2021, ITC Trade map - 0910 **Ginger, saffron, turmeric "curcuma", thyme, bay leaves, curry and other spices (excl. pepper..)** as of August 2023
Note: CARG; Compound Annual Growth Rate. Contraction is shown in parentis. Global share and world rank are based on the reported trade value.

2. Needs Assessment



a. Significance

"Quality", "Quantity", "Price" are relatively important factors for demand players.

b. Satisfaction

"Price", "Pesticide" are less satisfactory to demand players.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)
Note: Significance; percentage of players who consider relevant criterias are important.
Satisfaction: percentage of players who satisfied the product in terms of relevant criterias.

3. Strength and Opportunity for value addition

• Value addition potential is relatively high for the cosmetics & pharmaceuticals.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)

Commodity Profile based on the Demand Survey

Product Name	**Banana and Plantain**
Final Product	Raw, dried chips, frozen, powder

1. Demand Assessment

Domestic Market

Assessment; Relatively High

• Easily available and most affordable fruit in Sri Lanka.
• Different varieties available in different prices.(baby banana, Kolikuttu, Amban, sour)

Production & Food Balance 2021				
Domestic Supply (000' nos)	Self-Sufficiency (%)		Per Capita Food (kg/capita/year)	
62,090	N.A.		N.A.	
% of Supply	NCP	16%	NP	14%

Source: Department of Census and Statistics and "Food Balance Sheet 2021"

International Market

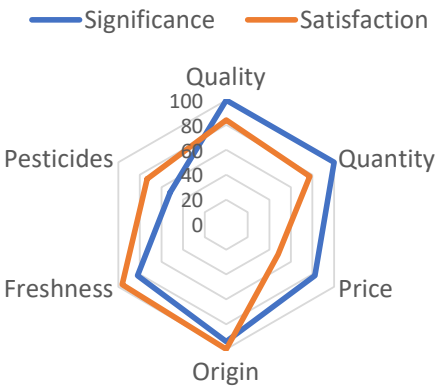
Assessment; High

• Unique taste in Sri Lankan baby banana

Export (Value, 1000 USD), FAOSTAT 2012-2021				Global Share	World Rank
CARG10y	CARG5y	2021	Trend (2012-2021)		
9%	(5%)	13,726		0.1%	49
Export Destination; Saudi Arabia, Quatar, UAE, Kwait, Bahrain					

Source: FAOSTAT 2012-2021, ITC Trade map - 070993 **Fresh or chilled pumpkins, squash and gourds "Cucurbita spp."** as of August 2023
Note: CARG; Compound Annual Growth Rate. Contraction is shown in parentis. Global share and world rank are based on the reported trade value.

2. Needs Assessment



a. Significance

"Quality", "Quantity" , "Origin" are relatively important factors for demand players.

b. Satisfaction

"Price", "Quantity", "Pesticide" are less satisfactory to demand players.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)
Note: Significance; percentage of players who consider relevant criterias are important.
Satisfaction: percentage of players who satisfied the product in terms of relevant criterias.

3. Strength and Opportunity for value addition

• Implementation of IQF (Individual Quick Freezing) method for fruit processing.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)

Commodity Profile based on the Demand Survey

Product Name	**Mango**
Final Product	Raw, pulp, juice, drink, dried, powder, jam, freezed, chunks, ice creams, jams.

1. Demand Assessment

Domestic Market

Assessment; High

- Availabiity of varieties with unique tropical tastes.
- High range of value addition products.
- Relatively low usage of agrochemicals.

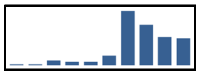
Production & Food Balance 2021				
Domestic Supply (000' nos)	Self-Sufficiency (%)		Per Capita Food (kg/capita/year)	
496,488	n.a.		n.a.	
% of Supply	NCP	27%	NP	4%

Source: Department of Census and Statistics and "Food Balance Sheet 2021"

International Market

Assessment; High

- Low COP (Cholesterol Oxidation Product) of local varieties.
- Availability of varieties with unique tropical tastes.
- High concentration of beta carotene.
- High range of value addition.

Export (Value, 1000 USD), FAOSTAT 2012-2021				Global Share	World Rank
CARG10y	CARG5y	2021	Trend (2012-2021)		
21%	23%	1,819		0.1%	47

Export Destination; UAE, Saudi Arabia, Oman, USA

Source: FAOSTAT 2012-2021, ITC Trade map - 080450 **Fresh or dried guavas, mangoes and mangosteens** as of August 2023.
Note: CARG; Compound Annual Growth Rate. Contraction is shown in parentis. Global share and world rank are based on the reported trade value.

2. Needs Assessment



a. Significance

"Quality", "Quantity" , "Origin" are relatively important factors for demand players.

b. Satisfaction

"Price" is less satisfactory to demand players.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)
Note: Significance; percentage of players who consider relevant criterias are important.
Satisfaction: percentage of players who satisfied the product in terms of relevant criterias.

3. Strength and Opportunity for value addition

- High range of value addition.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)

Commodity Profile based on the Demand Survey

Product Name	**Pineapple**
Final Product	Raw, pulp, juice, pickles, frozen.

1. Demand Assessment

Domestic Market

Assessment; High

- Not sufficient domestic production.
- Unique taste.

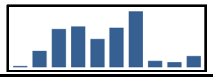
Production & Food Balance 2021				
Domestic Supply (000' nos)	Self-Sufficiency (%)		Per Capita Food (kg/capita/year)	
39,285	102%		2	
% of Supply	NCP	0%	NP	1%

Source: Department of Census and Statistics and "Food Balance Sheet 2021"

International Market

Assessment; High

- Potential variety (Mauritious) with unique tropical taste.
- Higher range of value addition.

Export (Value, 1000 USD), FAOSTAT 2012-2021				Global Share	World Rank
CARG10y	CARG5y	2021	Trend (2012-2021)		
6%	(16%)	2,517		0.1%	47

Export Destination; Germany, Australia, USA, UAE, Netherland

Source: FAOSTAT 2012-2021, ITC Trade map - 080450 **Fresh or dried guavas, mangoes and mangosteens** as of August 2023

Note: CARG; Compound Annual Growth Rate. Contraction is shown in parentis. Global share and world rank are based on the reported trade value.

2. Needs Assessment



a. Significance

"Quality", "Quantity", "Origin" are relatively important factors for demand players.

b. Satisfaction

"Price", "Quantity", "Pesticide" are less satisfactory to demand players.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)

Note: Significance; percentage of players who consider relevant criterias are important.

Satisfaction: percentage of players who satisfied the product in terms of relevant criterias.

3. Strength and Opportunity for value addition

- High range of value addition.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)

Commodity Profile based on the Demand Survey

Product Name	**Papaya**
Final Product	Raw, pulp, juice, pickles, frozen.

1. Demand Assessment

Domestic Market

Assessment; Relatively High

- Easily availabile and affordable fruit.
- Relatively high useage of agrochemical.

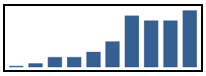
Production & Food Balance 2021				
Domestic Supply (000' nos)	Self-Sufficiency (%)		Per Capita Food (kg/capita/year)	
86,414	n.a.		n.a.	
% of Supply	NCP	32%	NP	8%

Source: Department of Census and Statistics and "Food Balance Sheet 2021"

International Market

Assessment; Relatively High

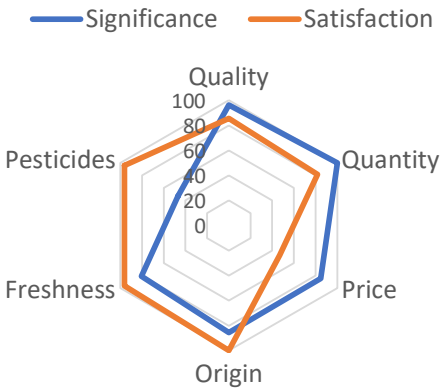
- Rapid increase in the last decade.
- Unavailability of varieties which has international demand.

Export (Value, 1000 USD), FAOSTAT 2012-2021				Global Share	World Rank
CARG10y	CARG5y	2021	Trend (2012-2021)		
28%	19%	6,949		2.3%	8

Export Destination; UAE, Quatar, Kuwait, Saudi Arabia, Oman.

Source: FAOSTAT 2012-2021, ITC Trade map - 080720 Fresh pawpaws "papayas" as of August 2023
Note: CARG; Compound Annual Growth Rate. Contraction is shown in parentis. Global share and world rank are based on the reported trade value.

2. Needs Assessment



a. Significance

"Quality", "Quantity" are relatively important factors for demand players.

b. Satisfaction

"Price" is less satisfactory to demand players.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)
Note: Significance; percentage of players who consider relevant criterias are important.
Satisfaction: percentage of players who satisfied the product in terms of relevant criterias.

3. Strength and Opportunity for value addition

- Relatively high range of value addition.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)

Commodity Profile based on the Demand Survey

Product Name	**Groundnut**
Final Product	Raw, butter, oil, snacks.

1. Demand Assessment

Domestic Market

Assessment; Relatively High

- Lack of domestic production to fulfill the domestic demand. Therefore, the rest of the demand met by the imports.
- Relatively low production of high demand varieties - Jambo peanuts.

Production & Food Balance 2021				
Domestic Supply (MT)	Self-Sufficiency (%)		Per Capita Food (kg/capita/year)	
36,947	100%		1	
% of Supply	NCP	13%	NP	20%

Source: Department of Census and Statistics and "Food Balance Sheet 2021"

International Market

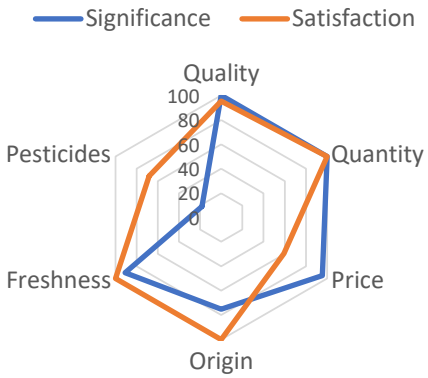
Assessment; Relatively High

- Lack of domestic production even to satisfy the local demand.

Export (Value, 1000 USD), FAOSTAT 2012-2021				Global Share	World Rank
CARG10y	CARG5y	2021	Trend (2012-2021)		
23%	n.a.	13		0.0%	121
Export Destination; Switzerland, India, Australia, Sweden, Netherlands.					

Source: FAOSTAT 2012-2021, ITC Trade map - 1202 **Groundnuts, whether or not shelled or broken (excl. roasted or otherwise cooked)** as of August 2023
Note: CARG; Compound Annual Growth Rate. Contraction is shown in parentis. Global share and world rank are based on the reported trade value.

2. Needs Assessment



a. Significance

"Quality", "Quantity", "Price" are relatively important factors for demand players.

b. Satisfaction

"Price", "Pesticides" are less satisfactory to demand players.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)
Note: Significance; percentage of players who consider relevant criterias are important.
Satisfaction: percentage of players who satisfied the product in terms of relevant criterias.

3. Strength and Opportunity for value addition

- No specific strength / opportunity was identified by the demand players.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)

Commodity Profile based on the Demand Survey

Product Name	**Sesame**
Final Product	Raw, oil, powder

1. Demand Assessment

Domestic Market

Assessment; Relatively High

- High potential for expansion due to low production
- Not established as commercial cultivation.

Production & Food Balance 2021				
Domestic Supply (MT)	Self-Sufficiency (%)		Per Capita Food (kg/capita/year)	
11,999	167%		Less than 1 kg	
% of Supply	NCP	63%	NP	10%

Source: Department of Census and Statistics and "Food Balance Sheet 2021"

International Market

Assessment; Relatively High

- Lack of interest of farmers to cultivate sesame with its agronomical practices.

Export (Value, 1000 USD), FAOSTAT 2012-2021				Global Share	World Rank
CARG10y	CARG5y	2021	Trend (2012-2021)		
5%	18%	3,962		0.4%	23
Export Destination; Italy, Maldives, Denmark, Canada, Sweden					

Source: FAOSTAT 2012-2021, ITC Trade map - 120740 Sesamum seeds, whether or not broken as ofAugust 2023Note: CARG; Compound Annual Growth Rate. Contraction is shown in parentis. Global share and world rank are based on the reported trade value.

2. Needs Assessment



a. Significance

"Quality", "Quantity" , **"Origin"** are relatively important factors for demand players.

b. Satisfaction

"Price", is less satisfactory to demand players.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)
Note: Significance; percentage of players who consider relevant criterias are important.
Satisfaction: percentage of players who satisfied the product in terms of relevant criterias.

3. Strength and Opportunity for value addition

- Value addition and oil extraction technology are not well-developed.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)

Commodity Profile based on the Demand Survey

Product Name	**Chicken Meat**
Final Product	Raw, frozen, ready-to eat foods (e.g., spicy chicken), sausages, meat balls.

1. Demand Assessment

Domestic Market

Assessment; High

- Mostly common meat type in Sri Lankan meals.
- High availability in quality processed chicken.

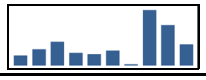
Production & Food Balance 2021				
Domestic Supply (000' nos)	Self-Sufficiency (%)		Per Capita Food (kg/capita/year)	
24,310	101%		11	
% of Supply	NCP	4%	NP	4%

Source: Department of Census and Statistics and "Food Balance Sheet 2021"

International Market

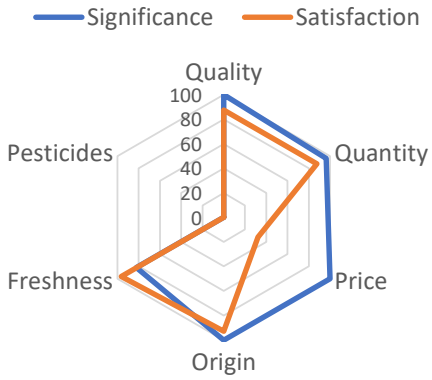
Assessment; Relatively High

- Increasing demand of frozen chicken for Gulf countries and Maldives.
- Good brand image for Sri Lankan Chicken due to bird flu free country.
- Weak price competitiveness.
- Lack of technology for value addition to meet export requirements.

Export (Value, 1000 USD), FAOSTAT 2012-2021				Global Share	World Rank
CARG10y	CARG5y	2021	Trend (2012-2021)		
7%	6%	1,107		0.0%	84
Export Destination; Maldives and some Gulf countries.					

Source: FAOSTAT 2012-2021, ITC Trade map - 0207 **Meat and edible offal of fowls of the species Gallus domesticus, ducks, geese, turkeys and . . .** as of August 2023
Note: CARG; Compound Annual Growth Rate. Contraction is shown in parentis. Global share and world rank are based on the reported trade value.

2. Needs Assessment



a. Significance

"Quality", "Quantity","Origin" are relatively important factors for demand players.

b. Satisfaction

"Price" is less satisfactory to demand players.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)
Note: Significance; percentage of players who consider relevant criterias are important.
Satisfaction: percentage of players who satisfied the product in terms of relevant criterias.

3. Strength and Opportunity for value addition

- Precooked and spicy chicken for local market.
- Chicken parts for leading multinational restaurant chains

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)

Commodity Profile based on the Demand Survey

Product Name	**Raw Milk (cattle and buffalo)**
Final Product	Pasteurized milk, flavoured milk, ghee, yogurt, milk powder, butter, cheese, ice cream.

1. Demand Assessment

Domestic Market

Assessment; High

- One of best versatile nutrients source available with lower cost.
- One of the mostly used food ingredient in food industry.

Production & Food Balance 2021				
Domestic Supply (000' Ltrs per day)	Self-Sufficiency (%)		Per Capita Food (kg/capita/year)	
35,447	87%		15	
% of Supply	NCP	16%	NP	13%

Source: Department of Census and Statistics and "Food Balance Sheet 2021"

International Market

Assessment; Fair

- Lack of domestic production even to satisfy the local demand.
- Unavailability of internationally recognized brands.

Export (Value, 1000 USD), FAOSTAT 2012-2021				Global Share	World Rank
CARG10y	CARG5y	2021	Trend (2012-2021)		
27%	39%	26		0.0%	76
Export Destination; Maldives, Canada, USA, Italy, UK.					

Source: FAOSTAT 2012-2021, ITC Trade map - 0402 **Milk and cream, concentrated or containing added sugar or other sweetening matter** as of August 2023
Note: CARG; Compound Annual Growth Rate. Contraction is shown in parentis. Global share and world rank are based on the reported trade value.

2. Needs Assessment



a. Significance

"Quality", "Quantity", "Price" are relatively important factors for demand players.

b. Satisfaction

"Price" is less satisfactory to demand players.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)
Note: Significance; percentage of players who consider relevant criterias are important.
Satisfaction: percentage of players who satisfied the product in terms of relevant criterias.

3. Strength and Opportunity for value addition

High range of value added products – curd, cheese, cake, butter, yogurt and ice cream etc.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)

Commodity Profile based on the Demand Survey

Product Name	**Hen Egg**
Final Product	Raw, liquid egg, powder.

1. Demand Assessment

Domestic Market

Assessment; Relatively High

- One of best versatile nutrients source available with lower cost.
- One of the mostly used food ingredient in food industry.

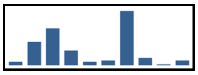
Production & Food Balance 2021				
Domestic Supply (000' nos per month)	Self-Sufficiency (%)		Per Capita Food (kg/capita/year)	
162,809	100%		4	
% of Supply	NCP	5%	NP	3%

Source: Department of Census and Statistics and "Food Balance Sheet 2021"

International Market

Assessment; Fair

- Lack of domestic production even to satisfy the local demand.

Export (Value, 1000 USD), FAOSTAT 2012-2021				Global Share	World Rank
CARG10y	CARG5y	2021	Trend (2012-2021)		
1%	(2%)	846		0.0%	65
Export Destination; Maldives, Canada, USA, Italy, UK.					

Source: FAOSTAT 2012-2021, ITC Trade map - 0407 **Birds' eggs, in shell, fresh, preserved or cooked** as of August 2023
Note: CARG; Compound Annual Growth Rate. Contraction is shown in parentis. Global share and world rank are based on the reported trade value.

2. Needs Assessment



a. Significance

"Quality", "Quantity", "Price" are relatively important factors for demand players.

b. Satisfaction

"Price" is less satisfactory to demand players.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)
Note: Significance; percentage of players who consider relevant criterias are important.
Satisfaction: percentage of players who satisfied the product in terms of relevant criterias.

3. Strength and Opportunity for value addition

- Not improved technology for egg value addition.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)

Commodity Profile based on the Demand Survey

Product Name	**Coconut**
Final Product	Raw, Coconut milk, desiccated coconut, powder, coconut water, virgin oil, snacks, cream, VCO capsules.

1. Demand Assessment

Domestic Market

Assessment; High

• One of the main food ingredients of Sri Lankan meals.
• Heavily used in Sri Lanka for day-to-day consumption for making curries and Coconut Salad (Sambol)

Production & Food Balance 2021				
Domestic Supply (Nuts mn)	Self-Sufficiency (%)		Per Capita Food (kg/capita/year)	
3,120	152%		18	
% of Supply	NCP	4%	NP	11%

Source: Department of Census and Statistics and "Food Balance Sheet 2021"

International Market

Assessment; High

• Fine texture, flavor and lightest color and is considered as the best quality desiccated coconuts in the global market.
• Rich in higher fat content as a result of tropical weather condition.

Export (Value, 1000 USD), FAOSTAT 2012-2021				Global Share	World Rank
CARG10y	CARG5y	2021	Trend (2012-2021)		
6%	7%	127,325		10.5%	3
Export Destination; UAE, Pakistan, Canada, UK, Australia					

Source: FAOSTAT 2012-2021, ITC Trade map - 080111 **Desiccated coconuts** as of August 2023
Note: CARG; Compound Annual Growth Rate. Contraction is shown in parentis. Global share and world rank are based on the reported trade value.

2. Needs Assessment



a. Significance

"Quality", "Quantity", "Price" are relatively important factors for demand players.

b. Satisfaction

"Price" is less satisfactory to demand players.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)
Note: Significance; percentage of players who consider relevant criteria are important.
Satisfaction: percentage of players who satisfied the product in terms of relevant criteria.

3. Strength and Opportunity for value addition

• Potential in developing a high- protein, low -fat coconut drink by blending it with cinnamon.
• Potential in virgin coconut capsule for high-end market.
• High potential for value added products in different range (e.g., a yoghurt, white oil, ice cream)
• Coir and allied product- fiber pith products and value added coir products.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)

Commodity Profile based on the Demand Survey

Product Name	**Maize**
Final Product	Raw, animal feed ingredient, breakfast cereals, canned products.

1. Demand Assessment

Domestic Market

Assessment; Relatively High

- Main feed ingredient in growing animal feed industry.
- Used for samaposha as a free food supplement provided for pregnant mother and mal nutritious children
- 70% of the demand cater by the imports

Production & Food Balance 2021				
Domestic Supply (MT)	Self-Sufficiency (%)		Per Capita Food (kg/capita/year)	
472,444	98%*		3	
% of Supply	NCP	43%	NP	1%

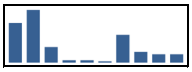
Source: Department of Census and Statistics and "Food Balance Sheet 2021"

* For human consumption; it does not consider animal feed ingredients.

International Market

Assessment; Fair

- Lack of domestic production even to satisfy the local demand.
- Weak price competitiveness in global market due to high cost of production.

Export (Value, 1000 USD), FAOSTAT 2012-2021				Global Share	World Rank
CARG10y	CARG5y	2021	Trend (2012-2021)		
(16%)	85%	47		0.1%	93
Export Destination; Japan, UK, Senegal, Qatar, Maldives.					

Source: FAOSTAT 2012-2021, ITC Trade map - 1005 **Maize or Corn** as of August 2023
Note: CARG; Compound Annual Growth Rate. Contraction is shown in parentis. Global share and world rank are based on the reported trade value.

2. Needs Assessment



a. Significance

"Quality", "Origin" are relatively important factors for demand players.

b. Satisfaction

"Price" is less satisfactory to demand players.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)
Note: Significance; percentage of players who consider relevant criteria are important.
Satisfaction: percentage of players who satisfied the product in terms of relevant criteria.

3. Strength and Opportunity for value addition

- Potential to supply SME level feed manufacturing and food supplement manufacturing.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)

Commodity Profile based on the Demand Survey

Product Name	**Aloe Vera**
Final Product	Gel, cubes, pulp, powder, beverage, cosmetics ingredient.

1. Demand Assessment

Domestic Market

Assessment; Fair

- Low demand for large quantities.
- Not established as commercial cultivation.
- No improved technology to develop the value additions.

Production & Food Balance 2021				
Domestic Supply (000' MT)	Self-Sufficiency (%)		Per Capita Food (kg/capita/year)	
n.a.	n.a.		n.a.	
% of Supply	NCP	n.a	NP	n.a

Source: Department of Census and Statistics and "Food Balance Sheet 2021"

International Market

Assessment; Relatively High

- High medicinal value of the Sri Lankan variety due to low “Aloin” content.

Export (Value, 1000 USD), FAOSTAT 2012-2021				Global Share	World Rank
CARG10y	CARG5y	2021	Trend (2012-2021)		
n.a	n.a	n.a	n.a	n.a	n.a
Export Destination; n.a					

Source: FAOSTAT 2012-2021, ITC Trade map
Note: CARG; Compound Annual Growth Rate. Contraction is shown in parentis. Global share and world rank are based on the reported trade value.

2. Needs Assessment



a. Significance

There is **no specific criteria** which is relatively important / not important for demand players.

b. Satisfaction

"Price" is less satisfactory to demand players.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)
Note: Significance; percentage of players who consider relevant criteria are important.
Satisfaction: percentage of players who satisfied the product in terms of relevant criteria.

3. Strength and Opportunity for value addition

- A raw material of shashe pack for individual consumption as wellness product.
- Currently value addition is only cosmetic products but expected to widen into food products to the export market.

Source: Interview to demand players (domestic & overseas) in JICA's demand survey (2023)