

The Republic of Indonesia

**Data Collection Survey on  
Agricultural Product Distribution System of  
Food Industry in Indonesia**

**Final Report**

July 2013

**Japan International Cooperation Agency (JICA)**

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**International Development Center of Japan Inc.  
IC Net Limited**

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## Abbreviations

	Indonesia	English
ABSP	-	Agricultural Biotechnology Support Project
AFTA	-	ASEAN Free Trade Area
AIP	-	Australia Indonesia Partnership
AMARTA	-	Agribusiness Market and Support Activity
AR	-	Accounts Receivable
ARP	Asosiasi Rantai Pendingin Indonesia	-
ASEAN	-	Association of Southeast Asian Nations
AusAID	-	Australian Agency for International Development
BAPPENAS	Badan Perencanaan dan Pembangunan Nasional	State Ministry of National Development Planning
BPOM	Badan Pengawas Obat dan Makanan	-
BPS	Badan Pusat Statistik	-
CVS		Convenience Store
DC	-	Distribution Center
DIT	-	Department of Internal Trade
EI-ADO	-	Analyzing Agribusiness Development Opportunities in Eastern Indonesia
GAP	-	Good Agricultural Practice
GDP	-	Gross Domestic Product
GHP	-	Good Handling Practice
GMP	-	Good Manufacturing Practice
GMS	-	Greater Mekong Sub-region
HACCP	-	Hazard Analysis and Critical Control Point
HM	-	Hypermarket
IAARP	-	Indonesian Agency for Agricultural Research and Development
ICT	-	Information and Communication Technology
IFORM		International Federation of Organic Agriculture Movements
IFPRI	-	International Food Policy Research Institute
IMF	-	International Monetary Fund
IPM-CRSP	-	Integrated Pest Management Collaborative Research Support Program
IRRI	-	International Rice Research Institute
JICA	-	Japan International Cooperation Agency
MP3EI	Masterplan Percepatan dan Perluasan Pembangunan Ekonomi Indonesia	Master Plan for Acceleration and Expansion of Indonesia's Economic Development
NGO	-	Non-governmental Organization



NRM II	-	Indonesia Golden Rice Program
PADA	-	Papua Agriculture Development Alliance
PBS	-	Program for Biosafety System
PDC	-	Provincial Distribution Center
PIKJ	Pasar Induk Kramat Jati	Kramat Jati Wholesale Market
PPP	-	Public-Private Partnership
PU	Kementerian Pekerjaan Umum	Ministry of Public Works
RDC	-	Regional Distribution Center
SCAI	-	Specialty Coffee Association of Indonesia
SM	-	Supermarket
SMARTD	-	Sustainable Management of Agricultural Research and Technology Dissemination
STA	-	Sub-terminal of Agribusiness
TA	-	Terminal of Agribusiness
USAID	-	United States Agency for International Development
USDA	-	United States Department of Agriculture
VCC	-	Value Chain Center
WB	-	World Bank

# 1 Background and Objectives of the Study

## 1.1 Background of the Study

National disposable incomes of Southeast Asian countries are currently expanding, driven by a robust economic growth. By the year 2015, the middle-class population in the top five members of the Association of Southeast Asian Nations, the so-called ASEAN 5 (Indonesia, Thailand, Malaysia, Vietnam, and the Philippines) is predicted to reach 320 million (JETRO, 2010). Backed by the increase in population, consumers' motivation to spend on food, and diet diversity, the size of food market both in the field of processed food and fresh food is expanding. Retail stores such as hypermarkets and supermarkets are increasing, and modern food services such as restaurants and fast food are growing rapidly mainly in city areas. In most parts of the country, particularly in rural areas, traditional markets and small private stores are still mainly used by low-income groups. However, both foreign and local modern retailers are expected to further expand their businesses driven by increasing demand mainly from middle income and young people.

In such an environment, building an efficient supply chain of agricultural products becomes one of the major challenges of retail and food service companies that plan to enter the fresh food business or to procure fresh food. However, various issues such as lack of transport infrastructure and cold chain, complex and high cost structure with many brokers, unsanitary environment of wholesale and retail market facilities, inadequate washing, sorting and packing, and increase in product loss still exist in the traditional distribution system of agricultural products, resulting in reduced quality, freshness, and food safety. Thus, currently it is difficult to stably obtain high quality and safe food products. There are many enterprises that depend on import products to remedy this problem, and such situation is limiting access of domestic food producers to the growing market. To increase the shipment of domestic products, it is essential to integrate a supply chain in cooperation with modern food enterprises, reliable distributors, farmers, and a farmer's group.

Past development aid from the Japanese government to Indonesia in the agriculture sector has been focused on production process. In the area of distribution process, aid for improving wholesale market facilities of fruits, vegetables, and fisheries products in traditional distribution systems has been implemented in the past such as "The Support Program for Agriculture and Fisheries Development in the Republic of Indonesia"(2005) and "Distribution Mechanism Reform through Development of Wholesale Market" (2011). In order to promote the Indonesian food industry together with the development of agriculture and fisheries industries, there should be a much closer connection between producers and consumers and a supply chain that allows an efficient movement of products. Such approach is also necessary in terms of encouraging Japanese enterprises attracted to Indonesian market potentials.

Among the ASEAN-member states, Thailand is considered to have an advanced food distribution system. It has relatively progressed in making the shift from a traditional to a modern distribution system of

agricultural and fisheries products. Also, a fresh food supply chain has been built by supermarkets and food service enterprises, and these enterprises are developing businesses in other nations as well. Indonesia and the rest of ASEAN can learn not only from Thailand's experience in modernizing its distribution system but also from the companies that are presently utilizing this non-traditional approach.

In the "Master Plan for Acceleration and Expansion of Indonesia's Economic Development 2011-2025 (MP3EI)", it is stated that Indonesia aims to reduce the regional imbalance of economic development through strengthening national connectivity (acceleration in the flow of people, products, and information as well as in the growth of regional industries) and developing six Indonesia Economic Corridors. This study aims to help create a stronger link between producers and consumers through analyzing factors that impede the development of supply chains and removing such impediments, which also contributes to strengthen national connectivity.

## 1.2 Objectives of the Study

By reviewing existing documents and conducting interviews with persons involved in the Indonesian food industry (e.g., private enterprises, government agencies, and donors) and farm producers, this research aims to collect fundamental information on the fresh food supply chain in Indonesia's retail and food service industries and to analyze stakeholders' needs and impediments to a stable and efficient local procurement of fresh food. Fundamental information collected through this research is to be utilized for considering JICA's future assistance policy in the areas of agriculture and rural development in Southeast Asian countries that are relatively developed. Additionally, the development path and current status of Thailand's distribution system of agricultural and fisheries products are studied to draw lessons for other ASEAN members including Indonesia, and their effects on business development of private companies and programs/projects are examined.

The objectives of this study are as stated below.

- To collect and analyze fundamental information on current status and structure of the fresh food supply chain in the food retail and food service industries in Indonesia and Thailand.
- To analyze and consider impediments to safe and efficient domestic procurements and stakeholders' needs in Indonesia and Thailand.
- To make program/project proposals in the area of agricultural product distribution in Southeast Asian countries, and collect, examine, and organize useful information that contributes to the acceleration of private companies' business development in Indonesia.

## 1.3 Study Outcome

The expected outcomes of this research are as indicated below.

- Obtain a comprehensive view of the Indonesian distribution system
- Capture supply chain structures of selected agricultural products in Indonesia

#### 1.4 Survey Area

The areas to be covered in this study are as stated below and shown in the following figures.

Indonesia: Java (Jakarta region) and Sumatra Islands

Thailand: Bangkok and surrounding provinces and Chiang Mai

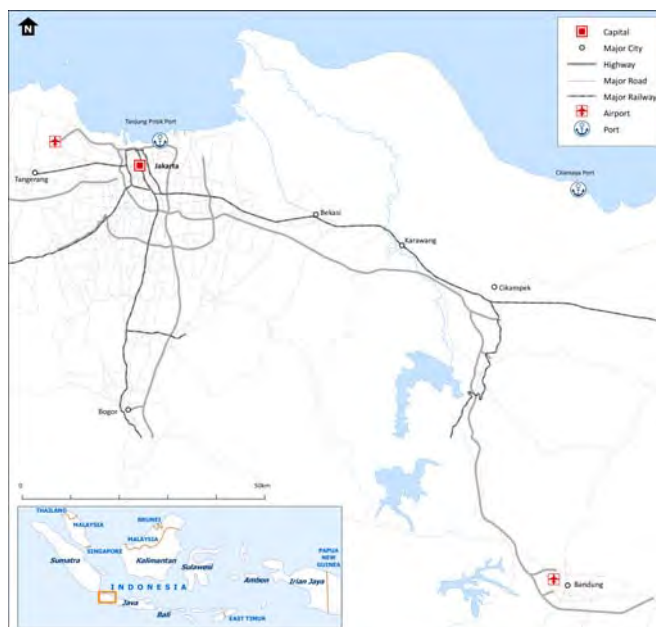


Figure 1.1 Survey Area 1: Java Island (centering on JKT)



Figure 1.2 Survey Area 2: Sumatra Island

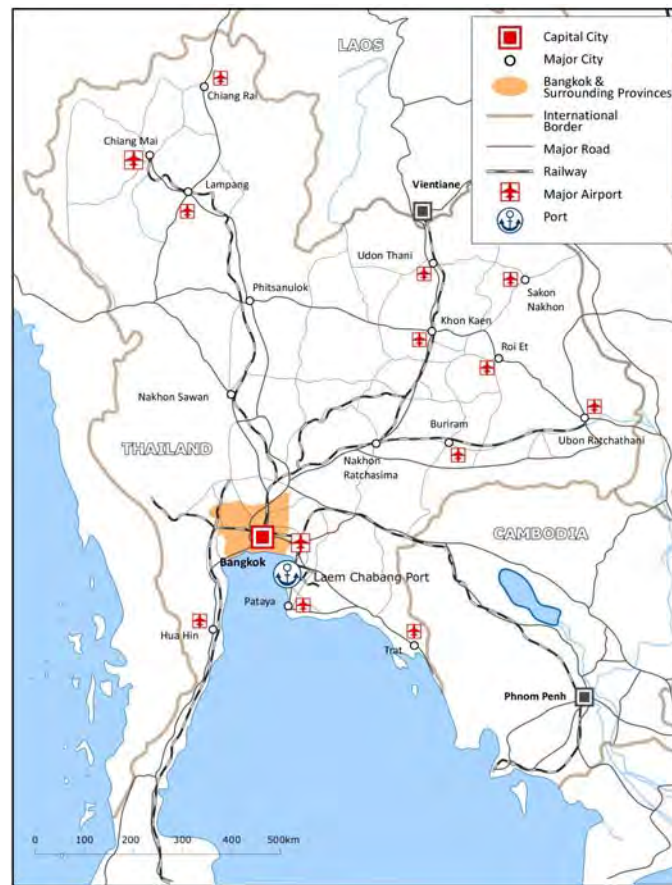


Figure 1.3 Survey Area 3: Bangkok and the Surrounding Area

## 1.5 Work Plan

The workflow of this study is as shown in Figure 1.4.

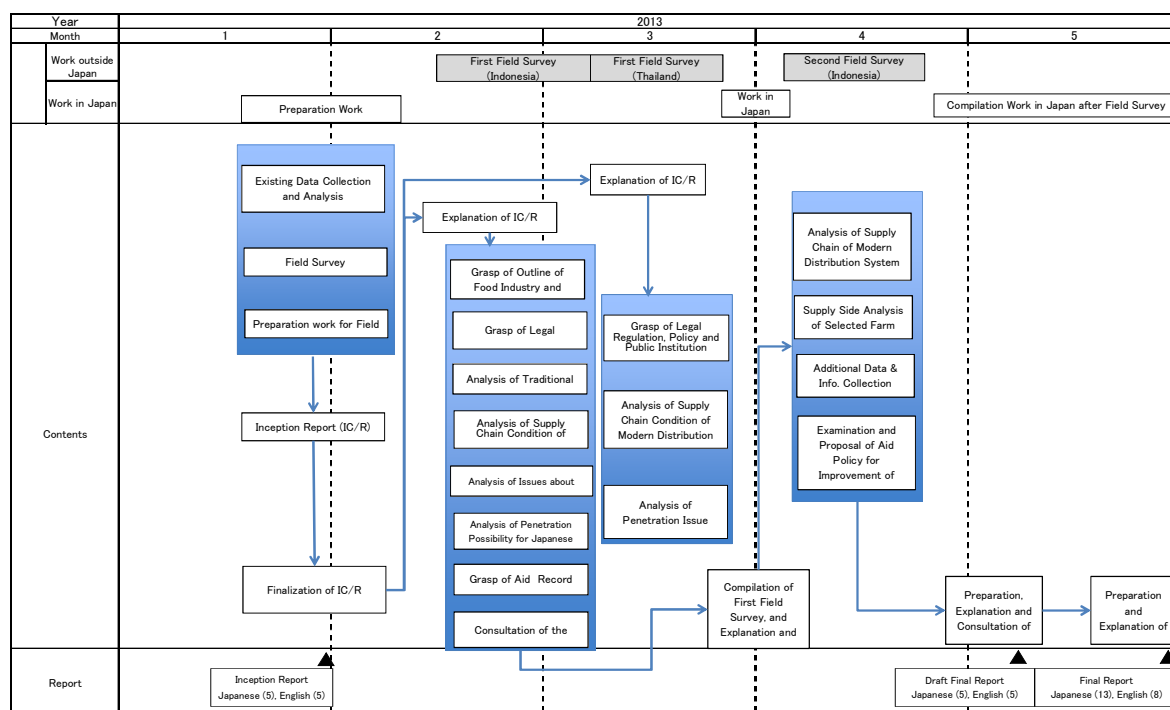


Figure 1.4 Workflow of the Study

## 1.6 Contents of this Report

This is an English version of the final report, which compiles all information, analyses and program/project proposals in the course of the Study. This report consists of the following five chapters:

Chapter 1: Background and Objectives of the Study

Chapter 2: Environment of Agricultural Product Distribution in Indonesia

Chapter 3: Analysis of Agricultural Product Distribution and Identification of its Challenges

Chapter 4: Cooperation by International and Bilateral Donors

Chapter 5: Program/Project Proposals for Agricultural Product Distribution in Indonesia

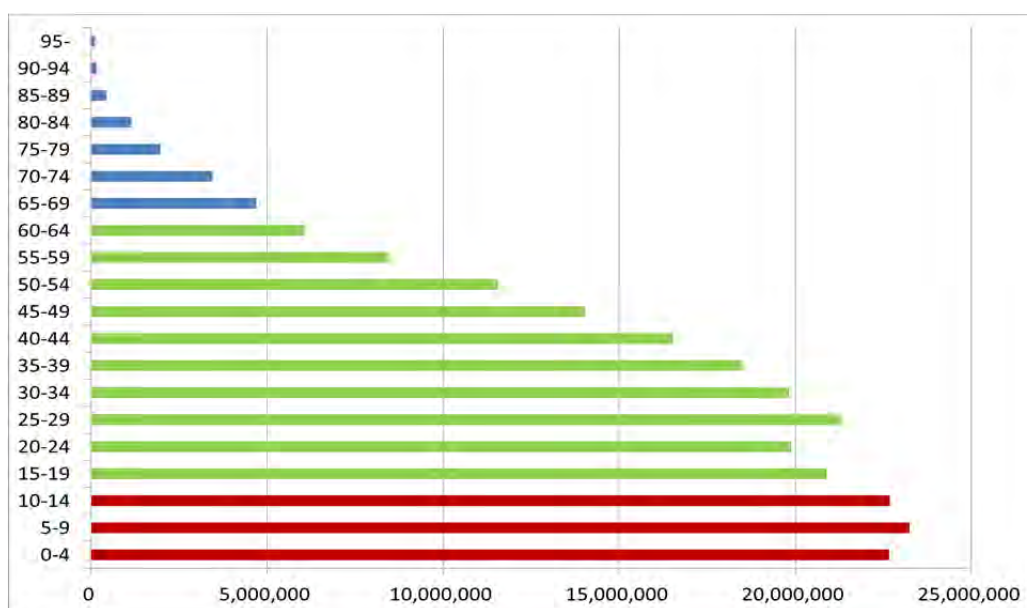
## 2 Environment of Agricultural Product Distribution in Indonesia

### 2.1 Overview of the National Socio-economic Situation

#### 2.1.1 Demographics

Indonesia's population in 2010, according to national census data, totaled 237.5 million people, which ranked fourth in the world after China, India and the United States.

The average annual population growth rate from 1990 to 2000 was 1.49%, which was lower than 1.97% from 1980 to 1990. This decline is thought to be a result of the government's promotion of family planning programs to reduce the birth rate. The annual population growth rate from 2005 to 2009 was 1.45%, which is expected to go down even further than the estimates of the government and the United Nations (UN). Moreover, the regional distribution of the population is remarkably imbalanced with Java Island representing only 7% of the national land area but over 60% of the population.



Source: UN Demographic Database 2010

Figure 2.1 Indonesian Population Distribution by Age Group

Additionally, as a general characteristic of the Indonesian market, the consumer population is seen to be not only “large” with the total working age population more than twice the children and senior populations combined, but also “young” with approximately 40% of the population under 20 years old, as shown in Figure 2.1 above. The population aged 10–20 years old is expanded forming a cone, and this means that the working age population that makes up the core consumers will continue to grow over the long-term. Moreover, according to the 2008 UN World Population Forecasts, as of

2002, while the senior populations of Thailand and China had exceeded 7% of the total population, in Indonesia the senior population is projected to be less than 7% of the total population until the year 2018.

Table 2.1 Senior Population Index for Major Asian Countries

	Senior Population Ratio Year projected to exceed 7%	Senior Population Ratio Year projected to exceed 14%
Indonesia	2018	2039
Thailand	2002	2024
Vietnam	2020	2038
China	2002	2026

Source: UN World Population Forecasts 2008

In 2011, the 15-24 years age group comprised 18% of the population while those aged 25-34 years made up 17%. At the same time, 58% of the total population was living on Java Island, and 60-65% of private consumption occurred on that island. Moreover, most of the middle class people tend to reside in urban areas where many of the modern retailers, restaurant chains, and processed foods are concentrated.

Table 2.2 Major Urban Populations of Indonesia (2005 Estimates: New Official Numbers)

City	Island	Population (Million)
Jakarta, Bogor, Tangerang, Bekasi	Java	14.7
Surabaya	Java	3.7
Yogyakarta and Surrounding Areas, Solo	Java	1.9
Bandung, Bandung Barat	Java	3.9
Semarang, Semarang District	Java	2.5
Medan, Binjai	Sumatra	2.4
Padang and Surrounding Areas	Sumatra	0.9
Pakanbaru	Sumatra	0.9
Palembang	Sumatra	1.5
Makassar	Sulawesi	1.3
Manado	Sulawesi	0.7
Bali	Bali	3.9
Balikpapan and Samarinda	Kalimantan	1.3

Source: Indonesia Central Bureau of Statistics (BPS)

Table 2.3 Indonesian Trends in Urban and Rural Populations

	1980	1990	2000	2011	1980-2011 Avg. Annual Growth Rate
Population (Mil.)	151	184	213	242	1.5%
Annual Growth Rate		2.0%	1.5%	1.2%	
Urban (Mil.)	33	56	90	123	4.3%
Annual Growth Rate		5.4%	4.9%	2.9%	
Rural (Mil.)	117	128	124	119	0.1%
Annual Growth Rate		0.9%	-0.3%	-0.4%	

Source: Centennial Group



Indonesia is also currently experiencing a population bonus period, which is marked with increase of people of working age. According to the UN, this period will last until 2040. For this reason, if employment opportunity increases steadily, it is expected that a relatively high growth rate will be maintained.

### 2.1.2 Gross Domestic Product

With the impacts of the 2008 global financial crisis and the recent global recession, the growth of Indonesia's gross domestic product (GDP) in 2009 slowed to 4.6% but maintained positive growth with the help of robust domestic demand. Subsequently, the real economic growth rate reached 6.1% in 2010 and continued to rise at 6.4% in 2011.

With such steady economic growth, and as a G20 member and an ASEAN-member state, Indonesia is increasing its political and economic influence in the world. (The Group of Twenty (G20) is 19 countries plus the European Union brought together to discuss global economic and financial issues.)

Table 2.4 Trends in Indonesian Macroeconomic Indicators

	2009	2010	2011	2012	2013	2014	2015	2016
	Actual		Forecasted					
Real GDP (Rate of Increase: %)	4.6	6.1	6.4	6.3	6.7	7.0	7.0	7.0
Aggregate Domestic Demand (Rate of Increase: %)	5.2	5.7	6.4	6.7	7.0	7.3	7.6	7.6
Net Exports (Rate of Increase: %)	1.2	0.8	0.6	0.3	0.4	0.4	0.1	0.1
Consumer Prices (Rate of Increase: %)	4.8	5.1	3.8	6.5	5.4	5.3	4.7	4.5
Primary Balance (GDP Ratio: %)	0.1	0.8	0.1	0.1	0.1	0.1	0.1	0.3
National Government Debt (GDP Ratio: %)	28.6	27.4	25.2	23.9	22.6	21.3	20.1	18.9
Current Account (US\$1 billion)	13.6	5.6	1.5	-4.0	-6.6	-9.4	-14.2	-18.1
External Debt (US\$1 billion)	172.8	202.4	216.1	230.0	241.7	253.9	266.3	278.9
External Debt to GDP Ratio (%)	32.1	28.6	25.9	24.6	23.4	22.3	21.3	20.2

Source: IMF Article 4 Conference Briefing Papers, 2011

### 2.1.3 Industrial Structure

The nation's industrial structure is mainly composed of manufacturing and trade based on their GDP shares. The manufacturing sector accounted for 26.2% of the total GDP in 2009, and in recent years, it has shown growth in the transportation, machinery and process sub-sectors. As for trade, both wholesale and retail trade has grown, corresponding to the increase in domestic demand, which came as a result of changes in income levels of the population. Although agriculture, forestry and fisheries represent merely 13.6% of GDP (as of 2009, though it was 14.9% in 2004), it involved over 40% of the working population.

As for trade to ASEAN countries, in terms of exports, years 2009 to 2010 showed strong growth of 35% with industrial goods making up 53% of the total exports. Imports also showed a strong 40% growth over the same period, with industrial goods similarly making up 54% of total imports. In the past, Indonesia was relatively isolated from the ASEAN region's networks of machinery production processes, but in recent years it seems that the nation has begun to show a presence in such networks.

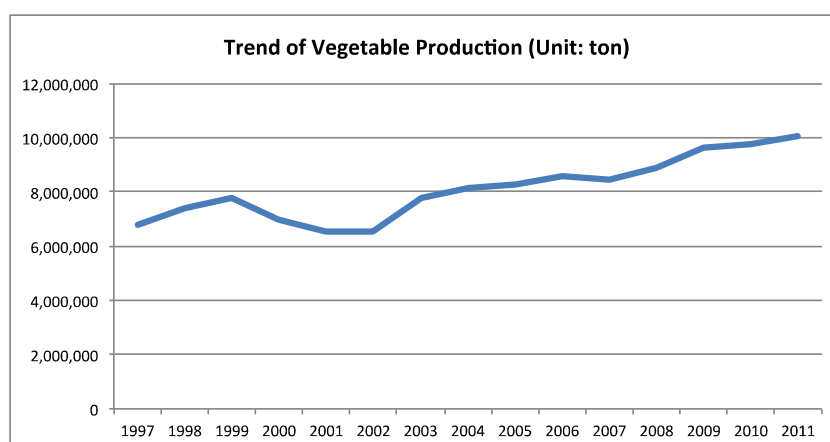
#### 2.1.4 Agriculture

Agriculture, comprising about 15% of the GDP, accounts for 40% of total employment. It is important to note that 65% of people living in poverty are found in the rural area, and they are mainly engaged in farming. Due to the increasing income gap between agricultural and non-agricultural workers, it is necessary to improve the livelihood of farmers in order to achieve sustainable economic growth.

Although agriculture's GDP share has declined due to economic development, Indonesia remains a country with large potential in agriculture and fisheries with its vast area of land, long coastlines, fertile land and many volcanoes. Its major export commodities are rubber, palm oil, and plantation crops such as coffee and seafood.

#### 2.1.5 Fruit and Vegetable Productions

Since 2002 vegetable production has maintained a growth trend. In terms of regions cultivating fruits and vegetables, 70%-80% were concentrated on Sumatra and Java Islands with their good climate and fertile soil. Particularly in western Java, there is a rapid shift from rice cultivation to horticultural crops and from low value-added crops to high value-added crops.



Source: FAOSTAT

Figure 2.2 Trends in Indonesia's National Vegetable Production

Table 2.5 Amount of Vegetable and Fruit Production by Region (2007)

(Unit: 1,000 tons/year)

Region	Vegetable		Fruit	
	Amount	Share (%)	Amount	Share (%)
Sumatra	2,587	24%	5,052	27%
Java	6,312	59%	9,589	51%
Bali	579	5%	1,549	8%
Kalimantan	316	3%	1,213	7%
Sulawesi	714	7%	1,150	6%
Maluku Papua	120	1%	100	1%
Total	10,628		18,654	

Source: Report on Distribution System Improvements through Wholesale Market Development, JICA (2012)

According to the 2009 Indonesian BPS Statistics, the domestic production of fruits has grown significantly as a whole, doubling over a 10-year period (2000-2009). The domestic production of vegetables, although falling short of that of fruits, had an overall growth of nearly 30% during the same period. Products with large production volumes were cabbage, pepper, potato and onion while those with high growth rates were radish (318%), pumpkin (133%), spinach (132%), pepper (83%), eggplant (78%), green onion (74%) and tomato (50%). Garlic has a high potential for domestic production, though its production volume has declined as a result of the impacts of high quality but cheaper Chinese imports.

Vegetable imports grew over three times between 1997 and 2007, and the share of imports in domestic aggregate demand increased gradually from 3% to 7%.

The plateau regions of Bandung and Puncak around Jakarta, with its heavy rains throughout the year, form a major production area for vegetables and fruits.

Fruits with large production volumes were banana, orange, pineapple, mango and durian. Those with high growth in production were pineapple (258%), mangosteen (220%), orange (215%), melon (214%), breadfruit (152%), sapodilla (131%), durian (108%), duc/ranzatto (106%) and watermelon (94%).

The volume of fruit imports doubled from 1997 to 2007, though the share of imports in domestic consumption remained low at 3%. The primary imports were temperate fruits that are difficult to produce domestically (apples, grapes and pears). Citrus fruits such as oranges and durian, which can be produced domestically, were also imported.

The table below shows types of vegetables and fruits with large production volumes in Indonesia.

Table 2.6 Production of Vegetables and Fruits in Indonesia (Top 6)

	Kind of Vegetable/Fruit	2010 Annual Output 2.1.6 (million tons)	World Production Volume Ranking	Notes
	Cabbage	1.38	7	Includes Chinese cabbage
	Chili pepper	1.33	4	
	Green Bean	0.88	2	
	Cucumber	0.55	10	
	Eggplant	0.48	6	
	Spinach	0.15	5	
	Banana	5.81	6	
	Orange	2.03	9	
	Pineapple	1.39	7	
	Mango, Mangosteen, Guava	1.31	6	
	Papaya	0.70	4	
	Avocado	0.22	4	Asia's largest production output

Source: Prepared by JICA Study Team based on Indonesian Statistical Documents

(High Value-Added Potential)

There has been rapid growth in both fruits and vegetables looking at their import figures. This trend explains why supplies to modern retailers that deal with fruit and vegetable imports (specifically, hypermarkets, supermarkets, mini-markets, CVS, etc.) seem to have increased and that consumer demand for high quality vegetables and fruits seems to have increased. For Indonesian vegetable and fruit farmers, the potential of high value-added agricultural products is thought to have increased.

Table 2.7 Trends in Vegetable Import Values

(Unit: US\$ M)

Kind of Vegetable	2007	2008	2009	2010	2011
Garlic	123.8	152.5	166.3	246.0	272.8
Red onion	53.4	69.0	40.4	55.1	107.6
Bean	15.2	11.3	24.5	37.1	59.7
Fresh Potato	2.7	2.9	6.7	14.6	46.4
Radish Seed	19.5	35.0	33.0	23.6	32.4
Saus dan Olahanya	12.5	17.9	16.4	22.7	25.6
Carrot	9.2	9.4	10.0	17.6	21.9
Frozen Potato	10.5	11.7	11.1	10.9	15.8
Onion	7.5	8.0	4.3	10.1	11.0
Others	82.2	107.9	110.6	132.5	172.0
Total	336.3	425.7	423.3	570.2	765.1
Growth Rate		27%	-1%	35%	34%

Source: BPS

Table 2.8 Trends in Fruit Import Values

(Unit: US\$ M)

Kind of Fruit	2007	2008	2009	2010	2011
Apple	111.7	111.7	128.5	168.1	186.4
Mandarin Orange	73.9	94.3	166.8	143.4	164.8
Grape	49.2	48.3	66.8	81.3	113.1
Lychee	55.2	46.2	79.1	62.9	111.8
Pear	68.6	65.6	69.9	87.8	106.8
Durian	28.7	30.8	36.0	34.7	38.2
Orange	16.9	21.6	15.3	24.4	25.1
Kurma	12.1	13.8	16.3	18.1	20.5
Chili	7.0	9.6	10.6	11.9	14.7
Others	35.3	44.2	49.3	69.1	95.1
Total	458.4	486.2	638.4	701.7	876.4
Growth Rate	-	6%	31%	10%	25%

Source : BPS

## 2.2 Consumer Market Trends

As seen from data of the International Monetary Fund (IMF) in Table 2.9 below, in terms of current real GDP and future GDP forecasts (2017), Indonesia's growth is remarkable among the ASEAN member states (Malaysia, Thailand, Indonesia and the Philippines). In 2000 GDP per capita was US\$804, but by 2010 the figure had reached US\$3,004, performing way above the GDP per capita for a country categorized as low income, which is under US\$1,000. This increase in GDP per capita has been empirically shown to lead to significant expansions in the domestic consumption structure

Moreover, the continuous development of the Indonesian market has the characteristic of being supported by domestic demand. According to a survey by the Census and Economic Information Center (CEIC), for each year from 2005-2009, the nominal GDP to export ratio was over 60% for Thailand, Malaysia and Vietnam, while for Indonesia it remained at only 20%. This explains that at least for those 5 years, the development of Indonesia's economy was led by domestic demand. According to the same CEIC survey, as if to support this domestic-led economic development, nearly 70% of the Indonesian nominal GDP was private consumption driven by domestic demand during this 5- to 6-year period. Moreover, nominal private consumption over the same period grew at an annual rate of 10%-20% year-on-year.

Table 2.9 GDP Per Capita Trends for Developed ASEAN Countries

	1980	1990	2000	2010	2017
Malaysia	1,769	2,374	3,992	8,737	14,724
	-	3.0%	5.3%	8.1%	5.4%
Thailand	696	1,521	1,983	4,992	7,708
	-	8.1%	2.7%	9.7%	4.4%
Indonesia	585	609	804	3,004	7,023
		0.4%	2.8%	14.1%	8.9%
Philippines	744	796	1,055	2,123	3,211
	-	0.7%	2.9%	7.2%	4.2%

Source: Prepared by JICA Study Team based on IMF and Indonesian Central Statistics Office Data

The market size for processed foods in developed ASEAN countries in 2012, shown in Table 2.10, indicates Malaysia at US\$6.3 billion, Thailand at US\$10 billion, Indonesia at US\$24.4 billion and the Philippines at US\$10 billion with Indonesia's market size for processed foods being the largest out of developed ASEAN countries. Moreover, in terms of the percentage of processed food expenditures per capita of the GDP per capita, Indonesia, with 2.9%, was at a higher level than Malaysia (2.2%) and Thailand (2.6%).

Table 2.10 Market Size for Processed Foods in Developed ASEAN Countries

	Malaysia	Thailand	Indonesia	Philippines	Remarks
GDP/CAPITA	10,085	5,395	3,512	2,345	USD, 2011
Processed Food Market	6,309	9,957	24,355	10,034	Million USD, 2012
Expenditure/Population	218.3	142.5	102.6	102.9	USD
E.P./(GDP/CAPITA)	2.2%	2.6%	2.9%	4.4%	

Source: Prepared by JICA Study Team based on EUTROMONITOR data

The proportion of middle class and upper class (households with an annual disposable income of more than US\$5,000 and less than US\$35,000) increased dramatically in Indonesia from 5.8% of the population in 1990 to 39.9% in 2008. According to the Euromonitor 2010, in 1990, 9.9 million was classified as middle class with incomes between US\$5,000 and US\$35,000, but by 2008 this number had increased seven times over the 18-year period to 80 million. This proportion is relatively low when compared to those of Thailand and Malaysia; however, potential middle class with incomes between US\$2,500 and US\$5,000 makes up approximately 40% of the population. Thus, it is expected that the proportion of middle class will expand as a result of increases in income.

Table 2.11 Trends in Indonesian Income Distribution

	1990	2000	2008
Avg. Annual Household Income (US\$)	1,823	2,294	5,295
Income Distribution (%)			
Less than US\$1,000	24.3	11.4	3.2
1,000-2,500	49.2	55.9	18.2
2,501-5,000	20.7	28.2	38.7
5,001-10,000	4	2.3	30.8
10,001-35,000	1.4	1.8	7.9
More than 35,000	0.4	0.4	1.2

Source: Euromonitor 2010

In the “Study on the Potential of Developing Businesses in Indonesian Food Market”, published by the Japan Food Industry Center in March 2012, it is estimated that the Indonesian food market in 2009 was valued at Rp605 trillion (¥5.5 trillion) and that in 2030 the market would expand to Rp3.382 quadrillion (¥30.8 billion).

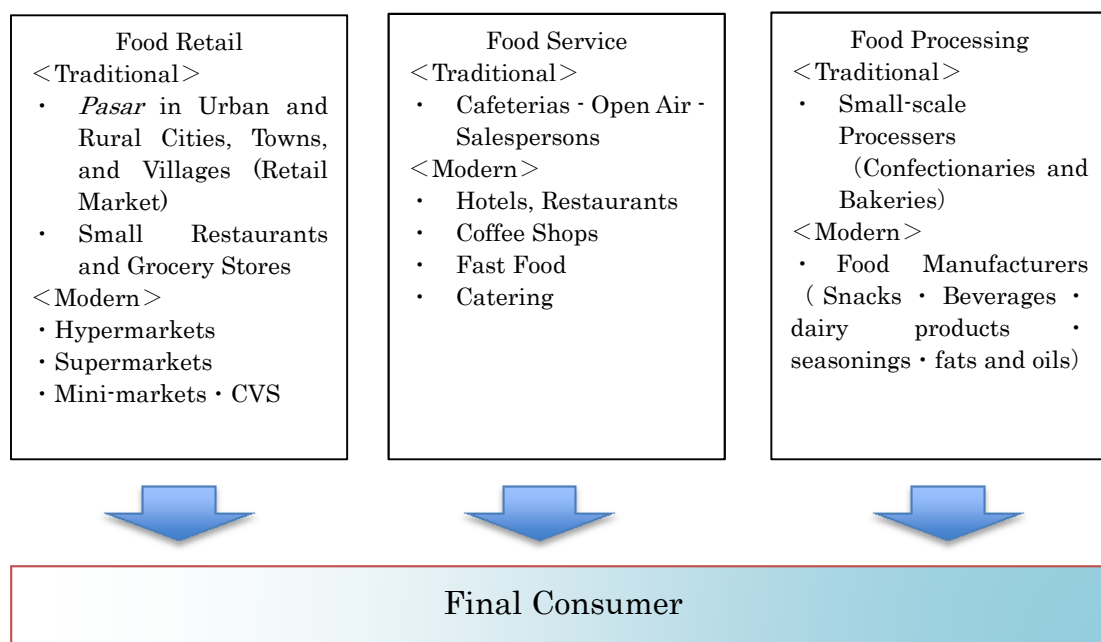
Table 2.12 Estimates of the Size of Indonesian Food Market

	Unit	2009	2020	2030
Monthly Per Capita Food Expenditure	Rupiah	217,720	637,488	1,038,401
Population	Million	231.5	251.6	271.5
Market Size	Trillion Rupiah	604.8	1,925.1	3,382.9
	Trillion Yen	5.5	17.5	30.8

Source: The Study on the Potential of Developing Businesses in Indonesian Food Market (March 2012), Japan Food Industry Center

### 2.3 Food-Related Industries

Food retail, service, and processing enterprises deliver fruit and vegetable processed foods to consumers in the final stage of the supply chain. Within these industries, a structural shift is underway driven by growth and expansion of modern stores targeting the middle class.



Source: Prepared by the JICA Study Team based on JICA Documents

Figure 2.3 Characteristics of Food-Related Industries

A characteristic of food retailers in Indonesia is the continuing existence of numerous *Pasar*, a type of public market, or “traditional retailers” such as old-fashioned family-run private stores or stalls.

In 1998, the Indonesian government reduced foreign entry regulations, which led to advances in competition and the expansion of domestic and foreign retailers. While large stores and chains such as convenience stores are growing, driven by the expansion of middle class, their market share remains relatively small compared to traditional retailers.

When sales volume of food retail is broken down into either modern retail, such as convenience stores, hypermarkets and supermarkets, or traditional retail of small retailers, the total sales volume of traditional retail in Indonesia makes up 74.9%, which marks the highest out of the developed ASEAN countries.



Table 2.13 Comparison of Sales Volume (Value Basis) of Food Retailers in Developed ASEAN

	Countries				Remarks
	Malaysia	Thailand	Indonesia	Philippines	
Sales Volume of Food Retail Market	11,111	50,867	94,725	37,949	Million USD, 2012
<b>Modern</b>	<b>34.7%</b>	<b>29.6%</b>	<b>12.5%</b>	<b>20.0%</b>	
Convenience Store (CVS)	3.5%	10.5%	4.6%	0.7%	
Hypermarket	22.9%	11.1%	3.0%	3.7%	
Supermarket	5.8%	5.9%	4.9%	15.4%	
Others	2.5%	2.3%	0.0%	0.1%	
<b>Traditional</b>	<b>30.6%</b>	<b>40.6%</b>	<b>74.9%</b>	<b>60.1%</b>	

Source: Prepared by JICA Study Team from EUTROMONITOR

Moreover, the food retail market in Thailand, which is advanced than in Indonesia, is experiencing the expansion of hypermarkets and supermarkets in urban areas around Bangkok, replacing small-scale, traditional markets (*talaat*) and small-scale, private shops. On the other hand, outside of urban areas there are not many hypermarkets and supermarkets handling a lot of fresh and processed foods, and small-scale individual shops and *talaats* are still the common destination for daily food purchases.

In most regions including low-income and rural areas, the use of traditional markets and small food shops is still the norm for the general public, though in the future it is expected that there will be market penetration by modern retailers of domestic and foreign capital, targeting young and middle classes. Such expansion of modern retail in urban areas will lead to increased demand for both fresh and processed foods.

Indonesia's retail industry (including general goods) has a tendency to protect government traditional markets and grocery stores, and traditional retailers are a major player in food distribution than modern retailers. These traditional retail stores are mostly micro and small businesses, serving as a basis for areas underserved by transportation and distribution networks.

Table 2.14 Classification of Indonesian Retailers

	Type of Retailer	Items Sold	Amount of Goods	Floor Space	Number of Stores in 2010 (All of Indonesia)
1	Department Store	Food and Non-food Goods, Clothing, Shoes, etc.	25,000-50,000	5,000-12,000 m <sup>2</sup>	315
2	Hypermarket	Food and Non-food Goods, Clothing, Sporting Goods, Health and Beauty Products	25,000-50,000	5,000-12,000 m <sup>2</sup>	141
3	Supermarket	Foodstuffs, and Daily Life Products	15,000	500-300 m <sup>2</sup>	1,146
4	Mini-market	Foodstuffs, and Daily Life Products	5,000	500 m <sup>2</sup>	11,569
5	Convenience Store	Instant Foods, Snacks, Breads	3,000	Less than 500 m <sup>2</sup>	358
6	Traditional Grocery Store*	Foodstuffs, Small Amounts of General Goods	500	100-300 m <sup>2</sup>	2,520,757

Source: "Retail Rule" by Meshvara Kanjaya & Yongky Susilo and Nielsen

※ : *Pasar* (Public Market), Toko (Shops), Warung (Fixed Stalls), Kaki Lima (Mobile Stands)

Modern retailers (including apparel and general goods) have increased in urban areas with the amount of stores and revenue shares trending upward. As shown in the table below, traditional grocery stores' share of transactions decreased at an average annual rate of 2% while the mini-market share showed a solid growth of 1% to 2% per year. Additionally, to protect micro- and medium-sized retails, mini-markets are not open to foreign capital.

Table 2.15 Trends in Trading Shares of Retailers

	2005	2006	2007	2008	2009
Traditional Market	68%	65%	64%	64%	62%
Mini-market	10%	12%	14%	15%	17%
Hypermarket/Supermarket	22%	23%	22%	21%	21%

Source: Prepared by JICA Study Team based on Nielson

Note: Includes apparel, general goods, etc.

Mini-markets and convenience stores have rapidly become popular, providing daily necessities, fresh products, and frozen goods at lower prices. Their stores are increasing in residential and urban areas, such as gasoline station shops and franchise chains. Recently, two local companies, Indo Mart and Alpha Mart, have captured more than 80% of the market share, but the U.S. and Japanese foreign chains are expanding rapidly. The slowdown in growth of number of stores in 2009 is thought to be an aftereffect of the international financial crisis.

Table 2.16 Store Opening Trends for Modern Retail Stores in Indonesia

	2005	2006	2007	2008	2009
Hypermarket	80	105	121	127	141
Supermarket	1,140	1,310	1,379	1,571	1,146
Mini-market	6,470	7,350	8,890	10,607	11,569

Source: Nielsen

Table 2.17 Store Opening Trends for Modern Retail Stores in Indonesia

	Business Name	Stores	2008	2009	2010
1	Carrefour	Hypermarket	43	61	67
		Supermarket	30	15	16
		Total	73	76	83
2	Matahari	Hypermarket	43	46	51
		Supermarket	27	24	25
		Total	70	70	76
3	Lion Super Indo	Supermarket	63	66	73
4	Hero	Hypermarket	26	35	38
		Supermarket	108	113	120
		Mini-market	116	124	125
		Total	250	272	283
5	Sumber Alfaria	Mini-market	2,779	3,373	4,812
6	Indomacro	Mini-market	3,093	3,892	4,994
7	Midi Utama	Mini-market	60	121	248
		CVS	0	35	161
		Total	60	156	409
Total			6,388	7,905	10,730
Hypermarket			112	142	156
Supermarket			228	218	234
Mini-market			6,048	7,510	10,179
CVS			0	35	161

Source: The Study on the Potential of Developing Businesses in Indonesian Food Market (March 2012), Japan Food Industry Center

The majority of consumers mainly from low-income group and rural areas are thought to use traditional markets continuously. However, as a result of the growth of middle class population and the expansion of consumer demand, modern retailers have even penetrated into rural areas, and it is likely that this trend will continue in the future. It is said that there are around 18,000 convenience stores in Indonesia today, and in 2020 this is expected to increase to 40,000 stores based on a study of multiple enterprises.

#### 2.4 Transportation Infrastructure Supporting Agricultural Product Distribution

In this section, trends relating to Indonesia's road situation, cold chain situation and recent Internet use in agricultural product transactions are taken into consideration.

(1) Transportation Infrastructure Situation

Indonesian roads are classified into main national roads, state roads, prefectural roads, and city roads; and the total length of these roads is 421,535 km as of 2007. However, the percentage of unpaved roads is high at over 40% of state, prefectural, and city roads. Maintenance of state, prefectural, and country roads currently lags with the proportion of unpaved roads being high and the roads being in a bad state of maintenance. Highways mitigate congestion and strengthen the connections between cities, and while it is expected to accelerate economic growth, their total completed length over the last 30 years has only been 650 km. The total length, pavement status, and road conditions of national roads, state roads, prefectural roads, and city roads as of 2006 are provided in Table 2.18, and therein it can be seen that the unpaved ratio is high particularly for state roads, prefectural roads, and city roads at over 40%.

Vehicle registrations as of the end of 2007 totaled roughly 66 million vehicles with the growth rate of registered vehicles being very high, having reached an average annual growth of 21.7% over the prior five years. The proportion of motorcycles is also high, accounting for 68% of vehicles.

Table 2.18 Indonesian Road Lengths and Conditions

		National Roads		State Roads		Prefectural and City Roads	
		Length (km)	Composition Ratio	Length (km)	Composition Ratio	Length (km)	Composition Ratio
Overall Length		34,682	100.0%	40,125	100.0%	319,040	100.0%
Road Surface	Asphalt	24,770	71.5%	23,187	57.8%	168,588	52.8%
	Gravel	9,858	28.5%	11,497	28.7%	65,142	20.5%
	Dirt	0	0.0%	4,883	12.2%	73,093	22.9%
	Other	0	0.0%	558	1.4%	11,947	3.7%
Highway Condition	Satisfactory	16,957	49.0%	10,413	26.0%	118,183	35.5%
	Mediocre	10,528	30.4%	14,102	35.1%	70,770	22.2%
	Damaged	2,069	8.6%	6,023	15.0%	81,387	25.5%
	Extremely Damaged	4,178	12.1%	9,587	23.9%	53,700	16.8%

Source: Statistik Perhungam 2006

Table 2.19 Trends in Indonesian Vehicle Registration

Vehicle	2002	2003	2004	2005	2006	2007	Average Annual Growth Rate	Component Distribution (2007)
Passenger Vehicle	3,863	5,134	6,748	7,481	7,495	9,930	20.8%	15.1%
Bus	732	1,270	2,013	2,414	2,730	4,414	43.2%	6.7%
Truck	2,015	3,058	4,361	4,574	4,785	6,756	27.4%	10.3%
Motorcycles	18,061	23,313	28,901	33,193	35,102	44,638	19.8%	67.9%
Total	24,671	32,775	42,023	47,685	50,112	66,738	21.7%	100.0%

Source: JICA Country Analysis Paper on Indonesia, March 2012

In Indonesia, the development level of road infrastructure is low, and during daily morning and evening rush hours there are traffic jams in the center of the national capital, Jakarta. This makes punctual deliveries difficult and increases transportation costs through increased fuel and labor expenditures. In this way, it has become an inhibiting factor at the distribution stage, not only incurring additional transaction and transportation costs but also contributing to decreased sales and instability for agricultural producers by leading to uneven qualities in agricultural products.

Moreover, the transportation sector has insufficient hard infrastructure with not only maintenance and traffic safety not being performed properly, but also becoming a bottleneck to economic development due to the insufficient functioning of the transportation network. This is the result of not only insufficient development funds but also a lack of a logistics and transportation network construction strategy. More particularly, road congestion has been worsening in major urban areas, including the Jakarta metropolitan region, and central to the strategic policies contributing to the construction of a comprehensive logistics and transportation network, as well as a railway based thereon, is the urgent issue of the development and expansion of the public transportation system. From the viewpoint of a developing the country as a whole, it is immediately necessary to conduct infrastructural development of comprehensive logistics and transportation networks between major cities.

## (2) Cold Chain Situation

In recent years, cold chains have become essential in Indonesia to vegetable and fruit processing chains though not widely adopted. This is said to be the result of delays in the spread of home appliances such as microwaves and refrigerators, and the resulting lack of penetration of chilled and frozen processed foods in the food market.

Currently (March 2013) there exists no cold chain logistics company covering the whole of Indonesia. In many situations where companies need cold chain facilities equipped trucks and/or warehouses, those facilities must be arranged by the companies themselves. For example, the foreign food chain KFC, the modern retailer Carrefour, Lotte Mart and many other companies each have outfitted their own cold chain facilities in a form that fits their needs.

In the Jakarta metropolitan area, small- and medium-sized refrigerated distributors exist for inter-city distributions though the transport quality varies according to distributor. Moreover, it is not unheard of for refrigerated products to be damaged and for frozen goods to end up in a half-thawed state depending on where they were placed within a truck.

The inadequate and unmaintained cold chain transport network in Indonesia has deprived grocery suppliers in the country of market opportunities. As such, the transport of horticultural crops, such as fruits and vegetables, is done at normal temperatures, and usually there is little distribution outside of the production area and its outskirts; even in cases where such goods are transported outside of the production area, it often occurs that the commercial value is reduced as a result of high rates of deterioration.

From 2003 to 2008, the United States Department of Agriculture (USDA) conducted an Indonesia Cold Chain Development Project to (1) establish an Indonesian Cold Chain Association comprising universities, government agencies and the private sector; (2) develop teaching materials and an educational curriculum on cold chain development for six universities; and (3) initiate the provision of loan funds for capital investments in cold chains. Through this project, specialist distributors receiving technical assistance and capital investment funds achieved technological improvements that appear to have resulted in 1) decreased waste; 2) prolonged lifespan of goods; 3) improved profitability by accessing new markets [since it became possible to transport goods to remote markets that offered higher prices]; and 4) decreased transaction costs [since product lifespans were longer and long-term storage became possible, the one-occurrence trading volume increased and trading frequency became lower]. (See 4.2 for further details.)

### (3) ICT Introduction in Agricultural Product Distribution

Mobile phone penetration in Indonesia is high with, among others, the use of smart phones spreading rapidly. The use of information and communication technology (ICT) for agriculture is still only a part of this; however, in the future it is expected that ICT use in agriculture will increase.

The Ministry of Agriculture has conducted studies and promotion of ICT for agricultural uses. However, the penetration of fixed Internet networks in rural areas remains low, and there is a concern that disparities in agricultural productivity will grow as a result of ICT use. Toward this problem the Initiative on ICT for Rural Livelihood (ICT4RL) has been implemented in Indonesia, and the list below sets out the pilot projects that are currently being implemented in Indonesia:

#### a) Establishment of a Learning Center through Microsoft

Through Microsoft, 33 learning centers were established in rural areas throughout Indonesia so that residents would be able to learn how to use the Internet. As one example, a learning center in Bali provided lessons on farming techniques through the Internet.

b) Establishment of Tele-centers through the United Nations Development Programme (UNDP)

Within these tele-centers established by UNDP, farmers were able to check planting and shipping statuses through Internet connected computers, and this information could then be shared with agricultural communities and urban centers. For example, harvest information could be uploaded to the 24-hour database, and it is possible to then purchase crops through the internet at any time. This type of program was carried out even within rural India and Bangladesh, and within developing countries this utilization of ICT has contributed to the improvement of the livelihoods of low-income populations.

c) Launching of a Website and Information Center by the Ministry of Agriculture (PFI3)

With the policy Poor Farmers' Income Improvement through Innovation, which is referred to as PFI3, the Ministry of Agriculture launched a website managed by countries relating to agriculture. Within this website the latest agricultural technologies and market trends are introduced. Moreover, within each region similar information centers were launched, distributing information and leading to increased income for low-income farmers.

d) Promotion of Agricultural Technology and Information Use (FEATI)

The Indonesian government (Ministry of Agriculture) began the Farmer's Empowerment through Agricultural Technology and Information. This policy, referred to as FEATI, lead the way in ICT utilization and the promotions of ICT use by farmers with the goal of a resulting increase in production capacity.

e) Collection of the Agricultural Know-how of Regional Customs

The Indonesian government (Ministry of Agriculture) began organizing know-how gained through regional customs with the aim of improving knowledge and information relating to agriculture practised by farmers and with the aim of enriching a future Indonesian website.

f) Formation of a Farmers' Network (SAPA Mobile Ecosystem)

SAPA Mobile Ecosystem is a public-private partnership project. This project was introduced by the Bandung Institute, and the Indonesian government was supported by the Ministry of Social Affairs, cooperatives and small- to medium-sized enterprises, the Ministry of Information and Communication, the Korean International Cooperation Agency (KOICA), and MarkAny Inc. (IT

company in South Korea). This system manages a supply chain using mobile phones. The government, banks, suppliers and farmers cooperate over the network with the aim of forming each partnership entity, providing the latest information and methods to farmers, and matching fragmented market demand with farmers.

g) Information Provider Tools from Nokia (Nokia Life Tools)

Nokia Life Tools is a service from Nokia providing a wide range of information relating to agriculture. Nokia accounted for roughly half of the mobile phones in Indonesia. Information delivery includes not only educational but also entertainment information, but mainly the information is agricultural information, specifically market prices, agro-chemical and fertilizer prices, weather information and other up-to-date information and know-how. This was launched in Indonesia in December 2009.

## 2.5 Administrative, Regulatory and Legal Systems relating to Agricultural Product Distribution

This section is organized into the regulatory and legal systems relating to Indonesian agricultural product distribution. Moreover, the agricultural product safety standards and distributional stage safety standards will be compared to that of Thailand, and the outlook for agricultural product distribution regulatory and legal schemes will be looked at for Indonesia in the future. Below is a comparison of Indonesian and Thai institutional, regulatory, and legal systems relating to agricultural product distribution (for details, please see the reference data).



Table 2.20 Agricultural Product Distribution Related Institutions, Regulations, and Legal Systems

		Indonesia	Thailand
Production	Restrictions on Foreign Investment	- Presidential Decree	Foreign Owned Business Law
	Agricultural Product Safety	- Residual Pesticide Regulations -GAP Certification -Organic Produce Certification	- Residual Pesticide Regulations - Residual Pesticide Inspection System Certification -GAP Certification -Organic Produce Certification -Q-Mark Product Certification System
Distribution	Post-Harvest	Good Handling Practice (GHP)	- Good Manufacturing Practice (GMP) - Hazard Analysis and Critical Control Point (HACCP)
	Retail Store Restrictions	Foreign Capital Restrictions	-Foreign Capital Restrictions -Food Stall Regulations (Bangkok)
	Retail Safety	None	-Q-Shop -Food Safety Certification System -Healthy Market
	Restaurant Safety	None	Clean Food, Good Taste
Importation	Import Controls	Have (Islamic Prohibited Goods)	Have

Source: JICA Study Team

(1) Production Stage

(Restrictions on Foreign Investment)

Within the production stage for agricultural products, both Indonesia and Thailand have regulations and systems for foreign investment and safety restrictions. In relation to foreign investment restrictions, in Indonesia, enterprises with less than 95% foreign capital are permitted to cultivate crops on farmland of no more than 25 hectares according to a presidential decree. On the other hand, in Thailand, under the Foreign Business Law, foreign companies (companies with over 50% foreign ownership) are prohibited from entering into the agricultural or orchard sectors. Moreover, under the Land Law, in principle foreign persons (including juristic persons) are not permitted to purchase land.

(Agricultural Product Safety)

In terms of agricultural product safety standards, Thailand has more systems.

Besides the pesticide residue regulations implemented in Indonesia, GAP certification, and organic produce certification, Thailand has a residual pesticide inspection system certification process and a Q-Mark quality assurance system. The residual pesticide inspection system certification process certifies the fruit and vegetable residual pesticide inspection systems of producers and suppliers. The

Q-Mark quality assurance system introduces authentic labeling for food and agricultural products meeting safety standards in order to ensure food safety.

(Overview of the Indonesian GAP System)

Indonesian GAP certification provides low incentives for farmers and farmer groups, and this was pointed out by the Horticultural Bureau of the Ministry of Agriculture to be the greatest obstacle. This is due largely to the low visibility and credibility of Indonesian GAP with the price difference of agricultural products having or not having Indonesian GAP certification being very small.

Up to this point, over 1,000 farmers and farms, centered around Western Java State and Central Java State, have been registered. GAP registered farmers are published on the Horticultural Bureau of the Ministry of Agriculture website (though this is only in Indonesian).

Within a recent modern supermarket in Surabaya, cases of Indonesian GAP being acquired has been seen. Moreover, there are cases where Malaysian exporters as well as Singapore traders have made Indonesian GAP certification a condition of their transactions. In the future, even domestically in Indonesia, the demand for Indonesian GAP will likely increase together with an increasing awareness of food safety. In particular, positions downstream of modern distribution, modern retailers, restaurant industry and the food processing industry will increase demand beyond that of the middle classes.

(Overview of the Indonesian Organic Produce Certification System)

The organic produce certification scheme promoted by the Indonesian Ministry of Agriculture is a measure, together with GAP certification, to improve agricultural product quality and safety. The organic agricultural product certification entities already have eight groups within the country, and the Ministry of Agriculture has been supporting organic produce certification through pilot projects in a number of prefectures. However, since certification incurs costs, there is a problem with it being difficult for small farmers to participate, resulting in the Ministry of Agriculture currently implementing organic produce certification support activity pilot projects in a number of prefectures.

As an organic agricultural product, coffee is already moving ahead while producers who have obtained organic certification for vegetables and fruits are still under 100 companies. The International Federation of Organic Agriculture Movements (IFOAM) has a leading role in facilitating organic produce certification seeing that standards vary country by country, and the creation of a common Asian standard has recently begun.

Out of the approximately 400 residual pesticide laboratories under the Ministry of Agriculture's jurisdiction, only about 15% are actually in operation. Modern residual pesticide inspection equipment is necessary, but cannot be purchased due to budget constraints.

## (2) Distribution Level

Pertaining to the distribution stage, discussion will be organized into 1) the safe handling of post-harvest products; 2) restrictions on foreign investment for retailers; 3) food safety certification targeting retailers; and 4) food safety certification targeting restaurants.

### (Post-Harvest Safety)

The Indonesian system for handling the safety of post-harvest agricultural products, based on demands from exporters and modern retailer supermarkets, has begun sanitation management for the packing of vegetables and fruits in accordance with the Hazard Analysis and Critical Control Point (HACCP) and Good Handling Practices (GHP). The food manufacturing industry is also coming under HACCP through implementation by the Ministry of Industry. In contrast, in Thailand, Good Manufacturing Practice (GMP) certification for packaging facilities, together with HACCP certification, and Q-Mark certification (as noted earlier) within the packaging stage for agricultural products is being carried out.

### (Food Safety for Retailers)

As of April 2013, a system for food safety certification targeting retailers does not exist.

In contrast, in Thailand Q-Shop, food safety certification systems and Healthy Market do exist.

Q-Shop is a certification for suppliers (supermarkets, markets, department stores, etc.) handling Q-Mark certified products, which is provided to enterprises that meet specific point-of-sale hygiene management standards. Certified sellers are authorized to display a Q-Shop plate within their store.

The food safety certification system targets retailers selling fresh food, processed food and cooked food under the same introduced certification system. Certified sellers are allowed to display the certification mark.

Healthy Market is a certification system for hygiene in national fresh markets by the Ministry of Health and introduced in 2002. In Thailand, it is a system resulting from many consumers using modern distribution that improves sanitary conditions in fresh markets and allows consumers to buy produce in safe fresh markets.

(Food Safety Standards Targeting Restaurants)

In Indonesia, there are no food safety standard systems targeting restaurants as of April 2013.

In contrast, Thailand has the Clean Food Good Taste system, which was introduced by the Ministry of Health in 1999, and it enables consumers to choose restaurants on the basis of safety. According to the Ministry of Health, nearly 70% of all food and drink enterprises have received this certification.

(3) Import Regulations

As for food import procedures, besides the Imported Food Product Registration Number, or ML system (discussed below), and Halal system, the Indonesian system is not much different than those of other countries. For importers, there is a necessary importer registration process, and for products, there are food hygiene regulations (packaging, food additives, residual pesticides, genetically modified foods) and food labeling regulations. In reality, safety and labeling are reviewed within the ML system. Moreover, it is required that imported food labeling be provided in Indonesian, but instead of pasting a sticker/seal in Indonesia, a system for Indonesian printed directly on the packaging has been introduced. Since food manufacturers then have to prepare packaging specifically for export products to Indonesia, this has become a heavy burden.

In addition, from January 2013 the landing locations for agricultural product imports are limited to three ports, namely, Belawan in the State of North Sumatra, Surabaya in the State of East Java and Makassar in the State of Sulawesi, and the Soekarno Hata International Airport. The import point restrictions were implemented for the purpose of protecting farmers, and since the agricultural technologies of Indonesian farmers are of a low level, it is not possible to substitute for imports with agricultural products of similar quality. The burden of these negative impacts falls upon all urban consumers.

For example, if one wanted to import horticultural crops into Java Island, since these imports could not be brought into Tanjung Priok Port in Jakarta, they must come through the Surabaya Port located 1,000 km to the east. Currently, due to delays in the import procedures at the Surabaya Port, there are containers full of large amounts of agricultural products that remain neglected in the harbor. As a result, retail and supermarket prices for carrots, garlic, apples and other produce are rising due to shortages. In particular, garlic has risen from Rp25,000/kg (January 2013) to Rp40,000/kg (March 2013).

That said, even if import procedures in Surabaya were carried out efficiently, there would be transportation costs to get the imports from Surabaya to the large consumer base of Jakarta. In addition to the deterioration in quality during transport, the increased transportation cost portion of the price will be borne by consumers. In this situation, there are even impacts on the import reserves of importers, leading to increases in import prices due to shortages.

(ML System: Imported Food Product Registration Number)

The ML System is a system wherein food products imported into Indonesia are required to have submitted a prior application to the National Food Product and Medical Supervisory Authority (BPOM : Badan Pengawas Obat Makanan), and then obtain a registration number (ML Number). (Legal Basis: Insurance Cabinet Provision No. 382/MEN.KES/PER/VI/1998).

In order to obtain this registration, the importer must accompany the goods (actual, physical goods) to BPOM and apply. In the process of applying, documentation for the trademark, raw materials and additives, packaging, production process, merchandise management system, and analysis results for the goods are required. After submission, examination based on documentation takes place. The examining authority does not charge a handling fee for three months. Although there is no deadline for ML registration, for the import of processed foods it is necessary to obtain BPOM transport authorization when transporting the goods domestically. It is not possible to distribute imported food products domestically in Indonesia without an ML number, and it is not possible to display products in a retailer without such number as well.

Moreover, in Indonesia, although there are rules relating to the examination period for import applications, on the ground there are many cases where they are not adhered to. In the case of imports, it is necessary to obtain an import license, and such license may take from 2-3 months. Following that, it will take 1-2 months to register the tariff number, referred to as the MIK. For this procedure, for international imports it will be necessary to obtain an import license(s) setting out each HS Code, which will also require a number of days. This set of procedures, by law, must be completed within 5 days, but non-adherence is usually the case. Moreover, in local interviews it was said that, from the application for the import license with the BPOM to the receipt of the license, it took 3-6 months, and in some cases took as long as 1 year.

Although the ML System was initiated in 2003, it has not been running according to the rules from the onset. However, in the wake of the 2008 Chinese melamine in milk products incidence, operations came to be stricter, and considerable social disruptions arose. Spot checks of food

products of supermarkets in Jakarta were carried out in accordance with the ML System, and imported products without ML numbers were removed. Even small specialty Japanese supermarkets were caught up and Japanese products without ML numbers were discovered resulting in Japanese foods temporarily disappearing from stores.

(Halal System)

The Halal system is a system managed according to a set of food standards that comply with Islamic law. More specifically, alcohol and pork, which are forbidden under Islamic law, cannot be included; safe food product standards are set and food products meeting those standards can be displayed as Halal, and those not meeting the Halal standard have limits on their production, importation and distribution. While the contents of Halal certification differ from country to country, since they are founded on Islamic law, there is some commonality in their basic elements. The Halal system has become a hurdle to the exporting of food products by Japanese companies into Indonesia.

Moreover, this is not a regulation set by the national government, but rather a standard set by religious institutions. As a result, Halal standards are in principle arbitrary standards, and rather than having a clear minimum standard, there is a clear and high-value premium standard. However, for such things as the slaughtering of meat there is a mandatory standard. Moreover, for products containing alcohol or pork there are regulations based on laws requiring clear labeling. For foods not receiving Halal certification, even if permitted to be imported and distributed domestically, consumers are largely Muslim and demand for such products is small, and as such most distributors will not handle such products.

For example, most instant noodles in supermarkets are sold with Halal certification. Acquiring Halal certification for products produced in Indonesia is not very difficult. The operating of the Halal system in Indonesia is seen to be more lenient as compared to that of Malaysia. In supermarkets, pork is sold at a separate sales floor location, but alcoholic beverages are on display close to other foods and beverages. This is in contrast to Malaysia where Halal and non-Halal food departments are distinctly demarcated.

## 2.6 Emerging Opportunities for Japanese Companies in the Indonesian Market

Mainland Chinese companies, with their networks spread across every Asian country, tend to quickly match the local tastes and prices. They not only take advantage of modern distribution industries, but local traditional sales channels as well, depending on the situation.

In contrast to this, Japanese companies make investments carefully in stages; and in most cases, these are centered around urban areas providing high value added products and services. As a result the reliability of the quality and safety management for products and services offered by Japanese companies is high and centered toward the wealthy classes.

#### 2.6.1 Context of Indonesia's Development

Within the Indonesian food market, the volume of the middle class, which serves as the backbone for the food product businesses, has most notably grown very large, and its growth potential is high. Japanese food manufacturers and frozen vegetable manufacturers, already with a view towards China-Plus-One, have decentralized their production bases into the Greater Mekong Sub-Region (GMS) countries from China to Cambodia and Vietnam. However, for Vietnam and Cambodia, with limited rainfall during the dry season, up-front and operational costs are necessary to compensate for environmental conditions. On the other hand, Indonesia, which is located in the southern hemisphere, has a complimentary seasonal relationship with the fruit and vegetable cultivation of the northern hemisphere, in addition to weather conditions especially suitable for the production of fruits and vegetables with rainfall throughout the year.

The Indonesian government is implementing a domestic protectionist policy with import restrictions on agricultural products, strict quota systems and strict port of entry restrictions for vegetable and fruit products, and is promoting the substitutions of foreign agricultural products with domestic products. However, the quality of domestic producers has been unable to substitute for the quality of foreign imported agricultural products thus far. As a result, shortages continue within high-end supermarkets providing high quality agricultural products (such as Lunch Market and Food Hall, which provide Australian and New Zealand vegetable imports), and agricultural product prices are continuing to soar.

Below are typical opinions from the results of local interviews conducted with Japanese companies:

- It is an important country for strategic investment with the view of constructing production networks within ASEAN or China-Plus-One;
- The production potential for agricultural products in Indonesia with the introduction of Japanese agricultural technologies is high with the future potential of Indonesia as a supply base for Japan in place of China;
- There is also great potential for the introduction of Japanese farming machinery. Currently, 10 million head of water buffalo are used for farming purposes and the number of farm tractors is

80,000. The demand for farm tractors from the organizing of farmers and large-scale farming that results from the continuing shift to modern distribution will likely be large; and

- Along with the development of new Japanese industrial parks, Japanese manufacturers have continued expanding into Indonesia, and the Japanese food businesses targeting these industrial parks have been expanding rapidly as a new restaurant (catering) market.

## 2.6.2 Emerging Difficulties for Japanese Companies in the Indonesian Market

Should Japanese companies expand, joint ventures with local companies should be a common approach in order to interact with distribution networks and address labor problems. As an example from the past, Nissin Food Products and Shikishima Breads formed an alliance with Salim Group's IndoFoods, Meiji formed an alliance with Rodamas, and Yamazaki Breads formed an alliance with Afufa Group. When first entering into Indonesia, large-scale investments is usually avoided if possible, and most enter by gradually building up with a partner, taking a wait and see approach. When food industry companies enter into Indonesia, it is necessary to have above-standard quality, stable prices, and a stable supply chain. For this reason, in the initial stages, collaboration with a local partner who has local supplier networks is preferred. However, in the long-term, many felt that a more reliable in-house or Japanese logistic company distribution system should be transitioned to.

However, within emerging food industry companies, should there be access to a network of organized producers with reliable access to above-standard agricultural technologies, the Indonesian emergent risks are reduced, and even more so, there is the potential to realize many business expansions.

Table 2.21 Recent Food Related Companies Entering Indonesia and Local Partners

Japanese Company Operations	Type of Industry	Local Partner
Nissin Foods	Food Processing	IndoFoods
Shikishima Baking Company	Food Processing	IndoFoods
Meiji	Food Processing	Rodamas
Yamazaki Baking Company	Food Processing	Alpha Group
Kanematsu	Trading (Food Processing)	Macroprima - Panganutama
Calbee	Food Processing	Mitra Jaya
Lawson	Distribution • Retail	Midi Utama
Marugame Noodle	Restaurant	Pizza Hut Owner

Source: Prepared by Study Team based on newspaper information

Below are typical opinions of emerging challenges from the results of local interviews conducted with Japanese companies:

- As part of the restrictions on foreign investment, from April 2012 foreign investment



restaurants must meet the condition that they form an alliance with a local supplier such as farmers or agricultural product producers.

- Malaysia's Halal certification is valid across many Islamic countries including countries in the Middle East. Halal certification within Malaysia has greater versatility than Indonesian Halal certification.
- In recent years, at the Japanese prefectural level (agriculture- and industry-related) local food processing manufacturers and restaurants have organized, and Indonesian farmers' groups and agricultural product suppliers have frequently engaged in business matching.
- Import license acquisition in Indonesia requires that one receive a business license and that the business actually be in operation. For this reason, in the case of new foreign capital entrants in Indonesia, even if the storefront is made, it is not possible to quickly bring in imported products. This system is based on the assumption that the plan behind the operating license is for manufacturing.
- In recent years the quality of the fresh fruits and vegetables of local producers has improved, and necessary items are increasingly coming to be locally-made. However, the number of intermediaries supplying produce at the comparatively high quality level necessary for Japanese restaurants is limited, and in many cases items are out of stock.
- When foreign capital related restaurant business, including Japanese restaurant businesses, enter Indonesia, they will face a major challenge in supplying safe, good quality vegetables and fruits.
- Currently, through Indonesia's agricultural protectionist policy, foodstuff supplies, including vegetables and fruits, have experienced shortages with soaring prices as foodstuff import restrictions and quotas have been tightened.
- Directly buying vegetables from farmers or farmers' groups that utilize a sub-terminal of agribusiness (STA) constructed on the manufacturers' site is being considered. Farmers and farmers' groups acquiring GAP and the introduction of HACCP product quality standards under STA are desirable.
- In Jakarta, while wholesale markets and wholesalers exist, there is no wholesaler function, and for emerging restaurant chains that need to purchase various fruits and vegetables in small amounts, this is becoming a major constraint.
- Though Indonesian vegetables have been used on a trial basis in Oden within Japanese convenience stores, cases of the development of actual business relationships are limited. A stable agricultural product supply chain is underdeveloped as quality and safety assurance problems abound.

- In the future, as a result of the emergence of Japanese affiliated convenience store chains and restaurant chains, it is expected that the demand for fresh vegetables, side dishes and ready-to-eat meals will increase; however, in terms of the stable provision of safe and reliable vegetables and fruits by the domestic market, the situation is grave.
- In Indonesia, since import bans and restrictions on agricultural products frequently occur, to the greatest extent possible one should plan on switching to local procurement.

### 2.6.3 Obstacles for Japanese Companies Entering into Indonesia

The above listed Japanese food companies are in the Islamic world, but eating habits differ in Indonesia, and the number of entering companies is low as compared to those in Thailand and Vietnam due to various problems and challenges.

The Indonesian food market still has many hurdles for the expansion of foreign companies. Up to this point within this food industry with little market entry, high barriers still exist, even more so than other industries. Below is a compilation of topics based on the ground interviews and existing materials.

#### (1) Significant Fluctuations in Exchange Rates

Looking at changes in the exchange rate of the Indonesian Rupiah, if looked at only in the medium-term (5-year period) then the fluctuations were limited, but when viewed over the long-term (10-20 years), the exchange rate experiences large fluctuations. In the wake of the financial crisis of 1997 (¥1 per Rp23), the Indonesian rupiah depreciated rapidly. By 1998 the rupiah had depreciated to three times its previous exchange rate against the yen to Rp74.1 per ¥1. Since then, despite a trend of economic growth, the rupiah has continued to depreciate.

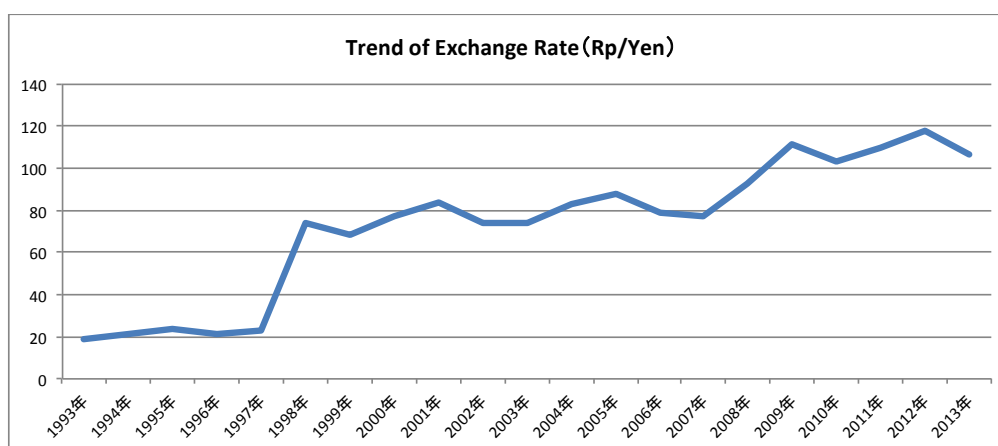


Figure 2.4 Indonesian Rupiah 20-Year Exchange Rates (Against the Yen)

## (2) Weaknesses in Transportation Infrastructure

Transportation infrastructure (particularly road) maintenance is not keeping up with traffic demand. Within the Jakarta metropolitan area thoroughfares connecting industrial points (industrial parks), ports and airports, and city roads within Jakarta encounter severe traffic that significantly inhibits commutes and logistics.

Fruits and vegetables supplying the retail and restaurant industries have short lead times, and it is necessary to protect against deterioration in quality from the hot, humid climate. Even assuming those distribution facilities, such as warehouses and trucks, are sufficiently maintained, transportation infrastructure such as roads remain vulnerable, and business risks and the cost of goods will be greatly affected.

## (3) Labor Problems

As a characteristic of Indonesian labor-management relations, labor disputes occur frequently, there are many benefits outside of regular salaries, and dismissals are difficult. Since 2000, the Indonesian government has enacted a labor law inclined toward worker protections and a Labor Protection Act. Moreover, because of Indonesia's history of hierarchical structures, it is said that these problems are difficult to address.

## (4) Religious Relations

About 86.1% of Indonesian are Muslim (over 200 million people) (BPS, 2000 Census), and Indonesia is the most populous Muslim nation in the world. Although Islam is not the Indonesian state religion, religious groups carry a great amount of political power. Particularly for the emerging food industry, management harmonious with workers' religious values and behavior (pilgrimages, worship, fasting, etc.) is required. Moreover, it is necessary to navigate the Halal system at each of the production, distribution and selling stages for food products.

## (5) Frequent Changes to Import Regulations

In Indonesia, in addition to the law, it is possible to frequently change various regulations through ministerial ordinances. For political reasons, the strengthening of import restrictions and quota regulations are often done, each time leading to increased prices and shortages for imported goods.

## (6) Other

The complexity of the laws and systems, inconsistencies, and lack of operational transparency still remain.

Security in Indonesia is not bad in general; however, with the Bali terrorist attacks (2002, 2005), the

terrorist attacks on hotels in Jakarta (2003, 2004, 2009), the Aceh independence movement and religious conflicts, there are some destabilizing elements.

### 3 Analysis of Agricultural Product Distribution and Identification of its Challenges

In Indonesia, agricultural products, particularly fresh fruits and vegetables, are distributed in accordance with various distribution systems, depending on the situations of production areas, organization of farmers, middlemen, collection facilities and the downstream part of the supply chain (delivering fresh fruits and vegetables to the destination). This section provides an understanding and analysis of complicated distribution systems in the country in light of field interviews, and identifies the challenges to be addressed.

#### 3.1 Prerequisites for Analysis of Agricultural Product Distribution

First, prerequisites for analysis of agricultural product distribution are identified. The analysis focuses on fresh fruits and vegetables. In terms of region, it covers West Java Province including the metropolitan area of Jakarta, Medan (the capital of North Sumatra Province), and the surrounding areas.

Before proceeding with the discussion, traditional distribution, modern distribution and middlemen are defined below to clarify the use of these terms in the Study.

##### (1) Definitions of Traditional Distribution and Modern Distribution

Traditional distribution is defined as a distribution system where traditional wholesale markets, traditional retail markets and others are situated in the downstream part of the supply chain of fruits and vegetables. Modern distribution is a distribution system where there are modern retailers, food service chain stores, and food processing companies in the downstream.

##### (2) Definition of Middlemen

Middlemen--also called suppliers, mediators, brokers, collectors and traders--purchase agricultural products from farmers and farmers' groups, and supply them to traditional markets, modern retailers, food processing companies, and the food service industry. In light of the field interviews and to simplify the discussions, this study classifies middlemen into the following two categories:

- (i) Collectors: large-scale farmers engaging in agricultural production and brokerage business; and
- (ii) Brokers: middlemen engaging in brokerage business only.

##### (3) Summary of Component Agents of the Distribution Systems

In Indonesia, particularly in the surrounding areas of Jakarta, traditional distribution coexists with modern distribution. The distribution systems have unique local characteristics, too. This study aims

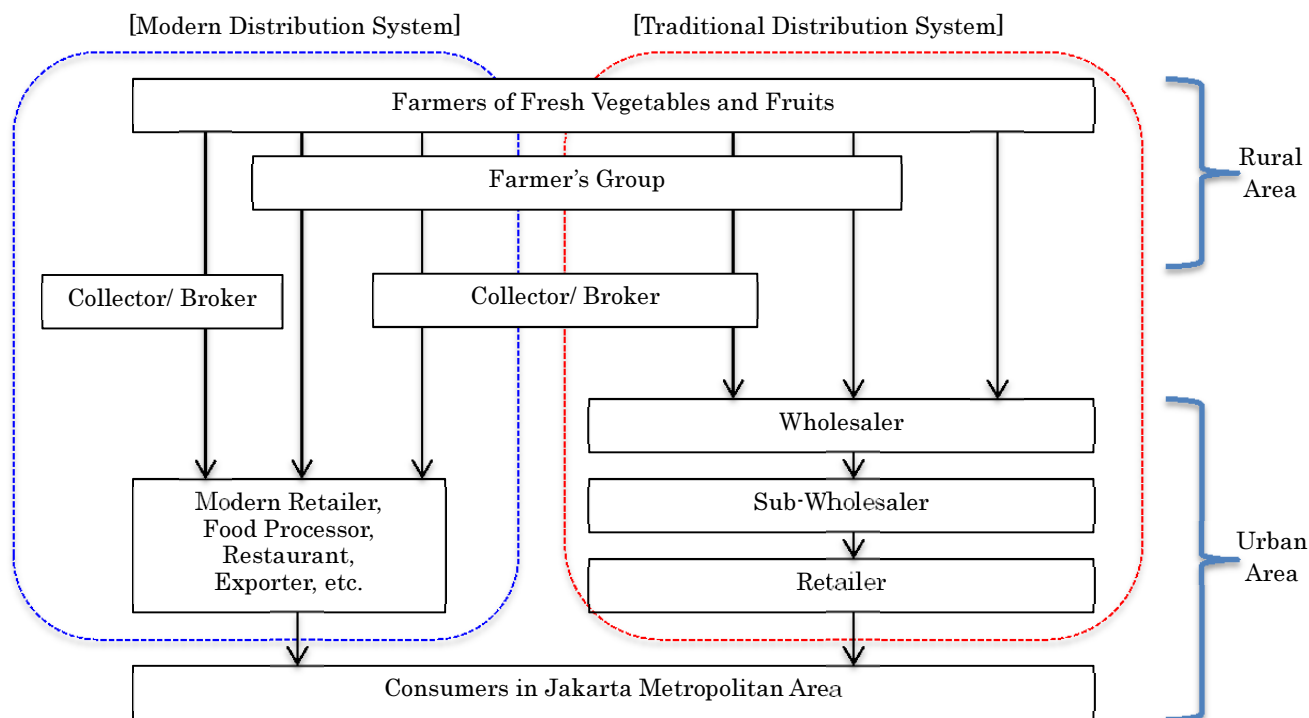
to present the component agents participating in traditional distribution and modern distribution, as shown in Table 3.1.

Table 3.1 Major Component Agents of Distribution Systems

Agent	Traditional distribution	Modern distribution	Remarks
Farmers	○	×	Production
Farmers' groups	○	○	Producer
Collectors	○	○	Middlemen
Brokers	○	○	Middlemen
Traditional wholesalers	○	×	Active in public and private markets
Traditional retailers	○	×	Fixed relationship with particular wholesalers
Modern retailers	×	○	
Food service chains	×	○	
Food processors	×	○	
Exporters	×	○	

Source: JICA Study Team

Figure 3.1 shows the generalized flows among the component agents in the distribution system for fruits and vegetables in Jakarta and the surrounding areas.



Source: JICA Study Team

Figure 3.1 Generalized Distribution Systems of Fruits and Vegetables in the Jakarta Metropolitan Area

### 3.2 Characteristics of Component Agents of the Distribution Systems

This section, based on the field interview surveys of the Study Team, identifies and describes the characteristics and practices of major actors comprising the distribution systems, namely the (1) farmers and farmers' groups; (2) middlemen (collectors and brokers); (3) traditional wholesalers and retailers; and (4) modern retailers, food processing companies, food service chains, exporters, and other actors.

#### (1) Farmers and Farmers' Groups

The major characteristics of horticultural farmers in Indonesia are summarized below.

##### a. Farmers

1. Roughly 65% of Indonesia's population resides in rural areas, 60% of whom are engaged in agriculture (farmers).
2. Since around 1970 when the population started to get highly concentrated in Jakarta, an increasing number of rice farmers around the country's capital shifted to horticulture, producing fruits and vegetables.
3. Their cultivation areas are relatively small, with 90% or more of such farmers having farms 1ha or smaller (see Table 3.2).
4. Some farmers directly bring their agricultural products to traditional markets. However, most of the agricultural products are supplied via collectors and brokers to traditional markets, modern supermarkets, food processing companies, food service chains, and others.
5. Low-income farmers with small farms sell their products at prices dictated by middlemen; there is little incentive for such farmers to grow higher value-added agricultural products.
6. These farmers use low production and post-harvest technologies.
7. Some farmers grow chemical-free and organic vegetables, but they are a minority and their production scale is small.

As most of the population started to move to Jakarta, an increasing number of farmers in the highlands around the capital, which are suitable for horticultural production, began to give up rice cropping and started to grow cash-generating fruits and vegetables. These products are grown in a small scale except for some of the estate crops such as coffee, cacao, sugar cane and coconut. The cultivation areas of horticultural farmers growing fruits and vegetables are particularly small, with small farmers (i.e., those with farms of 1ha or smaller) accounting for around 90% of all farmers. Those having farms of 2ha or larger account for a mere 5% or so. Overall, farmers have low production and post-harvest technologies and their income is low and unstable.

In general, small-scale horticultural farmers have a weak position in the market, compared to collectors and brokers who have their own distribution channels and control buying prices.

Table 3.2 Cultivation Land of Horticultural Crops in Indonesia

Crop acreage (ha)	Composition ratio (%)
0.2~0.5	70
0.5~1.0	20
1.0~2.0	5
2.0 or higher	5

Source: JICA Study Team (based on interviews with the Horticultural Crop Association/ Dewan Horikultura Nasional)

Some farmers have started to grow higher value-added products such as chemical-free and organic fruits and vegetables. However, the number of such farmers is still small and is not expected to increase considerably because the risk involved in organic and chemical-free vegetable farming is high while the risk-taking capacity of farmers is low. These higher value-added agricultural products on commission of food service chains and food processing companies.

Some relatively large-scale farmers directly bring their products to traditional markets. The majority, however, sell their products through collectors and brokers to traditional markets, modern supermarkets, food processing, food service chains, etc.

#### b. Farmers' Groups

The major characteristics of farmers' groups are summarized below.

1. In general, each farmers' group has a membership of 20-40 farmers.
2. Agricultural producers are beginning to mutually help each other and organize themselves, principally led by relatively large-scale farmers, and gain stronger bargaining power in negotiations with middlemen.
3. Some representatives of farmers' groups who have solidified neighboring farmers have become large-scale collectors of produce of farmers' groups.
4. An increasing number of farmers' groups are beginning to have their own collection facilities and engage in washing, grading, packing and other post-harvest work. An increasing number of farmers' groups are beginning to own their transport trucks. However, this number is still limited.
5. Farmers' groups registered with the Ministry of Agriculture can benefit from preferential policies of the government and support from international organizations.

To supply agricultural products to modern food-related industries, farmers are required to grow and



trade in agricultural products of stable quality at stable prices. In recent years, farmers are required to supply various kinds of agricultural products in bulk to modern supermarkets. Thus, they need to systematically cultivate various products at farms of a certain area or larger. They are also required to carefully avoid cultivating the same crops in the same place to avoid soil quality degradation and other problems resulting from repeated cultivation of fruits, vegetables and other horticultural crops. Particularly in the surrounding areas of the Jakarta metropolitan area where quite a few facilities of the modern food industries are situated, the necessity to organize small farmers has heightened. In fact, since 1997 when the Indonesian economy was seriously affected by the global financial crisis, agricultural producers have been organizing themselves into production groups, led by relatively large-scale farmers. As a result, such farmers' groups have gained stronger bargaining power in negotiating with middlemen. At the same time, some farmers' groups have started trading directly, rather than via middlemen, with traditional wholesalers, modern supermarkets, food processing companies, food service chains and exporters.

A typical farmers' group has 20 to 40 farmer members. The members vote for their officers each year. In many cases, large-scale farmers are appointed representatives and organize farmers for a long term. In recent years, some representatives have become large-scale collectors and trade with modern food-related industries.

In many cases, middlemen such as collectors and brokers and traditional wholesalers mainly engage in washing, grading, packing and other post-harvest work for agricultural products. In recent years, however, some farmers' groups have their own collection facilities and engage in these post-harvest activities themselves. In addition, an increasing number of farmers' groups have begun purchasing their own trucks and independently, without carriers or middlemen, supply their products to traditional wholesale markets and modern supermarkets.

Farmers' groups register with the Ministry of Agriculture. If registered, they can benefit from preferential policies of the government and international support programs. However, the Ministry spends most of its budget on rice-related measures and the budget for fruits, vegetables and other horticultural crops is currently very limited.

## (2) Middlemen (Collectors and Brokers)

The characteristics of middlemen (collectors and brokers) are summarized below.

1. Middlemen are businesses that collect agricultural products from farmers and farmers' groups

- and supply them to traditional wholesalers and modern retailers according to the latter's needs.
2. In the past, only brokers engaged in the brokerage business. In recent years, however, an increasing number of representatives of farmers' groups are working as collectors, while some collectors are beginning to organize farmers' groups.
  3. Modern superstores and other retail suppliers are beginning to procure agricultural products from collectors to reduce transaction costs and secure a large variety of products.
  4. Recently, middlemen use the Sub-Terminal of Agribusinesses (STAs) located near production sites to collect, wash, select and pack agricultural products.
  5. In general, middlemen have little consciousness about post-harvest treatment.
  6. Middlemen wish to have pre-cooling warehouses, refrigerated trucks and other facilities for the cold chain, but have difficulty in having them because of lack of and/or difficulty in raising funds.
  7. Brokers tend to deal in specific agricultural products; collectors deal in a variety of agricultural products.

Collectors and brokers – that is, middlemen – are businesses that collect agricultural products from farmers and farmers' groups; wash, sort, grade and pack them according to the buyers' needs; and supply them to traditional wholesalers and modern retailers.

In modern distribution, modern retailers and middlemen are basically in contractual relationships. Middlemen observe marketing principles in respect of the quality, prices and quantities of fruits and vegetables. Business relationships between large-scale middlemen and farmers are based on trust, but the prices are determined according to the quality of fruits and vegetables produced; that is, the prices also follow the dictates of the market.

Modern retailers (such as Hero and Carrefour) generally trade with a number of reliable middlemen (collectors and brokers). Many large-scale middlemen normally supply agricultural products to a number of modern retailers, and the small ones to one certain supermarket only.

The relationships between farmers, middlemen and wholesalers in traditional distribution are somewhat fixed, compared to those in modern distribution, so they seem to be less based on market mechanisms. Thus, the quality and prices of fruits and vegetables are stable in modern distribution than in the traditional one.

In general, middlemen have little consciousness about post-harvest treatment. Even so, some

collectors who are also farmers recognize the importance of post-harvest treatment and wish to have pre-cooling warehouses, refrigerated trucks and other cold chain facilities but find it difficult to raise enough funds for acquiring them.

Some fruit and vegetable producers work as agents (collectors) but specialize in collection services only. It used to be common for middlemen called brokers to collect agricultural products from farmers and supply them to wholesalers. Nowadays, however, an increasing number of the representatives of farmers' groups engage in brokerage activities as collectors. In general, brokers tend to deal in specific agricultural products while collectors engage in a variety of agricultural products.

The following discussion summarizes the characteristics of brokers and collectors.

#### a. Brokers

Brokers are middlemen who undertake procurement of fresh fruits and vegetables upon commission of modern retail shops and tie together farmers and farmers' groups. Perti Sugar Co., for example, trades with 50 farmers' groups which have contractual relationships with 1,500 subcontracting farmers. Mitratani Argo Unggul Co. ties together farmers and farmers' groups (with farm area totaling 500ha and involving 4,000 farmers), and supply agricultural products to a number of modern supermarkets and food processing companies and export them to foreign countries.

There are both individual and corporate brokers. Many of them deal in specific agricultural products, but corporate ones in many cases have their own collection facilities (packing houses) and transport trucks. Recently, corporate brokers use the Sub-Terminal of Agribusinesses (STAs) facilities located near production sites to collect, wash, select and pack agricultural products. Individual brokers also make use of STAs.

#### b. Collectors

Collectors are farmers and farmers' groups that produce fruits and vegetables on a large scale and directly trade with modern retail shops. In advanced vegetable production areas in Java Island, farmers' groups that are well educated and have attended training programs on agricultural management, organic agriculture and marketing are rapidly growing and beginning to deal with supermarkets directly or via middleman. They purchase or rent farms from small farmers (who have given up rice cropping) or investors; invest in vinyl greenhouses, irrigation, trucks and other farming facilities; and produce vegetables with higher market value on a large scale. They sell high-grade

products to supermarkets and low-grade ones to traditional wholesale markets. UD Agro Segar in Puncak, which owns a large vegetable production site in the highlands near Bogor, ties together 18 neighboring farming households (about 40 people); draws up production plans for them; provides them with technical guidance; jointly purchases fertilizers and feedstuff; and offers financial assistance to some small farmers, while supplying washed and packed fruits and vegetables to Hari Hari, a local supermarket in Jakarta targeting low- and middle-income groups. After sorting out the vegetables, they supply low-quality vegetables to the PIKJ, a traditional wholesale market in Jakarta.

### (3) Traditional Wholesalers and Retailers

The characteristics of traditional wholesalers and retailers are summarized below.

1. Traditional wholesalers and retailers are businesses that have their own booths at the central wholesale market and public wholesale markets (in the case of the Jakarta metropolitan area) and trade in fruits and vegetables.
2. The business relationship between farmers and farmers' groups and retailers is fixed at public wholesale markets, while the relationship with wholesalers is more flexible.
8. Most traditional retailers are those running traditional family-run private shops and stalls at public markets called *Pasar*.

Traditional wholesalers in Jakarta and the surrounding areas rent booths at either the public central wholesale market in Kramat Jati (Pasar Induk Kramat Jati or PIKJ) run by a public corporation of the Special Capital Region of Jakarta or Pasar Thnah Tinggi, a private wholesale market of agricultural products in Kota Tangerang, Banten Province.

The public management corporation running the PIKJ also operates a total of 152 traditional retail markets in Jakarta and the surrounding areas. Traditional retail takes the form of public markets called *Pasar* composed of traditional family-run private shops and stalls (see Table 3.3).

Table 3.3 Modern Retail and Traditional Retail in Indonesia

Form of modern retail	Form of traditional retail
Hypermarket	Pasar: public-run market
Supermarket	Toko: shop
Mini-market	Warung: permanent stall
Convenience store (CVS)	Kaki Lima: movable stall

Source: "Feasibility Study Report on Advance into the Food Industry in Indonesia," Japan Food Industry Association, March 2012.

Traditional wholesalers and retailers procure agricultural products either directly from farmers and

farmers' groups or from middlemen. The farmers and farmers' groups and retailers have a relatively fixed business relationship at public wholesale markets. Businesses at public wholesale markets, on the other hand, do business with others more flexibly than those at public-run markets. Market principles are observed by wholesalers and retailers so that trade of agricultural products between them is clearer and follows an efficient distribution system.

(4) Modern Retail, Food Processing Companies, Food Service Chains, Exporters, etc.

The characteristics of modern retail, food processing companies, food service chains, exporters, and other markets for agricultural products are summarized below.

1. "Modern retail", mainly in the form of large shops and chain stores, is expanding against a backdrop of a rising middle-income group, but its market share is still small.
2. Modern retailers dealing in fresh vegetables are mainly the hypermarkets (HM) and supermarkets (SM). Some mini-markets and convenience stores (CVS) are beginning to sell these products as well.
3. In general, these entities procure fresh fruits and vegetables via middlemen. Some food service chains and large food manufacturers take advantage of the contract system, where they provide farmers and farmers' groups with seeds, fertilizers and agrichemicals, and in turn purchase agricultural products from them.
4. Many large retailers and food processing companies have their own distribution centers and transport trucks.
5. Although the number is very small, some large-scale retailers with outlets nationwide have central distribution centers (DCs) with refrigerated facilities for procurement of fresh foods, rather than calling on each outlet to procure products on its own.
6. Retail chains tend to build their DCs first in Java Island and then gradually in other islands because the country's vegetable and fruit production sites are concentrated in the island and the surrounding areas, where import products are also easily available.
7. Some medium-sized retail chains in rural areas are beginning to have their own small DCs for fresh food.

Modern retail (HM, SM, CVS, etc.), food industry and food service chains in the downstream part of the modern distribution system are located in urban areas. Many of them procure fruits and vegetables via middlemen. Some food service chains and large food manufacturers (such as Indofood and Heins) procure fresh fruits and vegetables from collectors and brokers. Some food

service chains and large food manufacturers take advantage of the contract system where they provide farmers and farmers' groups with seeds, fertilizers, agrichemicals and other production inputs in exchange for purchasing the contract farmers' agricultural products.

Many large retailers and food processing companies have their own distribution centers and transportation facilities.



Some large-scale retailers with outlets nationwide have central DCs with refrigerated facilities for procurement of fresh foods, rather than calling on each outlet to procure products on its own. In this case, fruits and vegetables imported or produced at home are transported to DCs first by importers, wholesalers or logistics companies, and then distributed to each outlet. Packing and processing are made by a number of large collectors and brokers contracted by the large-scale retailers at their own collection facilities or STAs before agricultural products arrive at the centers, or by the retailers themselves at the center. In recent years, however, collectors and brokers pack and process agricultural products in many cases.

Retail chains tend to build their DCs first in Java Island and then gradually expand with other DCs in other islands because Indonesia's vegetable and fruit production sites are concentrated in Java and the surrounding areas, where import products are also easily available. The distribution system using

DCs is rapidly becoming common. For example, Matahari is a major Indonesian investor with large shares in the domestic markets of supermarkets and hypermarkets called “Foodmart” and “Hypermart”. In 2000, Matahari procured 30% of food products via DCs and the remaining 70% by direct shipment from wholesale markets or businesses to each outlet. By 2006, the company had adopted centralization of logistics and increased its ratio of procurement via DCs to 80%.<sup>1</sup>

Some medium-sized retail chains in rural areas are beginning to have their own small DCs for fresh food.<sup>2</sup> However, small chains for limited local areas, and the majority of hypermarkets and supermarkets targeting the middle- and lower-income groups still use drop shipment from local suppliers to individual stores.

Modern retail, chiefly in the form of large shops and chain stores, is expanding together with the rise in the middle-income group but its market share is still small. Modern retailers dealing in fresh vegetables are primarily the HM and SM. Some mini-markets and CVS are beginning to sell them, but their transaction volumes remain extremely small. In addition to administrative restrictions on opening of small stores, this situation appears to be largely attributable to fragile transportation infrastructure in urban areas that causes frequent traffic congestion and disables distribution to small stores.

Multinational companies such as Carrefour have their own hubs that normally cover wider areas in Asia and directly import agricultural products through the hubs. Other large chains and small retail chains procure import products mainly through large wholesale importers in Indonesia.

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<sup>1</sup>World Bank (2007) Annex 2.

<sup>2</sup>Under the Cold Chain Project, USDA supports supermarkets to be equipped with refrigerated facilities.

### 3.3 Identification of Agricultural Product Distribution Facilities

Sub-Terminals of Agribusiness (STAs) are collection centers in the fruit and vegetable distribution system in Indonesia and located in agricultural production areas. Wholesale markets are, on the other hand, located near consumption areas. In the Jakarta metropolitan area, both public-run wholesale markets (Kramat Jati) and private wholesale markets exist. Based on the field surveys, this section aims to identify and understand the characteristics of STAs that are collection centers of agricultural products, and wholesale markets that are distribution and shipping centers for traditional wholesalers. This section also aims to look at the future directions of wholesale markets in Indonesia by comparing them with more advanced private wholesale markets in Thailand.

#### (1) Sub-Terminals of Agribusiness

##### General Description

In 1995, the Ministry of Public Works (PU) established a total of 72 STAs across the country to break the market control of middlemen, raise farmers' income, and lower consumer prices of agricultural products. The STAs have long been left inoperational, so the management of these facilities was transferred in 2006 from the PU to the Ministry of Agriculture. In 2010, the Ministry of Agriculture started the operation of the STAs, which are currently under the supervision of the Domestic Marketing Division, Bureau of Processing and Marketing for Agricultural Products. As of February 2013, some 10% of the STAs are operating and the Ministry intends to start operating 15 STAs each year in the future.

The STAs, normally located near agricultural production sites, are facilities linking agricultural producers, wholesale markets, retailers and food-related industries. They are also used to collect, wash, select and pack agricultural products. They are officially required to comply with the standards of the Good Agricultural Practice (GAP) and the Good Handling Practice (GHP), but most STAs fail to do so.

##### Operation of the STAs

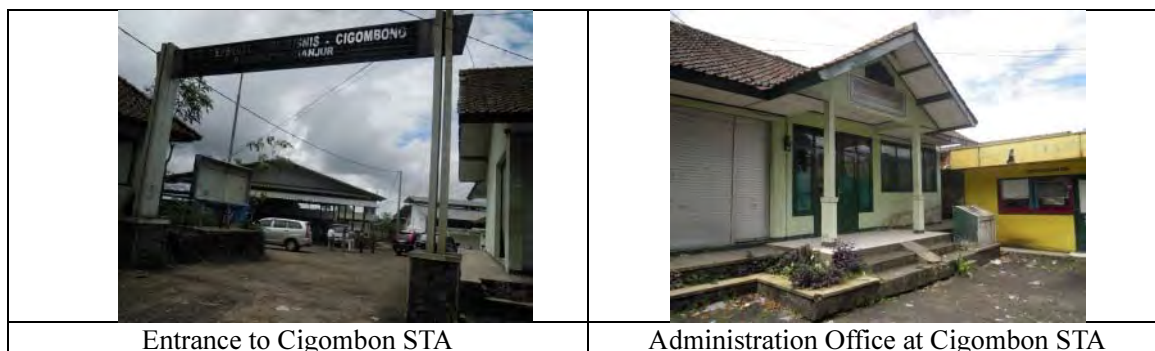
The STAs are owned by regencies (Kabupaten) and cities (Kota) where each STA is located. Some are operated by more than one Kabupaten or Kota, and others jointly by the public and private sectors. As observed during the field surveys, only a few government-operated STAs are successful. An STA in Cigombon near Kabupaten Bogor<sup>3</sup> is operated and managed by a management board composed of officials of the regency government, representatives of farmers' groups and private

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<sup>3</sup>The Ministry of Agriculture assesses that Cigombon STA is operated successfully.



middlemen. However, although the STA has an administration office, no particular person is apparently stationed there and officials visit the STA only once a month to collect rents for work booths.



#### The Current State and Issues of the STAs: the Case of Cigombon STA

Cigombon STA, located in the highland area near Kabupaten Bogor, is assessed “good” by the Ministry of Agriculture. The current state and issues of the STA, based on the field surveys on Cigombon STA, are discussed below.

The STA has a common work area and rental spaces for exclusive use. The monthly rent for an exclusive space of 6m x 15m is around Rp500,000. Each rental space is equipped with a scale, worktable and desk, and tenants must pay electricity and water bills. According to the interviews of brokers (private companies) that rented spaces at the STA, rent rates are frequently revised.<sup>4</sup>

The common space is mainly used to pack agricultural products to be shipped to the traditional wholesale market (PIKJ). Neighboring farmers bring fresh vegetables to the STA, and brokers sort out and ship them to the PIKJ in Jakarta at night.

Rental spaces for exclusive use are primarily used by collectors and brokers who have business with modern retailers and food manufacturers. They wash, select and pack fruits and vegetables brought in by contracted farmers and farmers’ groups, and ship them to DCs of supermarkets and food processing companies at night.

Some modern retailers, such as Giant and Lotte Mart, use Cigombon STA to procure vegetables. However, the amount of vegetables distributed to modern supermarkets and food processing companies via the STA is small, and most vegetables collected at the STA go to the PIKJ and private

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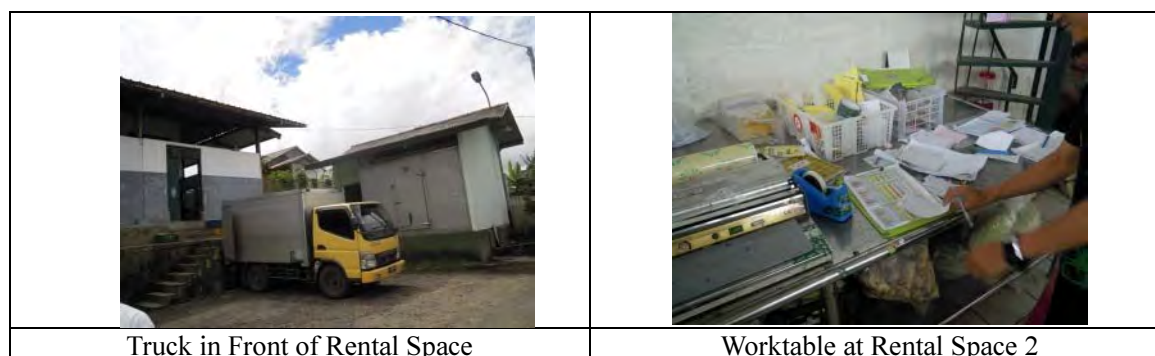
<sup>4</sup> According to interviews with the Ministry of Agriculture, work booths at the STA are available free of charge.

wholesale markets in Jakarta.

	
<p>Packing at the Common Space</p>	<p>Packed Vegetables (for Traditional Markets)</p>
	
<p>Work at Rental Space for Exclusive Use</p>	<p>Packed Vegetables (for Modern Supermarkets)</p>

Based on interviews with the Ministry of Agriculture, the STAs require that businesses should comply with the GAP for agricultural production process management and the GHP for hygienic management based on Hazard Analysis and Critical Control Points (HACCP) standards. In practice, however, the work environments at both the common space and rental spaces were not so hygienic even at Cigombon STA which received a “good” assessment from the Ministry. Moreover, fresh water was supposed to be supplied to the STA for washing fresh vegetables, but workers at the STA often had to ask neighboring farmers to give water because of unstable water supply.

	
<p>Waste Vegetable After Sorting</p>	<p>Worktable at Rental Space 1</p>



## (2) Wholesale Markets

This section aims to understand and present the state of the PIKJ in Jakarta and a private wholesale market to clarify challenges. It also summarizes the state of an advanced example, a central wholesale market in Bangkok, Thailand, and compares it with the wholesale markets in Indonesia.

Table 3.4 shows a comparison of Pasar Induk Kramat Jati (PIKJ), a central wholesale market in Jakarta, with a private wholesale market. The site area of the PIKJ is 14.7 ha (market area: 4 ha) and that of the private wholesale market is 4 ha (market area: 3 ha), but the daily average transaction totals 2,300 tons at the PIKJ and 3,000 tons at the private wholesale market (note that there are seasonal fluctuations). As for the utilization rate of booths, 80% of the booths at the PIKJ are occupied while 100% of the booths are in operation at the private wholesale market, suggesting that the latter is more active in trade despite the higher rent for booths.

Table 3.4 Comparison of PIKJ and a Private Wholesale Market

	PIKJ	Private wholesale market
Location	Suburb of Jakarta	Kota Tangerang, Banten Province
Operating entity	PIKJ public corporation (public)	Pascomnas Co. (Private)
Administrative staff	About 42 staff members (and 65 security guards and 106 cleaning staff workers on a contract basis)	About 50 staff members
Site area	14.7 ha (market area: 4 ha)	4 ha (market area: 3 ha)
Agricultural product lines	Vegetables (45%) and fruits (55%)	Vegetables (70%-80%) and fruits (20-30%)
Average transaction volume	2,300 tons/day (with seasonal fluctuations)	3,000 tons/day (with seasonal fluctuations)
Utilization rate of booths	80%	100%
Technical guidance to farmers	No	Yes
Audit to wholesalers at market	Yes (lenient)	Yes (strict)
Rent for a booth at market	Rp800,000/12m <sup>2</sup> /month	Rp2 million/6m <sup>2</sup> /month (Limit price is adopted because of high demand)
Initial admission fee for a booth	10% of the annual rent (Rp960,000/time)	None

	PIKJ	Private wholesale market
Attempt to develop market	No	Yes. The market seeks for collaboration with the STA.
Quality inspection	No	Applicable only to agricultural products brought in by the owner of the market

Source: JICA Study Team

(i) Kramat Jati Wholesale Market: Pasar Induk Kramat Jati (PIKJ)

General Description

Conventionally, traditional markets called “Pasar” used to serve as wholesale markets for distribution of fruits and vegetables in Jakarta. Since around the beginning of the 1970s, however, demand for fruits and vegetables increased as a result of the rapid concentration of population in Jakarta, making it difficult for the traditional distribution system centered on Pasar to work effectively. In response, the Jakarta City Government established in 1974 the PIKJ as a sole central wholesale market in Jakarta to modernize the distribution system and concentrate the wholesale activities for fruits and vegetables at one single place in the city's suburb. The then city government set forth a distribution regulation that all fruits and vegetables brought into the capital city should be shipped via the PIKJ.

Currently, however, because of an expansion in the modern distribution system (such as hypermarkets, supermarkets and convenience stores) and establishment of private wholesale markets, the ratio of agricultural products shipped to Jakarta via the PIKJ is around 60%-70% and has been decreasing over the years.

Fruits and vegetables are delivered via the PIKJ to 152 markets in Jakarta, all of which are administered and operated by Pasar Jaya, a public corporation of the Special Capital Region of Jakarta. The PIKJ also leases trucks to sub-wholesalers and retailers who do not have their own transportation means. The rental fee ranges from Rp500,000 to 700,000 per rental, though it varies depending on the distance.

The PIKJ consists of a fruit market, a vegetable market and a spice market. Around 70% of agricultural products shipped from the PIKJ go to the Special Capital Region of Jakarta. Other destinations include neighboring regions such as Bogor, Tangerang and Bekasi (25%); restaurants, and other food and drink establishments (approx. 2%-3%); and others (approx. 2%-3%). Wholesale markets do not deal in coffee, cacao, sugar cane, tea and other estate crops because they follow different distribution routes and are normally brought in directly to processing factories.



	
<p>Scene Inside the PIKJ</p>	<p>Scene at the PIKJ (Vacant Booth)</p>
	
<p>Scene at the PIKJ (Sorting)</p>	<p>Scene at the PIKJ (Packing)</p>
	
<p>Rear Deck of Truck of Retailer Having Bought Fruits and Vegetables</p>	<p>Truck for Transportation from Production Sites</p>

Wholesalers (purchase brokers) at the PIKJ contact local farmers, representatives of farmers' groups, and middlemen (collectors and brokers) by mobile telephone, informing them of the necessary amounts of products and buying prices. Small-scale farmers without any transportation means normally do the following:

1. Sell their products to middlemen (collectors and brokers);
2. Sell their products to neighboring large-scale farmers;
3. Entrust transportation to the PIKJ to neighboring large-scale farmers; or
4. Entrust transportation to local carriers (many of which are individual carriers).

As for settlement of sales proceeds, wholesalers at the PIKJ normally pay proceeds into bank accounts of producers and middlemen on the day after the delivery of agricultural products to the PIKJ. Some small-scale farmers are still paid by cash on the spot.

In the case of mandarin orange, about 20% of the proceeds go to farmers and farmers' groups and the remaining 80%, to collectors, brokers and other middlemen. In the case of long-distance transportation to, for example, Kota Makassar in Sulawesi Island and Kota Medan in Sumatra Island, middlemen arrange with logistics service providers for transportation to the PIKJ (according to interviews with the PIKJ). Generally, farmers, collectors and brokers bear the transportation costs. However, wholesalers of the PIKJ usually do so if they themselves procure fruits and vegetables.

For long-distance transportation, mandarin orange is plainly packed by producers and the post-harvest loss is generally low at 3%-5%. For example, the land transportation cost of a 20-foot container (8-12 load tonnage) from Kota Makassar to the PIKJ in Jakarta is Rp10 million (equivalent to ¥100,000), and the sea fare is Rp70,000 (equivalent to JPY70,000).

#### Organizational Structure of Market Management and Operation

The PIKJ, operated by a public management corporation affiliated to PD Pasar Jaya, is composed of the general affairs department, enterprise development department, financial affairs department, management and accounting department, and market security department. The management staff members totaled around 42 (as of March 2013). Various union organizations for various business forms exist within the PIKJ, such as Bapengar to solve troubles concerning transportation of products, Kabapin supporting transportation to other retail markets, Koppas formed by wholesalers, and a union organization of cleaning staff. The PIKJ public management corporation sets forth regulations on appropriate tax payments and safe use of the market, asking wholesalers to comply with them.

Koppas is a union organization managing wholesalers and the market and provide member wholesalers with information and funding (e.g., deposits and loans). The union currently has a deposit of approximately Rp100 million. It has 2,650 members, of whom active wholesalers total 1,300 or so. The union members are classifiable into those who are registered as wholesalers and those who deposit money with a funding loan program administered by the organization.

Except for Koppas, other wholesalers at the PIKJ have no business independently with modern supermarkets, hotels, food service industry or food processing industry. In business deals with modern distribution retailers, it takes 30-40 days to settle payments after delivery of agricultural products. The union supplies fruits and vegetables to modern supermarkets such as Giant, Lotte and Carrefour, and long-established hotels by making use of a loan scheme for members of the wholesalers' union.

### Description of the Facilities

The PIKJ site has a total area of 14.7 ha (4 ha of which are occupied by the market) and is equipped with a bank, telephone office, toilets, parking lots, mosque and other facilities. It has a total of 2,188 zones for wholesale shops, of which some 80% are currently (as of 2013) occupied by tenants. Each wholesalers normally rents two zones for its shops (a maximum of 6 zones are available to each wholesaler).

Some 600 trucks carry agricultural products in and out of the PIKJ every day. All agricultural products are manually unloaded. Thus, at night when the market is particularly busy, the traffic within the premises of the PIKJ gets heavy, prolonging the carriage and unloading of products.

An increasing number of large logistics companies having business with the PIKJ have their own refrigerated containers. The demand for a cold chain has been increasing for certain agricultural products such as melon, pineapple and papaya. Despite this, there is no refrigerated warehouse within the premises. In 2010, the PIKJ called on the Government of the Special Capital Region of Jakarta for assistance in this regard but this has not yet been realized.

### Items and Volumes of Agricultural Products Traded

The PIKJ trades some 40 kinds of vegetables and 30 fruits. Major fruits products include mango, melon, orange and papaya, while chili, red onion, cabbage, potato and tomato are among the major vegetables (see Table 3.5 and Table 3.6). The daily transaction volumes of vegetables and fruits are approximately 1,000 tons and 1,300 tons, respectively (with seasonal fluctuations), or a total of 2,300 tons per day.

Table 3.5 Fruits Traded at the PIKJ

	Commodity	Avg. Volume (ton/day)	Main Origin
1	Mango	659	West Java, East Java
2	Honeydew melon	183	East Java
3	Orange	146	North Sumatra, West Kalimantan, import
4	Watermelon	126	East Java, Lampung
5	Papaya	44	West Java, Lampung
6	Pineapple	33	South Sumatra, West Java
7	Avocado	21	West Java, East Java
8	Banana	21	West Java, Lampung
9	Bark/Zalacca	19	Bali, Yogyakarta
10	Apple	9	East Java, import
	Sub-total	1,261	
	Others	64	

	Commodity	Avg. Volume (ton/day)	Main Origin
	Total	1,325	

Note: The figures in the table were based on records in October 9 – 15, 2012.

Source: Interviews at the PIKJ

Table 3.6 Vegetables Traded at the PIKJ

	Commodity	Avg. Volume (ton/day)	Main Origin
1	Chili	174	West Java
2	Red onion	117	Central Java, West java, import
3	Cabbage	92	West Java
4	Potato	79	West Java, East Java
5	Tomato	75	West Java, Central Java
6	Corn	51	East Java, Lampung
7	Carrot	31	West Java, import
8	Ceisin	31	West Java
9	Local ginger	20	West Java, East Java
10	Garlic	15	Import
	Sub-total	685	
	Others	382	
	Total	1,067	

Note: The figures in the table were based on records in October 9 – 15, 2012.

Source: Interviews at the PIKJ

### Problems of the Public-Run Central Wholesale Market

The problems of the PIKJ, as found during the field surveys, are summarized below.

#### a. Complicated distribution system

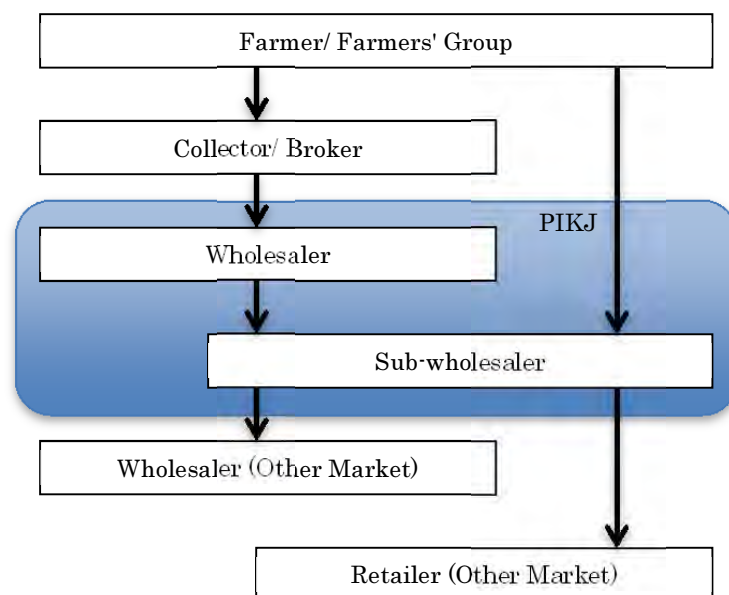
Wholesalers and sub-wholesalers coexist at the PIKJ. Other wholesalers are doing business outside the PIKJ, too. This multi-staged wholesale process (see Figure 3.2) represents the complicated distribution system in Indonesia.

#### b. Unclear unloading costs

The costs of unloading work are separately incurred at the market (see Table 3.7). Workers engaging in unloading belong to a number of long-existing organizations. The costs are paid from the proceeds of fruits and vegetables for producers and middlemen (collectors and brokers).

No such expense is incurred at Pasar Thnah Tinggi, a newly built private wholesale market, where the loading fee is uniformly set to reduce the burden on producers and middlemen.





Source: JICA Study Team (based on interviews at the PIKJ)

Figure 3.2 Distribution Route of Fruits and Vegetables via the PIKJ

Table 3.7 Cargo Handling Costs at the PIKJ

	Item	Price (Rp)	Unit
1	Transaction permit	2,000~3,000	/ time
2	Unloading fee	1,500~4,000	/ time
3	Site fee for special basket	2,000	/ time
4	Usage fee for special basket	1,000	/ time
5	Loading fee for special basket	1,500	/ time
6	Parking fees	5,000~10,000	/ vehicle-time

Source: JICA Study Team (based on interviews at the PIKJ)

### c. Unscrupulous wholesalers

According to interviews with farmers' groups in Bogor, Bandung and Tangerang, producers supplying fruits and vegetables to wholesalers at the PIKJ face risks of failure to receive proceeds because there are wholesalers who run off with the proceeds or go out of business. Some farmers' groups pointed out that the management structure of the PIKJ public corporation and the reliability of wholesalers were not as good as those of private wholesale markets. In addition, the PIKJ does not conduct any quality control, and fruits and vegetables are priced through negotiations among wholesalers, farmers and farmers' groups, and middlemen.

d. Non-uniform quality and unstable price

Modern retailers such as hypermarkets and supermarkets avoid procuring fruits and vegetables from the PIKJ since the prices fluctuate considerably and the quality is unstable, though the quality of products at the PIKJ is generally good.

Because of these problems, recent wholesalers are shifting their supply sources from the public PIKJ to farmers and farmers' groups doing business at the private wholesale market in Tangerang. Retailers are also shifting from the public to the private wholesale market. The following section summarizes the characteristics of the Pasar Thnah Tinggi in Tangerang.

(ii) Private Central Wholesale Market for Agricultural Products: Pasar Thnah Tinggi, Tangerang, Banten Province

Pasar Thnah Tinggi, operated with private capital, is located 4km south of the Jakarta International Soekarno-Hatta Airport in Tangerang, Banten Province, adjacent to the Special Capital Region of Jakarta. Similar to PIKJ, the privately operated market, which started operating in 2001, deals in fruits and vegetables. It operates 24 hours 365 days a year, where wholesalers are quite actively doing business. Almost 100% of the market's zones are in full operation.

Pasar Thnah Tinggi is operated and managed by Paskomnas founded in 2001. Paskomnas conducts business on a large scale including construction, building management, and real estate sale. The company regards a wholesale market as a new business opportunity, having its eye on potentials of fruits and vegetables in Indonesia. It is also committed as an advisor to planning, construction and instruction of a regional distribution center (RDC) and a Provincial Distribution Center (PDC) promoted by the Ministry of Trade.

Apart from Paskomnas which is responsible for management, four entities are mainly involved in transactions of agricultural products at the market, namely sellers (farmers, farmers' groups, middlemen, etc.), wholesalers at the market (middlemen), purchasers (wholesalers and retailers), and workers transporting agricultural products within the premises (approx. 500 persons). The market also has a retail space for general consumers upon the request of local people.

Wholesalers at the market consist of retailers of traditional markets, and new collectors and brokers.



Some 50 staff members are in charge of the operation and management of the market. The major income sources of the wholesale market business are rental fees for trading places (Rp2

million/space (2m x 2m)/month), fees for usage of facilities (including electricity charges, security cost and cleaning cost), and admission fees for vehicles (Rp1,000-2,000/time). Raw garbage generated in the course of the primary processing amounts to about 80 tons or 18 truckloads per day and is brought to feedstuff companies.

The expenses for carrying and unloading agricultural products at the market are uniformly determined by the operating company at Rp50/kg, rather than the complicated fee structure introduced by the PIKJ. At the private wholesale market, subcontractors are in charge of transportation of agricultural products within the premises.

#### Description of the Facilities

The entire area of the market is about 4 ha (including 3 ha of market area), in which there are 1,500 booths. The electricity is stably supplied and a back-up power generator is installed in case of power failure. Some wholesalers dealing in (imported) fruits have refrigerated storage facilities at their own booths.





	
Scene at the Private Wholesale Market	Scene at the Private Wholesale Market
	
Scene at the Private Wholesale Market	Sorting at the Private Wholesale Market

#### Trading of Fruits and Vegetables

The daily average transaction totals 3,000 tons (with seasonal fluctuations). The market area is smaller than that of the PIKJ, but the transaction volume is more or less the same. Thus, the booths at the market are almost fully occupied (while the utilization rate of booths at the PIKJ is only 80%).

Some 70%-80% of agricultural products transacted at the private wholesale market are vegetables and the remainder is fruits. Of the entire shipping volume, 70%-80% is destined for Banten Province and neighboring West Java and West Jakarta Provinces. The market collects fruits and vegetables mainly grown in Java Island and supplies them to the western region of Jakarta, and the southern region of West Sumatra such as Lampung and Palembang. Since the PIKJ supplies agricultural products to the central and eastern regions of Jakarta, they are well segregated in terms of destinations. However, because the quality and prices of agricultural products and the credibility of businesses and other aspects at the private market are preferred to those of the PIKJ, businesses doing business at the private wholesale market are gradually making forays into the central and eastern regions of Jakarta.

For transportation of agricultural products among regions, railroad can carry a large amount and thus is desirable. But since railroad infrastructure is not yet developed, trucks and marine transportation are the major means at the moment.

	
<p>Vegetables Loaded on Truck</p>	<p>Transportation of Vegetables at the Market</p>
	
<p>Truck for Transportation of Vegetables from Production Sites</p>	<p>Truck for Transportation to Retailers in Urban Areas</p>

#### New Initiatives of the Private Central Wholesale Market

The private-run Pasar Thnah Tinggi has started to try and do something new for suppliers (farmers, farmers' groups and middlemen) that public wholesale markets have not done. These new measures, clarified in investigations and the field surveys, are described below.

a. Future development plans

Paskomnas, the owner of the wholesale market, is currently operating and planning to operate four wholesale markets in addition to Pasar Thnah Tinggi, including Pasar Induk Jakabaring Palembang, Pasar Induk Beras Semarang (scheduled to start operation in 2014), and Pasar Induk Osowilangun Surabaya. In addition, it also has a plan to launch wholesale markets in six other places across the country, including Banjarmasin (Borneo), Balikpapan (Borneo), Makassar (Sulawesi), Palu (Sulawesi), Sorong (Sulawesi), and Medan (Sumatra).

b. Sharing of price information

Paskomnas posts selling prices of five wholesalers for each agricultural product at three wholesale markets in operation on its website every day. It also offers a searchable database of selling prices in the past on the website. This initiative aims to remove inter-regional inequality by unifying prices of agricultural products among regions and adjusting the supply and demand balance of agricultural products among regions, which effort is supported by the Ministry of Trade. The wholesale market scheduled to be developed in Makassar (Sulawesi Island) will operate as a new private wholesale market and serve as a provincial distribution center upon the request of the local government.

In the long term, Paskomnas aims to alleviate uneven distribution of agricultural products and price fluctuation risk by centrally managing information about prices at the STAs which are under the supervision of the Ministry of Agriculture (but owned by the local governments) and located closer to production sites, and sharing the information among the parties concerned.

The magnitude of fluctuations in fruit and vegetable prices is particularly considerable in Indonesia, where it is not unusual for the price of a particular product to jump tenfold or more in one single year (such as the case in 2012 of the prices of cabbage, onion and chili based on the website of Paskomnas). For example, if the price of a particular agricultural product rises sharply because of product shortage, quite a few small-scale farmers rush to grow the products. Then the supply becomes excessive, resulting in a fall in the price. Behind this phenomenon lies the fact that small-scale farmers independently make decisions without having sufficient information about the market.

c. Technical guidance and purchase of higher value-added products from farmers

The owner of the private wholesale market organizes farmers in East Java and Central Java Provinces who bring their agricultural products to the wholesale market, and provides them with technical guidance for cultivation of high value-added agricultural products. Then it purchases all



these high value-added products grown by the farmers it assists at prices based on their quality. These farmers are paid the proceeds from sales of agricultural products after wholesale commissions of 5% are deducted. Payments are made by bank transfer: 50% on the day after the delivery and the remaining 50% in five days' time. The proportion of agricultural products brought in to the wholesale market via the owner company is only 3% of all products at Pasar Thnah Tinggi in Tangerang, but accounts for 5%-10% at the newly built wholesale markets in Palembang and Surabaya.

(iii) Talat Thai in Thailand: a precedent case

This section presents the results of a survey on Talat Thai, a central wholesale market in Thailand, as a precedent case.

Talat Thai is the largest wholesale market in South Asia including Thailand. It was established in 1996 by Thai Agro Exchange Co., Ltd. and situated 42km north of the city of Bangkok.

It is located on 200 acres of land (80 ha) and operates 24 hours a day. Founded with a capitalization of THB2 billion, it deals in products worth THB300-500 million per day. The wholesale market was granted tax preferential treatment when it was founded, but did not receive any subsidy from the government. There are various buildings on the premises, which are all unique to individual products to be handled so that suppliers of agricultural products (including farmers) and buyers can efficiently trade with each other.

	
<p>Appearance of Talat Thai</p>	<p>Transportation Within the Premises of Talat Thai</p>





1-Flower market, 2-Orange market, 3-Mixed Fruits Market, 4-Possec, 5-Seasonal Fruit Group, 6-Fish Market, 7-Cold Storage, 8-Crop Market, 9-Vegetable Market, 10-Vegetable Ground, 11-Fresh Food market, 12-Meat Market, 13-Fish & Seafood Market

Talat Thai primarily deals in fruits and vegetables but it also trades dressed meat, seafood, processed foodstuff, flower and ornamental plants and various other products (see Table 3.8).

Table 3.8 Origins and Major Commodities

Regions	Provinces of Main Production	Major Commodities.
Northern Region	Chiangmai, Tak, Lampoon, Petchaboon, Nakornsawan	Onion, garlic, cool weather vegetable, tomatoes, red onion, cabbage, Chinese cabbage
North Eastern Region	Srisaket, Kon Kean, Ubol Rachathani, Amnajcharoen, Yasothorn, NakornRajasrima,	Chili, shallot
Eastern Region	Chantaburi, Rayong, Trat, Prachenburi	Seasonal fruits, pepper
Central Region	Angthong, Prathumthani, Ayudthaya, Supanburi	Leaf vegetables, common fruits (coconut, grape, banana)
Southern Region	NakornSritammaraj, Suradthani, Chumporn, Songkla	Seafood, seasonal fruits, pomelo, banana

Source: Interview surveys at Talat Thai

Talat Thai has obtained a permit as a central wholesale market for agricultural products from the Department of Internal Trade (DIT) of the Ministry of Commerce and is designated as a one-stop export center for fresh agricultural products. About 60% of Thailand’s agricultural products are distributed via Talat Thai. Chili grown in the northeastern region, for example, is transported via Talat Thai to the southern region. Fruits such as durian produced in the southern region are transported via the wholesale market to the northern region. It also supplies products to central

wholesale markets in rural areas, serving as a hub to Talat Meung Mai in Chiang Mai in the northern region, Talat Suranakorn in Korad in the northeastern region, Sri Meung in Tachaburi in the central region, and Chumporn Meungmai in Chumporn in the southern region.

Major income sources of the wholesale market are admission fees for vehicles charged on sellers of agricultural products and rent for booths at the market charged on wholesalers. Admission fees are THB200 for a four-wheeled vehicle, THB300 for a six-wheeled vehicle, and THB400 for an eight-or more-wheeled vehicle. Buyers can enter the premises free of charge. Rent for a booth at the market is set on monthly and daily bases. The monthly rent is THB4,200, while the daily rent (for 1 block parking space) is THB300 if the seller trades in fruits and vegetables and THB190 if the seller trades in other commodities.



Talat Thai introduces a unique quality control system, inspecting the quality of randomly sampled 100 items from wholesalers at the market. The facilities have acquired GMP and HACCP accreditation. Each business at the market has its own plastic cases to be used when purchasing products from farmers and middlemen and transferring products within the market. Some businesses have their own refrigerated warehouses.







Buyers and sellers basically trade on a negotiation basis; there is no particular law on market transactions such as the Wholesale Market Act in Japan. Staff members of the market gather data on transaction prices at each zone every day and report them to the market headquarters. It has a plan to provide price information on the Internet but has not yet implemented it (as of March 2013).

The main users of Talat Thai include small-scale local retailers, modern supermarkets, convenience stores, food service industry, delicatessens and various other customers. Unlike the traditional wholesale market in Jakarta, many modern retailers and food service industry representatives come and purchase food materials at Talat Thai. This appears to be attributable to the good hygienic environment of the premises, high quality of agricultural products, and relatively stable prices.

### 3.4 Overview of the Distribution Systems in Indonesia

This section aims to present an overview of the traditional and modern distribution systems, introduce the Royal Project of Thailand, a precedent case of a public-private initiative covering the entire supply chain from production to consumption, and look at future prospects of modern distribution in Indonesia .

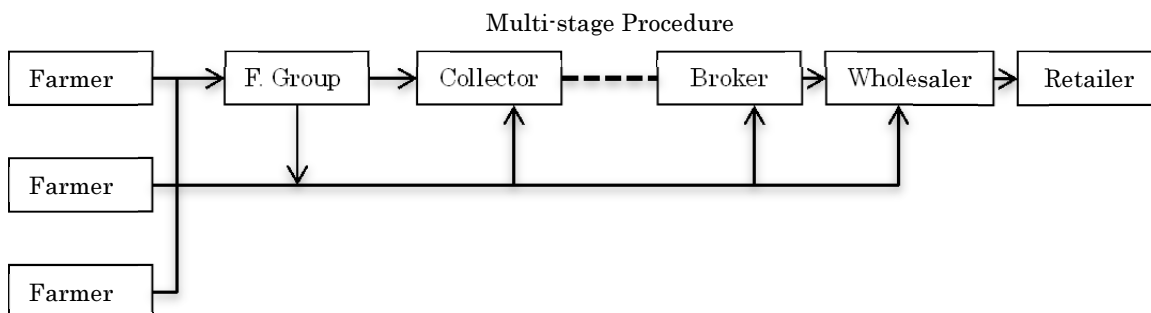
#### 3.4.1 Overview of the Traditional Distribution System

Two distribution systems coexist in traditional distribution in the Jakarta metropolitan area. The first is a process similar to the modern distribution system, where farmers' groups gather agricultural products and supply them through collectors and brokers to traditional wholesalers (see Figure 3.3). The second process is where farmers themselves bring their agricultural products to collectors, brokers and wholesalers. Relatively large-scale farmers tend to bring their agricultural products directly and independently to brokers and wholesalers. Some small-scale farmers who do not belong to any farmers' group jointly hire a carrier and regularly supply agricultural products to wholesalers.

Farmers intending to solely supply agricultural products tend to be placed at a disadvantageous position in negotiations with brokers and wholesalers. Farmers forming a group, on the other hand, tend to have stronger price bargaining power in negotiations with collectors and brokers, and the quality of their agricultural products is more stable.

The relationship among farmers, collectors and brokers as middlemen, and wholesalers is relatively fixed. If farmers' groups are to properly function and participate in the modern distribution system as well as in the traditional one, their relationship with collectors and brokers and wholesalers should be more flexible. The relationship between wholesalers and retailers is also fixed. At the government-run wholesale market in Jakarta, absconding with proceeds and fraudulent incidents by wholesalers have occurred, and some problems with the operation have been reported.

In recent years, private wholesale markets have been emerging in urban areas and facilitating more efficient wholesale activities. This is prompting the traditional distribution system to considerably change.



Source: JICA Study Team (based on interview surveys)

Figure 3.3 Example of Traditional Distribution System of Fresh Fruits and Vegetables  
(in Surrounding area of Jakarta)

In Medan, the capital of North Sumatra Province, there is no wholesale market at the moment (though a wholesale market currently under construction is expected to open in 2014). So many individual and small-scale middlemen are involved in the distribution system of fruits and vegetables linking farmers in rural areas, and retail markets and retailers in urban areas.

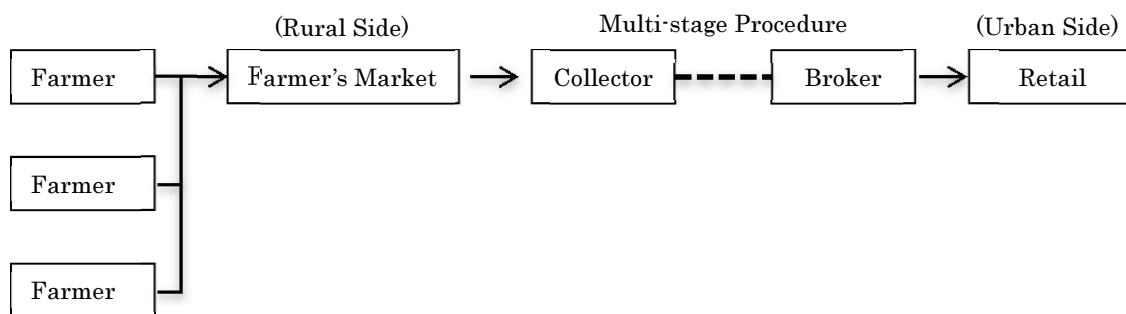


Individual fruit and vegetable farmers bring their products to the farmers' market, negotiating prices and trading with collectors and brokers (see Figure 3.4). Transactions are normally settled in cash, and agricultural products then follow various stages of the traditional distribution system and are supplied to retail markets and stores in the urban area (Medan).



As of March 2013, there are a total of eight STAs in North Sumatra Province, of which only one is in operation in Simalungun Regency near a vegetable production site in the highlands 200km away from Medan. Taking advantage of the STA, local exporters ship Japanese radish and sweet potato to Japan and frozen vegetables to Hong Kong, but the export volume remains small.

Some farmers organize themselves into groups of 10-15 farmers, much smaller in size than those of farmers' groups in the suburbs of Jakarta, and ship their products to traditional wholesale markets in Jakarta (such as the PIKJ and the private wholesale market in Tangerang). However, it takes five days or so to collect and pack agricultural products and another five days to transport them by truck to Jakarta. This distribution system costs a lot and presents high business risks.



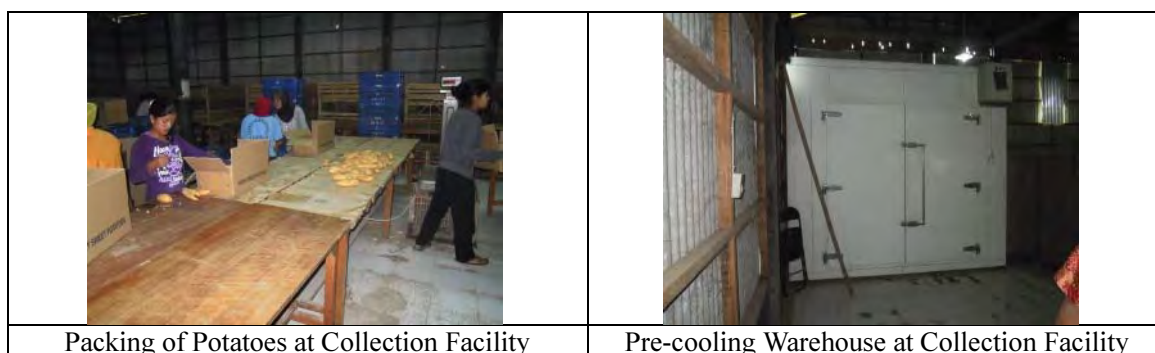
Source: JICA Study Team (based on interview surveys)

Figure 3.4 Example of Traditional Distribution System of Fresh Fruits and Vegetables (in Surrounding area of Medan)

### 3.4.2 Overview of the Modern Distribution System

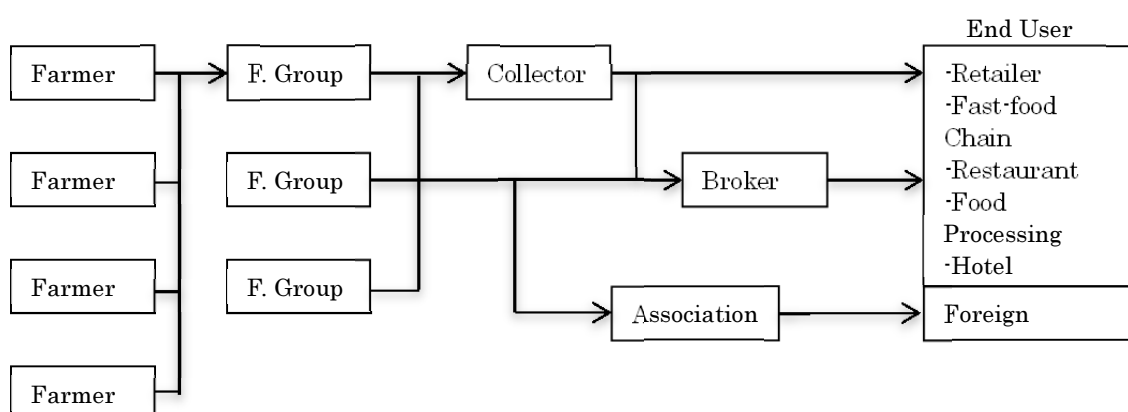
In the modern distribution system, few farmers directly and independently supply their products to end users such as retailers, food service chains and food processing companies, but farmers' groups organizing farmers supply products to end users via collectors (or brokers). Collectors (or brokers) normally own their trucks, warehouses and collection facilities (packing houses). Some collectors (or brokers) use STAs in a relatively good condition.





Some food processing companies and food service chainstores conclude agreements on contract farming with particular farmers. Some end users conclude agreements with particular suppliers though the distribution is made via collectors. The relationship between farmers and farmers' groups is fixed and long-term, while that between farmers' groups and collectors (or brokers) changes in accordance with the needs of end users. Many collectors pick up farmers' groups to satisfy the needs of end users (see Figure 3.5). The relationship between end users, and collectors and suppliers is flexible and determined based on the market principle between collectors and suppliers. However, some of them are in a fixed relationship because the number of collectors and brokers is small in the modern distribution system. The usual payment terms between collectors and brokers, and end users are 3-6 weeks, depending on the industry type, volume of products traded and duration of the relationship (credibility) of end users, and various other factors.

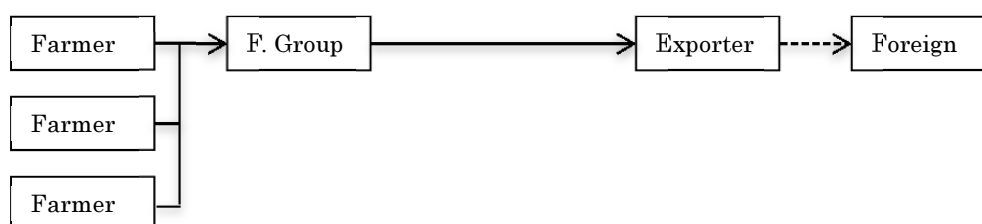
Fruits are usually exported via associations of farmers' groups in each region for individual fruits.



Source: JICA Study Team (based on interview surveys)

Figure 3.5 Example of Modern Distribution System of Fresh Fruits and Vegetables  
(in Surrounding area of Jakarta)

The traditional distribution system is generally used in Medan. Estate crops, such as sugar cane and palm, grown on large farms using individual farmers are exported from Medan to Malaysia, Singapore, Hong Kong and elsewhere (see Figure 3.6). Some volume of ordinary fruits and vegetables is also exported to Hong Kong. In these cases, exporters organize farmers to export fruits and vegetables from Indonesia. They supply agricultural products to foreign countries and regions (Malaysia, Singapore, Hong Kong, Japan, etc.) and traditional wholesale markets (the PIKJ and the private wholesale market in Tangerang).



Source: JICA Study Team (based on interview surveys)

Figure 3.6 Example of Modern Distribution System of Fresh Fruits and Vegetables  
(for Export, Medan)

### 3.4.3 Thailand's Royal Project (Poverty Reduction for Hill Tribes)

The Thai royal family implemented a project to support cultivation of fruits, vegetables and other cash crops to reduce poverty and encourage self-reliance among the hill tribes in Northern Thailand. This section introduces the project called the “Royal Project” as a successful precedent case of a public-private partnership covering the entire supply chain from the upstream (production) to the downstream (consumption). This case will be used as basic information to consider a possible direction of the distribution system in Indonesia and clarify aspects of the system that can be rectified.

#### (1) Summary of the Royal Project

The project was launched in 1969 upon the initiative of the Thai royal family to support healthy life, education and other living conditions of minority hill tribes in Northern Thailand including Chiang Mai, Chiang Rai, Mae Hong Son, Lumphoon and Payao Provinces with particular focus on the promotion of a shift from opium cultivation to cultivation of cash crops (see Table 3.9).

The project to grow vegetables focuses on (1) food security, (2) organic food, (3) herbs and (4) market development as the mainstays. As of March 2013, vegetables are cultivated at 38 places by



500 farming households. There are 140, 60 and 70 varieties of vegetables, fruits and flowers, respectively.

Table 3.9 Summary of the Royal Project

Item	Contents
Operation	In 1992, the Thai royal family organized a “Royal Project Foundation” which is now undertaking royal projects. The Foundation is operated by paid staff members and volunteers. Some staff members engaging in research activities are hired on a contract basis for each project. Professors and teaching staff members of Chiang Mai University, Kasetsart University and other educational institutions volunteer to give guidance on cultivation to farmers under the project. The Ministry of Agriculture also dispatches its officials to the project.
Project contents	<ul style="list-style-type: none"> <li>- Research and development (5-6 projects per year including guidance on cultivation to farmers. Recent focus is on post-harvest research, among other things.)</li> <li>- Distribution and sales of fruits and vegetables cultivated and collected</li> <li>- Accommodation and restaurant business</li> </ul>
Facilities owned and related facilities	<ul style="list-style-type: none"> <li>- A total of 8 collection (packing) facilities (called the “Stations”) in the entire project area</li> <li>- A total of 2 distribution centers (DCs)</li> <li>- Food processing factory</li> <li>- A total of 4 laboratories</li> <li>- A total of 36 development centers</li> <li>- Sales office (Bangkok)</li> <li>- Chiang Mai University (the city of Chiang Mai)</li> <li>- Kasetsart University (Agricultural university in the city of Bangkok)</li> </ul>
Earnings	<ul style="list-style-type: none"> <li>- Subsidies from the Thai Government (about half of the project operation cost)</li> <li>- Donation from general public</li> <li>- Interests and project profits</li> </ul>
Efforts for safety	Vegetables grown under the Royal Project are sold as “Doi Kham” food products at supermarkets. The most conspicuous feature of the “Doi Kham” brand is safety for which efforts are made in the entire process from production to sales. Project officers give guidance to farmers on organic cultivation and GAP. In the processing, quality control is strictly conducted based on GMP and HACCP. Moreover, “Doi Kham” products are labeled “Toxic Inspection Passed/Quality Guaranteed” of the Ministry of Health and the “Q mark” of the Ministry of Agriculture and Co-operatives.
Efforts for GAP	Farmers conduct GAP management under the direct supervision of project staff members. The project complies with traceability: vegetables grown by farmers are brought in containers owned by the farmers themselves and labeled the farmers’ numbers and dates when packed. The project purchases all vegetables supplied by contract vegetable growers, who are paid by the week through the Thai Bank of Agriculture. The proceeds paid to the farmers are determined in accordance with the quality, volume and the results of residual pesticide tests.
Chemical inspection scheme	Vegetables must clear sample tests conducted at three stages: by farmers, at packing house (collection and post-harvest stage), and at the DCs. The full-scale tests are conducted at the DCs, and tests at the previous two stages are simplified ones.

Source: JICA Study Team (“The Current Status of Production, Processing and Distribution of Vegetables in Lao






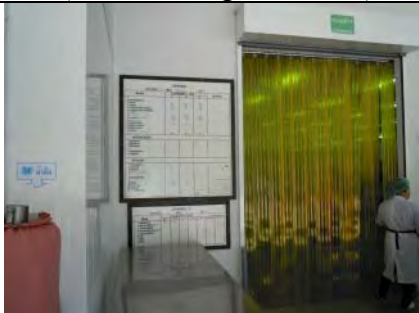
People’s Democratic Republic and Thailand”, Agriculture and Livestock Industries Corporation (2005), and interview surveys conducted by the Study Team)

Collection Facilities

Vegetables cultivated are directly brought to collection facilities on board farmers’ trucks. Those cultivated by farmers without any transportation means are collected and transported by eight (small) collection trucks owned by the Royal Project. Vegetables are then classified into general vegetables, organic vegetables, vegetables directly shipped to retail chains in Bangkok, and others and placed in color-coded containers.

Some packing houses are equipped with pre-cooling systems (i.e., hydro, vacuuming, and force) and refrigerated warehouses, so some vegetables are directly shipped to retailers and DCs of large supermarkets in Bangkok rather than transferred to the DC in Chiang Mai.

Fruits and vegetables packed at the collection facilities are also supplied to the food processing factory in Chiang Mai operated by the Royal Project (for snack food, retort-packed food, etc.).

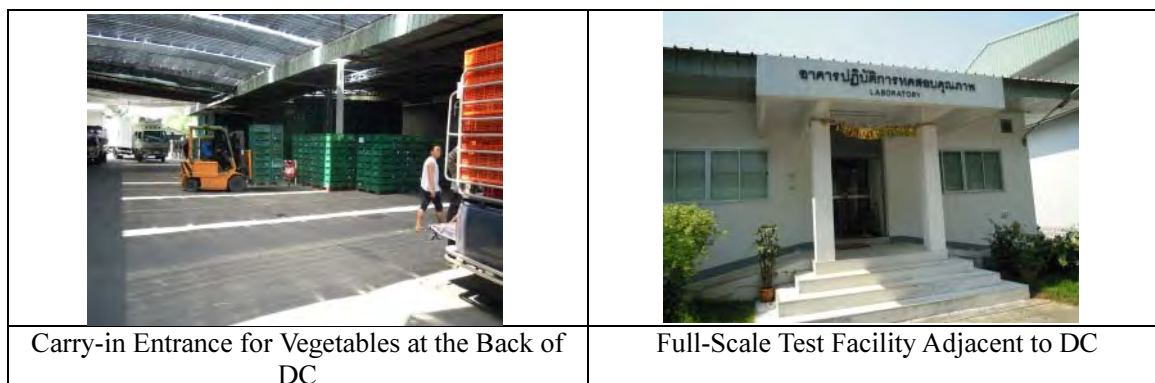
	
<p>Vegetable Production Site (Chiang Mai, Doi Intanon)</p>	<p>Collection and Pre-cooling Warehouse (One of the Eight Facilities)</p>
	
<p>Collection Truck (Owned by the Royal Project)</p>	<p>Entrance to Collection and Pre-cooling Warehouse</p>

	
<p>Scene Inside Collection and Pre-cooling Warehouse (Grading)</p>	<p>Scene Inside Collection and Pre-cooling Warehouse (Vegetable Washing Machine)</p>
	
<p>Scene Inside Collection and Pre-cooling Warehouse (Pre-cooling Facility)</p>	<p>Inspection Room Inside Collection and Pre-cooling Warehouse (Draft Chamber)</p>

DC in the City of Chiang Mai

Collected vegetables are transported from the packing house to the DC in Chiang Mai in special trucks (transportation at normal temperature, and pre-cooling and refrigerated transportation) owned by the Royal Project. Vegetables are transported from the DC to retailers in Bangkok, Phuket and other destinations in large refrigerated trucks owned by the project. The Royal Project owns a total of 19 trucks, including 5 medium-sized refrigerated trucks and 14 large trucks. The project sometimes entrusts transportation to third-party carriers during some seasons.

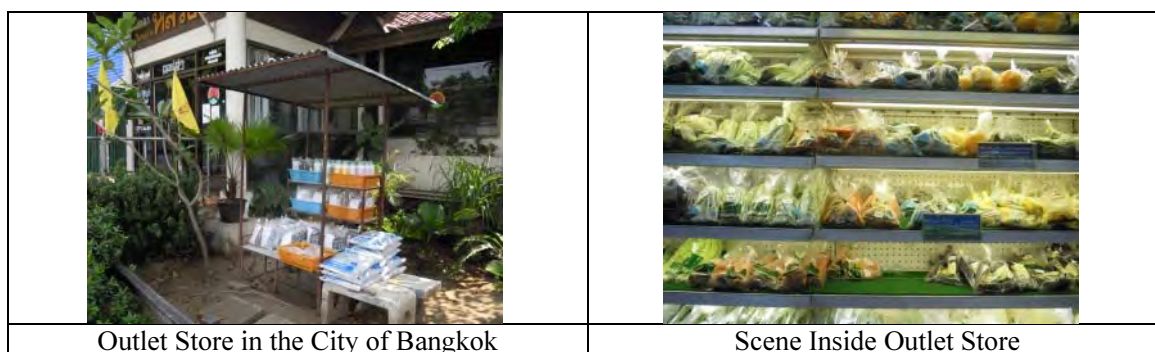
	
<p>DC in Chiang Mai and Trucks</p>	<p>Entrance to DC</p>



Specialized Retail Shops in the City of Bangkok

The Royal Project owns eight collection facilities (packing houses) to wash, sort, grade and pack vegetables and also conduct residual pesticide tests. Vegetables are normally transferred from the packing houses to the DC run by the Royal Project in Chiang Mai, and then to the Project’s specialized retail shops in Bangkok and Phuket and large private supermarkets (such as Makro, Lotus, Big C, Tops Supermarket and Sizzler (Salad) in Chiang Mai and Bangkok.

Fruits and vegetables of the Royal Project brand in Bangkok and other urban areas are more expensive than ordinary fruits and vegetables, and are targeted to cater to middle- and higher-income groups.



(2) Summary of the Characteristics of the Distribution System

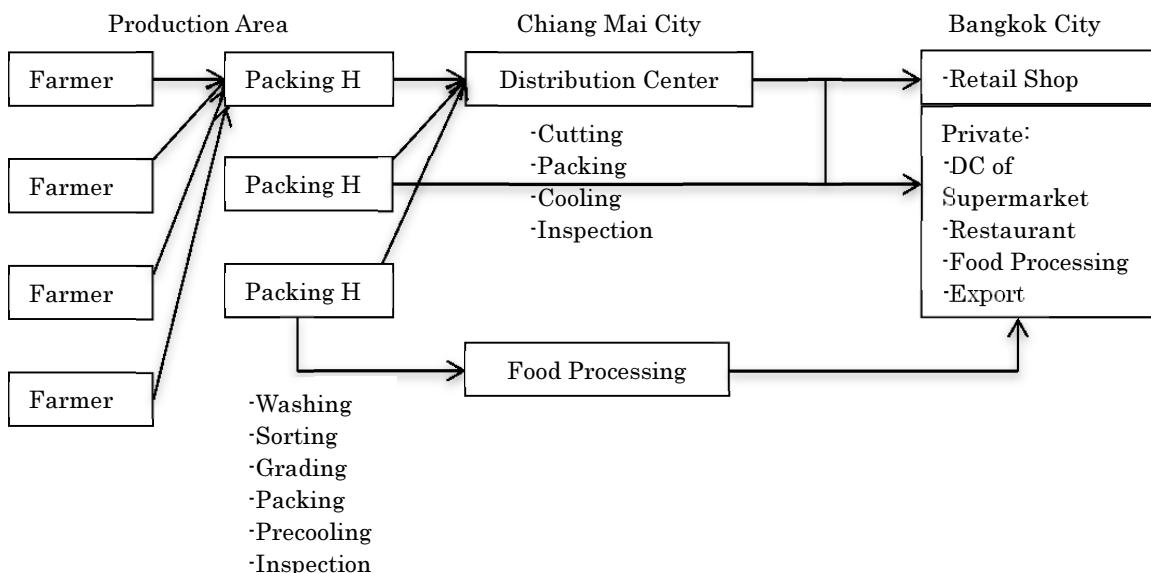
Pre-cooling and refrigerated transportation means are commonly used for long-distance transportation of fruits and vegetables in Thailand, which is possible only if the road infrastructure is well developed. Traceability of value-added agricultural products is required since consumers are very conscious of the safety of food.

The Royal Project is committed to the entire supply chain of fruits and vegetables from the

production to distribution and retail. It has been expanding its market thanks to an expansion in middle-income group, the targeted market segment of the project, and an expansion in the network of the supply chain in collaboration with the private sector including retailers, restaurants, food processing companies, and export to advanced countries.

Most large-scale modern retail chains have their own DCs in urban areas and transport vehicles. Some retail chains outsource transportation to third parties. In either case, they procure agricultural products from suppliers by referring to the supply-demand balance based on market needs and prices of agricultural products, and products in stock at DCs. Very few modern retailers in Thailand conclude a direct contract with farmers, with many procuring products via suppliers. Even so, because of the presence of competition among suppliers, retailers regularly renew supply agreements with them.

Currently, the Royal Project sells a large variety of vegetables as safe and secure high-grade food materials through its unique distribution routes at modern retails. Product lineup includes lettuce, Chinese cabbage, sweet corn, melon lettuce, pumpkin, spinach, cucumber and tomato. The project also exports cucumber and tomato to Singapore and other countries abroad. Figure 3.7 shows a schematic distribution system of the Royal Project.



Source: JICA Study Team

Figure 3.7 Modern Distribution System (Supply Chain) of the Royal Project

### 3.5 Understanding and Analysis of Distribution Margin of Specific Products

In general, leaf vegetables, root vegetables and fruits are grown and distributed in different ways. The freshness of leafy greens declines quickly and they need to be sold in a short while after the harvest, so they are sold near the production sites. Root vegetables, on the other hand, can be stored for a longer period and transported over longer distances. In Indonesia, however, many agricultural products are distributed via traditional wholesale markets in more or less the similar process regardless of the characteristics of each agricultural product. In the modern distribution system in Indonesia, products are beginning to be stored in pre-cooling facilities and transported in refrigerated trucks in accordance with needs of the market (modern supermarkets, food processing and food service companies, and exporters) and the characteristics of agricultural products.

Focusing on major fresh fruits and vegetables, this section has calculated the transportation cost and the distribution margin of profit (except the transportation cost) based on interview surveys of distributors. For the calculation, a total of 5 agricultural products – three vegetables (chili, garlic and cabbage) and two fruits (orange and banana) – have been selected in line with the following criteria. The calculation is for the distribution system involving traditional wholesale markets.

1. Major products in Indonesia (crops ranked high in the world's production ranking);
2. Crops in high demand from Japanese-affiliated companies (distribution and food processing) in modern distribution;
3. Crops whose production volumes are large in West Java Province (crops whose transaction volumes are large at wholesale markets); and
4. Either tropical vegetables grown in low altitudes or temperate crops grown in cool high altitude.

The distribution margin of profit of fruits and vegetables has been calculated for each of the wholesale and sub-wholesale and retail stages. The transportation cost is excluded from the distribution margin.

The margins at all the three stages are more or less the same for vegetables, but the margins at the sub-wholesale and retail stages are higher than that at the wholesale stage for fruits (see Table 3.10). This appears to be attributable to higher post-harvest loss of fruits at the final stage of the supply chain. Establishment of cold chains, improvement in loading/ handling while fruits are being transferred, and use of pallets for transportation will be effective to reduce post-harvest loss. The prices of fruits, vegetables and other horticultural crops fluctuate considerably in Indonesia. The use

of refrigerated warehouses and other temporary storage facilities will lead to stable prices.

Table 3.10 Distribution Margins of Major Fruits and Vegetables in Indonesia

Commodity:	Production Area	→	Wholesale	→	Retail & Wholesale	Customer	Unit
Red Chili	Central Java		PIKJ (JKT)		Kebayoran and Pasar Minggu market (JKT)	(JKT)	
Selling Price Avg.	13,000				17,000	22,000	Rp/kg
Transportation Cost		56		10		-	Rp/kg
Distribution Margin			3,934		4,990		Rp/kg
Rate of D.M			23.1%		22.7%		%

Commodity:	Production Area	→	Wholesale	→	Retail & Wholesale	Customer	Unit
Garlic	Grogol (West Java)		PIKJ (JKT)		Traditional market (JKT)	(JKT)	
Selling Price Avg.	11,000				13,000	15,000	Rp/kg
Transportation Cost		10		10		-	Rp/kg
Distribution Margin			1,980		1,990		Rp/kg
Rate of D.M			15.2%		13.3%		%

Commodity:	Production Area	→	Wholesale	→	Retail & Wholesale	Customer	Unit
Cabbage	Bundung		PIKJ (JKT)		Other Market (JKT)	(JKT)	
Selling Price Avg.	5,000				6,000	7,000	Rp/kg
Transportation Cost		167		222		-	Rp/kg
Distribution Margin			611		778		Rp/kg
Rate of D.M			10.2%		11.1%		%

Commodity:	Production Area	→	Wholesale	→	Retail & Wholesale	Customer	Unit
Orange	Pontianak (West Kalimantan)		PIKJ (JKT)		Traditional market (JKT)	(JKT)	
Selling Price Avg.	6,000				8,000	13,333	Rp/kg
Transportation Cost		800		222		-	Rp/kg
Distribution Margin			978		5,111		Rp/kg
Rate of D.M			12.2%		38.3%		%

Data Collection Survey on Agricultural Product Distribution System of Food Industry  
in Indonesia

Commodity:	Production Area		Wholesale		Retail & Wholesale	Customer	Unit
Banana	Lampung (South Sumatra)	→	PIKJ (JKT)	→	Traditional market (JKT)	(JKT)	
Selling Price Avg.	2,800				3,500	5,000	Rp/kg
Transportation Cost		175		222		-	Rp/kg
Distribution Margin			525		1,278		Rp/kg
Rate of D.M			15.0%		25.6%		%

Source: JICA Study Team



### 3.6 Summary of Challenges in Agricultural Product Distribution

This section presents the challenges of the traditional and modern distribution systems, summarized and discussed in Section 3.4, in terms of three stages, namely the production, distribution and consumption stages (see Table 3.11).

Table 3.11 Challenges in Distribution of Agricultural Products

	Challenges
1. Production stage	<ol style="list-style-type: none"> <li>1. Organization of farmers</li> <li>2. Farmers' low awareness of product quality</li> <li>3. Lack of information available to farmers (market prices, trends in demand, etc.)</li> <li>4. Long settlement term in modern food-related industries</li> <li>5. Lack of funds to improve productivity</li> <li>6. Poor road infrastructure</li> </ol>
2. Distribution stage	<ol style="list-style-type: none"> <li>1. Long and complicated distribution system (high cost)</li> <li>2. Post-harvest loss</li> <li>3. Lack of pre-cooling and refrigerated warehouses</li> <li>4. Uneven product quality</li> </ol>
3. Consumption stage	<ol style="list-style-type: none"> <li>1. Unstable retail prices</li> <li>2. Food safety control</li> </ol>

Source: JICA Study Team

#### 3.6.1 Challenges at the Production Stage

##### (1) Organization of Farmers

The first hurdle that farmers have to face when shifting to the modern distribution system is to organize themselves. As stated earlier, farmers (particularly horticultural farmers) in Indonesia are small-scale, because of which they have difficulty in constantly producing a stable amount of agricultural products.<sup>5</sup> If the farming size is small and farmers are not organized, the quality of agricultural products tends to be uneven and such farmers may have difficulty in participating in modern distribution. In addition, if individual farmers act alone, they will be placed in an advantageous position in negotiations with middlemen (collectors and brokers) in traditional distribution. Organizing farmers will enhance their bargaining power with middlemen and enable them to negotiate with the food processing industry, food service industry, modern retails and other entities.

##### (2) Improvement in the Product Quality

The field interview surveys have found that farmers and farmers' groups have low awareness of

<sup>5</sup> Coffee, cacao and other estate agricultural products are grown by organized farmers having farmlands of a certain scale, and thus they can produce stable volumes and quality of products at stable price ranges, which are suitable for export.



product quality. Currently, the Government of Indonesia is promoting the Indo-GAP guidelines among farmers and farmers' groups to improve the quality at the production level. As of March 2013, 1,000 or more vegetable farmers mainly in West Java and Central Java Provinces registered for the guidelines. They are required to meet the needs of modern retailers, food service industry and food processing industry which are situated downstream of the modern distribution system and expanding due to a rising middle-income group. Farmers and farmers' groups lack concern about the product quality perhaps because the compliance with the Indo-GAP does not necessarily increase purchase prices of their agricultural products. In this regard, the Indonesian authorities must continue to promote the Indo-GAP not only among producers but among consumers as well.

(3) Lack of Information Available to Farmers (e.g., market prices, trends in demand, etc.)

In many traditional distribution systems, more than one middleman stand between farmers and farmers' groups and wholesalers. In addition, there is a problem of asymmetric information about the prices of agricultural products and trends in demand between farmers and farmers' groups and middlemen, putting the former at a disadvantage during negotiations over agricultural product prices. In general, low-income horticultural farmers with small farms are obliged to sell their products at prices stated by collectors and brokers, dampening any inclination to grow high-quality agricultural products.

(4) Long Settlement Term in Modern Food-Related Industries

Another barrier for farmers to participate in the modern distribution system are the long settlement terms. In the traditional wholesale market, farmers are normally paid through bank transfer on the day after the delivery of agricultural products. They are paid by cash on the spot if they directly sell agricultural products to middlemen. On the other hand, retailers, food service chains, food processing companies and other entities at the end of the modern distribution system are ready to purchase agricultural products according to the quality, at higher prices than those offered by middlemen in the traditional system. However, farmers have to wait 3 to 6 weeks for the proceeds to be settled. Common settlement terms vary depending on trade partners. For example, it takes 3-6 weeks in the case of modern retailers, and two weeks in the first transaction and one week afterwards in the case of a certain food processing manufacture. Prolonged settlement terms are a great barrier for farmers and farmers' groups to enter the modern distribution system since they need cash earnings, making it much more difficult for small-scale farmers to do so.

(5) Lack of Funds to Improve Productivity

Farmers need to make initial investments to improve productivity and product quality (for example, through introduction of farming equipment and use of vinyl greenhouses), increase earnings and alleviate any cultivation risks. In Indonesia, a loan program is made available to farmers but they find it quite difficult to apply for such scheme. The Government of Indonesia also advises private banking institutions to provide farmers with financial assistance. The loan scheme is in fact advantageous for “agripreneurs”. Yet, ordinary farmers have difficulty accessing loans of banking institutions mainly due to strict mortgage requirements that the farmers cannot comply with.

The Government of Indonesia also advises private banking institutions to set the upper limits of loan amounts for individual crops (see Table 3.12). In addition, the government bears 7% of the average interest rate on loans, currently at 12%, to reduce the burden on farmers to 5%, but the repayment term of a maximum of six months is not long enough. In practice, banking institutions have rarely lent money directly to farmers because of solvency problems, lack of mortgage capacity, and lack of literacy about the loan on the farmers’ side. Some loans granted to farmers, if any, have turned out to be irrecoverable.

Table 3.12 Upper Limits of Bank Loans to Farmers by Crop Set by the Government  
(Agricultural Products)

	Commodity	Rp Million/ha
1	Irrigated Rice	5.032
2	Rained Rice	5.032
3	Hybrid Rice	6.590
4	Tidal Rice	3.357
5	Hybrid Corn	5.845
6	Soybean	4.754
7	Cassava	4.685
8	Sweet Potato	8.761
9	Peanut	5.611
10	Koro	5.830
11	Rice Seed	7.145
12	Corn Seed	6.675
13	Soybean Seed	5.543
14	Chili	49.290
15	Shallot	46.195
16	Potato	46.356
17	Garlic	41.592
18	Tomato	45.427
19	Ginger	29.500
20	Kencur	27.500
21	Turmeric	23.500

	Commodity	Rp Million/ha
22	Banana	18.000
23	Pineapple	38.000
24	Dragon Fruit	41.027
25	Melon	35.769
26	Watermelon	24.548
27	Papaya	19.000
28	Bark	48.961
29	Strawberries	49.147
30	Durian	20.239
31	Mango	20.504
32	Mangos teen	20.831
33	Orange	49.527
34	Apple	48.092
35	Cane	18.000

Source: Data of Dewan Hortikultura Nasional obtained by the JICA Study Team

#### (6) Road Infrastructure in Production Regions

Quite a few fresh vegetable production areas are located in fertile high altitude regions, and horticultural farmers live in highlands. However, the road conditions leading to the highlands are extremely poor, hindering the effective collection and delivery of agricultural products. Particularly during the rainy season, the roads are frequently blocked, making it difficult for farmers to stably supply agricultural products.



#### 3.6.2 Challenges at the Distribution Stage

##### (1) Long and Complicated Distribution System (High Cost)

In traditional distribution systems, the presence of unnecessarily many middlemen (collectors, brokers, etc.) in the supply chain from production sites of fruits and vegetables to wholesale markets and retailers in Jakarta and other urban areas raises distribution costs and, thus, diminishes profit margins. In addition, land transport carriers from production to consumption sites are often forced to pay unlawful bribes at expressways. Such additional costs are eventually passed on to retail prices of

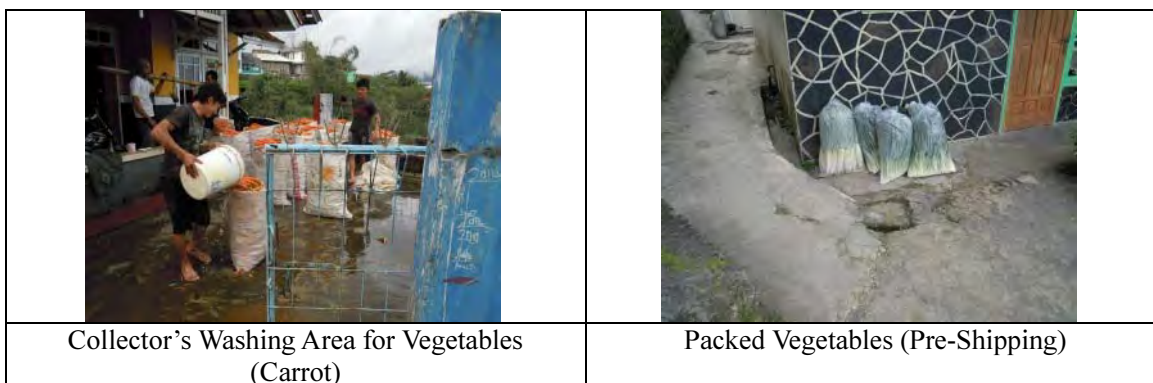
fruits and vegetables which consumers have to pay. Even in trades at traditional wholesale markets, traders and purchasers are often asked to pay unofficial charges by various groups. Because of these costs, supermarkets in Jakarta sometimes have to pay more for mandarin oranges grown in Berastagi on Sumatra Island than those grown in and imported from China.

(2) Post-Harvest Loss

Fruits and vegetables are often cultivated in highlands far away from urban areas, but many production sites do not have the necessary infrastructure for distribution such as roads and collection facilities (for washing, sorting, grading and packing). No cold chain (pre-cooling and refrigerated warehouses, refrigerated trucks, etc.) has been established either, to minimize fruit and vegetable quality degradation and waste, make a supply and demand balance at markets by prolonging expiry dates, and stabilize market prices and farmers' incomes.

In many cases, long-distance transportation in the traditional distribution system is outsourced to logistics companies. In short-distance transportation, on the other hand, farmers and farmers' groups bring products directly to wholesale markets by truck or ask middlemen to transfer them by truck.

Some farmers wash and pack fruits and vegetables in traditional distribution, but many still sell them to middlemen without doing any post-harvest activity. Such raw fruits and vegetables are brought to workplaces at packing houses and wholesale markets arranged by middlemen, and washed, sorted, graded and packed. To minimize damage during transportation, many farmers rinse and pack leaf vegetables and perishable products. Often, many fruits and vegetables brought to traditional wholesale markets are not appropriately washed, sorted, graded and packed, thus resulting in considerable post-harvest losses.



Moreover, the road conditions on the way from vegetable production sites to collection points and

wholesale markets are poor, but fruits and vegetables are directly loaded on trucks. Some workers even tread on vegetables when unloading them.



According to interview surveys of local middlemen, the post-harvest loss generated in the traditional distribution system from farmers and farmers' groups (via wholesale markets) to retailers accounts for some 30% of the entire production. This is much greater than the loss incurred in the modern distribution system of only 10% (2% in selection, 3% in washing, 3% in drying, and 2% in scaling).

(3) Lack of Pre-cooling and Refrigerated Warehouses, etc.

According to interview surveys of local farmers' groups, middlemen, modern retailers, food processing companies and other entities, their local areas have high potentials for production of fruits, vegetables and other horticultural crops but are absolutely short of packing houses and temporary storage warehouses (with pre-cooling and refrigerated facilities).

Farmers' groups tying small-scale farmers have been aiming to build their own packing houses and other facilities to gradually shift to the traditional distribution system. But the facilities are not enough to meet the rapidly increasing demand of the growing upper-middle income groups and other consumers in urban areas.

(4) Uneven Quality

Hypermarkets and supermarkets in the modern distribution system are required to efficiently and stably supply safe fruits and vegetables of constant quality. However, collectors and brokers in the traditional distribution system and wholesalers and other entities at traditional wholesale markets are not aware of the importance of effective post-harvest treatment and they roughly treat agricultural products. Thus, the traditional distribution system cannot satisfy the needs of the modern distribution system.

### 3.6.3 Challenges at the Consumption Stage

#### (1) Unstable Retail Prices

There are still quite a few independent small-scale farmers in Indonesia and it is, thus, difficult to adjust production in response to trends in market prices. If the price of a certain agricultural product suddenly increases, many small-scale farmers opt to start growing the product but experience a considerable drop in the product price in the next harvest time because of excessive supply they themselves cause. To avoid these frequent vicious cycles, farmers are beginning to organize themselves and adjust production according to market demand.

Since 2012, the Government of Indonesia has restricted imports and its quota system as part of measures to give favorable treatment to domestic farmers. Import restrictions on harbors result in a drop in import of high value-added agricultural products including fruits and vegetables particularly from Australia and New Zealand. The restrictions also frequently cause sudden inflation of market prices. The government recently revised the Act on Horticultural Agriculture, and the import of horticultural crops was temporarily banned and restrictions on import quotas were made more severe. Behind these measures lies the fact that Indonesia's farmers and farmers' groups cannot produce agricultural products that are good and safe enough to substitute for high value-added imported agricultural products.

#### (2) Safe Control for Food

The World Bank Report (2007) shows that some 60% of fresh fruits and vegetables sold in general modern stores are imported. This is about twice as high as the rates of China, Mexico and other emerging countries. Indonesia's dependence on import is particularly high for fruits. The rates of import for apple, pear and grape are around 60%-80%.

Indonesia is obliged to depend on import for high value-added fruits and vegetables mainly because the traditional distribution system has so many problems such as the underdevelopment of the cold chain, failure to conduct post-harvest treatment, and others earlier discussed; but also because the country has not yet established an inspection scheme for food safety, such as residual pesticide tests. Therefore, the country has no choice but to rely on imports. On the contrary, fresh fruits and vegetables imported from China and Thailand do not require high production and transportation costs compared to domestic products at traditional markets, are reasonably consistent in quality and size, and secure traceability (production sites, producers, harvest time and cultivation records).

Indonesia's exporters of agricultural products, on the other hand, are asked to acquire the GAP or

other permits from the Indonesian authorities by, for example, Singaporean importers. They will be asked to conduct more frequent quality inspections and acquire certificates of safety when exporting products to advanced countries. Thus, Indonesia must establish a domestic scheme on safety for food in future.

## 4 Cooperation by International and Bilateral Donors

This chapter presents the programs and projects undertaken by international and bilateral donors in agricultural product distribution for the purpose of utilizing them as the fundamental information to study Japan's assistance policy in this sector.

The cooperation agencies in the agricultural sector in Indonesia in recent years, namely, the United States Agency for International Development (USAID), the Australian Agency for International Development (AusAID) and World Bank (WB) have been major donors. Among them, USAID has played a central role in the field of horticulture in West Java and North Sumatra, which is the target of this study. AusAID has conducted a research project with a focus on Eastern Indonesia region. WB carries out a project to support agricultural research and extension system. In addition, the United States Department of Agriculture (USDA) implemented a project on cold chain development.

### 4.1 United States Agency for International Development (USAID)

USAID has focused on the development of the agricultural sector as a central project of the economic growth partnership between Indonesia and the United States. The agency invests in research and development, and expands the application of agricultural biotechnology, provides support for infrastructure development and implements a program for the purpose of improving public-private partnerships in business and farmer education. A central component of this program was the Agribusiness Market and Support Activity (AMARTA I), which began in 2006, and AMARTA II, the successor project that started in 2011 and is still in progress now.

#### (1) AMARTA I

AMARTA I had been a three-year project with funding amounting to US\$15 million (including loan), which demonstrated pilot projects with new technologies, improved agricultural practices, and market development, for the purpose of assisting the Government of Indonesia to develop a more robust, competitive agribusiness economy enabling the creation of work opportunities, economic growth, and improvement in citizen's welfare as well as increasing productivity, improving quality and value-adding to access better markets.

AMARTA I initially aimed at the development of the value chain of eight groups, which were horticulture produce (fruits, vegetables, flowers and ornamental plants), livestock, fish, seaweed, rubber, biofuel, cocoa and coffee. However, considering the results of evaluation of the activities in the initial 2 years which was made by USAID / Indonesia Economic Growth Sector Assessment



conducted in 2008, the focus of the activity was reduced to the value chain of three groups: horticultural produce (fruits, vegetables and flowers), cocoa and coffee. In addition, the project period was extended to December 2010, and accordingly, the project funds were increased to US\$20 million. The target areas of the activities were five provinces, namely, West Java, North Sumatra, South Sulawesi, Papua and Bali.

Table 4.1 Project Profile of AMARTA I

Project period	2006-2010 (4.7 years)
Project fund	US\$20,600,000 (including loan)
Implementation contractor	Development Alternatives Inc.
Partner organizations (Subcontractors)	Winrock International, Michigan State University, National Cooperative Business Association, Wilbur Smith Associates, Inc., Training Resource Group (TRG), PT. QED Indonesia
Project purpose	Improvement of agribusiness by the development of high value-added and exportable quality crops, and value-added horticultural produces for hypermarkets
Target area	Target areas were selected from five provinces: West Java, North Sumatra, South Sulawesi, Papua and Bali

Source: JICA Study Team

In this project, more than 200 of active farmers' association were organized; in addition, the Specialty Coffee Association of Indonesia (SCAI) and the Value Chain Center (VCC) in Padjadjaran University were established, which are organizations that developed their own value chain. These organizations support the production and sales of farmers who engaged in cocoa, coffee, fruits and vegetables farming in cooperation with U.S. companies, e.g., Heinz, Pacific Food Inc., etc., and local companies, like Alamand Inc., Bimandiri, etc., in order to achieve the improvement of investment and business environment as well as to increase income and employment opportunities post-project (refer to 5.3).

In addition, a wide range of activities such as the introduction of new varieties of vegetables (such as green beans, broccoli, carrots, tomatoes and potatoes), technical guidance and training of agricultural technology (such as cultivation density management and fertilization) as well as the introduction of packing and pre-cooling facilities, refrigerated trucks and cultivators were conducted.

Table 4.2 Summary of AMARTA I Activities

	Sub sector	Area	Summary of Activities
<b>1</b>	Cocoa	Sulawesi Bali	By PPP with Blommer Chocolate Company (USA), Pt. Olam Indonesia (Multinational agricultural trading company) and local companies, training in good agricultural practice for cocoa farmers (28,100 farmers / 1,124 groups), supplying training materials and seedlings, establishing Solar dryers and supporting farmers' sales of the product.

2	Coffee	North Sumatra Ache Sulawesi East Nusa Tenggara Papua	Formation of Specialty Coffee Association of Indonesia (SCAI) with exporters, individuals, farmer's cooperatives and retailers. Hosted trip by U.S. Coffee buyers, Contract for export between Arabica farmer's cooperative and a U.S. coffee company. Implementing coffee farmer training for 5,646 growers. SCAI members exported \$115 million worth of Arabica Coffee in 2010.
3	Fruits, Vegetables	North Sumatra West Java	<u>Fruits</u> (citrus, banana): Training and Technical Assistance for farmers. In collaboration with a specialized wholesaler (PT. Sewu Segar Nusantara) and the farmer's Cooperative (Deli Serdang Cooperative), fruits (banana) were sold in Jakarta and Medan. <u>Vegetables</u> (Broccoli, Green Beans, Carrots, Tomatoes, Green leafy vegetables, Potatoes, and Cucumber): Introduced new seed varieties, improved packing facilities, Introduced new techniques (irrigation system, plastic row cover, land tillage mechanization and mechanical weeding), Sorting, sterilization and packaging guidance in line with the quality standards of the supermarket, Farm Management training focusing on farm record keeping.
4	Others (flowers, livestock, fish-culture)	North Sumatra West Timor, Ache East Nusa Tenggara West Nusa Tenggara Papa	<u>Flowers</u> : Technical assistance and implementation of training to farmers (GAP etc.) <u>Livestock</u> : Grants for breeding female cattle, etc. <u>fish-culture</u> : Grant support for fry production and training for ice traders, etc.

Source: JICA Study Team

## (2) AMARTA II

AMARTA II is a follow-on project to the AMARTA I. Its design benefits from AMARTA I's successful interventions over the last 4 years. It is a US\$20 million (including loan) project which runs from 2011 to 2016. USAID expects to generate additional resources through alliances with the Government of Indonesia and private sector partners.

Table 4.3 Project Profile of AMARTA II

Project period	2011-2016 (5years)
Project fund	US\$20,000,000USD (including loan)
Project purpose	Improvement of agribusiness by the development of high value-added and exportable quality crops, and value-added horticultural produces for hypermarkets
Target area	Target areas were selected, according to the value chain, from four provinces: Java, North Sumatra, South Sulawesi and Bali

Source: JICA Study Team

AMARTA II has three components (Value Chain Development, Facilitating Access to Credit, and Agriculture Policy and Regulatory Analyses) which are organized around the development of value chain of three groups of high-value commodities, namely, horticulture (vegetables, fruits and flowers), cocoa and coffee and also receives support from the USAID-funded agricultural research projects for pest management, vegetable research and development, and the biosafety project.

a. Value Chain Development

Based on the successes and experiences of AMARTA I, activities of this component will further improve value chains for horticulture crops (vegetables, fruits and flowers), cocoa and coffee in four provinces (Java, N. Sumatra, South Sulawesi and Bali). In addition, the possibility of the value chain development of the other value-added crops such as storage and transport tolerant products will be considered. Furthermore, in the training for the farmers, it is intended to introduce the method corresponding to ICT.

b. Facilitating Access to Credit

Activities of this component will provide technical assistance to banks participating in the USAID-funded Loan Guarantee Program to enable access to credit by farmers and small and medium agribusinesses. The development of alternative ways to assess traditional collateral requirements for providing agricultural credit and the use of mobile money and mobile banking will be targeted.

c. Agriculture Policy and Regulatory Analyses

Activities of this component include conducting in-depth policy and regulatory analyses especially as they affect the target commodity groups, agribusinesses, and the agriculture sector in general; establishment of a forum for advocacy and promotion of policy and regulatory reforms; strengthening stakeholder groups' advocacy capacity; working with Bank of Indonesia to clarify and improve regulatory environment for financial inclusion and promote the use of mobile money and mobile banking as well as establishment of an appropriate forum for regular government and stakeholder dialogue.

Table 4.4 Summary of AMARTA II Activities

	Component	Summary of component
1	Value Chain Development	Following on to the AMARTA I, assisting improvement of value chain for horticulture crops (vegetables, fruits and flowers), cocoa and coffee; Technical assistance, training for farmers, strengthening farmer's organizations, assistance for growth of small and medium agribusinesses and Indonesian agricultural research and development institutions. Target areas are 4 provinces: Java, North Sumatra, South Sulawesi and Bali.
2	Facilitating Access to Credit	Provision of technical assistance to banks participating in the USAID-funded Loan Guarantee Program <sup>1</sup> .
3	Agriculture Policy and Regulatory Analyses	1) In-depth policy and regulatory analyses as they affect the target commodity groups; 2) Establishment of a forum for advocacy and promotion of policy and regulatory reforms; 3) Strengthening stakeholder groups' advocacy capacity; 4) Working with Bank of Indonesia to improve regulatory environment for financial inclusion and promote the use of mobile money and mobile banking.

Source: JICA Study Team

<sup>1</sup>It provides funds and guarantees the loan repayment to the participating banks of the loan repayment program, so that small- and medium-sized agribusiness companies and producers can have access to loans.

The following positive outcomes are expected from the activities:

- Increased use of improved inputs and the adoption of Good Agricultural Practices
- Increased incomes of smallholders in the project intervention areas
- Increases in production of priority food and cash crop commodities that are being sold in domestic and regional markets
- Increased quantities of value-added/processed target commodities marketed
- Increased agribusiness-related activity and private investment in the sector
- Increased value-chain financing by banks and/or other relevant financial institutions
- Reliable and widespread use of market information through innovative means
- Transformation of informal sector economic activities to formal commercial economic activities
- Increased domestically-produced fresh produce sold in major supermarket chains

It should be noted that, according to interviews with AMARTA II implementation team in this study, the value chain development activities for horticultural crops will be terminated in June 2013.

### (3) Papua Agricultural Development Alliance (PADA III)

PADA III program is an independent project of the predecessor that was included in the AMARTA. It aims to improve livelihoods and increase agricultural production including cocoa, coffee and fisheries in Papua, which is one of Indonesia's most under-developed provinces. Project funding is

US\$10 million and it will remain active through 2016.

(4) Agricultural Biotechnology Support Project (ABSPII)

The ABSPII program aims to strengthen and diversify Indonesia's agricultural sector by developing high-yielding, disease-resistant crops. Project funding is US\$710,000. The project involves partnering with Cornell University and will remain active through 2014.

(5) Program for Biosafety Systems (PBS)

PBS aims to improve Indonesia's biosafety policies and regulatory framework (including food safety, food handling and public support for agricultural biotechnologies). It is implemented by the University of Michigan and the International Food Policy Research Institute (IFPRI), in partnership with the Indonesian Commission. Project funding is US\$500,000 and the project will remain active through 2014.

(6) Integrated Pest Management (IPM-CRSP)

IPM-CRSP aims to strengthen Indonesia's food-to-market sector by developing and transferring integrated pest management technologies for cocoa, vegetable and rice crops. Project funding is US\$500,000 and involves partnering with Clemson University. The project will remain active through 2015.

(7) Indonesia Golden Rice Program (NRM II)

NRM II aims to develop vitamin A-fortified, locally adapted, high-value rice in Indonesia, strengthening and increasing the overall market value of Indonesia's rice sector. Golden Rice is a variety of rice that has been genetically modified to produce beta-carotene. Project funding is US\$200,000. The project involves partnering with the International Rice Research Institute and will be completed in 2012.

(8) International Vegetable Research and Development Center

This project is intended to provide support to the agriculture industry. Its mandate includes the development, by biotechnology and conventional means, of new vegetable strains, as well as their introduction and monitoring in Indonesia. These activities are expected to increase the market value of Indonesia's agricultural sector while promoting increased incomes and environmentally-sound yield gains. Project funding is US\$1.5 million, and it will remain active through 2014.

(9) Cocoa Value Chain, Sulawesi

The Cocoa Value Chain Program aims to increase female farmer income levels through improved

cocoa production and processing. Project funding is US\$1 million, and it will remain active through 2014.

#### 4.2 United States Department of Agriculture (USDA)

##### (1) Cold Chain Development

Cold chain development was a project made possible by the funds of USDA. The Indonesia Cold Chain Association (Asosiasi Rantai Pendingin Indonesia: ARPI) was established and the development of cold chain of eastern Indonesia was carried out by this project. In the beginning of the project, ARPI was established and its institutional capacity strengthened by management training to solidify its operations base; after that, technical training of cold chain was given to the members through ARPI. Promotions were conducted to attract private investment in cold chain infrastructure needed such as refrigerated trucks and refrigerated facilities, and achieved the infrastructure investment of US\$11.7 million to match the project funds at the same time. The infrastructure was mainly developed in the region east from Bali. This project was carried out jointly by the Agricultural Cooperative Development International/Volunteers in Overseas Cooperative Assistance (ACDI/VOCA), Winrock International and Texas A & M University from 2003 until 2008, and the project funding was US\$6,000,000.

#### 4.3 Australian Agency for International Development (AusAID)

Currently, agriculture-related support programs of AusAID in Indonesia are carried out on the basis of the "Australia Indonesia Partnership 2008-13 (AIP)". The AIP is a comprehensive plan of Australia's support to Indonesia that focuses on poverty alleviation, and the Pillar 1 of the plan is "sustainable growth and economic management". It focuses on improved economic opportunities for rural people through increases in productivity and access to markets, and through better infrastructure and growth of small- to medium-sized enterprises. Main target areas are the six provinces of eastern Indonesia where are found the most poverty-stricken areas.

##### (1) Markets for high-value commodities in Indonesia: Promoting competitiveness and inclusiveness

Foreign investments in modern retailing such as supermarkets since the lifting of the ban and the rapid rise in food sales share by the modern retail industry brought a transformation to the supply channel of high-priced agricultural products. The aim of this project was to investigate the effect of the transformation to farmers, wholesalers and primary processors of mango, mangosteen, red pepper, onion and shrimp. This project was implemented by the Australian Centre for International Agricultural Research (ACIAR) collaborating with the Indonesian Centre for Agriculture, Social,

Economic and Policy Studies, Padjadjaran University in Indonesia and the University of Adelaide in Australia from June 2008 to December 2011 and then extended until June 2013. The project cost was US\$1,500,000.

## (2) Analyzing Agribusiness Development Opportunities in Eastern Indonesia (EI-ADO)

This is a research program that has components of value chain analysis of five agricultural products of which the following two are directly related to the horticultural crops. In addition, similar studies are also carried out on beef, corn and legumes.

### a. Eastern Indonesia agribusiness development opportunities - analysis of mango value chains

The purpose of this study was to identify lead commodity value chains to be the focus of a new AusAID program, the Australia Indonesia Partnership for Decentralization - Rural Economic Program (AIPD-Rural). The goal of AIPD-Rural is a 30% increase in income for more than one million poor male and female farmers. The project Reference Group has identified mangoes as one of the lead commodities with potential to increase their incomes and livelihoods. The study comprised a detailed characterization and mapping of representative mango value chains, with a focus on the Indonesian regions of NTT, NTB and East Java. This project was implemented by the Australian Centre for International Agricultural Research (ACIAR) from June 2012 to March 2013 and then extended until November 2013. The re-commissioned organization was Collins Higgins Consulting Group, Australia and the project cost is US\$146,000.

### b. Eastern Indonesia agribusiness development opportunities - analysis of vegetable value chains

Same as the above study, the purpose of this project is to identify lead commodity value chains to be the focus of AIPD-Rural. The aims of this study are to identify agribusiness development constraints and opportunities in vegetable value chains that possess the most potential for improving net income of poor men and women (not just farmers). The project team will undertake a detailed characterization and mapping of representative value chains of vegetables, with a focus on the regions of NTT, NTB and East Java. The Australian Centre implemented this project for the International Agricultural Research (ACIAR) from September 2012 to March 2013. The re-commissioned organization was Collins Higgins Consulting Group, Australia and the project cost was US\$137,500.

## 4.4 World Bank (WB)

World Bank conducted a detailed investigation of production and distribution of fresh vegetables,

fruits and the value chain to the modern retail supermarkets, in particular, and compiled a report titled “Horticultural producers and supermarket development in Indonesia” in 2007. In addition, WB compiled a report with the title “Sustainable Management of Agricultural Research and Technology Dissemination (SMARTD)” as the strategic framework in 2008 and the project is being implemented.

(1) Sustainable Management of Agricultural Research and Technology Dissemination (SMARTD)

The objective of SMARTD is to improve the institutional capacity and performance of the Indonesian Agency for Agricultural Research and Development (IAARD) to develop and disseminate relevant and demand-driven innovative technologies, meeting the needs of producers and of the agro-food system. The project commenced in August 2012 and is expected to end in September 2017, financed by US\$100 million. Loan amounts planned for each project component are as follows.

a. Development and Management of Human Resources (US\$40 million)

This component aims at strengthening the scientific skills and research capacities of IAARD's professional staff through a number of different programs and activities designed to enhance their academic and technical skills.

b. Improvement in Research Infrastructure and Facilities (US\$35 million)

The objective of this component is to rehabilitate, improve and upgrade the physical infrastructure of some of the operational units within IAARD in terms of laboratory equipment, upgrading of experimental farms, and rehabilitation/construction of additional research facilities.

c. Research Management and Policy Support (US\$15 million)

The objective of this component is to enhance the efficiency and effectiveness in the use of research resources through the implementation of improved research management strategies, processes and instruments.

d. Project Management and Monitoring and Evaluation (US\$10 million)

This component includes activities that will facilitate project implementation, provide the necessary administrative support, and carry out monitoring and evaluation activities related to project implementation.



## 5 Program/Project Proposals for Agricultural Product Distribution in Indonesia

In light of the problems and challenges in the distribution of agricultural products in Indonesia that have been identified in the previous chapters, this section describes programs/projects that are considered appropriate for the improvement of the distribution system in Indonesia.

### 5.1 Overall Policies of the Government of Indonesia for Distribution of Agricultural Products

In May 2011, the Government of Indonesia published a master plan for Indonesian's economic development, the "Master Plan for Acceleration and Expansion of Indonesia's Economic Development 2011-2015 (MP3EI)", for the next 14 years. The Master Plan describes the future vision at which the country should aim as "one of the world's main food suppliers, as a processing center for agricultural, fishery, and natural resources, as well as a center for global logistics". In order to become a global food supply leader, Indonesia aims to acquire the capacity (and technology) to produce food more than the amount satisfying the domestic demand.

The Master Plan states that the country aims to bridge the economic gap by developing and promoting industries in each region through strengthening the connectivity of six economic corridors (East Sumatra (Northwest Java), North Java, Kalimantan, West Sulawesi, East Java (Bali, East Nusa-Tenggara) and Papua). In particular, infrastructure development, the bottleneck for development, is counted as the top priority. Infrastructure development will contribute to food security, development of the economic corridors and strengthening of the inter-regional connectivity.

To be able to distribute agricultural products more efficiently through modernization of the supply chain will help improve and stabilize earnings in rural areas and promote poverty reduction in the entire country. The efficient distribution of agricultural products is also essential to satisfy domestic demand of the population that is expected to increase in the future. In this sense, an improvement in the distribution system for agricultural products will play a crucial role in the agricultural development and poverty reduction in Indonesia.

### 5.2 Plans of the Government of Indonesia for Distribution of Agricultural Products

A number of ministries are involved in the distribution of agricultural products. These ministries and agencies, and divisions of each ministry tend to have a sense of sectionalism and thus do not share information with one another. In addition, their policies are often inconsistent. For example, the Ministry of Trade has plans of building Regional Distribution Centers (RDCs) and Provincial

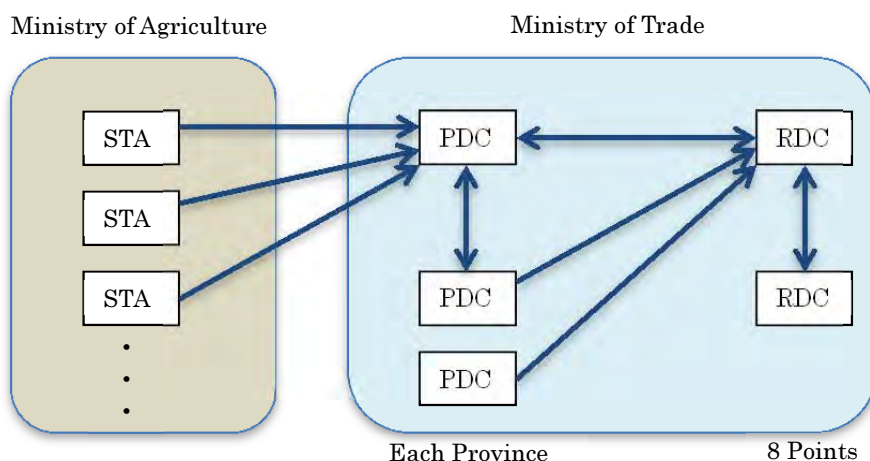
Distribution Centers (PDCs), whereas the Ministry of Agriculture has plans of building sub-terminals of agribusiness (STA) and their superagencies, Terminals of Agribusiness (TA). On the other hand, the Government of the Special Capital Region of Jakarta runs the PIKJ through a public corporation. In such situations, some redundant facilities have often been built, or plans have fallen through.

However, in 2012, when publishing the MP3EI, the President of Indonesia issued a Presidential Decree (No. 26 in 2012, “Blue Book for Development of National Logistics System”) which set forth policies for developing economic corridors. Based on one of the policies, i.e., the concept of Jakarta Metropolitan Special Area and Investment Promotion (MPA), the Government of Japan is currently proposing to realize 17 projects at the early stage of development.

Of the five ministries involved in the distribution of agricultural products, the ministries of Trade and Agriculture are in charge of drawing up concepts and plans for the nationwide distribution system. The Ministry of Trade is planning to build logistics centers across the country that deals with general agricultural products (primary products such as fruits and vegetables, meat and fish and other products). The idea is to build a PDC in each province and eight RDCs to control PDCs in individual regions. Under the plan, PDCs and RDCs will be equipped with the market functions, facilities to load/unload products, storage warehouses, inspection facilities for agricultural products, facilities to display products, and rest houses and accommodations for drivers. In 2013, PDCs will be built in South Lampung Regency in Palembang, the capital of South Sumatra Province (with an estimated budget of ¥1 billion), and in Makassar, the capital of South Sulawesi Province (with an estimated budget of ¥1.25 billion). Due to budget constraints and other reasons, however, Indonesia has difficulty in building all these facilities at the PDCs at the moment.

Either way, the country is aiming to remove inter-regional inequality of prices and availability of agricultural products by building RDCs, PDCs and other logistics centers and efficiently developing inter-regional logistics networks.

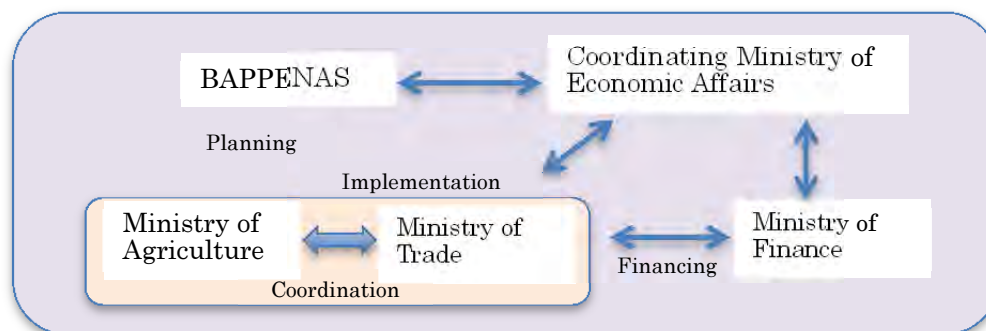
The Ministry of Agriculture, on the other hand, plans to collaborate with the Ministry of Trade in redeveloping agribusiness sub-terminals located near production sites and linking them and the RDCs and PDCs. The Ministry of Agriculture has its own plan to build two agribusiness terminals to control the sub-terminals but currently give priority to the linkage with the PDCs and RDCs of the Ministry of Trade.



Source: JICA Study Team

Figure 5.1 Collaboration of STAs (Ministry of Agriculture) and PDCs and RDCs (Ministry of Trade)

In response to the Presidential Decree stated above, the Ministries of Trade, Agriculture and Finance and the State Ministry of National Development Planning (BAPPENAS) are coordinating closely in planning for the efficient distribution of agricultural products



Source: JICA Study Team

Figure 5.2 Relations of the Five Ministries Concerned

### 5.3 New Attempt of the Public-Private Partnership for Distribution of Agricultural Products in Indonesia

In 2009, as a part of the Agribusiness Marketing and Support Activity II (AMARTA II) of the



USAID, a Value Chain Center (VCC) was founded at Bandung's Padjadjaran University. The VCC is designed to promote improvements in earnings of horticultural farmers and stabilize earnings and to contribute to expansion of the modern market by supporting horticultural farmers to organize themselves, produce quality agricultural products that satisfy the market needs, and collaborate with the modern food industry that includes supermarkets, export markets, restaurants, etc. The financial assistance from USAID to the VCC will come to an end in June 2013, but the activities of the VCC will continue and expand to cover a wider region.

Currently, stakeholders of the VCC include the Ministry of Agriculture, USAID, U.S. NGOs, and Indonesia's leading food processing companies, leading exporters, fertilizer companies, feedstuff companies, hotels and retailers' association. The VCC gives farmers and farmers' associations training opportunities and guidance in accordance with the needs of these stakeholders. The training begins with grouping farmers together and, if it goes well, providing them with guidance on production technologies and various kinds of assistance like provision of seeds, agrichemicals and document materials. The VCC is committed to around 2,000 farmers and farmers' groups (comprising 40 farmers on average) in West Java, Central Java and East Java. It also holds stakeholder meetings once or twice a month to report on its activities.





Source: Value Chain Center (Padjadjaran University)

The VCC owns packing houses with pre-cooling and refrigerated facilities and refrigerated trucks at five places and leases them to farmers' groups trained. The Provincial Government through the Ministry of Agriculture, a stakeholder of the VCC, also gives farming equipment and leases warehouses and transportation trucks to organized farmers as preferential treatment.

	
<p>Refrigerated vehicle leased by the provincial government</p>	<p>VCC's pre-cooling (refrigerated) facility</p>

According to field interviews with VCC staff by the Study Team, it normally takes 3-4 years to train farmers' groups or at least 18 months of fast-track training. The success rate in grouping farmers is apparently 60% or so. Some 20% are about to be successfully grouped together, and the remaining 20% seem to be difficult to be grouped together. Immigration policies implemented in the past seem to be an impediment for farmers who have difficulty in forming groups.

	
<p>Work inside packing house under construction</p>	<p>Vegetable production area (at an elevation of 1,200 m)</p>
	
<p>Growing vegetables following instructions of VCC</p>	<p>Packing house under construction</p>

	
<p>Growing vegetables following instructions of VCC</p>	<p>Growing vegetables following instructions of VCC</p>

As of April 2013, there were requests made by exporters to Singapore for training on traceability of agricultural products and acquisition of Indonesia's GAP, and although VCC instructed the farmers' groups concerned about these matters, a formal training could not be given by VCC, claiming budget constraint as the reason.

Upon request from Indonesia's leading exporter (Alamanda), the VCC trains farmers and farmers' groups to support the production of fruits and vegetables at the level that satisfies the quality control of the exporter.

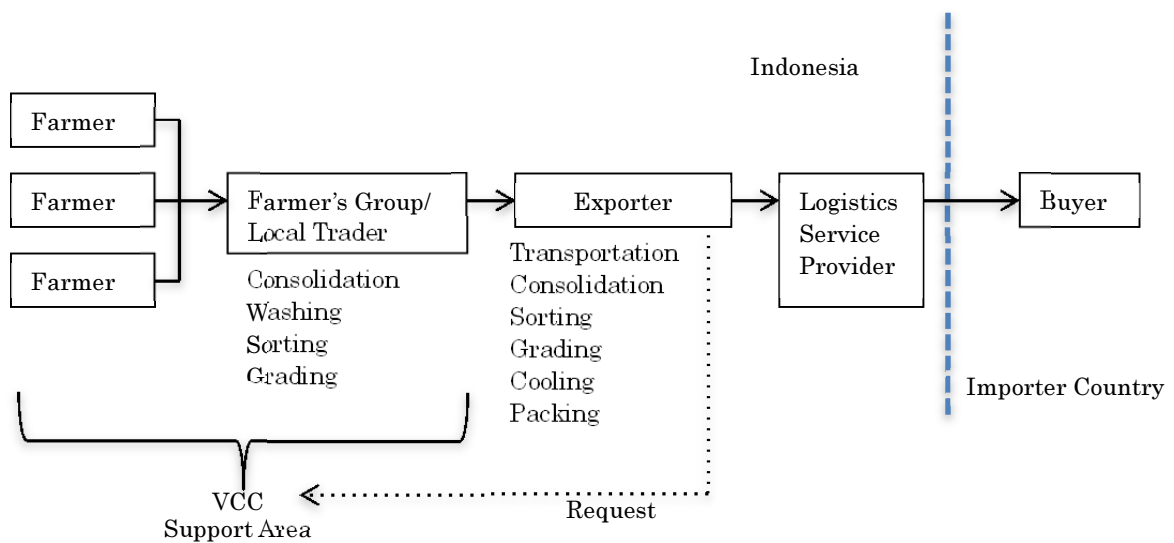
Local traders arrange transactions between farmers and exporters of fruits and vegetables from Indonesia. They do not sort (remove products of poor quality) or grade fruits and vegetables. They do not pay any cost of post-harvest treatment either. Thus, only 50%-60% of products harvested turn out to be suitable for export.

The surveys have clarified the following problems with the supply chain of agricultural products for export from Indonesia.

- Large post-harvest loss
- Absence of the cold chain
- Non-conformance of fruits and vegetables supplied to buyers' needs in terms of quality, volume and safety

To solve these problems, the VCC provides local traders, farmers and farmers' groups with technical and financial assistance in line with requests from exporters, one of its stakeholders.





Source: JICA Study Team

Figure 5.3 Example of the VCC Assistance to Export of Fruits and Vegetables Using Cold Chain

## 5.4 Program/Project Proposals

### 5.4.1 Future Prospects of Distribution of Agricultural Products in Indonesia

Prior to considering appropriate programs/projects for improving the distribution of agricultural products in Indonesia, the study looked at the distribution trends of agricultural products.

The following have been identified as future tendencies in the distribution based on field interviews with Japanese businesses doing and planning to do business in Indonesia and Thailand:

- An expansion in modern markets, for example, wholesalers and retailers, food service chains, the food-related industry, exporters, etc. will increase the needs of modern distribution. In particular, sales of fresh fruits and vegetables at convenience store chains will increase.
- Promotion of the public-private partnership will be the key for building an efficient supply chain of agricultural products. The public sector should give assistance to the production quality on the production side (upstream), and a modern distribution system should be built to meet increased new consumption markets on the consumption side (downstream).
- ICT will be used more widely in such areas of the supply chain as traceability, price information, stock information, order placement and settlement.
- Certificates for safety control and traceability will be considered more important at domestic markets dealing with high value-added fruits and vegetables and those for export.
- Following the enforcement of the ASEAN Free Trade Area (AFTA) in December 2015, import

tariffs will be basically zero or almost zero except those on items on the negative list. This will expand trade of agricultural products among ASEAN countries.

- Currently, Indonesia heavily relies on import products from China. Japanese-affiliated food-related companies in China and businesses importing products from China are beginning to shift suppliers of fruits and vegetables from China to Vietnam, Cambodia and other countries because of China's rising currency (the yuan), heightening political risks, and problems with food hygienic management. Indonesia has a high potential for another and new supplier of fruits and vegetables and as a destination for Japanese-affiliated food-related companies.

Table 5.1 Trends of Japanese Vegetable Imports

(Unit: ton)

		2009	2010	2011
Vegetables (fresh and chilled)	China	310,793	431,133	485,099
	USA	61,547	120,020	137,928
	New Zealand	82,878	94,414	88,234
	ROK	25,482	21,972	22,656
	Mexico	34,947	43,613	50,218
Dried vegetables	China	38,284	38,221	38,285
	USA	4,864	5,242	5,059
	Egypt	695	1,195	1,282
	Peru	99	98	98
	France	203	229	252
Dried beans	China	83,464	72,938	81,828
	Canada	17,906	18,455	22,169
	Myanmar	14,241	13,328	18,761
	USA	8,521	12,644	14,389
	Thailand	3,614	3,245	3,046
Frozen vegetables	China	297,698	330,969	371,672
	USA	302,357	327,477	339,367
	Thailand	41,679	45,971	50,796
	Taiwan	24,538	26,823	30,388
	Canada	30,329	30,474	34,482
Canned and bottled vegetables, and prepared vegetables	China	330,786	359,438	378,422
	USA	77,102	75,363	85,864
	Italy	87,408	89,735	97,354
	ROK	24,458	24,337	23,092
	Thailand	27,741	29,060	33,855
Total from China		1,061,025	1,232,699	1,355,306

Source: Agro-Trade Handbook: 2012, JETRO



#### 5.4.2 Needs of Assistance for Distribution Process

Various issues in distribution analyzed in Chapter 3 restrict access of domestic producers to expanding markets. To increase distribution of domestic products in the future, the modern food industry, reliable middlemen, and farmers and farmers' groups must work together to vertically integrate supply chains.

To date, Japan has focused on the production side through various kinds of official development assistance (ODA) when it aids the agricultural sector in Indonesia. For distribution, Japan has provided assistance to improvements in wholesale facilities of fruits and vegetables, and marine products in the traditional distribution system and public markets. However, what will be important is to link the entire supply chain from production to consumption, since fresh foods, fruits and other horticultural products are closely and directly related to consumption patterns and preferences of consumers. In particular, Indonesia is seeing economic growth and an increase in incomes, which will expand the modern retailing and food service industries. This suggests that the country will be required to produce agricultural products satisfying the needs of consumers who are more eager to purchase safe and quality fresh foods.

Farmers and farmers' groups exist on production sites, the upstream of the distribution process, and traditional retailers, modern supermarkets, food processing companies, food service chains and exporters on the downstream of the process closer to consumers. In between the two sides exist collectors that used to be farmers' groups, old brokers and other middlemen, as well as wholesalers doing business at wholesale markets.

This section aims to identify needs of assistance from three viewpoints: poverty reductions and an increase in earnings of farmers in Indonesia; assistance to Japanese-affiliated companies to expand their business to Indonesia; and the public-private partnership to like the both ends of the supply chain.

First, the needs of assistance among farmers and farmers' groups on the upstream of the chain and the needs of assistance among Japanese-affiliated companies (wholesalers and retailers, food processing companies, food service chains, etc.) on the downstream are considered in terms of three types of assistance, namely, (i) technical assistance; (ii) assistance to building of the system; and (iii) assistance to develop facilities and infrastructure. In Table 5.2 and the discussion that follows, the

assistance needs for improving the distribution system are identified in line with the issues of the supply chain identified in Chapter 3.

Table 5.2 Needs of Assistance for Improvement in Distribution System in Indonesia

	Needs of assistance	Beneficiaries	
		Farmers	Japanese-affiliated companies
Technical assistance	Technical assistance for cultivation (such as chemical-free and organic farming)	○	○
	Post-harvest treatment technology	○	○
Regulations and legal system	Building of a financial system for farmers	○	
	Alleviation of restrictions on import		○
	Promotion of food safety standards (such as GAP and HACCP)	○	○
	Assistance to introduction of ICT	○	○
Facilities and infrastructure	Sophistication of collection systems (refrigerated warehouses, etc. at STA)	○	○
	Collection trucks and refrigerated trucks for transportation	○	
	Introduction of farming equipment	○	○
	Road construction and improvement in agricultural production areas	○	

Source: JICA Study Team

#### (1) Technical Assistance

To date, the Government of Indonesia and donors have focused, when giving assistance to farmers, on rice that is a strategic good, and coffee, cacao, sugar cane and other estate crops, and their assistance for the production of fruits, vegetables and other horticultural crops has been fairly limited. Because of this, many horticultural farmers are not aware of the importance of cultivation technologies and the post-harvest treatment, and their technical standards are low. Such attitudes are a major obstacle to their participation in the modern distribution system.

In such circumstances, (i) assistance to cultivation technologies including chemical-free and organic cultivation technologies and (ii) assistance to post-harvest treatment must be highly needed as technical assistance at the production stage. The transfer of technologies at the production and post-harvest stages will enable farmers in Indonesia to join in the modern distribution system, and thus contribute to poverty reduction and improvement and stabilization of earnings.

## (2) Regulations and Legal System

The assistance to regulations and the legal system will benefit both farmers and Japanese-affiliated companies in Indonesia. Specific forms of assistance that provide benefits to the two parties include assistance to promote food security standards, such as GAP and HACCP, and to introduce ICT.

The Indonesian authorities, led by the Ministry of Agriculture, promote schemes of food security standards, but since they do not have sufficient budget and personnel, they are unable to sufficiently promote the schemes and thus the inspection schemes including residual pesticide tests are not well established. An improvement in food safety standards will certainly favor Indonesian companies that place much value on food safety and quality.

Moreover, the assistance to introduction of ICT will facilitate provision of information about transaction prices of agricultural products to farmers and farmers' groups, and thus contribute to solving the problem of asymmetric information between farmers and middlemen and inefficient distribution systems. ICT will also serve as a platform for Japanese-affiliated companies to share market information with farmers and farmers' groups, secure transparency of transactions and have access to farmers and farmers' groups in Indonesia.

The relaxation of the import system including the current restrictions on harbors allowed to accept import food materials (three harbors and one airports are currently allowed to receive imported foods) is a serious issue particularly for Japanese-affiliated distributors, retailers and food service chains dealing with import foods (at least until domestic foods can substitute for imported ones).

Financial assistance to farmers has two purposes: one is to help them improve the productivity and quality of agricultural products through, for example, mechanizing farming, advancing greenhouse cultivation and purchasing transportation trucks. The other is to offer a supplementary mechanism helping farmers secure bridging funds for living expenses even if they are suppliers of agricultural products to modern supermarkets, food processing companies and exporters because of the longer settlement period by these businesses. Financial assistance can possibly take the form of a scheme to

collect trade accounts receivable on behalf of farmers supplying products to Japanese-affiliated companies.

### (3) Facilities and Infrastructure

The assistance that goes to facilities and infrastructure will benefit both farmers and Japanese-affiliated companies in Indonesia. Possible forms of assistance to sophistication of the STA and farmers include assistance to procurement of transportation trucks and farming equipment and development of roads in highlands where vegetable production is popular. The assistance to sophistication of the sub-terminals is important since they have a high potential for access points for farmers and farmers' groups and Japanese-affiliated companies procuring agricultural products in the distribution system.

At some of the sub-terminals, farmers' groups do business with modern retailers, food processing companies and food service companies, many of which, as entities located on the downstream of the modern distribution system, often conclude long-term transaction agreements with a certain number of farmers. To stably secure fruits and vegetables satisfying the quality standards of their own, companies can reduce procurement risk by directly doing business with farmers and farmers' groups, rather than procuring products at traditional wholesale markets where products have different qualities and whose prices considerably fluctuate.

Field interviews with the owners of private wholesale markets show that the STA play an important role as a collection base for agricultural producers. It is important to heighten the incentive of farmers to grow agricultural products by upgrading the STA, organizing farmers and enabling farmers to share information about the market needs for high value-added products, quality required and prices. It is also possible perhaps to assist quality inspections and development of new products under the partnership between the sub-terminals, and universities and research institutes.

Farmers normally supply their fruits and vegetables to traditional markets through individual brokers. But an increasing number of farmers are beginning to supply products directly and stably to private wholesale markets and modern retailers (supermarkets) by organizing themselves and making use of the STA. Promoting farmers and farmers' groups to participate in the modern distribution system and heightening value-added of agricultural products will increase and stabilize earnings of farmers, and reduce poverty.

### 5.4.3 Consideration of Programs/Projects

To date, ODA has chiefly aimed at the agricultural production stage to improve the productivity of major crops such as rice. At the distribution stage, some farmers' groups, middlemen, the food-related industry and exporters have undertaken various measures for higher efficiency. However, the operation and establishment of facilities, that is, the software and hardware of facilities, in the distribution of agricultural products are essential to meet the needs of consumers for safety and diversification of foods that is increasing due to economic development.

This section considers appropriate programs/projects in light of future trends and needs for assistance to distribution of agricultural products in Indonesia identified in the previous sections.

Table 5.3 Identification of Issues and Needs for Assistance to the Distribution System of Agricultural Products

	Production		Distribution		Consumption
Actors	Farmers and farmers' groups	(Businesses in charge of collection) <sup>1</sup>	Collectors, Brokers and exporters	Wholesalers and retailers	Consumers
Necessary facilities	Road and farming equipment	STAs, collection facilities and refrigerated warehouses	Road and refrigerated trucks	Wholesale and retail markets	
Project scheme	<p>The diagram illustrates the coverage of different entities across the distribution chain. The 'Coverage of this Study' is shown as a long blue double-headed arrow spanning from the 'Production' stage to the 'Consumption' stage. The 'Coverage of traditional ODA' is a shorter blue double-headed arrow covering the 'Production' and 'Distribution' stages. The 'Coverage of PPP' is a blue double-headed arrow covering the 'Production', 'Distribution', and 'Consumption' stages. The 'Coverage of private sector' is a blue double-headed arrow covering the 'Distribution' and 'Consumption' stages.</p>				
Issues	Organization of farmers Production quality Lack of information Settlement period Road infrastructure		Complicated distribution Post-harvest Lack of refrigerated warehouses		Unstable prices Safety of food
Needs for assistance	Assistance to cultivation technologies, building of financial support system, introduction of farming equipment, development		Assistance to post-harvest treatment technology Trucks for collection and transportation		Relaxation of import restrictions

	of road, sophistication of STAs, promotion of food safety standards and assistance to introduction of ICT	Sophistication of STAs Promotion of food safety standards Assistance to introduction of ICT	Promotion of food safety standards Assistance to introduction of ICT
Possibility of Japanese companies to participate	Manufacturers of farming equipment, producers and producers' unions	Transportation-related companies, food processing companies, manufacturers of refrigerating and freezing facilities, and manufacturers of packing materials	Retailers, food service chains and exporting companies

Source: JICA Study Team

1/ In Indonesia, farmers, farmers groups, collectors and brokers are in charge of collection of agricultural products depending on regions.

In light of the issues and assistance needs described above, this section considers possibly effective forms of assistance that Japan can offer. At the same time, this section proposes an urgently needed project under the public-private partnership scheme for assistance to sophistication of the STAs that can serve as a platform for Japanese-affiliated companies to make a foray into Indonesia, and financial assistance to facilitate organization of farmers and a shift of farmers to the modern distribution system.

#### (1) Contents of Project Proposals

##### (Financial cooperation project)

##### (i) Development of Roads in Production Areas

Highlands with much rain are suitable for production of horticultural crops (fresh vegetables). Among areas near the Jakarta metropolitan area, Puncak and Bandung near Bogor are well known as production bases of fresh vegetables. However, the road conditions at these areas are poor, causing a great barrier to collection of agricultural products from farmers and delivery to consumption areas. Since the lead time of leafy vegetables is particularly short, deteriorated roads directly affect earnings of farmers. At least, roads on the collection and transportation routes must be urgently improved.

##### (ii) Provision of Equipment for Pesticide Tests

Indonesia's Ministry of Agriculture adopts the Codex standards for residual pesticides and bans the importation and domestic sale of non-compliant agricultural products. Residual pesticide tests are conducted at testing laboratories approved by the ministries of Health and Agriculture. However, a mere 15% of approximately 400 testing laboratories under the supervision of the Ministry of

Agriculture are equipped with agrichemical test equipment that can be actually used. The laboratories reportedly have difficulty in obtaining or maintaining equipment because of fund shortage. In such circumstances, they wish to have assistance in improving the agrichemical testing technology and procure test equipment in order to raise the availability of the testing laboratories, improve the credibility of their tests and develop professional technician.

(iii) Provision of Collection and Transportation Trucks and Transportation Technology

Field interview surveys have revealed that production areas are short of collection and transportation trucks. The Ministry of Agriculture leases trucks via STAs in Kabupaten, but it is not enough, so the shortage is a constraint on fruit and vegetable potentials. Moreover, because of poor transportation conditions, the rejection rate of fruits and vegetables, or the post-harvest loss, is high. To remedy the situation, the assistance project will procure trucks and establish a leasing system in strategically important fruit and vegetable production sites. Together with this, technical assistance is also necessary to improve product transportation services, such as packing skills, packing technology for transportation and loading/unloading work improvement.

(iv) Introduction of ICT System

An ICT system will be introduced to the STAs and wholesale markets to manage information about market prices, and shipping volumes and timing. The STAs and wholesale markets will be networked to make their information available to farmers and farmers' groups, middlemen, retailers and wholesalers and the food-related industries. At the same time, the supply and demand imbalance, as well as regional imbalance of agricultural products, will be rectified to keep the prices under control.

(v) Improvement in the STAs

A reasonably large number of STAs are in operation, but the number of STAs effectively operating is very small because of mounds of problems pertaining to locations, incidental facilities, and operation and management, among other things. To solve these problems, production potentials of agricultural products and the efficient distribution system to consumption sites must be reviewed, and high-priority STAs must be specified and vitalized. In addition, it is also necessary to draw up a master plan with an eye to establishment of new STAs. Accordingly, as assistance to vitalization of the STAs, a master plan for STAs will be drawn up to implement a pilot project to vitalize high-priority STAs.

(Project for technical transfer)

(vi) Improvement in Production Technology

People are beginning to be more aware of food safety, and will pay more attention to chemical-free and organic fruits and vegetables in future. There is a scheme for organic cultivation, which is not in widespread use at the moment. Therefore, the transfer of organic and chemical-free cultivation technologies will be promoted.

(vii) Transfer of Post-harvest Treatment Technology

Entities in the distribution system in Indonesia have little knowledge and skills of post-harvest treatment, generating a large volume of post-harvest loss. Thus, the post-harvest treatment technology will be transferred mainly to farmers and farmers' groups.

(viii) Dissemination of Food Safety Standards (such as GAP and HACCP) and traceability

Currently, consumers in Indonesia do not have any information about the safety of agricultural products they purchase, such as conditions in production sites, producers, harvest time and cultivation records. Thus, enlightenment activities will be conducted to raise consumer awareness that safe crops with traceability are high value-added products. At the same time, revisions should be considered to revising the legal system on requiring certification of food safety standards and traceability for import agricultural products.

(ix) Improvement in STA Management

To increase the operational vitality of STAs, they must be efficiently operated and managed by the private sector. The management of STAs must be made transparent to build an efficient distribution system covering farmers and farmers' groups on the production side and the food-related industries. Therefore, assistance will be offered to improve the management of STAs that are not under management of the private sector by small and medium enterprise management consultants or other experts.

(2) Public-Private Partnership Program Scheme

(i) Project for Improving STAs

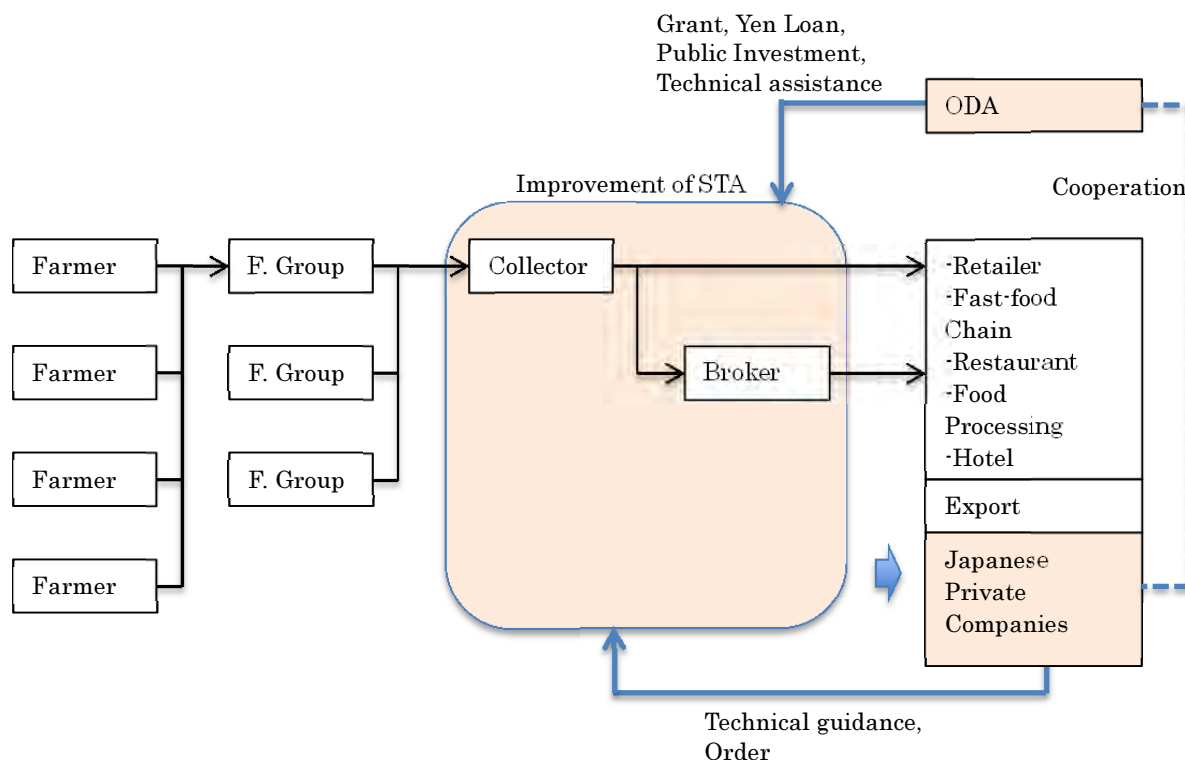
The more effective use of the STAs will support the advancement of Japanese food-related industries (distribution, retailers, food service chains and the food processing industry) and improve and stabilize earnings of fruit and vegetable growers.

It is crucial particularly for Japanese-affiliated companies intending to engage in business in



Indonesia to procure a certain volume of high quality agricultural products at stable prices. For example, some Japanese-affiliated food-related companies in Indonesia avoid the complicated traditional distribution route and directly contact local farmers and farmers' groups. Thus, such companies generally enter into joint ventures or other business arrangements with local companies. Sharing information among a number of STAs will enable both farmers and farmers' groups and Japanese-affiliated companies to be kept abreast of the situation. This helps the latter procure fruits and vegetables through their unique routes, rather than through the traditional distribution system which is common in Indonesia. Sharing information also makes it possible to secure the product quality, stabilize prices and secure the food safety through post-harvest treatment at places much closer to production sites.

For Japanese-affiliated companies, the STAs serve as venues to have access to farmers and farmers' groups and a platform to directly inform farmers of market needs and their own requests. Thus, the STAs will be able to improve and stabilize earnings of local farmers and farmers' groups, and considerably contribute to poverty reduction among farmers in highlands.



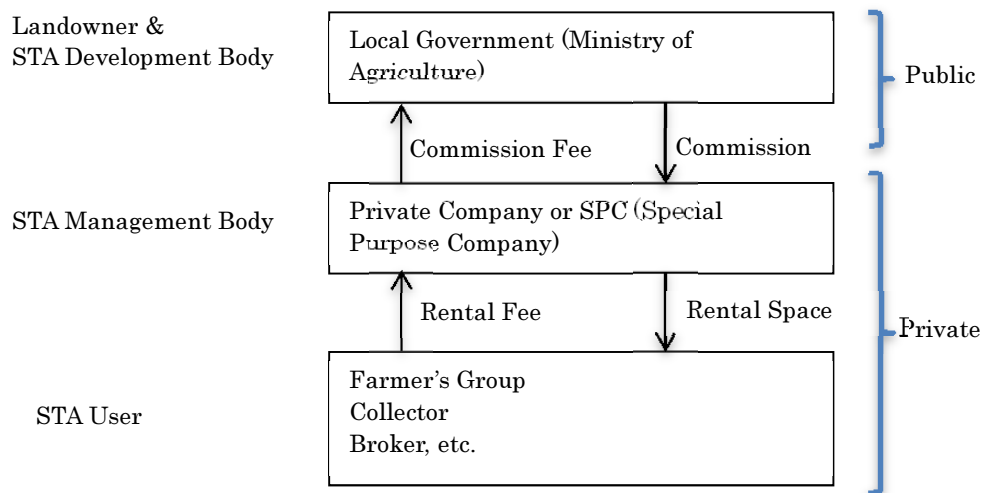
Source: JICA Study Team

Figure 5.4 Proposed Plan to Improve the Modern Distribution System Using STAs

Possible components for STA improvement are as follows:

1. Expansion and additional procurement of pre-cooling and refrigerated warehouses;
2. Transfer of advanced agricultural production technology to farmers' groups;
3. Collaboration with local universities (Bogor Agricultural University, Padjadjaran University in Bandung, University of North Sumatra in Medan, etc.), residual pesticide tests, and pilot cultivation for breed improvement;
4. Establishment of a loan scheme for farmers' groups;
5. Promotion of acquisition of GAP and GHP for better hygienic control;
6. Information sharing and assistance for Japanese companies to make a foray into Indonesian markets through introduction of IT (an online order placement system, etc.); and
7. Improvement in management (outsourcing of operation and management of STAs to private companies), etc.

If the STAs are owned by the government and operated and managed basically by private businesses, it will be easier to manage them more efficiently and build a mechanism to share information about market needs and trends with farmers and farmers' groups. If Japanese-affiliated companies can get more involved in business in Indonesia (through, for example, forming joint ventures with local companies and establishing special purpose companies) through management and use of the STAs, they will considerably contribute to technical transfer of management know-how and advancing of Japanese-related food-related companies to Indonesia. A proposed role-sharing scheme among the public and private sectors in the STAs is put into the form of a diagram as follows.



Source: JICA Study Team

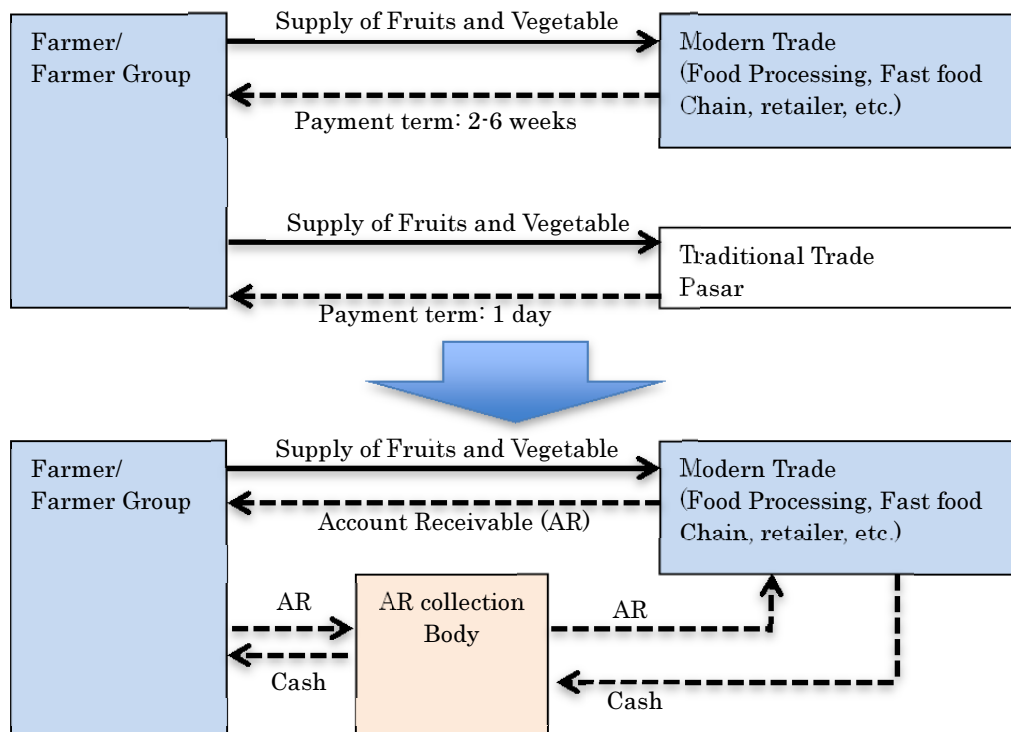
Figure 5.5 Example of Ownership and Operation of STAs

(ii) Financial assistance to agricultural producers

A mechanism to support a living fund for farmers must be built to encourage them and farmers' groups to shift to the modern distribution system, and promote improvement and stabilization in their earnings. However, private banking institutions require a mortgage for loans, so small-scale farmers currently have difficulty in taking advantage of such loan schemes.

A possible financial scheme that can supply a living fund for farmers and encourage them to shift to the modern distribution system is to establish an institute to collect trade accounts receivables (AR) on behalf of farmers from retailers, food service chains, food processing companies and other entities at the terminal of the modern distribution system.

Suppose, for example, that Japanese-affiliated companies (food processing, food service, distribution, retail, etc.) and farmers' groups or "agripreneurs" with high production technology jointly engage in agricultural production as part of their food business. The former has the high credibility and capacity to provide collateral, and the latter can stably supply quality agricultural products. Thus, the collaboration will be highly likely to contribute to an expansion in production of farmers' groups with high production technology.



Source: JICA Study Team

Figure 5.6 Financing to Help Farmers to Secure Bridging Funds by Establishment of AR Collection Body