**MINISTRY OF AGRICULTURE**
**THE REPUBLIC OF INDONESIA**

# THE STUDY ON DISTRIBUTION MECHANISM REFORM THROUGH DEVELOPMENT OF WHOLESALE MARKET (IMPROVING OF POST-HARVEST HANDLING AND MARKETING FACILITIES) IN INDONESIA (AGRICULTURE)

## FINAL REPORT
## MAIN REPORT

**JANUARY 2012**

**JAPAN INTERNATIONAL COOPERATION AGENCY**

**SYSTEM SCIENCE CONSULTANTS INC.**

**NIPPON KOEI CO., LTD.**

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| JR |
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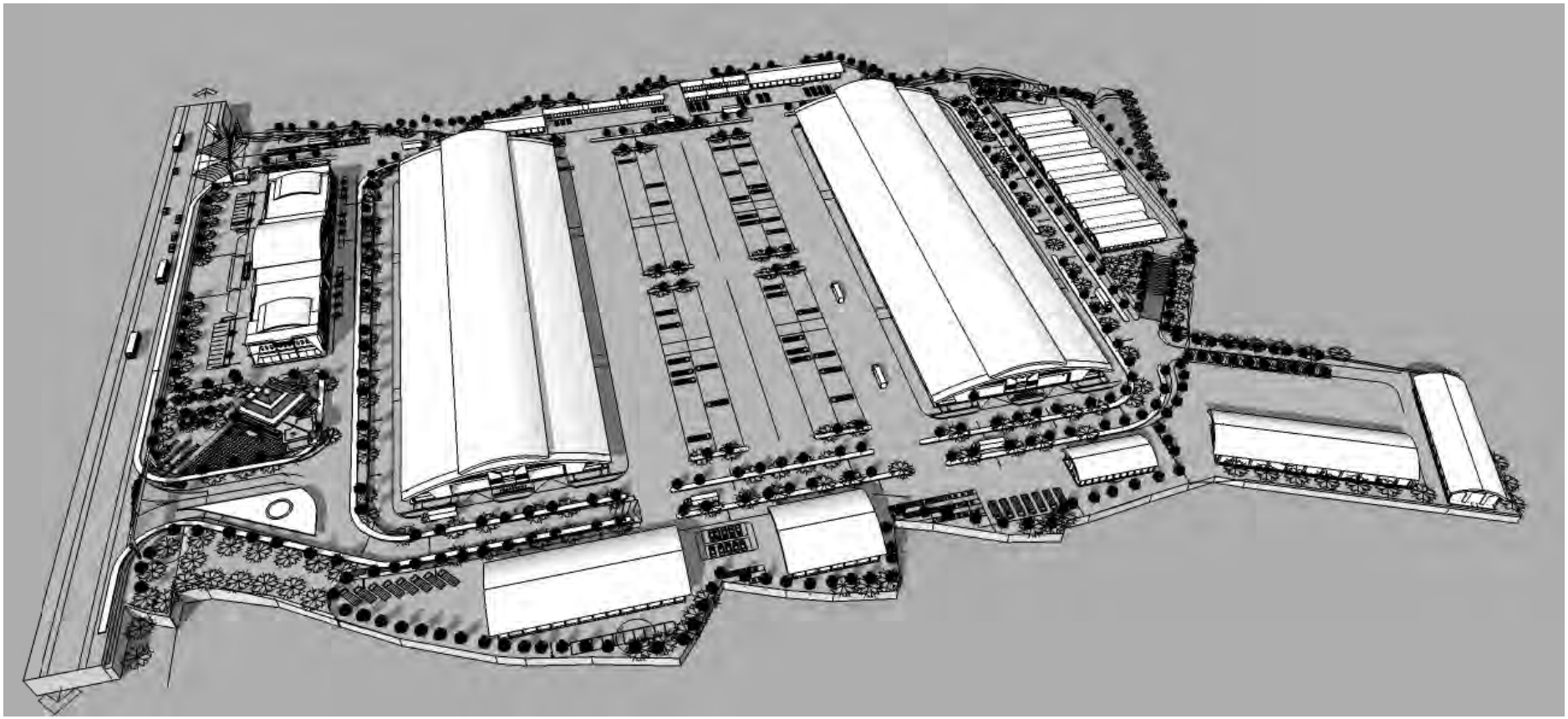
**Map of the Study Areas**



**Bird’s Eye View of the New TA in Lampung Province**

**Photographs**

**1. Lampung Province**

(1) Existing Wholesale Markets in Bandar Lampung City

1) Taming Market

■Facade of market building

■Wholesale booths

■Debris of cabbage

2) Gintung Market

■Neighboring main street

■Cabbage in wholesale market

■Potato in wholesale market

■Internal condition of retail market

■Garbage collection truck

(2) Candidate Sites of TA Construction

1) Penengahan Site

■Neighboring trunk road (view toward B. Lampung)

■Project site owned by Lampung Province (Ex-truck scale facilities of Transportation Agency, Approx. 1.8 ha)

■Project site (private land of approx. 10 ha)

■Houses in the project site

2) Natar Site

■Neighboring access road (view toward Bandar Lampung City)

■Overview of the site (viewed from neighboring trunk road)

■Chicken farm facilities in the site (under operation)

■High-voltage line and tower in the site

■Private junior high school which is facing to access road

3) Gedong Tataan Site

■Neighboring access road (view toward Bandar Lampung City)

■Overview of the site (access road and street trees viewed from the center of the site)

## 2. East Jawa

(1) STA Mantung

■Approach to STA from neighboring trunk road


■Sign board of STA

■Open space (center) and booths

■Booths along exit route

■Full loaded truck in the parking area

■Washing and grading of carrot

■Temporary stock space for cabbage (after lime treatment)

■Administration office

(2) Pasar Induk Osowilangun (Private Wholesale Market)

■Overview of internal road and market buildings

■Wooden pallet

■Fruits in cool storage

■Internal condition of wholesale market

■Wholesale market facilities (booths not rented yet)

(3) TA Puspa Agro

■Overview of internal road and market buildings

■Roof truss (space frame)

■Internal condition of wholesale market

■Market building with booth partitions and internal truck road

## 3. North Sumatra

(1) TA (STA) Semantang Siantar

■Overview image of the market: Loading space (left side), and other market buildings

(2) STA Saribudolok

■Open space for products collection and supporting facilities (from the left; cold storage, selecting, packing, warehouse and guards house)

■Selecting space with roof

■Administration office

■Kiosk

■Internal condition of cold storage

■Unloading work for “Wednesday market”

■Wednesday market

■Wednesday market

## 4. South Sulawesi

(1) STA Malino

■Administration office

■Selecting space

■Internal condition of selecting space

■Warehouse


■Signboard of a STA

The Study on
Distribution Mechanism Reform through Development of Wholesale Market
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Final Report

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# Abbreviations

| Abbreviation | Indonesian | English |
|---|---|---|
| AMDAL | Analisis Mengenai Dampak Lingkungan | Environmental Impact Assessment |
| BAPPEDA | Badan Perencana Pembangunan Daerah | Regional Agency for Planning and Development |
| BLHD | Badan Lingkungan Hidup Daerah | Regional Agency for Environment Management |
| BPLHD | Badan Pengendalian Ligkungan Hidup Daerah | Provincial Agency for Environment Management |
| BPS | Badan Pusat Statistik | Central Statistics Agency |
| CM | - | Central Market |
| DKI Jakarta | Daerah Khusus Ibukota Jakarta | Special Capital City District of Jakarta |
| DINAS | Dinas | Agency |
| EIA | - | Environmental Impact Assessment |
| EIRR | - | Economic Internal Rate of Return |
| IEE | - | Initial Environmental Examination |
| JICA | - | Japan International Cooperation Agency |
| KA-ANDAL | Kerangka Acuan Analisis Dampak Lingkungan Hidup | TOR of Environmental Impact Assessment Study |
| KLH | Kementrian Ligkungan Hidup | Ministry of Environment |
| KUPT | Kepala Unit Pelaksana Teknis | Head of Technical Implementation Unit |
| MOA | - | Ministry of Agriculture |
| MOT | - | Ministry of Trade |
| MPU | Mitra Praja Utama | Capital Area Partners |
| O/D | - | Origin and Destination |
| OKKPD | Otoritas Konpetensi Ketahanan Pangan Daerah | Regional Agency for Food Safety |
| PD. | Perusahaan Daerah | Regional Holding company |
| PERDA | Peraturan Daerah | Local Regulation |
| PIKJ | Pasar Induk Kramat Jati | Kramat Jati Wholesale Market |
| PT. | Perusahaan Terbatas | Limited Company |
| PT. LJU | PT. Lampung Jasa Utama | Lampung Jasa Utama Co., Ltd. |
| PT.TSS | PT. Tunggal Sentra Sejahtera | Tunggal Sentra Sejahtera Co., Ltd. |
| RKL | Rencana Pengelolaan Lingkungan | Environmental Management Plan |
| RPL | Rencana Pemantauan Lingkungan | Environmental Monitoring Plan |
| SM | - | Supporting Market |
| STA | - | Sub-Terminal of Agribusiness |
| TA | - | Terminal of Agribusiness |
| TPA | Tempat Pembuangan Akhir | Final Waste Disposal Site |
| UKL | Upaya Pengelolaan Lingkungan | Environment Monitoring Plan |
| UPL | Upaya Pemantauan Lingkungan | Environment Management Plan |
| UPTD | Unit Pelaksana Teknis Daerah | Regional Technical Implementation Unit |

# Summary

# 1 Background

In view of the agricultural policies, since 2000, MOA has announced its policies of emphasizing the development and improvement of the distribution facilities of the markets for agricultural products and supporting the establishment and improvement of wholesale markets in each province across the country. The basic approach is to establish markets for agricultural products (Sub-Agribusiness Terminals: STAs) in the production areas of agricultural products and wholesale markets (Agribusiness Terminals: TAs) in the consumption areas and achieve the improvement and efficiency enhancement of the distribution of agricultural products by facilitating the collaboration between the STAs and TAs. The STA improvement has been implemented under the responsibility of the Regency government and the TA improvement has been implemented under the responsibility of the provincial government. As of June 2011, MOA has financed a total of 64 markets around the country, consisting of two TAs and 62 STAs.

MOA focuses on the maintenance and operational improvement of existing markets rather than the construction of new markets as a policy concerning the future development of the markets.

# 2 New TA Development in Lampung Province

## 2.1 Current Condition and Issues in Study Areas

### 2.1.1 Current Condition and Issues on TA Development in Lampung Province

#### (1) Agriculture Related Policies

**1) Formulation of "Regional Basic Plan Lampung Province (2009-2029)"**

In May 2010, Lampung Province developed a long-term development plan "Regional Basic Plan Lampung Province 2009-2029" to define the future direction for the next 20 years, including the "Agro Minapolitan Initiative" covering the eastern part of the Province (Central, East and South Lampung Regency).

**2) Formulation of TA Development Plan by the Agriculture Agency, Lampung Province**

In March 2011, the Agriculture Agency in Lampung Province formulated the "TA Development Plan." This plan shows the details of the project, assuming that the TA will be constructed in Penengahan and enumerating "collection of products (collecting adequate volume of products enabling wide-area distribution)," "transparent and fair price formation," "supply of products to distributors or retailers," "collection and provision of market distribution information," "provision of support services on the issuance of certificates, sanitary inspection, customs clearance and quarantine, etc. of agricultural products" among others, as the required functions of the TA.

#### (2) Current Condition and Future Prospects of Inter-Provincial Marketing between Sumatra and Jawa

**1) Wide-area distribution volumes from Sumatra Island to Jawa Island**

With respect to vegetables, Sumatra Island has an excess supply capacity of 391 thousand tons (Lampung Province is an "importing province" for vegetables). Jawa Island also has an excess supply capacity of 368 thousand tons and ships to Kalimantan Island and other areas. In the case of vegetables, the distribution flow depends on the item-wise demand and supply rather than on the gross demand and supply, and some vegetables are also shipped from Lampung Province to Jawa Island.

As for fruits, Sumatra Island has an excess supply capacity of 1,184 thousand tons and it makes up for the shortage of supply in Jawa Island, that is 875 thousand tons. In the case of fruits, Lampung Province itself also has an excess supply capacity of 777 thousand tons. Therefore, it is assumed that the new TA in Lampung Province will mainly deal with fruits.

**2) Inter-provincial distribution from Sumatra Island to Jawa Island (O/D survey in May 2011)**

It is estimated that a daily average of about 1,444 tons of fruits and vegetables are transported from Sumatra Island to Jawa Island through Bakau Heni Port.

a) Origin
From the total distribution from Sumatra Island, 76.2% of the cargos had been dispatched from Lampung Province.

b) Destination
With respect to the destination of the cargos, 52.9% were bound for DKI Jakarta Province, followed by 24.5% for West Jawa Province and 19.4% for Banten Province.

c) Packaging condition
With respect to the packaging condition, 82.0% of the cargos were in bulks and 10.1% were packed in net bags. Both of them had not been graded. Merely 6.6% of the total had been graded and sorted by using wooden or carton boxes. As for the cargoes bound for DKI Jakarta Province alone, the percentage of box cargos was 9.1%, which is slightly higher, but more than 90% had not been graded and they are graded and packed in boxes within the wholesale markets in Kramat Jati.

d) Types of cargos
Fruits account for 76.8%, vegetables 8.3%, and fresh coconuts and other estate crops account for 14.8%. Some 78.4% of the fruits and 45.1% of the vegetables are from Lampung Province. As for estate crops, 82.1% are from Lampung Province. Considering the total balance of demand and supply, Lampung Province is a "consumption province" of vegetables, but in reality, it also functions as a supply base to Jawa Island.

#### 3) Distribution Volumes at Kramat Jati Wholesale Market (in DKI Jakarta Province)

The Kramat Jati Fruits and Vegetables Market (Pasar Induk Kramat Jati, hereinafter referred to as PIKJ) is a main marketing base of agricultural products in DKI Jakarta Province. The PIKJ handles 2,186 tons of fruits and vegetables daily (average for 2010), of which vegetables are 1,171 tons, accounting for 53.6% and fruits 914 tons, accounting for 41.8%. The remaining 101 tons are potatoes. They are sold to: 1) Pasars (retailers) in DKI (70%), 2) Mass merchandise stores (25%), 3) Restaurants (2%) and 4) Others (3%). Lampung Province is a major production place of chickpeas, papayas, bananas, watermelons, duku, durians and kedongdong dealt with in this market.

According to an estimate by DKI Jakarta Province, the PIKJ supplies 76% of the demand for vegetables, 40% for fruits, 80% for cassava and other potatoes and 20% for beans and peas in DKI Jakarta Province.

### (3) Relevant Agricultural Products Distribution Policies of DKI Jakarta

#### 1) Regulation of the Special Capital Province of Jakarta (PERDA8/2004) and its bylaws

PERDA 8/2004, which is a regulation of DKI Jakarta Province, was enforced in 2004 for the purpose of controlling the quality and ensuring the safety of agricultural products consumed in the capital city

As for quality standards, existing legislative systems, specifications and standards established by the Government of Indonesia should be followed. There is no standard specifically set by DKI Jakarta Province. Although specifications and standards concerning the quality control of agricultural products are in place, they are not yet widely applied and realized.

## 2.2 Site Selection for TA Development in Lampung Province

Among three candidate sites, "Penengahan" was selected as a project site of the new TA in Lampung Province, working through the process of confirmation on the Governmental/Provincial policies relating TA development, the trading area/distribution network on the new TA, and the needs of stakeholders for the new TA.

### (1) Comparative Analysis of three Candidate sites

With respect to the three candidate sites for the construction of the TA in Lampung Province (Penengahan, Natar and Gedong Tataan), a preliminary comparative study was carried out in the phase

1 work by evaluating the sites in terms of such items as consistency with policies, location and stakeholder's intention to participate.

This analysis was conducted both in the phase 1 and phase 2 work. Difference in the evaluation results on "Stakeholder's intention to participate in the new TA" between the phase 1 and phase 2 work was caused by the conditions that the target distribution area of the new TA was not implicated to the stakeholders in the interview in the phase 1 work, but in the phase 2 work, the stakeholders were informed that the target of the new TA was focused on the inter-provincial distribution.

**(2) Prioritized Site of New TA**

**1) Prioritized Site of New TA**

**a) Function of the new TA in Lampung Province**

The new TA in Lampung Province will have a function of transaction point for fruits and vegetables to be inter-regionally distributed between Sumatra and Jawa Island. That is, its characteristics are unique compared with the existing TAs, which are located near the large consumption areas. Furthermore, it will have function of STA because the location is close to the production areas of fruits in Lampung Province.

**b) Project Site of TA**

Penengahan (South Lampung Regency, Lampung Province)

## 3 Overall Strategy of the Project

### 2.3 Basic Information for Products Distribution and Marketing System relating to New TA in Lampung Province

#### 2.3.1 Review on the Distribution Volume of Potential Target Products

The existing flow volume of from Sumatra to Jawa Island in 2011 and forecasted volumes in 2015 and 2025 are summarized in the following table.

**Table Actual and Estimated Distribution Volume from Sumatra to Jawa**

Unit: ton/day

| | Actual Volume | | | Estimated Volume | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2011 (May) | | | 2015 | | | 2025 | | |
| | To Jakarta | To Others in Jawa | Total (To Jawa) | To Jakarta | To Others in Jawa | Total (To Jawa) | To Jakarta | To Others in Jawa | Total (To Jawa) |
| From Lampung | 550 | 552 | 1,102 | 865 | 862 | 1,727 | 1,012 | 1,011 | 2,023 |
| From Others in Sumatra | 210 | 132 | 342 | 325 | 201 | 562 | 383 | 237 | 620 |
| Total (From Sumatra) | 760 | 684 | 1,444 | 1,190 | 1,063 | 2,253 | 1,395 | 1,248 | 2,643 |

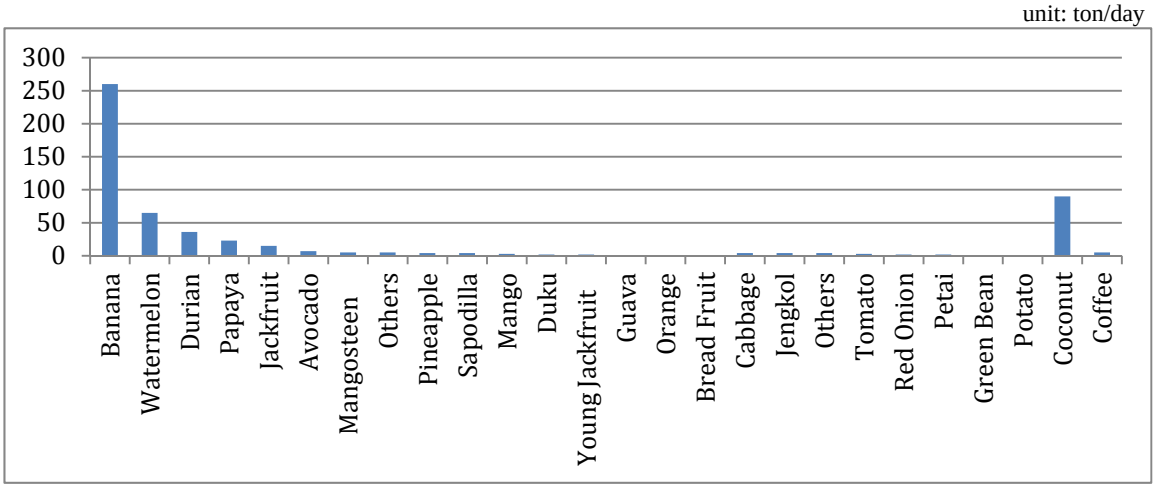
Source: JICA Study Team

Incidentally, Lampung Province has a great hope in PERDA 8/2004, and its by-laws will be fully enforced in the new TA, and the new TA will deal with all of the horticulture products passing through Bakau Heni Port in conformity with PERDA 8/2004 and its by-laws. But a full enforcement of PERDA 8/2004 and its by-laws in all provinces in Indonesia will not be realized in such a short time before the establishment of the new TA in Lampung Province. Consequently the new TA may exclusively deal with the Lampung products only in conformity with Perda 8/2004 and its by-laws, which will be agreed upon between Lampung Province and DKI Jakarta.

Through the sound promotion of the establishment of the above-mentioned bilateral agreement with DKI Jakarta, target products for New TA will be focused only on the distributed volume from

Lampung province to DKI Jakarta.

It is obvious that 550 ton/day of horticulture products distributed from Lampung Province to DKI Jakarta in 2011 would be the potential target of the new TA, Furthermore, the flow is characterized by the huge quantity of banana, and other fruits (watermelon, durian, papaya and sapodia) as shown in the following figure.



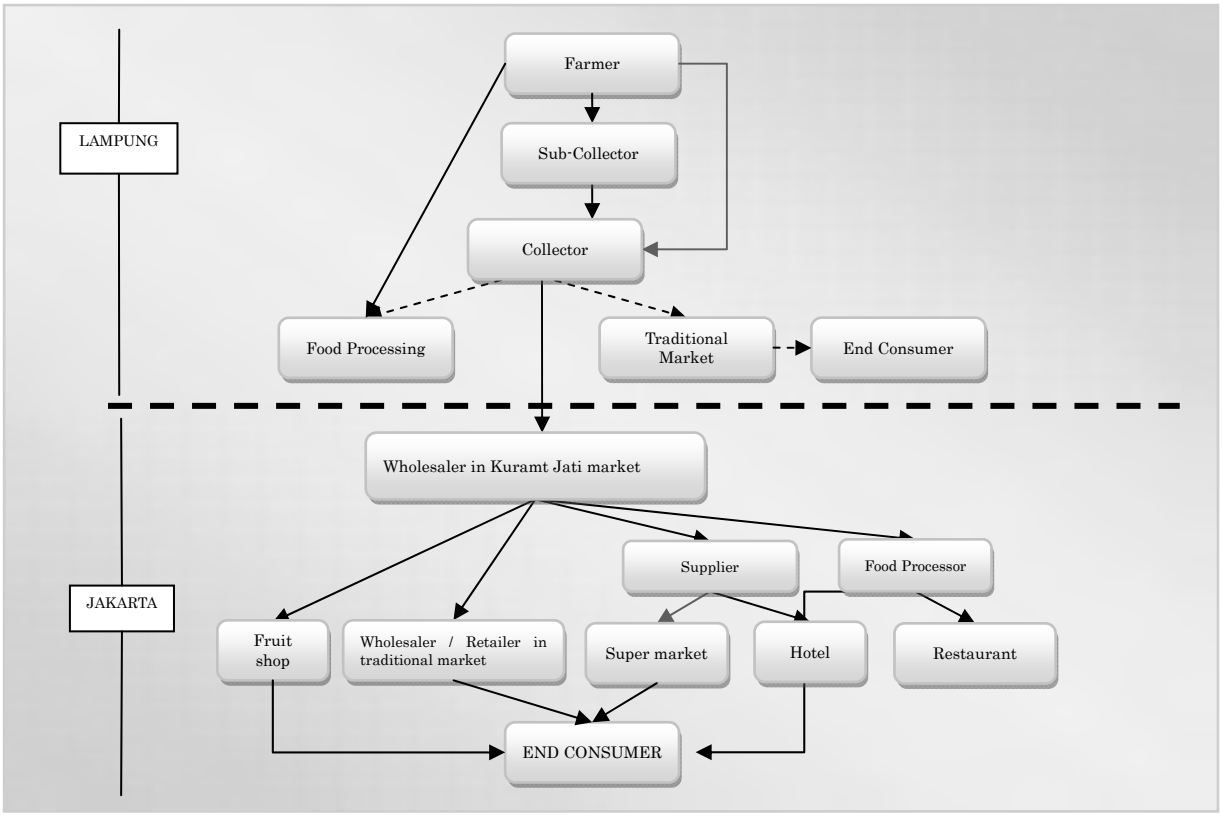

Source: JICA Study Team

**Figure Distribution Volume by Type of Horticulture Products in 2011**

### 2.3.2 Conventional Marketing System and Pricing Mechanism of Target Products of New TA

The general value chains of the fruits, and detailed value chains of banana as a major target product of New TA are shown in the following figures.

In the marketing system of fruits and vegetables from farmers in Lampung to the end consumers in Jakarta, the bulk buyers (hotels, restaurants and supermarkets) are involved with multiple marketing players such as farmer groups, collectors, wholesalers and retailers.
This long distribution channel makes the prices of products higher at each transaction level, and causes high prices to the end consumers.




Source: JICA Study Team

**Figure Marketing System of Fruits and Vegetables from Farm Gate in Lampung to End Consumer in Jakarta**

1) Each sub-collector collects the products from many farmers, and almost all farmers are bound by loan, credit or capital from a sub-collector.
2) Each sub-collector sells the products to a specific collector for whom sub-collectors function as their agents.
3) Wholesalers in DKI Jakarta buy products from many collectors in Sumatra Island (especially Lampung), and from the other parts of Jawa Island.

**(1) Marketing System and Value Chain of Banana**

**1) Traditional marketing system at production area**

Typical condition of banana distribution from fields to wholesale market through products collection centres is summarized in the following photograph.

Banana Field | Transportation by trucks | Collection centre in production area

Arrival at Jakarta (Kramat Jati) | Kramat Jati wholesale market | Serdang market in Jakarta


Banana in wooden box | Banana in cardboard box

**Photograph Typical Condition of Banana Distribution**

**2) Quality control of vegetables and fruits**

About 84% of all transaction volume of fruits and vegetables at Bakau Huni Port from Sumatra to Java are not graded or packaged, and are just loaded on trucks. Only 16% of them are packed in the wooden box, basket, carton and sack (JICA Study, Oct. 2011).

At farmer's level, the treatment method of banana is primitive. Banana is picked up sometimes even in damaged conditions. Therefore, it becomes rotten when it arrives at Jakarta. Even at collector's level, there is less sorting and grading just as at the farmers level.

**3) High quality banana marketing**

There are two specific types of marketing system on the high quality banana shown below. In both cases, the packaged banana are sold to hyper-, mini- and super market in an extremely high price around Rp10,000 - 15,000/kg.

a. Case 1: Farmers group which has been organized in Pesawaran Regency on their own initiatives supported by Provincial Lanpung and Pesawaran regency government

**Photograph Banana collection center in Padang Cermin District, Pesawaran Regency**

b. Case 2: Farmers or collectors who transport the raw products of banana with packaging to sell to the processors with/cold chain system in Jakarta

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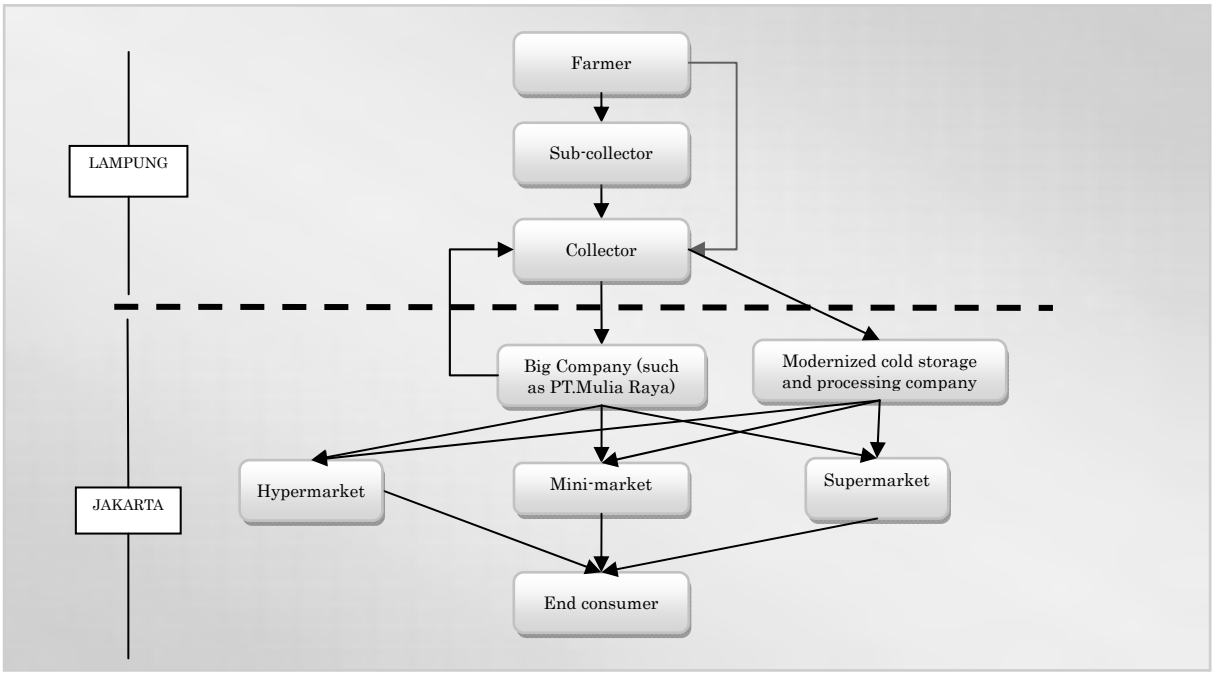



Source: JICA Study Team

**Figure Marketing System of Packaged Banana from Farm Gate in Lampung to End Consumer in Jakarta**

**4) Pricing mechanism**

The farm gate price is determined by prior agreement between a collector and a wholesaler in Kramat Jati or in other outside markets in Jakarta.

## 2.4 Overall Strategy of New TA Development in Lampung Province

### 2.4.2 Roles and Functions of the New TA in Lampung Province

(1) Quality improvement of fruits from Sumatra to Jawa island to meet rapid growth of demand for high quality fruits in DKI Jakarta

(2) Establishment of Lampung model for realization of PERDA8

(3) Modernization of fruits marketing system as well as improvement of conventional marketing system of fruits

(4) Acceleration of farmers organized involvement on quality improvement of fruits and diversification of food production to increase farmers income

(5) Diversification of wholesale function to the outside of DKI Jakarta for consumers of DKI Jakarta

### 2.4.3 Improved Marketing System by New TA in Lampung Province

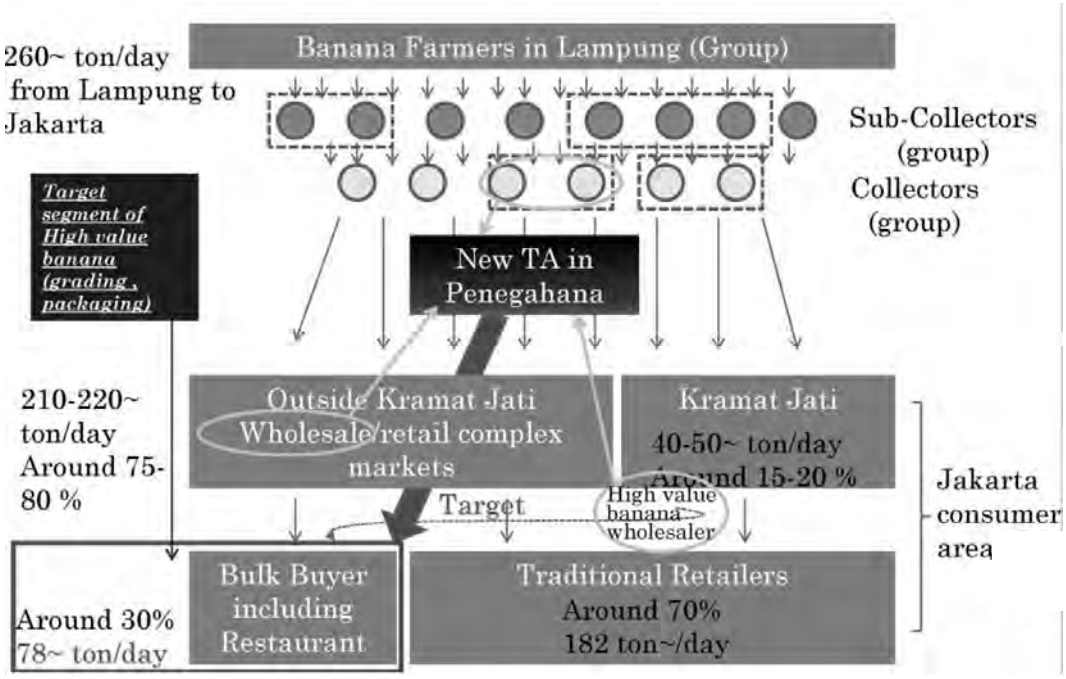
**(1) Potential Target Volume of New TA**

Some 550 ton/day of fruits and vegetables distributed from Lampung Province to DKI Jakarta in 2011 can be considered as the potential target of the new TA, and 260 ton/day out of total 550 ton/day is banana.

**(2) New marketing system with new TA project**

In the initial (short-term) step: Focusing on highly quality banana

Some farmers, sub-collectors and/or collectors will be organized under the marketing system, and the collected banana will be transported to the new TA, especially for quality improvement. It will be initially around 80 tons of high quality banana distribution.




Source: JICA Study Team

**Figure New Marketing System of Banana**

**(3) Stage-wise development**

1) Short –term (Initial step) of target volume

- Target commodity is high value banana (graded, packaged), which is around 80ton/day (approx. 30% of 260 ton/day) from Lampung to Jakarta in 2011 (and more considering the estimation in 2015), because the value of processed banana is high.
- Collectors in Lampung and wholesalers in the diversified complex wholesale/retail markets in Jakarta are the expected target wholesalers in the new TA.
- It takes several years as initial trial-operation stage to attract these stakeholders after commencement of the new TA operation.

2) Mid-term target volume

- Once the above initial operation is activated, other flows of banana, corresponding to 70% of total banana dealing volumes, can be expected to be accommodated in this new TA.
- In addition, other fruits and vegetables can also be attracted to this new TA.

3) Long-term target volume

Marketing products of New TA will be expanded to not only to all products from Lampung but also from other provinces of Sumatra to DKI Jakarta.

### 2.4.4 Target Products and Planned Handling Volume of the New TA in Lampung Province

The major items of the target commodity handled by the new TA will be banana, durian, watermelon, papaya, jackfruit, fresh coconut, and a few types of vegetable (red onion, cabbage), which are

produced in Lampung Province.
Regarding the distribution volume from Lampung Province to DKI Jakarta through Bakau Heni Port, which is directly related to the new TA, “500 ton/day” is used as an average value in 2011, considering the statistic surplus volume of horticulture in Lampung Province in 2009 and the result of O/D survey at Bakau Heni Port in 2011.

Based upon the total average distribution volume of 500 ton/day in 2011, it is calculated that “780 ton/day in 2015” (500×1,727/1,102=783.5→780) and “920 ton/day in 2025” (500×2,023/1,102= 917.8 →920) as the estimated distribution volumes from Lampung Province to DKI Jakarta through Bakau Heni Port.

To determine the total capacity of the new TA facilities which will start the operation in 2015, out of the major commodities in 2015 shown above, the commodities for which value addition cannot be expected, i.e. durian, watermelon, jackfruit, and fresh coconut, will be excluded from the estimation of planned handling volume of the new TA. Thus, 510 ton/day and its breakdown shown in the following table will be recommended as the planned average handling volume of the new TA.

This daily planned handling volume of 510 ton/day would be achieved around 2020, six years after the commencement of new TA operation (Refer to 2.5.8).

**Table Planned Average Handling Volume of new TA**

| Item | | Planned handling volume (ton/day) |
|---|---|---|
| 1 | Banana | 386 |
| 2 | Durian | 0 |
| 3 | Watermelon | 0 |
| 4 | Papaya | 31 |
| 5 | Jackfruit | 0 |
| 6 | Other fruits | 41 |
| 7 | Fresh coconut | 0 |
| 8 | Red onion | 7 |
| 9 | Cabbage | 7 |
| 10 | Other vegetable | 25 |
| 11 | Others | 13 |
| | Total | 510 |

Source: JICA Study Team

## 2.5 The Project

### 2.5.2 Facilities and Equipment Planning

#### (1) Facilities Plan

#### 1) Main components of the market facilities

**Table Main components of the market facilities**

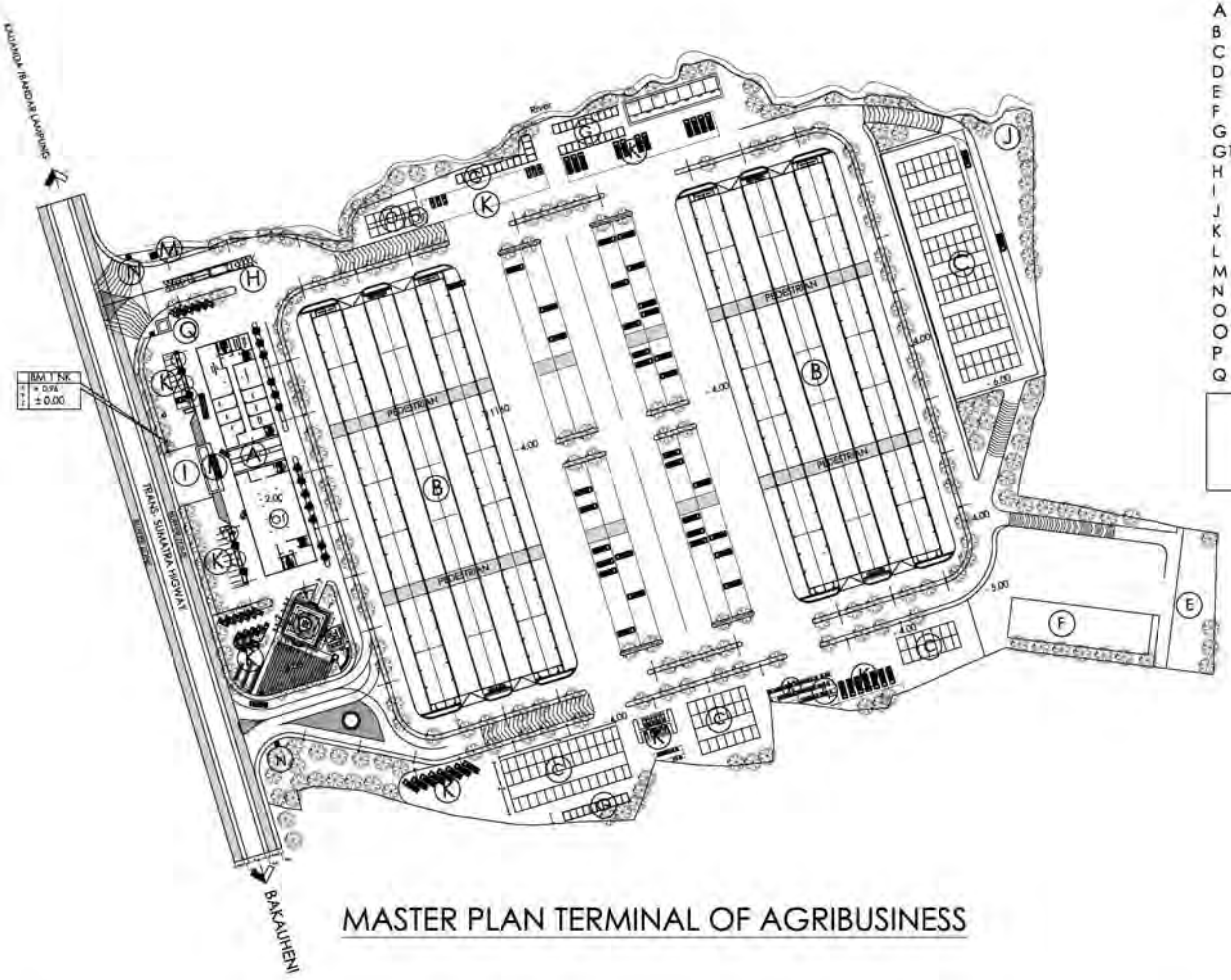
| Item | | Function | | | | | Remarks |
|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | |
| 1 | Marketing Hall – Type 1 (specialized hall for banana wholesaling) | ○ | | | | | Hall, Unloading/Loading Space, hall road, Packaging Material St (mezzanine), Public Toilet, Machine room (pump/panel) |
| 2 | Marketing Hall – Type 2 (hall for the other horticulture wholesaling) | ○ | | | | | Ditto |
| 3 | Storage | ○ | ○ | | | | Wholesalers’ St, Cold St, Equipment St, Workshop |
| 4 | Administration Center (multi-functional facilities) | | ○ | ○ | ○ | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | - Administration Office | | ○ | | | | Including First Aid, Machine room (pump/panel), Water Supply (well, reservoir, elevated water tank) |
| | - Food Inspection Laboratory | | ○ | | | | |
| | - Conference/Seminar Room | | ○ | | ○ | | |
| | - Canteen | | | ○ | | | With Public Toilet |
| | - Shops | | | ○ | | | |
| | - Banks | | | ○ | | | |
| 5 | Electric Power Station | | | | | ○ | Incoming panel, Transformer, Distribution Panel, Generator |
| 6 | Water supply facilities | | | | | ○ | Deep wells, Reservoir, Elevated water tank |
| 7 | Waste Water Treatment Plant | | | | | ○ | Separated plant system for each main building |
| 8 | Seepage Pond | | | | | ○ | For rainwater and processed water from the waste water treatment plant/ Overflow to the nearest stream |
| 9 | Garbage Collection Yard | | | | | ○ | with garbage recycling facilities |
| 10 | Truck berth | ○ | | | | | (paved) |
| 11 | Bus berth/Parking | ○ | | | | | (paved) |
| 12 | Perimeter Road | ○ | | | | | (paved, street light) |
| 13 | Entrance Gate | | ○ | | | | (paved, weight-bridge) with weight-bridge |
| 14 | Exit Gate | | ○ | | | | |
| 15 | Guards Box | | ○ | | | | |
| 16 | Accommodation facilities | | | ○ | | | with minimum and optimum number of accommodation unit |
| 17 | Mosque | | | ○ | | | |
| 18 | Fence | | ○ | | | | |
| | | | | | | | |

Note: Categories from A to E mean the following function.
A = Distribution, B = Management/Operation, C = Supporting, D = Education, E = Utilities/Maintenance
Source: JICA Study Team

### 2) Facilities plan

The facilities layout plan is shown in the next page, and the other detailed drawings of the buildings are shown in the Annex- 3.




LEGEND

| | |
|---|---|
| A | ADMINISTRATION CENTRE |
| B | MARKETING HALL 1 |
| C | MARKETING HALL 2 |
| D | MOSQUE |
| E | GARBAGE COLLETION/RECYCLING FACILITIES |
| F | WORKSHOP |
| G | STORAGE |
| G1 | COLD STORAGE |
| H | TRUCK SCALE |
| I | FIELD |
| J | SEWAGE POND |
| K | PARKING |
| L | RESERVOIR |
| M | ELECTRIC POWER STATION |
| N | GATE |
| O | ACCOMMODATION |
| O1 | CANTEEN |
| P | BUS STOP |
| Q | GUARDS BOX |

total module 107
total booth 642

NORTH

0 50 M 100 M

# MASTER PLAN TERMINAL OF AGRIBUSINESS

| DISTRIBUTION MECHANISM REFORM THROUGH DEVELOPMENT OF WHOLESALE MARKET (Improvement of Post Harvest Handling and Marketing Facilities) (Agriculture) | BLOCK PLAN | MASTER PLAN OPTION 1 | SCALE | NO | NOTE |
|---|---|---|---|---|---|
| | | | | 01 | |

**(2) Equipment Plan**

For adopting the new TA concept, the equipment for controlling the quality and ensuring the safety of agricultural products, and the equipment for new handling system of agricultural products such as banana and etc., are planned.

1) Equipment for controlling the quality and ensuring the safety of agricultural products

The equipment for quality inspection and labeling system for traceability of agricultural products in accordance with "PERDA8/2004" are as follows;

a) Quality inspection equipment for analyzing agro-chemical residues, mycotoxin, heavy metals and microbiological assay

Gas chromatography mass spectrometer, Atomic absorption spectrophotometer, Spectrophotometer, High speed liquid chromatography, Rotary evaporator, Microwave, Ultrapure water equipment, Water purify apparatus, Electric balance, Shaker, Magnetic stirrer, Homogenizer, Oven, Constant temperature water bath, Aspirator, Draft chamber, Lamina flow, General laboratory equipment

b) Equipment for traceability of agriculture products
Computer with Internet connection, Laser printer, Label printer

2) Equipment for new handling system
Pickup truck, Motor cycle, 4WD vehicle, Wheel roader, Pallet, High pressure washer

### 2.5.4 Overall Project Cost

The overall project cost is estimated to be approximately Rp. 168 billion (approx. Japanese ¥ 1.5 billion).

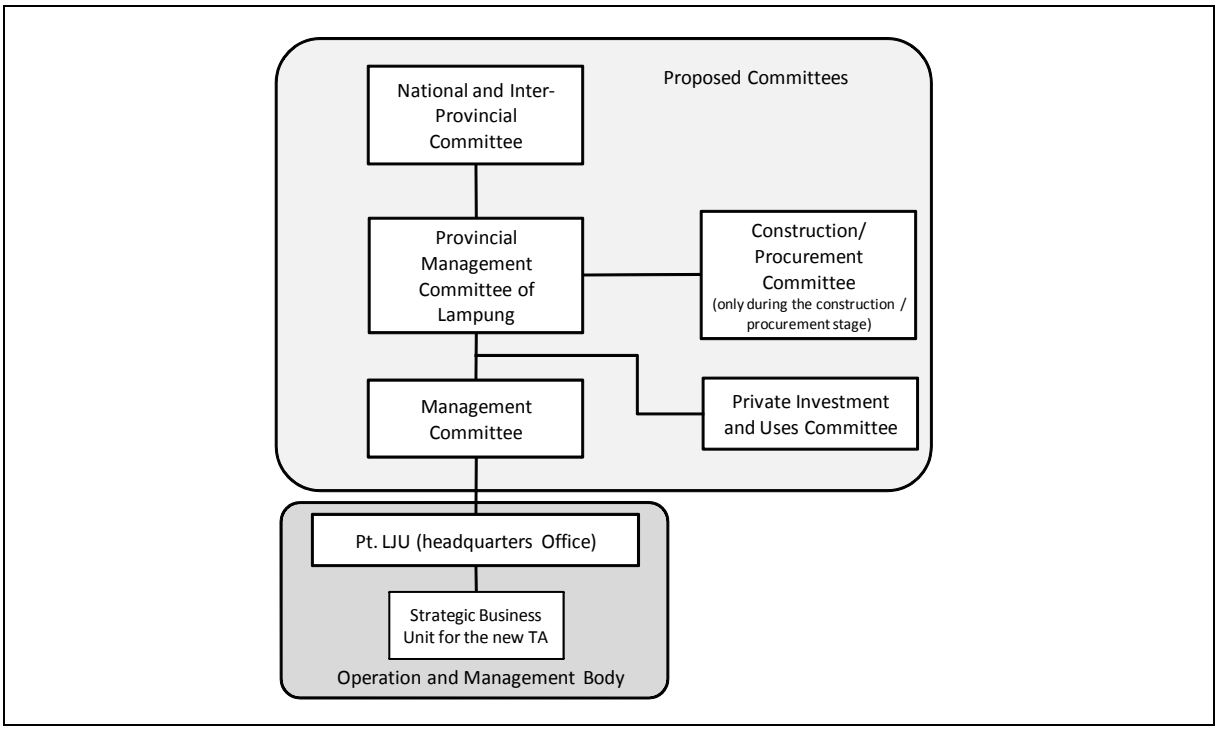
### 2.5.5 Project Implementation Schedule

It will take about 10 months for the EIA related matters and eight months for the implementation design on TA facilities before the construction of TA facilities and equipment procurement. The construction period is estimated to approximately 22 months.

### 2.5.6 Project Implementation Committee

Basically, the institution in charge of the Project is the government of Lampung. In addition, for smooth execution of the Project and active operation of the new TA, several committees will be established at each level in the Central Government and the provincial Government as shown as follows for the project implementation. These committees will function not only during the construction period but also after the commencement of operation except for (5) "Construction/ Procurement Committee."

Relationship among the proposed committees including operation and management body is explained in 2.5.7 is shown in the following figure.




Note: Operation and management body will be explained in next section.
Source: JICA Study Team

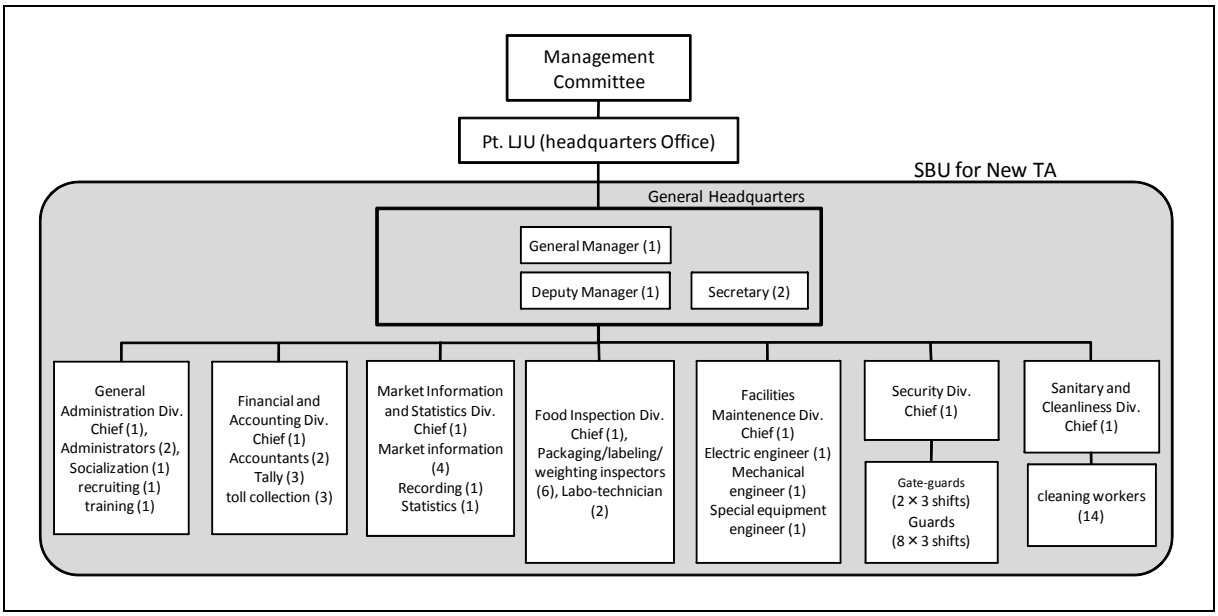
**Figure Proposed Relationship among Committees for the Project**

### 2.5.7 Project Operation and Management Body

Originally, Pt. LJU was established as the operation body for the public projects. It has a headquarters office with 20 staffs (10 permanent, 10 temporary), and it has a schedule to have several SBUs (strategy business units) for each public project. Therefore, one of the SBUs will be in charge of the operation/management of the new TA.

Under the "management committee" shown in 4.7.3, Pt. LJU will conduct operation/management of the new TA shown as follows.

- Implementation of Annual Operation Plan of New TA
- Dissemination for the promotion of investment and operation on the new TA
- Technical and financial management of the new TA
- Security and sanitary control




Source: JICA Study Team

**Figure Proposed Organization Chart for New TA Operation/Management**

### 2.5.8 Stage-wise development approach

1) Preparation stage: First half of 2012

   a. Mutual agreement among Lampung provincial government and relevant regencies in Lampung province

   b. Mutual agreement among management body of New TA and users groups such as farmers group /collectors in Lampung province and wholesalers/suppliers in DKI Jakarta through the establishment of the authorized Committee for investment and operation of New TA

   c. Dissemination of the New TA development plan and its information on the possible cost/benefit sharing among investors and users of New TA

   d. Completion of the land expropriation of the project site in Penengahan

   e. Implementation design of the new TA facilities, and preparation for the detailed technical specification of equipment

   f. Procedure of Environmental Impact Assessment, formulation of Environmental Management Plan, and Environmental Monitoring Plan

2) Preparation for construction/procurement and training: Second half of 2012

   a. Tender (building construction/ equipment procurement)

   b. Determination of the source of initial investment

   c. Training of key personnel of the management body on the management/operation of New TA: Administration, new technology on quality and information control, operation/maintenance of the facilities and equipment, financial management

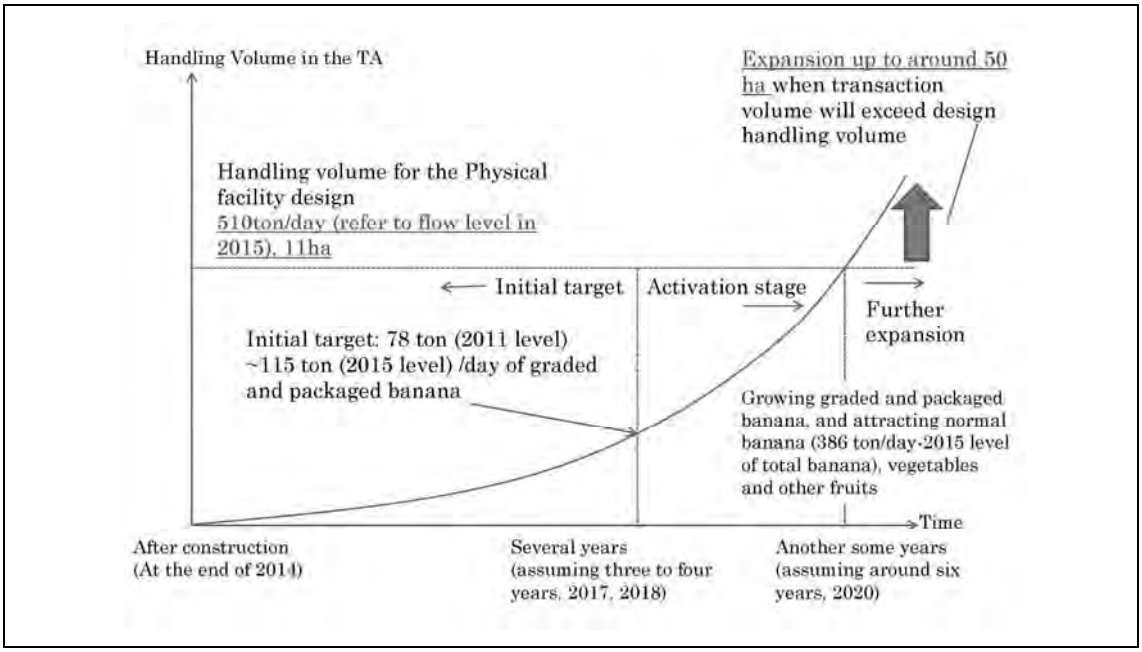
3) Implementation: 2013

   a. Building construction, and equipment procurement

   b. Management and operation: negotiation of potential investors and users

   c. Continuation of training

4) Initial operation: 2015




Source: JICA Study Team

**Figure Image of Development for Handling Volume in the New TA**

### 2.5.9 Necessity of Technical Assistance

In order to operate/manage the new TA sustainably, it is necessary to introduce technical assistance not only on the management issue of TA but also on the technical and financial issues to the operation body as shown below since Lampung Province has no experience on the TA operation.

**Table Proposed Technical Assistance for New TA Operation/Management**

| Item | Contents | Responsible Offices |
|---|---|---|
| 1. Management aspect | | |
| (1) Coordination | Organizing, Linkages with Committees | MOA, relevant provincial governments, PD. Pasar Jaya. |
| (2) Planning (Annual operation plan) | Projection of investors and users demand, Expansion and upgrading of facilities and equipment, Employment, financial source | Wholesale markets in DKI Jakarta and Surabaya, PD. Pasar Jaya |
| (3) Regulation and market control | Fee collection, Control of internal transport, security and facilities/equipment use in the market | |
| (4) Implementation | Success and constraints | |
| (5) Recording and Reporting | Annual TA report, Sector report, Statistics | |
| (6) Monitoring & Supervision | Annual report on activities and information for the preparation of Annual Work Plan to the Committees | |
| 2. Technical aspect | | |
| (1) Quality control | Workshops and individual trainings at New TA, STA, farmers groups and private collectors, wholesalers<br>Technical training for laboratory technicians | MOA, Laboratory in DKI Jakarta, International market, PD. Pasar Jaya |
| (2) Market information system | Price, financial and statistical information: Daily, Monthly and Yearly | MOA, MOT, PD. Pasar Jaya |
| 3. Financial aspect | | |
| (1) Income statement | Revenue (Fee, service charge)<br>Cost (Salary, O&M, Depreciation cost) | Wholesale markets in DKI Jakarta and Surabaya, PD. Pasar Jaya |
| (2) Cash flow | Investment, loan | |

Source: JICA Study Team

## 2.6 Environmental and Social Consideration

According to the Indonesian regulation, the TA construction with more than 5ha in scale (and/or 10,000$m^2$ of the building) is subject to EIA (refer to the government regulation concerning EIA, No.27/1999 and decree of Minister of Environment No.11/2006). Thus, development of TA in Penengahan is subject to Indonesian EIA. Major points to be considered for environmental and social considerations are below.

### (1) Environmental aspect

1) Countermeasure for waste management

According to the TA development design, the planned handling volumes of the vegetables are estimated as 510 ton/day, the majority of which is banana (386 tons). Considering that the bananas are usually delivered with the main stem, the stems are anticipated to become a major waste in the TA. No toxic wastes (heavy metal, (non) halogenated solvents, etc.) are expected by the TA operation. Estimating that around 5-10% of the handling volume of the products will become waste, around 25-50 tons of garbage per day will be disposed. If the TA facility is constructed according to the design proposed in the study, which considers the garbage contents and quantity, no particular problem is anticipated from the environmental consideration viewpoint. The management system must be well planned accordingly. In addition, it is recommended for the TA development to make efforts to enlarge such a system as an essential component in the facility when the extension of the TA site is planned in the future, although the TA is planned to be equipped with "Compost preparation area" capable for handling one ton daily for the present scale.

2) Waste water treatment

According to the relevant provincial regulation, the water discharged from TA operation will be under category of "domestic waste water." In the proposed plan, it is designed to build a wastewater treatment facility, which is capable to treat the discharged water estimated by the TA operation, and fulfills the standard. If the facility is built according to the plan and operated properly, negative impact will be eliminated.

3) Traffic and noise

Although the increase of traffic is expected from the TA operation due to product delivery trucks, garbage collection trucks, and so forth, the impact will be minimum as the proposed TA locates along with the main artery with heavy traffic now.

### (2) Social aspect

The land procurement process of Penengahan site has been in process by the Lampung province after confirmation letter by the Governor to secure the budget for land procurement in October 2010.

Although the negotiation for land acquisition is still in process with some difficulties, it is evaluated that the process is going on with proper social consideration to avoid negative impact of the project. With this in mind, it is recommended that a regular monitoring be in place even after the completion of land acquisition, including a practical strategy in the environmental monitoring plan.

### (3) Schedule estimated for EIA clearance

In order to complete all the process, including the implementation of EIA survey, it is estimated to take around 10 months for clearing all the process of EIA starting from selection of consultant to receipt of final approval. Accordingly, in order to complete the Detailed Design by the end of December 2012, for example, it is recommended to start selection of consultant as early as in January 2012.

(4) Environmental Management Plan (RKL) and Environmental Monitoring Plan (RPL)

According to the Indonesian regulation, the Environmental Management Plan to manage the anticipated impact identified in the EIA report must be prepared. Similarly, Environmental Monitoring plan to assess the validity of the management plan must also be prepared.

The developer (Lampung provincial government with DINAS agriculture) and operator (private company provisionally) is obliged to prepare RKL that will be used as a reference to the management of environment, and RPL to make sure to prevent the environmental impact due to operation. It is recommended to assign an environmental officer who is in charge of handling the supervision of the all process of management and monitoring activities and documentation.

## 2.7 Project Evaluation

### 2.7.1 Economic Evaluation

Economic evaluation was performed to determine the economic viability of the Project. In order to examine the proposed Project plan, internal rate of return was calculated. All detailed calculation methods and results are shown in Appendices-7, and the result of the examination is summarized below.

#### (1) Basic Assumptions

The following conditions were assumed for the evaluation:

a) Project life is 20 years, b) Project cost is calculated in Indonesian Rupiah (Rp.) currency as of the end of October 2011, c) In order to convert the financial project cost to economic project cost, the standard conversion factor is used as 0.9 by referring to other projects. d) Price contingency, tax, land acquisition, and other transfer payments are excluded from the economic cost.

#### (2) Economic Project Cost

1) Capital Cost

The economic capital cost was calculated by converting the financial capital cost and is summarized in the following table.

**Table Financial and Economic Project Cost**

Unit: million Rp

| Component | | Financial | Economic |
|---|---|---|---|
| A | Preparation and land clearing works | 11,068 | 9,961 |
| B | Building | | |
| 1 | Wholesale market construction | 57,884 | 52,096 |
| 2 | Administration office construction | 12,214 | 10,993 |
| 3 | Warehouse storage | 1,005 | 905 |
| 4 | Cold storage | 717 | 645 |
| 5 | Workshop wooden crate | 1,983 | 1,785 |
| 6 | Canteens and accommodation | 1,166 | 1,049 |
| 7 | Mosque construction | 739 | 665 |
| 8 | Truck scale | 557 | 501 |
| C | Electric power supply system | 2,278 | 2,050 |
| D | Plumbing works | 13,867 | 12,480 |
| E | Road, parking, fence, landscaping | 18,626 | 16,763 |
| F | Building equipment | 3,835 | 3,452 |
| G | Other equipment | 11,179 | 10,061 |
| Total construction | | 137,117 | 123,405 |
| Consultant services for detailed design | | 3,730 | 3,357 |
| Consultant services for supervision | | 2,441 | 2,197 |
| Administration project | | 795 | 716 |
| General construction and consultant services | | 144,083 | 129,675 |
| PPN (10%) | | 14,408 | - |
| Land Acquisition Cost | | 10,055 | - |
| **TOTAL** | | 168,546 | 129,675 |

Note: Tax and land acquisition cost are excluded from economic cost due to transfer payment.
Source: JICA Study Team

2) Annual Operation and Maintenance (O&M), and Replacement Cost

Annual O&M and replacement costs are converted to the economic value. The monthly O/M is summarized in the following table.

**Table Financial and Economic O&M and Replacement Cost**

Unit: million Rp

| | Financial | Economic |
|---|---|---|
| Annual Operation and Maintenance Cost (per month) | | |
| Sub-total | 687 | 450 |
| Replacement Cost | | |
| Other equipment (once in 10 years) | 11,179 | 10,061 |

Source: JICA Study Team

3) Payment Schedule

The payment schedule of the project cost was examined as per project implementation schedule, and is shown in table below.

**Table Payment Schedule of the Economic Project Cost**

Unit: million Rp

| No | Description of project activity | Project cost | Payment schedule | | | |
|---|---|---|---|---|---|---|
| | | | FY 2012 | FY 2013 | FY 2014 | FY 2015 |
| 1 | Detail design consultant | 3,357 | 3,357 | | | |
| 2 | Supervision consultant | 2,197 | | 999 | 1,198 | |
| 3 | Construction | 113,344 | | 48,944 | 58,733 | 5,667 |
| 4 | Procurement of other equipment | 10,061 | | | 10,061 | |
| 5 | Project administration | 716 | 151 | 226 | 226 | 114 |
| Total | | 129,675 | 3,508 | 50,169 | 70,218 | 5,781 |

Source: JICA Study Team

### (3) Economic Project Benefits

The economic benefit of the project is improving the efficiency in the distribution flow of horticulture products. For evaluation, the economic benefits are quantified and expressed in monetary terms. The following table shows the quantified economic project benefits (for details refer Appendices-7).

**Table Economic Benefits**

Unit: million Rp.

| Economic Benefit | Explanation | Quantified Benefit |
|---|---|---|
| Reduction of damage loss | Introduce grading and packaging process that reduces loss and damage. | 12,173/year |
| Time saving | Time in distribution flow is saved, especially at the level of collectors. | 689/year |
| Compost production | Compost is produced with the project instead of dumping the wastes without the project. Compost produced has economic benefit. | 197/year |
| Quality improvement from high value banana | Quality of some of banana handled in the new TA will be greatly improved because of the cooling process with the Project. This improvement is an economic benefit. | 13,930/year |
| Waste Reduction in Jakarta | Waste currently generated in Jakarta will instead be generated in Lampung province; thus the difference in cost (value) in waste treatment between Jakarta and Lampung is an economic benefit. | 4,320/assumed every lifetime of landfill |

Note: As economic benefit, only banana is used. The major reason is that planned handling volume of banana occupies 76% of total planned handling volume and is considered a major benefit for the Project.
Source: JICA Study Team, refer to Table A7-1, Appendices-7

### (4) Economic Internal Rate of Return (EIRR)

The EIRR is calculated with the Net Present Value at a discount rate of 9 percent; the results (including the B/C ratio) are shown in table below. (for details refer Appendices-7).

**Table Economic IRR and Net Present Value Analysis**

| Economic IRR | | | |
|---|---|---|---|
| 9.8% | | | |
| Net Present Value at 9% Discount Rate (Million Rp.) | | | |
| Cost | Benefit | Balance | B/C |
| 146,578 | 152,695 | 6,117 | 1.04 |

Source: JICA Study Team, refer to Table A7-2, Appendices-7

## 2.7.2 Financial Evaluation

Financial viability of the project is also evaluated from the viewpoint of business entity and the national economy. The financial evaluations thus evaluated on the project implementation and the operation and management system for the new TA are delineated below

### (1) Management Body

The basic assumption is that initial capital investment for construction is from the provincial government. PT. Lampung Jasa Utama (LJU) which is funded (100%) by the provincial government has been proposed to handle the operation and management of the new TA. LJU shall establish a strategic business unit (SBU) specifically for operation and management of the new TA. This unit is expected to run the TA in a financially sustainable manner. Therefore, an analysis of annual budget was made to see whether the management body could sustainably operate and manage the new TA from the viewpoint of revenue and expenditure.

1) Annual Income and Expenditure

Major income source is from the collection of several users fees of the TA. Expenditure is staff salary, electricity, garbage treatment, etc. Annual budget (income and expenditure) when in full operation is expected as shown below.

**Table Annual income and Expenditure of SBU in PT.LJU for TA**

| Expected Revenue | Unit | Number | |
|---|---|---|---|
| Rental fee of booth | 400,000 Rp/$m^2$ for one year | 15,053 $m^2$ of total net stocking area | 6,021 million Rp/year |
| Fee for weight | 30 Rp/kg | 510 ton/day of total transaction | 5,585 million Rp/year |
| Car parking fee | 2,000 Rp/car (assuming 3 ton pick up truck from farms) | 170 cars/day | 124 million Rp/year |
| | 3,000 Rp/car (assuming 6 ton truck to Jakarta) | 85 cars/day | 93 million Rp/year |
| Necessary electricity charge | 1,000 $m^2$/day | 15,053 $m^2$ of total net stocking area | 5,494 million Rp/year |
| Compost sales | 600 Rp/kg | 365 ton/year | 219 million Rp/year |
| **Total revenue** | | | **17,536 million Rp/year** |
| Expected Expenditure | | | |
| Operation and Maintenance Cost | | | |
| Electricity | 347 million Rp/month | | 4,164 million Rp/year |
| Generator | 46 million Rp/month | | 552 million Rp/year |
| Salary | 187 million Rp/month | | 2,244 million Rp/year |
| Garbage | 83 million Rp/month | | 996 million Rp/year |
| Other maintenance and mis. | 24 million Rp/month | | 288 million Rp/year |
| Sub-total | | | 8,244 million Rp/year |
| Depreciation | | | |
| Physical Structure | 114,870 million Rp excluding preparatory works | 25 years of life | 4,595 million Rp/year |
| Other equipment | 11,179 million Rp | 10 years of life | 1,118 million Rp/year |
| Sub-total | | | 5,713 million Rp/year |
| **Total expenditure** | | | **13,957 million Rp/year** |

Source: JICA Study Team

The preliminary examination shows the operation and management of the TA could be financially sustainable, including the salary of proposed number of staffs. However, the anticipated income could

be realized only when the planned transaction volumes are handled and all expected wholesalers conduct their business in the TA. Hence, it is important to take necessary measures to attract current collectors, wholesalers, etc. to the TA, such as socialization and advertisement. It would also be a good idea to attract potential wholesalers by discounting rental charges for first or second year as a promotion until their business become profitable. Additionally it requires training of the staff of the management body to operate the TA in a proper manner.

2) Initial Investment

Primarily, the initial investment for the Project is proposed to be prepared from APBN (national budget) or APBD (provincial budget). If so, this initial investment may not be really necessary to be collected back. This principle affects especially to set up rental booth fee. The above calculation considers depreciation, and then rental fee of booth is 400,000 Rp/$m^2$/year. If depreciation is not considered, rental fee can be reduced so that more potential users can be attracted.

On the other hand, if investors are required for preparation of initial investment, rental booth fee must be higher than the current figure. This is a trade-off judgment. At this moment, it is recommended to think more on users at the initial stage (namely low rental fee of booth) to attract wholesalers. Once the TA gets active, rental fee can be raised. As an example of private investment, when the physical capacity of the current design of the TA becomes full, investors can be invited for further expansion like PIKJ's renovation/expansion in 2003 done by a private investor.

### (2) Wholesaler

Wholesalers are important stakeholders in the TA whose business activity is a source of income revenue. In absence of their activity, the operation and management of the TA cannot be sustained due to lack of operational fund. Therefore, it is necessary to appeal and attract wholesalers business. Since the major commodity handled is banana, a budget analysis of a typical banana wholesaler is examined and shown below (for details refer Appendices-7).

**Table Annual Budget Analysis of Typical Banana Wholesaler**

| Item | Detail |
|---|---|
| Gross sales income | 233 boxes/day * 70,000 Rp/box = 16,310,000 Rp/day |
| Cost of sales | 233 boxes/day * 61,250 Rp/box = 14,271,250 Rp/day |
| Net Sales Profit | Balance of 2,038,750 Rp/day * 365 days = 744 million Rp/year/wholesaler |
| Cost for the TA | Payment for several fees: 157 million Rp/year/wholesaler |
| Net Benefit | 587 million Rp/year/wholesaler |

Note: Assumption each wholesaler uses one module (one module has 6 banana-booths that includes washing, grading, and packaging; 1 booth=24$m^2$, 1 module= 144$m^2$).
Source: JICA Study Team; for details refer to Table A7-4 Appendices-7

So typical wholesalers of banana in the new TA can earn sufficient profit (benefit) from their business. However, this model can be gainful or feasible only when all the planned conditions are fulfilled; hence, supporting activities to this TA are important. Additionally, the other wholesalers for vegetables are not many and their benefits are smaller than banana wholesalers; thus differences in fees structure have to be examined.

## 3 Improvement of Operation and Management of Three STAs

### (1) STA Mantung

#### 1) Reinforcement of market information delivery function to relevant stakeholders

It is necessary to strengthen the following functions relating to market information.

- Daily data collection, management and delivery of the farm-yard prices in the surrounding area, wholesale prices in the STA and wholesale prices in the TA in the consumption area.
- Data collection, management and delivery of the volumes of demands handled by wholesalers in the STA, vegetable production in the surrounding area in each month, demands in the consumption area,

such as demands at major customers/distributors and TAs.

The data should be delivered by ① SMS by dedicated mobile phone (public announcement of the mobile number will be needed) or ②website (for customers in wider area).

**2) Reinforcement of the collection of fees**

Collection of booth rental fee and vehicle fee at the gate exit should be reinforced.

**3) Improvement of the method of waste treatment**

A waste yard should be set up in an area within the premises that is easily accessible by truck. Waste vegetables that farmers do not take home should be stored in the yard and treated in accordance with legal requirements in cooperation with the government authority in charge of waste management, as necessary.

**4) Reinforcement of market operation and management capability of the staff in relation to the above-mentioned items**

With respect to the reinforcement of market information delivery function, the staff should be trained in the method of collecting and delivering information and creating website. As for the reinforcement of the collection of fees, it is proposed to organize tours to private wholesale markets to observe the method of fee collection and regarding the improvement of the method of waste treatment, formulation of rules for the staff and raising the awareness of people working in/using the market as well as organizing tours to other markets to observe the method of waste treatment are proposed.

**(2) STA Saribudolok**

**1) Establishment of new management structure**

Following the example of STA Mantung, the UPTD should be set up and permanently-stationed staff should be sent for operational management. Aiming to make it a market like the STA Mantung, which is used as a wholesale market of local agricultural products, wholesalers should be encouraged to use the facility so that the facility can be operated around the clock throughout the year. The Wednesday market should be incorporated into the new structure.

**2) Administrator' s role**

The UPTD should carry out delivery of market information (on prices and demands) (on mobile phones for the time being) in addition to general market operation, such as collecting fees, cleaning of the premises, waste treatment, and ensuring security within the premises.

**3) Facility improvement**

As a first step, wholesale booths should be installed in the roofed space and a gate and a fee collection station should be provided at the entrance. Once they are used and when it is determined that there is a demand for additional facilities, additional booths should be set up in the open space in the next step.

**4) Revenues and expenditures**

Considering the scale of vegetable production in the surrounding area and the small size of the STA, the booth usage fee and the entry fee should be the source of revenues. The amount of the fees has to be decided based on an agreement with the products collectors in the surrounding area.

With respect to the expenditures, the Regency should pay the operating staff and efforts should be made to cover the operating costs with the revenues.

**5） Socialization**

First, this operational improvement plan should be explained to the market players (farmers and wholesalers who are potential users). Once the wholesalers become part of the STA and the operation is set on its way, a promotional campaign should be carried out to inform assumed consumption areas of this STA, thereby further increasing the buyers.

**(3) STA Pattapang (Malino)**

**1) New management structure**

This STA should be operated and managed by the existing operator, namely, PERUSDA Public Corporation. Aiming to become a market like the STA Mantung, which is used as a wholesale market of local agricultural products, wholesalers should be encouraged to use the facility so that it can be operated around the clock throughout the year.

**2) Administrator's role**

PERUSDA Public Corporation should carry out delivery of market information (prices, demands) (by mobile phone for the time being) in addition to general market operation, such as collecting fees, cleaning of the premises and waste treatment and ensuring security within the premises.

**3) Facility improvement**

A total of eight booths should be installed in the roofed space to be used by wholesalers.

**4) Revenues and expenditures**

Considering the scale of vegetable production in the surrounding area and the small size of this STA, the booth usage fee should be the only source of revenue. The amount should be decided based on an agreement with the products collectors in the surrounding area.

With respect to the expenditures, the Regency should pay the operating staff and efforts should be made to cover the operating costs with the revenues.

**5）Socialization**

As is the case with STA Saribudolok, this operational improvement plan should be explained first to the market players (farmers and wholesalers who are potential users). Once the wholesalers become part of the STA and the operation is set on its way, a promotional campaign should be carried out to inform assumed consumption areas of this STA, thereby further increasing the buyers.

# 4 Conclusion and Recommendation

## 4.1 Conclusion

### 4.1.1 TA Development in Lampung Province

**(1) Selection of New TA Site in Lampung province**

Penengahan is selected among three candidate sites, as a project site for feasibility study on the new TA in Lampung Province by the Indonesian side, through a process of confirming government/ and provincial policies relevant to TA development, trading areas/distribution network, needs survey to stakeholders on the new TA.

**(2) Significance and Major role of New TA in Lampung Province:**

The new TA in Lampung Province will have a function of transaction point for fruits and vegetables to be inter-regionally distributed from Lampung Province to DKI Jakarta. It will have a unique characteristic, wherein the functions of TA and STA are mixed, because its closeness to the production areas in Lampung Province; on the contrary, the existing TAs is located at the center of large consumption areas. Furthermore, it will also function as a part of STA and/or private collection centers because its location is close to the production areas of fruits in Lampung Province.

**(3) Major target products and function of New TA**

1) Total distribution volume in 2011 is less than 1,500 tons/day of fruits and vegetables, mainly fruits being distributed inter-regionally between Sumatra and the Jawa Islands. Among the potential volume that will be transacted through New TA, products with higher possibility are emphasized in the distribution from Lampung to DKI JKT. Among the products, banana is the highest potential product to be transacted at New TA and followed by watermelon and papaya.

2) In recent years, consumer demand for high quality fruits and vegetables in DKI JKT and imports of fruits have increased rapidly. In spite of this situation, there is a slow growth in modernization of traditional marketing system. New TA is anticipated to improve products quality and to establish an effective/efficient new marketing system.

Therefore, this new TA can be a model of modern inter-regional marketing system to contributing quality improvement and reducing waste in Jakarta (in the context of PERDA8 of DKI Jakarta).

There are two types of major beneficiaries of New TA. One is farmers and collectors of Lampung province, and the other is wholesalers and bulk-buyers in DKI JKT. Strengthening of linkage is indispensable for better functioning of New TA among various types of stakeholders as mentioned above.

**(4) Risks and issues for better functioning of New TA**

Several years will be necessary to reach a profitable operation after the commencement of New TA. Continuous effort and coordination are required among the relevant management authorities and stakeholders in order for them to receive adequate benefit as evidenced in the past of private sector wholesale markets.

The following issues should be taken into consideration to reduce the ßabove-mentioned risks.

1) Lack of attractive services to attract/recruit stakeholders such as farmers, collectors and wholesalers
2) Lack of coordination among related persons/groups of stakeholders
3) Less understanding on the new TA by stakeholders through the provision of the clear-cut New TA Development Plan and its physical/management design
4) No experience on TA management by Lampung provincial government and management body, LJU

**(5) Impact of Sunda Strait Bridge Project**

With the Sunda Strait bridge completed (Refer to 2.2.2 (1)), the vehicles using the bridge would be passenger vehicles and cargo-trucks transporting high value-added products that can afford to pay toll charges considering the cost-effectiveness of the bridge. Hence, this planned bridge will have positive impacts on the new TA rather than any negative impact shown as follows.

a) Positive Impacts

The new TA will play a significant role when the bridge is in place, specifically providing value-addition on horticulture products, as mentioned below.

- Movement/transport of target horticulture products handled in the new TA shall shift from existing ferry service to the bridge.

  High value-added products in the new TA, such as banana, papaya and other fruits, will be transported using the strait bridge. Accordingly, value-addition of new TA is significantly noted.

- Target horticulture products handled in the new TA without shifting from existing ferry transportation to bridge

  Other commodities, such as watermelon, jackfruit, and fresh coconut, to which high value-addition is not be expected, will be transported using ferry-boat from Bakau Heni Port to avoid expensive toll charges of strait bridge.

- Other expected impact

  Lampung Province has a strategy to utilize the new TA as a hub of comprehensive development in eastern/southern Lampung. The bridge will also serve to transport other high value-added agricultural products. The traders will be expected to use the new TA for its service of value-addition.

b) Negative Impacts

If the quality control system in the production areas is strengthened, high quality products can be realized and transported from production areas (STAs or collection centers) to Jawa Island directly using the strait bridge. This situation is ideal for horticulture production in Lampung Province. But, such a drastic change in the production areas cannot be realized in short time. The reason is the production areas of horticulture products in Lampung, especially for banana, are scattered and small. The new TA still has to play a significant role in value addition in the production areas.

### 4.1.2 Improvement of Operation and Management of Three STAs

Target three STAs can be categorized into two groups in general, namely a good-example group and a group to need improvements in terms of their operation and management. Out of three, only one STA (STA Mantung) is in the good example group, and the rest of two (STA Saribudolok and STA Pattapang) are in the latter group. According to the data[1] of MOA, STAs, which are judged as well-functioned ones, are not so many. The three STAs visited showed the differences in their ideal functions and roles that depend on the responsible institutions charged with development, operation and management. As discussed in the STAs, STA Mantung is properly working as "typical wholesale market" with the facilities designed exactly for wholesale market. On the other hand, the other two STAs seem not to be intended as "typical wholesale market" judging from the facility design.

Improvement plans are proposed for each STA depending upon the site specific conditions. Especially for two STAs in the latter group, the plans focus on how to get started for activation, based on the theoretical understanding of STA with minor modifications on facilities.

## 4.2 Recommendation

### 4.2.1 TA Development in Lampung Province

(1) Way of reducing risks of New TA operation

1) In the proposed plan, initial target (80 ton/day of packaged and graded banana) and physical handling volume (510 ton/day for 11ha) are set at reasonably conservative quantity, and a step-wise development approach is proposed. Once the handling volume becomes larger, expansion can be considered up to 50 ha as a next step.
2) From operational and management viewpoint, the proposed committees are recommended to be organized and to coordinate actions among all the related stakeholders, including initial efforts to attract the wholesalers of New TA through dissemination of advertisement and socialization.
3) In addition, mutual understandings and organizing of farmers group and collectors in Lampung and wholesalers in DKI Jakarta is advisable to enhance the utilization of the new TA and to expect quality improvement.

(2) Technical training

Technical training of key personnel of management body on the way of management and operation of New TA is indispensable on the following aspects.

In order to operate/manage the new TA sustainably, it is necessary for the MOA and agencies concerned in Lampung and DKI Jakarta provinces to provide technical assistance not only on the management issue of TA but also on technical and the financial issues in the following fields.

1) Management aspect:
   a. To organize the Committees and Management Body for New TA and to coordinate among relevant agencies,
   b. To make annual plan, formulate the regulation, implement operation, record/report regularly, monitor/supervise the operation, and maintain the New TA management.

[1] The detailed planning survey report (Database Sarana dan Kelembagaan Pasar 2009, Directorate Pemasaran Domestic, MOA)

2) Technical aspect:

a. To conduct trainings and to hold workshops on products quality control, and on market information system including price/quality and trading volume through international training course as well as by domestic support from MOA and MOT and their relevant agencies.
b. To provide techniques on the operation and maintenance of facilities and equipment.
c. To provide knowledge and to train the operation of accounting system including fee setting/collection, formulation of income statement and cash flow tables.

(3) Others

From the Project implementation viewpoint, firstly it is important to complete the construction by 2014, and accordingly the EIA and land acquisition must be completed in 2012 in parallel with B/D, D/D and preparation of budget for construction.

### 4.2.2 Improvement of Operation and Management of Three STAs

Based on the above conclusion, the following recommendations are made related to STA (regarding the recommendations on improvement of operation and management for the specific three targeted STAs, please refer to the STA part in the report).

**(1) Promoting Proper Understanding of STA**

As discussed above, firstly, a policy is recommended on the improvement of operation and management of existing STAs in the latter group (not only to the two visited STAs, but also other STAs). Regency governments, institutions in charge of STA, are appropriately advised to understand properly the theoretical function and role of STA. As argued in the STA part, basic principle of STA on its functions are six, and the major four are; 1) STA is a wholesale market established in agricultural producing area; 2) in a wholesale market, major players (users of a market) are farmers/collectors, wholesalers, and buyers; 3) an important function is to provide market information in order to mitigate price fluctuation; 4) involvement of the government would be limited to provision of information and management of a place of transaction. In some regency, there are cases that particular business entities (normally regency companies) are intended in STA. These cases may work, however if STA is intended to work in terms of typical wholesale market, regency governments are strongly recommended to understand the above-mentioned points. Once a proper understanding is made, the following four points are recommended as practical considerations in proper planning of STA development and improvement: 1) selection of location, 2) facility design based on certain concept, 3) opinions of users, and 4) socialization (please refer to the STA part for more detail).

**(2) Strengthening of Marketing Linkage through STA**

After adopting the theoretical functions of STA as a wholesale market activates the STAs, that do not function well, the next step is to strengthen the marketing linkage through STA.

The horticulture farmer are small and scattered, and thus sub-collectors and collectors individually collect products from farmers and send them to consumption areas. Hence the actors are many, and marketing system is complex; price may become high, and quality loss may occur due to many actors in the system, leading to an inefficient marketing system. In order to improve the current horticulture marketing system, one of the solutions is to establish an efficient marketing system through introduction of STA. Especially for upper part of supply chain (related part of STA in horticulture producing area), it is expected that marketing system can be efficiently improved by providing a place of transparency, open transaction as STA, so that many actors can gather at one place, and complex system will be efficiently improved.

In addition, market linkage to downstream of supply chain via STA is important. Through introduction/activation of STA, it is expected that farmers (producers) can obtain marketing information, namely what consumers really want, from buyers (wholesalers, traders). Now free trade discussion is a hot issue, and free trade may be enhanced that agriculture commodities are freely traded across borders (more commodities with good quality may be imported), and hence competition is assumed to become intensive. Consumers are also realizing the importance of good and high quality.

To cope with these increasing demands on high quality, farmers' efforts are required, not only just improving market system. Out of six points for the basic principle of STA as mentioned in (1) above, rest of two are; 5) STA can have a value-added facilities such as grading/sorting/cold storage etc; and 6) STA can provide some assistance for farmers such as provision of finance/credit and necessary extension services. As such, STA can play a certain role in this issue as well.

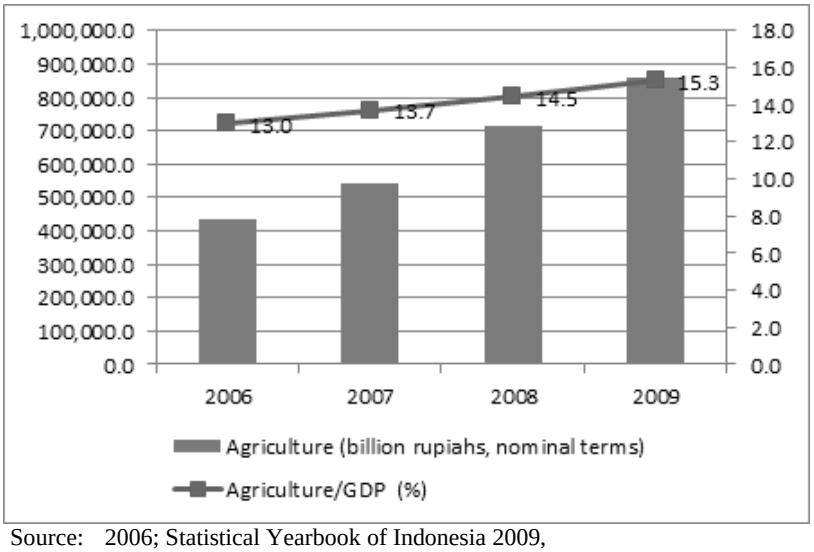
Considering the above-discussed issues, it is recommended that market linkage be strengthened via STA.

# Part 1
# Background

## 1.1 Current Condition and Issues of Agriculture Sector in Indonesia

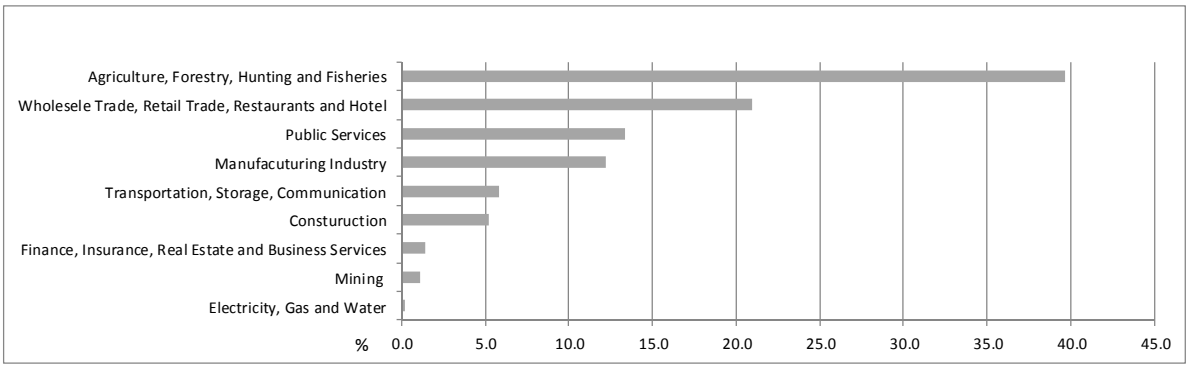
### 1.1.1 Current Condition of Agricultural Sector

The agriculture, forestry, livestock and fisheries sector occupies 13.0 % to 15.3 % of the GDP (2006 - 2009) of the Republic of Indonesia (hereinafter referred to as "Indonesia"), and approximately 40% of the labor force is engaged in this sector. The related graphs are shown below.




Source: 2006; Statistical Yearbook of Indonesia 2009,
2007 to 2009; Statistical Yearbook of Indonesia 2010

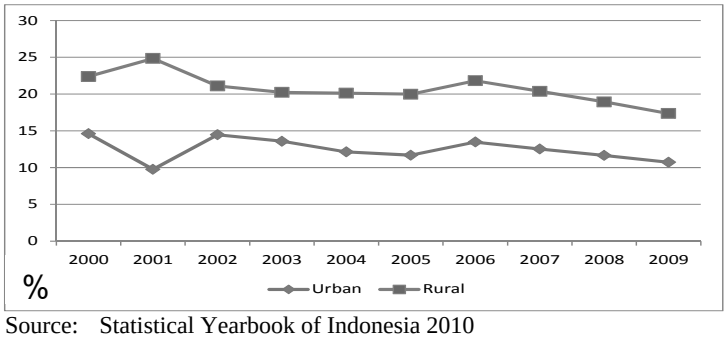
**Figure 1.1.1 GDP and Growth Rate Agriculture, Forestry Livestock and Fisheries Sector 2006-2009**




Source: Statistical Yearbook of Indonesia 2010

**Figure 1.1.2 Labor Force by Sector 2009**
**(Economically Active Population 15 Years of Age and Over by Sector of Activity 2009)**

Following graph shows percentages of poor people in urban and rural area (2000 – 2009). Poverty rate is approximately 25% to 17% in urban areas, and 15% to 11% in rural areas during this period.




Source: Statistical Yearbook of Indonesia 2010

**Figure 1.1.3 Percentage of Poor People, 2000 – 2009**

### 1.1.2 Agriculture Related Policies

As mentioned above, the Government of Indonesia has implemented three types of national development plans in agriculture sector. The main national development plan is "Long-Term Development Plan 2005-2025." In conformity with the Long-Term Development Plan, the Ministry of Agriculture has implemented a 20-year development plan in agriculture sector; long-term Agriculture Development 2000-2025 Vision and Direction" in January 2005. In accordance with the "Long-term Agriculture Development 2005−2025 Vision and Direction, "the five-year development plan for agriculture sector has been developed. The first plan "Indonesia Agricultural Development Plan 2005−2009" was formulated in January 2005. The second plan "Strategic Plan Design − Ministry of Agriculture Year 2010−2014" was announced in December 2009.

The main strategy and target of the development plans are as follows.

#### (1) Long-term Agriculture Development 2000 -2025 Vision and Direction

The goals for agriculture are as follows.

- To achieve completive agriculture system
- To stabilize self-reliance in food
- To create full time employment opportunity for agriculture community
- To eradicate poverty in agriculture sector

The action program on agricultural development plan comprises with the following points.

- To establish solid foundation for farmers' participation
- To increase capability of farmers
- To improve agricultural infrastructure
- To implement effective financing in agriculture sector
- To establish agriculture innovation through biotechnology, etc.
- To expand of investment through incentive policy such as guaranty price, subsidy, and tax exemption.
- To establish high value-added agribusiness through diversification of agriculture product and locality
- To establish agribusiness based on small-scale farmers
- To establish supply chain based on farm agricultural cooperation
- To produce highly-competitive international standard commodities through introducing traceability

#### (2) Indonesia Agricultural Development Plan 2005 − 2009

The goals for Agricultural Revitalization are as follows.
(Average growth rate of 3.52% per annum in 2004-09)

- To increase capability of farmers to produce highly-competitive commodities
- To maintain level of domestic rice production at the minimum level of 90% of domestic demand to secure food self-reliance
- To diversify production, supply and consumption of food to reduce high dependence on rice
- To increase availability of food from domestic livestock and fish production
- To increase domestic consumption of protein from livestock and fishery products
- To increase competitiveness and value-addition of agricultural/fishery products
- To increase production and exports of agricultural/fishery products
- To increase capability of farmers & fishermen in managing natural resources in a sustainable and responsible manner
- To enhance value-addition and benefit of timber forest products
- To increase the production of non-timber forest products by 30% from the 2004 production
- To increase planted forests by at least five million hectares

#### (3) Strategic Plan Design − Ministry of Agriculture Year 2010 − 2014

Main goals of the plan are as follows.

- To reinforce food security and the revitalization of agriculture to secure self-reliance in food
- To enhance the competitiveness of agricultural products and the income level of farmers

- To conserve the environment and natural resources
- To increase the growth rate of the agricultural sector in the GDP to 3.7%, and the Farmers Terms of Trade to 115‐120 in 2014

The action program on food security is comprised of the following main points:

a) Land Development of Agricultural Zones and Agricultural Area Planning:
   To reform regulations to ensure legal certainty of agricultural lands;
   To acquire two million hectares of new agricultural areas; and
   To utilize the abandoned lands.
b) Infrastructure:
   To construct and maintain infrastructure for transportation, irrigation, electricity networks, communication technology, and the national information system to increase the quantity and quality of production and increase the ability to trade the products at agricultural production centers.
c) Research and Development:
   To strengthen research and development activities in agriculture that can create superior seeds and other research outputs to achieve better quality and productivity of national agricultural products.
d) Investment, Financing, and Subsidies:
   To encourage investment in food, agriculture, and rural industries of local products on business and government entities by providing financial support and subsidies, which ensures the availability and affordability of tested superior seeds, fertilizers, appropriate technology and post-harvest facilities on a timely basis and in the right quantity.
e) Food and Nutrition:
   To increase the quality of nutrition and food diversity through the enhancement of the hope food approach.
f) Adaptation to Climate Change:

To take concrete steps to reinforce adaptation and anticipation of the food and agricultural system to climate change.

### 1.1.3 Consumption Trend of Horticulture Products

The amount of fruit and vegetable production, and the production forecast of 2015, i.e. the following year of "Strategic Plan Design- Ministry of Agriculture Year 2010-2014," and that of 2025, i.e. the final year of "Long-term Agriculture Development 2000-2025 Vision and Direction" are, respectively calculated as follows.

**(1) Fruits**

In demand forecasting, the production volumes of all 20 kinds of fruits (Box 01) during the period between 1995 and 2007 are taken from the website of Statistics Indonesia (BADAN STATISTIK REPUBLIK INDONESIA).

Box 01: 20 kinds of Fruits

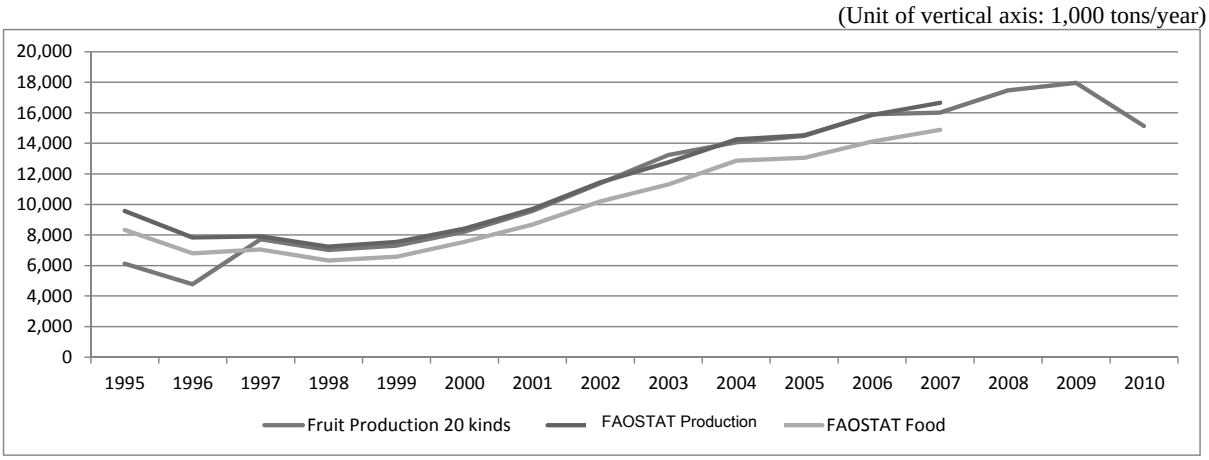
Mango, Orange, Papaya, Banana, Pineapple, Durian, Mangosteen, Avocado, Star Fruit, Langsat, Guava, Rose apple, Jackfruit, Salak, Rambutan, Sapodilla, Soursop, Passion Fruit, Bread Fruit, Belinjo

On the other hand, the consumption volume was calculated with data from FAOSTAT. FAOSTAT estimates the fruit consumption per capita by subtracting export and other uses from the sum of production, export, stock variation, and dividing the result with the total population.

Fruit consumption per capita (kg/person per year)
= (Production + Import + Stock variation-Export-Other uses)/Population

Since the FAOSTAT does not provide detailed information on fruits, for example it indicates "fruit excluding wine," it is necessary to compare "FAOSTAT Production," "FAOSTAT Food" and "Fruit

production of 20 kinds" as shown in the following figure. (Food is defined as "overall consumption" in FAOSTAT)




Source: Statistic Yearbook of Indonesia 2010, FAOSTAT

**Figure 1.1.4 Production Trends of 20 Kinds of Fruits (Production data and Food data by FAOSTAT)**

The production of 20 kinds of fruits almost equals to the FAOSTAT production between 1997 and 2007 (Some variance are found in 1995 and 1996 because the production of only five kinds of fruits were calculated during this period.) In addition, because "FAOSTAT Food" includes the kinds of fruits, which are used for other purposes (export and import are almost balanced), the volume is less than the "FAOSTAT Production", ranging between 87.1% and 90.1% of "FAOSTAT Production".
Based on this result, the production is forecasted with the data of fruit production of 20 kinds. The forecasted population for 2015 and 2025 is 246,192, 000 and 264,490, 000 respectively, as indicated in the table below.

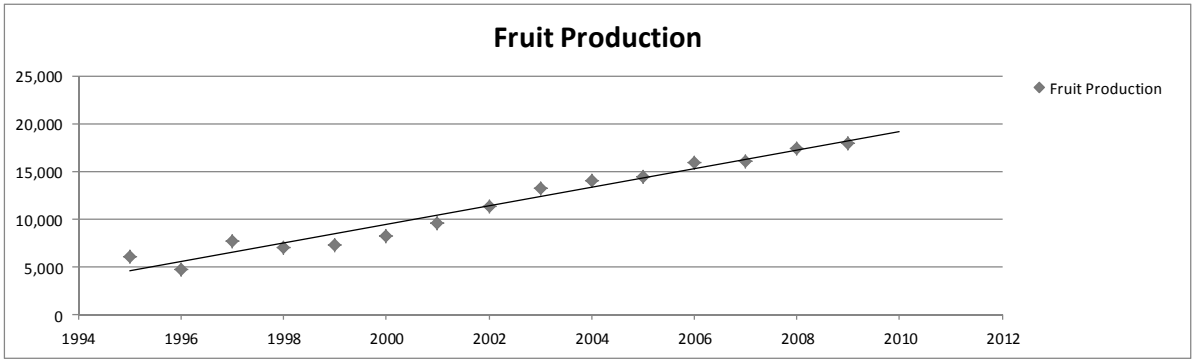
**Table 1.1.1 Population Forecast of Year 2010 - 2030**

| Year | Population (1,000) |
|---|---|
| 2010 | 232,517 |
| 2015 | 246,192 |
| 2020 | 254,218 |
| 2025 | 264,490 |
| 2030 | 271,485 |

Source : UN, *World Population Prospects: The 2008 Revision*

The scatter diagram and approximation curve calculated from the data of fruit production of 20 kinds from 1994 to 2009 is shown below. The line approximation curve is drawn based on the assumption that there will be no drastic increase in production.

(Unit of vertical axis: 1,000 tons/year)




Source: FAOSTAT

**Figure 1.1.5 Fruit Production and Approximation ($R^2$=0.9203)**

The high value of $R^2$ (coefficient of determination), 0.9203, indicates that this approximation curve is quite precise. According to this curve, the predicted fruit production of 2015 and that of 2025 are 24,467,000 tones (99.4 kg/person per year) and 34,579,000 tons (130.7 kg/person per year) respectively.

On the other hand, data in consumption from FAOSTAT between 2001 and 2007 is summarized in the following table. Based on this data, the estimated "food supply quantity" (kg/capita/year) in 2015 and 2025 are calculated to be 99.6 kg/capita/year and 139.3 kg/capita/year respectively. Accordingly, the figures are close to the estimated values of fruits consumption in 2015 and 2025 based on the fruit production of 20 kinds.

**Table 1.1.2 Consumption of Fruits (FAOSTAT - 2001-2007)**

| FAOSTAT Data Fruit excluding wine | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|---|---|
| Production (1000 tonnes) | 9,702 | 11,447 | 12,752 | 14,254 | 14,529 | 15,855 | 16,649 |
| Import Quantity (1000 tonnes) | 294 | 310 | 261 | 463 | 521 | 782 | 562 |
| Stock Variation (1000 tonnes) | 19 | 27 | -33 | 0 | 0 | -143 | -250 |
| Export Quantity (1000 tonnes) | 338 | 418 | 374 | 397 | 507 | 484 | 434 |
| Domestic supply quantity (1000 tonnes) | 9,676 | 11,366 | 12,607 | 14,320 | 14,543 | 15,710 | 16,527 |
| Processing (1000 tonnes) | 53 | 55 | 52 | 62 | 66 | 64 | 70 |
| Other Util (1000 tonnes) | 950 | 1,124 | 1,248 | 1,402 | 1,418 | 1,526 | 1,566 |
| Food (1000 tonnes) | 8,674 | 10,191 | 11,311 | 12,856 | 13,057 | 14,119 | 14,890 |
| Food supply quantity (kg/capita/yr) | 41.7 | 48.3 | 52.9 | 59.4 | 59.6 | 63.6 | 66.3 |

Source：FAOSTAT

The forecasted total volumes of fruits consumption in 2015 and 2025 are summarized in the following table.

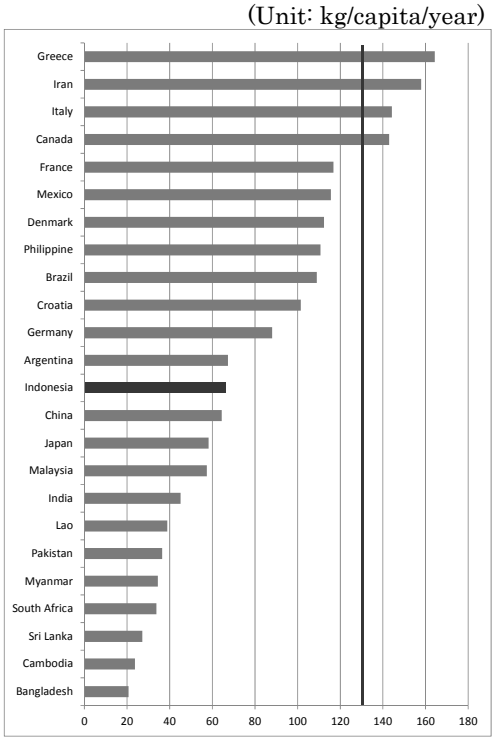
**Table 1.1.3 Forecasted Total Volume of Fruit Consumption for 2015 and 2025**

| Forecasted Year | Predicted Volumes（1000 tons） |
|---|---|
| Year 2015 | 24,467 |
| Year 2025 | 34,579 |

Source: JICA Study Team

For reference, FAOSTAT presents the fruit consumption of each country for the Year 2007 as shown in the following Figure. In Indonesia, the estimated annual fruit consumption per capita in 2025 is 130.7 kg. The estimated consumption level seems to be quite high in comparison with other countries.

(Unit: kg/capita/year)




Source: FAOSTAT
Note: Vertical red line shows the estimated fruits consumption (per capita) in Indonesia in 2025

**Figure 1.1.6 Consumption of Fruits in Selected Countries (2007) and the Estimated Per Capita Consumption of Fruits in Indonesia in 2025**

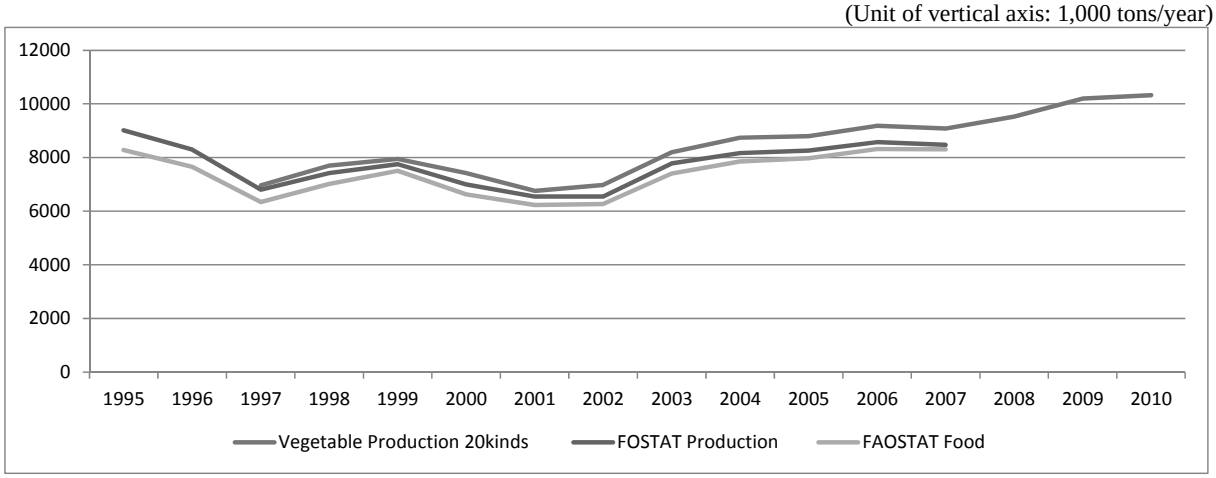
**(2) Vegetables**

The production data of 20 kinds of vegetable (Box 02) during the period 1997 and 2007 was taken from the website of Statistics Indonesia (BADAN STATISTIK REPUBLIK INDONESIA).

Box02: 20 kinds of vegetables
Shallot, Garlic, Spring Onion, Potato, Cabbage, Cali flower, Chinese Cabbage, Carrot, Radish, Red bean, Yard long bean, Chili, Mushroom, Tomato, Eggplant, Green bean, Cucumber, Pumpkin, Kangkong, Spinach

The data regarding vegetable is also available in FAOSTAT. Vegetable production of 20 kinds is compared with “FAOSTAT Production” and “FAOSTAT Food” in the following figure.

(Unit of vertical axis: 1,000 tons/year)



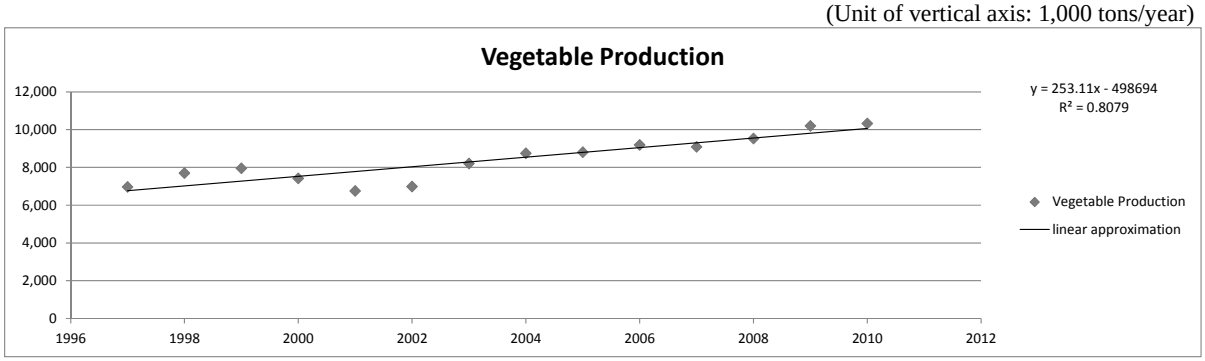

Source: Statistic Yearbook of Indonesia 2010, FAOSTAT

**Figure 1.1.7 Comparison of 20 Kinds of Vegetable Production, FAOSTAT Production & FAOSTAT Food**

The above figure shows that the vegetable production of 20 kinds almost equals to FAOSTAT production with similar trend. Similarly, the FAOTSTAT production and FAOSTAT food are also almost equal.

Scatter diagram and approximation curve are made with the data from vegetable production of 20 kinds between 1997 and 2009. The data of 2010 is the estimated value.

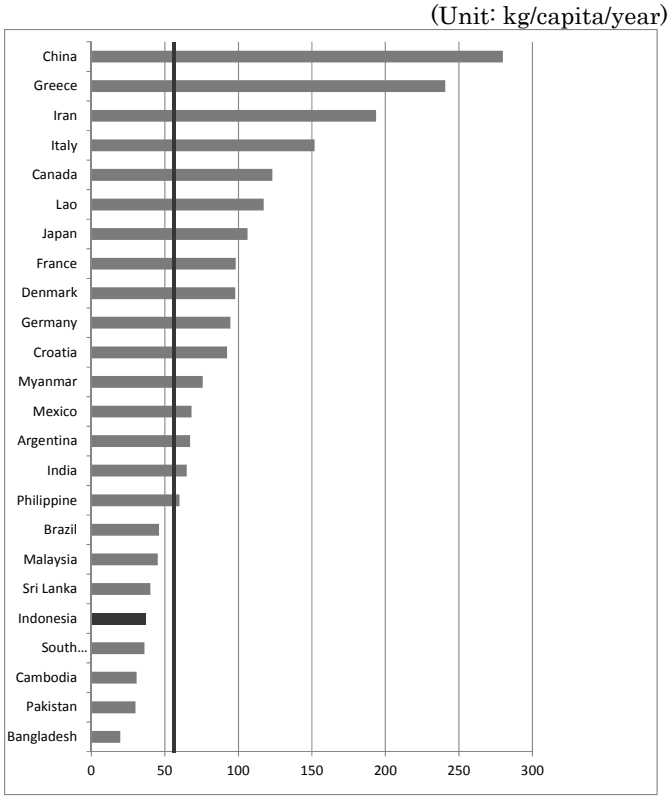
(Unit of vertical axis: 1,000 tons/year)




Source: FAOSTAT

**Figure 1.1.8 Vegetable Production and Approximation（$R^2$=0.8079）**

This approximation curve shows that the predicted amounts of vegetable production in 2015 and 2025 are 11,324,000 tons (46.0 kg per capita per year) and 13,855,000 tons, respectively (52.4 kg per capita per year). The vegetable consumption per capita is compared with other countries as follows.




Note: Vertical red line shows the estimated vegetable production (per capita) in Indonesia in 2025
Source: JICA Study Team

**Figure 1.1.9 Comparison of Per Capita Vegetable Consumption by countries (2007) and Estimated Per Capita Consumption of vegetable in Indonesia in 2025**

As shown in above figure, the predicted per capita consumption of 52.4kg/person per year in 2025 for vegetables is not significant in comparison with other countries where there seems to be still a possibility of increase in the production in the future. The peak consumption between 1997 and 2007 was 43.2 kg/person per year marked in 1995.

The data of consumption (Food supply quantity) in FAOSTAT during the period between Year 2000 and Year 2007 is summarized in the following table.

**Table 1.1.4 Consumption of Vegetables**

| FAOSTAT DATA Vegetable + (Total) | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|---|---|---|
| Production (1000 tonnes) | 6,996 | 6,541 | 6,548 | 7,777 | 8,167 | 8,264 | 8,573 | 8,476 |
| Import Quantity (1000 tonnes) | 305 | 333 | 348 | 357 | 401 | 440 | 499 | 598 |
| Stock Variation (1000 tonnes) | 0 | 0 | 0 | -12 | 11 | 1 | 0 | 0 |
| Export Quantity (1000 tonnes) | 106 | 113 | 103 | 98 | 80 | 92 | 95 | 108 |
| Domestic supply quantity (1000 tonnes) | 7,195 | 6,760 | 6,793 | 8,024 | 8,500 | 8,613 | 8,976 | 8,966 |
| Processing (1000 tonnes) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Util (1000 tonnes) | 566 | 529 | 524 | 622 | 644 | 644 | 670 | 666 |
| Food (1000 tonnes) | 6,630 | 6,229 | 6,271 | 7,405 | 7,858 | 7,975 | 8,312 | 8,305 |
| Food supply quantity (kg/capita/yr) | 32.3 | 29.9 | 29.7 | 34.7 | 36.3 | 36.4 | 37.4 | 37.0 |

Source: FAOSTAT

From the table of FAOSTAT, the consumption (food supply quantities) of 2015 and that of 2025 are 46.8 kg/person per year and 57.8 kg/person per year, respectively. As the predict figures of FAOSTAT data are similar to the data of 20 kinds of vegetable data indicated on page 7, the forecasted value of vegetable production for 2015 and 2025 are summarized in the following table which is calculated from 20 kinds of vegetable data.

**Table 1.1.5 Forecasted Total Vegetable Consumption for 2015 and 2025**

| Forecasted year | Predicted Volumes（1,000 tons） |
|---|---|
| Year 2015 | 11,324 |
| Year 2025 | 13,855 |

Source: JICA Study Team

### 1.1.4 Supply and Demand in Domestic and International Markets

#### (1) Consumption of Fruits and Vegetable per Capita

The estimated consumption volume (kg/person per year) of fruits and vegetables (2009) are as follows;

**Table 1.1.6 Consumption of Fruits and Vegetables (2009)**

Unit: production (ton/year), consumption (kg/person/year)

| Fruit | Production | Consumption |
|---|---|---|
| Mango | 2,243,440 | 9.70 |
| Orange | 2,131,768 | 9.21 |
| Papaya | 772,844 | 3.34 |
| Banana | 6,373,533 | 27.55 |
| Pineaple | 1,558,196 | 6.73 |
| Durian | 797,798 | 3.45 |
| Mangosteen | 105,558 | 0.46 |
| Avocado | 257,642 | 1.11 |
| Star Fruit | 72,443 | 0.31 |
| Duku/ Langsat | 195,364 | 0.84 |
| Common Guava | 220,202 | 0.95 |
| Watery Rose Apple | 104,885 | 0.45 |
| Jackfruit/ Champedak | 653,444 | 2.82 |
| Salak | 829,014 | 3.58 |
| Rambutan | 986,841 | 4.27 |
| Sapodilla | 127,876 | 0.55 |
| Soursop | 65,359 | 0.28 |
| Possion Fruit | 120,796 | 0.52 |
| Bread Fruit | 110,923 | 0.48 |
| Belinjo | 221,097 | 0.96 |
| Total | 17,949,023 | 77.58 |

| Vegetable | Production | Consumption |
|---|---|---|
| Shallot | 965,164 | 4.17 |
| Garlic | 15,419 | 0.07 |
| Spring Onion | 549,365 | 2.37 |
| Potato | 1,176,304 | 5.08 |
| Cabbage | 1,358,113 | 5.87 |
| Cauli flower | 96,038 | 0.42 |
| Chinese cabbage (Mustard Green) | 562,838 | 2.43 |
| Carrot | 358,014 | 1.55 |
| Radish | 29,759 | 0.13 |
| Red Bean | 110,051 | 0.48 |
| Yardlong Bean | 483,793 | 2.09 |
| Chilli | 1,378,727 | 5.96 |
| Mushroom | 75,124 | 0.32 |
| Tomato | 853,061 | 3.69 |
| Egg plant | 451,564 | 1.95 |
| Green bean (French) | 290,993 | 1.26 |
| Cucumber | 583,139 | 2.52 |
| Pumpkin | 321,023 | 1.39 |
| Kangkong | 360,992 | 1.56 |
| Spinach | 173,750 | 0.75 |
| Total | 10,193,231 | 44.05 |

Source: Statistical Yearbook of Indonesia 2010
Note:
Production, consumption and balance of fruits and vegetables are calculated by the following methods. (As the difference of 20kinds production and the Food is around 10% and less than the yearly production fluctuation of fruits and vegetables, import, export, stock variation quantities are negligible);

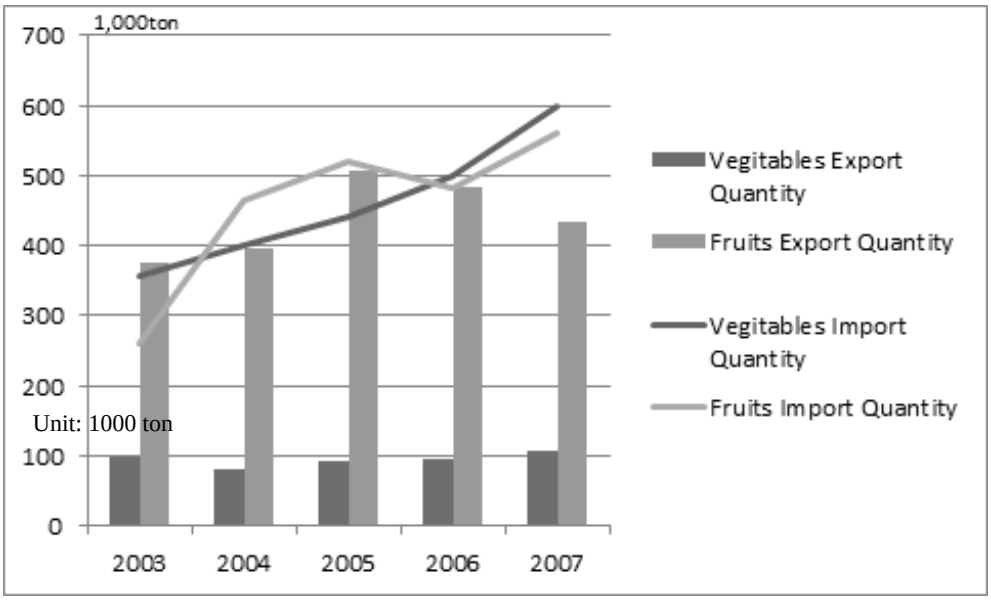
- Production (ton): Fruits and vegetable production data (2009) from Indonesia Statistical yearbook
- Population: 2009 total Indonesia population; 231,376,254
- Consumption: Production x 1000 / population (kg/person per year)

### (2) Production, Consumption and Balance of Fruits and Vegetables

In Appendix 4-1 to 4-4 and 4-8 to 4-13, production, consumption and balance of each fruit and vegetable are summarized by province in all Indonesia and by regency in Lampung Province, East Jawa Province, North Sumatra Province and South Sulawesi Province in 2009. The information on consumption per capita is taken from Statistical Yearbook of Indonesia 2010 (Bandan Pusat Statistik) and statistical yearbooks of 4 provinces of 2010. In addition, total volume of production, consumption and balance of all fruits and vegetables by province in 2009 are shown in Appendix 5-6 and 5-7 (source of production data: MOA).

### (3) Export and Import of Fruits and Vegetable

The following figure describes the trends of the export and import of fruits and vegetables from 2003 to 2007. Generally, the export volumes of both fruits and vegetables have not increased significantly while the imports of fruits and vegetables have increased remarkably.




Source: FAOSTAT

**Figure 1.1.10 Export and Import Volumes of Fruits and Vegetable from 2003 to 2007**

## 1.2 Development of Agricultural Wholesale Market

### 1.2.1 Development Project and Course of Agricultural Wholesale Market

### (1) Current Condition of Horticulture Production and Consumption in Indonesia

According to the regulation of MOA (Law No.13/2010), the horticulture products are explained as fruits, vegetable, ornamental plant (flowers, etc.), bio-pharmacy plant (including molds and mildews), and water plants which used in cooking or as cooking ornament materials.

Generally, horticulture farming is carried out in scattered field on a small scale (less than 0.5 ha/farmer

in average) in the production areas. Large-scale horticulture plantations are rare in Indonesia.

Common problems facing the horticulture production and consumption areas are as follows.

[Production areas]

- Small and scattered farm fields:
  Approximately 90% of all production volume of horticulture is produced in this type of farm fields.
- Too many types of commodity:
  Main targets are not focused in each production area.
- Inconsistency on the products qualities
- Long chain of products distribution, and high cost for distribution
- Lack of marketing information in farmers' side
- Small incentive for horticulture farmers
- Poor condition on infrastructure in the production areas, e.g. farm roads, main trunk roads and ports
- Lack of government budgets both on central and provinces/regencies

[Consumption areas]

- High price at the end users due to the long value-chain between production areas and consumption areas
- Inconsistent and low quality of the products
- No response from the supply side to the demand side in which more variety and volume in horticulture products are required to meet the demand of the increasing middle-income group

**(2) Development Project of Agricultural Wholesale Market**

**1) Establishment of STA and TA by MOA**

To solve above-mentioned problems, since 2001, the Indonesian Government had started to establish the wholesale market facilities both in production areas and consumption areas, i.e. Sub Terminal of Agribusiness (STA) in production areas, and Terminal of Agribusiness (TA) in consumption areas.

STA is managed under the Regency's responsibility, and STA carries out not only the management of products collection but also the management of production system (including scheduling of planting). Therefore, Regency Government dispatches site managers to each STA, who conduct technical assistance and provide market information to the farmers. On the other hand, TA is under the responsibility of Province government.

Generally, farmers and farmer groups bring the harvested products to STA, from here the collectors and wholesalers transport them to TA. Retailers finally deliver the products to retail markets.

The MOA supported 62 STAs and 2 TA as of June 2011. Some 41 STA and 1 TA are in operation, while 21 STA and 1 TA are not in operation. The following table shows total number of TA/STA of each Province.

**Table 1.2.1 Number of STA and TA Supported by MOA (June 2011)**

| No. | Name of Province | Number | |
|---|---|---|---|
| | | TA | STA |
| 1 | Ache | | 1 |
| 2 | North Sumatra | | 8 |
| 3 | West Sumatra | | 4 |
| 4 | Jambi | | 1 |
| 5 | Bengkulu | | 2 |
| 6 | Riau | 1 | |
| 7 | South Sumatra | | 2 |
| 8 | Lampung | | 2 |
| 9 | West Jawa | | 5 |
| 10 | Central Jawa | | 6 |
| 11 | Yogyakarta | | 1 |
| 12 | East Jawa | | 3 |
| 13 | West kalimantan | 1 | 1 |
| 14 | South Kalimantan | | 2 |
| 15 | Central Kalimantan | | 1 |
| 16 | East Kalimantan | | 2 |
| 17 | South Sulawesi | | 5 |
| 18 | North Sulawesi | | 2 |
| 19 | South East Sulawesi | | 1 |
| 20 | West Sulawesi | | 1 |
| 21 | Bali | | 8 |
| 22 | West Nusa Tenggara | | 1 |
| 23 | East Nusa Tenggara | | 1 |
| 24 | Papua | | 2 |
| | Total | 2 | 62 |

Source: MOA

**2) Other related Projects by MOA**

In addition to the establishment of STA and TA, MOA has been developing since 2005 the packaging facilities projects, in which the main target is farmers' organizations/groups. Furthermore, MOA facilitated the installation of cool storage for farmers' groups since 2008, and MOA has a schedule to support farmers' group to use refrigerator trucks from 2013.

In addition, MOA is currently proposing the area development on vegetable plantation, and encouraging the government owned companies to develop estate crop farming to diversify the horticulture commodities.

**3) Establishment of Agricultural Wholesale Markets by Ministry of Trade**

The Ministry of Trade (MOT) also has policies to establish and improve the agricultural wholesale markets; it has published policy paper, "Thoughts: On the Development of Central Market and Supporting Market" to establish and improve the market system of agricultural products. According to the classification by MOT, wholesale markets for consumption areas are called as Central Market (CM), and wholesale markets for production areas are called as Supporting Market (SM).

Basically, both the STA supported by MOA, and SM supported by MOT has the same functions, and TA and CM too have same functions. However, SM and CM supported by MOT, handle agricultural products and also livestock, fishery, etc.

The characteristics of the Central Market Initiative of MOT is that it is required to procure the construction funds from private investments, and to propose a model of procuring 30% of the funds from private investment and 70% to be financed by financial institutions.

### 1.2.2 Laws and Regulations regarding Agricultural Wholesale Market by MOA

There are no laws and regulations to establish and manage TAs and STAs. In case of STA, it uses the operating guidelines prepared by MOA ("General Operating Guidelines for Agribusiness Sub-Terminal (STA)" in "Strategic Planning, Directorate General of Processing and Marketing for Agricultural Product 2005－2009" (2006)). But for TA, there is no operational guideline.

### 1.2.3 Legal Framework and Procedures regarding Environmental and Social Considerations

#### (1) Laws and regulations regarding Environment

The laws and regulations regarding environment and social considerations are categorized as follows;

**Table 1.2.2 Laws and Regulations regarding Environment and Social Considerations**

| Classification | Indonesian | English |
|---|---|---|
| Laws & regulations at national level | Undang Undang Dasar (UUD) | Constitution |
| | Undang Undang (UU) | Laws |
| | Peraturan Pemerintah (PP) | Government regulations |
| | Peraturan Menteri (PERMEN) | Ministerial regulation |
| Regulation and decree at Regional level | Peraturan-Peraturan Daerah di tingkat Provinsi dan Kabupaten/Kota | Local government regulations at provincial and regency/municipality level |

Source: JICA Study Team

The laws and regulations regarding environment are as below. The fundamental law on environment is "Law of Republic of Indonesia, No.32/2009 regarding environmental protection and Management." There is a necessity of conducting EIA for any activities that have impacts to environment. Lampung province follows the national regulation without setting particular regulation at provincial level, according to the BPLHD-Lampung (Bandan Pengedailian Ligkungan Hidvp Daerah: Provincial Environment Management Agency Lampung).

**Table 1.2.3 Laws and Regulations regarding Environment for TA development**

| Laws, Regulations and Decrees regarding Environment |
|---|
| **【Fundamental law regarding environmental protection & management】** |
| Law of Republic of Indonesia, No.32/2009, regarding Environmental protection and Management |
| **【Concerning environmental impact analysis / EIA】** |
| Regulation of state minister of environment regarding Environmental Impact Analysis, No.27/1999 |
| Regulation of Minister of environment regarding guidelines for preparation of EIA , No.8/2006 |
| Decree of Minister of environment regarding kind of activities required EIA analysis, No.17/ 2001 |
| Decree of Minister of environment regarding kind of activities required EIA analysis, No.11/ 2006 (Modified version of the decree of Minister of Environment No.17/ 2001) |
| Regulation of Minister of procedure for preparation of UKL-UPL, No.86/2002 |
| Regulation of Minister of environment regarding framework of assessment commission for EIA, No.5/2008 |
| Regulation of Minister of environment regarding procedure of license of the EIA assessment commission, No.6/2008 |
| Regulation of Minister of environment regarding competence certification for preparing analysis document of EIA and requirement of training competence institution for EIA document preparation, No11/ 2008 |
| Regulation of Minister of environment regarding competence certification for preparing analysis document of EIA and requirement of training competence institution for EIA document preparation, No.7/2010 |
| Attachment I: Competence standard for qualification of team member roles in preparing EIA document |
| Attachment II: Competence standard for qualification of team leader roles in preparing EIA document |
| Regulation of Minister of environment regarding guidelines for evaluating EIA document, No.24/ 2009 |
| Regulation of State Ministry of Environment No.13/2010, regarding Environmental Management Effort and Environmental Monitoring Effort and statement letter for Environmental Management and Monitoring commitment |
| South Lampung Regency Decree Number B/137/IV.03/HK/2009 regarding assessment committee formation regarding environmental impact analysis in South Lampung Regency. |
| **【Others】** |
| Law No. 5/1990 on the conservation of Bio natural resources and its ecosystem |

Source: JICA Study Team, based on the information from Ministry of Environment and BPLHD-Lampung

The table below lists the relevant regulations, environmental standards, and provincial standards, which may be considered for TA development. For the items of which the provincial standards have set higher than the national standards, it is requested to refer to the ones of provincial standards.

**Table 1.2.4 Relevant Environmental Laws, Regulations and Decrees**

| Laws, Regulations and Decrees regarding Environment |
|---|
| 【National Level】 |
| Regulation of Minister of environment regarding standard of quality of waste water for fruit & vegetable processing activities, No.5/ 2007 |
| Regulation No.82/2001 on water quality management and waste water control |
| Decree of Minister of Environment No.48/MENLH/11/1996 on noise level standard |
| Decision of director general of PPM/PLP No.70-I/PD.03.04.LP/1992 on guidance for noise control related to health |
| Decree of Minister of Environment No.49/MENLH/11/1996 |
| Decree of Minister of Environment No.50/MENLH/11/1996 on Odor level standard |
| Decree of Minister of Environment No.45/MENLH/11/1996 on standard index of air pollution |
| Decree of Minister of Environment No.13/1995 on exhaust gas |
| Decree of Minister of Environment No.51/1995, No.3/1998, No.113/2003, No.4/2006, No.4/2007. No.8/2007, No.8/2009, No.10/2009 on discharge water |
| Regulation of Minister of environment regarding guidelines in determining environment carrying capacity in managing area, No.17/ 2009 |
| 【Provincial Level】 |
| Governor Lampung Regulation No.7/ 2010 regarding waste water standard, Noise pollution standard, and immovable resources emission standard |

Source: JICA Study Team, based on the information from Ministry of Environment and BPLHD

### (2) Administration concerning environmental and social consideration

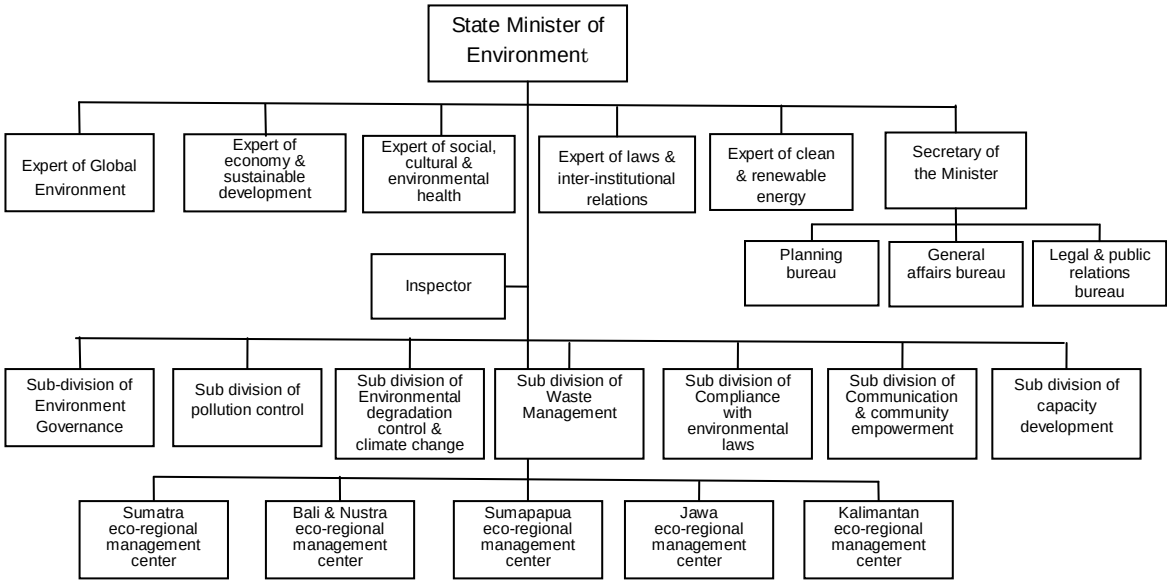
#### 1) Environmental Administration

The Ministry of Environment (Kementrian Lingkungan Hidup: KLH) is in charge of policy, planning, management, control and all other administration of environmental issues[1]. The organization structure is shown in the following figure. A subdivision of environmental governance controls EIA and environment planning and its monitoring, while preparation of laws and regulations are under subdivision of compliance with environmental law. In line with the decentralization, environmental governance including the issue of environmental impact analysis is also controlled at regency or provincial level according to the scale, location and the sector of the proposed project. Regulation of ministry of environment No5/2008 defines the sector, scale and other condition of projects to be controlled either by central, provincial or regency.

In case of TA construction, it will be decided depending on the location. If the TA is located inside the regency, the project will be under supervision of regency level. If it extends to two regencies, it will be

1 An environmental management law was issued in 1982 after establishment of the Ministry of Environment and Development in 1978. The Ministry of Environment and Development was reformed to the Ministry of Environment and Population in 1983. In 1990, Environment management Agency (BAPEDAL) was established under the Ministry as an executing agency of environmental policy and regional planning agency (BAPEDALDA ) and regional environmental office (BLKH) were set at each province. The Ministry of Environment and Population was reformed to the Ministry of Environment in 1993, and BEPEDAL was unified to the Ministry in 2002, which is the present Ministry of Environment (Kementrian Lingkungan Hidup: KLH).

supervised at provincial level.

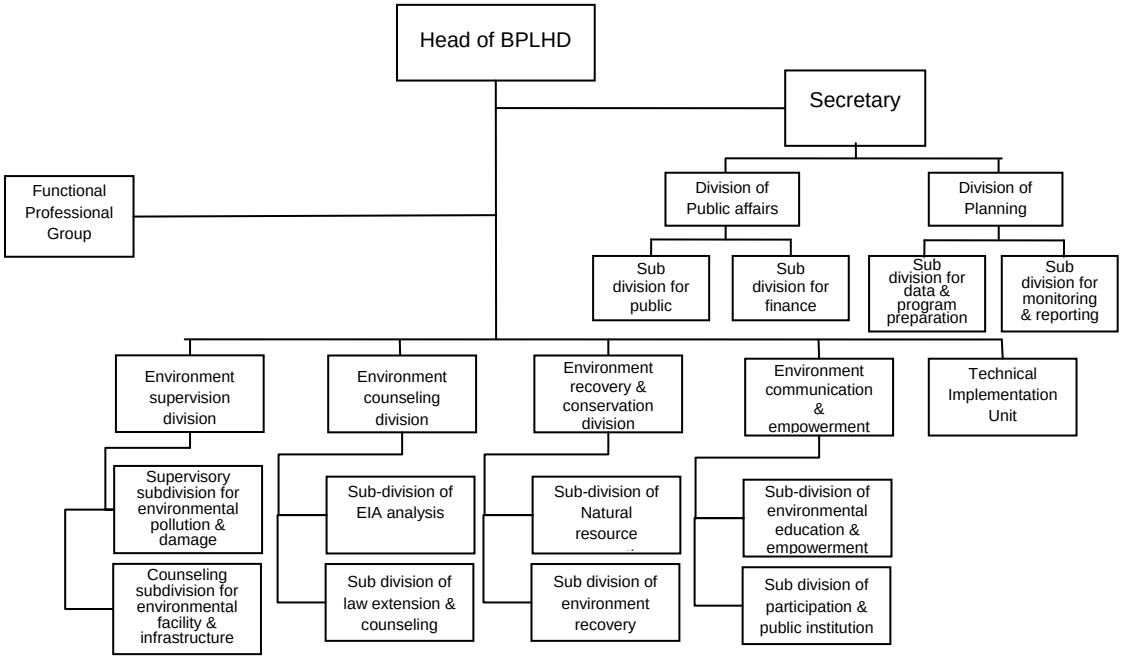



Source: Ministry of Environment 2010

**Figure 1.2.1 Organization Structure of Ministry of Environment**

### 2) Provincial and Regency Levels

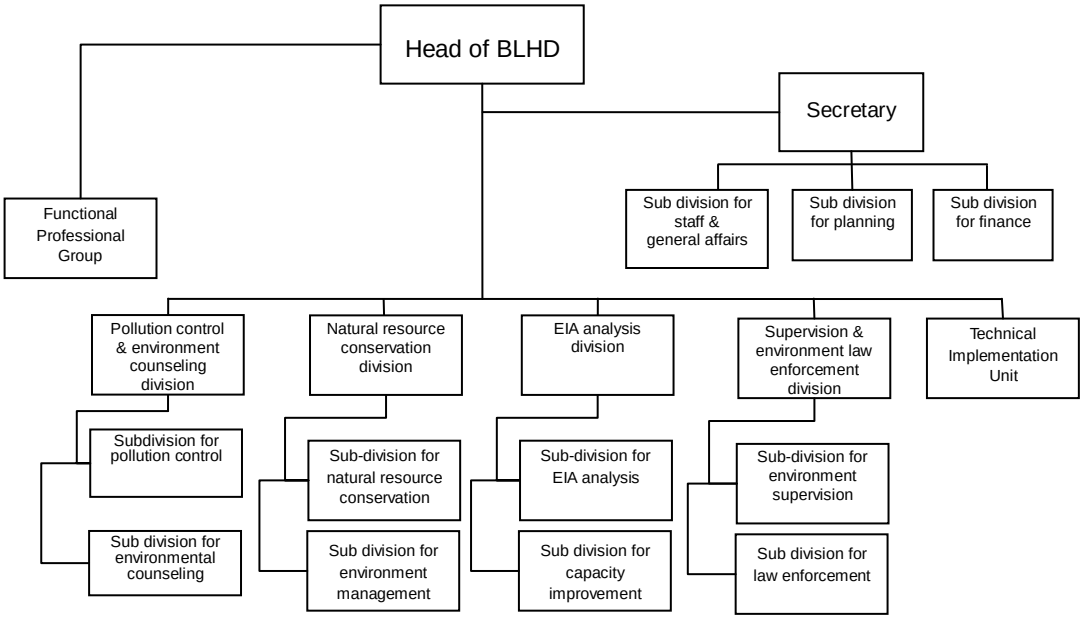
At provincial level, BPLHD (Bandan Pengedailian Ligkungan Hidup Daerah: Provincial Environment Management Agency) is the agency which is in charge of environmental administration and EIA. As for the project, the land of which extends to more than two regencies, the provincial BPLHD will be responsible for the environmental clearance. The organization structure is as follows.




Source: Ministry of Environment 2009

**Figure 1.2.2 Organization Structure of BPLHD, Lampung**

At regency level, BLHD (Bandan Lingkungan Hidup Daerah: Regional Environment Management Agency) is in charge of environmental policy and administration. As for the Penengahan and Natar sites (Refer to 2.1.2), BLHD-South Lampung Regency is the one responsible for managing environmental issues including deciding regulations and IEE/EIA clearance, while BLHD-Pesawaran is for Gogong Tataan site.




Source: Ministry of Environment 2008

**Figure 1.2.3 Organization Structure of BLHD (South Lampung Regency)**

### (3) Environmental Clearance

#### 1) Environmental clearance procedure in Indonesia

Based on the law No.32/2009 regarding environmental management and protection, it is stipulated that all projects with certain large scale are requested to clear environmental assessment, either through the form of a) preparing Environmental Management plan (UKL) and Environmental Monitoring Plan(UPL) or b) EIA (called as AMDAL in Indonesia).

The kinds and scale of project, which requires EIA, are determined in No.11/2006, Decree of Minister of Environment. In this article, the projects and the plans subject for conducting EIA are categorized into 14 sectors, and the scale and conditions, which require EIA, are prescribed.
The condition of EIA necessity regarding TA development according to the decree is as follows.

**Table 1.2.5 Condition of EIA regarding TA Development**

| No | Type of project/facility | Scale | Assessment points and note |
|---|---|---|---|
| 14 | Office, Educational facility, sport facility, art and art facility, religious place, shopping center | Land area: ≥5 ha<br><br>Scale of building: ≥10,000 $m^2$ | Assessment points<br>a) Size of land acquisition<br>b) Strength of the land bearing capacity<br>c) Quantity of water usage per day<br>d) Waste management<br>e) Negative impact around the construction site (vibration, noise, air pollution, etc.)<br>f) KDB (Building effective factor/floor area ratio) and KLB (Land effective factor/building coverage)<br>g) Species and volume (number) of trees removed<br><br>Note<br>a) Social disputes caused by land acquisition (especially in case of development in urban area with high |

| No | Type of project/facility | Scale | Assessment points and note |
|---|---|---|---|
| | | | density of population)<br>b) Impact by construction of high building and destruction of underground water layer/aquifer by post and dewatering by foundation work<br>c) Impact by increase of traffic and settlement of labors during construction<br>d) Impact by increase of traffic and necessity of preparation of parking places<br>e) Waste caused by operation |

Source: No.11/2006, Decree of Minister of Environment

In case the project scale is smaller than this category, the executing agency is requested to prepare UKL and UPL to ensure that the management of any environmental impacts meets the Regulation of State Ministry of Environment No.13/2010.

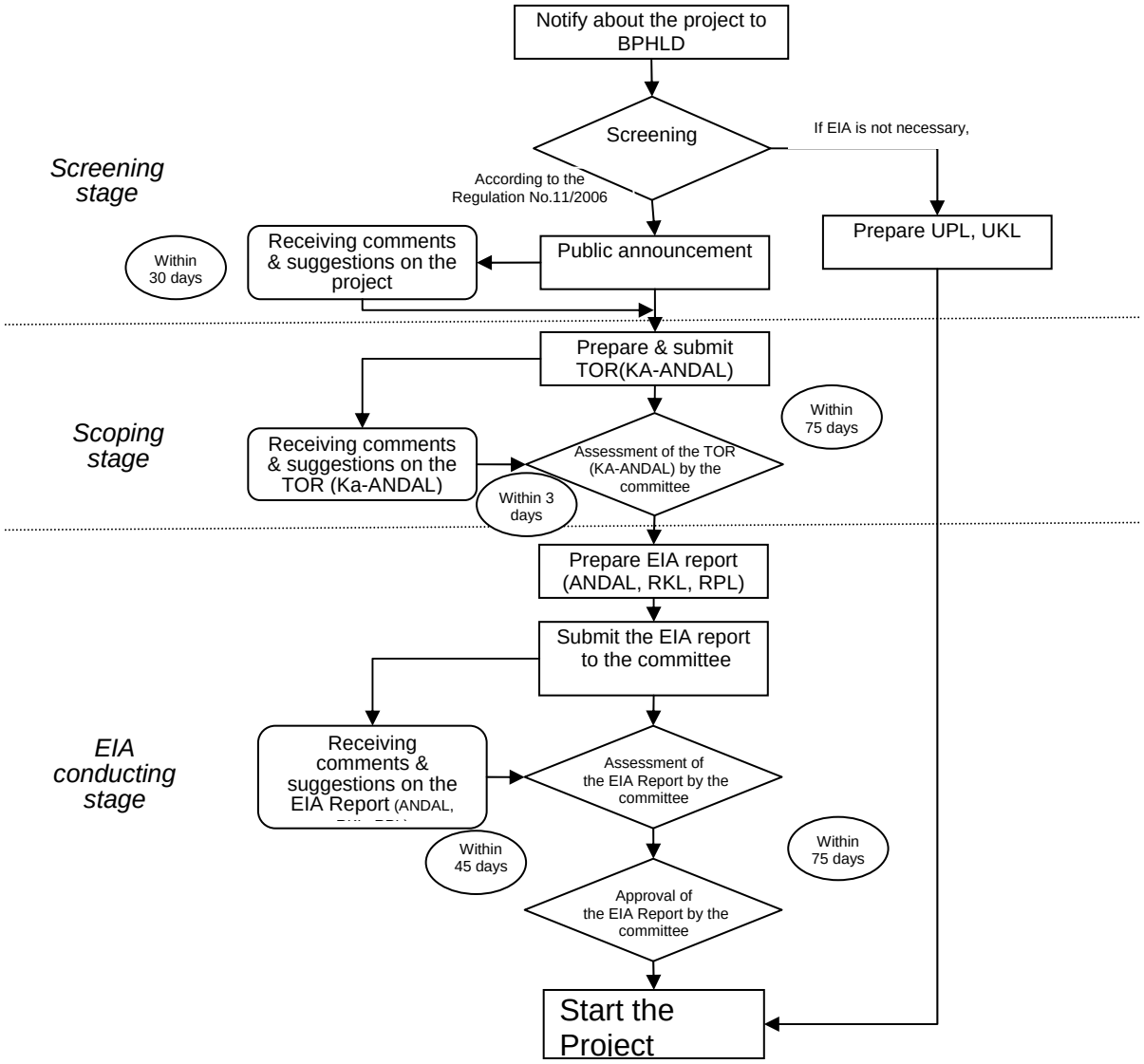
**2) EIA procedure and time required for approval**

The EIA procedure stated in the regulation No.27/1999 is summarized in the next figure. As there is no particular decree regarding EIA procedure at Lampung provincial level, same procedure as the one of central is applied for the project in the province.

The executing agency is obliged to submit the TOR of EIA (KA-ANDAL) to the AMDAL committee through concerning government agency, either BLHD/BPLHD; after assessment of the TOR by the committee, EIA will be commenced. The result is compiled into EIA report (ANDAL), Environmental management plan (RKL) and Environmental Monitoring Plan (RPL) are to be assessed by the AMDAL committee.

The result of the assessment is reported from AMDAL committee to the governor of the relevant regional government. And the governor will issue approval announcement within 75 days after receiving the document.

According to the regulation of state minister of Environment No.6/2008, the “EIA Team” should implement the EIA with certain professionals including a team leader with a competence certificate.




Source: JICA Study Team, refer to the regulation of state minister No.27/1999

**Figure 1.2.4 Flow Chart of Clearing EIA**

If the project expands its function that may cause potential environmental and social impacts in the future, EIA should be conducted for the part extended additionally.

### 3) Necessary documents for TOR of EIA (KA-ANDAL)

According to the Regulation of Ministry of Environment No.8/2006, the TOR of EIA called KA-ANDAL has to be prepared. The following table describes major contents of the KA-ANDAL, which is basically consistent with the JICA guidelines, which again refers to the world banks' operational policy. However, there is no specific regulation for involuntary resettlement in Indonesia, while JICA guideline requires preparation of resettlement plan in case large involuntary resettlement is required (more than 200 people).

**Table 1.2.6 Contents of KA-ANDAL**

| Item | Major content |
|---|---|
| **Chapter 1: Introduction** | |
| 1.1 Background | Background |
| 1.2 Purpose & expected impact of the project | - Present condition of the sector<br>- Needs of the project<br>- Purpose of the project and expected impact |
| 1.3 Concerning laws and regulations | Concerning laws and regulations |
| **Chapter 2: Scope of the study** | |
| 2.1 Project component | - Target area referring to the spatial plan of the region<br>- Major activities expected<br>- Schedule<br>- Anticipated environmental and social impact due to implementation of the project at each stage of activity (planning, construction, implementation, after completion)<br>- Other elements to be considered in the area |
| 2.2 Present environmental and social condition | Present environmental and social condition including the ones of alternative site |
| 2.3 Scope of EIA | - Scope selected with the clear reason |
| **Chapter 3: Method of the study** | |
| 3.1 Method of data collection and analysis | - Data collection method with the information of equipment used for the survey, etc.<br>- Method of analysis |
| 3.2 Prediction method of anticipated impact | Method of prediction (e.g. Calculation, experiment, simulation model, lessons from similar project, evaluation by the relevant specialist, etc.) |
| 3.3 Evaluation method for anticipated impact | -Assessment of each activity planned in the project from environmental impact viewpoint.<br>- Monitoring method |
| **Chapter 4: Administration** | |
| 4.1 Executing agency of the project | Executing agency of the project |
| 4.2 Surveyor/Consultant | Information of the certified surveyor/consultant which conduct the EIA |
| 4.3 Budget of the study | Budget of the study |
| 4.4 Study period | Study period |
| **Others** | - Reference, secondary data, etc.<br>- Attachment (project information, discussion record among stakeholders, CV of the representative of the expert team |

Source: JICA Study Team, based on the regulation No.8/2006 and interview result

### (4) Land Acquisition and Resettlement Policy

#### 1) Laws and regulations regarding land procurement

The following table lists the laws and regulations to be referred for land acquisition. There are no particular regulations and/or guidelines on "involuntary resettlement" in Indonesia. Instead, it is required to explain the project summary with its schedule and potential impacts of the construction, and receive opinions from people in and around the target area, according to the Decree of Head of Environmental Impact Management Agency No.8/2000 regarding community involvement and information openness in the process of environmental impact assessment.

**Table 1.2.7 Laws and Regulations regarding Land Acquisition for Public Purpose**

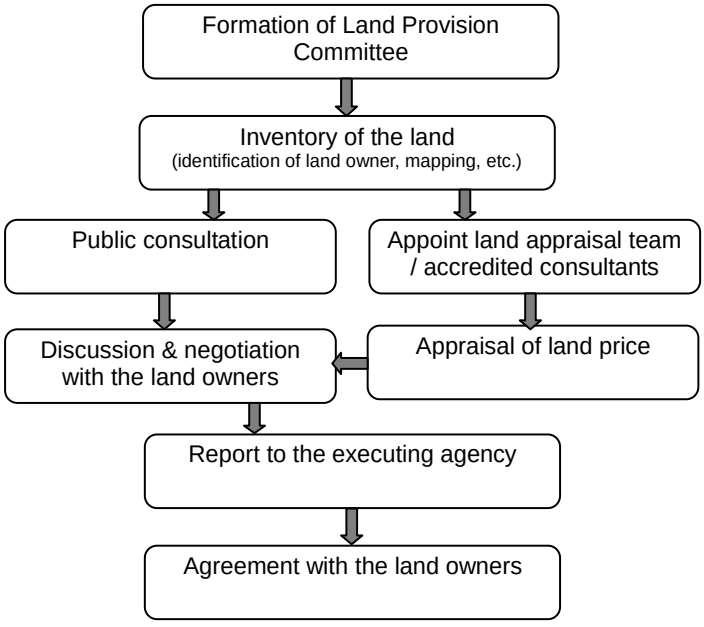
| Laws, Regulations and Decrees |
|---|
| Head of National Land Agency Regulation No.3/2007 about Provision Implementation of Presidential Decree No.36/2005 about Land Acquisition for Implementation of Development for Public Interest as Amended By Presidential Decree No.65/2006 about Amendments to the Presidential Regulation No.36/2005 about Land Acquisition for Implementation of Development for Public Interest |
| Decree of Head of Environmental Impact Management Agency No.8/2000 regarding community involvement and information openness in the process of environmental impact assessment |

| Laws, Regulations and Decrees |
|---|
| Presidential decree on the provision of land for public purpose, No.36/2005 |
| Presidential Regulation No.65 Year 2006 jo No.36 Year 2005, about land acquisition for implementation development for public interest |
| No.20/1961 Law regarding land procurement Law No.20 Year 1961, about revoking rights of land acquisition and existing objects above |
| No.36/1998 Regulation on the use of abandoned land |
| Law No.5 /1960, about Basic Regulation of Agrarian Affairs |
| Law No.51/1960, about the Prohibition Use Land Without Eligible Permission or the Authority |
| Government Regulation No.8 Year 1953, about authorization nation land |
| Government Regulation No.39/1973, about determination of compensation by the Court Relating to the revocation of rights on land and objects existing above |
| Government Regulation No.36/1998, about control and efficiency of land abandoned |
| Presidential Decree No.34/2003, about national policy in the field of land |
| Decree Head of National Land Agency No.2/2003 about norms and standard mechanism authority management in the field of land held by government district |

Source: JICA Study Team

### 2) Land procurement procedure

Regarding the execution of Presidential Decree No.36/2005 on Land Acquisition for Implementation of Development for Public Interest, the Head of national land agency regulation No.3, 2007 states that a) land provision committee (called Panita 9) and b) land price appraisal team will be organized in order to acquire land for public purpose. If the size of the land is less than one hectare, the land provision committee will not be organized and the implementation agency would directly negotiate with the landowners (Presidential Decree No.36/2005 about Land Acquisition for Implementation of Development for Public Interest).
The Land Provision Committee precedes the following flow for land procurement.




Source: JICA Study Team, based on information obtained and regulation No.36/2005

**Figure 1.2.5 Land Acquisition Procedure for Public Purpose**

### 3) Involuntary resettlement issue

As mentioned above, there is no particular resettlement guideline in Indonesia. Instead, it is strongly recommended to explain the project summary with its schedule and potential impacts of the construction to the surrounding inhabitants, and receive opinions of people in and around the target

area, according to the Decree of Head of Environmental Impact Management Agency No.8/2000 regarding community involvement and information openness in the process of environmental impact assessment.
The procedure and the timing of explanation are as below.

- EIA preparation stage: Explanation on the plan and schedule of the project, reception of objections and questions for 30 days
- TOR preparation stage: Explanation on potential environmental and social impact items and the magnitude of the impact, etc.
- TOR assessment stage: Reception of the comments by the people in/around the area by 3 days before assessment of the TOR
- ANDAL, RPL,RKL assessment stage: Open the report in public for 45 days and receive objections if any

### (5) Major Environmental Standards likely to be concerned for TA Development

#### 1) Standards for discharge wastewater

Wastewater quality standards for businesses are regulated in the Lampung governor regulation No.7, 2010 regarding "Waste water quality standards for businesses and/or activities in Lampung Province." The category of business is divided into 37 types of the activities. The TA development will be under category of "Domestic waste water" according to BPHLD Lampung from the present information.

**Table 1.2.8 Domestic Waste Water Quality Standard**

| Parameter | Unit | Maximum Rate |
|---|---|---|
| pH | - | 6 – 9 |
| BOD | mg/L | 100 |
| TSS | mg/L | 100 |
| Oil and Fat | mg/L | 10 |

Source: JICA study team, based on the Lampung governor regulation No.7, 2010

#### 2) Waste management

There are no particular laws and regulation regarding general solid waste management except for the treatment of toxic waste. The "toxic waste" (recognized as "B3") defines wastes as described in the following table. It is unlikely to be discharged from TA activity.

**Table 1.2.9 List of B3 Toxic Wastes**

| B3 waste from a non-specific source | B3 waste from specific sources | B3 waste from expired chemical material, spills, discarded packaging |
|---|---|---|
| - Halogenated solvents (10 kinds)<br>- Non-halogenated solvents (18 kinds)<br>- Acid bases (10 kinds)<br>- Other non-specific sources wastes (4 kinds) | Fertilizer, pesticide, adhesive resin, petrochemical, ink, textile, vehicle assembly, paint industrial material, oil and natural gas exploration, mining, pharmaceutical material, hospitals and laboratories, etc. (28 kinds) | Pollutant which are forbidden to use at present (180 kinds) |

Source: JICA Study Team, based on the regulation No.19, 1994 and presidential Law No.78, 2001 regarding hazardous and toxic waste management

### 3) Noise Level

The standard regarding noise level is shown in the table below.

**Table 1.2.10 Standards of Noise Level**

| Items | dB (A) |
|---|---|
| 1. Area Usage | |
| a. Residential | 55 |
| b. Commercial | 70 |
| c. Office and trade | 65 |
| d. Open green area | 50 |
| e. Industry | 70 |
| f. Government and public facility | 60 |
| g. Recreation (resort) | 70 |
| h. Special | |
| - Airport | |
| - Train station | |
| - Ship yard | 70 |
| - National port | 60 |
| 2. Activity area | |
| a. Hospital | 55 |
| b. School | 55 |
| c. Place for pray/ church / Temple / Mosque | 55 |

Source: JICA Study Team based on the decree of Minister of Environment, No.48/1996

### 4) Odor

There is no specific regulation regarding odor level except for some particular chemicals. But for the smells of mixture of odorants, which might be the case of TA development, it is stated as follows in the regulation of minister of environment regarding odor, No.11/1996; the level of smell from the mixture of odorants can be detected by at least eight testers with their sensory. If more than 50% of the testers find the smell or odor to be significant, it is evaluated as exceedingly smelly.

## 1.3 Trends in Assistance by Other Donors in Indonesia

According to the Center of International Cooperation of MOA, there has not been any assistance by other donors in the field of distribution and/or wholesale market. However, in the agricultural sector, the following projects are under implementation.

**Table 1.2.11 Projects by Other Donors**

| Implementing Partner(s) | Project Title | Implementation period | Contribution (Million $) |
|---|---|---|---|
| South Korea | Feasibility Study for the Development Agricultural Resources in Central Kalimantan | 2011-2013 | - |
| China | Indonesia-China Technical Cooperation on Hybrid Rice Development in Indonesia | 2010-2013 | - |
| Australia | Indonesia-Australia Partnership Emerging Infectious Diseases | 2010-2014 | - |
| ADB | Participatory Irrigation Sector Project (PISP) | 2005-2010 | 8.80 |
| IFAD | Rural Empowerment and Agricultural Development Programme in Central Sulawesi (READ) | 2006-2014 | 21.08 |
| WB | Farmer Empowerment through Agriculture Technology and Information (FEATI) | 2007-2012 | 92.80 |
| ADB | Integrated Citarum Water Resources Management Investment Program | 2009-2014 | 3.29 |

# Part 2
# New TA Development in Lampung Province

## 2.1 Current Condition and Issues in Study Areas

### 2.1.1 Current Condition and Issues on TA Development in Lampung Province

#### (1) Agriculture Related Policies

The outline of Lampung Provincial Government and its policy for TA development are described below.

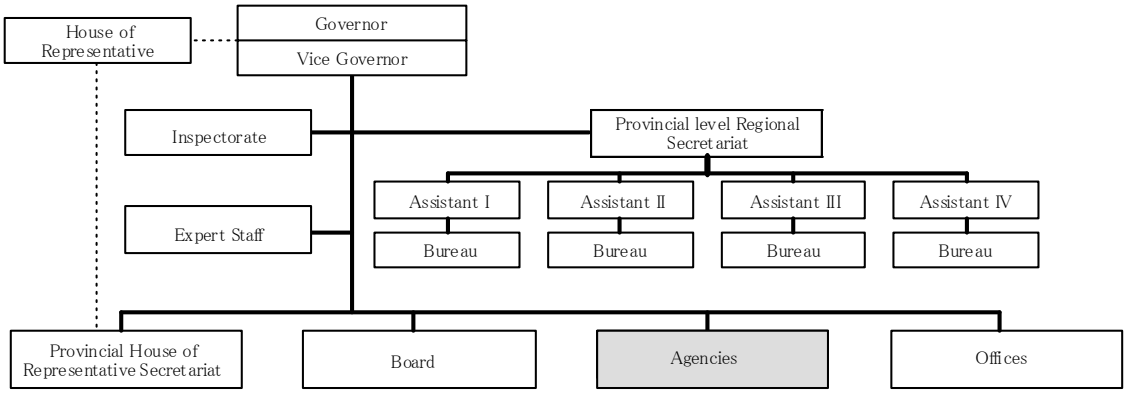
#### 1) Outline of Lampung Provincial Government

Lampung Provincial Government is the executive agency of TA development. The outline of the organization and its financial condition is shown below. In order to promote the TA development in Lampung Province, the governor established in January 2010 a committee for acceleration of TA development (hereinafter referred as TA Committee). It is an advisory committee for the governor, and the committee consists of the representatives of Planning and Development Agency (BAPPEDA), Public Works Agency, Commerce Agency, Economy Agency, Agriculture and Food Crop Agency, Estate Crop Agency, Fishery Agency and Livestock Industry Agency etc. The roles of this advisory committee are summarized in 2.2.1.

a) Organization

Organizational structure of Lampung government is illustrated in Figure below. The composition of structure is Regional Secretary with four Assistants and 11 Bureaus; Local House of Representatives Secretariat, 1 Inspectorate; 9 Boards; 4 Technical Institutions; 18 Units of Agencies Other Technical Institutions (Secretariat of Counseling Coordination Body, Secretariat of Employee Corps of the Republic of Indonesia, and Secretariat of KPID). The implementation agency of the Project is Agriculture agency, which is one of the 18 agencies under the direct control of the governor.

The Lampung government has never involved in the construction of a TA. Hence, the government does not have accumulated know-how and human resources for implementation management and operation of the TA. Lampung government, therefore, have to bring in human resources with knowledge of the management for wholesale market and distribution systems. The sharing of information with other agencies is very important.




Source: BAPPEDA, Lampung Province

**Figure 2.1.1 Organizational Structure of Lampung Province Regional Government**

b) Financial Condition

Lampung government has approximately 8,697 staffs and total of 250 billion Rp as governmental budget in 2011. The revenue is composed of tax revenue (50%), grant from central government (48%) and others (2%). Expenditures comprise indirect cost (55%), and direct cost (45%) in which investment expenditure alone is 44%. The balance is a deficit but the government almost covers the deficit by balance brought forward in each year. On the other hand, it seems the Lampung government has no debt loan.

**Table 2.1.1 Local/Regional Budget (APBD) of Lampung Province, Fiscal Year 2008 to 2011**

(Unit: Rp.)

| No. | DESCRIPTION | FY 2008 | FY 2009 | FY 2010 | FY 2011 |
|---|---|---|---|---|---|
| I | REGIONAL INCOME | 1,623,366,047,390 | 1,697,783,336,989 | 2,040,402,724,069 | 2,496,411,121,844 |
| II | REGIONAL EXPENDITURE | 1,803,685,785,470 | 1,890,757,887,818 | 2,115,354,103,705 | 2,651,575,096,015 |
| | Investment Expenditures | 212,947,818,750 | 236,714,823,290 | 434,554,010,814 | 638,574,197,660 |
| III | SURPLUS / DEFICIT | 180,319,738,080 | 192,341,217,829 | 74,951,379,636 | 155,163,954,172 |
| IV | FINANCING | 180,319,738,080 | 192,341,217,829 | 74,951,379,636 | 155,163,954,172 |
| TOTAL BALANCE (III-IV) | | 0 | -633,333,000 | 0 | -19,999 |

Source: Financial Agency, Lampung Province

### 2) Formulation of "Regional Basic Plan Lampung Province 2009-2029"

In May 2010, Lampung Province formulated the long term development plan, i.e. "Regional Basic Plan Lampung Province 2009-2029" which states "development of local road network to facilitate the transportation for local commodity," "development of port function to promote local business, export and import", and "development of Agro Minapolitan policy (refer to note) in the regencies of West Lampung, South Lampung, Central Lampung, and East Lampung," etc.

Note: "Agro Minapolitan" is one of the governmental policies to promote a comprehensive approach to create a common area for agriculture and fishery. It emphasizes to improve productivities, and to promote marketing of products based upon the centralized management system in order to assist farmers and fishermen. It includes master plan formulation from planting/crop handling to marketing promotion.

### 3) Formulation of "TA Development Plan" by Provincial Agricultural Agency

In March 2011, Agriculture and Food Crop Agency of Lampung Province formulated "TA Development Plan" as one of agricultural sector plan in conformity with "Regional Basic Plan Lampung Province 2009-2029" and a recommendation paper by TA Committee. It clarifies the role and function of TA, i.e., "collecting various products (up to efficient amount for extensive distribution)," "price formation in transparent and fair manner," "Quick and efficient Products distribution to traders or retailers," "Marketing information center," and "providing supporting service related to certification, hygiene inspection, customs, quarantine, etc."

**Table 2.1.2 Outline of TA Development Plan**

| | |
|---|---|
| 1) Location of prioritized site | Penengahan Sub-district, South Lampung Regency |
| 2) Outline | ①TA Facilities<br>Projected Handling Items: Crop, Horticulture, Livestock, Plantation and Fishery Products<br>Required facilities: a) Administration office、b) Storage, sorting and packing facilities, c) Storage including cold room, cold storage, cooler box etc., d) Marketing information system, e) Transaction facilities and promotional area, f) Public facilities (WC, meeting room, etc.), g) Supporting facilities (bank, café, restaurant, rest room, etc.) h) Waste water treatment and garbage collection system、i) Parking<br>②Operation/ Management Body<br>Pt. Lampung Jasa Utama or private sector<br>③Project Implementation Schedule (Phase 1 – Phase 4)<br>a) Phase 1 (2008-2010): Pre-F/S, Governors Decree, Site selection, STA operation etc.<br>b) Phase 2 (2011) Project implementation plan, Detailed plan of distribution system and facilities, F/S, Land acquisition, Institutional, Marketing information system, etc.<br>c) Phase 3 (2012-2014) Construction of TA, construction in existing market and STA, etc.<br>d) Phase 4 (2014) Commencement of operation |

| | |
|---|---|
| 3) Project Cost | ①Each level of government, domestic and foreign investor should be involved in the project at the implementation stage.<br>㋑Project cost: Total Rp. 28.1 billion (land acquisition 4.5 billion, building construction 12.6 billion, infrastructure and utilities 10 billion, Initial operation cost 1 billion) |
| 4) Area Development Plan of TA | It is necessary for TA operation to implement certification of quality assurance to the products at each level of farmers association, STA and TA, and education/ training for these activities. Preparations shown as follows are required to establish such institutional network.<br>①Socialization of standard development/ operation for STA<br>②Socialization of information on management of TA/ STA to stakeholders<br>③to facilitate wholesale market construction with DKI Jakarta partnership |
| 5) Partnership Scheme and Network Mechanism | Products, which are, treated post-harvest sorting; cleaning, and packaging by STA will be distributed to TA as a trade center. STA supports farmers as marketing information center. |

Source: BAPPEDA, Lampung Province

### (2) Current Condition and Future Prospects of Inter-Provincial Marketing between Sumatra and Jawa

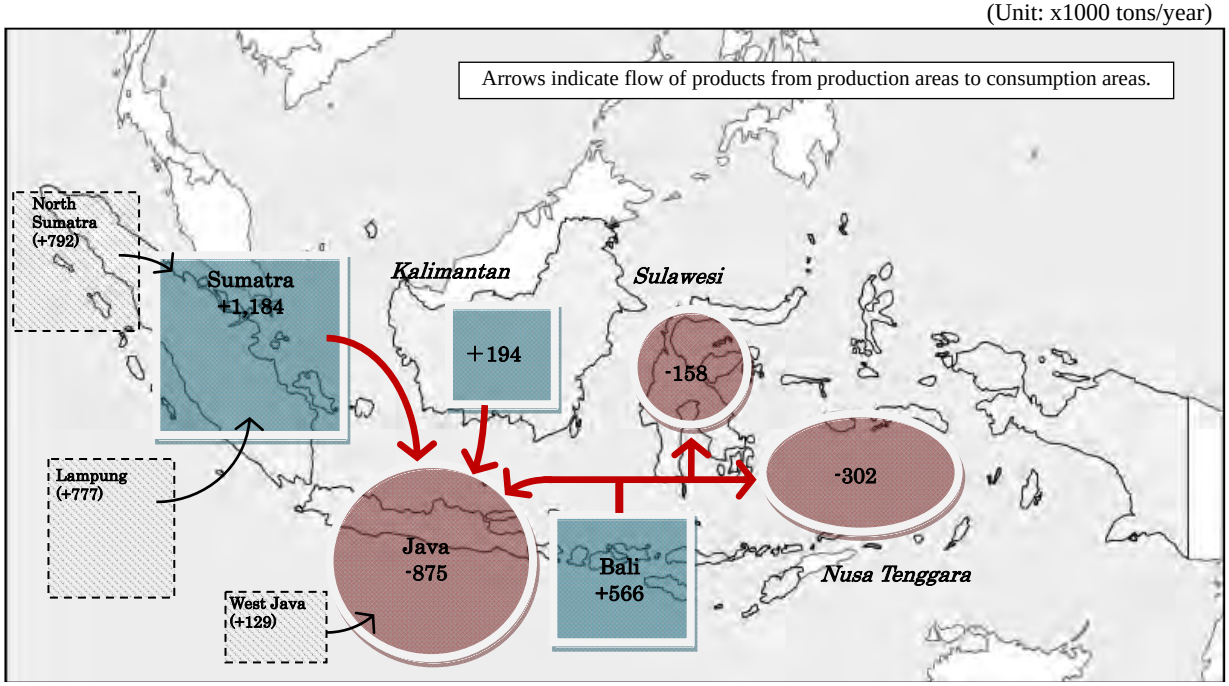
#### 1) Distribution Flows between Sumatra and Jawa Based on the Balance of Supply and Demand

The current gross domestic productions of fruits and vegetables, and the consumption per capita in 2015 and 2025 in Indonesia are estimated in the previous chapter (Refer to 1.1). The study analyzed distribution flow of horticultural product, supply (production) and demand (consumption) in and between Sumatra and Jawa. One assumes that products simply move from place with excess amount of production to places facing the shortage of such products. However, distribution system is much more complex than the above assumption as various actors and restrictions are involved in daily trade.

#### a) Distribution Flows of Fruits between Sumatra and Jawa

According to the amount of fruits production and consumption in Sumatra and Jawa, it is simulated that 1,184 thousand tons of fruits were over supplied in Sumatra and transported to Jawa in 2009. In Jawa, on the other hand, the production of fruits (supply) against the consumption (demand) faced shortage of 875 thousand tons of fruits in 2009, which equals to 2,397 tons per day from Sumatra to Jawa.

(Unit: x1000 tons/year)




Source: Total production data of fruits provided by MOA, and estimation of consumption of fruits per capita by JICA Study Team (Refer to Append

**Figure 2.1.2 Macro Balance of Fruits and Distribution Flow (2009)**

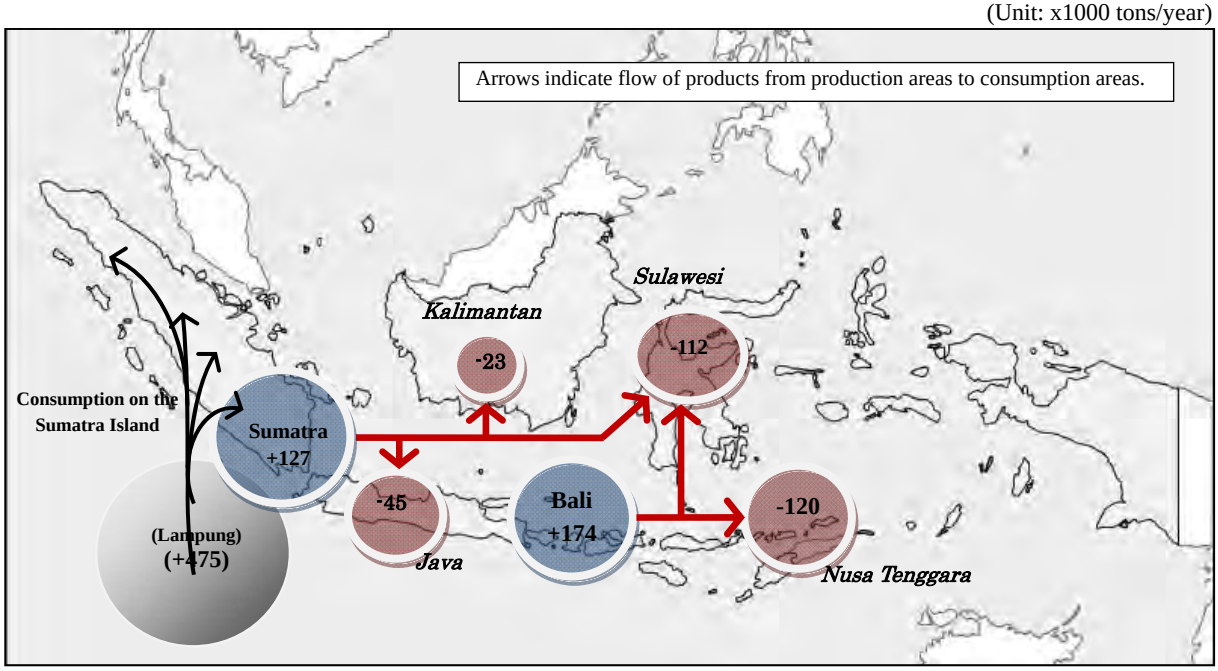
#### b) Distribution Flow of Main Items of Fruits between Sumatra and Jawa

Banana is the main horticultural crop in Lampung. In 2009, the production of Banana in Lampung

province led to a surplus of 475 thousand tons against its demand. In Sumatra, surplus was 127 thousand tons. Lampung province, therefore, could provide its excess banana not only in Sumatra but also to Jawa and others areas.

Pineapple constitutes another main crop in Lampung; the province provided 392 thousand tons of pineapples to other areas. In Sumatra, the surplus was 539 thousand tons. However, the O/D survey at Bakau Heni Port (Refer to 2.1.1 (2) 2)) did not show the transaction of pineapples because most of the pineapples are processed and exported from Sumatra.

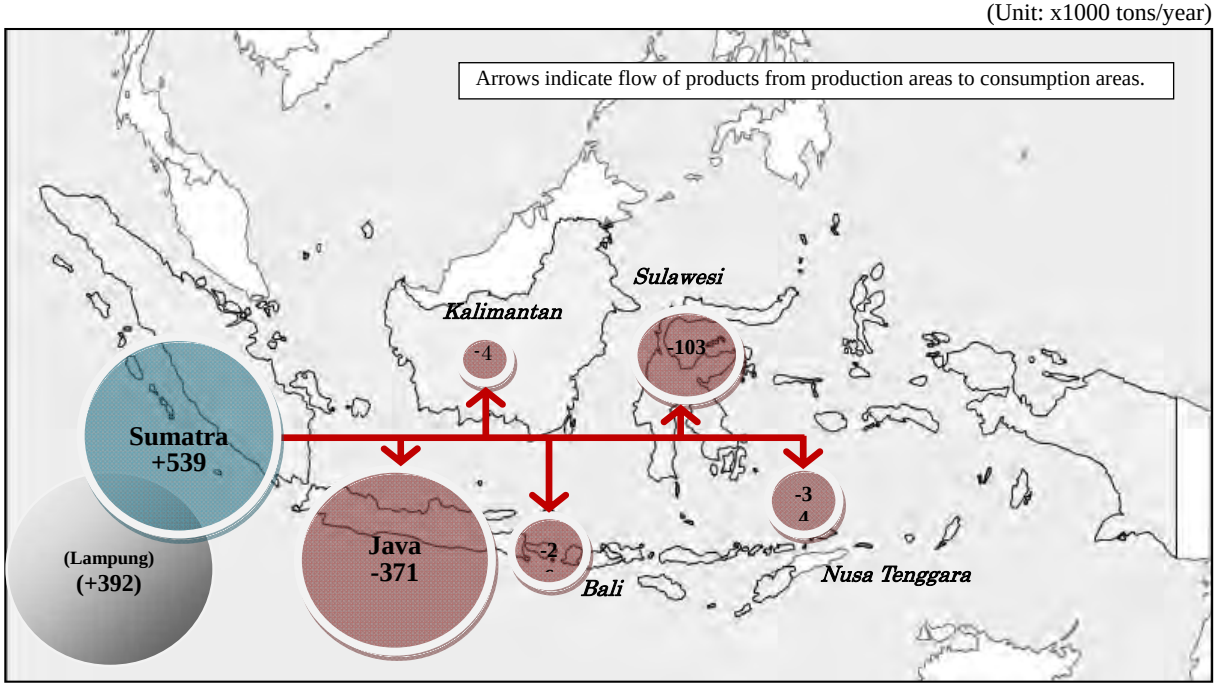
(Unit: x1000 tons/year)




Source: Production data of Statistik Indonesia 2010 (Badan Pusat Statistik Republik Indonesia), and estimation of consumption of fruits per capita by JICA Study Team (Refer to Appendix 5-1)

**Figure 2.1.3 Inter-island Balance of Banana and Distribution Flow (2009)**

(Unit: x1000 tons/year)



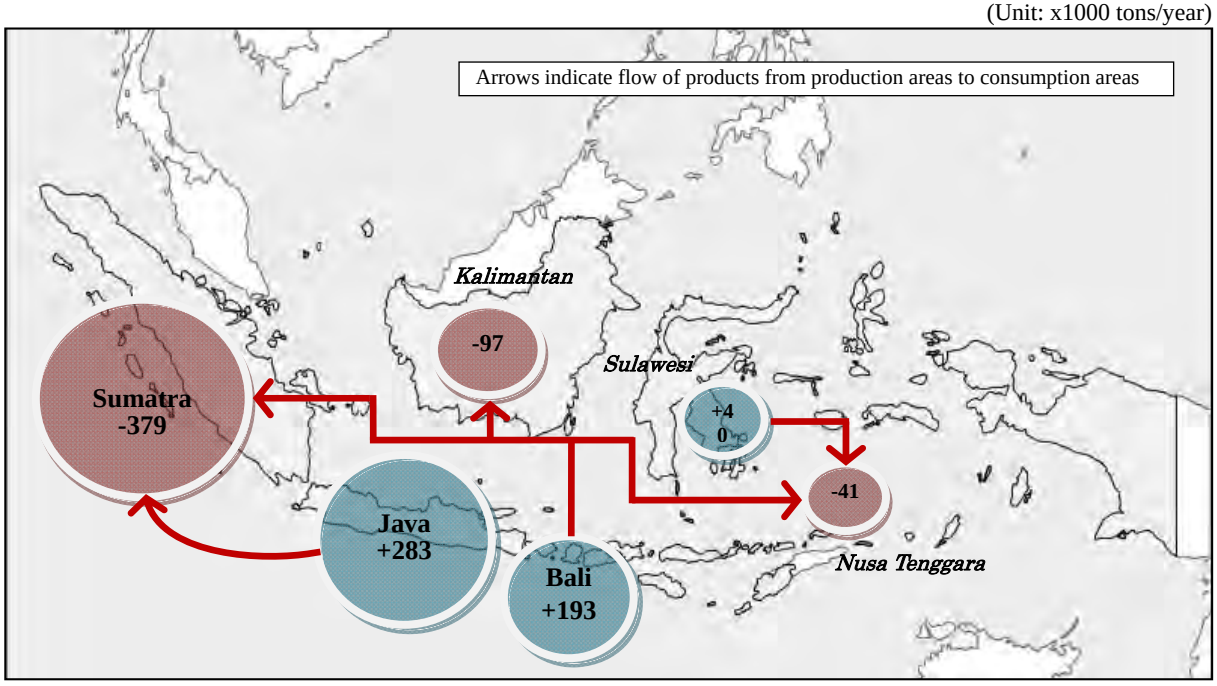

Source: Production data of Statistik Indonesia 2010 (Badan Pusat Statistik Republik Indonesia), and estimation of consumption of fruits per capita by JICA Study Team (Refer to Appendix 5-1)

**Figure 2.1.4 Inter-island Balance of Pineapple and Distribution Flow (2009)**

Mango is also considered to be one of the main items to be distributed from Jawa to Sumatra. The figure below describes that the demand was 379 thousand tons in Sumatra.

However, as for the new TA in Lampung, mango may not be considered as the main transactional product from Jawa to Sumatra because all the trade is undertaken directly between traders at its origin to those at destination. Most of them may not use the new Lampung TA.

(Unit: x1000 tons/year)




Source: Production data of Statistik Indonesia 2010 (Badan Pusat Statistik Republik Indonesia), and estimation of consumption of fruits per capita by JICA Study Team (Refer to Appendix 5-1)

**Figure 2.1.5 Inter-island Balance of Mango and Distribution Flow (2009)**

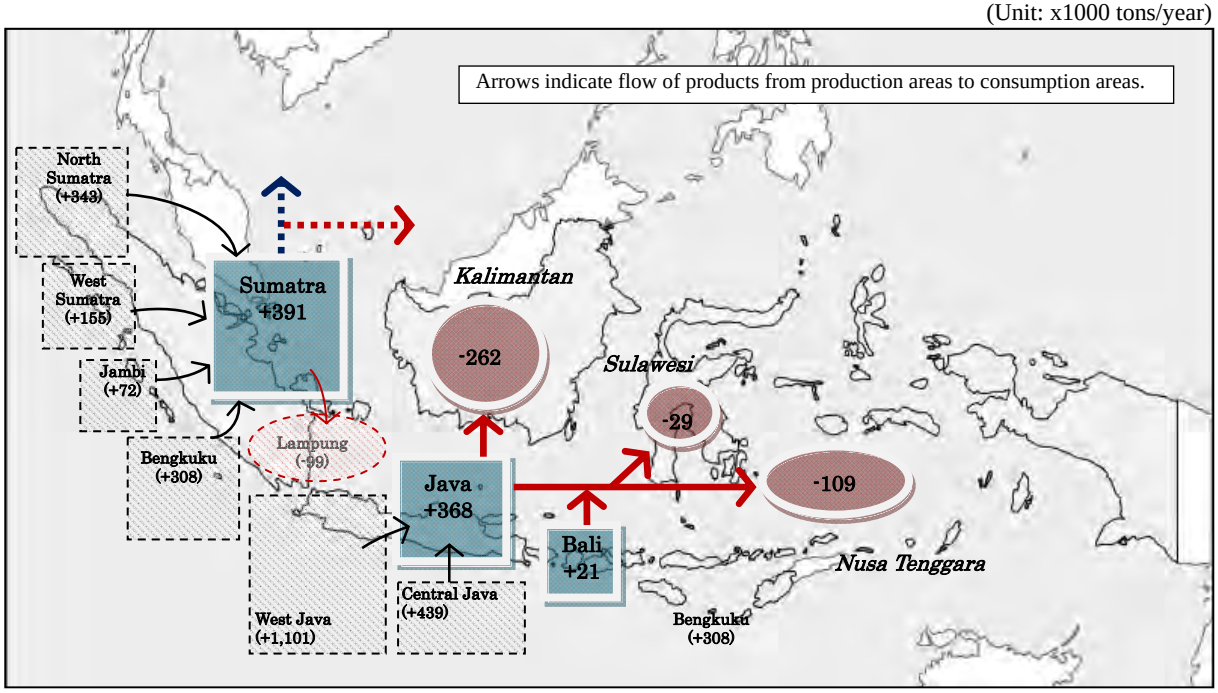
### c) Distribution Flows between Sumatra to Jawa based on the Balance of Supply and Demand of Vegetables

In 2009, surplus of vegetables in Sumatra and in Jawa were 391 thousand tons and 368 thousand tons, respectively. Judging from these figures, it is not expected that the transaction of vegetables from Sumatra to Jawa will be important, but the real trading is very active for the exportation of vegetables, not only from Sumatra to Jawa, but also from Jawa to Sumatra. According to the O/D survey conducted in May 2011, the transaction of vegetables amounts to 214 tons per day from Sumatra to Jawa. It is estimated to be 78 thousand tons per year.

Therefore, transaction of vegetables between Jawa and Sumatra is observed constantly even though the macro flow shows surplus in vegetable production in both areas.

The supply of cabbage contributes to the surplus of 111 thousand tons in Sumatra. Similarly, in Jawa, it amounts to the surplus of 57 thousand tons per year. Bali and Kalimantan suffer from a shortage of vegetable. On the other hand, Sumatra suffers from the shortage of carrots, 166 thousand tons / year, while Jawa has a surplus of 172 thousand tons / year. Therefore, this product may be imported from Jawa to Sumatra. Regarding chili, both Sumatra and Jawa have surplus. The demand of chili depends on the varieties. Sometime, the prices are different between Sumatra and Jawa. Some traders deal with the gap of prices to make profits.

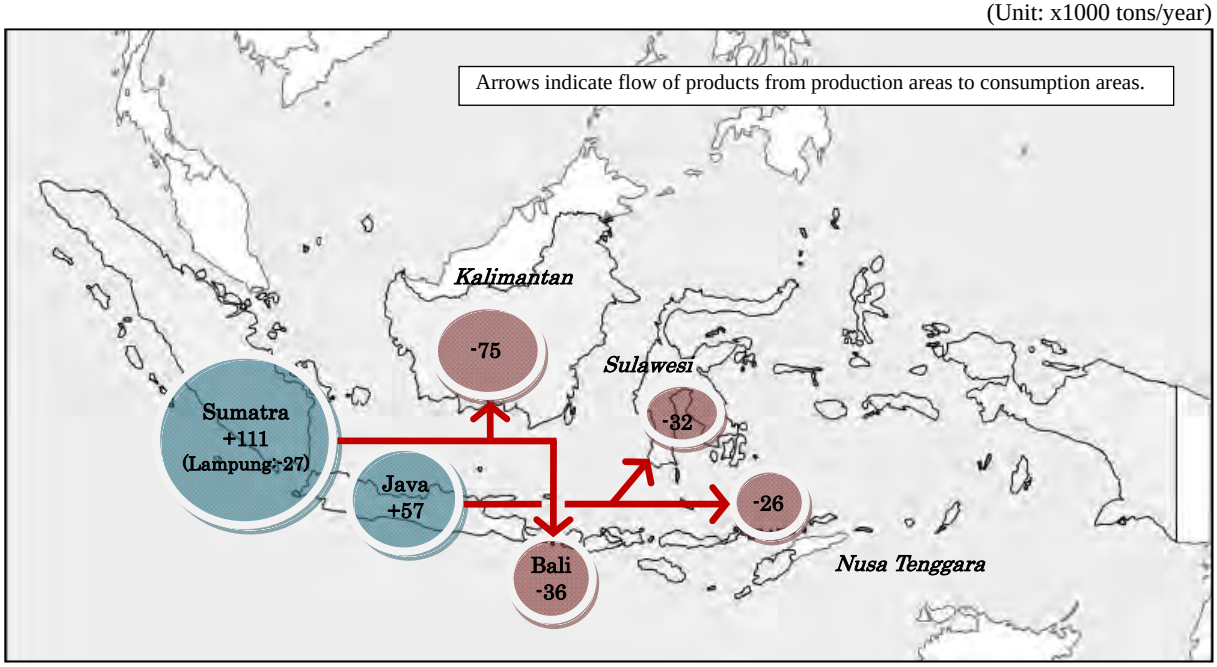
(Unit: x1000 tons/year)




Source: Total production data of vegetables provided by MOA, and estimation of consumption of vegetable per capita by JICA Study Team (Refer to Appendix 5-7).

**Figure 2.1.6 Macro Balance of Vegetables and Distribution Flow (2009)**

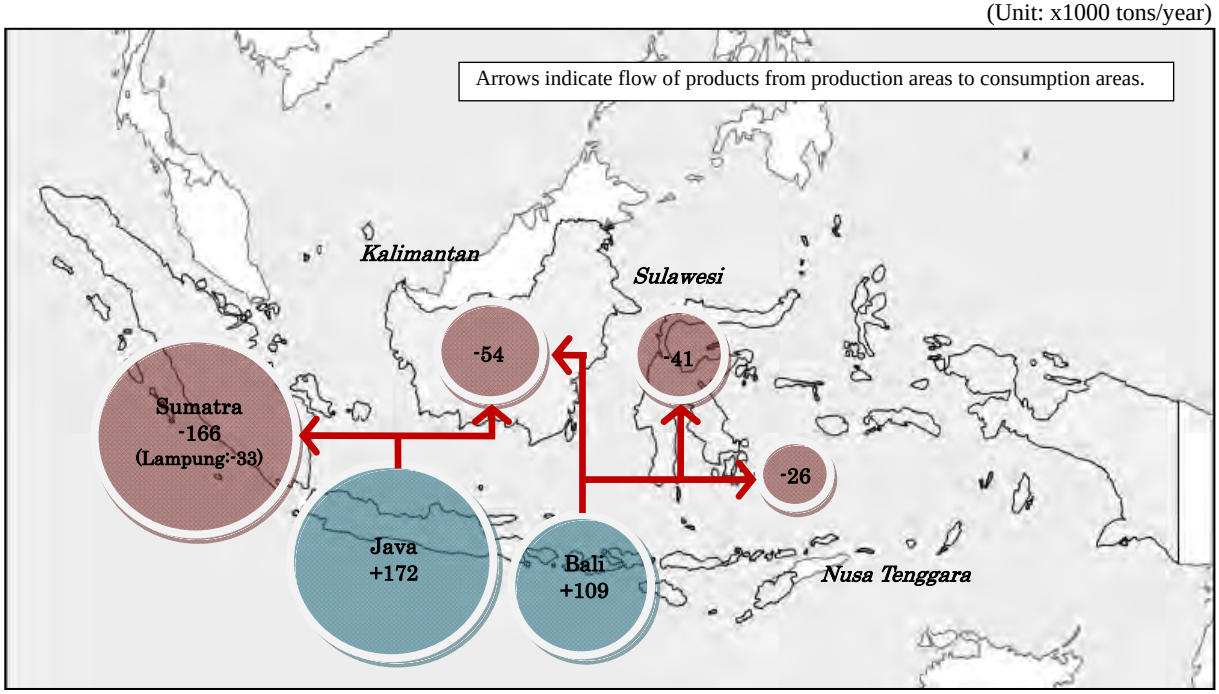
(Unit: x1000 tons/year)




Source: Production data of Statistik Indonesia 2010 (Badan Pusat Statistik Republik Indonesia), and estimation of consumption of vegetable per capita by JICA Study Team (Refer to Appendix 5-2)

**Figure 2.1.7 Inter-island Balance of Cabbage and Distribution Flow (2009)**

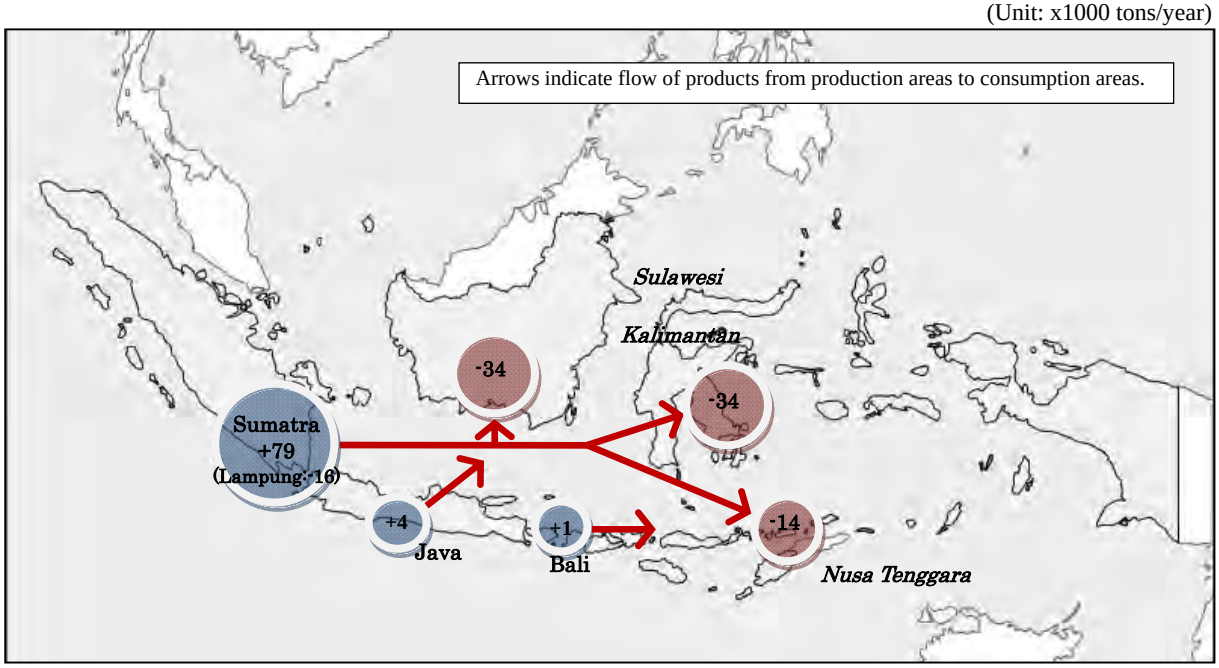
(Unit: x1000 tons/year)




Source: Production data of Statistik Indonesia 2010 (Badan Pusat Statistik Republik Indonesia), and estimation of consumption of vegetable per capita by JICA Study Team (Refer to Appendix 5-2)

**Figure 2.1.8 Inter-island Balance of Shallot and Distribution Flow (2009)**

(Unit: x1000 tons/year)




Source: Production data of Statistik Indonesia 2010 (Badan Pusat Statistik Republik Indonesia), and estimation of consumption of vegetable per capita by JICA Study Team (Refer to Appendix 5-2)

**Figure 2.1.9 Inter-island Chili Distribution Flow (2009)**

### 2) Origin and Destination Survey from Sumatra to Jawa

#### a) Methodology

The Origin and Destination Survey from Sumatra to Jawa was implemented from nine o'clock in the morning on May 23rd to 26th (continuously for 72 hours) at Bakau Heni Ferry Port in Lampung. The survey took a form of interview survey to truck drivers concerning the following items:

- Type of Commodities
- Kind of Packaging
- Origin of Goods
- Destination of Goods
- Route to Bakau Heni Port
- Cool or not Cool
- Tonnage of the truck
- Plate number of the truck

In addition to the interviews, photos of tonnage label and plate number of trucks with target commodities (i.e. fruits, vegetables, and estate commodities) were taken. Tonnages of cargo were estimated from the tonnage label, although many trucks carried over the regulation of the plates. After the survey, total transaction volume of the target commodities was estimated from the total number of trucks. And then the daily transaction volume was calculated by dividing the total volume by three days.

**b) Summary**

During the 3-day survey period, 1,232 trucks were surveyed, carrying estimated volume of 4,332 tons of the target commodities. Therefore, daily transaction volume is estimated at 410.7 trucks with 1,444 tons per day. Note that tonnage used in the following sections refers to daily transaction volume.

Majority of commodities were fruits (76.8%) and approximately half the fruit commodity was bananas. Regarding origin and destination, 76.2% originated from Lampung and 52.9% were destined to DKI Jakarta. Therefore, it is assumed that Lampung has a comparative advantage in transporting its fruits to DKI Jakarta and surrounding areas most probably due to its location next to Jawa Island.

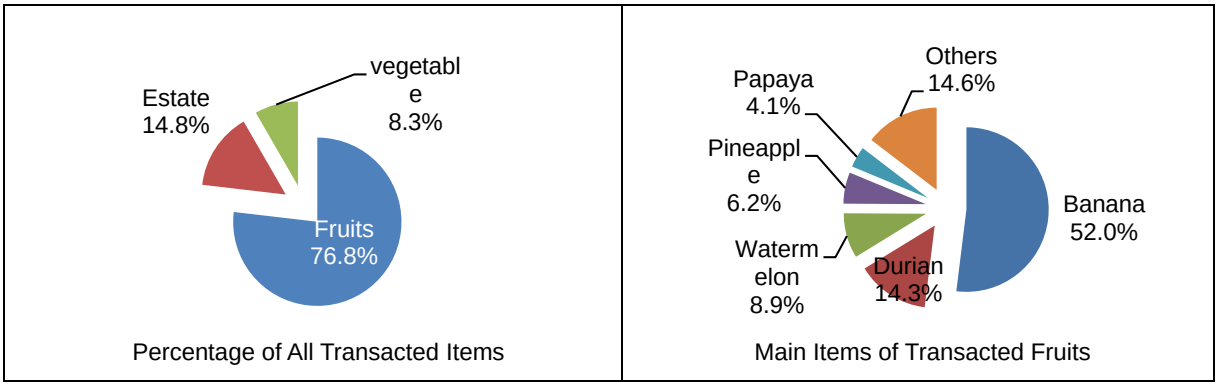
Regarding packing and grading, some 82.0% of the cargo were “not graded” and “not packaged.” Some 10.1% of the cargo was packed with large plastic net bags by the producers but without grading. Therefore, it is possible for wholesalers to add value to their goods when better grading and packing was implemented.

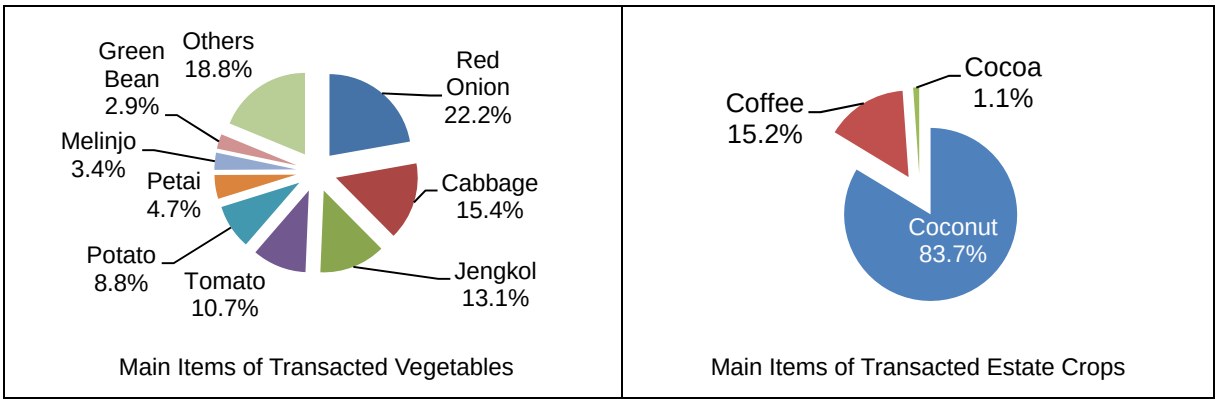
The following sections provide the result of the survey in more detail.

**c) Items**

Among the total volume of 1,444 tons / day, 1,110 tons (76.8%) was fruits, followed by 214 tons of estate crops (14.8%) and 120 tons of vegetables (8.3%). Among the fruits, banana constitutes 52% (577 tons), followed by durian (159 tons / 14.3%), watermelon (99 tons / 8.9%), pineapple (68 tons / 6.2%), and papaya (46 tons / 4.1%).

Among the vegetables, red onion, cabbage, jengkol, tomato and potato accounted for 22.2% (27 tons), 15.4% (19 tons), 13.1% (16 tons), 10.7% (13 tons) and 8.8% (11 tons), respectively. Among the estate crops, coconut and coffee comprise 83.7% (179 tons) and 15.2% (33 tons), respectively, and cocoa accounted for only 1.1% (two tons). (Refer to Annex 1.1).





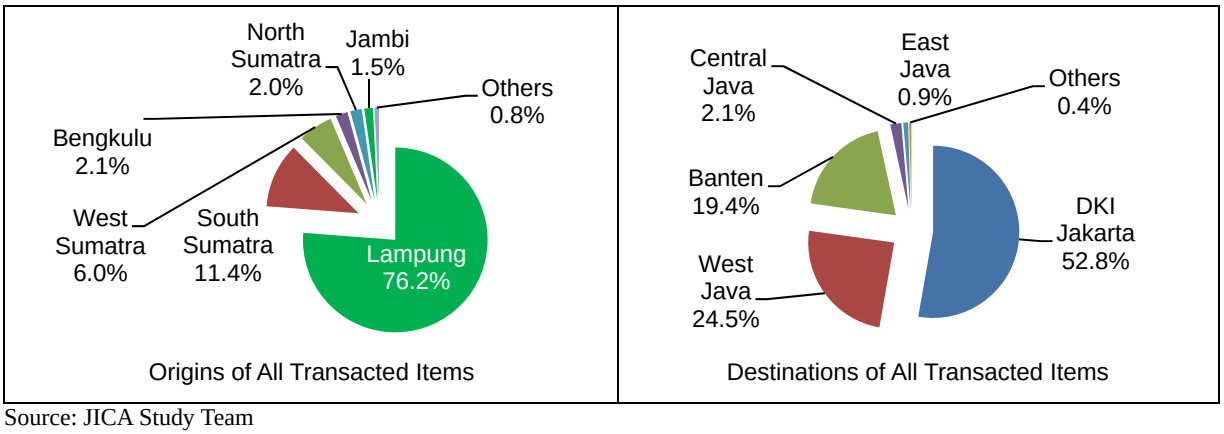

Source: JICA Study Team

**Figure 2.1.10 Main Items in Horticulture Distribution from Sumatra to Jawa (O/D Survey)**

### d) Origins

Origins of all commodities were as follows; Lampung (1,101 tons / 76.2%), South Sumatra (164 tons / 11.4%), West Sumatra (87 tons / 6.0%). On the other hand, origin of fruits shows similar trend as follows; Lampung (870 tons / 78.4%), South Sumatra (136 tons / 12.2%), and West Sumatra (51 tons / 4.6%). Regarding the origin of banana, papaya and watermelon, Lampung accounted for most of the cargos to Jawa as 94.5%, 95.9%, and 92.3% of respective products were originated from Lampung. However, when it comes to pineapple, which is one of the main crops in Lampung, only five tons (7.9%) were transported from Lampung, wherein South Sumatra accounted for 63 tons (92.2%) of cargos. It is assumed that pineapples are processed and exported from Sumatra, rather than transported and consumed in Jawa. But further survey is needed to clarify the reason.

The origins of vegetables were more diversified than fruits. Approximately half the vegetable was from Lampung (55 tons / 45.7%), followed by West Sumatra (30 tons / 25.2%), Jambi (15 tons / 12.4%), South Sumatra (9 tons / 7.6%), Kepulauan Riau (7 tons / 5.8%) and others. Regarding the origin of estate crops, however, Lampung was the biggest contributor (176 tons / 82.1%), followed by South Sumatra (19 tons / 8.9%), Bengkulu (11 tons / 5.0%) and so on.
(Refer to Annex 1.1)




Source: JICA Study Team

**Figure 2.1.11 Origin and Destination in Horticulture Distribution from Sumatra to Jawa (O/D Survey)**

### e) Destinations

Among the total transaction volume of 1,444 tons, 762 tons (52.8%) were being transported to DKI Jakarta, followed by 353 tons (24.5%) to West Java, 280 tons (19.4%) to Banten. The three destinations in and around DKI Jakarta consists 96.6% of the total transaction.
Among the fruit transaction (1,110 tons), approximately half the cargo (587 tons / 52.9%) were being transported to DKI Jakarta, a quarter (272 tons / 24.6%) to West Java, one fifth (222 tons / 20.0%) to Banten. Transaction of banana, papaya, vegetables, and estate crops follow the similar trend.

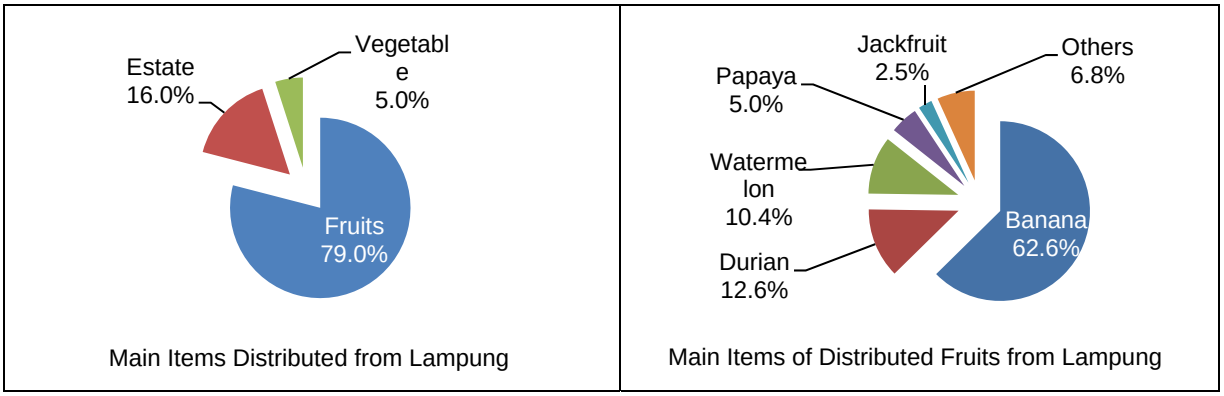
Regarding pineapple and watermelon, majority went to DKI Jakarta; 54 ton / 79.0% and 72 ton / 72.9%, respectively.
(Refer to Annex 1.1)

**f) From Lampung**

Focusing on cargos from Lampung province, 870 tons (79%) was fruits, 176 tons (16%) was estate crops, and 55 tons (5%) was vegetable. Among the fruits from Lampung, banana, durian, watermelon and papaya comprise 62.6% (545 tons), 12.6% (110 tons), 10.4% (91 tons) and 5.0% (44 tons), respectively. Although pineapple constitutes the main product in Lampung, there are only five tons per day according to the survey.

Some 18.7% (10 tons) of vegetables are red onion and 18.5% (10 tons) are cabbage. The local vegetables are also shipped to Jawa from Lampung, such as jengkol (7 tons / 12.8%), petai (6 tons / 10.4%) and melinjo (4 tons / 7.4%). Coconut accounts for 89.8% (158 tons) of estate crops, while coffee and cocoa account for 8.8% (16 tons) and 1.4% (2 tons), respectively.

The destinations from Lampung are mainly to DKI Jakarta (50.0%), West Jawa (25.7%) and Banten (21.1%).
(Refer to Annex 1.1)




Source: JICA Study Team

**Figure 2.1.12 Main Items in Horticulture Distribution Flow from Lampung to Jawa (O/D Survey)**

**g) To DKI Jakarta**

When focusing on cargos to DKI Jakarta, some 587 tons (77%) out of 762 tons were fruits products, followed by 114 tons (14.9%) of estate crops and 61 tons (8.0%) of vegetables. Among the fruits to DKI Jakarta, banana, watermelon, durian, pineapple and papaya comprise 46.6% (273 tons), 12.1% (72 tons), 11.0% (65 tons), 9.2% (54 tons) and 4.2% (25 tons), respectively. It should be noted that the survey took place during the season of durian. Therefore, there would be considerable amount of reduction of durian cargos during other seasons.

Regarding vegetables (61 tons), red onion, potato, cabbage, tomato and jenkol accounted for 18.7% (11 tons), 18.1% (11 tons), 14.8% (9 tons), 12.5% (8 tons) and 11.6% (7 tons), respectively. Therefore, the difference between each crop is not significant.
(Refer to Annex 1.1)

**h) From Lampung to DKI Jakarta**

The main transactions from Lampung to DKI Jakarta were fruits (434 tons / 78.8%). The volume of 94 tons (17.2%) and 22 tons (4.0%) were for the estate crops and vegetable, respectively. Among the fruits from Lampung to DKI Jakarta, banana, watermelon, durian, papaya and jackfruits comprise 260 tons (60.0%), 65 tons (15.1%), 36 tons (8.2%), 23 tons (5.2%) and 15 tons (3.5%), respectively. Vegetables from Lampung to DKI Jakarta were mainly cabbage (4 tons / 20.4%) and jengkol (4 tons / 19.5%), and other crops such as tomatoes and red onions, showing no significance in difference. Regarding estate crops, most of them were coconuts (90 tons / 94.8%), and coffee contributed the rest (5 tons / 5.2%).

(Refer to Annex 1.1)

**i) Grading and Packaging**

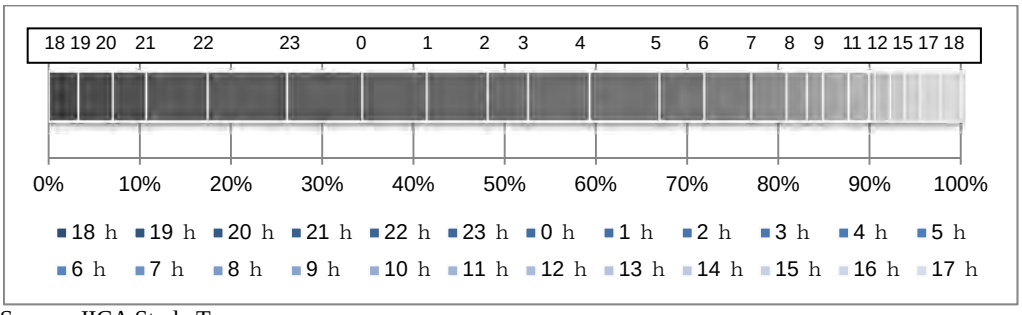
Some 82.0% (1,185 tons) of all transactions (1,444 tons) at Bakau Heni Port from Sumatra to Jawa were neither graded nor packaged; they were just loaded on trucks. Some 10.1% (149 tons) was packed in plastic nets and are not graded. The rest of the products were packaged in wooden boxes, baskets or cardboards.
Unlike fruits of which 87.9% were not packaged, proportion of unpackaged vegetables was considerably lower at 61.2%. Among bananas, durians, watermelons, pineapples, and papayas, proportion of those unpackaged were very high at 98%, 98%, 94%, 92%, and 87 %, respectively.
(Refer to Annex 1.1)

**j) Routes**

There are two main routes to the Bakau Heni Ferry Port; a west route via Bandar Lampung, and east route through Gunung Sugih and Maringgai. About 274 out of 408 trucks (67.2%) used west route, while others used east route.
(Refer to Annex 1.1)

**k) Time**

Most of the transactions were being carried out at night. A total of 80.8% of cargo passed through the port between 6:00 pm to 8:00 am.




Source: JICA Study Team

**Figure 2.1.13 Hourly Transaction at Bakau Heni Port**

**l) Results of Supplementary Survey in October 2011**

Supplementary survey on origin and destination was conducted in late October 2011 in a similar condition as in previous survey in May 2011 to study the seasonal fluctuation of the transaction volume from Sumatra to Jawa. The result of the survey is summarized as follows (Refer to Annex 1.1). Tonnage shown in the following sections refers to that of daily volume, if not mentioned otherwise.

**[Summary]**

During the 3-day survey, total number of trucks was 1,054 (351.3 trucks per day) and total volume of transaction from Sumatra to Java at Bakau Heni Ferry Port was 3,555.78 tons (or 1,185.26 tons / day). Among all the transaction, majority of cargos was from Lampung (946 ton / 80%). And DKI Jakarta was the most popular destination at 49% (577 tons), followed by West Jawa (27% / 326 tons) and Banten (18% / 208 tons).

Out of 1,185.26 tons, 777 tons (66%) were fruits, followed by estate crops (267 ton / 22%) and vegetables (140 ton / 12%). The biggest volume in the transaction of fruits was banana (364 ton / 47%), and the second one was watermelon (168 ton / 22%), followed by orange, papaya and pineapple. Similarly, most of the transactions to DKI Jakarta were fruits (392 tons / 68%) and estate crops (145 ton / 25%). Among fruits, banana was the most popular products (153 ton / 39%), watermelon (97 ton / 25%), followed by orange, pineapple and papaya. Unlike the previous survey, durian was not popular as it was not the season.

About 84% (1000 tons) of all transaction at Bakauheni Port from Sumatra to Java were neither graded nor packaged and they were just loaded on trucks. Only 16% (185 tons) of them were packed in the wooden box, basket, carton or sack. Regarding a route to Bakauheni Ferry Port, 52% (542 %) of the trucks used western route through Bandar Lampung (Trans Sumatra Road), and the rest used Gunung Sugih and Maringgai.

**Table 2.1.3 Number of Trucks and Distribution Volume in the O/D survey (May & Oct. 2011)**

| Parameter | Number of Truck (unit/day) | Transaction Volume (ton/day) |
|---|---|---|
| 1st Survey in May 2011 | 410.7 | 1,444.00 |
| 2nd Survey in October 2011 | 351.3 | 1,185.26 |

Source: JICA Study Team

**Table 2.1.4 Distribution Volume from Sumatra to Jawa in Oct. 2011**

Unit: ton/day

| | 2011 (October) | | |
|---|---|---|---|
| | To Jakarta | To the Others in Jawa | Total (To Jawa) |
| From Lampung | 444 | 502 | 946 |
| From Others in Sumatra | 133 | 106 | 239 |
| Total (From Sumatra) | 577 | 608 | 1,185 |

Source: JICA Study Team

### 3) Simulation of Trading Volume From Sumatra to Jawa Based on O/D Survey

To estimate the trading volume in New Lampung TA, following 8 cases were calculated. The targeted products are fruits, vegetables, and estate crops. The main estate crop is fresh coconut.

a) Estimated transaction of the targeted products through the Bakau Heni Ferry Port
b) Estimated transaction of the targeted products without grading through the Bakau Heni Ferry Port
c) Estimated transaction of the targeted products to DKI Jakarta through the Bakau Heni Ferry Port
d) Estimated transaction of the targeted products without grading to DKI Jakarta through the Bakau Heni Ferry Port
e) Estimated transaction of the targeted products from Lampung Province through the Bakau Heni Ferry Port
f) Estimated transaction of the targeted products without grading from Lampung Province through the Bakau Heni Ferry Port
g) Estimated transaction of the targeted products from Lampung Province to DKI Jakarta through the Bakau Heni Ferry Port
h) Estimated transaction of the targeted products without grading from Lampung Province to DKI Jakarta from through the Bakau Heni Ferry Port

This estimation is based on the O/D survey at the Bakau Heni Port as well as the estimated demand of horticultural products in "1.1.4 Supply/Demand in Domestic/ International Market" and population estimation of each province by BAPPENAS of Indonesia Government[1]. All estimation trading volume

[1] "Proyeksi Penduduk Indonesia (Indonesia Population Projection 2005-2025" by Bandan Perencannaan Pembangunan Nasional Bandan Pusat Statik United Nation s Population Fund, BAPPENAS, Jakarta 2005, from the web site http://www.datastatistik-indonesia.com/proyeksi/index.php?option=com_content&task=view&id=910&Itemid=923

in 2015 and 2025 is calculated with the share from Sumatra to the top three destinations of O/D survey, namely DKI Jakarta, West Jawa and Banten, which have 96.6% of the transaction in the survey.
The assumptions for these simulations are as follows:

i) The production of the targeted products in Sumatra, especially in Lampung Province grows as much as the demand in Jawa increases.
ii) The consumption of horticultural products in Jawa grows at the same ratio of these ten years
iii) The transaction volume from Sumatra to Jawa through the Bakau Heni Ferry Port is not much different from that of the O/D survey.
iv) The percentage of estate crops to total transaction is stable at 14.8% as estimated in the O/D survey.

The numerical formula of each estimated volume is as follows.

**a) Estimated transaction of the targeted products through the Bakau Heni Ferry Port**

"Estimated transaction of the targeted products through the Bakau Heni Ferry Port" is calculated by the data of transaction of the targeted products per day based on "The O/D survey at the Bakau Heni Port". The numerical formula is as follows:

"Estimated total transaction volume in 2015"

$$Tr_{15=}(Sh_{S/J10} \times D_{J15} + Sh_{S/WJ10} \times D_{WJ15} + Sh_{S/B10} \times D_{B15})/Sh_{top3}/Sh_{FV}$$

"Estimated total transaction volume in 2025"

$$Tr_{25=}(Sh_{S/J10} \times D_{J25} + Sh_{S/WJ10} \times D_{WJ25} + Sh_{S/B10} \times D_{B25})/Sh_{top3}/Sh_{FV}$$

$$Sh_{S/J10} = Tr_{S/J10} \times 365 \text{ days}/D_{J10}$$

$$Sh_{S/WJ10} = Tr_{S/J10} \times 365 \text{ days}/D_{WJ10}$$

$$Sh_{S/B10} = Tr_{S/J10} \times 365 \text{ days}/D_{B10}$$

$Tr_{15}$= "Estimated total transaction volume in 2015"
$Tr_{25}$= "Estimated total transaction volume in 2025"
$Tr_{S/J10}$= (Transaction volume from Sumatra to DKI Jakarta per day)
$Tr_{S/WJ10}$= (Transaction volume from Sumatra to West Jawa per day)
$Tr_{S/B10}$= (Transaction volume from Sumatra to Banten per day)
$Sh_{S/J10}$= "Share of Sumatra to DKI Jakarta Demand in 2010" [(Transaction volume from Sumatra to DKI Jakarta per day)
$Sh_{S/WJ10}$= "Share of Sumatra to West Jawa Demand in 2010" [(Transaction volume from Sumatra to West Jawa per day)
$Sh_{S/B10}$= "Share of Sumatra to Banten Demand in 2010" [(Transaction volume from Sumatra to Banten per day)
$D_{J10}$ = Demand in DKI Jakarta in 2010 =(Consumption of DKI Jakarta per capita) x (Population of DKI Jakarta in 2010)
$D_{J15}$ = "Estimated Demand of DKI Jakarta in 2015" = (Consumption of DKI Jakarta per capita) x (Population of DKI Jakarta in 2015)
$D_{J25}$ = "Estimated Demand of DKI Jakarta in 2025" (Consumption of DKI Jakarta per capita) x (Population of DKI Jakarta in 2025)
$D_{WJ10}$ = Demand in West Jawa in 2010 = (Consumption of West Jawa per capita) x (Population of West Jawa in 2010)
$D_{WJ15}$ = "Estimated Demand of West Jawa in 2015" = (Consumption of West Jawa per capita) x (Population of West Jawa in 2015)
$D_{WJ15}$ = "Estimated Demand of West Jawa in 2025" = (Consumption of West Jawa per capita) x (Population of West Jawa in 2025)
$D_{B10}$ = Demand in Banten in 2010 = (Consumption of Banten per capita) x (Population of Banten in 2010)

$D_{B15}$ = "Estimated Demand of Banten in 2015" = (Consumption of Banten per capita) x (Population of Banten in 2015)

$D_{B15}$ = "Estimated Demand of Banten in 2025" (Consumption of Banten per capita) x (Population of Banten in 2025)

$Sh_{top3}$ = "Percentage of the share of top 3 destination"

$Sh_{FV}$ = "Percentage of the share of Fruits and Vegetables to all transaction through the Bakau Heni Port" = (Transaction volume of Fruits + Vegetables)/(Transaction volume of Fruits + Vegetables + Estate crops)

**b) Estimated transaction of the targeted products without grading through the Bakau Heni Ferry Port**

"Estimated transaction of the targeted products without grading through the Bakau Heni Ferry Port" is based on the data of transaction of horticultural products without grading per day, which are not packaged in sacks and others, except in wooden and cardboard boxes.

"Estimated transaction without grading in 2015"
= $Tr_{15}$ x PNg
"Estimated transaction without grading in 2015"
= $Tr_{15}$ x PNg
"Estimated transaction without grading in 2025"
= $Tr_{25}$ x PNg
"Estimated transaction without grading in 2025"
= $Tr_{25}$ x PNg
PNg = "Percentage of the transaction without grading"

**c) Estimated transaction of the targeted products to DKI Jakarta through the Bakau Heni Ferry Port**

"Estimated transaction of the targeted products to DKI Jakarta through the Bakau Heni Ferry Port" is based on the data of transaction of horticultural products from Sumatra to DKI Jakarta.

Estimated transaction to DKI Jakarta in 2015"
= $Tr_{15}$ x PTj
Estimated transaction to DKI Jakarta in 2025"
= $Tr_{25}$ x $PT_J$
$PT_J$ = "Percentage of the transaction to DKI Jakarta"

**d) Estimated transaction of the targeted products without grading to DKI Jakarta through the Bakau Heni Ferry Port**

"Estimated transaction of the targeted products without grading to DKI Jakarta through the Bakau Heni Ferry Port" is based on the data of transaction of horticultural products from Sumatra to DKI Jakarta per day without grading, and packaging except in wooden and cardboard boxes.

Estimated transaction to DKI Jakarta in 2015 without grading"
= $Tr_{15}$ x $PT_J$ x $PNg_J$
Estimated transaction to DKI Jakarta in 2025 without grading"
= $Tr_{25}$ x $PT_J$ x $PNg_J$
$PT_J$ = "Percentage of the transaction to DKI Jakarta"
$PNg_J$ = "Percentage of the transaction without grading"

**e) Estimated transaction of the targeted products from Lampung Province through the Bakau Ferry Heni Port**

"Estimated transaction of the targeted products from Lampung Province through the Bakau Heni Ferry Port" is based on the data of transaction of horticultural products from Lampung Province per day.

"Estimated transaction of the targeted products from Lampung in 2015"
= $Tr_{15}$ x $PT_p$
"Estimated transaction of the targeted products from Lampung in 2025"
= $Tr_{25}$ x $PT_p$
$PT_P$= "Percentage of the transaction from the Lampung Province"

**f) Estimated transaction of the targeted products without grading from Lampung Province through the Bakau Heni Ferry Port**

"Estimated transaction of the targeted products without grading from Lampung Province through the Bakau Heni Ferry Port" is based on the data of transaction of horticultural products from Lampung Province per day without grading and packaging.

"Estimated transaction of the targeted products without grading from Lampung in 2015"
= $Tr_{15}$ x $PT_p$ x $PNg_p$
Estimated transaction of the targeted products without grading from Lampung in 2025"
= $Tr_{25}$ x $PT_p$x $PNg_p$
$PT_P$= "Percentage of the transaction from the Lampung Province"
$PNg_P$ = "Percentage of the transaction without grading"

**g) Estimated transaction of the targeted products from Lampung to DKI Jakarta through the Bakau Heni Ferry Port**

"Estimated transaction of the targeted products from Lampung Province through the Bakau Heni Ferry Port" is based on the data of transaction of horticultural products from Lampung Province to DKI Jakarta.

"Estimated transaction of the targeted products from Lampung to DKI Jakarta through the Bakau Heni Port in 2015"
= =$Tr_{15}$ x $PT_{LJ}$
"Estimated transaction of the targeted products from Lampung to DKI Jakarta through the Bakau Heni Port in 2025"
= =$Tr_{25}$ x $PT_{LJ}$
$PT_{LJ}$ = Percentage of the transaction from the Lampung Province to DKI Jakarta"

**h) Estimated transaction of the targeted products without grading from Lampung to DKI Jakarta through the Bakau Heni Ferry Port**

"Estimated transaction of the targeted products without grading to DKI Jakarta through the Bakau Heni Ferry Port" is based on the data of transaction of horticultural products from Lampung Province to DKI Jakarta without grading and packaging.

" Estimated transaction of the targeted products without grading from Lampung to DKI Jakarta in 2015"
= $Tr_{15}$ x $PT_{LJ}$ x $PNg_J$
" Estimated transaction of the targeted products without grading from Lampung to DKI Jakarta in 2025"
= $Tr_{25}$ x $PT_{LJ}$ x $PNg_J$

$PT_{LJ}$ = Percentage of the transaction from the Lampung Province to DKI Jakarta"

$PNg_{LJ}$ = "Percentage of the transaction from Lampung to DKI Jakarta without grading"

Based upon above-mentioned method, the estimated transaction volume in 2015 and 2025 are shown as follows.

**Table 2.1.5 Simulation of Transaction of the Targeted Products (tons/day)**

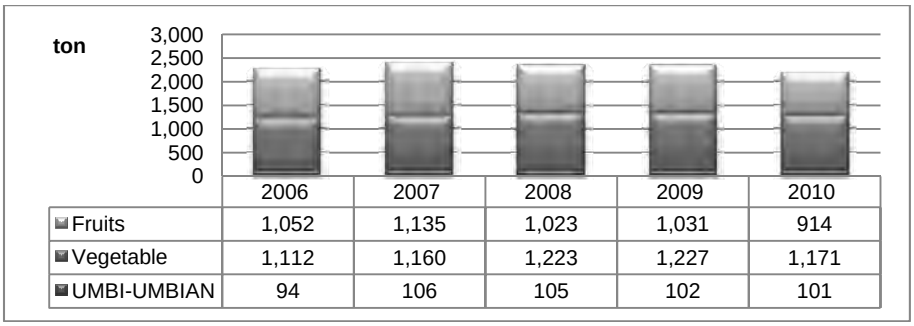
| O/D | Whole/Without grading | Sector | 2011 | 2015 | 2025 |
|---|---|---|---|---|---|
| All | Whole | Fruits | 1,110 | 1,762 | 2,055 |
| | | Vegetables | 120 | 157 | 196 |
| | | Estate | 214 | 334 | 392 |
| | | Total | 1,444 | 2,253 | 2,643 |
| | Without grading | Fruits | 1,030 | 1,635 | 1,907 |
| | | Vegetables | 108 | 141 | 176 |
| | | Estate | 210 | 328 | 385 |
| | | Total | 1,346 | 2,099 | 2,464 |
| To Jakarta | Whole | Fruits | 586 | 932 | 1,087 |
| | | Vegetables | 61 | 80 | 100 |
| | | Estate | 113 | 178 | 208 |
| | | Total | 760 | 1,190 | 1,395 |
| | Without grading | Fruits | 530 | 842 | 982 |
| | | Vegetables | 53 | 69 | 86 |
| | | Estate | 113 | 178 | 208 |
| | | Total | 695 | 1,089 | 1,277 |
| From Lampung | Whole | Fruits | 870 | 1,381 | 1,611 |
| | | Vegetables | 56 | 72 | 89 |
| | | Estate | 176 | 274 | 322 |
| | | Total | 1,102 | 1,727 | 2,023 |
| | Without grading | Fruits | 841 | 1,335 | 1,557 |
| | | Vegetables | 55 | 72 | 90 |
| | | Estate | 155 | 242 | 284 |
| | | Total | 1,051 | 1,640 | 1,924 |
| From Lampung to Jakarta | Whole | Fruits | 434 | 689 | 803 |
| | | Vegetables | 22 | 29 | 36 |
| | | Estate | 94 | 147 | 173 |
| | | Total | 550 | 865 | 1,012 |
| | Without grading | Fruits | 415 | 659 | 793 |
| | | Vegetables | 22 | 29 | 36 |
| | | Estate | 90 | 140 | 165 |
| | | Total | 527 | 822 | 1,014 |

Note:
1) "Whole" means all of transaction of the targeted products through Bakau Heni Port.
2) "Without grading" means the amount of transaction of the targeted products through Bakau Heni that are not graded.
Source: JICA Study Team

### 4) Transaction through Kramat Jati Wholesale Market in DKI Jakarta

Kramat Jati Wholesale Market (PIKJ = Pasar Induk Kramat Jati) is one of the main markets, which supplies vegetables and fruits to consumers in DKI Jakarta. In 2010, 2,186 tons of horticultural products were traded per day on average at PIKJ. The share of vegetables was 53.6% (1,171 tons) per

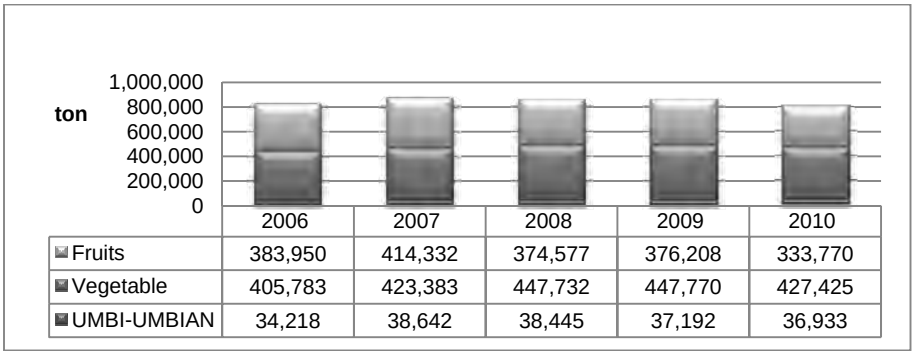
day, and fruits occupied 41.8% for 941 tons. Other products were tuber (umbi-umbian) at 4.6% or 101 tons per day.
Annually 798,129 tons were transacted through PIKJ. Fruits amounted to 333,770 tons, vegetable were 427,425 tons and tubers 36,933 in 2010.




| | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|
| Fruits | 1,052 | 1,135 | 1,023 | 1,031 | 914 |
| Vegetable | 1,112 | 1,160 | 1,223 | 1,227 | 1,171 |
| UMBI-UMBIAN | 94 | 106 | 105 | 102 | 101 |

Source: Pasar Jaya

**Figure 2.1.14 Daily Transaction in Kramat Jati（2006-2010）**

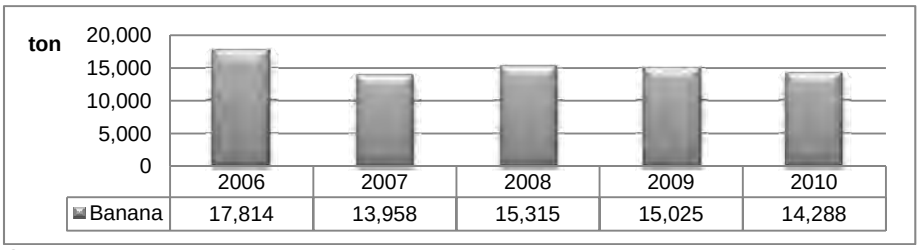



| | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|
| Fruits | 383,950 | 414,332 | 374,577 | 376,208 | 333,770 |
| Vegetable | 405,783 | 423,383 | 447,732 | 447,770 | 427,425 |
| UMBI-UMBIAN | 34,218 | 38,642 | 38,445 | 37,192 | 36,933 |

Source: Pasar Jaya

**Figure 2.1.15 Annual Transaction in Kramat Jati（2006-2010）**

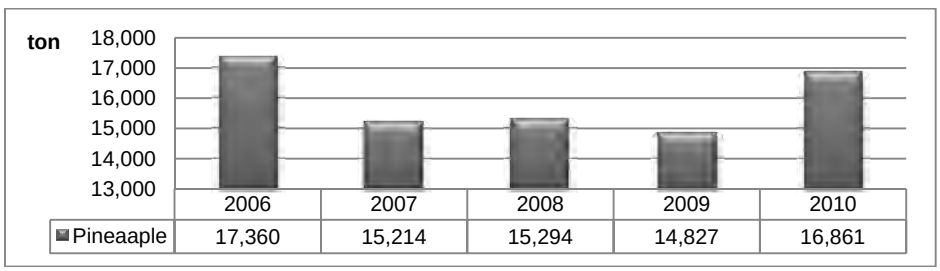
The annual transaction of bananas was 14,288 tons in 2010. Some 16,861 tons of pineapples were transacted as well as 15,516 tons of papayas and 39,182 tons of watermelons. The daily transaction of bananas was 39.1 tons and the pineapples was 46.2 tons, papaya was 42.5 tons and watermelon was 107.3 tons.




| | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|
| Banana | 17,814 | 13,958 | 15,315 | 15,025 | 14,288 |

Source: Pasar Jaya

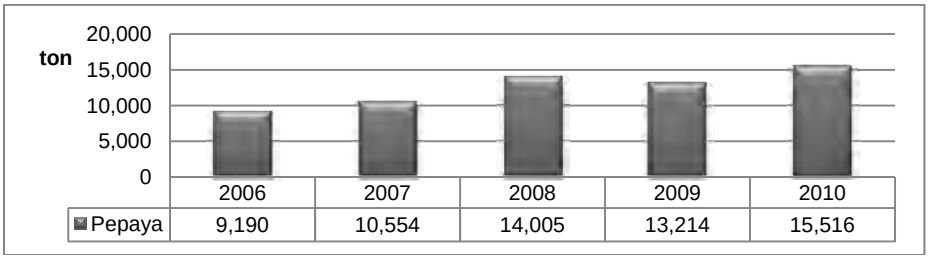
**Figure 2.1.16 Annual Transaction of Bananas in Kramat Jati（2006-2010）**




| | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|
| Pineaaple | 17,360 | 15,214 | 15,294 | 14,827 | 16,861 |

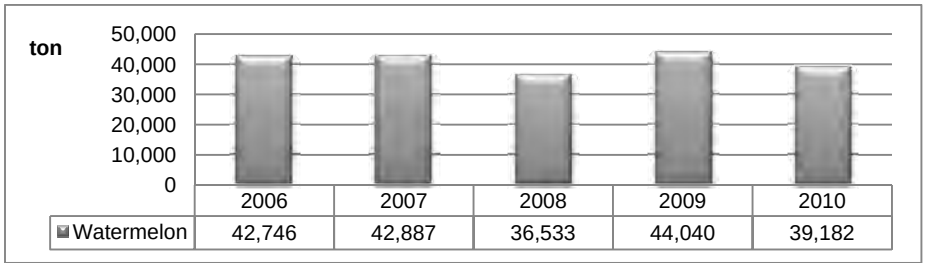
Source: Pasar Jaya

**Figure 2.1.17 Annual Transaction of Pineapples in Kramat Jati（2006-2010）**




Source: Pasar Jaya

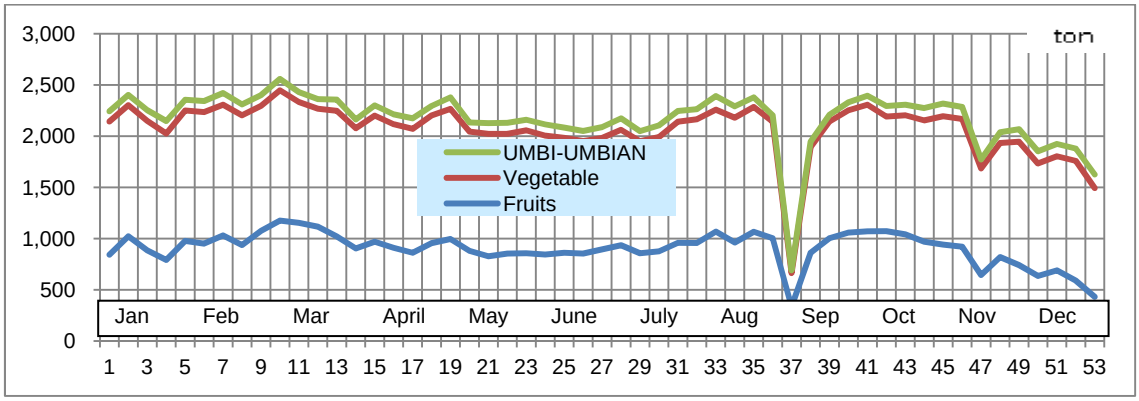
**Figure 2.1.18 Annual Transaction of Papayas in Kramat Jati（2006-2010）**




Source: Pasar Jaya

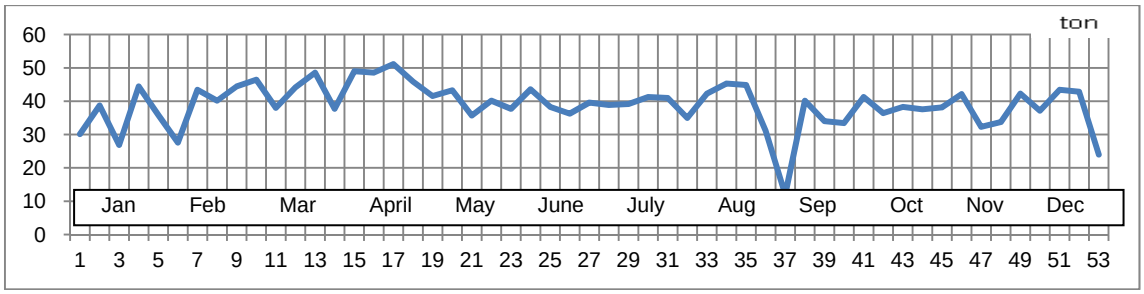
**Figure 2.1.19 Annual Transaction of Watermelons in Kramat Jati（2006-2010）**

For the weekly transaction in Kramat Jati, the transactions from February to May were rather higher than that of November to December. From September 9 to 11, Kramat Jati was closed because of the holidays at the end of Ramadan. The weekly transaction sharply dropped during that week. During Ramadan, the transactions in Kramat Jati were rather higher, especially for pineapples. From October to December, the transaction of papaya was more active than other seasons.



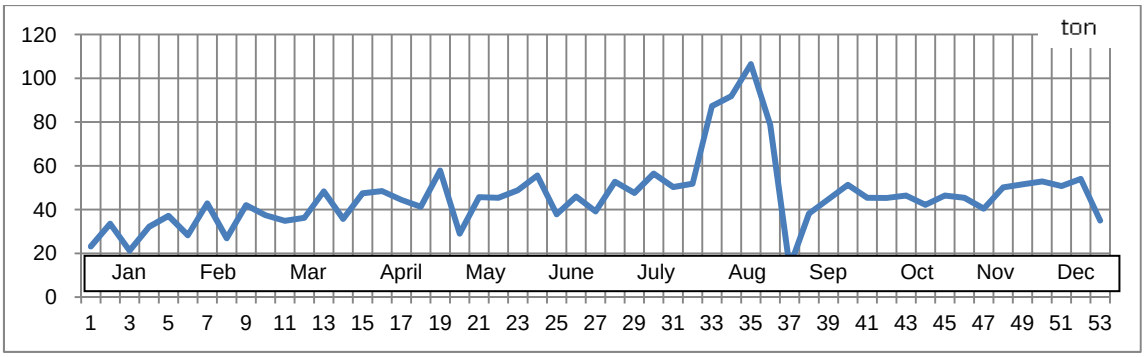

Source: Pasar Jaya

**Figure 2.1.20 Weekly Trading Quantity in Kramat Jati in 2010**



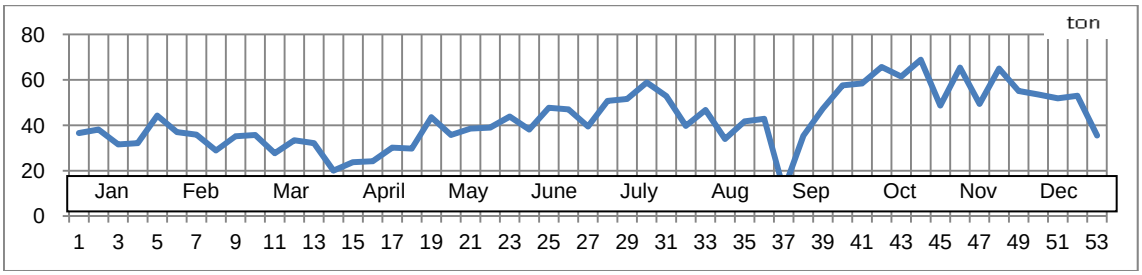

Source: Pasar Jaya

**Figure 2.1.21 Weekly Trading Quantity of Banana in Kramat Jati in 2010**




Source: Pasar Jaya

**Figure 2.1.22 Weekly Trading Quantity of Pineapple in Kramat Jati in 2010**




Source: Pasar Jaya

**Figure 2.1.23 Weekly Trading Quantity of Papaya in Kramat Jati in 2010**

The wholesalers of Kramat Jati sold 70% of products to traditional retailers, 25% to supermarkets, 2% to restaurants and 3% to others. The products from Lampung were chickpeas, papayas, bananas, watermelons and dukes, durians and kedondon. According to the DKI Jakarta's data, Kramat Jati amounted to 76% of vegetables of DKI Jakarta, 40% of fruits, 80% of tubers and 20% of beans.

**5) Analysis on the survey results from the viewpoint of new TA development in Lampung**

The summary of the survey results is as follows.

a) Considering the surplus of vegetables and fruits, there is a large amount of transaction of fruits from Sumatra to Jawa. Especially, bananas and pineapples from Lampung occupied a large proportion of the transaction as bananas from Lampung occupies 777 thousand tons of total surplus of bananas in Sumatra (1,184 thousand tons), and that of pineapple occupies 392 thousand tons out of 539 thousand tons.

b) According to O/D survey at Bakau Heni Port, transaction of fruits occupies 1,110 tons (76.8%) of total transaction volume of 1,444 tons from Sumatra to Jawa per day. Furthermore, bananas occupy approximately half of the fruit transaction volumes (577 tons), followed by durians, watermelons, pineapples and papaya. Among all transaction volume of 1,444 tons, 1,100 tons are from Lampung province. Pineapples from Lampung, on the other hand, did not show large volume at the survey, because most of pineapples are processed to canned products and the rest is consumed in Lampung province.

**(3) Relevant Agricultural Policies of DKI Jakarta to be Considered**

**1) Regulation PERDA8/2004 of DKI and others**

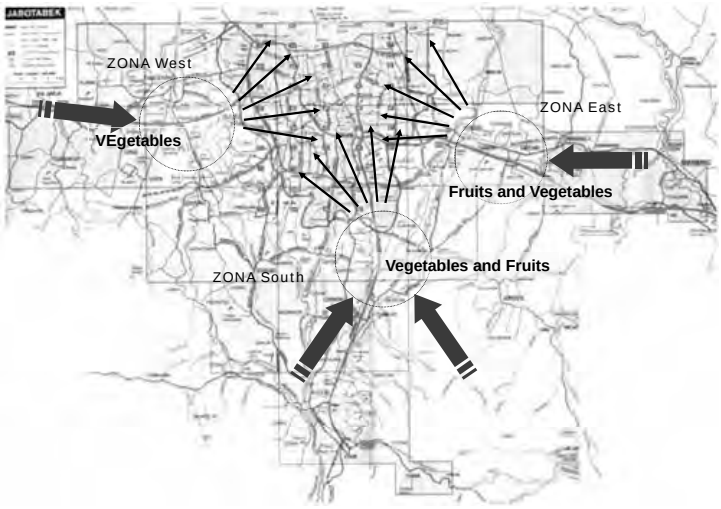
**a) Framework of Implementation of PERDA 8**

Regulation PERDA 8/2004, enacted in 2004, aims to improve the quality of the agricultural products to DKI Jakarta. DKI Jakarta is planning to develop three new TAs in the vicinity of Jakarta with PERDA 8. The locations are as follows.

1) Between Banten and Serang (West area = Banten Province)

2) Between Karawang and Chibiteng (East = West Jawa Province)
3) Between Bogor and Ciawi (South = West Jawa Province)

DKI Jakarta aims to distribute safe agricultural products for consumers by controlling the quality of the products at TAs before they reach to DKI Jakarta. The scheme of PERDA 8 and TA was explained to the designated provinces, including Banten, which competes with the Lampung province for the new TA. But the provincial government of Banten failed to secure the land. And the scheme of PERDA 8 has not been securely implemented in surrounding provinces as well.




Source: DKI Jakarta

**Figure 2.1.24 Trading Zone of Planned New Three TAs for Fruits and Vegetables to Jakarta**

**b) Subsidiary Regulation of PERDA 8 Enacted in November 2010**

Although discussions on PERDA 8 have been held with the neighboring provinces, it is yet to be implemented since 2004. Therefore, the subsidiary regulation necessary for the enforcement of PERDA 8 was prepared as the provincial governor's decree in November 2010 to enforce the regulation to full extent by 2012 with a trial period in 2011. According the Study Team's survey, however, this regulation was not much acknowledged among the wholesalers in the market place (Kramat Jati) of DKI.

The characteristic of the subsidiary regulation requires three types of certificates not only to the agricultural product delivered to Jakarta but also to the agricultural products passing through Jakarta. The three certifications are listed as follows:

i. Certificate of the origin
ii. Labeling on quality
iii. Certificate of qualification test

The certificate of origin is issued by the agricultural administrative that is a competent authority in origin. The name of producer, address, place of production, type of agricultural product and the quantity are indicated on the certificate.
Labeling on quality and certificate of qualification test require analyses on safety of foods such as agricultural chemical residues, the number of bacillus, heavy metals. The quality must meet the markets' needs, such as packaging according to size of products, etc.
DKI Jakarta does not have its own quality standard; the Indonesian legal system is applied and the following standards shall prevail. Although the standards of quality control on agricultural products are enacted, but its enforcement is insufficient.

i. Indonesian National Standard (SNI) shall guide the standard of appearance.
ii. The standard of safety on agricultural products shall be guided by Prime3, Prime2, Prime 1,

GAP (Good Agriculture Practices)[2], GHP (Good Hygienic Practices)[3], GMP (Good Manufacturing Practices) [4] authorized by OKKP-D[5].

OKKP-D in each Province is cited as an authorization body on quality inspection. An authorization for quality consists of three categories. Those categories are below.

i. Prime1 = the same rank as authorization of organic food
ii. Prime2 = chemical fertilizer is used, but agricultural chemical is not used
iii. Prime3 = cultivation by low agricultural chemical

"Eco Agro Mark" (lower right) in Japan

The products distributed in DKI Jakarta must be at least authorized with Prime 3 level.
Prime 3 must be passed the tests of agricultural chemical residues and heavy metals, etc. However, OKKP-D in each province does not have an adequate testing system. Prime 3 can be authorized in Lampung Province, it intends to improve its testing facilities.
The traders and collectors must get a certificate of the origin, which is issued by the province, or regional governments where the products originate.
The certificate of qualification test can also be issued by the local government at the origin of the products as well as by DKI Jakarta and other agencies authorized by DKI Jakarta. The certificate has to be renewed every six months with the approval of authorities.

Labeling on quality constitutes a combination of letters and designed logo or mark (see the picture of tomatoes in the case of Japan) issued by each producer, and the competent authority in the Province of production must authorize the quality guarantee when it is issued.

PERDA 8 also regulates packaging, storage, and transportation of products. All the traders should have the qualification of good technical management to ensure the appropriate management of the agricultural products. This qualification is a kind of permission to trade the agricultural products. The director of legislation will decide the procedure in details and the application regarding the authorization. The traders of agricultural product include wholesalers, supermarkets, collectors, and packers. The traditional small-scale retailers do not need to get the qualification. There is a penalty when PERDA 8 is violated as shown in the following list:

i. Caution by document
ii. Temporary prohibition of trafficking or suspension of distribution of agricultural products
iii. Retrieve or abandonment of products in case the distribution is a hazard to people's health
iv. Deprivation of permission of business

**Table 2.1.6 Outline of Subsidiary Regulation of PERDA 8**

| Kind of certificate | Issued by | Outline of Certification | Remarks |
|---|---|---|---|
| 1. Certificate of the origin | Competent authority relating to production of vegetables and fruits in each province | a) Name of shipper<br>b) Address of shipper<br>c) Place of production or collection<br>d) Variety of agricultural products<br>e) Quantity/weight | |
| 2. Labeling on quality | Business operator who has an official certification of quality | "Combination of letters and picture" to understand the name of brand and its grade at first glance | Business shippers have to be authorized by OKKP-D in Province and hold their |

[2] Good Agricultural Practices are "practices that address, environmental, economic and social sustainability for on-farm processes, and result in safe and quality food and non-food agricultural products" (FAO COAG 2003 GAP paper)
[3] GHP certification is verification of practices in the handling and packing operation that minimize microbial contamination in the handling of fresh fruits, vegetables and tree nuts (USDA).
[4] Good Manufacturing Practices (GMPs) contain both requirements and guidelines for manufacturing of food and drug products in a sanitary environment (FDA in USA).
[5] OKKP-D is Otoritas Kompetensi Keamanan Pangan Daerah that means "Regional Competent Authority of Food Security and Safety"

| | | | |
|---|---|---|---|
| | guarantee<br>Official inspection board in Province of origin | Cf. Mark of ecological farmer in Japan | certificate in order to issue a label requirement |
| 3. Certificate of qualification test | OKKP-D in each Province of origin | Requirement for quality<br>1) Technical requirement<br>2) Hygienic requirement<br>3) Safety from chemical contamination such as agricultural chemical, heavy metal, etc.<br>4) Safety from biological contamination such as bacillus, etc.<br>5) Safety from material contamination such as soil from abroad, foreign compound (glass, etc)<br>Each standard is guided by Indonesian government.<br>1) Standard is SNI<br>2) Safety standard consists of Prime3, Prime2, Prime1, GAP, GHP, GMP<br>Prime3 has tests of agricultural chemical residue and content of heavy metal, etc. | OKKP-D in Province of origin, in DKI, in other Province and a qualified private sector are eligible to issue (by oral explanation)<br><br>Note: Authorization of quality guarantee has to be revised in each 6 months. The permission will be suspended if there is no revision in 2 years. |

Source: JICA Study Team

**2) Negotiations between Lampung Province and DKI Jakarta**

PERDA 8 has been announced at the meeting of MPU several times since 2004. MPU (Mitra Praja Utama = Capital Area Partnership) is a partnership among the governors of provinces surrounding DKI Jakarta. Lampung Province is the only member from Sumatra in MPU. Other members of MPU are the governors of DKI Jakarta, Banten, West Jawa, East Jawa, Bali, Yogyakarta, Central Jawa and West Nusa Tenggara.

The negotiation between the Governments of Lampung Province and DKI Jakarta has started in 2011 regarding the new TA relating to PERDA8. The Government of Lampung Province hoped that an official contract would reach an agreement in 2011. DKI Jakarta was making preparation for their assistance to the new TA if the conditions are favorable (Refer to 2.2.1(5)).

The governor of Lampung Province had also schedule to explain about the new TA at the meeting of Governors of Sumatra Island to get a consensus and implement the legislation regarding PERDA8 at the new TA in Lampung Province.

**(4) Features and Issues of Agriculture Marketing in Lampung Province**

**1) Features of Fruits and Vegetables Markets in Lampung Province**

In Lampung each city and regency has established markets of vegetables and fruits. General description on traditional markets managed by Bandar Lampung is shown as follows.

**a) Bandar Lampung**

In Bandar Lampung, there are two wholesale markets, Gintung and Taming, which have mixed function of wholesale and retail markets. On the other hand, there is a night wholesale market on the roadside at Jatimulyo to trade vegetables and fruits. The wholesalers come to buy from local collectors as well as from farmers. The markets are underdeveloped and it is necessary to establish a modern distribution system from the viewpoint of hygiene and quality control. Nevertheless, the Government of Lampung Province and Bandar Lampung City are not keenly aware of this problem.

The wholesalers in Bandar Lampung buy a certain amount of vegetables and fruits from Jawa including DKI Jakarta. These cargoes are left in front of the shops at night, and are paid daytime when the sellers come to their markets. The shops also pay security fee to secure their products from burglars at night.

The wholesalers in Bandar Lampung buy a certain amount of vegetables and fruits from Jawa

including DKI Jakarta. These cargoes are left in front of the shops at night to pay for them in daytime when the sellers come to their markets. But they must pay the security fee to the gangs informally to protect their cargo during the night.

**Night Market at Jatimulyo**

**Gintung at night (left) and the wholesaler in daytime**

There are 14 markets in Bandar Lampung, and most are traditional markets. The local government manages 13 markets, and a private sector entity (The Cooperatives, Industry and Trade Service of Lampung Province, 2006) manages one market. A general description of markets in Bandar Lampung is shown in the following table.

**Table 2.1.7 A General Description of Traditional Markets in Bandar Lampung, 2005 (1/2)**

| No | Name of Market | District | Year Established | Area (m2) | | Distance to Capital center (km) |
|---|---|---|---|---|---|---|
| | | | | Land | Building | |
| 1 | Bawah | T.Karang Pusat | 1998 | 11000 | 6000 | 0 |
| 2 | Tugu | T. Karang Timur | 1990 | 70599 | 4235 | 7 |
| 3 | Way Halim | Tanjung Seneng | 1983 | 10000 | 6000 | 20 |
| 4 | Way Kandis | Tanjung Seneng | 1999 | 5000 | 2000 | 30 |
| 5 | Bambu Kuning | T. Karang Barat | 1990 | 8840 | 4888 | 0 |
| 6 | Baru | T. Karang Barat | 1985 | 6765 | 4059 | 0 |
| 7 | Pasir Gintung | T. Karang Pusat | 1988 | 2222 | 1412 | 0 |
| 8 | Tamin | T. Karang Barat | 1990 | 12000 | 7200 | 5 |
| 9 | Beringin Raya | Kemiling | 1998 | 3000 | 910 | 25 |
| 10 | Panjang | Panjang | 1990 | 33700 | 20250 | 25 |
| 11 | Kangkung | T. Betung Selatan | 1990 | 15622 | 9373 | 15 |
| 12 | Gudang Lelang | T. Betung Selatan | 1980 | 1500 | 900 | 15 |
| 13 | Cimeng | T. Betung Selatan | 1990 | 4465 | 2679 | 13 |
| 14 | Koga | Kedaton | 1990 | 6950 | 3857 | 10 |

Note: “Location Survey and Study, Development of Agribusiness Terminal In the Lampung Province” (Regional Development Planning Agency of the Lampung Province And Cv. Exalindo Konsultan, 2008)
Source: JICA Study Team

**Table 2.1.7 A general description of traditional markets in Bandar Lampung, 2005 (2/2)**

| No | Name of Market | No. of Utilities | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Kiosks | Vendors | Shan-ties | Shops | Shop-houses | Mattress Vendors | Officers |
| 1 | Bawah | 180 | 139 | 75 | 23 | 30 | 0 | 6 |
| 2 | Tugu | 172 | 881 | 75 | 177 | 15 | 0 | 9 |
| 3 | Way Halim | 181 | 417 | 80 | 279 | 20 | 0 | 6 |
| 4 | Way Kandis | 36 | 107 | 40 | 0 | 0 | 0 | 6 |
| 5 | Bambu Kuning | 46 | 488 | 80 | 264 | 0 | 0 | 15 |
| 6 | Baru | 174 | 617 | 34 | 135 | 53 | 0 | 16 |
| 7 | Pasir Gintung | 116 | 521 | 137 | 51 | 26 | 0 | 11 |
| 8 | Tamin | 176 | 217 | 0 | 207 | 0 | 0 | 11 |
| 9 | Beringin Raya | 174 | 310 | 34 | 135 | 53 | 0 | 4 |
| 10 | Panjang | 308 | 524 | 120 | 67 | 200 | 0 | 13 |
| 11 | Kangkung | 150 | 338 | 0 | 104 | 0 | 0 | 8 |
| 12 | Gudang Lelang | 130 | 230 | 44 | 0 | 0 | 0 | 7 |
| 13 | Cimeng | 234 | 330 | 53 | 112 | 0 | 0 | 6 |
| 14 | Koga | 45 | 321 | 26 | 156 | 0 | 112 | 4 |

Note: "Location Survey and Study, Development of Agribusiness Terminal In the Lampung Province" (Regional Development Planning Agency of the Lampung Province And Cv. Exalindo Konsultan, 2008)
Source: JICA Study Team

### b) Features of Fruits and Vegetable Markets in Other Regencies in Lampung Province

Traditional markets of fruits and vegetables operated by other cities and regencies function as the regional retail markets. An outline of these markets is summarized in Annex 1.3.

### (5) Other Facilities and Systems referred in TA Planning

### 1) Pasar Induk Kramat Jati in DKI Jakarta

Kramat Jati Fruits and Vegetables Wholesale Market (PIKJ) is established on December 28 in 1973 under a law, "Governor of Jakarta Decree No. DV, a18/1/17/1973." It has been a major distribution center of vegetables and fruits to ensure a smooth distribution for DKI Jakarta. PD. Pasar Jaya manages PIKJ.
The main tasks of PIKJ are as follows.

a) To facilitate smooth flow of fruit and vegetable.
b) To provide marketing and trading facilities which are necessary for the implementation of the vegetable and fruit trade.

The Functions of PIKJ are as follows:

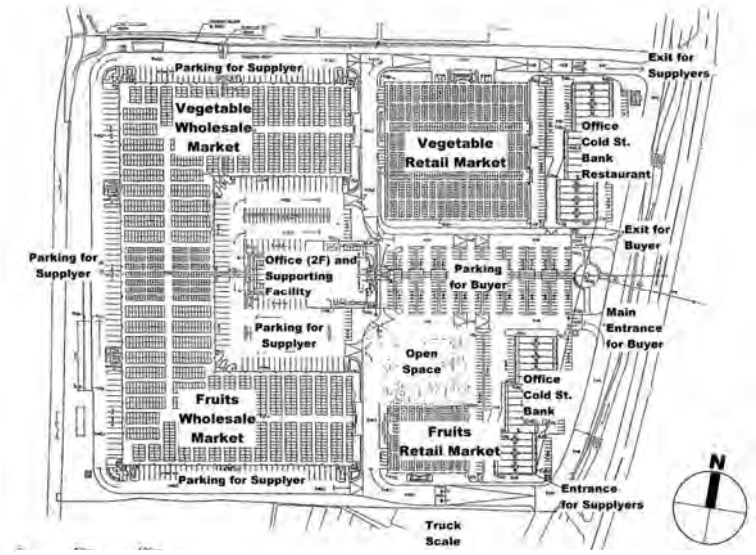
- To provide and regulate trading/marketing facilities
- To provide public facilities
- To regulate transport and loading/unloading activities
- To list up prices and tonnages of products

### a) Profile of Pasar Induk Kramat Jati

a) Address : Jl. Raya Bogor KM17 Jakarta Timur
b) Established : December 28, 1973
c) Land Area : 14,7 ha
d) Building floor area : 83,605 $m^2$
e) Parking area : 17,737 $m^2$

**b) Facilities of PIKJ**

There are 4,428 wholesale booths, of which 3,718 (84%)booths are active, and 710 (16%) are empty.
The booth number of each building is shown in the following table.
"Agro Outlet Office" is a place for the province governments to promote the sale of the agro products to DKI Jakarta. The Lampung Province has an outlet office here.
Booths of fruits trading are 1,492 (33.7%) and those of vegetables are 2,080 (47.0%). A total of 3,572 (80.7%) are traders of fruits and vegetables.
There are 6 banks and 183 booths for restaurants and food stands.




Source: Pasar Jaya

**Figure 2.1.25 Building Layout of PIKJ**

**Table 2.1.8 Facilities and Location of the Buildings in PIKJ**

| | Plot | |
|---|---|---|
| | Number | % |
| Wholesaler Building (A1, A2,A3) | 2118 | 47.8% |
| Management Office Building | 435 | 9.8% |
| Agro Outlet Office | 29 | 0.7% |
| C.1 Building (Vegetable Sub Wholesalers) | 1424 | 32.2% |
| C.2 Building (Fruits Sub Wholesalers) | 350 | 7.9% |
| Others | 72 | 1.8% |
| Total | 4428 | 100% |

Source: Pasar Jaya

**Table 2.1.9 Type of Trading Commodity in PIKJ**

| Type of Trading | Number | % |
|---|---|---|
| Fruits | 1492 | 33.7% |
| Vegetables | 2080 | 47.0% |
| Household Ingredient | 388 | 8.8% |
| Textile | 31 | 0.7% |
| Other Services | 45 | 1.0% |
| Bank | 6 | 0.1% |
| Agro Outlet Office | 29 | 0.7% |
| Other retailer | 174 | 3.9% |
| Restaurant and Food Stands | 183 | 4.1% |
| Total | 4428 | 100% |
| Fruits and Vegetable | 3572 | 80.7% |

Source: Pasar Jaya

**Table 2.1.10 Booths in PIKJ**

| Space ($m^{2)}$ | Number | % |
|---|---|---|
| 3,91 | 1384 | 31.26% |
| 4,00 | 781 | 17.64% |
| 6,00 | 73 | 1.65% |
| 8,26 | 126 | 2.85% |
| 8,40 | 1682 | 37.99% |
| 12,46 | 20 | 0.45% |
| 12,60 | 360 | 8.13% |
| 30,90 | 1 | 0.02% |
| 90,72 | 1 | 0.02% |
| TOTAL | 4428 | 100% |

Source: Pasar Jaya

**c) Purchasing and Lending System in the expanded area**

Kramat Jati Market was renovated in 2003 in cooperation with PT. Tunggal Sentra Sejahtera (PT. TSS) by TPP method. PT. TSS is a developer to invest in the renovation of the facilities of PIKJ. The company sold the business rights for 20 years to recover the investment cost. Almost all the rights were sold out once.
Prices of the booths per $m^2$ just after the renovation work are shown in the following table.
The price of plot in the wholesaler building was sold 8 million /$m^2$ just after the reform, but a wholesaler got the space at 3 times more expensive than this. The rights are sold and bought like for real estates. Not only wholesalers, but also investors bought them expecting an increase in the price.
Many wholesalers rent spaces from investors and/or holder of the right, and the wholesalers pay the

fee for lending. Cost of 16m$^2$ (2 booths) is Rp. 2 million a month.

**Table 2.1.11 Price of Exploitation Right of Booth in PIKJ**

| Type of Booths | Price (Rp.) |
|---|---|
| Wholesaler Building | 8,000,000 |
| Sub Wholesaler Building | |
| a. Stall for Wholesalers | 8,445,000 |
| b. Food Stand | 7,111,000 |
| c. Kiosk | 5,778,000 |

Source: Pasar Jaya

**d) Fees of PIKJ**

The source of income of PIKJ is as follows.

a) Charge for using space for 20-year: Rp. 1 million /m$^2$
b) Renewal fee of the right of using space: Rp. 15,000 /m$^2$ per year
c) Charge of using toilet: Rp. 1,000/person, Rp. 2,000/shower for one person
d) Charge of parking: see below;

**Table 2.1.12 Parking Fee in PIKJ**

| | Admission fee (Rp.) | Charge per one hour (Rp.) |
|---|---|---|
| Motorbike | 1,000 | 500 |
| Motor Vehicle | 2,000 | 1,000 |
| Pickup Truck | 3,000 | 1,000 |
| 4 ton Truck | 5,000 | 1,500 |
| Container Truck | 7,000 | 2,000 |

Source: Pasar Jaya

e) Charge of electricity and tap water
f) Charge for cleaning: Rp. 500/4m$^2$/ a day
g) Charging for security

PD. Pasar Jaya has a schedule to charge based on trade amount of trucks for experimental purposes from the 4$^{th}$ quarter in 2011. It has already installed a truck scale at the gate and has undertaken the operation test to weigh the trucks to make the calculation system.

**e) PD. Pasar Jaya**

PD. Pasar Jaya was funded fully by DKI Jakarta Government.
It manages 153 markets and 106,000 booths in DKI Jakarta.
The related laws to Pasar Jaya are as follows:

- Perda 2/2009 about PD. Pasar Jaya
- Perda 3/2009 on the management of markets of DKI Jakarta

The purpose and objectives of PD. Pasar Jaya are to manage and develop the market areas.
The main tasks of PD. Pasar Jaya are as follows:

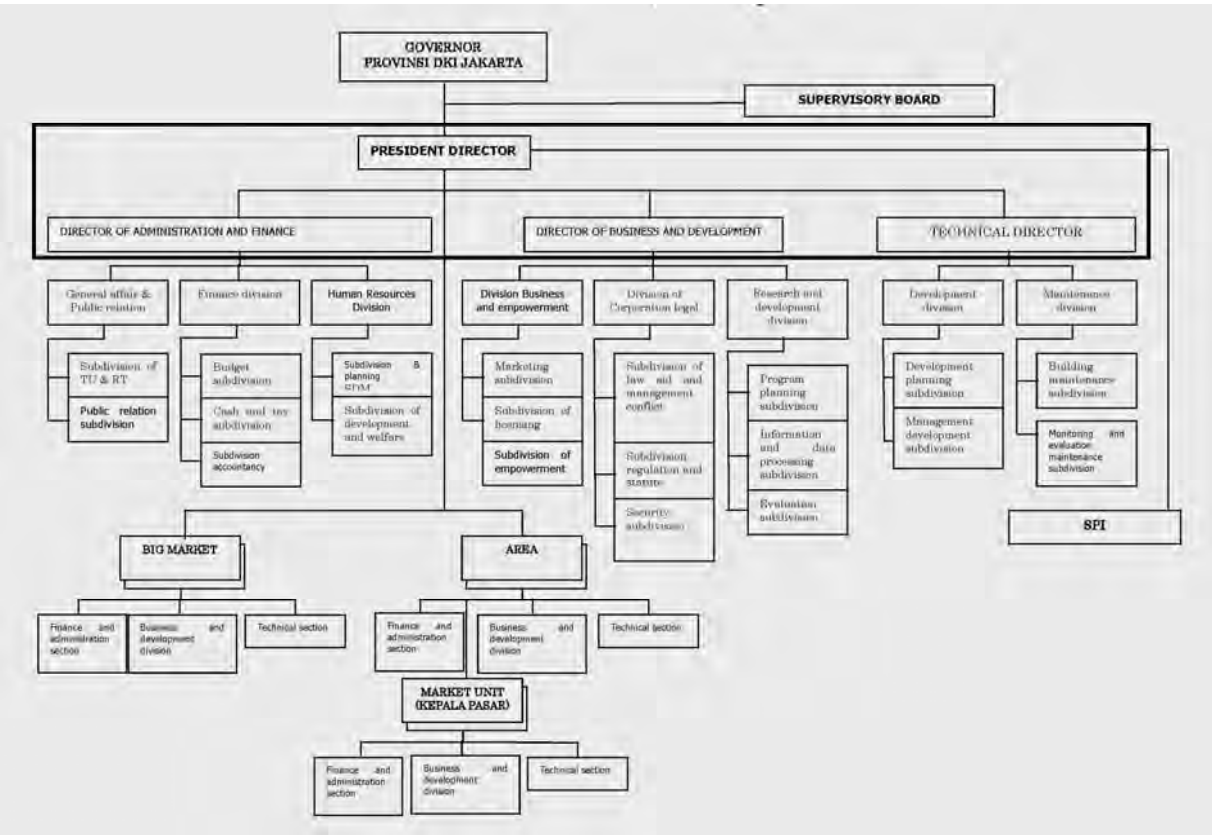
- To manage public service in the field of market area effectively,
- To foster large traders
- To make the price of goods stable, and
- To facilitate smooth distribution of goods and services in the market

The functions of PD. Pasar Jaya are as follows:

- Planning, development, maintenance and repair market area;
- Provision, maintenance & care facilities equipment market area;
- Supervision and control of utilization of the market area;
- Implementation and development cooperation; and
- Security control of and order in the market area

The organization chart of Pasar Jaya is shown below. PIKJ is one of the departments of Pasar Jaya, and it has 51staffs. Another 65 persons are in charge of security section and 106 persons are involved

in the cleaning service. Both of the sections are outsourced.




Source: Pasar Jaya

**Figure 2.1.26 Organization Chart of PD. Pasar Jaya (Derived from Perda 2/2010)**

**Table 2.1.13 Development Of Regional Authentic Revenue Deposit (Pad) Pd Pasar Jaya Years 2005-2010**

| URAIAN | REALIZATION | REALIZATION | REALIZATION | REALIZATION | REALIZATION | REALIZATION | RKAP | RKAP |
|---|---|---|---|---|---|---|---|---|
| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2010 | 2011 |
| | (AUDITED) | (AUDITED) | (AUDITED) | (AUDITED) | (AUDITED) | (UNAUDITED) | | |
| Operational Income | 225,119,121,892 | 242,855,386,431 | 268,956,128,776.22 | 262,728,080,732.43 | 294,573,048,286.08 | 307,622,967,076.48 | 303,733,373,264 | 323,723,909,119 |
| Operational Cost | 162,436,260,429 | 189,695,636,627 | 200,226,414,151.31 | 204,797,502,533.09 | 224,969,643,172.48 | 235,337,124,399.04 | 242,467,489,115 | 253,572,877,172 |
| Operational Profit / Lost | 62,682,861,463 | 53,159,749,804 | 68,729,714,624.91 | 57,930,578,199. 35 | 69,603,405,113.60 | 72,285,862,677.44 | 61,265,884,168 | 70,151,031,947 |
| Other income | 11,425,856,144 | 20,555,161,061 | 8,950,282,211.84 | 19,901,023,008.59 | 13,926,808,877.05 | 14,274,870,107.09 | 16,116,863,000 | 13,270,689,000 |
| Profit / Lost before Tax | 10,030,632,939 | 5,668,059,869 | 4,457,736,954.44 | 4,450,117,454.55 | 7,642,553,646.70 | 5,783,422,496.67 | 387,500,000 | 1,571,204,950 |
| (Income tax) PPh institution (chapter. 25) | 16,041,542,230 | 16,023,259,143 | 18,200,365,813.05 | 17,720,429,044.37 | 75,887,660,343.95 | 90,777,310,287.86 | 76,995,247,168 | 81,850,515,997 |
| Tax Assets | | | 722,602,107.28 | 1,064,321,336.79 | 2,063,260,644.29 | | | |
| Profit / Lost after Tax | 48,036,542,438 | 52,023,591,853 | 55,744,496,176.54 | 56,725,376,045.80 | 60,242,906,288.77 | 63,095,744,412.86 | 58,595,247,168 | 62,650,515,997 |
| Deposit PAD | 24.018.271.219 | 26.011.795.926 | 27.872.248.088 | 28.362.688.022,90 | 24.097.162.515,51 | 25.338.297.765,14 | 23.468.098.867 | 25.060.206.399 |

Note: Commencing from the year 2009, obligations of the PAD to the DKI Jakarta Provincial Government for 40% of profit after tax (audited), according to Perda 2/2009.

Source: Pasar Jaya (The figures in the table include some obvious mistakes, but retained as original ones.)

**2) Private Wholesale Market "Pasar Induk Osowilangun Surabaya" (PIOS)**

PIOS is a private wholesale market built in February 2010, located approximately 10 km west of the city center in Surabaya City, has the handling capacity of 1,000 ton/day (handling volume in May 2011 was approx. 150 ton/day). The total land area is estimated to be 4.5 ha and has following building components (total floor area is estimated as approx. 13,700 $m^2$);

- Wholesale market hall (approx. 1,560 $m^2$ x 3 units, approx. 1,550 $m^2$ x 3 units)
- Cold storage (approx. 495 $m^2$, 22 units of cold rooms)
- Warehouse (approx. 220 $m^2$ x 3 units)
- Unloading/ treatment space (approx. 3,300 $m^2$)
- Administration office

The market is operated by one of the companies of PT. Paramita group, a famous developer of wholesale markets in Indonesia. PT. Paramita established and managed the Tanah Tinggi wholesale market that has six blocks and each block has 150 booths, for a total of 900 in PIOS. The occupation rate was around 30 % in May 2011. In order to increase the rate, PIOS organized the promotion on TV, radio, etc., to attract traders from Surabaya

Source: PIOS

**Figure 2.1.27 Building Layout of PIOS**

**a) Fees**

There are the following three ways of charging traders.

- Parking fee
- Received cargo fee
- Rental fee

**i) Parking fee**

Both of sellers and buyers must pay at the gate. The parking fee is charged based on types of vehicle as follows.

**Table 2.1.14 Parking Fee and Number of Vehicles**

| | Fee (Rp./vehicle) | Number of Vehicles (per day) | Income (Rp.) |
|---|---|---|---|
| Motorbike | 1,000 | 200 | 200,000 |
| Pickup truck, van, small truck:(2-ton): | 2,000 | 150 | 300,000 |
| Colt Diesel medium sized truck (4-ton) | 3,000 | 50 | 150,000 |
| Trailer | 5,000 | 2 | 10,000 |

Source: PIOS

**ii) Received cargo fee**

The traders must pay Rp. 50 per kilogram. A truck scale at the entrance checks the weight. Firstly, the whole weight of truck with cargo is scaled, and the weight of a truck body and drivers in the car, 60 kg per a person are deducted from the total weight. Weight of cargo is recorded and given to a driver with a memo. The checkers at the place unloading checks the weight again.

**iii) Rental fee**

The rental fee is Rp. 3,000,000 /$m^2$ for two-years. Twenty percent of the fee shall be paid as advanced. The rest of it shall be paid as monthly rental fee.

**b) Lack of Tenants**

An agreement was made between PIOS and Surabaya city that if the wholesale market was established

the city would encourage the wholesalers in Surabaya to use PIOS. There are several traditional markets in the city but facilities are not enough, as a result some of them are held on the road.
There is another new TA in Surabaya, named "Pasar Induk Puspa Agro" (PIPA) which is funded by the provincial government. According to East Jawa provincial government, PIPA covers the total distribution in the province, but PIOS covers only the demand of Surabaya city.

**c) Investment**

PT. Paramita purchased land from local residents and built the wholesale market as a developer.

**d) Permission for Establishment**

Following permissions were obtained from the relevant agency.

a) Permission for the use of electricity
b) Permission of traffic
c) Permission of establishment in business in general
d) Permission of AMUDA as an environmental regulation
e) Permission of "Ijinkurayaman" as a regulation for facilities to have capacity for more than 40 persons

**e) Reasons for site selection**

The reasons for site selection are as follows:

a) Accessibility to highways
b) Accessibility to city center; only approximately 10 km away from the city
c) Accessibility to a planned international container port, which is planned to be built 100 m from here
d) Accessibility to the center of producers

**f) Others**

Information on market price is collected and informed daily for users, and is also reported to the related ministry. An SMS is sent to stakeholders such as farmers. The price and transactions are informed through the Internet.

**3) "Pasar Induk Puspa Agro" (TA) in Surabaya City**

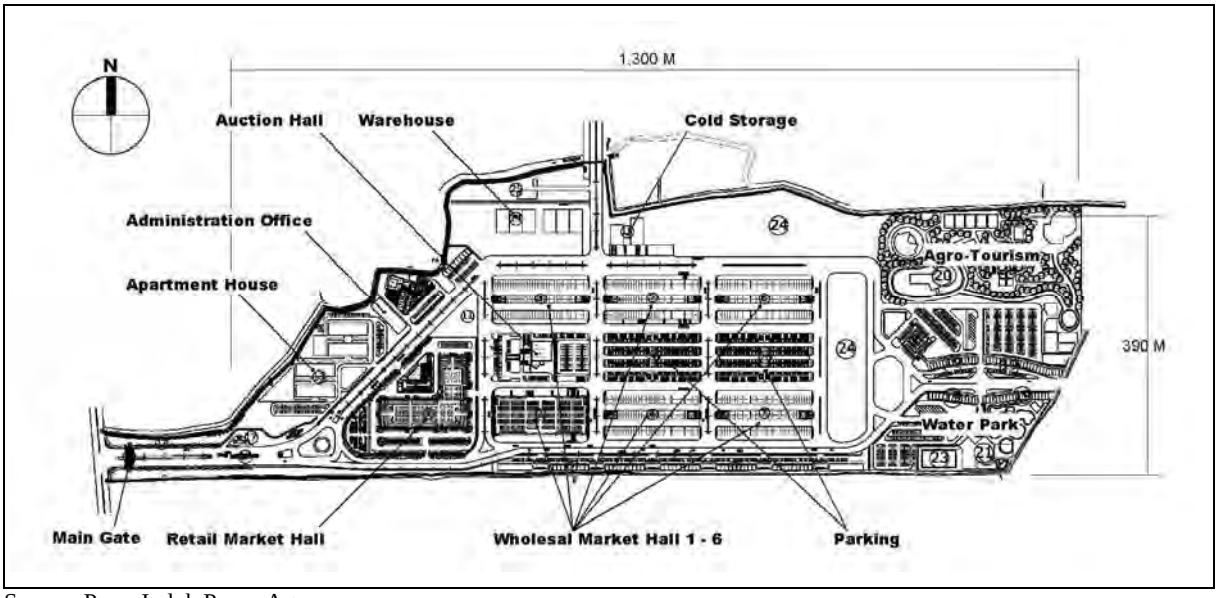
"Pasar Induk Puspa Agro" was a newly built TA in 2011, which is located approximately 30 km south of Surabaya City center in East Jawa. The function of the TA includes not only wholesaling of agriculture products, but also education to farmers and agricultural students, and enlightenment for regional communities. The total land area of the TA will be approximately 50 ha (30 ha in May 2011). The total floor area of the facilities in 2012 will be approximately 137,000 $m^2$ with the following facilities:

- Wholesale market hall (8,025 $m^2$ x 6 units, i.e. vegetable 2 units, fruits 2 units, crops 1 unit, rice 1 unit; 3 units are not yet completed in May 2011),
- Retail market hall (8,724 $m^2$),
- Auction hall, and storages (4,320 $m^2$),
- Cold storage (1,200 $m^3$ x 3 units; not yet completed in May 2011),
- Apartment house for traders' short stay (4 units, 4,800 $m^2$; donated by central government)
- Administration office
- Kiosk (not yet completed in May 2011)
- Agro-tourism facilities (camping field, facilities of bazaar: not completed yet in May 2011)
- Water park (is not yet completed in May 2011)

The total project cost was estimated at Rp. 685 billion (excluding the apartment house). The construction works started in the beginning of 2010, and the opening ceremony was scheduled to be held in September 2011 after the completion of the construction works on the essential buildings for basic operation.

Pt. Jatis Kuramu Utama, owned by East Jawa Province, operates all market facilities. The capital of

Rp. 300 billion was shared by the Provincial Government (95%) and the Cooperative of Public Servants of East Jawa Province. The salaries of all 200 staffs are disbursed from the capital, but Jatis Kuramu has a strong intention to balance the budget within five years.




Source: Pasar Induk Puspa Agro

**Figure 2.1.28 Building Layout of TA-Puspa Agro in Surabaya**

Regarding the commercial booth which is used by individual wholesalers (retailers), market halls will have 1,445 booths in total, which are consist of three different sizes, i.e. 2m by 2m, 3m by 3m, and 4m by 6m. Rights of utilization are sold to the users at the unit price of Rp. one million per square meter for 10 years.

Compared to the private wholesale market PIOS in Surabaya City, this TA has a large land size, and the quality of the market building is relatively better than PIOS.

**4) Price Information System by Central Government**

Both the Ministry of Agriculture (MOA) and Ministry of Trade (MOT) collect the price information of agricultural products.

The price information is collected by provincial government and is informed through FAX, SMS or e-mail. The price information of vegetables, fruit, cereals, such as rice and maize, livestock and crops of plantation is revised every day and is informed to MOA. Since 2006, MOA provides the price information of agricultural products through the Internet. And also the information is transmitted by SMS free of charge from 2008. The information is informed not only through the Internet, but also through specialized magazines.

MOT collects the nationwide information of agricultural and marine products on wholesale markets. This information is open to people and submitted to the vice president and other minister including MOA and the Ministry of Economic Affairs as well as mass media. But it is not delivered through Internet.

Additionally, MOA and MOT organize a meeting every Thursday to exchange the information of the prices on agricultural products.

### 2.1.2 Current Conditions in Candidate Sites of New TA in Lampung Province

#### (1) Current Condition of Social Infrastructure in three Candidate Sites for TA Construction

#### 1) Site Condition

Current condition of social infrastructure and other general conditions in three candidate sites for TA development are summarized below. Regarding the candidate site in Natar, it was confirmed that site is not the site where JICA Study Team of Additional Survey of 2nd Detailed Planning Survey reported in May 2010, but it is another site where the Team conducted supplementary survey on the reference in the same period of May 2010.

**Table 2.1.15 Current Conditions of Candidate Sites for TA**

| Site Name | Penengahan | Natar | Gedong Tataan |
|---|---|---|---|
| Location | Sukabaru Sub-district, Penengahan District, South Lampung Regency | Merakbatin Sub-district, Natar District, South Lampung Regency | Banjarnegari Sub-district, Way Lima District, Pesawaran Regency (Note 1) |
| Distance from B. Lampung | Approximately 70 km south-east of B. Lampung | Approximately 13 km north-west of B.Lampung | Approximately 21 km west of B. Lampung |
| Time-distance by Vehicle | About. 2 - 3 hours | About 20 - 45 minutes | About 45 minutes - 1 hour |
| Relation between Local Main Road and Site | The site is located east side of the main road from Kalianda to Bakauheni | The site is located 600 m west of the Mainline of B, Lampung - Kota Bumi. | The site is located 7.5 km south of mainline B.Lampung - Kota Agung. |
| Land Area | Approximately 50 ha. | Approximately 5 ~10 ha | Approximately 5 ha |
| Ownership | Property of the Province (ex. Truck-scale facility owned by Transportation Agency) and Private Land. | Private Land | Private Land |
| Site Condition | Government Owned (1.8 ha) but abandoned since 2005 by the Transportation Agency, within the site administration building, truck scale, warehouses, mosque, public toilets, manager's office, etc. (in use). This has been confirmed. Total number of the facilities is 12; these facilities are located within the boundaries of the site. A paved internal circular road located almost central to the site and is connected with the entrance and the exit gates. There is slight down slope (1~2 percent) from the front road to the backyard. First phase of Land Procurement (~10 ha). The surrounding U-shaped lands (excluding the 1.8 ha) will be acquired within the first phase of Land Procurement; are composed of open spaces with lush bushes and palm forests. | From the front road it is possible to see Rice fields, Chicken farm (in operation) palm forests and cassava fields. Further to the backside, a concrete block factory is visible. Additionally, 150 KV electrical lines are traversing across the center of the site (Note 2). | Rice fields which have a slight down slope from the front road to the back side; including partially chilly field. |
| Branch Road to which Site is Facing | Local Main Road (pavement width of about 6 m), and the road condition is very good. | The width of the paved front road is approximately 5m. It is possible to see many old and damaged parts of this road. The area from Local Main Road to the side (600 m) is a residential area comprising of fifty houses including one primary school, two junior high | The width of the paved front road is approximately 5m. It is possible to see many old and damaged parts of this road. The area from the Local Main Road to the site (~7.5km) includes residences, shops, and the road itself is curvy and is undulated. |

| | | | |
|---|---|---|---|
| | | schools, one kindergarten, and one health center. It is possible to see, approximately midway from the local main road to the side, a railroad crossing. | |
| Electric Power Mainline | It is possible to see the electric Power Mainline with 20 kV/50 kHz along the adjacent side of the front road. | It is possible to see along the opposite side of the road. | It is possible to see the electric Power Mainline with 20 kV/50 kHz along the adjacent side of the front road. |
| City Water Mainline | The site is outside the Local Water Company service range, instead a well is used (40 m in depth) | The site is outside the Local Water Company service range, instead a well is used (30 m in depth) | The site is outside the Local Water Company service range, instead a well is used (7~15 m in depth) |
| Sewage Mainline | There is no sewerage network. Before construction of TA facility it is necessary to prepare wastewater treatment facility. | Same as left. | Same as left. |
| Telephone Mainline | The site is within the coverage of mobile phone network. It is possible to use cellular phone. | There is no phone network coverage. But it is possible to use cellular phone. | Same as left. |

Note 1: Gedong Tataan site is not exactly located at Gedong Tataan District, but located in the neighboring Way Lima district.

Note 2: Regarding the high-voltage mainline running across Natar site; at the moment, five units of chicken breeding facilities located underneath the mainline. According to the PLN (State Power Supply Company) regulation; the 30 m area surrounding the mainline tower perimeter is prohibited for any kind of constructions with exception of, agriculture facilities.

Source: JICA Study Team

## 2) Meteorological Condition

The meteorological data from 2005 to 2010 at the meteorological station in Radin Inten II Airport in Bandar Lampung, and the specialized data for rainfall from 1972 to 2006 at the rainfall gauging station in Penengahan are summarized as follows.

**Table 2.1.16 Meteorological Condition in Bandar Lampung**

| | | Jan. | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Ave. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Seasons | | Rainy Season (☂) | | | | Dry Season (☀) | | | | | | | (☂) | |
| Air Temp. | Mean Air Temp. (℃) | 26.4 | 26.5 | 26.4 | 26.9 | 27.0 | 26.2 | 26.0 | 26.0 | 26.7 | 27.1 | 27.1 | 26.7 | 26.6 |
| | Average Max. Air Temp. (℃) | 31.5 | 31.5 | 32.0 | 32.4 | 32.4 | 31.6 | 31.8 | 31.9 | 33.1 | 33.2 | 32.7 | 32.0 | 32.2 |
| | Max. Air Temp. (℃) | 34.0 | 33.6 | 34.2 | 35.2 | 34.8 | 35.2 | 33.4 | 34.6 | 36.2 | 36.6 | 37.4 | 35.0 | 35.0 |
| | Average Min. Air Temp. (℃) | 23.5 | 23.6 | 23.5 | 23.7 | 23.7 | 23.1 | 22.4 | 22.0 | 22.4 | 23.1 | 23.5 | 23.6 | 23.2 |
| | Min. Air Temp. (℃) | 20.4 | 22.0 | 19.6 | 20.0 | 21.0 | 21.0 | 20.0 | 18.8 | 18.0 | 19.2 | 20.0 | 21.8 | 20.2 |
| Monthly Rainfall (mm) | | 293.5 | 246.3 | 235.8 | 171.3 | 86.1 | 161.3 | 90.4 | 71.2 | 67.5 | 86.8 | 143.7 | 304.0 | 1,957.6/12 |
| Sunshine Hours (hours/day) | | 4.0 | 3.9 | 4.1 | 4.8 | 5.1 | 4.2 | 5.1 | 5.3 | 5.4 | 5.2 | 4.5 | 4.0 | 4.6 |
| Relative Humidity (%) | | 81 | 80 | 80 | 79 | 79 | 80 | 77 | 76 | 74 | 75 | 77 | 80 | 78 |
| Wind | Mean Wind Velocity (m/s) | 3.1 | 2.9 | 2.3 | 2.9 | 2.5 | 2.4 | 3.3 | 3.2 | 3.2 | 3.0 | 2.8 | 2.4 | 2.8 |
| | Max. Wind Velocity (m/s) | 18.0 | 21.0 | 16.0 | 17.0 | 28.0 | 16.0 | 15.0 | 18.0 | 19.0 | 24.0 | 20.0 | 18.0 | 19.2 |
| | Wind Direction | N / NNW | N / NNW | N / W | E / SE | E / SE | E / SSE | E / SE | SE | E / SE | E / SE | E / SE | NNW | N / SE |

Source: Meteorological Station in Radin Inten II Airport in Bandar Lampung

Note: Each meteorological data in the above table shows the average values from 2005 to 2010. But in case of "max./min."data, it shows the actual peaking value within the 6 years.

**Table 2.1.17 Monthly and Maximum Rainfall in Penengahan**

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Average Monthly Rainfall (mm/month) | 249 | 226 | 201 | 172 | 135 | 111 | 133 | 90 | 80 | 97 | 126 | 214 | 1,834 |
| Maximum Rainfall per Day (mm/day) | 115 | 180 | 112 | 100 | 105 | 100 | 226 | 100 | 150 | 175 | 150 | 180 | |

Data Source: Balai PU Lampung (Rainfall data from 1972 to 2006 by the rainfall gauging station of Penengahan/Pasuruhan)

### a) Air Temperature

The air temperature is almost stable through all seasons, such as average monthly mean temperature of

26-27 °C, the average maximum temperature of 31-33 °C and the average minimum temperature of 22-24 °C. The biggest difference between the maximum temperature and the minimum temperature is confirmed in September (max. 36.2 °C – min. 18.0 °C).

b) Rainfall

According to rainfall data for 35 years (1972 – 2006) at the Penengahan rainfall gauging station, the average annual rainfall is approximately 1,800 mm, and weather is broadly divided into the rainy season from November to May, and the dry season from June to October. Rainfall attains approximately 70 % of annual rainfall in rainy season.

The average maximum daily rainfall is over 100 mm/day in any month without any relationship with season. The maximum daily rainfall was 226 mm/day in July 1984 for the 35 years. Probable maximum daily rainfall is estimated at approximately 160 mm with a return period of 10 years and at approximately 240 mm with a return period of 100 years.

On the other hand, the rainfall data for six years from 2005 to 2010 at the Radin Inten II Airport in Bandar Lampung shows the average annual rainfall of approximately 1,950 mm, and the rainfall data shows the similar pattern as the pattern obtained at the Penengahan rainfall gauging station.

c) Humidity and wind etc.

Sunshine hour ranges from 3.9 to 4.1 hrs in rainy season and from 4.2 to 5.4 hrs in dry season. Sunshine hour in rainy season is rather short and much affected by number of rainy days.

Relative humidity is 79-81% in rainy season and 74-80% in dry season.

Average wind speed 2.3-3.1 m/sec in rainy season and 2.4-3.3 m/sec in dry season, and typical wind speed in tropical monsoon region. The maximum wind speed is more than 16-18 m/sec in rainy season and 15-28 m/sec in dry season. Maximum wind speed in rainy season is much influenced by moving of rain.

**(2) Environmental and Social Considerations concerning TA Development**

In order to evaluate the potential environmental and social impacts due to TA development, the following study was conducted for each proposed site in this Study, according to the "JICA environmental and social consideration guideline (2004)" as well as Indonesian government laws and regulations.

1) Confirmation of the screening category,
2) Provisional scoping
3) Initial Environment Examination (IEE) for the proposed project sites

**1) Confirmation of the Screening Category**

The project was screened as "Category B" in the ex-ante project evaluation according to the JICA guideline (2004). "Category B" is generally determined that the environmental and social impact is limited to the project site itself and manageable by ordinal ways of implementation. If the government of Indonesia requests Japanese yen loan, it is required to follow the new JICA's guideline for environmental and social consideration (April 2010), which may require additional survey. Depending on the categories, the requirements for environmental and social clearance are different.
During the 1st field survey, the relevancy of this category was re-confirmed through confirming the series of facts in the proposed sites. Each proposed site can assume the category at this stage of the survey as below, and the elements, which may influence their categorization, are also pointed out. As the project component as well as the site has not been decided yet, it is necessary to review again when the site and the component of the TA are to be concretely designed (refer to the detail information about each site in the following sections).

**Table 2.1.18 Provisional Screening by Proposed Site**

| Site Name | Category | Major elements to influence categorization |
|---|---|---|
| Penengahan | B | - As the proposed site consists of the wreck of former truck scale station (provincial property), farmland and abandoned land, no serious impacts to natural resources are expected.<br>- As the site locates along the existing main road, no necessity to expand the access road. It is an advantage to minimize the impact.<br>- As the No. of inhabitants and land holders of the proposed site is small, the negative social impact can be regarded as minimum, with a condition to provide adequate compensation from the government. |
| Natar | A/B | - As the proposed site mainly consists of farmland, no serious impact to natural resources is expected.<br>- As the site locates in rural road with houses, shops and schools, 650m inside main road, large scale of involuntary resettlement is required in case of expanding the access road, in addition to the land holders of the proposed site, which will be the subject for "Category A". |
| Gedong Tataan | A/B | - As the proposed site mainly consists of farmland, no serious impact to natural resources is expected.<br>- As the site locates in rural road with houses and shops, 7.5km inside main road, large scale of involuntary resettlement is required in case of expanding the access road, in addition to the land holders of the proposed site, which will be the subject for "Category A". |

Source: JICA Study Team

On the other hand, according to the Indonesian regulation, the TA construction with more than 5 ha in scale is the subject for EIA (refer to the government regulation concerning EIA, No.27/1999 and decree of Minister of Environment No.11/2006).

**2) Provisional Scoping of Environmental and Social Consideration**

Assuming the typical case of TA development, provisional scoping was examined as a result of field survey and interviews to the concerning agencies. The scoping result is shown below. The scope was examined referring to the JICA guideline (2004) as well as Indonesian guideline for preparation of EIA, No.8/2006.

**Table 2.1.19 Provisional Scoping Checklist**

| | Potential Impact | Brief description of the anticipated impact |
|---|---|---|
| 1 | Air pollution | Impact due to increase of traffic |
| 2 | Water pollution | Negative impact due to discharge water from TA |
| 3 | Soil contamination | Although the wastes from TA are mostly organic without hazardous wastes, recommend to confirm |
| 4 | Noise and vibration | During construction period, noise and vibration may be anticipated.<br>During operation, increase of traffic may cause noise and vibration. |
| 5 | Waste and sanitation | Wastes from TA may become the issue of concern for sanitation and environment |
| 6 | Odor | Odor from TA may affect environment |
| 7 | Land and natural resource use | Though the major part of proposed lands are farm land and/or abandoned land, better to confirm the surrounding area |
| 8 | Topography and geology | As the proposed lands are flat, the impact may be minimum, but requested to confirm technically. |
| 9 | Soil erosion, sediment | As the structure of TA will be low-rise building, no significant will be expected |
| 10 | Hydrology/water use | Quantity of water use may be increased at and around TA site. |
| 11 | Ecosystem | As the proposed sites are farm lands at present, no significant impact is expected, but requested to confirm. |
| 12 | Resettlement | As the all 3 sites are private farm land, loss of means of livelihood is anticipated. In case of Natar and Gedong Tataan case, there is possibility of involuntary resettlement in case of necessity of expanding access road |
| 13 | Livelihood/local economy | Positive impacts may be expected to vitalize local economy by operating TA |
| 14 | Social infrastructure and social services | As resettlement of schools and nursery school may be required for expanding access road to Natar site, need to examine the ways to minimize negative impact |
| 15 | Minorities and indigenous people | Though there are no indigenous groups confirmed, need to confirm if there will be negatively influenced people by TA construction in the region. |
| 16 | Social capital and regional decision making organization | Need to pay attention to the influences to / by regional decision making organization |
| 17 | Conflicts in the region | Prediction of conflicts due to construction of TA is expected |
| 18 | Hazards/Traffic accident | Impact by increase of traffic |
| 19 | Heritage | Though it was confirmed that there is no heritage in/around the proposed sites, it is better to check out. |

Source: JICA Study Team

### 3) Initial Environment Examination (IEE) of the TA and Mitigation Measures

The main objectives of the IEE are;

- ✓ To identify anticipated environmental and social impacts in preparing/ constructing the TA;
- ✓ To make judgments what the critical issues for the propriety projects could be;
- ✓ To propose mitigation measures and alternatives for anticipated negative environmental impacts in order to avoid and/or mitigate the negative impacts of the project as much as possible.

IEE was conducted for the each proposed sites (Penengahan, Natar and Godong Tataan) for the purpose of confirming the anticipated environmental and social impact by the project, and considered as one of the criteria for the project site selection.

According to the evaluation, the major environmental negative impacts which are likely to occur are 1) sanitation and waste, 2) pollution from discharge water, and 3) other impacts due to increase of traffic such as accident, noise and vibration. As for social impacts, involuntary resettlement for land acquisition of the proposed TA sites (relocation of the habitants along with the access road as expansion of access road is necessary), particularly in the cases of Natar and Godong Tataan, will be crucial.
The results of the IEE by each proposed site are presented in the form of the environmental and social impact matrix as shown below.

### a) Proposed site 1: Penengahan

**Table 2.1.20 Result of IEE on TA Development in Penengahan Site**

| | Potential Impact | Activity Stages | | | Reasons |
|---|---|---|---|---|---|
| | | Designing | Construction | Operation | |
| 1 | Air pollution | * | * | * | As the site locates along the main road, which has heavy traffic even at present, no significant change is anticipated. |
| 2 | Water pollution | * | -C | -C | Possibility of negative impact because of discharge water from TA |
| 3 | Soil contamination | * | * | * | As the wastes from TA are mostly organic without hazardous objects, no significant change is anticipated. |
| 4 | Noise and vibration | * | * | * | As it locates along the main road without having residence area around, there will not be serious negative impact. |
| 5 | Waste and sanitation | * | -C | -B | Wastes from TA may become the issue of concern for environment |
| 6 | Odor | * | * | -B | Odor from TA may affect environment. Need to examine certain countermeasure. |
| 7 | Land and natural resource use | * | * | * | As the proposed site consists of farmland and abandoned land, no particular impact to natural resource is anticipated. |
| 8 | Topography and geology | * | * | * | As the proposed land is almost flat and no particular change will be made. |
| 9 | Soil erosion, sediment | * | * | * | As the structure of TA will be a low-rise building, no significant will be expected |
| 10 | Hydrology/water use | * | * | -C | Quantity of water use may be increased at and around TA site. |
| 11 | Ecosystem | * | * | * | No significant impact is expected, as it is farmland at present. |
| 12 | Involuntary resettlement | -B | * | * | The land for the phase1 stage (10ha) is with two dwellers and 24 landholders, using them as farmlands. As they will lose their means of livelihood, it is inevitable to consult adequately to get an agreement at the planning stage. |
| 13 | Livelihood/local economy | * | +C | +B | Positive impacts may be expected to vitalize local economy by operating TA |
| 14 | Social infrastructure & social services | * | * | -C | As there is a path to two primary schools on the other side of the TA entrance, increase of traffic accident is a matter of concern. |
| 15 | Minorities and indigenous people | * | * | * | As there are no indigenous groups observed, no impact is expected. |
| 16 | Social capital & regional decision making organization | * | * | * | There is no particular decision making organization apart from village council. Considering that the site locates in "Penengahan village", Sukabaru sub-district, Penengahan district, South Lampung regency, it is recommended to involve all necessary stakeholders of relevant local government. |
| 17 | Conflicts in the region | D | D | D | No particular conflicts exist according to the village head at present. However, better to monitor continuously. |
| 18 | Hazards/Traffic accident | * | -C | -C | Increase of traffic accident is the matter of concern during construction and operation period. |
| 19 | Heritage | * | * | * | No heritage in/around the proposed site |

Note: *A: relatively significant impact, B: relatively medium impact, C: relatively small impact, D: unknown as of present*
**: No impact or no corresponding impact*
*+: Positive impact, -: Negative impact*
Source: JICA Study Team

The migration measures to minimize the negative impact can be proposed as follows.

**Table 2.1.21 Mitigation Measures for Penengahan site**

| | Potential Impact | Impact | Cause of Impact | Mitigation measures | Timing for avoidance /mitigation |
|---|---|---|---|---|---|
| 2 | Water pollution | -C | Discharge water from TA | To install wastewater treatment facility to mitigate contaminating water discharged in the TA as there is no available public sewage system in/around the area. Wastewater from washed products and the one from others such as toilet and canteen should be classified and the treatment facility is to be prepared respectively. | Designing/Construction |
| 5 | Waste and sanitation | -C/ -B | Wastes of fruits and vegetables of TA | To design and construct the garbage collection point and to manage it to keep the sanitary condition of the TA. Following to the Regency regulation regarding garbage collection, the rule is to be made to carry the garbage to final dumpsite regularly. In order to reduce the amount of wastes from fruit and vegetables handled in the TA, the rule of delivery condition of the products (ex. Deliver products in boxes in order to reduce damage of the products which will increase wastes) is to be also examined. | Designing /Operation |
| 6 | Odor | -B | Odor from wastes of fruits and vegetables of TA | To set up high wall around the TA area as well as around the garbage collection point to mitigate the odor from wastes. During operation, the garbage collected may be delivered daily to the dump area to avoid keeping source of odor. | Designing /Operation |
| 10 | Hydrology/ Water use | -C | Increase of water use | Necessary water volume is estimated at planning stage referring to the business plan and variety of available water sources such as well, reservoir and so forth. Considering its estimation, to combine the available water sources such as underground and reservoir for designing water supply system. | Designing/Construction |
| 12 | Involuntary resettlement | -B | 24 landholders, using as farmland, which means they will lose their means of livelihood, hold the land. | The land necessary for the TA construction is acquired following the Indonesian regulation with reasonable consultation and compensation to mitigate the negative impact for the target population. Public consultation and sufficient meetings to discuss and obtain consensus with the landowners. Monitoring is to be conducted to confirm the condition of the people resettled after resettlement. | Designing |
| 14 | Social infrastructure & social services | -C | Trucks may pass by the entrance to the path to 2 primary schools on the other hand of the TA entrance, which may become hindering cause for traffic accident. | Guards are to be allocated to avoid traffic accident during operation at the gate of the TA. | Operation |
| 18 | Hazards/Traffic accident | -C | Impact by increase of traffic | -Ditto- | Construction/ Operation |

Source: JICA Study Team

### b) Proposed site 2: Natar

**Table 2.1.22 Result of IEE on TA Development in Natar Site**

| | Potential Impact | Activity Stages | | | Reasons |
|---|---|---|---|---|---|
| | | Designing | Construction | Operation | |
| 1 | Air pollution | * | -C | * | As the site is 650m inside from the main road, increase of air pollution during construction will be anticipated. However, magnitude of pollution will be minimum considering the machinery used for construction TA kind of buildings. |
| 2 | Water pollution | * | -C | -C | Negative impact is possible because of discharge water from TA |
| 3 | Soil contamination | * | * | * | As the wastes from TA are mostly organic without hazardous objects, no significant change is anticipated. |
| 4 | Noise and vibration | * | -B | -B | As the site locates in rural road with houses, shops and schools, 650m inside main road, noise and vibration will be influencing factors for the environment. |
| 5 | Waste and sanitation | * | -C | -B | Wastes from TA maybe an issue of concern for environment |
| 6 | Odor | * | * | -B | Odor from TA may affect environment. Need to examine certain countermeasure. |
| 7 | Land and natural resource use | * | * | * | As the proposed site consists of farm land and abandoned land, no particular impact to natural resource is anticipated. |
| 8 | Topography and geology | * | * | * | As the proposed land is almost flat and no particular change will be made. |
| 9 | Soil erosion, sediment | * | * | * | As the structure of TA will be low-rise building, no significant will be anticipated. |
| 10 | Hydrology/water use | * | * | -C | Quantity of water use may be increased at and around TA site. |
| 11 | Ecosystem | * | * | * | No significant impact is expected, as it is farm land at present |
| 12 | Involuntary Resettlement | -A/-B | * | * | Around 22 landholders, using as farmland, hold the land a chicken grazing yard and block making workshop. They will lose their means of livelihood due to resettlement. In addition, if the access road is expanded, involuntary resettlement of the dwellers (approx. 50 households) and 3 schools, nursery school is required. |
| 13 | Livelihood/local economy | * | +C | +B | Positive impacts may be expected to vitalize local economy by operating TA |
| 14 | Social infrastructure and social services | -A/-B | * | -C | One nursery school, one primary schools and two junior high schools along with the access road to the proposed site. In case of necessity of expansion of the access road, relocation of those social infrastructures will be required. In addition, as a railway crosses the access road, it is necessary to pay extra attention for expanding the access road. |
| 15 | Minorities and indigenous people | * | * | * | Although there are no indigenous groups observed, no impact is expected. |
| 16 | Social capital and regional decision making organization | * | * | * | There is no particular decision making organization apart from village council. Considering that the site locates in “Merk Batin village”, Natar sub-district, Natar district, South Lampung regency, it is recommended to involve all necessary stakeholders of relevant local government. |
| 17 | Conflicts in the region | D | D | D | No particular conflicts exist according to the village head at present. However, better to monitor continuously. |

| | Potential Impact | Activity Stages | | | Reasons |
|---|---|---|---|---|---|
| | | Designing | Construction | Operation | |
| 18 | Hazards/Traffic accident | * | -B | -C | Impact by increase of traffic |
| 19 | Heritage | * | * | * | No heritage in/around the proposed site |

Note: *A: relatively significant impact, B: relatively medium impact, C: relatively small impact, D: unknown as of present*
**: No impact or no corresponding impact*
*+: Positive impact, -: Negative impact*
Source: JICA Study Team

The migration measures to minimize the negative impact can be proposed as follows.

**Table 2.1.23 Mitigation Measures for Natar site**

| | Potential Impact | Impact | Cause of Impact | Mitigation measures | Timing for avoidance /mitigation |
|---|---|---|---|---|---|
| 1 | Air pollution | -C | Emission of exhaust gas from trucks | To set regulation for efficient construction vehicles with less exhaust gas emission and control traffic volume and speed of those utilizing the access roads. During operation, monitor the degree of pollution periodically. | Construction & operation |
| 2 | Water pollution | -C | Discharge water from TA | To install wastewater treatment facility to mitigate contaminating water discharged in the TA as there is no available public sewage system in/around the area. Wastewater from washed products and the one from others such as toilet and canteen should be classified and the treatment facility is to be prepared respectively. | Designing/Construction |
| 4 | Noise and vibration | -C | Trucks and heavy machineries for construction as well as trucks of delivering products. | TA will be surrounded by high wall with sufficient space with the residence area around. During construction stage, control the machinery standard to minimize the noise and vibration. During operation, monitor the noise and vibration periodically. | Designing/Construction/Operation |
| 5 | Waste and sanitation | -C/ -B | Wastes from TA | To design and construct the garbage collection point and to manage it to keep the sanitary condition of the TA. Following to the Regency regulation regarding garbage collection, the rule is to be made to carry the garbage to final dumpsite regularly.<br>In order to reduce the amount of wastes from fruit and vegetables handled in the TA, the rule of delivery condition of the products (ex. Deliver products in boxes in order to reduce damage of the products which will increase wastes) is to be also examined. | Designing /Operation |
| 6 | Odor | -B | Odor from fruits and vegetables of TA | To set up high wall around the TA area as well as around the garbage collection point to mitigate the odor from the wastes. During operation, the garbage collected may be delivered daily to the dump area to avoid keeping source of odor. | Designing /Operation |
| 10 | Hydrology/water use | -C | Increase of water use | Necessary water volume is estimated at planning stage referring to the business plan and variety of available water sources such as well, reservoir and so forth. Considering its estimation, to combine the available water sources such as underground and reservoir for designing water supply system. | Designing/ Construction |

| | Potential Impact | Impact | Cause of Impact | Mitigation measures | Timing for avoidance /mitigation |
|---|---|---|---|---|---|
| 12 | Involuntary resettlement | -A/ -B | Around 22 landholders, using as farmland, hold the land a chicken grazing yard and block making workshop. They will lose their means of livelihood due to resettlement. In addition, large quantity of involuntary resettlement will be anticipated for expanding the access road | The land necessary for the TA construction is acquired following to the Indonesian regulation with reasonable consultation and compensation to mitigate the negative impact for the target population (including the landowners of the access road). Public consultation and sufficient meetings to discuss and obtain consensus with the landowners. Monitoring is to be conducted to confirm the condition of the resettled people after resettlement. | Designing |
| 14 | Social infrastructure & social services | -A/ -B | For expanding the access road, some schools and nursery school are subjects for relocation. . | Detail consultation with the respective government agency, schools and the users of those facilities will be held. Alternative site with appropriate condition for relocating schools are to be prepared. | Designing/ Operation |
| 18 | Hazards/ Traffic accident | -B/ -C | Impact by increase of traffic | Guards are to be allocated to avoid traffic accident during operation. As the access road extends 650m from main road, the guard has to be allocated at the entrance of the access road and the TA. | Construction/ Operation |

Source: JICA Study Team

### c) Proposed site 3: Gedong Tataan

**Table 2.1.24 Result of IEE on TA Development in Gedong Tataan Site**

| | Potential Impact | Activity Stages | | | Reasons |
|---|---|---|---|---|---|
| | | Designing | Construction | Operation | |
| 1 | Air pollution | * | -C | * | As the site is 7.5 km inside main road, increase of air pollution during construction will be anticipated. However, magnitude of pollution will be minimum considering the machinery used for construction TA kind of buildings. |
| 2 | Water pollution | * | -C | -C | Negative impact is possible because of discharge water from TA |
| 3 | Soil contamination | * | * | * | As the wastes from TA are mostly organic without hazardous objects, no significant change is anticipated. |
| 4 | Noise and vibration | * | -B | -B | As the site locates in rural road with houses, shops and schools, 7.5 km inside main road, noise and vibration will be influencing factors for the environment. |
| 5 | Waste and sanitation | * | -C | -B | Wastes from TA may be an issue of concern for sanitation and environment |
| 6 | Odor | * | * | -B | Odor from TA may affect environment. Need to examine certain countermeasure. |
| 7 | Land and natural resource use | * | * | * | As the proposed site consists of farmland and abandoned land, no particular impact to natural resource is anticipated. |
| 8 | Topography and geology | * | * | * | As the proposed land is almost flat and no particular change will be made. |
| 9 | Soil erosion, sediment | * | * | * | As the structure of TA will be low-rise building, no significant will be expected |
| 10 | Hydrology/water use | * | * | -C | Quantity of water use may be increased at and around TA site. |
| 11 | Ecosystem | * | * | * | No significant impact is expected, as it is farm land at present |

| | Potential Impact | Activity Stages | | | Reasons |
|---|---|---|---|---|---|
| | | Designing | Construction | Operation | |
| 12 | Involuntary Resettlement | -A/-B | * | * | The land is held by around 15 landholders, using as farmland, which means they will lose their means of livelihood due to resettlement.<br>In addition, if the access road is expanded, involuntary resettlement of the dwellers (approx. 300 households) are required. |
| 13 | Livelihood/local economy | * | +C | +B | Positive impacts may be expected to vitalize local economy by operating TA |
| 14 | Social infrastructure and social services | -C | -B | * | There is a bridge in the access road to the proposed site, which is also a target for expansion if the road will be expanded. |
| 15 | Minorities and indigenous people | * | * | * | As there are no indigenous groups observed, no impact is expected. |
| 16 | Social capital and regional decision making organization | * | * | * | There is no particular decision making organization apart from village council. Considering that the site locates in "Banjarnegari village", Way Lima district, Pesawaran regency, it is recommended to involve all necessary stakeholders of relevant local government. |
| 17 | Conflicts in the region | D | D | D | No particular conflicts exist according to the village head at present. However, better to monitor continuously. |
| 18 | Hazards/Traffic accident | * | -B | -C | Impact by increase of traffic |
| 19 | Heritage | * | * | * | No heritage in/around the proposed sites |

Note: *A: relatively significant impact, B: relatively medium impact, C: relatively small impact, D: unknown as of present*
**: No impact or no corresponding impact*
*+: Positive impact, -: Negative impact*
Source: JICA Study Team

The migration measures to minimize the negative impact can be proposed as follows;

**Table 2.1.25 Mitigation Measures for Gedong Tataan Site**

| | Potential Impact | Impact | Cause of Impact | Mitigation measures | Timing for avoidance /mitigation |
|---|---|---|---|---|---|
| 1 | Air pollution | -C | Emission of exhaust gas from trucks | To set regulation for efficient construction vehicles with less exhaust gas emission and control traffic volume and speed of those utilizing the access roads. During operation, monitor the degree of pollution periodically. | |
| 2 | Water pollution | -C | Discharge water from TA | To install wastewater treatment facility to mitigate contaminating water discharged in the TA, as there is no available public sewage system in/around the area. Wastewater from washed products and from others such as toilet and canteen should be classified and the treatment facility is to be prepared respectively. | Designing/Construction |
| 4 | Noise and vibration | -B | Trucks and heavy machineries for construction as well as trucks of delivering products. | The TA will be surrounded by high wall with sufficient space with the residence area around. During construction stage, control the machinery standard to minimize the noise and vibration. During operation, monitor the noise and vibration periodically. | Designing/ Construction/ Operation |
| 5 | Waste and sanitation | -C/ -B | Wastes from TA | To design and construct the garbage collection point and to manage to keep the sanitary condition of the TA. Following to the Regency regulation regarding garbage collection, the rule | Designing /Operation |

| | Potential Impact | Impact | Cause of Impact | Mitigation measures | Timing for avoidance /mitigation |
|---|---|---|---|---|---|
| | | | | has to be made to carry the garbage to final dumpsite regularly.<br>In order to reduce the amount of wastes from fruit and vegetables handled in the TA, the rule of delivery condition of the products (ex. Deliver products in boxes in order to reduce damage of the products which will increase wastes) is to be also examined. | |
| 6 | Odor | -B | Odor from fruits and vegetables of TA | To set up high wall around the TA area as well as around the garbage collection point to mitigate the odor from the wastes. During operation, the garbage collected may be delivered daily to the dump area to avoid keeping source of odor. | Designing /Operation |
| 10 | Hydrology/ Water use | -C | Increase of water use | Necessary water volume is estimated at planning stage referring to the business plan and a variety of available water sources such as well, reservoir and so forth. Considering its estimation, to combine the available water sources such as underground and reservoir for designing water supply system. | Designing/Construction |
| 12 | Involuntary resettlement | -A/ -B | Around 15 landholders, using as farmland, which means they will lose their means of livelihood, hold the land. In addition, involuntary resettlement (around 300 households) will be anticipated for expanding the access road | The land necessary for the TA construction is acquired following to the Indonesian regulation with reasonable consultation and compensation to mitigate the negative impact for the target population (including the landowners of the access road). Public consultation and sufficient meetings to discuss and obtain consensus with the landowners. Monitoring is to be conducted to confirm the condition of the people resettled after resettlement. | Designing |
| 14 | Social infrastructure & social services | -B/ -C | There is a bridge on the way to reach to the site which should be expanded | Detail consultation with the respective government agency, schools and the users of those facilities will be held. Alternative site with appropriate condition for relocating schools are to be prepared.<br>For the construction of the access road, the root and location is designed carefully in order not to close the access of residents considering the location of the existing bridge on the way. | Designing/ Construction/ |
| 18 | Hazards/Traffic accident | -B/ -C | Impact by increase of traffic | Guards are to be allocated to avoid traffic accident during operation. As the access road extends 7.5km from main road, the guard has to be allocated certain interval at the most risky locations. | Construction/ Operation |

Source: JICA Study Team

### d) Comparison of the proposed three sites

From the environmental and social consideration point of view, the proposed site with less negative impact is Penengahan, which was also counted as an important element for the site selection.

**Table 2.1.26 Summary of the Result of IEE on TA Development in the Proposed Sites**

| | Potential Impact | Proposed site | | | Remarks |
|---|---|---|---|---|---|
| | | Penengahan | Natar | Gedong Tataan | |
| 1 | Air pollution | * | -C | -C | As the Gedong Tataan site is 7.5km away from the main road, increase of air pollution during construction is anticipated relatively in wider area than others. However, the level will be limited. |
| 2 | Water pollution | -C | -C | -C | Negative impact is possible because of discharge water from TA |
| 3 | Soil contamination | * | * | * | As the wastes from TA are mostly organic without hazardous objects, no significant change is anticipated. |
| 4 | Noise and vibration | * | -B | -B | Natar and Gedong Tataan sites located about 600m, and 7.5km away from the main road respectively and are quiet at present. Noise and vibration will be the influencing factors for the environment than Penengahan. |
| 5 | Waste and sanitation | -C/-B | -C/-B | -C/-B | Wastes from TA may be an issue of concern for sanitation and environment |
| 6 | Odor | -B | -B | -B | Odor from TA may affect environment. Need to examine some countermeasures. |
| 7 | Land and natural resource use | * | * | * | As the proposed site consists of farmland and abandoned land, no particular impact to natural resource is anticipated. |
| 8 | Topography and geology | * | * | * | As the proposed land is almost flat and no particular change will be anticipated in all sites. |
| 9 | Soil erosion, sediment | * | * | * | As the structure of TA will be on a low-rise building, no significant erosion will be expected |
| 10 | Hydrology /water use | -C | -C | -C | Quantity of water use may be increased at and around the TA site. |
| 11 | Ecosystem | * | * | * | No significant impact is expected, as it is a farmland at present |
| 12 | Involuntary Resettlement | -B | -A/-B | -A/-B | The volume of involuntary resettlement is less than the other two sites in Penengahan as it is limited to around 24 farmland holders.<br>In case of Natar and Gedong Tataan, the category of environmental and social consideration should be rescreened to category A according to the JICA guideline. |
| 13 | Livelihood/local economy | +B | +B | +B | Positive impacts may be expected to vitalize local economy by operating TA |
| 14 | Social infrastructure and social services | -C | -A/-B | -B/-C | Related to the No.12, involuntary resettlement, large involuntary resettlement will be required for Natar and Gedong Tataan. |
| 15 | Minorities and indigenous people | * | * | * | As there are no indigenous groups observed, no impact is expected. |
| 16 | Social capital and regional decision making organization | * | * | * | |
| 17 | Conflicts in the region | D | D | D | Conflicts of interests due to construction of TA |
| 18 | Hazards/Traffic accident | -C | -B/-C | -B/-C | The negative impact in Penengahan is less than other two as it locates along the main road. |

| | Potential Impact | Proposed site | | | Remarks |
|---|---|---|---|---|---|
| | | Penengahan | Natar | Gedong Tataan | |
| 19 | Heritage | * | * | * | No heritage in/around the proposed sites |

Note: *A: relatively significant impact, B: relatively medium impact, C: relatively small impact, D: unknown as of present*
**: No impact or no corresponding impact*
*+: Positive impact, -: Negative impact*
Source: JICA Study Team

**4) Alternative of "without" project option**

It is recommended that the Study examine the alternatives of "without" project option and alternative project site options in light of environmental and social considerations in the JICA Guidelines for Environmental and Social Considerations (version of April 2004 and April 2010). As the options for sites have been discussed, this section examines the case of "without" option, considering the lessons and observations of the existing TAs. Some modifications may be necessary after site selection and designing the function of the TA.

The TA development aims to vitalize the Lampung province as a whole by improving the distribution mechanism through development of wholesale market, and the direct impact of the project is expected to be brought to the distributers of vegetable and fruits, wholesalers, and middlemen, and then trickled down to the producers. As the inhabitants around the proposed site are not necessarily the producers of the products handled in the wholesale market, it is not certain that the people around the proposed site will get direct positive impact.

On the other hand, the operation of TA will create employment and other economic activities that may provide positive impact to the local economy.

Without the project, the anticipated impact such as air pollution, water contamination, waste management, traffic accident and so forth will not occur; but with the project proper mitigation measures must be considered for the facility design and its operation.

The local inhabitants around the area will face some environmental influences, as noted above, hence certain mitigation measure should be considered. It is recommended to examine some mechanism to provide preferential opportunities for the local people to have access to employment and the wholesale market in order to bring benefits as much as possible to the local people around the TA site.

## 2.2 Site Selection for Feasibility Study on New TA Development in Lampung Province

Penengahan is selected among three candidate sites, as a project site for feasibility study on the new TA in Lampung Province by the Indonesian side, through a process of confirming government/and provincial policies relevant to TA development, trading areas/distribution network, needs survey to stakeholders on the new TA.

### 2.2.1 Governmental and Provincial Policies relating to TA Development

#### (1) Governmental Policy

MOA is implementing a consistent policy since 2000. It has the support for implementing and improvement of the STAs in the production areas and the TAs in the consumption areas of each province across the country. The new TA development in Lampung Province has the support of MOA and its development is highly evaluated.

#### (2) Provincial Policy for Agriculture in Lampung

As mentioned in 2.1.1 (1), Lampung Province formulated in May 2010 the "Regional Basic Plan Lampung Province 2009-2029" which mentions "development of Agro Minapolitan policy in the regencies of South Lampung, Central Lampung, and East Lampung".

#### (3) Preparatory Works on TA Development by Lampung Province

After the JICA's Additional Survey of 2nd Detailed Planning Survey in May 2010 and signing of Scope of Work of the Study in December 2010, Lampung Province proceeded the preparatory works for TA development steadily, such as, a search for a new site in Penengahan, selection of prioritized project site, budgeting for land acquisition of project site, and preparation for land procurement. An outline of these preparatory works is summarized below.

**a) Change of Candidate Site in Penengahan**

- Lampung Province introduced three candidate sites for TA development to JICA Study Team of Additional Survey of 2nd Detailed Planning Survey in May 2010, i.e. Penengahan site (property of Ministry of Forestry), Natar site (private land) and Gedong Tataan site.
- After May 2010, TA Committee (refer to 2.2.2 (1)) found out the difficulty to transfer the ownership of land property from Ministry of Forestry to Lampung Province regarding candidate site of TA in "maize field" in Penengahan.
- TA Committee reached a conclusion to propose the site of the former truck-scale facilities (1.8 ha/ property of Provincial Transportation Agency) and the surrounding private land (48 ha) located between Pisan and Hatta in Penengahan Sub-District as a new candidate site of TA. The site is facing directly to the main road from Kalianda to Bakauheni.

**b) Selection of Prioritized TA Site and Operation Body Recommended by TA Committee**

- On October 18, 2010, TA Committee submitted the recommendation paper to the Governor, in which it recommended Penengahan site as a prioritized project site of TA, Pt. LJU as an operation body for new TA, and preparation of budgeting for land acquisition of Penengahan site (a total amount of Rp. 3.55 billion) in the provincial budget 2011 fiscal year.
- Governor basically agreed on these recommendations.
- Penengahan was recommended as a project site because of its strategic location, flat condition of the site, and potential for future expansion.

**c) Formulation of "TA Development Plan" by Provincial Agricultural Agency**

- As mentioned in 2.1.1 (1), Agriculture and Food Crop Agency formulated in March 2011 "TA Development Plan" as one of agricultural sector plan in conformity with "Regional Basic Plan Lampung Province 2009-2029" and "Recommendation Paper by TA Committee" mentioned above.

**d) Implementation of land acquisition**

- Land acquisition cost of approximately ten ha of private land in Penengahan TA site was prepared

in the Provincial Budget in 2011 fiscal year.

- Equipment and asset agency is in charge of land acquisition. The agency has its own implementation schedule, which is divided into two phases (phase 1 and 2). Target of phase 1 stage is to procure the private land of approximately ten ha which is a surrounding area of the former truck-scale facilities (approx. 1.8 ha) of provincial transportation agency. Investigation on landowners, families and dwellers in this area has been conducted by the agency. The agency started the expropriation procedure from July 2011, and had a schedule to complete it by the end of December 2011.
- Regarding the target of phase 2 stage, i.e. additional private land of approx. 38 ha, expropriation will be completed by the end of 2012, after conducting comparative analysis between case-1 (expropriation of northern side of phase 1 land) and case-2 (expropriation of southern side of phase 1 land).

**(4) New TA Development Plan by the Government of DKI Jakarta Province**

As mentioned in 2.1.1 (3) "Relevant Agricultural Policies of DKI Jakarta to be Considered," DKI Jakarta has its own strategy to establish new TAs in the surrounding provinces in order to make the inflow of agricultural products to DKI stable and consistent, and to improve the quality of the product by enforcement of PERDA 8/2004 and its by-laws.

a. In order to implement PERDA 8/2004 and its by-laws, DKI Jakarta had a plan to newly construct a TA in three areas around Jakarta, namely, 1) between Banten and Serang (to the west of Jakarta), 2) between Karawang and Chibiteng (to the east of Jakarta) and 3) between Bogor and Ciawi (to the south of Jakarta) . However, it is uncertain when the construction plan will be developed.
b. Given these circumstances, DKI Jakarta has high expectations for the new TA to be built in Lampung Province. Accordingly, this plan has a higher priority as compared to the aforementioned plan of constructing three TAs.

**(5) Consensus Formulation among Related Provinces on PERDA 8/2004 and New Lampung TA**

As mentioned in 2.1.1 (3) "Relevant Agricultural Policies of DKI Jakarta to be Considered," Lampung Province has proceeded continuously with the negotiation with DKI Jakarta about the development of a new TA in Lampung. Recent meetings were held on May 11 and June 8, 2011. Basically, DKI Jakarta has the intention to support the TA development in Lampung, considering the benefits obtained by DKI Jakarta, such as a consistent supply of high-quality agricultural products from Lampung to DKI Jakarta, volume reduction of garbage in the markets in DKI Jakarta, cost saving on distribution/marketing activities, accelerated enforcement of Perda 8/2004, and etc.

A support to Lampung Province will be implemented as a part of cooperation program between MPU (Capital Area Partnership) in connection with the National Food Security Program. A working meeting of MPU was held at Yogyakarta on June 16, 2011 to discuss the National Food Security Program as mentioned above (Refer to Appendix 6.1).

### 2.2.2 Trading Area and Distribution Network

**(1) Infrastructure Development Project relating to the New TA**

The following infrastructure development projects should be taken into consideration for the new TA development.

1) By-pass Project connecting the Trans Sumatra Highway

The following by-pass construction project connecting the Trans Sumatra Highway should be taken into consideration for the new TA development.

A by-pass at approximately 180 km from Menggala (approx. 100 km north of Bandar Lampung) to the Bakau Heni Port via Sukadana, called “East Coast Line Project,” has nearly been completed. The construction work of this highway includes an implementation period of six years, from 2001 to 2006. The line has been opened to the public use except for approximately two km. As for this length of two km of incomplete section, land expropriation at one point in the east coast has not been achieved yet, and another point near Menggala has been damaged by rainfall. At this moment, the completion of the work in these two points has not been confirmed (Source: Interview with Mr. Dodi Hendrawan of BAPPEDA and Mr. Rachmat Susilo of Transportation Agency of Lampung Province, Aug. 10, 2011).

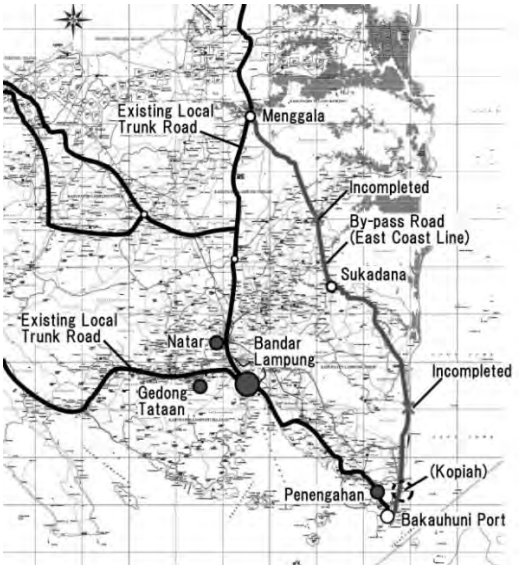



**Figure 2.2.1 Road Network around TA Sites**

If the problem of the incomplete section could be solved appropriately, a smoother access would be provided fo the cargo-vehicles from other provinces in Sumatra i direction to Jakarta via the Bakau Heni Port. However, as mentioned later, as long as the new TA will not deal with the products of other provinces in the short term, negative impacts will not occur to the new TA.

Currently, the volume of fruits and vegetables distributed from Sumatra to Jawa through this by-pass is approximately 30% of total amount. To formulate a mid-term plan, it is necessary to estimate the change of the distribution volume through this by-pass.

2) Sunda Strait Bridge Project

Sunda Strait bridge project is an on-going national project in Indonesia, implemented by Central Government, Banten Provincial Government and Lampung Provincial Government. It will connect the southern end of Lampung in Sumatra Island and the northern end of Banten in Jawa Island, with total bridge length of 29 km, width of 60 m, and the total project cost of Rp. 150, 000 billion. The project period is from 2011 to 2025 (Refer to 4.1.1 (5)).

### (2) Inter-Provincial Distribution System and TA Planning in Lampung Province

#### a) Inter-Provincial Distribution Pattern

As mentioned in 2.1.1 (2) “Current Condition and Future Prospects of Inter-provincial Marketing between Sumatra and Jawa,” within the distribution volume of fruits and vegetable from Sumatra to Jawa Island, fruits occupies 76.8% of all distributed volume, vegetable 8.3% and estate crop, mainly fresh coconuts, 14.8% according to the O/D survey by JICA Study Team at Bakau Heni in May 2011.
Some 76.2% of the origin is Lampung (fruits from Lampung: 78.4%, vegetable from Lampung: 45.1%, and estate crops from Lampung: 82.1%). Lampung is one of the main suppliers of fruits to Jawa including DKI Jakarta. DKI Jakarta occupies 52.9% as the top destination, West Java 24.5%, and Banten 19.4%. These top three destinations occupy 96.6% of all destinations.

#### b) Estimated Trading Volume of Inter-Provincial Distribution

A part of the inter-provincial distribution from Sumatra Island to Jawa Island through Bakau Heni Port would be the major target of new TA.
Based on the results of O/D survey by JICA Study Team at Bakau Heni in May 2011, the volumes of fruits, vegetables and estate crops distributed from Sumatra to Jawa through Bakau Heni were estimated to be 1,444 ton/day, and O/D pattern in 2011was estimated as follow (Refer to 2.1.1 (2)).

**Table 2.2.1 O/D Pattern on Total Volume of Horticulture Products (Fruits, Vegetable and Estate Crops) (2011)**

| 2011 (unit: ton/day) | | | |
|---|---|---|---|
| Origin \ Destination | Jakarta | Other Jawa | Total |
| Lampung | 550 | 552 | 1,102 |
| Other Sumatra | 210 | 132 | 342 |
| Total | 760 | 684 | 1,444 |

Source: JICA Study Team

**c) Development of TA as a distribution center to DKI Jakarta and the other provinces**

The new TA can serve as a wholesale market with safety and quality inspection, traceability procedure, washing and grading, packaging, etc. to distribute high quality surplus agriculture products from Lampung province to DKI Jakarta and other provinces in Jawa Island. According to the statistical data, the surplus agricultural products in Lampung Province and surplus/shortage quantity in DKI Jakarta and East Java are as follows (Refer to Appendix 4.1).

**Table 2.2.2 Surplus Agriculture Products in Lampung Province and Surplus/Shortage Quantity in DKI Jakarta and West Java Province**

(Unit: ton/year)

| | Durian | Papaya | Pineapple | Banana | Sapodia |
|---|---|---|---|---|---|
| Lampung | 4,607 | 28,307 | 391,932 | 475,316 | 7,832 |
| DKI Jakarta | -31,523 | -30,115 | -62,112 | -253,028 | -4,843 |
| West Jawa | -72,737 | -48,153 | 186,311 | 272,486 | -5,802 |
| Average transaction per day | 12.6 | 77.6 | 1,073.8 | 1,302.2 | 21.5 |

Source: Statistik Indonesia 2010

There are large surplus quantities of banana and pineapple in Lampung Province (1,300 ton/day and 1,070 ton/day respectively). But in case of pineapple, almost all surpluses are processed to canned product in the main production area of Central Lampung Regency, and a small amount of fresh pineapple is consumed in and around the production areas. Therefore, no pineapples are transported from Lampung Province. In case of durian, papaya and sapodia, Lampung Province has approximately 111 ton/day of surplus in total.

On the other hand, according to the result of O/D survey at Bakau Heni Port, approx. 260 ton/day of banana, 65 ton/day of watermelon, 36 ton/day of durian, and 23 ton/day of papaya were distributed specifically from Lampung Province to DKI Jakarta (Refer to Annex 1.1.2 -6)).

As results of these analysis, the main functions of new TA in Lampung Province is considered to be as follows:

- To ship banana to DKI Jakarta after washing, grading and packing, with attachment of certificate of origin, quality labels and quality test certificate (Adding value effect by packaging is high.)
- To ship the other fruits (watermelon, durian, papaya and sapodia) to DKI Jakarta with certificate of origin, quality labels and quality test certificate (Transaction of these products are done usually without any packaging due to their hard outer shells. Therefore, adding value effect by packaging is relatively low.)

Note: It is necessary to consider that East Jawa Province also has a lot of banana surplus, and they can provide the surplus to DKI Jakarta. Therefore, banana of East Jawa is one of the strong competitors to the new TA in Lampung. On the other hand, in case of durian, papaya and sapodia, East Jawa has shortage.

**(3) Development of New Wholesale Market in or near Bandar Lampung**

In Bandar Lampung city (830,000 population in 2009), there are two large traditional markets with mixed function of retail and wholesale markets. But the two markets have insufficient capacity and some hygiene and environmental problems. They also have few facilities for traceability and market information system. In or near Bandar Lampung City, it is required to establish new wholesale market in the local consumption area, which is equipped with information system, traceability facilities and food inspection equipment. However, such type of wholesale market is not included in the development plan of both Lampung Province and Bandar Lampung City. In addition, the estimated handling volume of new wholesale market would be approximately 140 ton/day based on the estimated consumption by the city population (approx 50% of the population's demand), which is considered to be small.

### 2.2.3 Needs of Stakeholders for New TA in Lampung Province in the Phase 1 Work

Until Phase-1 of the Study (May-June 2011), the administration of Lampung Province and the stakeholders had not met together for a consultation on the new TA although it was essential to confirm the private sector stakeholder's conditions for accepting the new TA and to comply with them to establish the new TA.

The needs survey during the phase 1 work in Indonesia found that the stakeholders from private sector had the opinions on the new TA in Lampung Province as shown in the following table (Refer to Annex 1.4). The roles and functions of the New TA were not explained clearly to the stakeholders in this survey to find opinions of possible users without any assumptions or bias. Naturally their response was favorable toward Natar compared to other two locations for its geographical advantage of being close to Bandar Lampung. It is assumed that the users considered the new TA to be built as a local wholesale market. Further survey is needed to find their opinions with assumptions such as the new TA being inter-provincial market.

**Table 2.2.3 Summary of the Result of Needs Assessments (Phase 1 Work of the Study)**

| Stakeholders | Comments |
|---|---|
| 1) Wholesalers in Kramat Jati and Tanatingi | Some 15 (36.6%) of 41 wholesalers and suppliers responded that they would consider participating in the new TA in Lampung Province. Majority of them gave a consensus answer; "We will go if we can make profits." |
| 2) Supermarkets in DKI Jakarta | Three out of four supermarkets are interested in participating in the new TA. |
| 3) Stakeholders in Lampung | 60% of international traders and 40 % of food processors are positive to rent the space in new TA. |
| 4) Wholesalers in Bandar Lampung | 60.4% of them have intention to participate to new TA, but 64.6% of them prefer Natar to Penengahan where is supported by only 10.4%. |
| 5) Collectors in Lampung | 86.7% of collectors are positive to participate to new TA, but only 3.3% is positive to Penengahan. |

Source: JICA Study Team

### 2.2.4 Comparative Analysis on Three Candidate Sites of New TA in the Phase 1 Work

With respect to the three candidate sites for the new TA in Lampung Province (Penengahan, Natar and Gedong Tataan), a preliminary comparative study was carried out in the phase 1 work (May-June 2011) by evaluating the sites in terms of (1) consistency with policies, (2) location and (3) stakeholder's intention to participate. The relative evaluation method in which each item was evaluated as "A: high evaluation," "B: moderate" and "C: low evaluation" was adopted. The result is shown in the table below. The evaluations on Penengahan and Natar were almost same at the previous survey due to the high score for Natar on "Stakeholder's intention to participate in the new TA." According to this comparative analysis, Penengahan has major advantages in terms of policies (inter-regional), location (especially trading-area size, max 1,500 ton/day), and environmental and social considerations (less social impact). On the other hand, Natar has relative advantage of stakeholders' needs. Since the needs survey was conducted without showing target trade area of the new TA, this point was left for further clarification during the Phase-2 work.

**Table 2.2.4 Comparative Analysis on Three Candidate Sites of TA (Results of Phase 1 Work of the Study)**

| No | Evaluation Item | Detailed Item | | Evaluation on Candidate Sites | | | Remark |
|---|---|---|---|---|---|---|---|
| | | | | Penen-gahan | Natar | Gedong Tataan | |
| 1 | Policies | Consistency with the policies of MOA and Province | | A | C | C | Note 1 |
| | | Consistency with the regulations according to the usage of land | | B | B | B | |
| 2 | Location | Accessibility to major production areas | (1) To major vegetable production areas | C | B | A | |
| | | | (2) To major fruit production areas | A | B | A | |
| | | Accessibility to major consumption areas | (1) To Bandar Lampung City | C | A | B | |
| | | | (2) To the western part of Jawa Island including DKI Jakarta | A | B | C | |
| | | Accessibility to the ferry port | | A | B | C | |
| | | Trading-area size | (1) Handling volume transferrable from the existing wholesale markets to new TA | C | A | C | Note 2 |
| | | | (2) Wide-area distribution volumes transported to the western part of Jawa Island via Bakau Heni Port that can be handled by the new TA | A | C | C | Note 3 |
| 3 | Stakeholder's intention to participate in the new TA | Farmers/ Farmers group in Lampung | | B | A | B | |
| | | Products collector in the production area in Lampung | | B | A | B | |
| | | Wide-area suppliers in Lampung | | A | A | B | |
| | | Wholesalers | (1) Wholesalers in Lampung | C | A | C | |
| | | | (2) Wholesalers in DKI Jakarta | B | B | B | Note 4 |
| | | Retailers in Lampung | | C | A | C | |
| | | Bulk buyers | (1) Bulk buyers in Lampung | C | A | C | |
| | | | (2) Bulk buyers in DKI Jakarta | B | B | B | Note 4 |
| 4 | Environmental and Social Consideration | Environment (site development work, pollution, tree cutting etc.) | | B | B | B | |
| | | Society (involuntary resettlement, compensation etc.) | | A | B | C | |
| 5 | Infrastructure, etc. | Condition of access road (road between local trunk road and site) | | A | B | C | |
| | | Power supply, water supply, sewage and telecommunication | | B | B | B | |
| | | Whether or not there is a high voltage cable | | A | C | A | Note 5 |
| | | History of natural disaster | | B | B | B | |

Source: JICA Study Team

Note 1: Lampung Province determined Penengahan site as a project site of new TA in "TA Development Plan" formulated in May 2011. Ministry of Agriculture in Jakarta conforms its opinion to Lampung's.

Note 2: It is evaluated here that the estimated handling volume of new TA, which can be transferred from the existing, markets with function of wholesale market (Taming and Gintung) in Bandar. Total handling volume of these markets is estimated to be approx. 100 ton/day.

Note 3: It is evaluated here that the possible involving volume from the inter-provincial marketing flow from Sumatra to western part of Jawa through Bakauhuni port, which usually does not pass through the existing markets in Bandar Lampung. Its total volume is estimated to be approx. 1,500 ton/day.

Note 4: Several wholesalers and bulk buyers in DKI Jakarta showed their intentions to come to new TA Lampung in the interview survey, but specific site names (Penengahan, Natar and Gedong Tataan) were not opened to the interviewees. Therefore, judgment of "B" is applied to all 3 sites on the evaluation items.

Note 5: High-voltage line of 150 kV, which is running across in the middle of Natar site, will not give the fatal damage to the site, but it will constrain strongly the land use of the site.

### 2.2.5 Selection of the Project Site of New TA in the Phase-2 Work

#### (1) Confirmation on Target Trade Area of New TA

The comparative analysis in the Phase-1 work indicated a similar evaluation result to Penengahan and Natar as the project site. One of the reasons is that the needs assessment was conducted not specifying target trade area of the new TA. In this sense, target trade area of the new TA was confirmed during the Phase-2 work. In the counterpart meeting in Lampung Province on Aug. 9, 2011, Lampung Province and the JICA Study Team confirmed that the new TA must focus its function on the inter-provincial distribution of fruits and vegetables between Sumatra and the Jawa Islands (Refer to Attachment 1.2 in Appendix 3.2).

#### (2) Consensus-building by Stakeholders Workshops on the New TA in Lampung Province

In order to assess the needs stakeholder on the function of the new TA, namely inter-provincial distribution, MOA, Lampung Province, and JICA Study Team held stakeholder workshops in Bandar Lampung and Jakarta to confirm the stakeholders' needs on the new TA and to build a consensus on the new TA development in Lampung Province. Workshops were held in Bandar Lampung on Aug. 10, and in Jakarta on Aug. 15, 2011. The participants were selected mainly from the same interviewees from the needs assessment in the phase 1 work in Indonesia in May 2011. Lampung Province and MOA selected the participants from the list of interviewees provided by the Study Team. From Lampung Province, the leaders of farmers group, wholesalers, products collectors, private processors and traders were selected as participants (actually, the wholesalers could not participate in the workshop due to the busy period of Ramadan, therefore supplementary questionnaire survey was done to the wholesalers after the workshops). In Jakarta, MOA selected the wholesalers and private developers.

At the workshops, the new TA's function as a transaction point between Sumatra and Jawa was emphasized to the participants. The participants then discussed the following issues; the preferable site of the new TA, and expectations from the new TA. The results of discussions are as follows (Refer to Attachment 1.3 and 1.4 in Appendix 3.2).

##### 1) Preferable Site of the New TA

Penengahan was designated as the most prioritized site among three candidate sites, both in Bandar Lampung and in Jakarta. The main reasons are as follows:

##### a) Opinions from participants in Lampung

- "The location facilitates the distribution from all regencies in Lampung" (Penengahan is ideally situated to distribute smoothly the products from all production areas in Lampung Province.)
- "Accessibility to the Bakau Heni Port" (Penengahan is close to the Bakau Heni Port in South Lampung Regency as a gateway to the Jawa Islands.)
- "Geographical proximity to the central market in Jakarta" (Almost same as above.)
- "Easy development," etc. (Different from the other 2 sites, it is easy to undertake the land expropriation in Penengahan because the site is occupied mainly by empty private lands).

##### b) Opinions from the participants in Jakarta

- "To be closer to the port" (Penengahan is closer to the Bakau Heni Port than to the other 2 sites.)
- "Shortening of distribution line and lower transportation costs", etc. (Distance from Jakarta to Penengahan is shorter than the cases of the other 2 sites.)

##### 2) Expectations to New TA

Several expectations were presented in the workshop as follows; bank service with ATM facilities, market information service through the Internet, 24 hours security service, capacity building for all type of products, adequate charging system in parking, cold storage, separation of vehicles and pedestrians' flow, adequate loading and unloading facilities, 24 hours operation and no hoodlums.

### 2.2.6 Conclusion on the Site Selection for Feasibility Study on New TA

The counterpart meeting in Lampung Province and stakeholder workshops in Bandar Lampung and Jakarta, MOA, Lampung Province, and the JICA Study Team confirmed the following items in the Joint Counterpart Meeting on Aug. 15, 2011 (Refer to Appendix 3.2).

**(1) Project Site of TA for Feasibility Study:**

Penengahan (South Lampung Regency, Lampung Province)

**(2) Function of the new TA in Lampung Province:**

The new TA in Lampung Province will have function of transaction point for fruits and vegetables to be distributed inter-regionally between Sumatra and the Jawa Islands. Furthermore, the new TA will have unique characteristics with mixed function of TA and STA compared to existing TAs because the new TA is located closer to production areas while other TAs are located closer to consumption areas.

**(3) Summary of Comparative Evaluation**

All of the above results are summarized once again in the form of the comparative evaluation as shown in the following table.

**Table 2.2.5 Final Comparative Evaluation of the Three Candidate Site for the Construction of TA**

| No | Evaluation Item | Detailed Item | | Evaluation on Candidate Sites | | | Remark |
|---|---|---|---|---|---|---|---|
| | | | | Penen-gahan | Natar | Gedong Tataan | |
| 1 | Policies | Consistency with the policies of MOA and Province | | A | C | C | |
| | | Consistency with the regulations according to the usage of land | | B | B | B | |
| 2 | Location | Accessibility to major production areas | (1) To major vegetable production areas | C | B | A | |
| | | | (2) To major fruit production areas | A | B | A | |
| | | Accessibility to major consumption areas | (1) To Bandar Lampung City | C | A | B | |
| | | | (2) To the western part of Jawa Island including DKI Jakarta | A | B | C | |
| | | Accessibility to the ferry port | | A | B | C | |
| | | Trading-area size | (1) Handling volume transferrable from the existing wholesale markets to new TA | C | A | C | |
| | | | (2) Wide-area distribution volumes transported to the western part of Jawa Island via Bakau Heni Port that can be handled by the new TA | A | C | C | |
| 3 | Stakeholder's intention to participate in the new TA | Farmers/ Farmers group in Lampung | | A | C | C | |
| | | Products collector in the production area in Lampung | | A | C | C | |
| | | Wide-area suppliers in Lampung | | A | C | C | |
| | | Wholesalers | (1) Wholesalers in Lampung | A | B | C | |
| | | | (2) Wholesalers in DKI Jakarta | B | C | C | Note 1 |
| | | Retailers in Lampung | | C | A | C | Note 2 |
| | | Bulk buyers | (1) Bulk buyers in Lampung | A | C | C | |
| | | | (2) Bulk buyers in DKI Jakarta | B | B | B | Note 2 |
| 4 | Environmental and Social Consideration | Environment (site development work, pollution, tree cutting etc.) | | B | B | B | |
| | | Society (involuntary resettlement, compensation etc.) | | A | B | C | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 5 | Infrastructure etc. | Condition of access road (road between local trunk road and site) | A | B | C | |
| | | Power supply, water supply, sewage and telecommunication | B | B | B | |
| | | Whether or not there is a high voltage cable | A | C | A | |
| | | History of natural disaster | B | B | B | |

Source: JICA Study Team

Note 1 : According to the result of supplementary questionnaire survey in the stakeholder workshop in DKI Jakarta, approx. 40% of wholesalers voted Penengahan as a project site of new TA (no answer: approx. 60%.). Furthermore, percentage of wholesalers who have intention to be tenants of new TA was 40% (no intention: approx. 50%).

Note 2 : Evaluations are kept to be same as former ones of phase 1 work because related persons did not participate the stakeholder workshop in phase 2 work.

## 2.3 Basic Information for Products Distribution and Marketing System relating to New TA in Lampung Province

After selecting Penengahan as the project site of the new TA in Lampung Province, further detailed surveys and analysis were conducted on the planning of TA during Phase-3 work in Indonesia (Sept.-Nov. 2011). The survey results are shown as follows.

### 2.3.1 Review on the Distribution Volume of Potential Target Products

As mentioned in 2.2.2 (2) “Inter-Provincial Distribution System and TA Planning in Lampung Province” and (3) “Inter-Provincial Distribution Pattern”, the existing volume of horticulture from Sumatra to Jawa in 2011 and forecasted ones in 2015 and 2025 are summarized in the following table.

**Table 2.3.1 Actual and Estimated Distribution Volume from Sumatra to Jawa**

Unit: ton/day

| | Actual Volume | | | Estimated Volume | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2011 (May) | | | 2015 | | | 2025 | | |
| | To Jakarta | To Others in Jawa | Total (To Jawa) | To Jakarta | To Others in Jawa | Total (To Jawa) | To Jakarta | To Others in Jawa | Total (To Jawa) |
| From Lampung | 550 | 552 | 1,102 | 865 | 862 | 1,727 | 1,012 | 1,011 | 2,023 |
| From Others in Sumatra | 210 | 132 | 342 | 325 | 201 | 562 | 383 | 237 | 620 |
| Total (From Sumatra) | 760 | 684 | 1,444 | 1,190 | 1,063 | 2,253 | 1,395 | 1,248 | 2,643 |

Source: JICA Study Team

Incidentally, Lampung Province expects to fully enforce PERDA 8/2004, and its by-laws in the new TA. The new TA will deal with all horticulture products passing through Bakau Heni Port in conformity with PERDA 8/2004 and its by-laws. But it is quite necessary to consider following two things,

a) A full enforcement of PERDA 8/2004 and its by-laws in all provinces in Indonesia will not be realized in such a short time before the establishment of the new TA in Lampung Province.

b) On the other hand, the new TA may exclusively deal with the Lampung products only in conformity with Perda 8/2004 and its by-laws, should Lampung Province and DKI Jakarta establish a special agreement.

Therefore, Lampung Province should undertake a sound promotion of the establishment of the above-mentioned bilateral agreement with DKI Jakarta, and to focus only on the Lampung products as targets of the new TA, without dealing, at this moment, with the products from other provinces in Sumatra. (If other provinces request Lampung to undertake food inspection, etc., Lampung would deal the matter individually).

Reviewing the distribution volumes from above mentioned viewpoint, it is obvious that 550 ton/day of horticultural products distributed from Lampung Province to DKI Jakarta in 2011 become the potential target of the new TA, and the estimated volumes in 2015 and 2025 will be 865 ton/day and 1,012 ton/day respectively. Furthermore, the flow is characterized by the huge quantity of banana, and the other fruits (watermelon, durian, papaya and sapodia) as shown in the following figure.

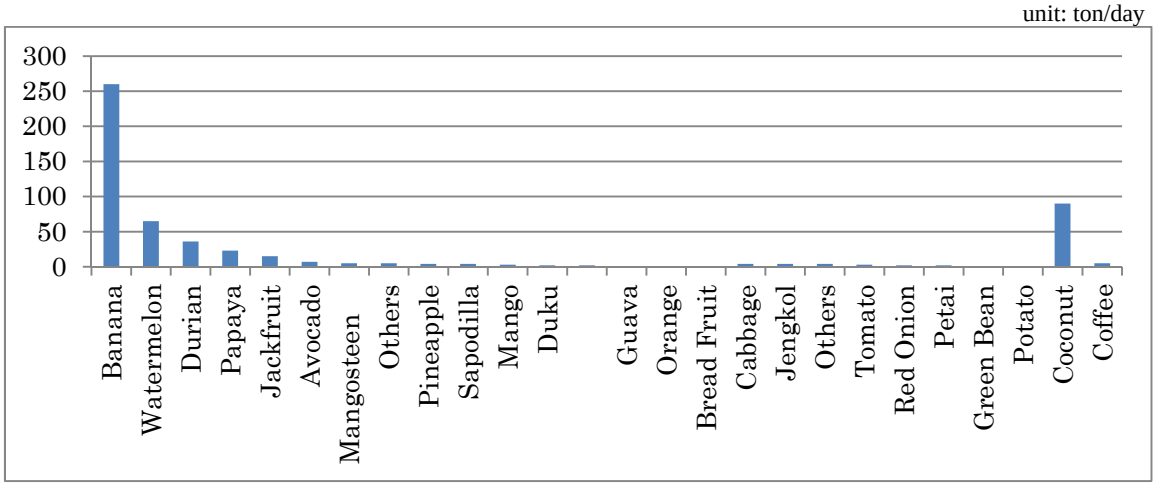


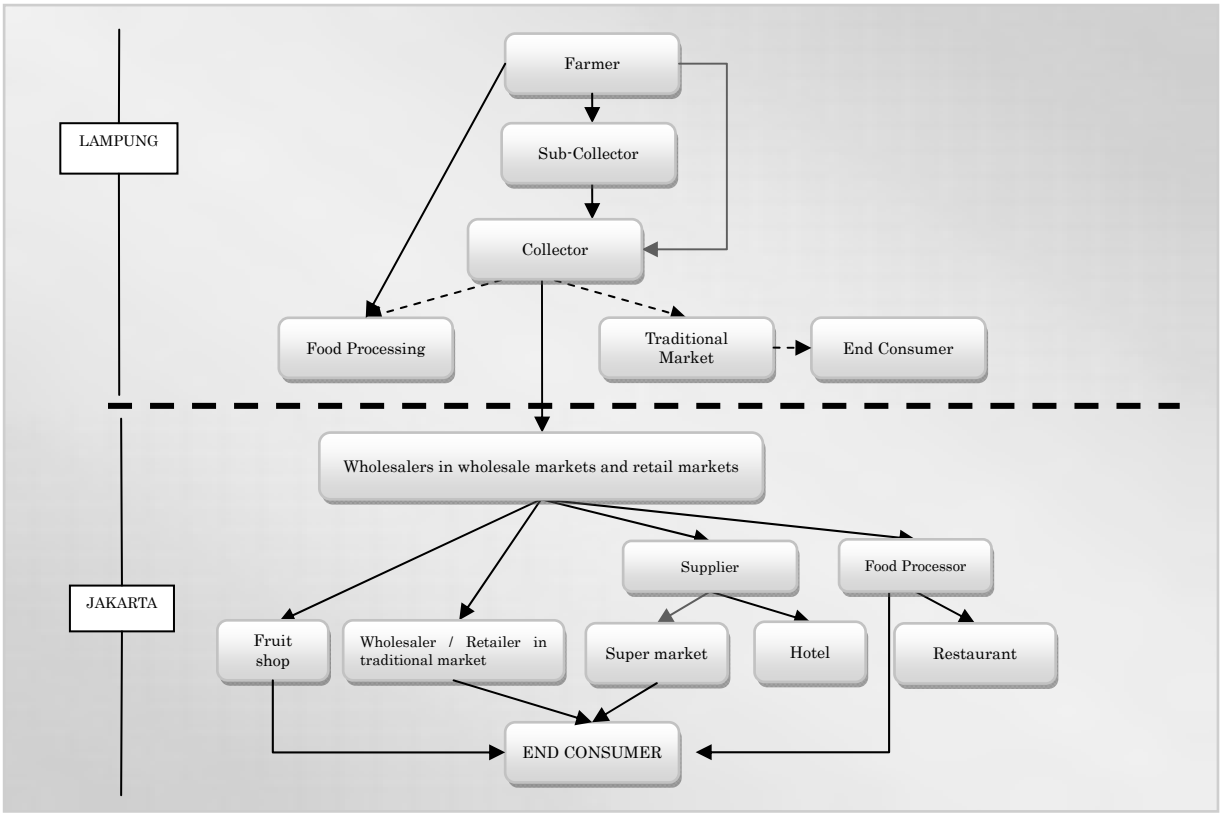

**Figure 2.3.1 Distribution Volume by Type of Horticulture Products in 2011**

### 2.3.2 Conventional Marketing System and Pricing Mechanism of Target Products of New TA

The general value-chain of the fruits is shown in the following figure, and detailed value chains of banana, papaya and watermelon are mentioned later. As for durian, jackfruit, and fresh coconut, a detailed value-chain survey was not carried out because these products are usually transacted without packaging and it is relatively difficult to expect value addition because they have their extraordinary hard shells compared with the other fruits.

In the marketing system of fruits and vegetables from farmers in Lampung to the end consumers in Jakarta, the bulk buyers (hotels, restaurants and supermarkets) are involved with various marketing perpetrators such as farmer groups, collectors, wholesalers and retailers.

In addition to this main channel, because of the difficulties in transportation and the lack of accessible information network including the market price information, some other additional actors play a marketing role as the sub-collectors in the production area between collectors and farmers, and as the suppliers in consumption area between wholesalers and retailers.
This long distribution channel makes the prices of products higher by each transaction level, and causes quite high prices at the end consumers.




Source: JICA Study Team

**Figure 2.3.2 Marketing System of Fruits and Vegetables from Farm Gate in Lampung to End Consumer in Jakarta**

Based on the above figure, the characteristics of a general value chain of the fruits can be summarized as follows.

1) Each sub-collector collects the products from many farmers. Almost all farmers are tied by credit, loan or capital from a sub-collector.
2) Each sub-collector sells these products to a specific collector for whom sub-collectors function as their agents.
3) Wholesalers in DKI Jakarta buy products from many collectors in Sumatra Island (especially Lampung), and from the other parts of Jawa Island.

### (1) Marketing System and Value Chain of Banana

#### 1) Traditional marketing system at production area

Typical condition of banana distribution from fields to wholesale market through products collection centres is summarized in the following photograph.

Banana Field | Transportation by trucks | Collection centre in production area

Arrival at Jakarta | Kramat Jati wholesale market | Serdang market in Jakarta

Banana in wooden box | Banana in cardboard box

**Photograph: Typical condition of banana distribution**

Majority of collectors provide some credit services to his agents as sub-collectors for collecting banana from farmers. Due to this credit system, farmers have no way of free trading but to sell their harvested products to the sub-collectors. The amount of fund provided by the collector varies, depending upon the need of the farmer.

**2) Measuring of weight and transportation**

Banana from farmers is traded with stem, but the payment is based on the weight (kg) excluding the stem, which is around 1 kg per stem. Transport cost from production area in Lampung to Kramat Jati is Rp 1,700,000 per truck in which has loading capacity of 5.3tons. Therefore, the cost of transportation per one kilogram of bananas is Rp321.

**3) Quality control**

About 84% of all transaction volume of fruits and vegetables at Bakau Heni Port from Sumatra to Java are not graded nor packaged and just loaded on trucks. Only 16% of them are packed in wooden boxes, baskets, cartons and sacks (JICA Study, Oct. 2011).

At farmer's level, treatment of banana is done in primitive manner. Bananas are usually harvested before ripened so that they get ripened after arrival at wholesale market in Jakarta. But sometime harvesting is done when bananas are already ripened or in more old condition. Consequently, the banans become rotten at Jakarta. Even at collector's level, similar method of sorting and grading is adopted.

**4) High quality banana marketing**

There are two specific types of marketing system on the high quality banana (washed, graded, packaged and weighed banana) shown as follows. In both cases, the packaged banana will be sold to hyper-, mini- and super market in a extremely higher price around Rp10,000 - 15,000/kg.

a. Case 1: Farmers group which has been organized in Pesawaran Regency by their own initiatives

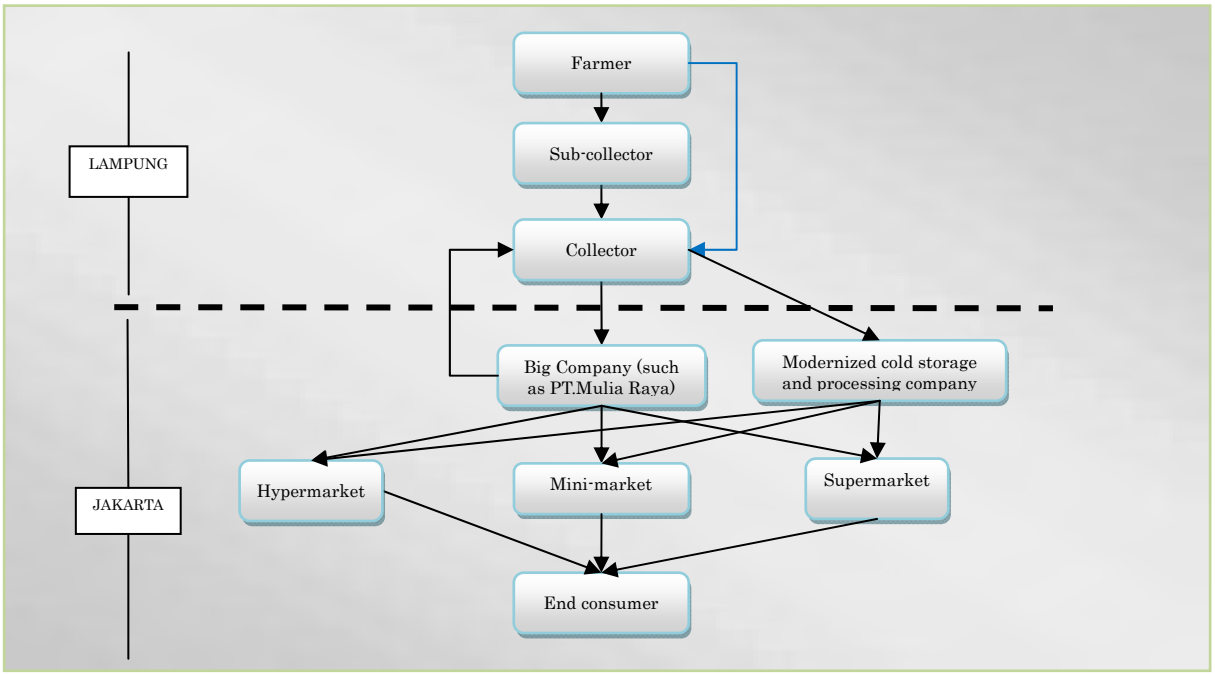
supported by Provincial Lampung and Pesawaran regency government

This group made contract with a bulk buyer in Jakarta,"Mulio Raya". They invested to establish a banana collection center-receiving loan from Mulio Raya.
In this collection center, washing, sorting, grading and packaging of banana has been implemented under the prior agreement with Mulio Raya. Avarage trading volume is three to five tons per day.

**Photograph: Banana collection center in Padang Cermin District, Pesawaran Regency**

b. Case 2: Farmers or collectors who transport the raw products of bananas with packaging and sell them to processors with cold chain system in Jakarta

"Sunpride" is a processing company, which deals with fruits such as banana, mango and apple. The products are sometimes imported from China and Malaysia. All banana products are transported from Lampung after packaging at production area with daily amount of 13 tons.




Source: JICA Study Team

**Figure 2.3.3 Marketing System of Packaged Banana from Farm Gate in Lampung to End Consumer in Jakarta**

### 5) Pricing mechanism

The farm gate price is determined by prior agreement between a collector and a wholesaler in Kramat Jati or other outside markets in Jakarta.

**Table 2.3.2 Pricing of Banana from Farm Gate in Lampung to End Consumer in Jakarta**

| AREA | Value Chain Actors | Variety (Rp./Kg) | | | | | | | | Added Value of Each Class - Margin (Rp./Kg) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | *Ambon* (A) | | *Tanduk* (B) | | *Kepok* (C) | | *Rames* (D) | | | | | |
| | | Buy | Sell | Buy | Sell | Buy | Sell | Buy | Sell | A | B | C | D |
| LAMPUNG | Farmer | - | 1200 | - | 1200 | - | 800 | - | 600 | 1200 | 1200 | 800 | 600 |
| | Sub-Collector | 1200 | 1400 | 1200 | 1400 | 800 | 900 | 600 | 800 | 200 | 200 | 100 | 200 |
| | Collector | 1400 | 1800 | 1400 | 1600 | 900 | 1200 | 800 | 1100 | 400 | 200 | 300 | 300 |
| JAKARTA | Wholesaler (Kramatjati) | 1800 | 2000 | 1600 | 2300 | 1200 | 1800 | 1100 | 1150 | 200 | 700 | 600 | 50 |
| | Supplier (in Kramatjati) | 2000 | 2500 | 2300 | 2500 | 1800 | 2000 | 1150 | 1650 | 500 | 200 | 200 | 500 |
| | Retailer | 2500 | 5000 | 2500 | 3500 | 2000 | 3000 | 1650 | 4000 | 2500 | 1000 | 1000 | 2350 |
| | End Consumer | 5000 | - | 3500 | - | 3000 | - | 4000 | - | - | - | - | - |
| | Supermarket* | 12,000 – 14,500 | | | | | | | | | | | |

Source: JICA Study, Oct. 2011 (*Price in supermarket in Jakarta is listed at the bottom in the table because of the highest value addition.)

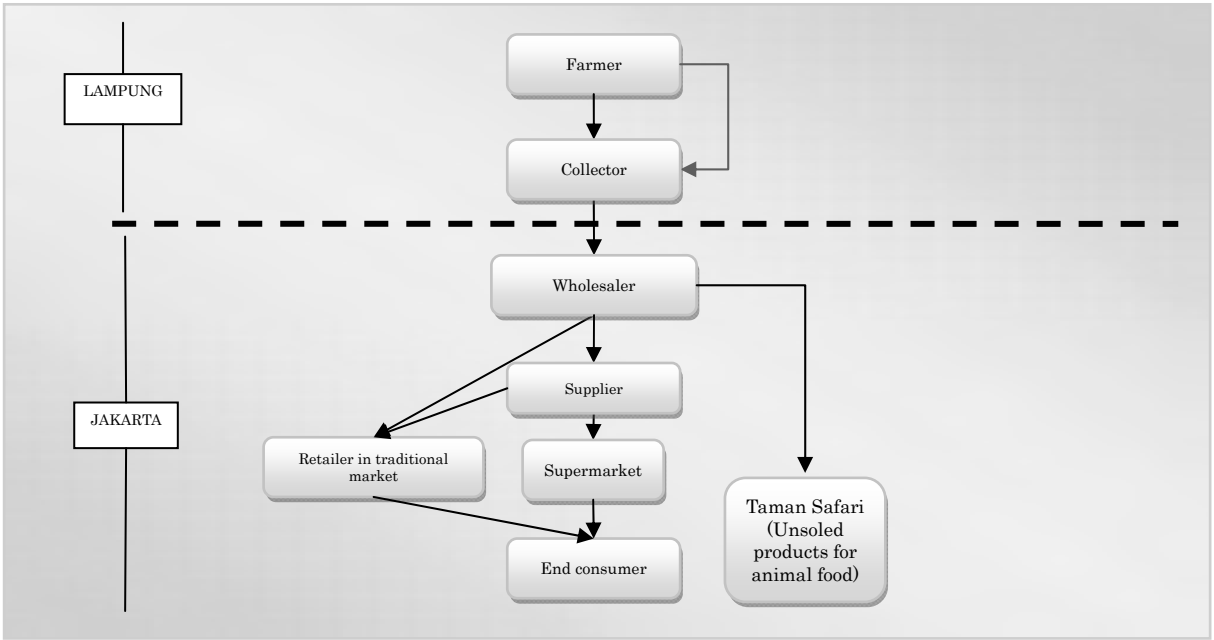
### (2) Marketing System and Value Chain of Papaya

1) Credit system

There are only two types of actors in Lampung; collectors and farmers. The collector provides the farmers nursery for free for planting. This nursery is the preferable type of papaya to consumers in Jakarta (same type of papaya sold at Bangkok), which is traded at a higher price. The collector also provides farmers other materials on request for production. This is conducted by credit system

2) Transportation cost

Transportation cost from Lampung to Jakarta is around Rp. 1,300,000 per truck, which has a loading capacity of 2.5 tons. Therefore, the cost of transporting one kilogram of papaya is Rp 520 per kg. Marketing system and value chain of papaya are shown as follows.




Source: JICA Study Team

**Figure 2.3.4 Marketing System of Papaya from Farm Gate in Lampung to End Consumer in Jakarta**

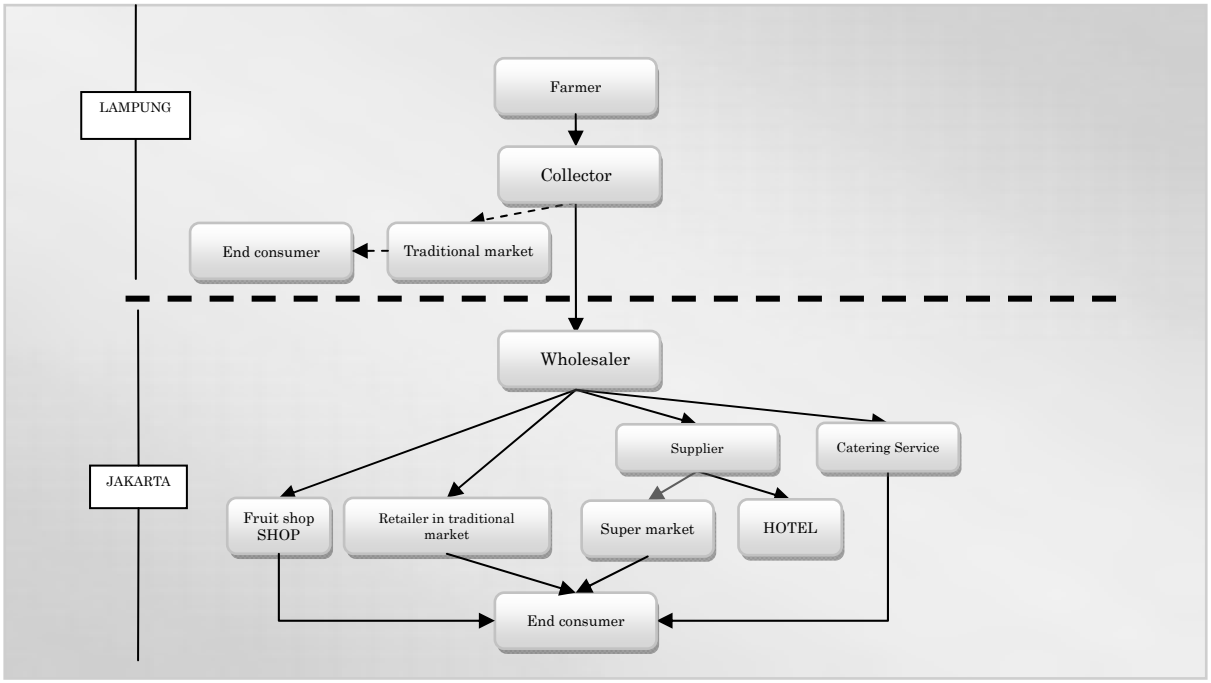
**Table 2.3.3 Pricing of Papaya from Farm Gate to End Consumer in Jakarta**

| AREA | Value Chain Actors | Quality (Class) Rp./Kg | | | | | | Added Value Each Class - Margin (Rp./Kg) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | A | | B | | C | | | | |
| | | Buy | Sell | Buy | Sell | Buy | Sell | A | B | C |
| LAMPUNG | Farmer | - | 1100 | - | 1100 | - | 1100 | - | - | - |
| | Sub-Collector | - | - | - | - | - | - | - | - | - |
| | Collector | 1100 | 1700 | 1100 | 1700 | 1100 | 1700 | 600 | 600 | 600 |
| JAKARTA | Wholesaler (Kramatjati) | 1700 | 2500 | 1700 | 2000 | 0 | 600 | 800 | 300 | 600 |
| | Supplier | 2500 | 3000 | - | - | - | - | 500 | - | - |
| | Retailer | 3000 | 5000 | - | 4000 | 600 | 2500 | 2000 | - | 1900 |
| | Supermarket | 3500 | 6500 | - | - | - | - | 3000 | - | - |
| | End Consumer | 5000 | 0 | 4000 | - | - | - | - | - | - |

Note: A is the best quality (bigger size, no damage), B is the medium quality, C is the lowest quality(broken, small size, damage)
Source: JICA Study Team

### (3) Marketing System and Value Chain of Watermelon

The condition of watermelon production is different from other agricultural products. In case of watermelon, a collector invests his own money as initial cost to the farmer. For one ha land to plant watermelon, it requires Rp. two to three million for renting the land, and about Rp. 20 million of production cost. Total cost of production in one ha land is Rp. 26 million with revenue of Rp. 40 million. Total profit for farmer is Rp. 10 million per ha per three months period. Basically, one farmer plants two ha of farmland with two laborers. Marketing system and value chain of watermelon are shown as follows.




Source: JICA Study Team

**Figure 2.3.5 Marketing System of Watermelon from Farm Gate in Lampung to End Consumer in Jakarta**

**Table 2.3.4 Pricing of Watermelon from Farm Gate to End Consumer in Jakarta**

| AREA | Value Chain Actors | Variety (Class) Rp./Kg | | | | | |
|---|---|---|---|---|---|---|---|
| | | Red watermelon with seed (A) | | Red watermelon without seed (B) | | Yellow watermelon without seed (C) | |
| | | Buy | Sell | Buy | Sell | Buy | Sell |
| LAMP-UNG | Farmer | - | - | - | 2000 | - | 2000 |
| | Collector | - | - | 2000 | 2500 | 2000 | 2500 |
| JAKARTA | Wholesaler (Kramatjati) | 1200 | 1700 | 2500 | 3000 | 2500 | 3500 |
| | Supplier in ramatjati | - | - | 3000 | 4000 | 3800 | 5000 |
| | Retailer | 1700 | 3500 | 2000 | 4000 | 3500 | 5000 |
| | Supermarket | - | - | 4000 | 6500 | 4500 | 7000 |
| | Fruit Shop | 2000 | 4000 | 2500 | 5000 | 4000 | 5500 |
| | End Consumer | 4500 | - | 5000 | - | 6000 | - |

Source: JICA Study Team

### 2.3.3 Trends in Consumption Area

Regarding the trends in consumers' preference on food products, their intention to select the high quality products has grown gradually in Indonesia. Such trends can be observed in the increased number of modern style markets and quantity of imported foods.

#### (1) Growth of Modern Markets in Indonesia

In the period between 2004 and 2008, number of modern market grew significantly. The number of hypermarket grew as high as 39.8% per year, minimarket outlets also showed high growth about 16.4% per annum and the growth of supermarkets was 10.9% per year. The growth in the number of modern markets is concentrated in Java, especially in Jakarta, West Java and East Java.

The number of modern markets in Jakarta in 2008:

Minimarket: 3,968 units
Supermarket: 317 units
Hypermarket: 40 units
Total: 4,325 units
(Source: "Modern Market, Economic Review No.215, March 2009, Indonesian Retailer Association")

The definition of the market type of mini-, super-, and hypermarket are shown in the following table.

**Table 2.3.5 Outline of Minimarket, Supermarket and Hypermarket in Indonesia**

| Description | Minimarket | Supermarket | Hypermarket |
|---|---|---|---|
| Product | Various domestic needs including daily items for household | Various domestic needs including daily need for household | Various domestic needs including daily items for household |
| Quantity of Product | < 5000 items | 5000 – 25000 items | Ø 25000 items |
| Type of Product | - Packed food<br>- Essential hygiene product (household) | - Food<br>- Domestic product (household) | - Food<br>- Domestic product (household)<br>- Electronic<br>- Dress<br>- Sport Equipment |
| Wide of the floor (based on President Regulation no.112 year 2007) | Maximum of 400 m2 | 4000 – 5000 m2 | >5000 m2 |

| | | | |
|---|---|---|---|
| Parking Area | Minimum | Standard | Very large (wide) |
| Capital (excluding land and structure) | Up to Rp.200 Million | Rp.200 million – Rp.10 Billion | More than Rp.10 billion |

Source: President Regulation No. 112/2007, Indonesian Retailer Association

**(2) The Growth of imported fruit**

The amount of imported fruits in Indonesia were 413,410.6 tons (US$ 234.07 million) in 2005, while in 2010 it had grown up to 601,965.0 tons (US$ 591.68 million). On average, the amount of imported fruit is about 467,342.0 tons per year or U.S. $ 381.85 million per year in this period.

Based on the data from Central Bureau of Statistics (BPS), imported mandarin oranges in the period of January-March 2011 was worth US$ 85,352,866. In fact, in the same quarter of previous year, the amount of imported mandarin orange was US$ 68,103,952. It means that the imported mandarin oranges in the first quarter in 2011 had drastically increased by 25.3 percent compared to the first quarter in 2010.

In case of imported pears, the condition was more drastic. The amount of imported pears in the first quarter in 2011 was US$ 30,392,987, while it was US$ 11,317,116 in the same quarter in 2010. Therefore, the increasing rate was 168.6% per year.

## 2.4 Overall Strategy of New TA Development in Lampung Province

### 2.4.1 Necessity for Development of New TA Development in Lampung Province

The new TA for horticulture products (fruits and vegetables) in Lampung Province has a significant role and function to meet the following necessity of DKI Jakarta and Lampung Province and the national policies. The needs from perspectives of national policies, major consumption area, and production area are shown as follows.

**(1) National Policies**

MOA emphasizes the following issues.

a) To increase food security,
b) To increase farmers' capability to produce the highly-competitive agricultural products,
c) To diversify the production/ consumption of food in order to reduce high dependence on rice,
d) To increase the value-added of agricultural products for the improvement of farmers income level, and
e) To conserve the environment and natural resources.

**(2) Major consumption area (DKI Jakarta)**

a) Increase in consumption per capita:
   From 66 kilocalories/day/capita in 2005 to 72 kilocalories /day/capita in 2007 in DKI Jakarta.
b) Increase in the requirement on high quality fruits and vegetables
   i) Rapid growth rate in numbers of high grade retail shops (2004 to 2008): Hypermarket (39.8% / year growth to be 40 units of hypermarket, 2008), minimarket (10.9% growth / year to be 3,968 units, 2008) and supermarket (10.9% / year growth to be 317 units, 2008)
   ii) Increase in imported volume: From 413,410 tons which is worth US$234 million in 2005 to 601,965 tons which is worth US$592 million in 2010, leading to severe competition between imported and domestic products regarding quality (based on Central Bureau of Statistics).
c) High and negative environmental impacts: Accumulation of vegetables and fruits waste from Sumatra to DKI Jakarta without quality control before entering the wholesale market in DKI Jakarta.
d) Limitation in the usable land for wholesale markets in Jakarta due to the rapid growth of urban development.
e) Urgent needs for the realization of the new TA model to execute "PERDA8/2004," which was regulated for the purpose of controlling the quality and ensuring the safety of agricultural products consumed in DKI Jakarta

**(3) Production Area (Lampung Province)**

a. Contribution to the "Regional Basic Plan Lampung Province 2009-2029" in order to define the future direction for the next 20 years, including the "Agro Minapolitan Initiative" covering the eastern part of the Province (Central, East and South Lampung Regency).
b. Modernization of traditional and inter-regional marketing system to meet the rapid growth of consumers demand on high quality
c. Change in the closed trading system with collectors (middlemen) at production area and wholesalers in DKI Jakarta, in order to improve the current inefficient distribution system
d. Free access on price information for farmers and sub-collectors as agents of collectors through Internet and/or hand phone in Jakarta

### 2.4.2 Roles and Functions of the New TA in Lampung Province

(1) Quality improvement of fruits from Sumatra to Jawa Island to meet rapid growth of demand for high quality fruits in DKI Jakarta
(2) Establishment of Lampung model for the realization of PERDA8
(3) Modernization of fruits marketing system as well as improvement of conventional marketing system of fruits
(4) Acceleration of farmers' involvement on quality improvement of fruits and diversification of food

production to increase farmers' income

(5) Diversification of wholesale function to the outside of DKI Jakarta for consumers of DKI Jakarta

### 2.4.3 Improved Marketing System by New TA in Lampung Province

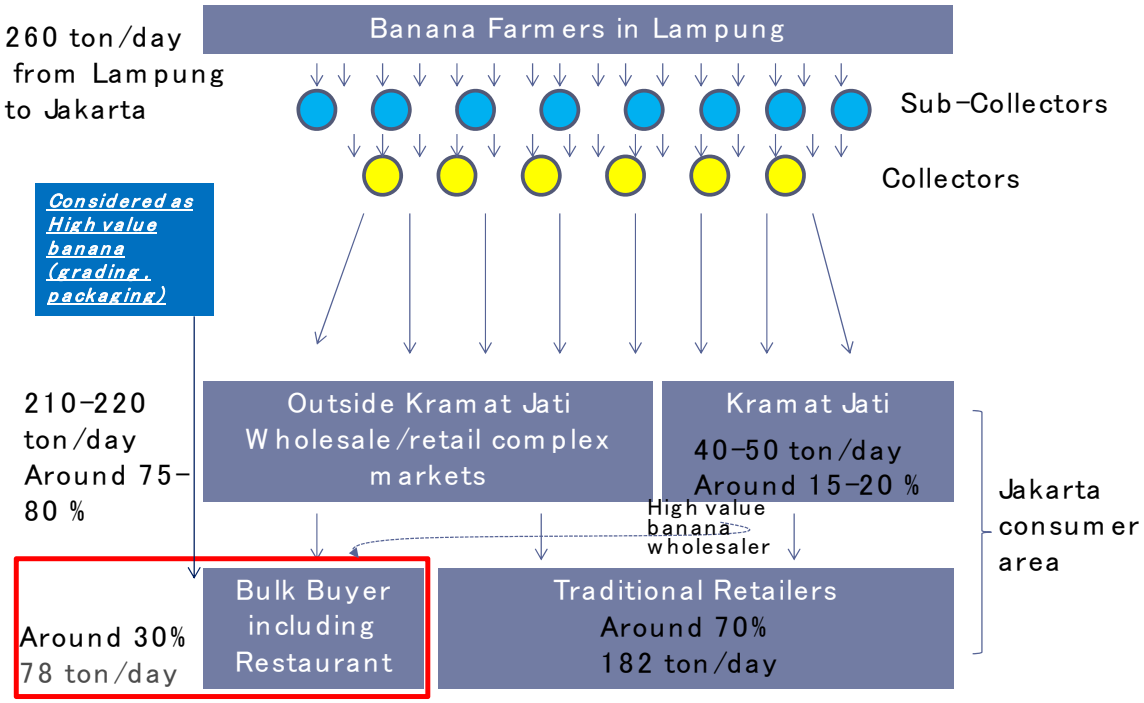
#### (1) Potential Target Volume of New TA

As mentioned in 2.3.1 "Review on the Distribution Volume of Potential Target Products," 550 ton/day of fruits and vegetables are to be distributed from Lampung Province to DKI Jakarta in 2011can be considered as the potential target of the new TA, and 260 ton/day out of total 550 ton/day is banana.

#### (2) Traditional Marketing System and New marketing system of Banana

#### 1) Traditional marketing system without new TA project

Traditional and conventional marketing system is shown as follows as the case of "without New TA Project".



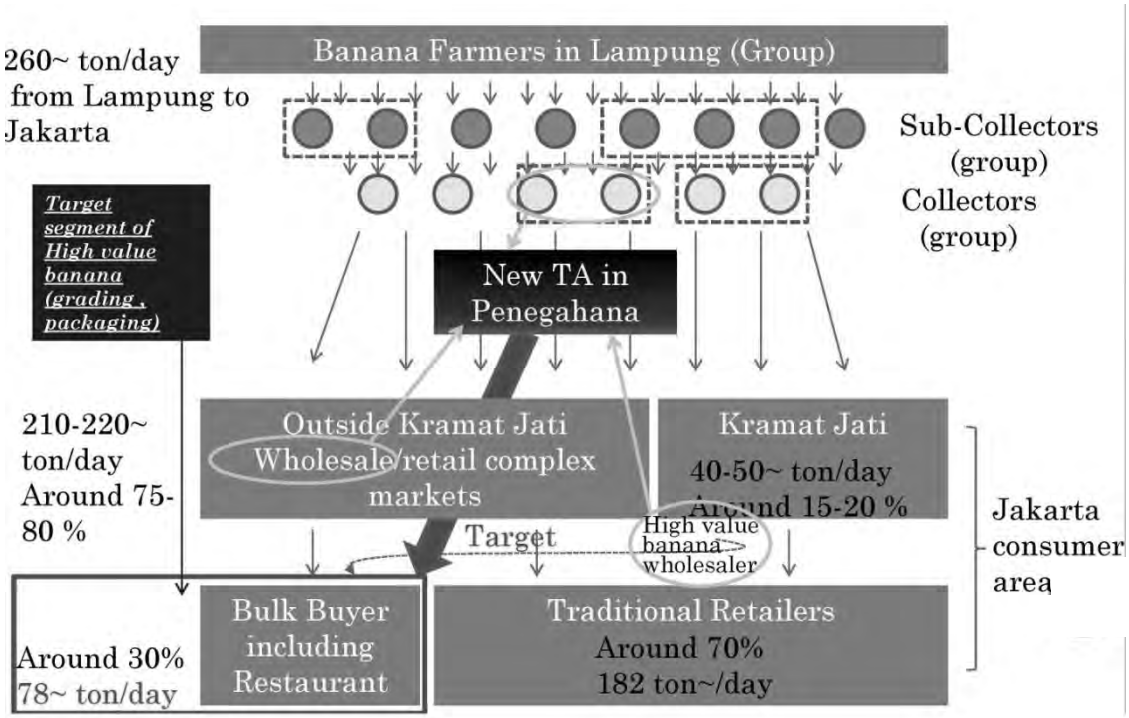

Source: JICA Study Team

**Figure 2.4.1 Traditional Marketing System of Banana**

#### 2) New marketing system with new TA project

In the initial (short-term) step: Focusing on highly quality banana

Some farmers, sub-collectors and/or collectors will be organized under the marketing system, and the collected banana will be transported to the new TA, especially for quality improvement. It will be initially around 80 tons of high quality banana distribution.




Source: JICA Study Team

**Figure 2.4.2 New Marketing System of Banana**

**(3) Stage-wise development**

1) Short –term (Initial step) of target volume

- Target commodity is high-value banana (graded, packaged), which is around 80 ton/day (approx. 30% of 260 ton/day) from Lampung to Jakarta as of 2011 (and more considering the estimation in 2015), because value of processed banana is high.
- Target wholesalers of the new TA are collectors in Lampung and wholesalers in complex banana markets in Jakarta (try to accommodate the current players).
- It may take several years to attract these stakeholders after commencement of the new TA operation.

2) Mid-term target volume

- Once the above initial operation is activated, other flows of banana, corresponding to 70% of total dealing volumes of bananas can be expected to be accommodated in this TA including materials of banana processing products.
- In addition, other fruits and vegetables can also be attracted to this new TA.

3) Long-term target volume

Marketing products of New TA will be expanded to all of the products not only from Lampung but also from the other provinces of Sumatra to DKI Jakarta.

### 2.4.4 Target Products and Planned Handling Volume of the New TA in Lampung Province

The major items of the target commodity handled by the new TA would be banana, durian, watermelon, papaya, jackfruit, fresh coconut, and a few types of vegetable (red onion, cabbage), which are produced in Lampung Province.

Regarding the distribution volume from Lampung Province to DKI Jakarta through Bakau Heni Port which is relating directly to the new TA, “500 ton/day” is used as an average value in 2011, considering the statistic surplus volume of horticulture in Lampung Province (total daily surplus volume except for pineapple: approx. 430 ton/day in 2009) and the result of O/D survey at Bakau Heni

Port (transported volume of Lampung products to DKI Jakarta: approx. 550 ton/day in May 2011).

Based upon the average distribution volume of 500 ton/day in 2011, it would be calculated that “780 ton/day in 2015” (500×1,727/1,102=783.5→780) and “920 ton/day in 2025” (500×2,023/1,102=917.8 →920) as the estimated distribution volumes from Lampung Province to DKI Jakarta through Bakau Heni Port. The breakdowns are shown in the following table, by using the same proportions of the volumes of detected items in the O/D survey” in May 2011 (Refer to Annex 1.1).

**Table 2.4.1 Estimated Distribution Volumes from Lampung Province to DKI Jakarta through Bakau Heni Port in 2015 and 2025**

| Item | | Estimated average distribution volumes (ton/day) | |
|---|---|---|---|
| | | 2015 | 2025 |
| 1 | Banana | 386 | 455 |
| 2 | Durian | 78 | 92 |
| 3 | Watermelon | 64 | 76 |
| 4 | Papaya | 31 | 37 |
| 5 | Jackfruit | 16 | 18 |
| 6 | Other fruits | 41 | 48 |
| 7 | Fresh coconut | 112 | 132 |
| 8 | Red onion | 7 | 8 |
| 9 | Cabbage | 7 | 8 |
| 10 | Other vegetable | 25 | 29 |
| 11 | Others | 13 | 15 |
| | Total | 780 | 920 |

Source: JICA Study Team

To determine the total capacity of the new TA facilities which will start the operation in 2015 (Refer to 2.5.8), out of the major commodities in 2015 shown above, the commodities for which value addition cannot be expected, i.e. durian, watermelon, jackfruit, and fresh coconut, will be excluded from the estimation of planned handling volume of the new TA. Thus, 510 ton/day and its breakdown shown in the following table will be recommended as the planned average handling volume of the new TA.

This daily planned handling volume of 510 ton/day would be achieved around 2020, 6 years after the commencement of new TA operation (Refer to 2.5.8 (2) and 2.7.1 (3)).

**Table 2.4.2 Planned Average Handling Volume of New TA**

| Item | | Planned handling volumes (ton/day) |
|---|---|---|
| 1 | Banana | 386 |
| 2 | Durian | 0 |
| 3 | Watermelon | 0 |
| 4 | Papaya | 31 |
| 5 | Jackfruit | 0 |
| 6 | Other fruits | 41 |
| 7 | Fresh coconut | 0 |
| 8 | Red onion | 7 |
| 9 | Cabbage | 7 |
| 10 | Other vegetable | 25 |
| 11 | Others | 13 |
| | Total | 510 |

Source: JICA Study Team

## 2.5 The Project

This chapter explains the contents of the Project that include the facilities and equipment plan, construction and procurement plan, implementation schedule, and the cost estimation. Further, it provides the recommended implementation committee, structure of the operation and management body, and recommended technical assistance.

### 2.5.1 Design Conditions on the New TA

#### (1) Target years

Facilities and equipment plan of the Study was formulated so as to conform to the planned handling volume in 2015.

#### (2) Annual operating days, and daily operating hours

The new TA will be basically operated throughout the year for 365 days for 24 hours a day.

#### (3) Target commodity items and planned average handling volume

An average daily handling volume of 510 tons in 2015 is used in the planning of the facilities and equipment (Refer to 4.1).

#### (4) Seasonal peaking factor

The values from +15 % to +110% shown in the following table are used for the peak factor rate for each of the target commodity items.

**Table 2.5.1 Peak Volumes Handled in the New TA**

| Item | | Peaking factor rate (%) | Peak handling volumes in 2015 (ton/day) |
|---|---|---|---|
| 1 | Banana | +20 | 463 |
| 2 | Durian | +110 | 0 |
| 3 | Watermelon | +20* | 0 |
| 4 | Papaya | +15 | 35 |
| 5 | Jackfruit | +20 | 0 |
| 6 | Other fruits | +20* | 49 |
| 7 | Fresh coconut | +20 | 0 |
| 8 | Red onion | +100 | 14 |
| 9 | Cabbage | +100 | 14 |
| 10 | Other vegetable | +100 | 50 |
| 11 | Others | +20* | 15 |
| | Total | | 640 |

Source: Produksi Tanaman Buah-Buahan Provinsi Lampung Tahun 2009 (Lampung Province), Agriculture Agency of Lampung Province, and JICA Study Team

### 2.5.2 Facilities and Equipment Planning

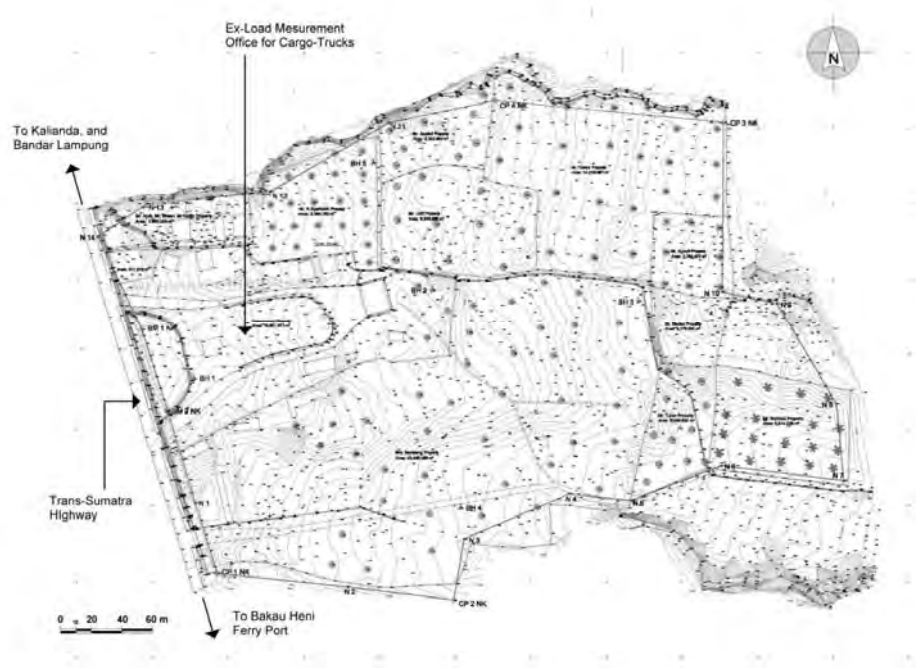
#### (1) Facilities Plan

#### 1) Review of the project site

#### a) General characteristic of the project site

#### i) Location

The project site of the new TA is located approximately 70 km southeast of Bandar Lampung, and approximately 13 km north of Bakau Heni Port, in Penengahan District of South Lampung Regency. The site faces directly to the local trunk road (Trans-Sumatra Highway) from Bandar Lampung to Bakau Heni Port via Kalianda (capital city of South Lampung).




Source: JICA Study Team

**Figure 2.5.1 TA Project Site in Penengahan**

**ii) Land features and existing land use**

The project site is located in a hilly area at the foot of Mt. Raja Basa, and it has a gradual slope from the road boundary to the backland (total level difference: approx. 10 m). A small stream bound the northern side. The total land area is 11.05 ha which consists of a central government property (0.06 ha), a provincial government property (1.87 ha), and 11 private properties (total 8.12 ha). The "ex-cargo truck load inspection office" occupies the provincial property with a weighbridge and related facilities (12 buildings in total), which are abandoned since 2005. The private properties in the site are used partially for the field crops (maize, coconut and the others) and the dwelling (2 families), but its main part (approx. 40%) is a vacant land covered with shrubs or bushes. A small property owned by the central government is used for the signboard of Ministry of Forestry. Considering these land features, a stepwise setting of the ground level for the planned facilities, and a rain-water drainage system which covers the surface water of 11 ha is required for the building layout plan and the landscape plan. Furthermore, it is necessary to integrate the existing small stream along the north boundary into the landscape plan, considering the possibility of future expansion of the project site toward the northern side.

**iii) Condition of neighboring main road**

The local trunk road is a part of the Trans-Sumatra Highway, which leads to Bakau Heni Port; therefore it is a frequent route for heavy cargo-trucks besides the normal vehicles. In view of this, a buffer area for incoming/outgoing vehicles is necessary to the new TA along this trunk road.

**b) Public infrastructure**

**i) Access road**

There is no access road as the project site faces directly to the local trunk road (Trans-Sumatra Highway).

**ii) Main electric power line**

A main electric power line with 20 KV/50Hz along the local trunk road is available for power in-take to the new TA. In the project implementation stage, the project needs to install an incoming panel, transformer, and distribution panel in the project to supply electric power of single phase 220 V and 3

phase 380 V/50Hz to the planned facilities at the site, while PLN (state power company) will be responsible for the installation of a branch line from the mainline to the incoming panel.

The nearest power station is located at Tarahan, and it is slightly far from the project site (approx. 47 km north-west of the project site). All power stations in Sumatra are currently inter-connected to each other. Therefore, the power supply is relatively stable, and the blackout rarely occurs. However, a generator of minimum capacity is basically required in cases of emergency. “Business” type of the category will be applied to the project in the charging system of PLN.

**iii) City water mainline**

The project site is located out of the coverage of city water service. As mentioned in the chapter of Natural Condition, the underground water level is relatively shallow (approx. 3-5m) at the project site, and an ex-cargo truckload inspection office is using a few wells (depth: 15-40m), which are still functioning. Therefore, there will not be any difficulty to install the water supply system supported by a well system in the project site.

**iv) Sewage mainline**

The project site is outside the coverage of public sewage network. Therefore, it is necessary to install wastewater treatment facilities at the project site; and also to secure a suitable natural stream or river has to be secured to discharge the treated water. The quality of treated water should meet the national standard formulated by the Ministry of Environment.

**v) Telephone mainline**

The project site is outside the coverage of telephone mainline by TELCOM (state telephone company), though mobile phones are functioning at the project site. Normal telephone network is a necessity in the new TA for operation/administration; introduction of the satellite phone system or an equivalent system should also be considered in the project.

**vi) Public garbage collection service**

**- General characteristics of public garbage collection service in South Lampung Regency**

“Market, Sanitary and Cleanliness Agency” of South Lampung Regency (Kalianda) provides the public garbage collection service in Penengahan District. Basically, the jurisdiction of South Lampung , which has 17 districts, is divided into 6 administrative zones considering the locations of public local traditional markets. Each zone has a branch office of the Agency, namely KUPT (Head of Technical Implementation Unit, which is a garbage collection service unit). Each KUPT is responsible for the collection and dumping service of garbage by the “dump-truck” (capacity: 3tons) and “container-truck with arm-lift” (capacity: 3tons). Penengahan District is under “KUPT Bakau, which is located in Bakau District. The headquarters office of the Agency is currently providing the service instead of KUPT Bakau using its own dump trucks and container-trucks. Every KUPT provides the garbage collection service twice a week; the garbage collected is separated to two groups, i.e. “non-organic” and “organic.”

**- Dumping Areas**

The Agency has many TPAs (Final Processing Areas which are the dumping areas) in its jurisdiction. The largest one is TPA Lubuk Karna, which is located 4 km north of Kalianda. Among the existing TPAs, TPA Kalianda, which has a space of 4 ha, seems to be the candidate of dumping area for the new TA in Penengahan. But, a few regencies in Lampung Province are currently proceeding the “Regional TPA Project” jointly, and are developing large-scale dumping areas in two places, i.e. TPA Pesawarang and TPA Kabitung (approx. 20 km north of Kalianda in South Lampung). TPA Kabitung with a space of 25 ha will be completed in two to three years time, and it will be the most suitable TPA for the new TA in Penengahan.

**- Charging system**

As long as the new TA in Penengahan functions as a provincial wholesale market, the Agency is responsible to provide daily collection service using two to three trucks to the new TA. The Agency

estimates the new TA will generate garbage equivalent to 2 – 4 percent of the total handling volume. The payment to the garbage collection/dumping service will be determined by negotiation between the Agency and the new TA in the preparatory stage, but everyone can estimate it by applying the current unit cost of Rp. 10,000 – 15,000/ton. Furthermore, any initial charge will not be requested in case of the new TA.

**- Special note**

It is necessary for every industrial facility including the market facility to be equipped with a "recycle system," e.g. a "fertilizer processing plant" for organic garbage based on the decree of the Ministry of Environment. Some 15 percent of the organic garbage is currently treated in a recycle system, but basically, such a specific percentage is not required for now. Every industrial facility is requested to make an effort to install such system as an essential component of the facilities.

**vii) Public transportation**

A few private companies and a province owned company are currently operating routine public autobus system every 45 minutes between "Bakau Heni bus terminal" and "Raja Basa bus terminal" in Bandar Lampung. A long-distance bus transportation system is also operating between Jakarta and Bandaache via Bakau Heni Port. A recent traffic-volume survey (in July 2011) on the cargo-trucks (including pick-up type trucks) and autobuses by the Transportation, Telecommunication and Information Agency of South Lampung Regency in Kalianda, indicated an average daily traffic volume of 5,000-6,000 vehicles and a maximum daily volume of 6,000-7,000 vehicles. Autobus traffic accounted for about 35 percent (i.e. ranging from 1,900 to 2,450 buses a day), and the rest were cargo-trucks. This figure could be directly applied to the traffic volume in front of the new TA project site in Penengahan. Therefore, it is quite necessary to prepare adequate buffer area (additional car-lanes beside the existing ones with about 600 m length in total) along the neighboring road of the new TA site.

**c) Zoning in and around the project site**

The area in and around the new TA project site is a mixed area of "Estate Crops Area" and "Agriculture Area" designated by South Lampung Regency. The Regency supports the provincial policy to develop South Lampung as a "Agro-business Zone" which is a integrated zone of agriculture, estate crops, livestock, and fishery industries, following the "Agro-Minapolitan" policy in the "Regional Basic Plan of Lampung Province 2009-2029."

**d) Seismic condition**

**i) Disaster Record of Earth Quake and Seismic Hazard Map**

There are large geological sub-duction and faults around the Project site such as Sunda Sub-duction in the Indian Ocean and Krakatau Fault and East Lampung Fault in the Sunda Strait.

The Project site is located north of Sunda Sub-duction in the Indian Ocean and Krakatau Fault in the Sunda Strait, and west of East Lampung Fault. In addition, the project site is near to Panjang Fault in Lampung Province and Ranau Fault extending toward the northern region of Sumatra Island. The Sunda Strait region is one of active area of volcanic and seismic activities. The historical seismic activities near the project site were Sunda earthquake of M 7.2 and Semangko earthquake of M 7.6.

Large earthquakes in Sumatra such as the Ache earthquake (M9.2, Dec. 26, 2004), Nias earthquake (M8.7, Mar. 28, 2005), and Siberut earthquake (M8.5, Sept. 12, 2007), have struck settlement areas and other infrastructures, and have caused heavy damages to the region as well as to the regional economy.

**ii) Seismic hazard map**

According to seismic hazard map in Indonesia Seismic Building Code IN SNI 03-1726-2002 of the Seismic Resistant Design Standard for Building Structures SNI 03-1726-2002, Indonesian islands are classified into 6 zones based upon the geological base rock, and the project site is located in the zone 4.

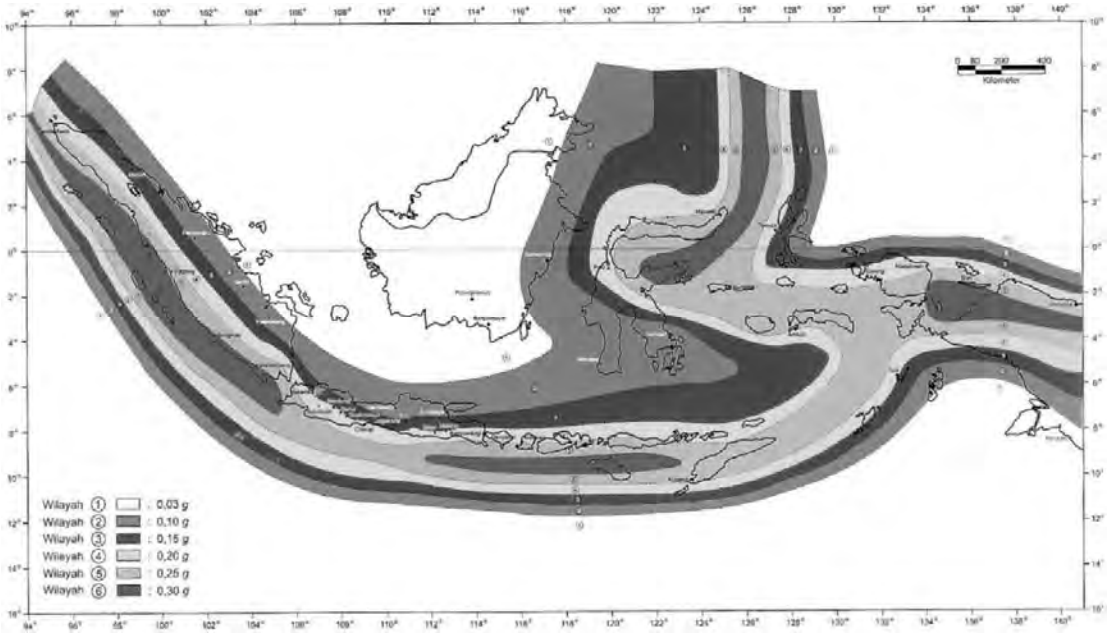



**Figure 2.5.2 Indonesian Seismic Hazard Map (SNI 03-1726-2002)**

**Note:**

In response to the large earthquakes and the heavy damages, the Ministry of Public Works has been reviewing present Seismic Resistant Design Standard for Building Structures IN SNI 03-1726-2002 in association with other institutes and universities, and the Ministry compiled tentatively a new hazard map (Summary of Study: Development of Seismic Hazard Maps of Indonesia for Revision of Hazard Map in SNI 03-1726-2002, July 2010), applying 10-18 seismic zones. According to the new hazard map, in case of Penengahan site, the peak ground acceleration and spectral response acceleration of earthquake with a return period of 475 years is assumed as follows:

a) Peak Ground Acceleration 0.2 - 0.25 g
b) 0.2 sec. Spectral Response acceleration 0.4 - 0.5 g
c) 1.0 sec. Spectral Response acceleration 0.15 - 0.2 g

In the seismic resistant design standard for building structures SNI 03-1726-2002, generally, peak ground acceleration and spectral response acceleration of earthquake with a return period of 475 years are recommended to adopt for deign of common buildings and structures.

Moreover, horizontal earthquake factor (shearing force) is much influenced by toughness of top soil layer, importance of role and function of buildings and/or structures, structural type of buildings and/or structures, type and kind of construction materials and not the same in even the same zone classified by the seismic hazard map of the seismic resistant design standard for building structures SNI 03-1726-2002.

It is clarified that the Project area is located on young volcanic deposits of Mt. Raja Basa and has middle to strong soil layer as base foundation for buildings and/or structures, based on the results of geological and soil investigation.

In planning and design of buildings and facilities in the Project area, it is recommended that horizontal earthquake factor should be examined and assumed, considering importance of role and function of buildings and/or structures, structural type of buildings and/or structures, type and kind of construction materials.

### 2) Main components of the market facilities

Several functions are integrated in a wholesale market facility, i.e. functions of distribution, administration, supporting, education, and utilities/maintenance. Considering such functions and their linkages, it is recommended to adopt the following building items as the essential components of the new TA in Lampung Province.

**Table 2.5.2 Main components of the Market Facilities**

| Item | | Function | | | | | Remarks |
|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | |
| 1 | Marketing Hall – Type 1 (Specialized hall for banana wholesaling) | ○ | | | | | Hall, Unloading/Loading Space, hall road, Packaging Material St (mezzanine), Public Toilet, Machine room (pump/panel) |
| 2 | Marketing Hall – Type 2 (Hall for the other horticulture wholesaling) | ○ | | | | | Ditto |
| 3 | Storage | ○ | ○ | | | | Wholesalers' St, Cold St, Equipment St, Workshop |
| 4 | Administration Center (Multi-functional facilities) | | ○ | ○ | ○ | | |
| | - Administration Office | | ○ | | | | Including First Aid, Machine room (pump/panel), Water Supply (well, reservoir, elevated water tank) |
| | - Food Inspection Laboratory | | ○ | | | | |
| | - Conference/Seminar Room | | ○ | | ○ | | |
| | - Canteen | | | ○ | | | With Public Toilet |
| | - Shops | | | ○ | | | |
| | - Banks | | | ○ | | | |
| 5 | Electric Power Station | | | | | ○ | Incoming panel, Transformer, Distribution Panel, Generator |
| 6 | Water supply facilities | | | | | ○ | Deep wells, Reservoir, Elevated water tank |
| 7 | Waste Water Treatment Plant | | | | | ○ | Separated plant system for each main building |
| 8 | Seepage Pond | | | | | ○ | For rainwater and processed water from the waste water treatment plant/ Overflow to the nearest stream |
| 9 | Garbage Collection Yard | | | | | ○ | With garbage recycling facilities |
| 10 | Truck berth | ○ | | | | | (Paved) |
| 11 | Bus berth/Parking | ○ | | | | | (Paved) |
| 12 | Perimeter Road | ○ | | | | | (Paved, with street light) |
| 13 | Entrance Gate | | ○ | | | | (Paved, weight-bridge) with weight-bridge |
| 14 | Exit Gate | | ○ | | | | |
| 15 | Guards Box | | ○ | | | | |
| 16 | Accommodation facilities | | | ○ | | | With minimum and optimum number of accommodation unit |
| 17 | Mosque | | | ○ | | | |
| 18 | Fence | | ○ | | | | |
| | | | | | | | |

Remarks: A = Distribution, B = Management/Operation, C = Supporting, D = Education, E = Utilities/Maintenance
Source: JICA Study Team

### 3) Required spaces and capacities for main components

#### a) Marketing hall and related spaces

#### i) Stock-volume per one $m^2$ of floor area for each commodity item (ton/$m^2$)

Based upon the actual storing condition (packaging size, material, weight per package and maximum stacks) in Kramat Jati Wholesale Market in Jakarta, the following stock volumes per square meter floor area could be applied for each commodity handled in the new TA.

**Table 2.5.3 Stock-Volume per 1 $m^2$ of Floor Area for Each Commodity Item (ton/$m^2$)**

| Item | | Typical packaging size (cm)/ weight (kg), max. stack number | Net Stock volume per 1 $m^2$ (ton/$m^2$) | *Actual Stock volume Net x 25% except for banana (ton/ $m^2$) |
|---|---|---|---|---|
| a | Banana | $^{L}$53 x $^{W}$38 x $^{H}$30 (wooden box)/ 18kg, 5 stacks<br>$^{L}$50 x $^{W}$35x $^{H}$22 (c-board box) / 15kg, 5 stacks | 0.44 | (0.035) |
| b | Durian | $^{L}$100 x $^{W}$50x $^{H}$50 (wooden box)/ 64kg, 4 stacks *** | 0.51 | 0.126 |
| c | Watermelon | $^{L}$100 x $^{W}$50x $^{H}$50 (wooden box)/ 80kg, 4 stacks *** | 0.64 | 0.160 |
| d | Papaya | $^{L}$60 x $^{W}$45 x $^{H}$40(wooden box) / 55kg, 4 stacks | 0.81 | 0.203 |
| e | Jackfruit | $^{L}$100 x $^{W}$50x $^{H}$50 (wooden box)/ 40kg, 4 stacks *** | 0.32 | 0.080 |
| f | Other fruits | - | 0.50 | 0.125 |
| g | Fresh coconut | $^{L}$100 x $^{W}$90 x $^{H}$30(bag) / 50kg, 4 stacks | 0.22 | 0.055 |
| h | Red onion | $^{L}$100 x $^{W}$70 x $^{H}$60(bag) / 50kg, 4 stacks | 0.29 | 0.073 |
| i | Cabbage | $^{L}$100 x $^{W}$50 x $^{H}$25(bag) / 50kg, 2 stacks | 0.20 | 0.050 |
| j | Other vegetable | - | 0.30 | 0.075 |
| k | Others | | 0.50 | 0.125 |

Note 1: In the actual stock volume, it is assumed that 50% of the floor area will be used for washing, grading, packaging and passage, and 25% will be used for internal passage.
Note 2: Durian, Watermelon and Jackfruit are usually traded in un-packaged condition in the wholesale markets. Packaging styles*** shown in the above table are recommended by JICA Study Team.
Source: JICA Study Team

### ii) Recommendable dimension on wholesaler's booth unit in the marketing hall

In case of Kramat Jati Wholesale Market in Jakarta, nine types of booth units are provided to wholesalers, i.e. from 3.9 $m^2$ to 90.7 $m^2$. In the newly built TA in Surabaya of Puspa Agro, three types of booth units are prepared, i.e. 2m x 2m (4 $m^2$), 3m×3m (9 $m^2$), and 4m×6m (24 $m^2$). The new TA in Lampung Province will function not only as a TA but also as a STA partially where the products will be washed, graded and packed. It is, therefore, necessary to secure relatively a large space for the booth unit. Booth unit dimension of 4m×6m (24 $m^2$) is recommended as a basic booth unit in the new TA.

### iii) Required floor area for products washing, grading and packaging

**- Banana**

Banana is the major product handled in the new TA. Spaces for washing, grading and packaging for the bananas have to be planned in the new TA. So as to prevent unnecessary internal circulation being mingled with the market activities, and to save the stocking space for packaged products, integration and harmonization of the washing, grading and packaging space in the marketing hall is recommended.

The booth units for the "bananas" recommended would be a specialized module of 144 $m^2$, which consists of six continuous units of the basic booth unit following to a progressive approach by a banana farmer's group lead by Mr. Dedi in Padang Cermin in Pesawarang Regency. This group is providing a maximum of 5 tons/day of packaged banana in a small packaging facility (total floor area: approx. 150 $m^2$) that is equipped with two units of washing tanks, a storing space for raw products, and a stocking space for packaged products. Banana module should be easily converted into the normal wholesaler's booths.

**- Other products**

The space for washing, grading and packaging of other horticulture products shall have a similar stocking place planned within the wholesaler's unit as mentioned in "b)" above.

### iv) Number of wholesaler's booth unit

Based upon the design conditions discussed in the previous chapter, the required numbers of (normal) wholesaler's booth unit and the specialized modules for banana are estimated for the market hall in 2015 and 2025. The designing of the market hall and its facilities are planned to conform to the estimated handling volume in 2015 within the land area or space of approximately 11.05 ha in the project site.

The number of specialized modules for the banana is estimated to be 92 units which are to be planned mainly in the "market hall-1," and the number of the normal-type wholesaler's booth units is estimated to be 78 (630-552=264) which are to be planned mainly in the "marketing hall-2" as shown in the following table.

**Table 2.5.4 Required Number of Wholesaler Booths in the Marketing Hall**

| Target year | Products items and handling volume | | | | Products stocking area | | Total booth No. | |
|---|---|---|---|---|---|---|---|---|
| | Products items | Planned average handling volume (ton/day) : A | Seasonal peaking factor (%) B (+15%～+110%) | Peak handling volume (ton/day) : C = A x B | Actual stockable volume (ton/m2) : D | Required stocking area (m2) : J = C/D | Required no. of wholesalers booth K=J/24 $m^2$ | (Remark) No. of specialized module for banana within the left column (1 module =144 $m^2$) |
| 2015 | Banana | 386 | 20 | 463 | 0.035 | 13,229 | 552 | 92 |
| | Durian | 0 | 110 | 0 | 0.126 | 0 | 0 | - |
| | Watermelon | 0 | 20 | 0 | 0.16 | 0 | 0 | - |
| | Papaya | 31 | 15 | 35 | 0.203 | 173 | 8 | - |
| | Jackfruit | 0 | 20 | 0 | 0.08 | 0 | 0 | - |
| | Other fruits | 41 | 20 | 49 | 0.125 | 392 | 17 | - |
| | Fresh coconut | 0 | 20 | 0 | 0.055 | 0 | 0 | - |
| | Red onion | 7 | 100 | 14 | 0.073 | 192 | 8 | - |
| | Cabbage | 7 | 100 | 14 | 0.05 | 280 | 12 | - |
| | Other vegetable | 25 | 100 | 50 | 0.075 | 667 | 28 | - |
| | Others | 13 | 20 | 15 | 0.125 | 120 | 5 | - |
| | Total | 510 | | 640 | | 15,053 | 630 | |

Note 1 : Actual stockable volum: In the wholesalers booth 6 m x 4 m (floor area : 24$m^2$), 25% of booth floor area is avairable for the sale space (products stocking). And, 50% is used for (washing) grading and packaging, and the rest of 25% is used for passage except for "banana".

Note 2 : In case of "banana", a specialied module of 144 $m^2$ which consists of 6 continuous units of normal wholesalers booth is used for raw products storing, cutting, grading, washing, packaging, and packaged products stocking, with capacity of 5 ton/day.

Source: JICA Study Team

### v) Truck berth, unloading/loading spaces and truck berth

The unloading and loading/shipping spaces are to be basically secured in front of each wholesaler's booth unit (incl. banana module) between the truck berth and the booth or on the internal truck lane. The capacities of truck berth and parking space are shown below.

- Truck berth beside the marketing hall 1: total 168 units (for 12-ton trucks)
- Space for parking in the internal truck lane in the market hall 1: total 56 units (for 12-ton trucks)
- Additional parking space: total 42 units (for 12-ton trucks)
- Tentative parking space (future expansion area) total 208 units (for 12-ton trucks)

### b) Storage and others

### i) Cold Storage

Although there is no cold chain in the current marketing system in Lampung Province and in/around DKI Jakarta, a minimum optimum scale of cold storage facilities could be considered as a trial operation in the new TA, considering the recent visionary projects in Surabaya, i.e. "Puspa-Agro" and "Osowilangun" (PIOS). Seven units of a cool room (internal dimension: approx. $^{W}$6.0 m×$^{L}$6.0 m×$^{H}$3.5 m with a mezzanine) to store about 10 tons of banana (5 tons/day×2 days) will be prepared.

Introduction of other sophisticate equipment, such as gas-facilities to delay ripening of banana could be considered after initial operation of new TA.

**ii) Storage for wholesalers**

A few storage sheds with a storage space of approximately 12 $m^2$ per unit should be planned near to the marketing halls to facilitate daily activities of the wholesalers.

**iii) Workshop for wooden box fabrication**

Plastic bags, cardboard boxes, bamboo baskets and wooden boxes are the typical packaging materials for the products in the wholesale markets. Banana is a major product in the new TA; wooden boxes, which are dominantly used by hotels/restaurants in Jakarta, will be used for packaging about 80 percent of the total handling volume. Approximately 17,200 pieces of wooden boxes are needed daily (386 ton/day ×80%/ 0.018 ton/box). It is necessary for the new TA to provide these boxes as much as possible within the site. Therefore, a workshop for fabrication of wooden box should be planned at the site.

**c) Administration center**

In view of the limited land area that could be allocated for facilities, namely the administration office, food inspection laboratory, conference and seminar room, canteen, shops/banks, these facilities should be integrated in one building with multi-functions. The rooms/spaces required for the administrative/management activities, etc. would be planned based on the number of staff members.

**Table 2.5.5 Estimated Number of Administration Office Personnel and Related Workers**

| Division | | Personnel/Numbers | Total No. |
|---|---|---|---|
| a | General headquarters | General manager (1), Deputy manager (1), Secretaries (2) | 4 |
| b | General Administration | Chief (1), Administrators (2), Socialization/recruiting/training management (3) | 6 |
| c | Financial/Accounting | Chief (1), Accountants (2), Tally/toll collection (6) | 9 |
| d | Market information/ Statistics | Chief (1), Market information (4), Recording/Statistics (2) | 7 |
| e | Food inspection | Chief (1), Packaging/labeling/weighting inspectors (6), Laboratory-technician (2) | 9 |
| f | Facilities maintenance | Chief (1), Electric engineer (1), Mechanical engineer (1), Special equipment engineer (1) | 4 |
| g | Security | Chief (1), Gate-guards (2×3 shifts), Guards (8×3 shifts) | 11 |
| h | Sanitary/Cleanliness | Chief (1), cleaning workers (14) | 15 |
| | Total | | 65 |

Source: JICA Study Team

**d) Electric power supply facilities**

An electric power station would be located near the neighboring road at the northern-west of the project site. It will in-take a power of 20 kV/50 Hz from the nearest transformer in the mainline of PLN, and would be equipped with the followings.

- Receiving panel
- Transformer: Primary: 20 kV/50Hz, Secondary: 220V/380V/50Hz, Capacity: 865 KVA /3 phase (220V/380V/50Hz)
- Distribution panel :
- Generator: Approx. 750 KVA (max.)

**e) Water supply facilities**

Deep wells (2 units, each about 100 m in depth), a centralized reservoir tank, and separated elevated water tank in each main building will be planned as the main water supply system. As shown in the following table, it is estimated that approx. 770 tons/day of well water would be consumed in the new TA. Approximately 70% of the total volume (530 tons/day) would be used for “banana washing”.

**Table 2.5.6 Daily Required Water Volume by New TA**

| Consumption Items | Person /day : A | Water consumption per person (ton/person) : B | Required water volume (ton/day) : C = A x B |
|---|---|---|---|
| 1. Consumption by temporary occupation | | | |
| a Supplyers with driver/worker | 819 | | |
| b Buyers with driver/worker | 468 | | |
| Total number of temporary occupants | 1,287 | 0.010 | 13 |
| 2. Consumption by permanent occupation | | | |
| a Wholesalers and workers in banana modules | 1,288 | | |
| b Wholesalers and workers in normal units | 1,320 | | |
| c Administration officers and workers | 65 | | |
| d Canteen | 20 | | |
| e Shops | 6 | | |
| f Banks | 6 | | |
| g Workshop workers | 185 | | |
| Total number of permanent occupants | 2,890 | 0.070 | 202 |
| 3. Consumption by banana washing ($^{W}1.2x^{L}3.0x^{H}0.8$)x2x92 | - | - | 530 |
| 4. Consumption by floor washing : Assumption : market hall floor washing of 1 time per month (39,600 $m^2$ x 0.02 ton/$m^2$ /30) | - | - | 26 |
| Total Required Water Volume | | | 771 |

Note 1: (With respect to 1-a) It is assumed that 390 ton/day out of the average total handling volume of 780 ton/day should be supplied by 5-ton cargo-trucks with a supplier, a worker and a driver (total 3 persons). The rest of 390 ton/day will be supplied by 2-ton cargo-trucks with same condition as above.

Note 2: (With respect to 1-b) It is assumed that the average total handling volume of 780 ton/day will be purchased by 5-ton cargo-trucks with a buyer, a worker and a driver (total 3 persons).

Note 3: (With respect to 2-a) It is assumed that 1 wholesaler, 1 assistant and 12 workers (total 14 persons) are engaged in the wholesaling, cutting, washing, grading, and packaging works in each banana module (total 92 modules).

Note 4: (With respect to 2-b) It is assumed that 1 wholesaler and 4 workers (total 5 persons) are engaged in the wholesaling work in each normal wholesaler's unit (total 264 units).

Note 5: (With respect to 3) In case of banana washing, 2 units of water tanks ($^{w}1.2m\times^{l}3.0m\times^{h}0.8m\times$ 2units) will be used for the washing/grading work with running water. It is assumed that the water in the tank will be replaced completely in a day by the running water.

Source: JICA Study Team

### f) Waste water treatment Plants

The volume of water consumed by temporary and permanent occupants will be an estimate target of the wastewater treatment plants in the new TA. Several treatment tanks would be installed just close to each planned building. The outline of the wastewater treatment is as follows.

- Waste water volume: 172 tons/day (80% of the water consumption of temporary and permanent occupants)
- Treatment system: Septic tank (Anaerobic Baffled Reactor type)
- Discharging: To the nearest stream on the northern boundary in the site (which connects to Penengahan River) via a Seepage Pond
- Water quality standard: As shown in the following table

**Table 2.5.7 Outline of Water Quality Standard for Discharged Water from Facilities to Rivers**

| Parameter | Unit | CLASS I | II | III | IV | NOTE |
|---|---|---|---|---|---|---|
| Physical matters | | | | | | |
| Residue dissolved | mg/L | 1000 | 1000 | 1000 | 2000 | |
| Residue Suspended | mg/L | 50 | 50 | 400 | 400 | For conventional drinking water treatment, residue suspended <5000 mg / L |
| Organic Chemical indicators | | | | | | |
| pH | | | | | | If outside the natural range, it is determined based on natural conditions |
| BOD | mg/L | 2 | 3 | 6 | 12 | |
| COD | mg/L | 10 | 25 | 50 | 100 | |
| DO | mg/L | 6 | 4 | 3 | 0 | Minimum values |
| Total phosphate as (P) | mg/L | 0,2 | 0,2 | 1 | 5 | |
| NO3 as (N) | mg/L | 10 | 10 | 20 | 20 | |

Note: The values shown in "Class II" will be applied to the new TA.
Source: Government Regulations Number 82/2001 (December 14, 2001: Extracted)

### g) Garbage collection yard and recycling facilities

It can be statistically estimated in Indonesia that about 10 percent of the total handling volume will have to be treated as final garbage under the market operation. Therefore, in the new TA, around 51–64 tons/day of the garbage have to be properly treated by the public garbage collection service (98% of total volume), and the garbage recycling facilities (2% of total volume).

- Estimated garbage volume: 51 tons/day 231.8 $m^3$/day) (average)
  (50 tons/day by the public collection service)
  (1 ton/day by the recycling (composting process))
- Collection yard: a) Proper space for 17 units of garbage container (capacity 3 tons), and
  b) Approx. 91 $m^2$ (1.0 tons/day / 0.22 ton/$m^3$ × 30days / $^h$1.5m) of processing yard for composting. In addition, a proper working space for chopper and conveyer is required (*30 days: required period for composting process)

## 4) Facilities layout plan and its alternatives

Three typical alternatives of facilities layout plan are formulated by the analyzing the functional zoning and traffic circulations in the project site. These typical alternatives are shown in the figures of Option 1, Option 2, and Option 3.

The large buildings are the marketing halls, and their total floor areas (marketing hall-1 and marketing hall-2) will be at least 4.8 ha within the project site of 11.05 ha (occupation rate: about 44%). Therefore, the crucial point in the layout plan must be the location or placement of the marketing halls, and the circulation of products' movement in and out. The other important point is to find out suitable locations for the ancillary facilities, together with the supporting circulation to the marketing halls.

### a) Facilities layout plan – Option 1

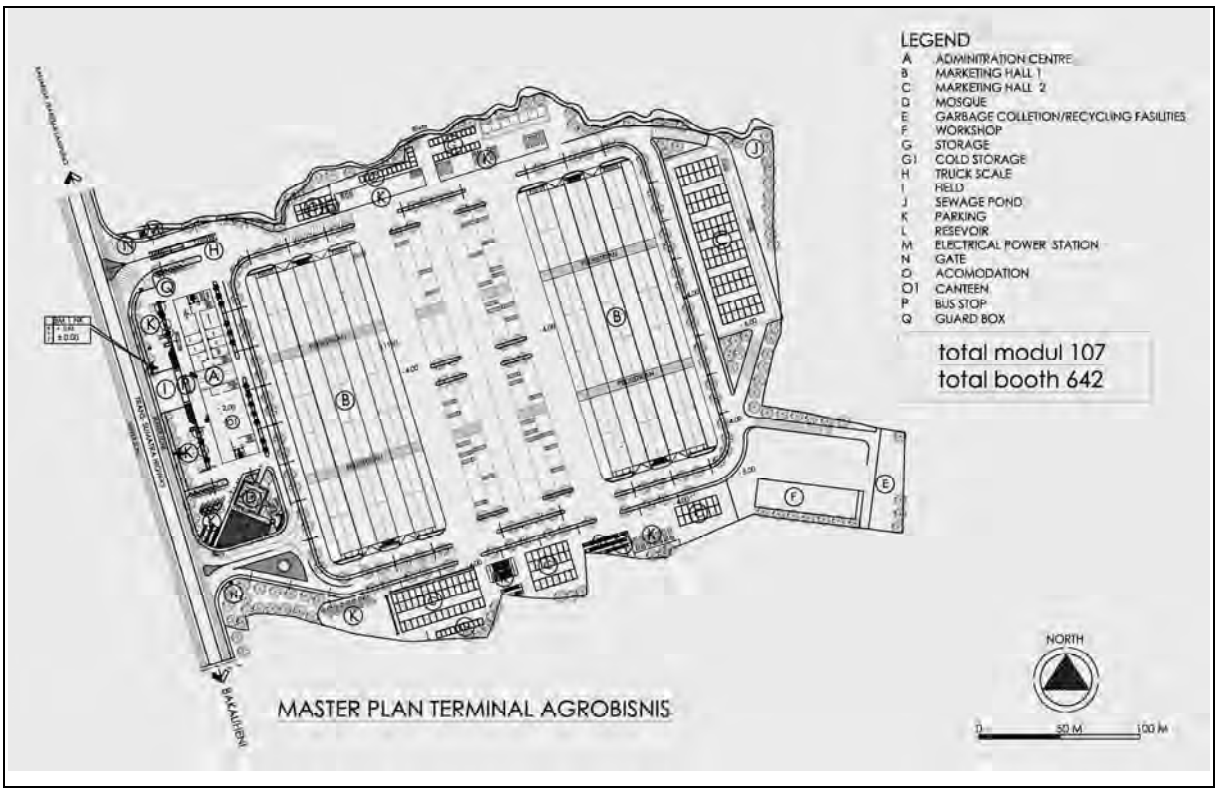
### i) Zoning

Buildings of the Marketing Hall-1 (specialized mainly for banana: hereinafter referred as "MH-1 zone") will be located at the center of the site, and the buildings would be placed parallel to the neighboring main road (Trans-Sumatra Highway). On the other hand, the buildings of Marketing Hall-2 (hereinafter referred as "MH-2 zone") will be located separately near the south-western

boundary and the north-eastern boundary. Administration center will be located near the western boundary, and the ancillary facilities (hereinafter referred as "AA zone") will be located at the perimeter area along the boundary.

**ii) Circulation**

The entrance gate will be placed at the north-western corner of the site, and the exit gate will be placed near the south-western corner. After passing through the entrance gate, all cargo-trucks of suppliers/buyers can move around the marketing hall-1 zone through the "Outer Perimeter Road" ($^{w}$ 9.0m + safety lane $^{w}$2.0m: one way/ clockwise) which leads to all zones, and finally get out the site through the exit gate. On the other hand, MH-1 and MH-2 zones have their own "Inner Perimeter Road" (w7.5m: one way/ clockwise) around the marketing hall buildings. In case of MH-1 zone, it has 2-way roads ($^{w}$13.0m: two ways) between each Marketing Hall-1 building, which also has 2 lanes of "Hall Road" ($^{w}$12.0m: one way) and 2 lines of pedestrian way ($^{w}$8.0m) within the hall.




Source: JICA Study Team

**Figure 2.5.3 Option 1 of the Facilities Layout Plan of New TA**

**iii) Levels**

GL (±0 level for all planned facilities at the site: altitude 96.0m from the sea level) will be secured at almost in middle of the west boundary of the neighboring main road (Trans-Sumatra Highway). Four major levels would be set-up as follows. Several ramps near the gates and in/from the Outer Perimeter Road will connect these 4 levels to each other.

- GL -2.0m: For the administration center
- GL -4.0m: For the marketing hall-1, and part of the marketing hall-2 (near the south-western boundary)
- GL -5.0m: For the workshop, and the garbage collection/recycling facilities
- GL -6.0m: For the marketing hall-2 (near the north-eastern boundary)

**b) Facilities layout plan – Option 2**

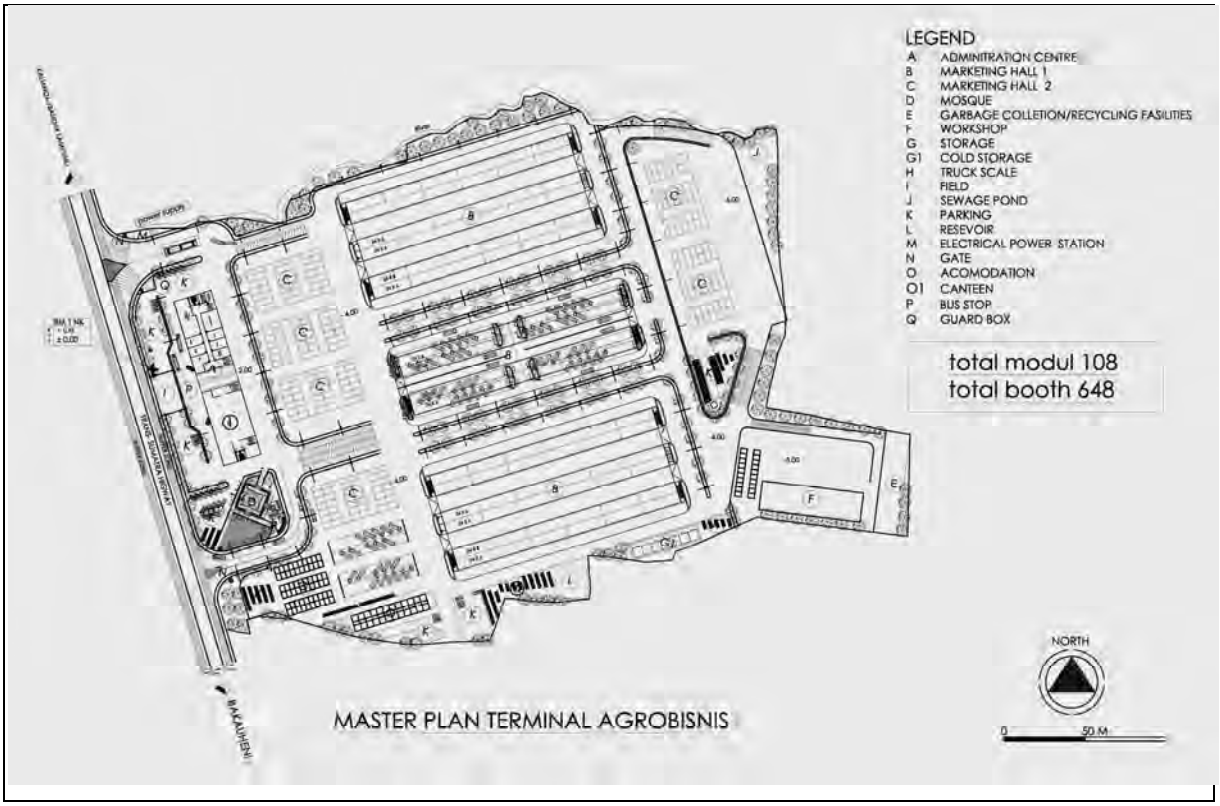
**i) Zoning**

The MH-1 zone will be located at the center of the site. The difference between the above-mentioned

Option 1 and this option is that the buildings of Marketing Hall-1 are placed almost at a right angle to the neighboring main road, and each building has to be adjusted to have a smaller width than in the Option 1. Furthermore, the MH-1 zone will be divided into two sub-zones by the central road. On the other hand, the MH-2 zone will be located separately at the western and eastern sides of MH-1 zone. Furthermore, western MH-2 zone will be divided into two groups by the central road. AA zone will be almost the same as in the Option 1.

**ii) Circulation**

The locations of entrance/exit gates are same as in the Option 1. MH-1 and MH-2 zones have their own "Perimeter Road" (w7.5m: one way/ clockwise) around the marketing hall buildings. In case of MH-1 zone, it has 2-way roads ($^{w}$12.0m: two ways) between each Marketing Hall-1 building, which also has a "Hall Road" ($^{w}$12.0m) within the hall. The "Central Road" leads to the eastern MH-2 zone, the workshop and the garbage collection/recycling facilities in the easterly direction, and then to the exit gate in the westerly direction.




Source: JICA Study Team

**Figure 2.5.4 Option 2 of the Facilities Layout Plan of New TA**

**iii) Levels**

- GL -2.0m: For the administration center
- GL -4.0m: For the marketing hall-1, and part of the marketing hall-2 (western side of marketing hall-1)
- GL -5.0m: For the workshop, and the garbage collection/recycling facilities
- GL -6.0m: For the marketing hall-2 (eastern side of marketing hall-1)

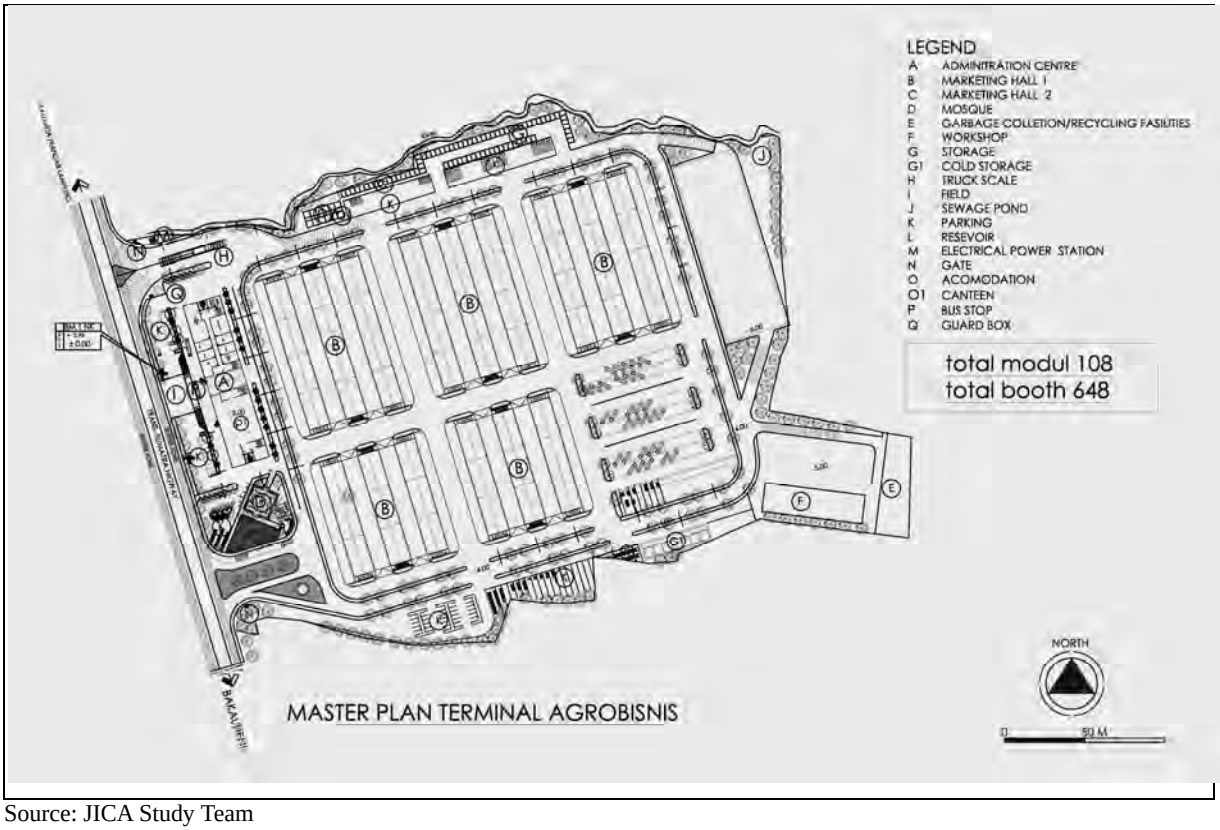
**c) Facilities layout plan – Option 3**

**i) Zoning:**

This option is quite similar to the option 1, but MH-1 zone will be divided into 2 groups, i.e. larger group and smaller group. MH-2 zone would be located near the north-eastern boundary. The locations of administration center and the other ancillary facilities (AA zone) would be similar to the option 1.

### ii) Circulation

The circulation system is also similar to the option 1, but "semi"- Outer Perimeter Road is secured around the northern MH-1. The other conditions are also similar to the option 1, except the marketing hall-1 does not have a pedestrian way.




Source: JICA Study Team

**Figure 2.5.5 Option 3 of the Facilities Layout Plan of New TA**

### iii) Levels:

- GL -2.0m: For the administration center
- GL -4.0m: For the marketing hall-1
- GL -5.0m: For the workshop, and the garbage collection/recycling facilities
- GL -6.0m: For the marketing hall-2

## d) Comparison of the options

The three options of layouts of the facilities mentioned above were discussed adequately to confirm zoning, uninterrupted circulation and suitable level settings. A comparative analysis of the options is done to clarify their characteristics by applying the criteria of "distribution" (smoothness of circulation, equity), "management/operation" (easiness of management/operation), "supporting" (easiness to provide the supporting service), "utilities/maintenance" (easiness of keeping the utilities and their maintenance), and "cost/ effectiveness," as shown in table below. As a result, Option 1 is considered to be the most suitable among the three options.

**Table 2.5.8 Comparative Analysis on the Options of Facilities Layout Plan**

| Items | | Option | | | Remarks |
|---|---|---|---|---|---|
| | | 1 | 2 | 3 | |
| 1 | Distribution | | | | |
| | 1) Smoothness of carry-in/ carry-out circulation (for suppliers and buyers) | A | C | A | The "Outer Perimeter Road" and Semi-outer Perimeter Road ensures a smooth circulation of carry-in/out in Options 1 and 3. In Option 2, the flow between the Central Road and the Perimeter Road does not ensure fully a smooth circulation; a certain level of the traffic congestion is expected or anticipated at both ends of the "Central Road." |
| | 2) Equity on the business chance regarding the booth location | A | B | A | The "equal business opportunity" will not be fully realized in the Option 2 because of the anticipate interruption in the "circulation." |
| 2 | Management/ Operation | A | C | B | From the viewpoint of number of buildings of marketing hall, Option 1 is the easiest to operate & manage; then followed by Option 3 and Option 2. |
| 3 | Supporting | A | C | B | From the same viewpoint as above, Option 1 is the easiest to provide services from the supporting facilities to the marketing halls, followed by Option 3 and Option 2. |
| 4 | Utilities/ maintenance | A | C | B | In the order of maintenance of utilities, Option 1 is the easiest, followed by Option 3, and Option 2. |
| 5 | Cost Effectiveness | A | C | B | From the viewpoint of total building number, the construction cost increase in order of Option 1, Option 3 and Option 2. |

Note: Evaluation scores: A = High; B = Normal; and C = Low.
Source: JICA Study Team

### 5) Outline of building structure

The outline of the main structure applied to the new TA facilities is shown as follows, divided into "lower structure" (foundation type) and "upper structure".

For the foundation type, it is necessary to consider the following two points, i.e. (i) the bearing capacity at the center of the site is relatively low (N value: 0–5–17) within the level from ±0m to -6m, and (ii) the total load of the marketing hall-1 is outstandingly large in comparison to the other buildings.

On the other hand, the upper structure of the marketing hall, the largest building, will differ from the ancillary facilities.

#### a) Lower structure

i) Foundation type for marketing hall (Marketing hall-1 and 2)
- Pile type foundation (approx. ¢300- max.L7500) and under-ground beam: Marketing hall-1
- Spread type foundation and under-ground beam: Marketing hall-2

ii) Foundation type for the other ancillary facilities:
- Spread type foundation and under-ground beam

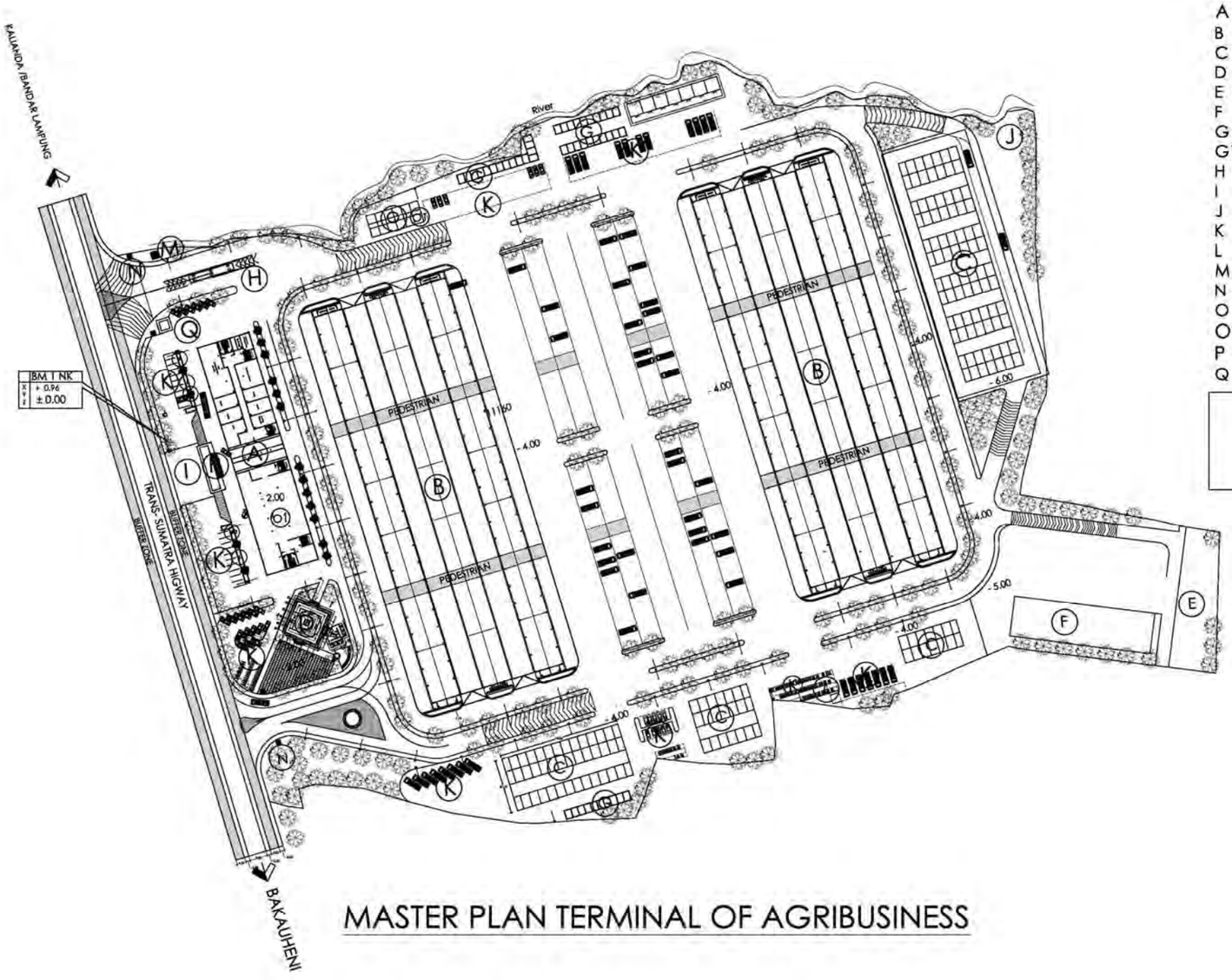
#### b) Upper structure

i) Roof structure and column of marketing hall (Marketing hall-1 and 2)
- Steel truss roof structure (roofing material: galvalume steel long sheet), and steel column (H type)

ii) Structure for the other ancillary facilities
   - Reinforced concrete frame and slab (with partially steel truss roof structure), brick wall with cement mortar and paint finishing

**6) Facilities plan**

The facilities layout plan is shown in the following page, and the detailed drawings of the buildings are shown in the Annex-3.




## LEGEND

| | |
|---|---|
| A | ADMINISTRATION CENTRE |
| B | MARKETING HALL 1 |
| C | MARKETING HALL 2 |
| D | MOSQUE |
| E | GARBAGE COLLETION/RECYCLING FACILITIES |
| F | WORKSHOP |
| G | STORAGE |
| G1 | COLD STORAGE |
| H | TRUCK SCALE |
| I | FIELD |
| J | SEWAGE POND |
| K | PARKING |
| L | RESERVOIR |
| M | ELECTRIC POWER STATION |
| N | GATE |
| O | ACCOMMODATION |
| O1 | CANTEEN |
| P | BUS STOP |
| Q | GUARDS BOX |

total module 107
total booth 642

# MASTER PLAN TERMINAL OF AGRIBUSINESS

| DISTRIBUTION MECHANISM REFORM THROUGH DEVELOPMENT OF WHOLESALE MARKET (Improvement of Post Harvest Handling and Marketing Facilities) (Agriculture) | BLOCK PLAN | MASTER PLAN OPTION 1 | SCALE | NO | NOTE |
|---|---|---|---|---|---|
| | | | | 01 | |

**(2) Equipment Plan**

For the new TA concept, equipment for controlling and ensuring the quality and safety of agricultural products, and equipment for the new handling system of agricultural products, such as banana, are planned.

1) Equipment for controlling and ensuring the quality and safety of agricultural products

The equipment for quality inspection and labeling system for traceability of agricultural products in accordance with “PERDA8/2004” are as follows.

a) Quality inspection equipment for analyzing agrochemical residues, mycotoxin, heavy metal and microbiological assay

- Gas chromatography mass spectrometer
- Atomic absorption spectrophotometer
- Spectrophotometer
- High speed liquid chromatography
- Rotary evaporator
- Microwave
- Ultrapure water equipment
- Water purify apparatus
- Electric balance
- Shaker
- Magnetic stirrer
- Homogenizer
- Oven
- Constant temperature water bath
- Aspirator
- Draft chamber
- Lamina flow
- General laboratory equipment

b) Equipment for traceability of agriculture products
- Computer with internet connection
- Laser printer
- Label printer

2) Equipment for new handling system
- Pickup truck
- Motor cycle
- 4WD vehicle
- Wheel roader
- Pallet
- High pressure washer

### 2.5.3 Construction and Procurement Plan

**(1) Scheme of Construction**

Construction scheme shall focus on the quality of construction materials, safety and labor management, choice of appropriate construction method and setup of economic construction schedule. The quality of construction materials, such as concrete, steel bar and wood are specified in the INDONESIA NATIONAL STANDARD (SNI). The contractor must strictly follow the standards stipulated in SNI for sampling, testing and evaluation methods. Safety and labor management is also specified in HIMPUNAN PERATURAN PERUNDANGAN DI BIDANG KESELAMATAN DAN KESEHATAN KERJA.

**(2) Procurement of Consultants and Contractor**

a) Procurement of Consultants

This project requires the procurement of following consulting services.

i) Social and Environmental Impact Assessment (EIA)
ii) Basic design and detailed engineering design work (B/D D/D)
iii) Supervision of the construction work

The consultants shall be selected through a tender process by adhering to the regulations of PERATURAN PRESIDEN No.54/2010. The process will take at least 60 days from the announcement of tender until the signing of agreement with consultant.

Detailed works of consultants are as follows.

- Environmental Impact Assessment, formulation of Environmental Management Plan/ Environmental Monitoring Plan
- Detail design of the new TA facilities, and compilation of the technical specification for TA equipment
- Assisting for tender evaluations on the building construction works and equipment procurement works
- Supervision works for building construction and equipment procurement
- Establishment of the market information system

b) Procurement of Contractor

The qualification of contractors is divided into seven grades (Regulation of peraturan Menteri Pekerjaan Umum No.16/SE/M/2010) depending on the number of engineers, experience and technical capabilities. In the tender for the project, a contractor shall be selected from a company with high technology holding with construction grades of 5 or above.

c) Procurement of Construction Materials and Equipments

Construction materials, such as cement, aggregates and bricks shall be procured in Sumatra. Other materials and equipment, however, have to be brought from Java via Bakauheni, which will increase the normal price to five to ten percent more.

### 2.5.4 Overall Project Cost (incl. Financing Plan)

**(1) Determining the Condition of Cost Estimation**

The unit price of building materials and the wages of labors are determined according to the following references.

- Basic Unit Price, Building Material Price and Wage of Labors in Lampung province in June 2011 issued by the department of Irrigation and Settlement Lampung Province
- Indonesian National Standard (SNI), analysis of construction costs issued by the National Standardization Agency in 2008.

The unit price of road works, excluding buildings, is based on the Analysis-K from Bina Marga

Agency Standardization in preparing the budget plan; the rate (%) of consultant services, supervision and administration of the project are referred to the Legislation of buildings synchronization programs and environment (PBBI).
In the cost estimation, assignment of foreign engineers and inflation rate are not considered.

**(2) Exchange rate**

Exchange rates (shown below) are calculated as of 31 October 2011.

i) US$1.00→JP¥78.75 (Bank of Tokyo-Mitsubishi UFJ, TTS rate)
ii) 1.00Rp→US$: 8,791 (Bank Indonesia, TTB rate)
iii) 1.00Rp→JP¥0.00895

**(3) Overall Project Cost**

Overall project cost is summarized below.
.

**Table 2.5.9 Overall Project Cost**

| DESCRIPTION | No, | Unit | Unit Price | Total (Rp) | Total (¥) |
|---|---|---|---|---|---|
| Direct Construction Work | | | | | |
| Temporary Work | 1 | lump sum | | 11,067,838,033 | 99,057,150 |
| Building Work | | | | | |
| Wholesale market | 27,306 | m2 | 2,119,826 | 57,883,962,001 | 518,061,460 |
| Office/administration building | 5,088 | m2 | 2,400,520 | 12,213,846,182 | 109,313,923 |
| Storage | 540 | m2 | 1,861,107 | 1,004,998,015 | 8,994,732 |
| Cold Storage | 378 | m2 | 1,897,438 | 717,231,577 | 6,419,223 |
| Work Shop | 1,134 | m2 | 1,748,600 | 1,982,911,883 | 17,747,061 |
| Canteens and Accommodation | 480 | m2 | 2,429,326 | 1,166,076,634 | 10,436,386 |
| Mosque Construction | 285 | m2 | 2,591,772 | 738,655,079 | 6,610,963 |
| Truck Scale | 1 | lump sum | | 556,776,555 | 4,983,150 |
| Electrical work | 1 | lump sum | | 2,278,032,532 | 20,388,391 |
| Plumbing work | 1 | lump sum | | 13,866,601,061 | 124,106,079 |
| Road, Parking, Fence, Landscaping | 1 | lump sum | | 18,626,097,075 | 166,703,569 |
| Building Equipment | 1 | lump sum | | 3,835,268,585 | 34,325,654 |
| Other Equipment | 1 | lump sum | | 11,178,994,000 | 100,051,996 |
| Professional Fees | | | | | |
| Detail Engineering Design | 2.72 | (%) | | 3,425,521,630 | 30,658,419 |
| Supervision | 1.78 | (%) | | 2,241,701,655 | 20,063,230 |
| Administration Project | 0.58 | (%) | | 730,442,112 | 6,537,457 |
| Total Construction Cost | | | | 143,514,954,609 | 1,284,458,844 |
| PPN (10%) | | | | 14,351,495,461 | 128,445,884 |
| Land Acquisition | | | | 10,055,000,000 | 89,992,250 |
| Total Construction Cost + PPN + Land Acquisition | | | | 167,921,450,070 | 1,502,896,978 |
| Rounded | | | | 167,921,450,000 | 1,502,896,000 |

Source: JICA Study Team

**(4) Operation and Maintenance Cost of new TA**

The estimated operation and maintenance costs are as follows.

The total O/M cost is estimated on the assumption the TA is at full operation (100% of the capacity).

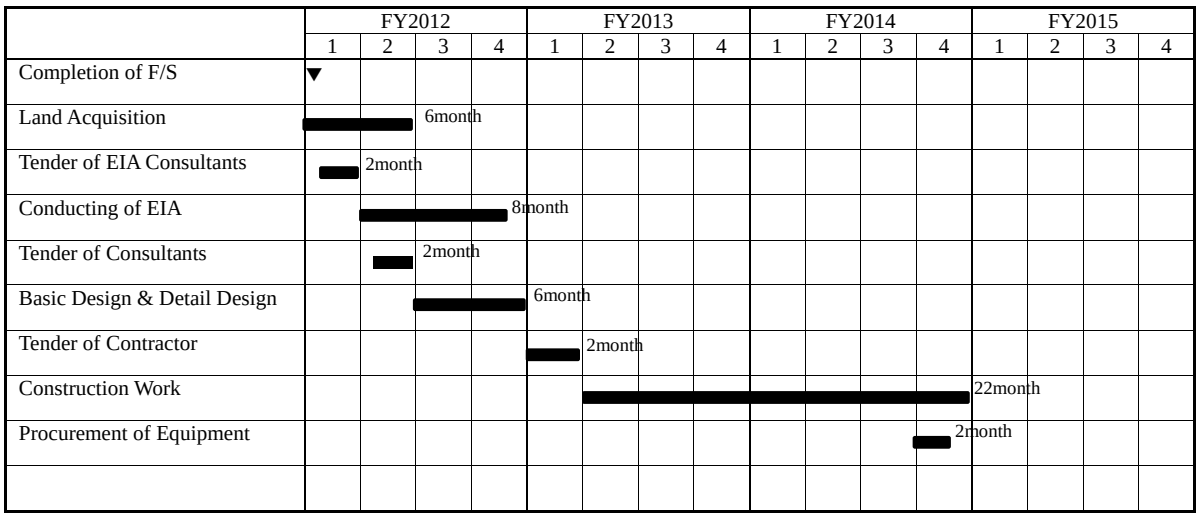
**Table 2.5.10 Operation and Maintenance Cost of new TA**

| Description | Total Price (Rp)/month |
|---|---|
| Electricity | 346,297,000 |
| Generator | 46,363,000 |
| Garbage Disposal | 153,974,000 |
| Salary/Wages | 187,000,000 |
| Maintenance and miscellaneous | 24,115,000 |
| Total | 757,749,000 |

Source: JICA Study Team

### 2.5.5 Project Implementation Schedule

The project implementation schedule covers major physical works of the project such as, land acquisition, environment impact assessment, basic design and detail engineering design and construction works. It will take three years to complete from F/S to construction works. Each stage shall go through the tendering process as mentioned above. Budget for each fiscal year must be ensured throughout the implementation schedule.



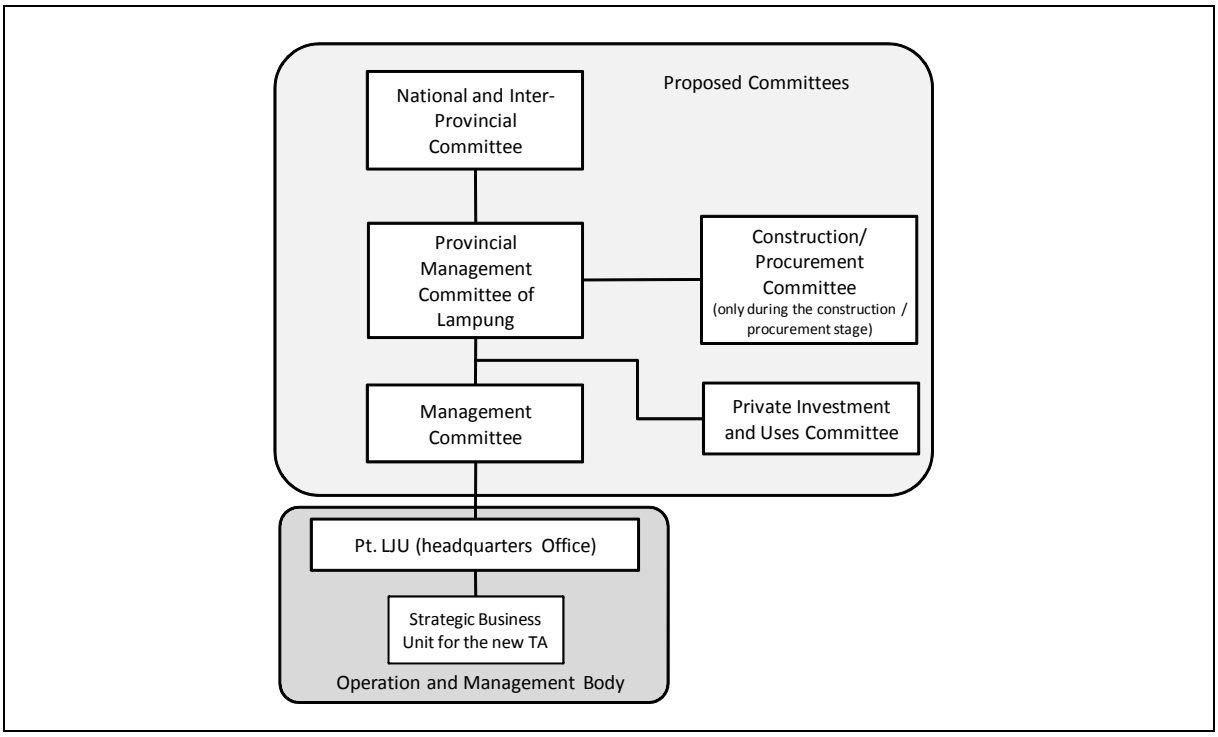

Source: JICA Study Team

**Figure 2.5.6 Project Implementation Schedule**

### 2.5.6 Project Implementation Committee

The institution in charge of the Project is the Government of Lampung. For a smooth execution of the Project and efficient operation of the new TA, several committees shall be established at each level of the Central Government and Provincial Government as shown in the project implementation. These committees will function not only during the construction period but also after the commencement of operation except for (5) “Construction/ Procurement Committee.”

Relationship among the proposed committees including operation and management body (explained in 2.5.7) is shown in the following figure; the roles and functions of the committees are explained below.




Note: Operation and management body is explained in 4.8.
Source: JICA Study Team

**Figure 2.5.7 Proposed Relationship among Committees for the Project**

**(1) National and Inter-Provincial Committee**

**1) Purpose**

The committee is to support Lampung Provincial Government and DKI JKT in the implementation of New TA and its contribution to PERDA8

**2) Roles and functions**

a) Formulation of "Inter-provincial Action Plan of New TA" through the coordination of the provinces concerned in Sumatra and Jawa as well as Lampung/DKI Jakarta
b) Formulation of investment and management strategy of New TA
c) Dissemination support for the promotion of investment and operation on New TA
d) Technical support on quality improvement for farmers, STA of relevant regencies and New TA

**3) Members**

a) Chairman: Minister of MOA
b) Vice-chairman: Governor of Lampung Province
c) Members: Directors of the relevant organizations of MOA and MOT, directors of relevant organizations in Lampung Province and DKI Jakarta, representatives from relevant provincial governments

**(2) Provincial Management Committee of Lampung**

**1) Purpose**

a) To support the new TA and to promote linkages with new TA, farmers and STA of each Regency.
b) To support and supervise the management body of new TA

**2) Roles and functions**

a) Formulation of Annual Operation Plan of the new TA in coordination with DKI Jakarta
b) Dissemination of support for the promotion of investment and operation of the new TA

c) Technical and financial support on quality improvement for farmers, relevant Regencies of STA and the new TA.
d) Security and sanitary control
e) Monitoring and supervision of New TA implementation

**3) Members**

a) Chairman: Governor of Lampung Province
b) Vice-chairman: Director of Agriculture Agency of Lampung Province
c) Members: Directors of the relevant organizations of Lampung Province, representatives of relevant Regencies in Lampung Province and DKI Jakarta, representatives of private investment and users committee

**(3) Management Committee**

**1) Purpose**

a) To manage the new TA and to communicate with farmers and STA in each Regency
b) To conduct operation and maintenance of the new TA

**2) Roles and functions**

a) Implementation of the Annual Operation Plan of New TA under the supervision of the Provincial Management Committee of Lampung.
b) Dissemination of support for the promotion of investment and operation of the new TA.
c) Technical and financial management of the new TA
d) Security and sanitary control

**3) Members**

a) Chairman: Manager of New TA
b) Vice-chairman: Co-manager of New TA
c) Members: Directors of relevant organizations of the new TA, representatives of private investment and users committee.

**(4) Private Investment and Users Committee**

**1) Purpose**

a) To organize and strengthen the farmers association, collectors association and wholesalers associations
b) To propose improvement of the new TA's management for the investors and users of the new TA

**2) Roles and function**

a) Operation and maintenance of facilities and equipment of the investors and users.
b) Improvement of quality.
c) Self-monitoring and supervision of New TA implementation.

**3) Members**

a) Chairman: to be selected by the members
b) Vice-chairman: to be selected by the Chairman
c) Members: Representatives of farmers, collectors and wholesalers association

**(5) Construction/Procurement Committee**

During the construction/procurement stage, Lampung Province will conduct the tender that includes the preparation of detail design of new TA facilities, and specifications of equipment, and the supervision of the construction/procurement works. In addition, the committee will carry out the following tasks.

- Finalization of the source of initial investment

- Coordination of education/training for key personnel of Pt. LJU and provincial officers related to the market operation and management (including “market information system”), and re-training of the inspectors of provincial OKKP-D on quality control and inspection.
- Completion of the land expropriation of the project site in Penengahan
- Completion of Environmental Impact Assessment, formulation of Environmental Management Plan/ Environmental Monitoring Plan

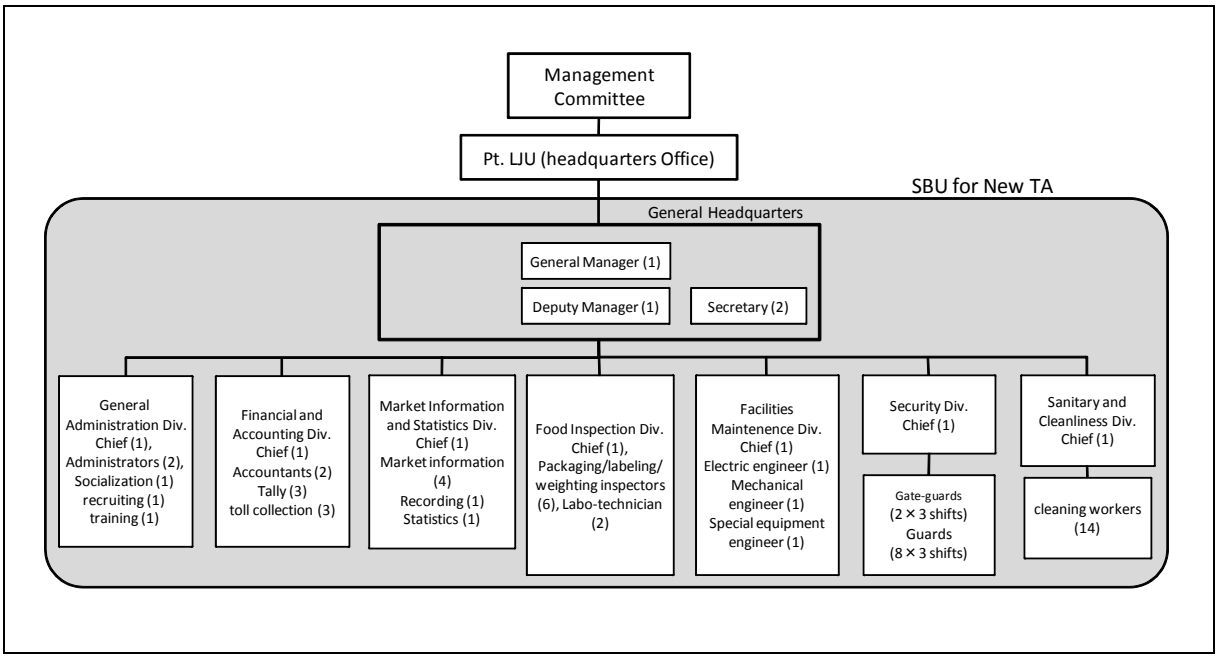
### 2.5.7 Project Operation and Management Body

Pt. Lampung Jasa Utama (LJU), which was established by Lampung Province with the initial capital of Rp. five billion (fully investment by the Province) in 2010. Pt. LJU was designated as the operation body of the new TA in October 2010.

Pt. LJU was originally established as the operational body for the public projects. It has a head office with 20 staffs (10 permanent & 10 temporary), and has a schedule to have several SBUs (strategy business units) in each public project. One of the SBUs therefore will be in charge of the operation/management of the new TA.

Under the “management committee” (shown in section 2.5.6), Pt. LJU will conduct operation/ management of the new TA shown below.

- Implementation of Annual Operation Plan
- Dissemination of support for the promotion of investment and operation
- Technical and financial management
- Security and sanitary control




Source: JICA Study Team

**Figure 2.5.8 Proposed Organization Chart for New TA Operation/Management**

General job description of each proposed division is mentioned below.

**(1) General Administration Division**

1) This division will manage the general administrative matters, socialization of the TA, recruiting staffs and training of staffs, etc.
2) Six officers are proposed in the division.

**(2) Finance and Accounting Division**

1) The division will handle the finance and accounting, such as toll fee collection, payment of costs,

and managing budget of revenue and expenditure.

2) Proposed staff number is nine persons.

**(3) Market Information and Statistics Division**

1) The division collects market information, namely commodity-wise price and transaction volume in the TA, and markets in Jakarta, and keeps records of the information in the computer. The division also provides such information free to whoever needs market information, such as farmers, collectors, and buyers by mobile phone.
2) Total seven people are proposed in this division.

**(4) Food Inspection Division**

1) The division conducts inspection related to PERDA8 to ensure and maintain quality of the commodity on chemical residues. The division also issues handling certificates in collaboration with provincial OKKPD, as well as provides technical advice on grading, sorting, packaging and weighing.
2) A total of eight persons are proposed for the division.

**(5) Facilities Maintenance Division**

1) The division provides technical/engineering services on maintenance of facilities related to electrical, mechanical and equipment.
2) Proposed number of staff is three.

**(6) Security Division**

The division is charged with security inside the TA.

**(7) Sanitary and Cleanliness Division**

The division is tasked to maintain and secure cleanliness in the TA through waste management, compost production, etc.

### 2.5.8 Stage-wise Development Approach

**(1) Strategy**

1) Preparation stage: First half of 2012

   a. Mutual agreement among Lampung provincial government and the regencies concerned in Lampung province

   b. Mutual agreement among management body of New TA and users groups such as farmers group /collectors in Lampung province and wholesalers/suppliers in DKI Jakarta through the establishment of the authorized Committee for investment and operation of New TA

   c. Dissemination of the New TA development plan and its information on the possible cost/benefit sharing among investors and users of New TA

   d. Completion of the land expropriation of the project site in Penengahan

   e. Implementation design of the new TA facilities, and preparation for the detailed technical specification of equipment

   f. Procedure of Environmental Impact Assessment, formulation of Environmental Management Plan, and Environmental Monitoring Plan

2) Preparation for construction/procurement and training: Second half of 2012

   a. Tender (building construction/ equipment procurement)

   b. Determination of the source of initial investment

   c. Training of key personnel of the management body on the management/operation of New TA: Administration, new technology on quality and information control, operation/maintenance of the

facilities and equipment, financial management

3) Implementation: 2013

a. Building construction, and equipment procurement

b. Management and operation: negotiation of potential investors and users

c. Continuation of training

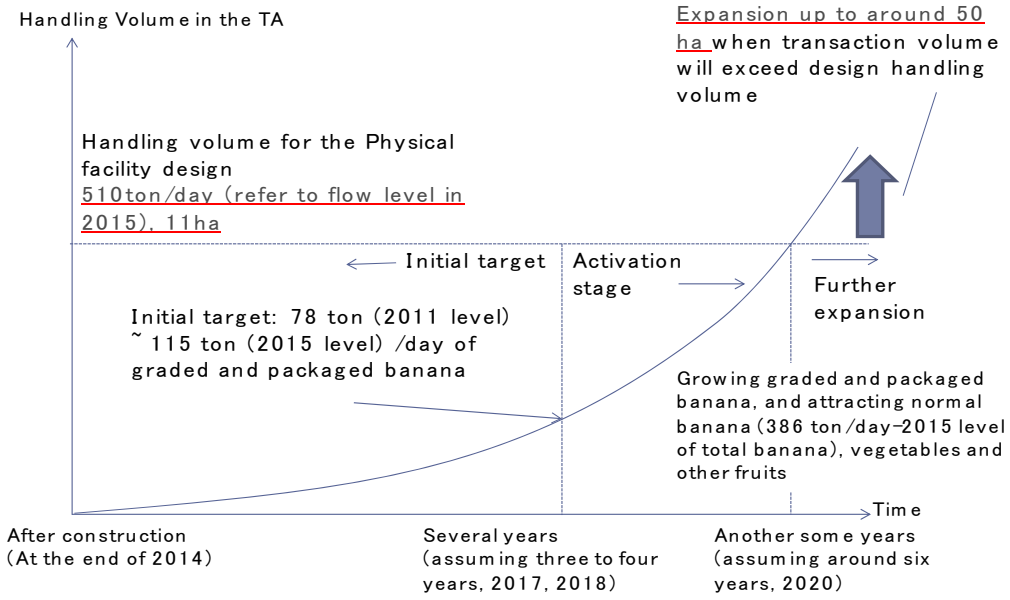
4) Initial operation: 2015

**(2) Planned handling volume by stage-wise approach**

The handling volume used for physical facility design is 510 ton/day (386 ton/day of banana out of total 510 ton), which is the projected figure in 2015.

In practice, around 80 ton/day of graded and packaged banana (at the level of 2011, current figure) is proposed to be targeted as the initial target after commencement of operation and management of the new TA because this segment can be considered promising for immediate action due to value added banana. To reach to that level (80 ton/day of 2011 level), it is assumed to take three years, i.e., 2017. Once marketing system starts changing, and actors realize the benefits of the new TA, transaction volumes can be increased gradually. This initial target segment is projected to grow around 115 ton/day at the level of 2015 and is expected to be transacted in 2018 in the plan.

Likewise, the success of wholesalers of banana is expected to attract transaction of other commodities such as vegetables and other fruits. Consequently, designed handling volume of 510 ton/day for the facility is assumed to be transacted in practice in 2020, six years after the start of the new TA operation. The above plan of development is summarized as an image in the following figure.




Source: JICA study team

**Figure 2.5.9 Image of Development for Handling Volume in the New TA**

As seen, it will be in 2020 when actual transaction volume is assumed to reach the planned handling volume of physical facility (510 ton/day at the level of 2015). It is needless to say that whole horticultural product volume in the distribution flow from Lampung to Jakarta must grow in 2020 and become more than 510 ton/day. Thus, it can also be interpreted that the above handling volume in the new TA is targeted only for increased volume on top of current amount, without changing the current distribution flow to some extent.

### 2.5.9 Necessity of Technical Assistance

For a smooth and sustainable operation and management of the new TA, technical assistance on matters related management, technical and financial will have to be introduced to the operational body since Lampung Province has no experience on a TA operation..

**Table 2.5.11 Proposed Technical Assistance for New TA Operation/Management**

| Item | Contents | Responsible Offices |
|---|---|---|
| 1. Management aspect | | |
| (1) Coordination | Organizing, Linkages with Committees | MOA, relevant provincial governments, PD. Pasar Jaya. |
| (2) Planning (Annual operation plan) | Projection of investors and users demand, Expansion and upgrading of facilities and equipment, Employment, financial source | Wholesale markets in DKI Jakarta and Surabaya, PD. Pasar Jaya |
| (3) Regulation and market control | | |
| (4) Implementation | Success, weakness and constraints | |
| (5) Recording and Reporting | Annual TA report, Sector report, Statistics | |
| (6)Monitoring & Supervision | Report on yearly activities and information for the preparation of Annual Work Plan to the Committees | |
| 2. Technical aspect | | |
| (1) Quality control | Workshop and individual training at New TA, STA, groups of farmers and private collectors, wholesalers<br>Technical training for laboratory technicians | MOA, Laboratory in DKI Jakarta, International market, PD. Pasar Jaya |
| (2) Market information system | Price, financial and statistical information: Daily, Monthly and Yearly | MOA, MOT, PD. Pasar Jaya |
| 3. Financial aspect | | |
| (1) Income statement | Revenue (Fee, service charge)<br>Cost (Salary, O&M, Depreciation cost ) | Wholesale markets in DKI Jakarta and Surabaya, PD. Pasar Jaya |
| (2) Cash flow | Investment, loan | |

Source: JICA Study Team

## 2.6 Environmental and Social Consideration

### (1) Environmental Clearance for the TA development in Penengahan

According to the Indonesian regulations, any construction with more than 5 ha scale (and/or 10,000m$^2$ of the building), is subjected to EIA (refer the government regulation of EIA, No.27/1999 and the decree of Minister of Environment No.11/2006). Thereby, the new TA in Penengahan is a subject for Indonesian EIA.

According to the regulation of ministry of environment No.5/2008, since the proposed TA is in South Lampung Regency, the EIA process will be under supervision of the BLHD-South Lampung Regency.

### (2) Important Points for Environmental and Social Consideration

#### 1) Land Acquisition Issue

#### a. Progress of land acquisition and relevancy

In order to acquire land for public purpose, a)land provision committee and b)land price appraisal team will be organized according to the Presidential Decree No.36/2005 on land acquisition for implementation of development for public interest.

Accordingly, the land procurement process of Penengahan site has been in process by the Lampung province after a confirmation letter in October 2011 by the Governor to secure the budget for land procurement. The actions so far till the end of October 2011 are summarized below.

- "Land Procurement Coordination Team" was organized with the member of BPN (Bandan Pertanahan Nasional = National Land Board), equipment and asset bureau, law bureau, agriculture office and settlement office, to handle all land procurement process.
- The Team started identification of land owners with the land scale information (end of May)
- "Land Price Appraisal Team" selected and sub-contracted a private company in Lampung Province for the land evaluation of the target area (middle of June 2011). Note, Lampung province has four accredited companies with license for land appraisal.
- Conducted two public consultation meetings with the invited residents in the target areas (August 2011).

The proper consultation meetings with stakeholders were held in line with the above decree and adequate considerations were attended to the residents and landowners of the lands.

#### b. Issues encountered

It is confirmed that the land acquisition was facing difficulties for negotiating with the land owners regarding the price (as of end of October 2011). The evaluated price by the consultant is below the expected price of the landowners (refer to the table below). The land procurement coordination team plans to categorize the land owners (24 household in total) into four groups depending on the difficulties of the negotiation.

**Table 2.6.1 Estimated Land Prices**

| No | Evaluator | Land price (Rp./m$^2$) | |
|---|---|---|---|
| | | Land facing the main road | Land not facing the main road |
| 1 | Price evaluated by the consultant | 130,000 | 80,000 |
| 2 | Price expected by the land owners | 150,000 | 150,000 |

Source: Result of interview to the Equipment and asset agency, Lampung Province

According to the team leader of the Land procurement coordination team, it is expected to complete the procurement of the land within FY2011, as the budget secured is valid until 31st December 2011. Since the presidential decree No.36/2005 states the enforcement of provision of land for public purpose, the Team expects that all residents may agree to the relocation basically. However, if there are objections to resettlement, the Team will try to make persuasive approach without forcing the people to move out, and/or reducing the land size to avoid the families who refuse to move out.

The negotiation for land acquisition is still in process with proper social consideration to avoid any negative impact of the project. Under this situation, it is recommended that regular monitoring be in

place even after the completion of land acquisition, that includes practical strategy in the environmental monitoring plan.

2) **Necessity of preparing resettlement plan in case of requesting Japanese yen loan**

It was confirmed that preparation of resettlement plan to minimize the negative impact for involuntary resettlement is not an obligation in Indonesia and as such there are no guidelines and regulations. However, if the government of Indonesia requests Japanese yen loan, it is required to follow the guidelines of JICA, which includes the obligation to prepare resettlement plan for a certain scale of the project that entails resettlement of the population, in accordance with the World Bank Safe Guard Policy OP.4.12 on involuntary resettlement.

Depending on the screening category, mentioned in the 1.2.2 (3), the required documents to prepare also differ, and the TA development in Penengahan is subjected to making of an "Abbreviated resettlement plan" from the scale of the project.

**Table 2.6.2 Variety of Resettlement Plan depending on the Condition of the Site/Project**

| Condition proposed site | Resettlement Plan ( Abbreviated) | Resettlement Plan (Full) |
|---|---|---|
| Condition | Category A and Category B with the condition below:<br>For projects that entail land acquisition or involuntary resettlement of more/fewer than 200 people, an abbreviated resettlement plan has to be prepared. | Category A:<br>For projects that entail land acquisition or involuntary resettlement of more/fewer than 200 people, a full resettlement plan has to be prepared. |

Source: JICA Study Team, referring to the JICA Guideline for Environmental and Social Consideration (April 2010)

The major content of the resettlement plan is as below. The major difference between Full-resettlement Plan and Abbreviated-resettlement Plan necessitates a "Relocation Arrangement Plan." If the Indonesian government decides to request Japanese Yen loan, further strategy of its preparation will be advised depending on the necessity.

**Table 2.6.3 Required Documents for Resettlement Plan (Full) and Resettlement Plan (Abbreviated)**

| Contents to be included | Resettlement Plan (Full) | Resettlement Plan (Abbreviated) |
|---|---|---|
| 1. Project description | ○ | ○ |
| 2. Necessity of land acquisition and resettlement, potential impacts | ○ | ○ |
| 3. Result of socio-economic survey including the land, population, property in the target area | ○ | ○ |
| 4. Concerning laws & regulations | ○ | ○ |
| 5. Land acquisition procedure with responsible agencies | ○ | ○ |
| 6. Condition of the target population | ○ | ○ |
| 7. Procedure for compensation for the loss of property and countermeasures. Measures for improving and/or recovering the livelihood of the resettled population | ○ | ○ |
| 8. Relocation arrangement plan | | |
| - Selection of relocation place and its preparation, procedure for legalization of the property | ○ | × |
| - Compensation of the houses and basic social infrastructure | ○ | × |
| - Environmental conservation and management in the relocation site | ○ | × |
| - Measures to avoid conflicts with the existing population in the area | ○ | × |
| 9. Community participation | ○ | ○ |
| 10. Grievance system and its procedure | ○ | ○ |
| 11. Schedule of resettlement after compensation payment | ○ | ○ |

| Contents to be included | Resettlement Plan (Full) | Resettlement Plan (Abbreviated) |
|---|---|---|
| 12. Cost and budget source | ○ | ○ |
| 13. Monitoring system and form | ○ | ○ |

Source: JICA Study Team, referring to the JICA Guideline for Environmental and Social Consideration (Oct. 2010) & other explanatory papers

**3) Countermeasure for preparation of waste management**

Waste management will be the biggest issue in the environmental consideration for TA development. Accordingly certain countermeasure for proper waste management is necessary at Penengahan site considering the current situation delineated below.

**a. The major garbage expected**

According to the TA development design, the planned daily handling volumes of the fruits & vegetables are estimated around 510tons/day, that includes banana (386 tons, the major product), followed by Papaya (31tons), other fruits (41 tons), red onion (7 tons), cabbage (7 tons), other vegetables (25 tons) and others (13 tons). Bananas are usually delivered with the main stems; these stems will be the major waste in the TA. No toxic wastes (heavy metals, non-halogenated solvents, etc.) are expected at the TA operation.

Around 5-10 percent of the handling volume of the products will be waste; it amounts to 25-50 tons of garbage per day that have to be disposed. If the TA facility is constructed conforming the proposed design in this report, which has adequately considered the contents and quantity of garbage, and no particular problem can be anticipated from viewpoint of the environmental consideration.

**b. Garbage collection**

"Market, Sanitary and Cleanliness Agency" of South Lampung Regency (Kalianda) provides the public garbage collection service in Penengahan District. The jurisdiction of South Lampung, with 17 districts, is divided into six administrative zones considering the locations of public local traditional markets. Each zone has a branch office of the Agency, named as KUPT (Head of Technical Implementation Unit = garbage collection service unit), and each KUPT is responsible for the garbage collection and dumping service using "dump-truck" (3 tons/truck) and "container-truck with arm-lift" (3 tons/truck). Penengahan District belongs to "KUPT Bakau", which is located in Bakau District; however, Headquarters office of the Agency is currently in charge of the service instead of KUPT Bakau. Every KUPT carries out the garbage collection service twice a week by separating the garbage into two groups, i.e. "non-organic" and "organic."

The Agency has many TPAs (Final Processing Areas = dumping areas) in the jurisdiction, and the largest one is TPA Lubuk Karna, which is located 4 km north of Kalianda. Among the existing TPAs, TPA Kalianda, which has the land space of 4 ha, could be a candidate as a dumping area for the new TA in Penengahan. Alternately, a few regencies in Lampung Province are currently proceeding the "Regional TPA Project" jointly, and are developing large-scale dumping areas in two places, i.e. TPA Pesawarang and TPA Kabitung (approx. 20 km north of Kalianda in South Lampung). TPA Kabitung, is developing a public dumping area for the general waste with a space of 25 ha. It will be completed within 2-3 years, and will serve as the most suitable TPA for the new TA in Penengahan.

Since the new TA in Penengahan will function as a provincial wholesale market, the Agency is responsible to provide daily collection service to the new TA, utilizing 2-3 trucks. The Agency estimates the new TA will generate garbage equivalent to 10 percent of the total handling volume. The payment to the garbage collection/dumping service will be determined by the negotiation between the Agency and the new TA management entity in the preparatory stage. The cost for the service can be estimated using the current unit cost of Rp.10,000-15,000/ton. No initial charges will be required in case of the new TA. Assuming the garbage will be delivered daily to a landfill area, it is necessary to arrange 17 rounds of dump-trucks (3-ton truck) for handling 50 tons of garbage a day. This point will be considered in the design of the waste management system.

**c. Consideration of recycle system**

According to the decree of Minister of Environment No.2/2008, every industrial facility including

market facility has to be equipped with a “recycle system” such as “fertilizer processes plant” for organic garbage. It is stipulated in the decree, that approximately 15 percent of organic garbage be treated by a recycle system, which is not an obligation for now.

According to the design planned in this report, the facility is equipped with “Compost preparation area” that is capable for handling one ton a day.

This scale is suitable and realistic at the initial stage, however, in line with the government policy of promotion of 3R (Reduce, Reuse, Recycle) from 2007, it is recommended for the TA development to make an effort to enlarge such system as an essential component in the facilities, when the extension of the TA site is planned in the future.

**4) Waste water treatment**

According to the relevant provincial regulation mentioned in 1.1.2 (3), the water discharged from TA operation will be under category of “domestic waste water.” In the proposed plan, it is designed to build a wastewater treatment facility that is capable to treat the discharged water estimated by the TA operation and to fulfill the standards. If the facility is built according to the plan and operated properly, negative impact will be avoided.

**5) Traffic and Noise**

Although the increase of traffic is expected from the TA operation due to delivery trucks, garbage collection trucks, etc., the impact will be minimum as the proposed TA is planned to be located along with the main artery with heavy traffic.

### (3) TOR (Tentative) of EIA for the TA development at Penengahan site

The outline of the TOR of EIA for the TA development will be summarized as follows. In case of changes of the scale, activity held in the TA, EIA should be carried out for the changed portion of the project.

**Table 2.6.4 TOR of EIA (KA-ANDAL) for the TA Development in Penengahan**

| Item | Major content |
|---|---|
| **Chapter 1: Introduction** | |
| 1.1 Background | Background of the EIA survey |
| 1.2 Objectives and benefits of the project | - Current condition of the sector<br>- Needs of the project<br>- Objective of the project and expected impact |
| 1.3 Relevant laws and regulations | Relevant laws and regulations to environmental and social consideration, particularly TA development |
| **Chapter 2: Scope of the survey** | |
| 2.1 Project component | - Size and location<br>- EIA implementation in the past<br>- Description of the project (scale, function, major facility installed, etc.)<br>- Major project activities which may influence environmental and social conditions in the area<br>- Schedule |
| 2.2 Present environmental and social condition | Present environmental and social condition including those of alternative sites<br>- Geographical condition<br>- Climate condition<br>- Biological condition (vegetation, ecosystem of flora and fauna in danger or need to pay attention)<br>- Land status, land acquisition progress if any.<br>- Social and cultural condition (population, tribes, characteristics of the target area (village), demographic profile, economic feature, public services etc.)<br>- Other elements to be considered in the area |
| 2.3 Scope of the EIA | - Scope identified and their clear reasons |

| Item | Major content |
|---|---|
| **Chapter 3: Survey component** | |
| 3.1 Environmental impact survey for the scoped items | a. Items<br>b. Method of data collection and analysis (Data collection method with the information of equipment used for the survey, etc., ways of analysis)<br>c. Prediction method of anticipated impact (ways of prediction method, such as calculation, experiment, simulation model, lessons from similar project, evaluation by the relevant specialist, etc.)<br>d. Evaluation method for anticipated impact (Assessment of each activity planned in the project from environmental impact point of view) |
| 3.2 Mitigation plan | For the items that may influence environment, mitigation plan should be examined to minimize the negative impact. |
| 3.3 Alternative plan | Examine an alternative plan of the project and clarify the impact of with and without project |
| **Chapter 4: Environmental Management Plan and Environmental Monitoring Plan** | |
| 4.1 Environmental Management Plan | Prepare the environmental management plan in order to be used as a reference to the management of environment, which must be carried out by project initiator/management and other relevant institutions. |
| 4.2 Environmental Monitoring Plan | Prepare the environmental monitoring plan to provide guidance for the implementation of TA development project and its operation. |
| **Chapter 6: Administration** | a. Executing agency of the project<br>b. Information of the certified surveyor/consultant which conduct the EIA (including the MM required for the survey)<br>c. Budget of the study<br>d. Study Period |
| **Others** | - Reference, secondary data, etc.<br>- Attachment (project information, discussion record among stakeholders, CV of the representative of the expert team |

Source: JICA Study Team

In comparison to the JICA guidelines, most of the contents are covered by the Indonesian regulations, however the following points are required to be assessed and/or to pay adequate attention when the project is to be realized with the support of a Japanese Yen loan.

- In addition to the description of the project component (chapter 2 in above table), JICA guideline requires the information of necessity investment outside of the project site (ex. Necessity of installation of pipeline, access road, electronic facility, etc.)
- Though it is not necessary to describe the necessity of resettlement plan in the Indonesian regulation, JICA guideline requires describing it clearly.
- While Indonesian regulation does not point out the necessity of including the predictive information on the uncertain issues, it is necessary to include the recognition and assessment of those points as well as identification of the items, which is not necessary to consider, should be also specified according to the JICA guideline.
- Public consultation should be held under both Indonesian and JICA regulation. The record of public consultation should be attached for both in Indonesian regulation and in JICA guideline. In addition, JICA guideline requires the record of discussion of the all related meetings regarding public consultation.

### (4) Schedule estimated for EIA clearance

As mentioned in 1.1.2, considerable period of time is necessary for clearing the EIA process. In order to complete the whole process, including the implementation of EIA survey, it takes around 10 months for the clearance starting from the selection of consultant to the receipt of final approval. Accordingly to complete the Detailed Design by the end of December 2012, for example, it is recommended to start the selection of consultant as early as January 2012.

| | Process | 2012 | | | | | | | | | | | | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| 1 | Selection of consultant | ▬ | | | | | | | | | | | | |
| 2 | Notify the project to BLHD (screening by BLHD) | | ● | | | | | | | | | | | |
| 3 | Public announcement | | ● | | | | | | | | | | | |
| 4 | To receive commnets and suggestions on the project (within 30 days) | | ▪ ▪ ▮ | | | | | | | | | | | |
| 5 | To prepare and submit TOR (KA-ANDAL) | | | ▪ | | | | | | | | | | |
| 6 | To receive commnets on the TOR (KA-ANDAL) (within 3 days) | | | ▪ | | | | | | | | | | |
| 7 | Assessment of the TOR (KA-ANDAL) by the committee (75 days) | | | ▬ | ▬ | ▬ | | | | | | | | |
| 8 | To prepare EIA report (ANDAL, RKL, RPL) | | | | | ▬ | ▬ | ▬ | | | | | | |
| 9 | Submit the EIA report to the committee | | | | | | | ★ | | | | | | |
| 10 | To receive comments and suggestions on the EIA Report (within 45 days) | | | | | | | | ▪ ▪ | ▪ ▮ | | | | |
| 11 | Assessment of the EIA Report by the committee (within 75 days) | | | | | | | | ▬ | ▬ | ▬ | | | |
| 12 | Approval of the EIA report by the committee | | | | | | | | | | ★ | | | |

Source: JICA Study Team

**Figure 2.6.1 Estimated Schedule for EIA clearance**

### (5) Environmental Management Plan (RKL)

According to the Indonesian regulation (regulation No.13/2010 regarding environmental management effort and environmental monitoring effort and statement letter for environmental management and monitoring commitment), preparation of the Environmental Management Plan (referred to as "EMP". Recognized as "RKL" in Indonesian language) is compulsory for all projects which anticipate any environmental impact. The developer (Lampung provincial government with DINAS agriculture) and operator (private company provisionally) are obliged to prepare RKL that will be used as a reference to the management of environment. It is recommended to assign an environmental officer who is in charge of handling the supervision of the all monitoring activities and documentation.
According to the regulation of minister of environment No.8/2006, the contents of the management plan is delineated below.

**Table 2.6.5 Major Contents of Environmental Management Plan**

| Contents | Note |
|---|---|
| Chapter 1<br>Introduction | - To describe the policy regarding TA development from environmental point of view, referring to the relevant regulation and policy.<br>- To state the benefit of the environmental management plan |
| Chapter 2<br>Policy of Environmental Management | - To describe the policy of environmental management from technical, socio-economical and institutional point of view. |
| Chapter 3<br>Environmental management plan | - Major cause of anticipated environmental impact<br>- Objectives of the environment management plan<br>- Relevant standard for achieving the objective of the management plan<br>- Environment management plan<br>- Location of the management, timing, implementing agency/responsible agency |
| Reference<br>Appendices | - Relevant academic document, etc. if any<br>- Summary of the Environmental Management Plan, etc. |

Source: JICA Study Team referring to the regulation No.8/2006

In JICA Environmental and social consideration guideline, on the other hand, it is regulated that EMP should be prepared for ensuring to eliminate adverse impacts, offset, or reduce them to acceptable levels referring to the EIA report to be prepared. The EMP describes mitigation, monitoring, and institutional measures to be taken during construction and operation of the project. Although it is the subject to the project under category B, this report shows the draft of the EMP as it is important to be sensitive for environmental and social consideration for any public works from accountability point of view.

Tentative Environment Management plan according to the each environmental impact anticipated for the TA development in Penengahan site is explained in the following table. The plan contains; type of anticipated impact, cause of the impact, impact indicator, environmental management purpose, period of management, and the responsible agencies for those activities, categorizing by the stages such as 1) pre-construction phase, 2) construction phase, and 3) Operation phase, as described in the table. These items raised should be confirmed and modified depending on the result of EIA.

**Environmental Management Plan (RKL) for the TA development in Lampung Province (Tentative)**

**1. Pre-Construction Phase**

| No. | Significant impact & its cause | | Impact Indicator | The environmental management purpose | Environmental management | Location | Period | Responsibility | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Type of Impact | Cause of impact | | | | | | Implementation agency | Supervision | Reporting |
| 1 | Restlessness of land owners | Land acquisition for the TA development site | The number of household who are unhappy with the compensation | To get agreement with the all target population by ensuring the participation in the project implementation process. | -To hold fair and sincere public consultation at early stage.<br>- provision of reasonable compensation. | The public consultation will be held at the convenient place for the target population near Penengahan | - Starting from the public consultation at designing stage, till completion of land acquisition with provision of compensation. | - Land acquisition including public consultation and compensation: Land procurement coordination team (head by Equipment and asset agency)<br>- Land value is assessed by private consultant team contracting with the land procurement coordination team. | TA development coordination committee | Reporting the result of environmental management result monthly to the governor through the assessment committee. |
| 2 | Loss of means of livelihood | The lands being acquired for the TA development site are farm lands which are main source of income of the people | The number of household who lost their income source due to the TA development and their livelihood | Avoid the loss/decrease of livelihood | - Hold fair and sincere public consultation at early stage.<br>- provision of reasonable compensation.<br>- to assist restoring economic activities for the citizens who lost their means of livelihood. Those assistance plans can be included into a resettlement plan. | The management location is in the proposed TA site | - Starting from the public consultation at designing stage, till completion of land acquisition with provision of compensation.<br>- Referring to the resettlement plan, monitoring of resettled people is to be continued during the period of monitoring after resettlement/land acquisition. | - Land acquisition including public consultation and compensation: Land procurement coordination team (head by Equipment and asset agency)<br>- Land value is assessed by private consultant team contracting with the land procurement coordination team. | TA development coordination committee | Reporting the result of environmental management result in every to the governor through the assessment committee. |

**2. Construction Phase**

| No. | Significant impact & its cause | | Impact Indicator | The environmental management purpose | Environmental management | Location | Timing/frequency | Responsibility | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Type of Impact | Cause of impact | | | | | | Implementation agency | Supervision | Reporting |
| 1 | Water contamination | Discharge water from the TA construction | Quality of discharge water from the TA site | to ensure that the waste water quality being disposed will not exceed the waste water quality standards | To construct the waste water processing installation (IPAL) with a certain function following to the provincial regulation | Inside the proposed TA site | During whole construction process | Contractor | TA development coordination committee (Developer) | TA development coordination committee (Developer) |
| 2 | Increase of traffic accident | Trucks and heavy machines for TA construction | Traffic volume increased for the construction | To avoid traffic accident by the TA construction related tracks & other heavy machines | - To control the tracks and heavy machines used for the construction with propse security management.<br>- As the paths to primariy schools are in front of the TA site, special attention should be paid. | At the entrance of the TA site | During whole construction process | Contractor | TA development coordination committee (Developer) | TA development coordination committee (Developer) |

**3. Operation Phase**

| No. | Significant impact & its cause | | Impact Indicator | The environmental management purpose | Environmental management | Location | Time/frequency | Responsibility | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Type of Impact | Cause of impact | | | | | | Implementation agency | Supervision | Reporting |
| 1 | Water contamination | TA operation | Quality of discharge water from the TA site | To ensure that the waste water quality being disposed will not exceed the waste water quality standards of the South Lampung regency regulation | - To prepare water treatment procedure and follow<br>- To use the waste water processing installation (IPAL) with a certain function which the government decide<br>- To record data of daily waste water flow, daily acidity (pH), raw material usage, product quantity, monthly production working days, and waste water parameter level as stated in poit periodically at least 1 time every 3 months to the operator with copies to the relevant agencies at Regency level. | Inside TA | - Self-monitoring should be conducted daily and record<br>- advancement and supervision by the agency is to be conducted in minimum once every 6 months and if deemed necessary may be conducted once in every 3 months. | Operator of the TA | Provincial and regency government through agency in charge of environmental protection and management (BLHD/BPHLD) | Provincial and regency government through agency in charge of environmental protection and management (BLHD/BPHLD) |

| No. | Significant impact & its cause | | Impact Indicator | The environmental management purpose | Environmental management | Location | Time/frequency | Responsibility | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Type of Impact | Cause of impact | | | | | | Implementation agency | Supervision | Reporting |
| 2 | Waste and sanitation | Wastes of fruit and vegetables from the TA operation | Quantity of the wastes made by the TA operation, and the capacity of waste management facility | To ensure that the wastes will be managed properly following to the South Lampung regency regulation. | - The waste management facility to be properly used with preparaing guidelines for the users of TA operation.<br>- The waste management system is properly prepared, functioned, allocating necessary persons in charge. | Inside TA | - Self-monitoring should be conducted daily and should be recorded.<br>- advancement and supervision by the agency is to be conducted in minimum once every 6 months and if deemed necessary may be conducted once in every 3 months. | Operator of the TA | Provincial and regency government through agency in charge of environmental protection and management (BLHD/BPHLD) | Provincial and regency government through agency in charge of environmental protection and management (BLHD/BPHLD) |
| 3 | Odor from the wastes and other products dealt in the TA | Wastes and the products (fruit and vegetables) dealt in the TA operation | Result of the measurement following to the South Lampung regency regulation | To minimize the odor affecting the environment around the TA site | - By guilding high wall around the TA to mitigate noise, odor, etc. for the people around the TA site.<br>- The waste management facility to be properly used with preparaing guidelines for the users of TA operation.<br>- The waste management system is properly prepared, functioned, allocating necessary persons in charge. | Inside TA | - Self-monitoring should be conducted daily and should be recorded. | Operator of the TA | Provincial and regency government through agency in charge of environmental protection and management (BLHD/BPHLD) | Provincial and regency government through agency in charge of environmental protection and management (BLHD/BPHLD) |
| 4 | Decrease of underground water level | Increase of water use | Result of the measurement following to the South Lampung regency regulation/Provincial regulation | To minimize the afects of water use for the existing water resources. | - By estimating the water quantity used for the TA operation, proper water quantity should be secured and mnaged by the operator. | Inside TA | - Self-monitoring should be conducted daily and should be recorded. | Operator of the TA | | |
| 5 | Affects for social infrastructure & social services | Increase of traffic | Traffic volume increased for the construction & number of accident if any | To avoid traffic accident by the TA construction related tracks & other heavy machines | - To control the tracks used for the construction with propse security management.<br>- As the paths to primariy schools are in front of the TA site, special attention should be paid. | At the entrance of the TA site | During whole operation process | Operator of the TA | TA development coordination committee (Developer) | TA development coordination committee (Developer) |
| 6 | Increase of traffic accident | Trucks and heavy machines for TA construction | Traffic volume increased for the construction & number of accident if any | To avoid traffic accident by the TA construction related tracks & other heavy machines | - To control the tracks used for the construction with propse security management.<br>- As the paths to primariy schools are in front of the TA site, special attention should be paid. | At the entrance of the TA site | During whole operation process | Operator of the TA | TA development coordination committee (Developer) | TA development coordination committee (Developer) |

### (6) Environmental Monitoring Plan

Environmental monitoring plan aims to provide a guidance for the implementation of TA development project and its operation, 1) to describe the pragmatic environmental monitoring plan to evaluate the success of the environmental management measures that have been done, in order to maintain and enhance environmental quality and carrying capacity, and 2) to determine the implementing agency and supervisor and the receiver of the report on the implementation of environmental monitoring, together with the implementation mechanism, in accordance with the existing regulation.

The Environment Monitoring Plan (Recognized as "RPL" in Indonesia language) consists of environmental management and monitoring framework, monitoring procedure and monitoring program.
It can be referred as guidance, instruction and reference in the implementation of the monitoring of big and important impact to the environment, which might arise from TA development, so that the negative impact can be prevented, reduced and overcome, and the positive impact can be enhanced.
According to the regulation of minister of environment No.8/2006, the contents of the monitoring plan are as follows;

**Table 2.6.6 Major Contents of Environmental Monitoring Plan**

| Contents | Note |
|---|---|
| Chapter 1<br>Introduction | - To describe the objective of the monitoring plan |
| Chapter 2<br>Environmental monitoring plan | - Major items to be monitored<br>- Major cause of anticipated environmental impact<br>- Method of monitoring, place, timing and period of monitoring<br>- Monitoring institution/responsible agency |
| Reference<br>Appendices | - Relevant academic document, etc. if any<br>- Summary of the Environmental Monitoring Plan, etc. |

Source: JICA Study Team referring to the regulation No.8/2006

Tentative Environmental Monitoring plan according to the each environmental impact anticipated are explained in the following table. It is prepared according to each development stage of the project, i.e. pre-construction phase, construction phase and operational phase of the project. The developer (Provincial government with DINAS agriculture) and operator (private company provisionally) is obliged to monitor according to the plan. It is recommended to assign an environmental officer who is in charge of handling the supervision of the all monitoring activities and documentation. These items raised should be confirmed and modified depending on the result of EIA.

**1. Pre-Construction Phase**

| No. | Environmental component to be monitored | Impact Indicator | Environmental Parameter to be monitored | Purpose of the environmental monitoring plan | Environmental Monitoring Method | | | Monitoring institution | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Method of data collection & data analysis | Location of environmental monitoring | Monitoring period & frequency | Implementation agency | Supervision | Reporting |
| 1 | Unrest community | The number of household who are unhappy with the relocation | Complaints about the land acquisition process and the TA construction | - To detect the number of people who are unhappy with the relocation and the TA construction.<br>- To evaluate the effectiveness of the environmental management efforts that have been implemented by the proponent of the project | Direct field survey by interviewing the target population | Within the TA site | Start from the beginning of the land acquisition process till completion of construction (once a half year). | Land procurement coordination team (head by equipment and asset agency) | TA development coordination committee | Reporting the result of environmental monitoring result monthly to the governor through the assessment committee. |
| 2 | Social Economic Condition | The population who are disturbed their economic activities due to the land acquisition/TA construction. | Complaints about the loss of land/loss of livelihood, claims about the decrease of household income due to the TA construction. | - To detect the number of people who decrease/lose their livelihood due to the TA construction.<br>- To evaluate the effectiveness of the environmental management efforts that have been implemented by the proponent of the project | Direct field survey by interviewing the target population | Within and around the TA site | Start from the beginning of the land acquisition process till completion of construction (once a half year). | Land procurement coordination team (head by equipment and asset agency) | TA development coordination committee | Reporting the result of environmental monitoring result monthly to the governor through the assessment committee. |
| 3 | Other social conflict, etc. | Complains, protest from residents who have anticipation of affects of the TA development. | Protest meetings, demonstrations, and other protest movement, if any | - To detect social conflict as early as possible for settling the issue.<br>- To evaluate the effectiveness of the environmental management efforts that have been implemented by the proponent of the project | Direct field survey by interviewing the target population | Within and around the TA site | Start from the beginning of the land acquisition process till completion of construction (once a half year). | Land procurement coordination team (head by equipment and asset agency) | TA development coordination committee | Reporting the result of environmental monitoring result monthly to the governor through the assessment committee. |

**2. Construction Phase**

| No. | Environmental component to be monitored | Impact Indicator | Environmental Parameter to be monitored | Purpose of the environmental monitoring plan | Environmental Monitoring Method | | | Monitoring institution | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Method of data collection & data analysis | Location of environmental monitoring | Monitoring period & frequency | Implementation agency | Supervision | Reporting |
| 1 | Water contamination | Discharge water quality | The discharge water quality should clear the environmental standard of the South Lampung regency. | - To ensure the discharge water quality clearing the regency standard.<br>- To evaluate the effectiveness of the environmental management efforts that have been implemented by the proponent of the project | Record of the contractor | Within the TA constrcution site | During the whole construction process | Contractor | TA development coordination committee | Provincial & regency government through the agency in charge of environmental protection and management (BLHD) |
| 2 | Increase of traffic accident | Traffic accident occurred by the construction related vehicles | - Security control of the TA construction related vehicles.<br>- Traffic accident occurred by the construction related vehicles. | - To ensure the security during construction.<br>- To evaluate the effectiveness of the environmental management efforts that have been implemented by the proponent of the project | Record of the contractor and/or police office | Within and around the TA construction site | During the whole construction process | Contractor | TA development coordination committee | TA development coordination committee |

**3. Operation Phase**

| No. | Environmental component to be monitored | Impact Indicator | Environmental Parameter to be monitored | Purpose of the environmental monitoring plan | Environmental Monitoring Method | | | Monitoring institution | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Method of data collection & data analysis | Location of environmental monitoring | Monitoring period & frequency | Implementation agency | Supervision | Reporting |
| 1 | Water contamination | Discharge water quality | The water quality discharged from the TA site should clear the environmental standard of the South Lampung regency. | - To ensure the discharge water quality clearing the regency standard.<br>- To evaluate the effectiveness of the environmental management efforts that have been implemented by the proponent of the project | Record of the contractor | Within the TA operation site | Monthly report during operation | Operator of the TA | Regency government through the agency in charge of environmental protection and management (BLHD) | Regency government through the agency in charge of environmental protection and management (BLHD) |

| No. | Environmental component to be monitored | Impact Indicator | Environmental Parameter to be monitored | Purpose of the environmental monitoring plan | Environmental Monitoring Method | | | Monitoring institution | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Method of data collection & data analysis | Location of environmental monitoring | Monitoring period & frequency | Implementation agency | Supervision | Reporting |
| 2 | Waste and sanitation | Quantity and management condition of the wastes managed in the TA site | - Waste management condition is sanitary safe and comfortable enough for the users of the TA.<br>- The waste management condition matches to the regency regulation if any | - To ensure the appropriate waste management in the TA site for securing the sanitary condition for the users and surroundings of the TA site.<br>- To control the quantity of wastes | Direct observation, record of waste disposal to public dump site | Within the TA operation site | Monthly report during operation | Operator of the TA | Regency government through the agency in charge of environmental protection and management (BLHD) | Regency government through the agency in charge of environmental protection and management (BLHD) |
| 3 | Odor | Odor from the wastes/products of the TA | - Waste management condition, particularly odor management is sanitary and comfortable enough for the users of the TA.<br>- The waste management condition matches to the regency regulation if any | - To ensure the appropriate odor management in the TA site for securing the sanitary condition for the users and surroundings of the TA site.<br>- To control the quantity of wastes | Direct field survey, record of waste disposal to public dump site | In and around the TA operation site | Once in a half year | Operator of the TA | Regency government through the agency in charge of environmental protection and management (BLHD) | Regency government through the agency in charge of environmental protection and management (BLHD) |
| 4 | Decrease of underground water level | No particular changes of underground water condition | Water quantity used for the TA operation is same and/or below the planned quantity | To make sure the no negative impact to the underground condition around the TA site | Field survey | In and around the TA operation site | Once in a half year | Operator of the TA | - | - |
| 5 | Social infrastructure and social services | No negative changes for the existing social infrastructure | No accident, damage, disturbance for the existing social infrastructurecaused by the TA operation | To make sure that no negative changes happen due to the TA oepration | Direct field survey, interviews | In and around the TA operation site | Once in a half year | Operator of the TA | - | - |
| 6 | Traffic accident | Traffic accident occurred by theTA related vehicles | - Security control of the TA operation related vehicles.<br>- Traffic accident occurred by the TA operation related vehicles. | - To ensure the security during construction.<br>- To evaluate the effectiveness of the environmental management efforts that have been implemented by the proponent of the project | Record of the contractor and/or police office | Within and around the TA construction site | During the whole construction process | Contractor | TA development coordination committee | TA development coordination committee |

## 2.7 Project Evaluation

### 2.7.1 Economic Evaluation

Economic evaluation was performed to determine the economic viability of the Project. In order to examine the proposed Project plan, internal rate of return was calculated. All detailed calculation methods and results are shown in Appendices-7, and the result of the examination is summarized in this chapter.

#### (1) Basic Assumptions

The following conditions were assumed for the evaluation.

- Project life is 20 years.
- Project cost is calculated in Indonesian currency Rupiah (Rp.) as of the end of October 2011.
- In order to convert the financial project cost to economic project cost the standard conversion factor of 0.9 is used by referring to other projects.
- Price contingency, tax, land acquisition, and other transfer payments are excluded in the economic cost.

#### (2) Economic Project Cost

1) Capital Cost

The economic capital cost was calculated by converting the financial capital cost, and is summarized in Table 2.7.1 below.

**Table 2.7.1 Financial and Economic Project Cost**

Unit: million Rp

| Component | | Financial | Economic |
|---|---|---|---|
| A | Preparation and land clearing works | 11,068 | 9,961 |
| B | Building | | |
| 1 | Wholesale market construction | 57,884 | 52,096 |
| 2 | Administration office construction | 12,214 | 10,993 |
| 3 | Warehouse storage | 1,005 | 905 |
| 4 | Cold storage | 717 | 645 |
| 5 | Workshop wooden crate | 1,983 | 1,785 |
| 6 | Canteens and accommodation | 1,166 | 1,049 |
| 7 | Mosque construction | 739 | 665 |
| 8 | Truck scale | 557 | 501 |
| C | Electric power supply system | 2,278 | 2,050 |
| D | Plumbing works | 13,867 | 12,480 |
| E | Road, parking, fence, landscaping | 18,626 | 16,763 |
| F | Building equipment | 3,835 | 3,452 |
| G | Other equipment | 11,179 | 10,061 |
| Total construction | | 137,117 | 123,405 |
| Consultant services for detailed design | | 3,730 | 3,357 |
| Consultant services for supervision | | 2,441 | 2,197 |
| Administration project | | 795 | 716 |
| General construction and consultant services | | 144,083 | 129,675 |
| PPN (10%) | | 14,408 | - |
| Land Acquisition Cost | | 10,055 | - |
| **TOTAL** | | 168,546 | 129,675 |

Remarks: Tax and land acquisition cost are excluded from economic cost due to transfer payment.
Source: JICA Study Team

2) Annual Operation and Maintenance (O&M), and Replacement Cost

Annual O&M and replacement costs are converted to the economic value. The monthly O/M is

summarized in the following table.

**Table 2.7.2 Financial and Economic O&M and Replacement Cost**

Unit: million Rp

| | Financial | Economic |
|---|---|---|
| Operation and Maintenance Cost (per month) | | |
| Electricity | 347 | 312 |
| Generator | 46 | 41 |
| Salary | 187 | 168 |
| Garbage | 83 | 75 |
| Other maintenance and miscellaneous | 24 | 22 |
| Sub-total | 687 | 450 |
| Replacement Cost | | |
| Other equipment (once in 10 years) | 11,179 | 10,061 |

Source: JICA Study Team

3) Payment Schedule

The payment schedule of the project cost was examined as per project implementation schedule, and is shown in table below.

**Table 2.7.3 Payment Schedule of the Economic Project Cost**

Unit: million Rp

| No | Description of project activity | Project cost | Payment schedule | | | |
|---|---|---|---|---|---|---|
| | | | FY 2012 | FY 2013 | FY 2014 | FY 2015 |
| 1 | Detail design consultant | 3,357 | 3,357 | | | |
| 2 | Supervision consultant | 2,197 | | 999 | 1,198 | |
| 3 | Construction | 113,344 | | 48,944 | 58,733 | 5,667 |
| 4 | Procurement of other equipment | 10,061 | | | 10,061 | |
| 5 | Project administration | 716 | 151 | 226 | 226 | 114 |
| Total | | 129,675 | 3,508 | 50,169 | 70,218 | 5,781 |

Source: JICA Study Team

### (3) Economic Project Benefits

The economic benefit of the project is improving the efficiency in the distribution flow of horticulture products. For evaluation, the economic benefits are quantified and expressed in monetary terms. The following table shows the quantified economic project benefits (for details refer Appendices-7).

**Table 2.7.4 Economic Benefits**

Unit: million Rp.

| Economic Benefit | Explanation | Quantified Benefit |
|---|---|---|
| Reduction of damage loss | Introduce grading and packaging process that reduces loss and damage. | 12,173/year |
| Time saving | Time in distribution flow is saved, especially at the level of collectors. | 689/year |
| Compost production | Compost is produced with the project instead of dumping the wastes without the project. Compost produced has economic benefit. | 197/year |
| Quality improvement from high value banana | Quality of some of banana handled in the new TA will be greatly improved because of the cooling process with the Project. This improvement is an economic benefit. | 13,930/year |
| Waste Reduction in Jakarta | Waste currently generated in Jakarta will instead be generated in Lampung province; thus the difference in cost (value) in waste treatment between Jakarta and Lampung is an economic benefit. | 4,320/assumed every lifetime of landfill |

Note: As economic benefit, only banana is used. The major reason is that planned handling volume of banana occupies 76% of total planned handling volume and is considered a major benefit for the Project.
Source: JICA Study Team, refer to 7.1, Appendices-7

These benefits will not be fully realized immediately after the construction. Initial target quantity of graded and sorted banana is around 78 tons/day in 2011, and it is anticipated to increase 115 tons/day in 2015, and later to 386 tons/day (physical design capacity). The following table indicates the benefit increase for evaluation.

**Table 2.7.5 Expected Benefit Increase**

| | FY2015 | FY2016 | FY2017 | FY2018 | FY2019 | FY2020 |
|---|---|---|---|---|---|---|
| Benefit Increase (%/year) | 10 | 15 | 20 | 30 | 60 | 100 |
| Banana handling volume (ton/day) | 38.6 | 57.9 | 77.2 | 115.8 | 231.6 | 386 |

Note: This increase tendency is applied to the first three benefits mentioned in Table 2.7.4.
Source: JICA Study Team

### (4) Economic Internal Rate of Return (EIRR)

The EIRR is calculated with the Net Present Value at a discount rate of 9 percent; the results (including the B/C ratio) are shown in table 2.7.6 (for details refer Appendices-7).

**Table 2.7.6 EIRR and Net Present Value Analysis**

| Economic IRR | | | |
|---|---|---|---|
| 9.8% | | | |
| Net Present Value at 9% Discount Rate (Million Rp.) | | | |
| Cost | Benefit | Balance | B/C |
| 146,578 | 152,695 | 6,117 | 1.04 |

Source: JICA Study Team, refer to 7.2, Appendices-7

### (5) Sensitivity Analysis

Sensitivity analysis was performed to determine the economic viability of the Project, under condition of unexpected changes that affects the benefit and cost. For example, increase benefits due to increase in booth rental by wholesalers, and increase in banana quantity more than the planned quantity. Conversely, there may be decreases in the assumed benefits and planned quantity of bananas. These changes in benefits and quantity affect the construction and O&M costs. Needless to say, there may be cost overrun of construction and O&M costs due to inflation or delay of construction period, etc., that may increase the cost. The result is summarized in table 2.7.7 below (for details refer Appendices-7).

**Table 2.7.7 Sensitivity Analysis**

| | | (Decrease) | | Cost | (Increase) | |
|---|---|---|---|---|---|---|
| | | -20% | -10% | 0% | +10% | +20% |
| (Increase) | +20% | 17.9% | 15.5% | 13.3% | | |
| | +10% | 16.1% | 13.7% | 11.6% | | |
| Benefit | 0% | 14.2% | 11.8% | 9.8% | 8.0% | 6.3% |
| | -10% | | | 7.8% | 6.0% | 4.3% |
| (Decrease) | -20% | | | 5.5% | 3.7% | 2.0% |

Source: JICA Study Team, refer to 7.3, Appendices-7

## 2.7.2 Financial Evaluation

Financial viability of the project is also evaluated from the viewpoint of business entity and the national economy. The financial evaluations thus evaluated on the project implementation and the operation and management system for the new TA are delineated below

### (1) Management Body

The basic assumption is that initial capital investment for construction is from the provincial government. PT. Lampung Jasa Utama (LJU) which is funded (100%) by the provincial government has been proposed to handle the operation and management of the new TA. LJU shall establish a strategic business unit (SBU) specifically for operation and management of the new TA. This unit is

expected to run the TA in a financially sustainable manner. Therefore, an analysis of annual budget was made to see whether the management body could sustainably operate and manage the new TA from the viewpoint of revenue and expenditure.

1) Annual Income and Expenditure

Major income source is from the collection of several users fees of the TA. Expenditure is staff salary, electricity, garbage treatment, etc. Annual budget (income and expenditure) when in full operation is expected as shown below.

**Table 2.7.8 Annual income and Expenditure of SBU in PT.LJU for TA**

| Expected Revenue | Unit | Number | |
|---|---|---|---|
| Rental fee of booth | 400,000 Rp/$m^2$ for one year | 15,053 $m^2$ of total net stocking area | 6,021 million Rp/year |
| Fee for weight | 30 Rp/kg | 510 ton/day of total transaction | 5,585 million Rp/year |
| Car parking fee | 2,000 Rp/car (assuming 3 ton pick up truck from farms) | 170 cars/day | 124 million Rp/year |
| | 3,000 Rp/car (assuming 6 ton truck to Jakarta) | 85 cars/day | 93 million Rp/year |
| Necessary electricity charge | 1,000 $m^2$/day | 15,053 $m^2$ of total net stocking area | 5,494 million Rp/year |
| Compost sales | 600 Rp/kg | 365 ton/year | 219 million Rp/year |
| **Total revenue** | | | **17,536 million Rp/year** |
| Expected Expenditure | | | |
| Operation and Maintenance Cost | | | |
| Electricity | 347 million Rp/month | | 4,164 million Rp/year |
| Generator | 46 million Rp/month | | 552 million Rp/year |
| Salary | 187 million Rp/month | | 2,244 million Rp/year |
| Garbage | 83 million Rp/month | | 996 million Rp/year |
| Other maintenance and mis. | 24 million Rp/month | | 288 million Rp/year |
| Sub-total | | | 8,244 million Rp/year |
| Depreciation | | | |
| Physical Structure | 114,870 million Rp excluding preparatory works | 25 years of life | 4,595 million Rp/year |
| Other equipment | 11,179 million Rp | 10 years of life | 1,118 million Rp/year |
| Sub-total | | | 5,713 million Rp/year |
| **Total expenditure** | | | **13,957 million Rp/year** |

Prepared by JICA Study Team

The preliminary examination shows the operation and management of the TA could be financially sustainable, including the salary of proposed number of staffs. However, the anticipated income could be realized only when the planned transaction volumes are handled and all expected wholesalers conduct their business in the TA. Hence, it is important to take necessary measures to attract current collectors, wholesalers, etc. to the TA, such as socialization and advertisement. It would also be a good idea to attract potential wholesalers by discounting rental charges for first or second year as a promotion until their business become profitable. Additionally it requires training of the staff of the management body to operate the TA in a proper manner.

2) Initial Investment

Primarily, the initial investment for the Project is proposed to be prepared from APBN (national budget) or APBD (provincial budget). If so, this initial investment may not be really necessary to be collected back. This principle affects especially to set up rental booth fee. The above calculation considers depreciation, and then rental fee of booth is 400,000 Rp/$m^2$/year. If depreciation is not considered, rental fee can be reduced so that more potential users can be attracted.

On the other hand, if investors are required for preparation of initial investment, rental booth fee must be higher than the current figure. This is a trade-off judgment. At this moment, it is recommended to think more on users at the initial stage (namely low rental fee of booth) to attract wholesalers. Once the TA gets active, rental fee can be raised. As an example of private investment, when the physical capacity of the current design of the TA becomes full, investors can be invited for further expansion like PIKJ's renovation/expansion in 2003 done by a private investor.

### (2) Wholesaler

Wholesalers are important stakeholders in the TA whose business activity is a source of income revenue. In absence of their activity, the operation and management of the TA cannot be sustained due to lack of operational fund. Therefore, it is necessary to appeal and attract wholesalers business.

Since the major commodity handled is banana, a budget analysis of a typical banana wholesaler is examined in table 2.7.9 (for details refer Appendices-7).

**Table 2.7.9 Annual Budget Analysis of Typical Banana Wholesaler**

| Item | Detail |
|---|---|
| Gross sales income | 233 boxes/day * 70,000 Rp/box = 16,310,000 Rp/day |
| Cost of sales | 233 boxes/day * 61,250 Rp/box = 14,271,250 Rp/day |
| Net Sales Profit | Balance of 2,038,750 Rp/day * 365 days = 744 million Rp/year/wholesaler |
| Cost for the TA | Payment for several fees: 157 million Rp/year/wholesaler |
| Net Benefit | 587 million Rp/year/wholesaler |

Note: Assumption each wholesaler uses one module (one module has 6 banana-booths that includes washing, grading, and packaging; 1 booth=24m2, 1 module= 144m2).
Source: JICA Study Team; for details refer to 7.4, Appendices-7

So typical wholesalers of banana in the new TA can earn sufficient profit (benefit) from their business. However, this model can be gainful or feasible only when all the planned conditions are fulfilled; hence, supporting activities to this TA are important. Additionally, the other wholesalers for vegetables are not many and their benefits are smaller than banana wholesalers; thus differences in fees structure have to be examined.

### 2.7.3 Operation and Effect Indicators

#### (1) Operation Indicators

The following baseline and target figures for operation indicators are provisionally set.

**Table 2.7.10 Operation Indicators (Provisional)**

| Indicators | Explanation | Before the Project | After the Project | Data Source |
|---|---|---|---|---|
| Transaction volume in the market (ton/year) | Annual total handling volume in the Market. | - | Initial target: 80 tons/day of processed banana in 2017. Final target: 510 tons/day for all commodities after 2020 | Record by the management office |
| Gross total number of users (no. of vehicles/year) | Total number of users (sellers and buyers in the market; indicators are the total number of vehicles entering the market). | - | 170 of 3 ton -truck/day and 85 of 6 ton-truck/day after 2020 | Record by the management office |
| Percent of contracted wholesale booths (%) | Actual rate of contracted booths to the total number of planned booths. | - | 100% after 2020 | Record by the management office |
| Income (Rp/year) | Operational income to operate and manage the market annually by collecting several fees | - | 17,536 million Rp/year after 2020 (if current fees are applied) | Record by the management office |

Source: JICA Study Team

#### (2) Effect Indicators

The following baseline and target figures for effect indicators are provisionally set.

**Table 2.7.11 Effect Indicators (Provisional)**

| Indicators | Explanation | Before the Project | After the Project | Data Source |
|---|---|---|---|---|
| Transaction volume in the market (ton/year) | Annual total handling volume in the Market. | - | Initial target: 80 ton/day of processed banana as of 2017. Further target: 510 ton/day for all commodities after 2020 | Record by the management office |
| Reduction of Damage Loss (%) | Percentage of loss and damage out of total transacted in the new TA or distributed from Lampung to Jakarta. | 3% (banana) | 0% (banana) | A impact survey to be implemented by the management body |

Source: JICA Study Team

### 2.7.4 Qualitative Effect

The following issues are quantified partially or fully. However, these are described in this section qualitatively considering the limited data sources.

**(1) Contribution to Modernization of Horticulture Distribution Flow**

The new TA aims to impart initially a modernized form of distribution to the high-value banana that is in the conventional form of distribution together with other horticulture crops. Since there is a growing demand for quality improvement from the consumers, the TA is highly expected to contribute to the modernization of horticulture distribution flow in Indonesia.

In the context of Perda 8 of DKI Jakarta, the form of processed banana proposed by the new TA will be a model case of Perda 8, whereby it will keep good quality products including grading, sorting and packaging, and even food safety by checking of agro-chemicals residues.

**(2) Contribution to Environment**

By the modernized distribution flow and Perda 8, there will be a reduction in waste especially in the mega-city, Jakarta, which receives horticulture products from different places all over Indonesia (even from outside of Indonesia). Currently most of horticulture products are brought to Jakarta in a primitive form; therefore concentrated wastes are generated in Jakarta due to processing them to final products for the consumers. If horticulture products are processed in each producing area, waste produced in Jakarta will be greatly reduced; thereby cost of waste treatment will be minimized (treatment cost of accumulated volume of waste is higher in Jakarta than cost of small volume in each area). This reduction in wastes will contribute to the environment.

**(3) Economic Development in the Area**

With the new TA, new employment opportunities are expected in the area. The management body will hire staff including security workers and laborers. Wholesalers are expected to come and engage in business activities. Necessary services around the new TA are also expected commence, namely restaurants, banking, etc. These resultant effects will contribute to economic development in the area of Penengahan.

**(4) Value Distributed to Upstream of Supply Chain**

Since the processing of banana is introduced in the TA in Lampung, the value, which is basically prevailing and enjoyed in Jakarta now will be created in Lampung too; this will lead to higher wholesale price of banana. So the value can be distributed to upstream of supply chain, namely farmers and sub-collectors in Lampung.

In the new TA, a system of providing price information is proposed, and any stakeholder will have

access to price information by mobile phones. Stakeholders of the upstream of the supply chain of banana, who generally do not know price information in consumer areas, are expected to obtain the information and have a bargaining power with stakeholders in the downstream of the chain.

It is also expected that quality information that is required by consumers, are not only price information; it also reaches to farmers, and quality of banana is improved at the stage of production.

# Part 3
# Improvement of Operation and Management of Three STAs

## 3.1 Current Condition and Issues on Operation and Management in Three STAs

### 3.1.1 STA Mantung (East Jawa Province)

#### (1) Current Condition and Future Trend of Horticulture Products in the Surrounding Area

**1) East Jawa Province**

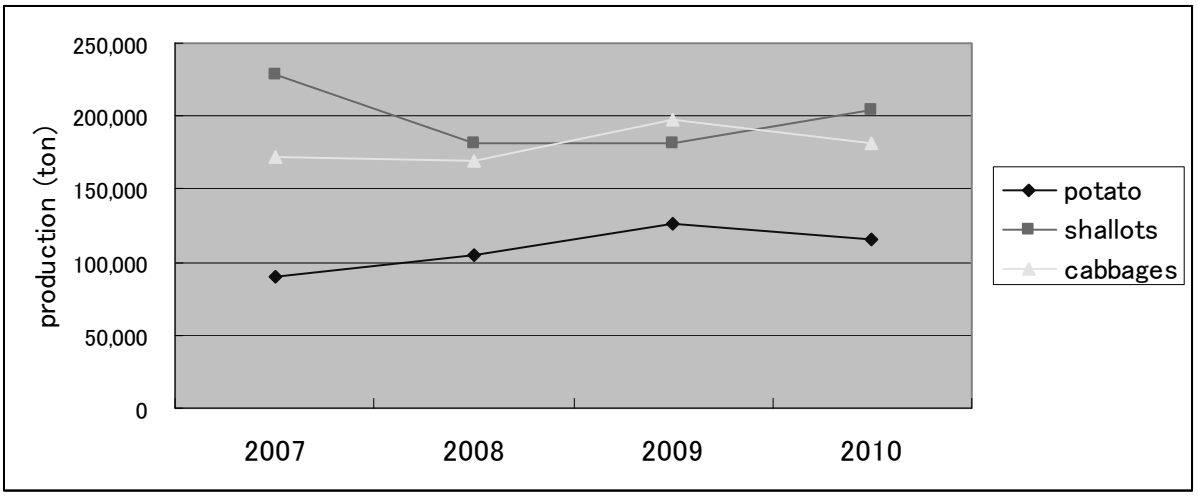
Agriculture in East Jawa Province is characterized by its high productivity and diversity. Main agriculture products are paddy, maize, vegetable, sweet potato, groundnut, soybean, sugarcane, tobacco, etc. Productivity and production of food crops are at the highest level, and production of vegetable is also large due to its rich land resources. Irrigation facilities are well developed in the low area, and therefore agriculture production is considered stable. Vegetable production[1] in the province is around 1.3 million ton (2008). Main vegetables are shown in the following table. Out of these, main products whose production exceeds 100,000 ton are shallot (red onion), potato, cabbage, and chili.

**Table 3.1.1 Production of Major Vegetables in East Jawa Province (2008)**

| Vegetable | Shallot (Red Onion) | Potato | Cabbage | Mustard Green | Carrot | Chili (Incl. big and small) | Tomato |
|---|---|---|---|---|---|---|---|
| Production (ton) | 205,829 | 112,509 | 174,669 | 52,260 | 50,387 | 237,519 | 48,262 |

Source: The detailed planning survey report (Data Produksi Hortilultura Di Jawa Timur Tahun 2008)

Production trend of major three vegetables for the last four years is shown in the following figure.




Note: Data between central and province are slightly different
Source: Statistik Indonesia 2009 and 2010

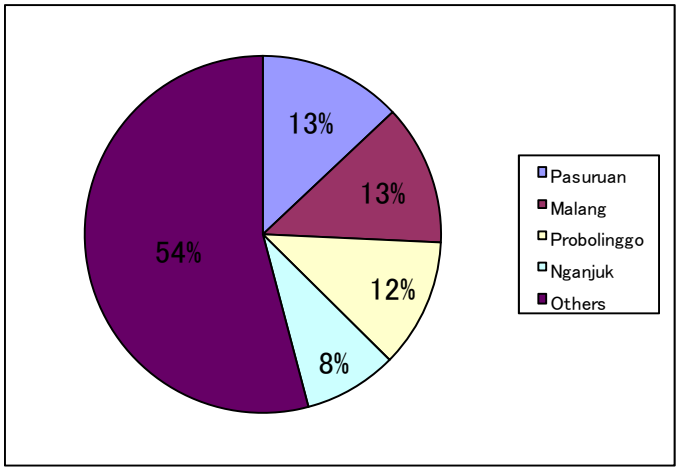
**Figure 3.1.1 Production Trend of Major Three Vegetables 2007-2010**

This graph shows relatively stable tendency of vegetable production, and its tendency could continue unless drastic changes of environments occur.

**2) Malang Regency (Kabupaten)**

This STA is located near Batu and Pujon in Malang Regency, which is almost in the middle of East Jawa Province. Elevation of the area is around 1,000m; climate is cool, and therefore the nearby area is famous for producing vegetables. Vegetable production of Malang Regency indeed occupies 13% of total provincial production of vegetable (there are 38 regencies and cities), as the second largest. The first largest vegetable production is in Pasuruan Regency, which is located north east adjacent from Malang Regency, and these two regencies produce one fourth of total provincial vegetable production as shown in the following figure.

[1] It should be noted that depending upon the statistical books (e.g. national level, provincial level, kabupaten level, or among provinces etc.), kinds of vegetables, which are used for the summation, are different to make total vegetable production.



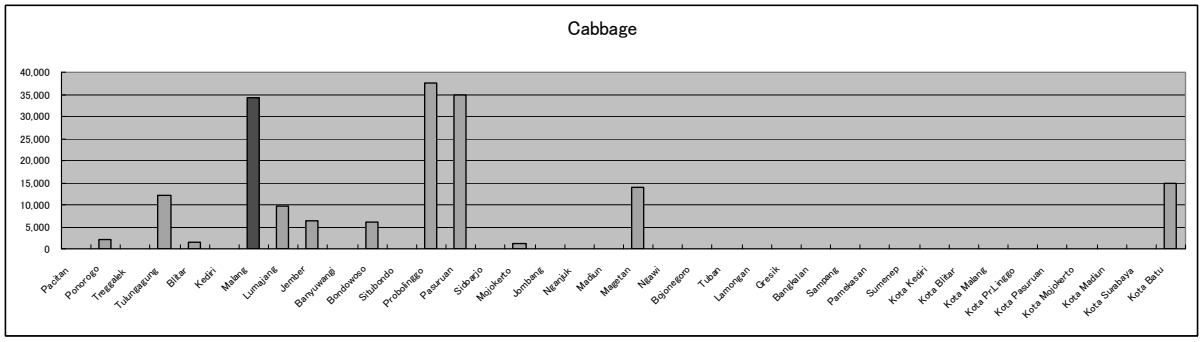


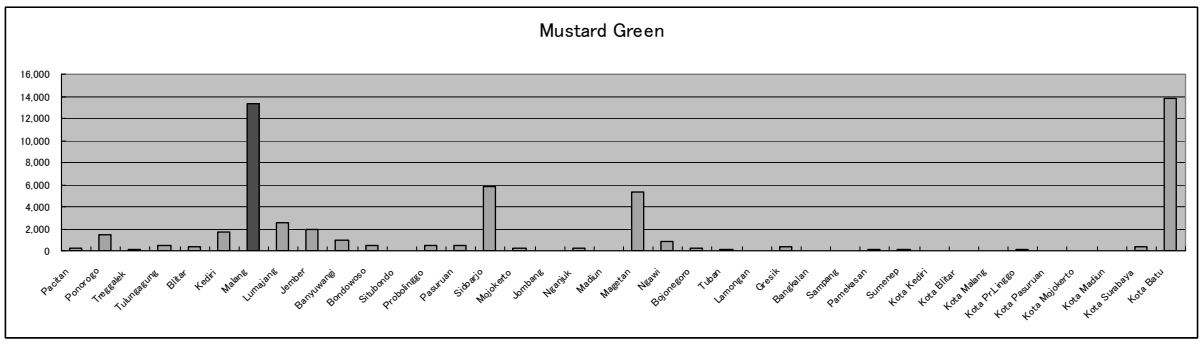
Source: The detailed planning survey report (Data Produksi Hortilultura Di Jawa Timur Tahun 2008)

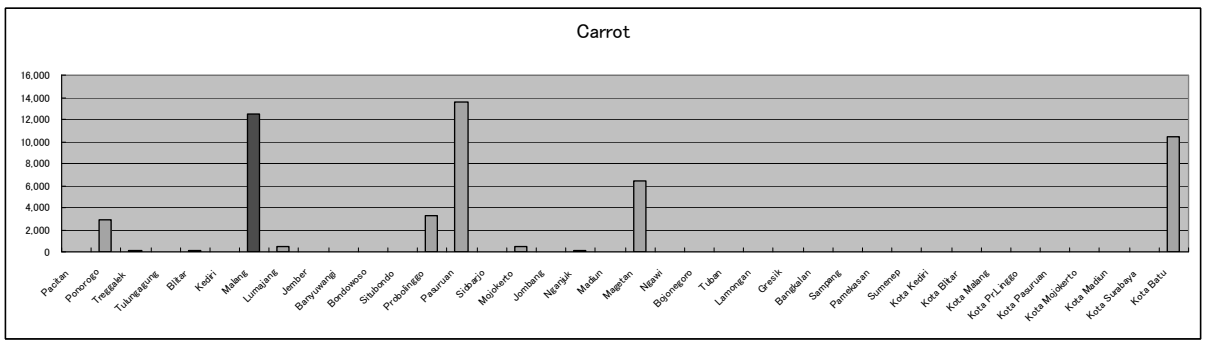
**Figure 3.1.2 Map of East Jawa Province and Proportion of Vegetable Production of Regencies and Cities (2008)**

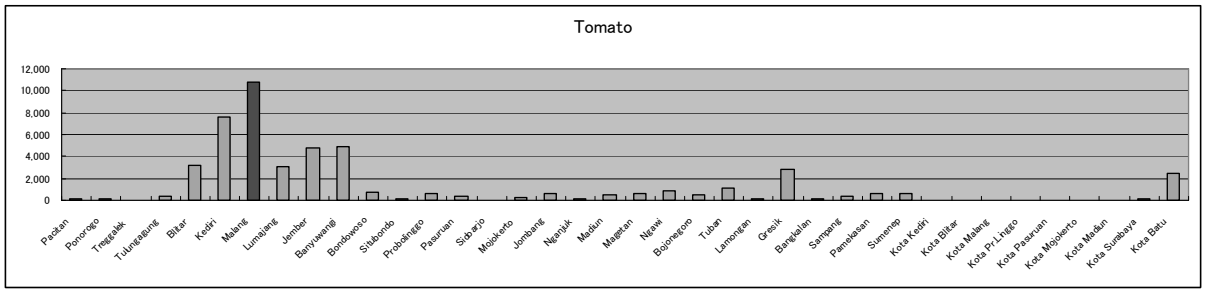
As shown below, in the province, Malang Regency is the major producing area of cabbage, mustard green, carrot, and tomato compared to other regencies.

(unit: ton/year)



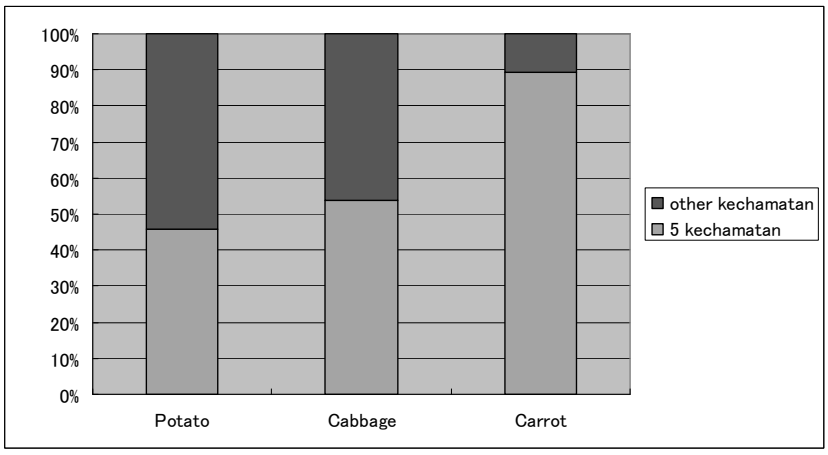



Source: A detailed planning survey report (Data Produksi Hortilultura Di Jawa Timur Tahun 2008) (unit is ton/year)

**Figure 3.1.3 Production of Major Vegetables by Regencies and Cities in East Jawa Province (2008)**

### 3) Surrounding Area of STA Mantung

Total vegetable production in Malang Regency was 160,000 tons in 2008[2]. Out of these, cabbage, chili, mustard green, carrot, and potato are the major vegetables compared to others in the regency. This regency is divided into 33 sub-regencies (kechamatan), and vegetables in the STA are collected mostly from Pujon, where this STA is located, Tumpang, Ngantang, Poncokusumo, and Wajak sub-regency. Production of major vegetables, namely cabbage, carrot, and potato in these five sub-regencies occupied more than half of total production, showing that these five sub-regencies are the major producing area of vegetable in the regency.




Source: The detailed planning survey report (internal data as of 2008 obtained from Dinas Pretanian Kabupaten Malang)

**Figure 3.1.4 Proportion of Major Vegetable Production of Five Sub-regencies (2008)**

Cropping Pattern in the surrounding area is shown as follows.

| month / Vegetables | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | rainy season | | | | | dry season | | | | | |
| Cabbage | | ⇐ = | = ⇒ | harvesting | | | | | | | sowing | |
| Carrot | | | ⇐ = | = ⇒ | | | | | | | | |
| Cauliflower | | ⇐ = | = ⇒ | | | | | | | | | |
| White Chinese Cabbage | | ⇐ = | = ⇒ | | | | | | | | | |

Source: The detailed planning survey report (hearing at the STA office)

**Figure 3.1.5 Cropping Pattern of Major Vegetables in Surrounding Area of STA Mantung**

Generally, vegetables are sowed at the beginning of rainy season (November-December) and harvested around February-April. For reference, annual rainfall in East Jawa Province was 1,515mm, and

[2] Data Produksi Hortilultura Di Jawa Timur Tahun 2008

number of rainy days is 141days both in 2007 (BPS).

**4) Production and Demand Balance of Vegetables in Malang Regency**

Balance of demand and production of vegetables in Malang Regency is examined. Population of Malang Regency was 2.4 million as of 2007. According to Food Balance Sheet of FAOSTAT, per capita consumption of vegetable was 37 kg/year (2007). Demand of vegetable is estimated as around 90,000 ton/year. As mentioned, annual production of vegetable in this regency is 160,000 tons, therefore, around 70,000 ton/year of vegetable is assumed as production-surplus and are o be shipped to other regencies. This area is a vegetable-supplying area to other places.

**(2) Current Condition of Distribution Flow and Operation of STA Mantung**

**1) Background of STA Mantung**

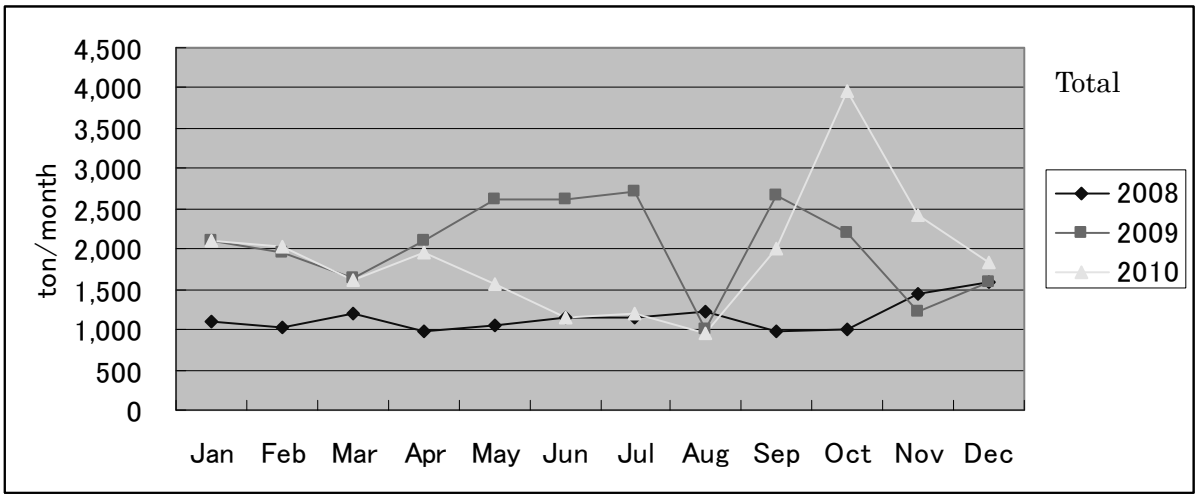
Of three STAs assisted by the central government in East Jawa Province (refer to (3) 1)), the operation and management of STA Mantung is highly evaluated by the central government. The STA is located in Pujon sub-regency, Malang Regency, 25 km west from Malang city with 1,000 m elevation. The STA faces a provincial road where 20-ton level trucks can use, therefore its access is considered adequate.

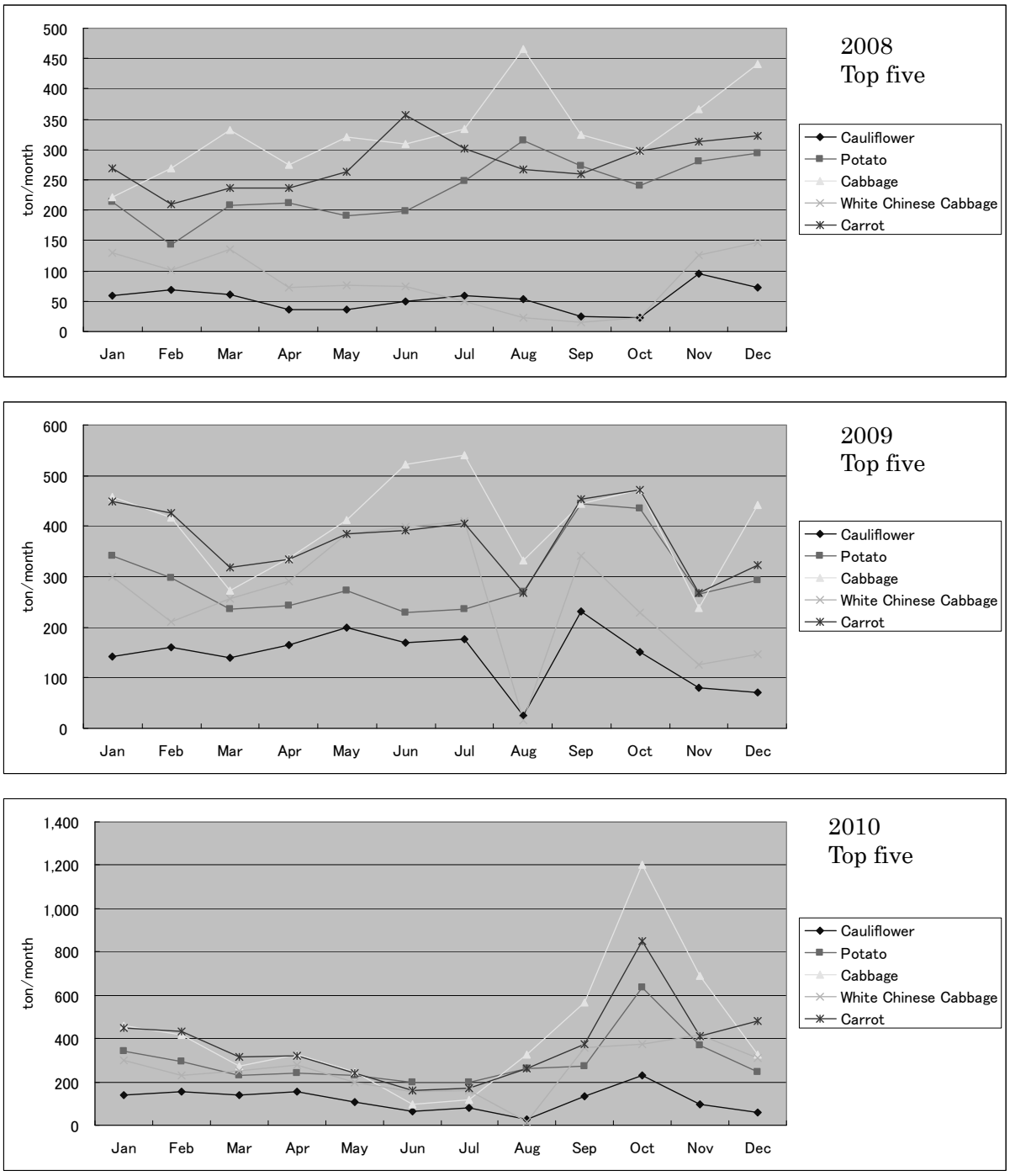
The government of Malang Regency in East Jawa Province submitted a proposal for establishment of STA in the regency to the Ministry of Agriculture of the central government referring to the policy of STA development by the central government, and it was approved. Pujon sub-regency as a site was selected as a center of vegetable production. The selected site was originally a coffee farm owned by the regency government; hence there was no problem of land acquisition. At the time of selection, there had been some small-scale vegetable transcation by producers and traders. The basic plan of the STA was prepared by experts of an university in Malang, and detailed design by local consultants in Jakarta under the contracts with the regency government. Construction was implemented for two years from 2002 to 2004, and the cost of which was 2.5 billion Rp, as a grant from the central government. The operation of the STA commenced in April 2004.

**2) Commodity**

Commodities transacted in STA Mantung are around 15 kinds of vegetables such as potato, cabbage, carrot, white chinese cabbage, cauliflower, leek (spring onion), onion, beans, tomato, and chili. According to the staffs in the STA office, transactions are relatively active during January and June, but they are less active from July to December. This can be attributed to changes of production volume in the surrounding area due to dry and rainy season. To keep transaction volume stable, the office makes efforts to increase vegetables especially during dry seasons when harvested vegetables are less, by purchasing commodities from other parts of Indonesia.

Data of transaction volume for three years (2008-2010) is shown in the following graph.






Note: Data missing for these months (2009 September: for 3 days, 2009 November: for 16 days, and 2010 September: for 5 days)
Source: Computer data obtained from the STA office

**Figure 3.1.6 Monthly Trend of Transaction Volume of Vegetable (2008-2010)**

Top five commodities, which have the largest transaction volumes, are same for three years, namely cabbage, carrot, potato, white Chinese cabbage, and cauliflower. For these three years data, patterns of seasonal fluctuation seem to vary for each year. Though monthly production data in the surrounding area is not available, this suggests that transaction volume may not be related to production volume in the neighborhood assumed from cropping pattern.

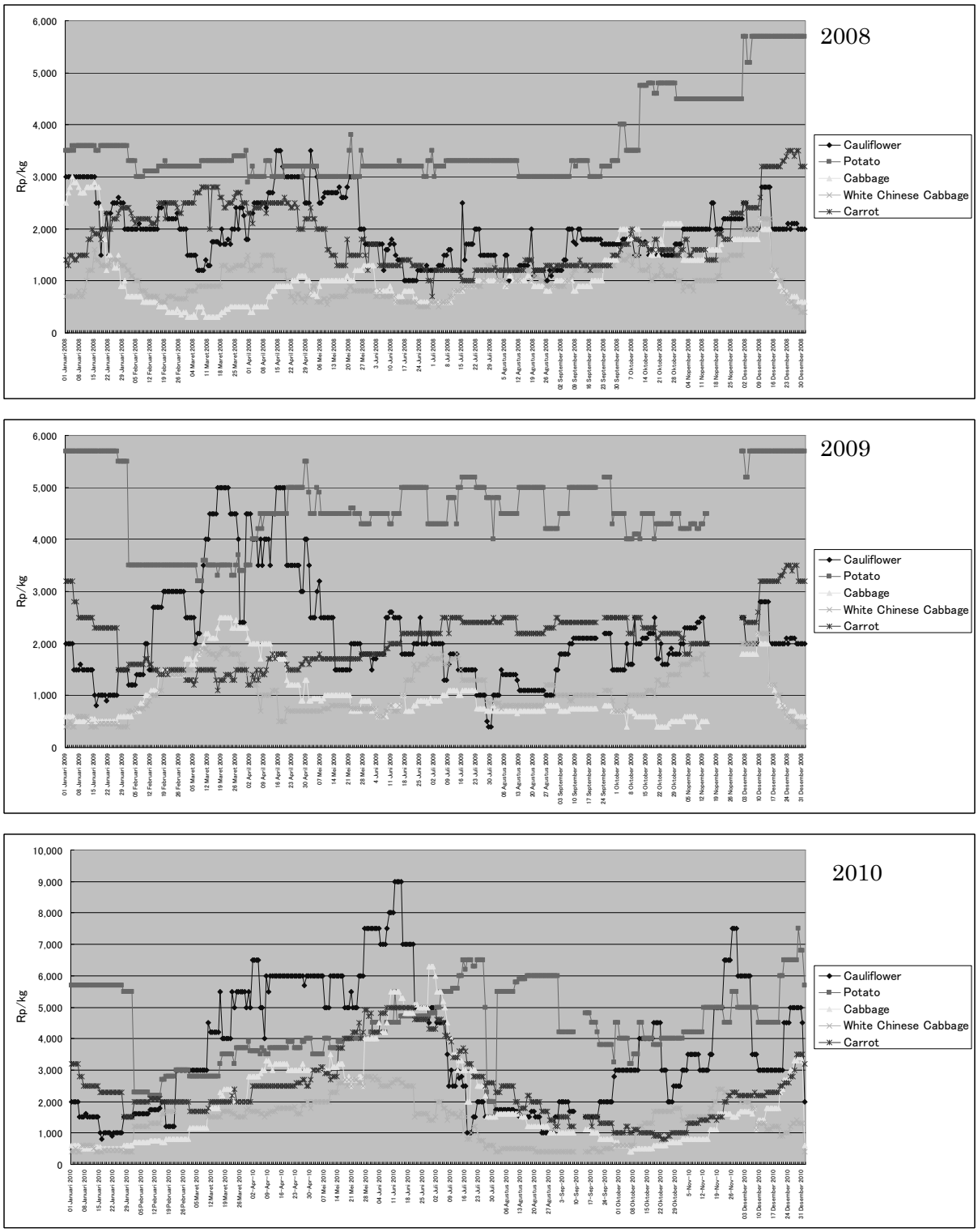
Data of three-year transaction is summarized in the following table.

**Table 3.1.2 Daily Transaction Volume of Vegetable (2008-2010)**

| Year | 2008 | 2009 | 2010 |
|---|---|---|---|
| Daily Transaction (ton/day) | 38 | 67 | 62 |

Source: JICA study team

Except for 2008, daily transaction volume of the STA is assumed as around 65 ton/day.
Daily price of major five vegetables from 2008 to 2010 is shown below.




Note: Data missing in Sept 2009 for for 3 days, Nov. 2009 for16 days, & Sept 2010 for 5 days.
Source: Computer data obtained from the STA office

**Figure 3.1.7 Trend of Daily Vegetable Price (2008-2010)**

General tendency could be the prices are higher in the first half of the year and lower in the last half. Fluctuations of price for all vegetables are large in a year. The following table shows an analysis of price fluctuation.

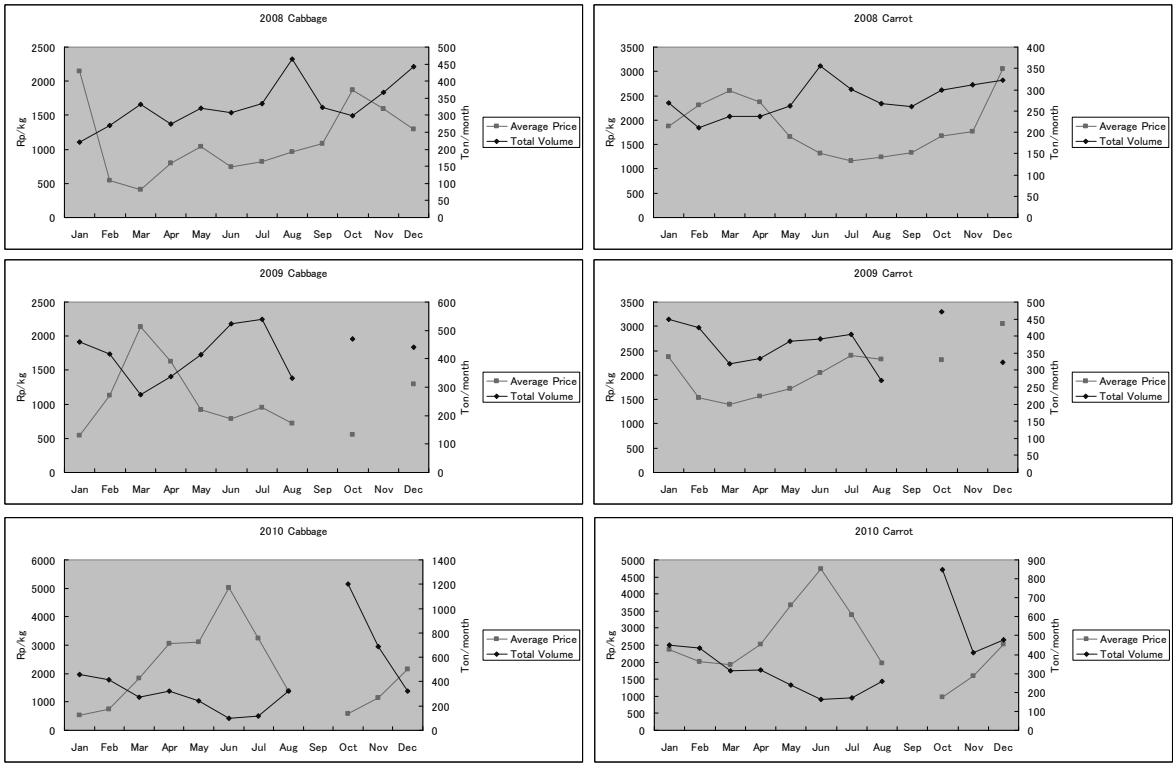
**Table 3.1.3 Analysis of Price Fluctuation for Five Vegetables (2008-2010)**

| Year | Item | Cauliflower | Potato | Cabbage | White Chinese Cabbage | Carrot |
|---|---|---|---|---|---|---|
| 2008 | Max (Rp/kg) | 3,500 | 5,700 | 3,000 | 2,200 | 3,500 |
| | Min (Rp/kg) | 1,000 | 2,900 | 300 | 400 | 700 |
| | Max/min | 3.5 | 2.0 | 10.0 | 5.5 | 5.0 |
| 2009 | Max (Rp/kg) | 5,000 | 5,700 | 2,500 | 2,200 | 3,500 |
| | Min (Rp/kg) | 400 | 3,200 | 400 | 400 | 1,100 |
| | Max/min | 12.5 | 1.8 | 6.3 | 5.5 | 3.2 |
| 2010 | Max (Rp/kg) | 9,000 | 7,500 | 6,300 | 2,800 | 5,000 |
| | Min (Rp/kg) | 800 | 1,600 | 400 | 400 | 800 |
| | Max/min | 11.3 | 4.7 | 15.8 | 7.0 | 6.3 |

Source: JICA Study Team

According to the data, range of price fluctuation is around 2~16 times. Cabbage has the biggest fluctuation for three years.

For major two vegetables (cabbage and carrot), relationship between transaction volume and price is analyzed.



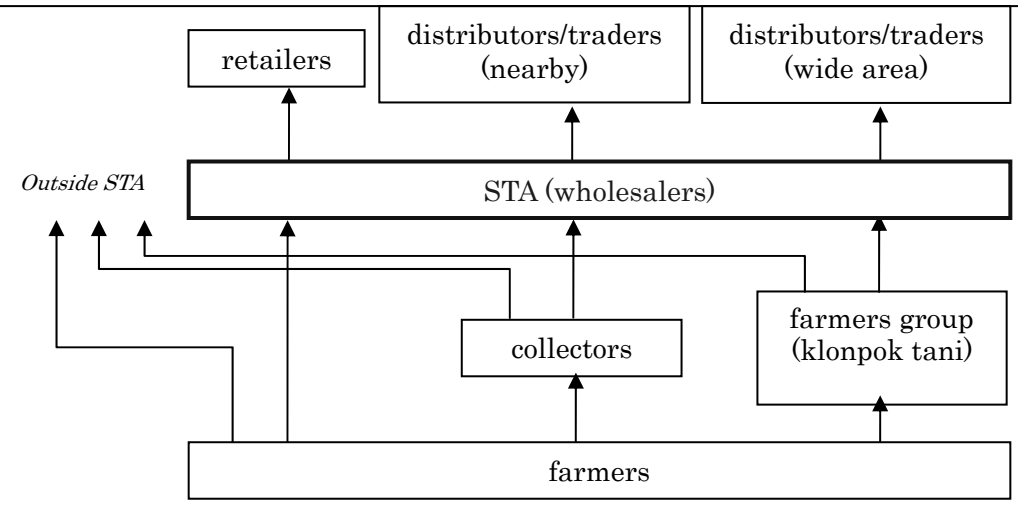

Note: Data missing in Sept 2009 for for 3 days, Nov. 2009 for16 days, & Sept 2010 for 5 days.
Source: JICA Study Team

**Figure 3.1.8 Relationship between Price and Transaction Volume**

This analysis indicates that price is sensitive to transaction volume. As volume increases, price goes down. Thus, it is important to make efforts to deal with stable volume to keep price constant.

### 3) Distribution Flow

Distribution flow in this surrounding area is summarized as follows.



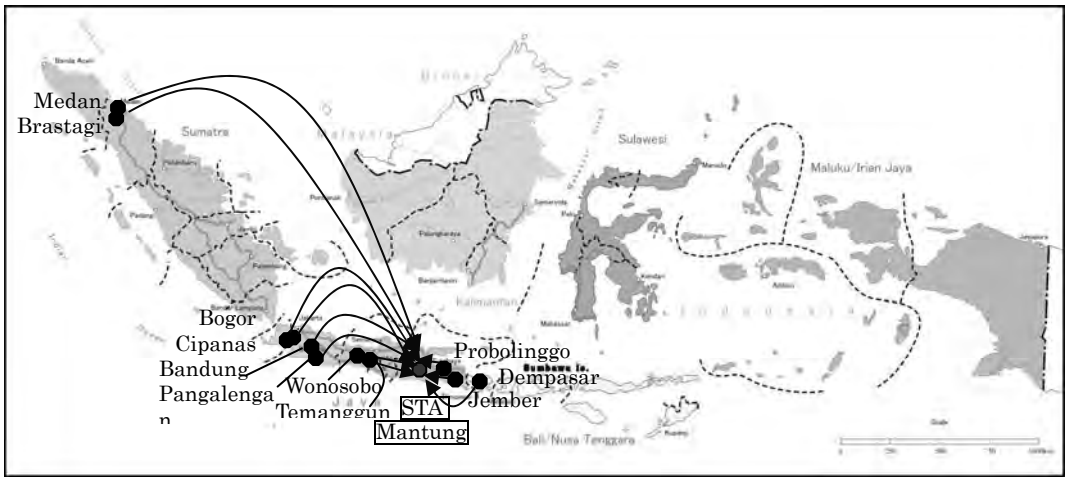

Source: The detailed planning survey report (hearing from farmers), modified by the study team

**Figure 3.1.9 Distribution Flow of Vegetable**

Farmers, farmers' group, and collectors bring vegetables to STA. At the STA, wholesalers buy vegetables and sell them to retailers and distributors (both in nearby areas and wide area). According to the hearing the farmers do not pay much attention to quality of vegetables.

Vegetable production in the surrounding area of the STA (five sub-regencies) is around 80,000 tons (half of 160,000 tons of the regency total). Annual transaction volume in the STA is about 23,725 ton (65 ton/day x 365 days), which is less than the estimated vegetable production in the surrounding area, indicating that flows other than the STA are also active.

Geographical distribution of areas that supply vegetables to the STA (wider area) is shown as follows.




| Location | Province | Vegetable Supplied |
|---|---|---|
| Medan, Brastagi | North Sumatera Province | Potato |
| Bogor, Cipanas | West Jawa Province | Carrot |
| Pangalengan, Bandung | West Jawa Province | Beans, potato |
| Wonosobo | Central Jawa Province | Potato |
| Probolinggo | East Jawa Province | Leek, potato |
| Jember | East Jawa Province | Cabbage |
| Dempasar | Bali Province | Cabbage, cauliflower |

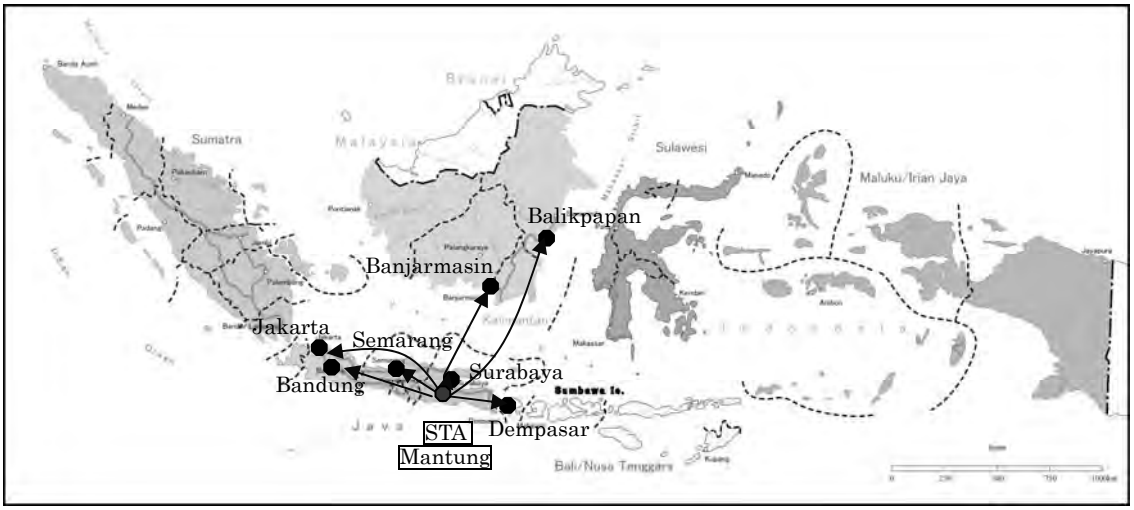
Source: The detailed planning survey report (hearing at the STA office and brochure)

**Figure 3.1.10 Geographical Distribution of Areas which Supply Vegetables to the STA (wider area)**

As mentioned, the STA has already made efforts to buy vegetables from outside the neighborhood when fewer vegetables are produced in the surrounding area. The other provinces in the Jawa island are the major places which supply vegetables, however, potato for instance is collected from North Sumatra Province.

For the area nearby areas, vegetables are collected from Pujon, Tumpang, Ngantang, Poncokusumo, Wajak sub-regency, and Batu city as described.

Similarly, geographical distribution of areas to which vegetables are sent from the STA (wider area) is shown as follows:




| Location | Province | Vegetable Sent |
|---|---|---|
| Dempasar | Bali Province | Cabbage, carrot, potato, and leek |
| Surabaya | East Jawa Province | Cabbage, carrot, potato, and leek |
| Balikpapan | East Kalimantan Province | Cabbage, carrot, potato, and leek |
| Banjarmasin | South Kalimantan Province | Cabbage, carrot, potato, and leek |
| Semarang | Central Jawa Province | Cabbage |
| Jakarta | DKI Jakarta | Cabbage |
| Bandung | West Jawa Province | Cabbage |

Source: The detailed planning survey report (hearing at the STA office and brochure)

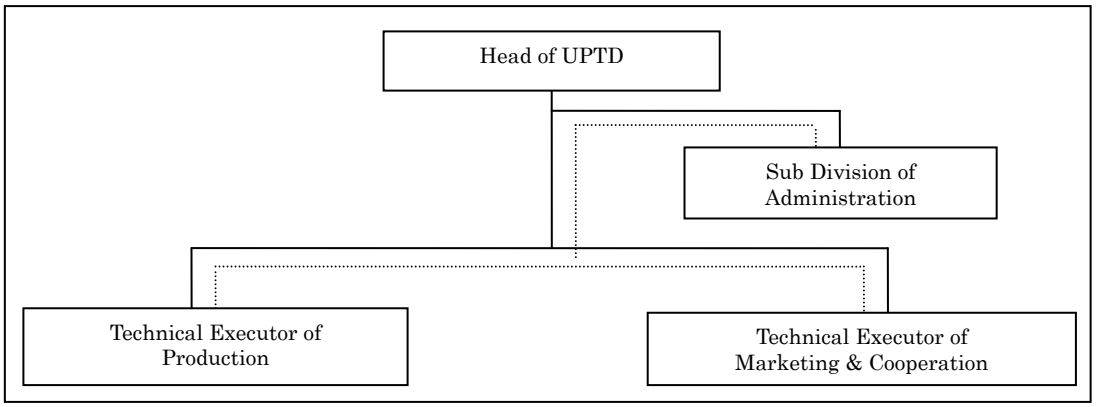
**Figure 3.1.11 Geographical Distribution of Areas To which Vegetables Are Sent from the STA (wider area)**

This STA sends mostly vegetables to large consumption areas in Jawa Island (including Bali), and Dempasar, Surabaya, Semarang, Jakarta and Bandung. In addition, vegetables in the STA are sent to the Kalimantan Island where vegetable production is less, indicating the STA establishes a wider trading domain. Vegetables are also sold to nearby places, Kediri and Sidoarjo.

**4) Operation and Management of STA**

Management Body

The government of Malang Regency manages STA Mantung. Until 2010, the agency of industry, trade and market was the management body of the STA, but since 2010 it is managed by the agency of agriculture and plantation by establishing UPTD (technical implementing unit). Organization chart of UPTD is shown in the following figure.




Source: Profile Sub Terminal Agribis (STA) Mantung-Pujon

**Figure 3.1.12 Organization Chart of STA Mantung**

Staffs in the STA office (UPTD) are government officers hired by the government of Malang Regency, and the government pays their salaries. Therefore income of the STA basically goes to the government. As of October 2009, number of staffs in the STA office was 16, and there have been no major changes since May 2011. The STA is open for 24 hours and 365 days, however, the office is closed on Sundays.

The STA office sends information of its transaction such as price and volume to sections in charge of Malang Regency and East Jawa Province. This information is stored in the computer of the office.

Stakeholders in the STA are, 1) staffs of the STA office, 2) sellers of vegetables (farmers, farmers' groups, and collectors), 3) wholesalers in the STA, 4) buyers of vegetables (retailers, distributors/traders (nearby and wide area)), and 5) porter labours in the market.

The STA is now managed by the agency of agriculture and plantation of Malang Regency; a change from the agency of industry, trade and market in 2010. By this change, functions of agriculture extension such as provision of farm input, technical advice, and credit have been emphasized in addition to those of market.

Income

Income source of the STA is collection of fees. Fees are mainly of two kinds, namely 1) rental fee for booths (monthly basis) and 2) entry fee for cars (each time). The followings are unit price for those fees.

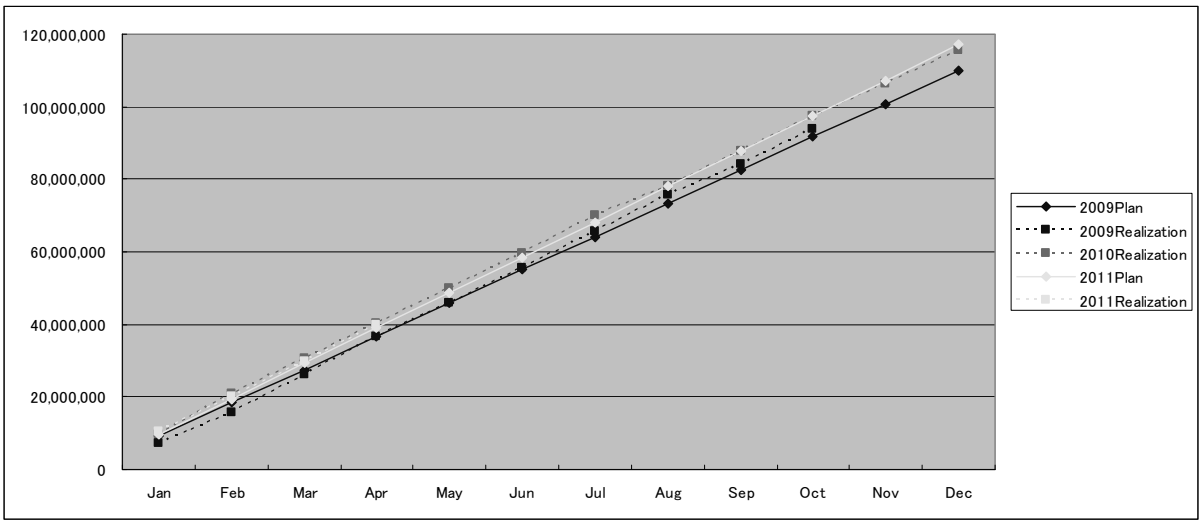
| | | | |
|---|---|---|---|
| a | Rental fees for booths | type GA booth with key (18 $m^2$ x 13 booths) | 391,500 Rp/month |
| | | type GB booth with key (18 $m^2$ x 17 booths) | 337,500 Rp/month |
| | | type GC storage with key (18 $m^2$ x 10 storages) | 337,500 Rp/month |
| | | type RB, RC booth open (34 $m^2$ x 13 booths) | 117,000 Rp/month |
| | | type RS booth open (64 $m^2$ x 2 booths) | 131,625 Rp/month |

(Remark) For actual usage, a single wholesaler uses a booth with a key, while several (2~4) wholesalers use an open-type booth, and they share the rental fees.

| | | | |
|---|---|---|---|
| b | Entry fee for cars | Big size truck | 4,000 Rp/time |
| | | Medium size truck | 3,000 Rp/time |
| | | Small size truck | 2,000 Rp/time |
| | | Motorcycle | 1,000 Rp/time |

There are also other fees/income such as a fee for load/unload (1,000 Rp/sack above 150kg/sack, 500 Rp/sack below 150kg/sack).

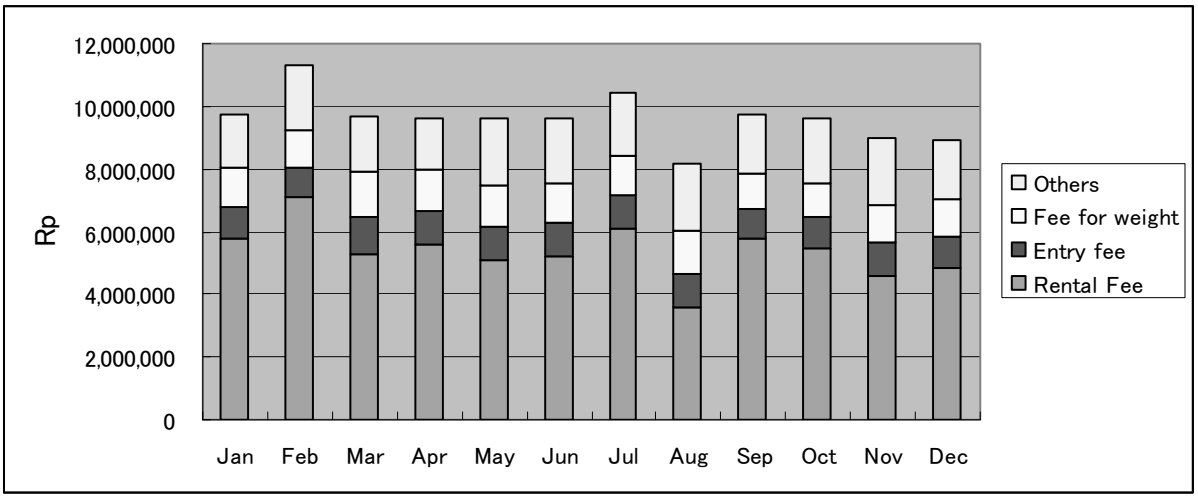
The following table shows income of the office for several years.




Source: the STA Office

**Figure 3.1.13 Income of STA Mantung (2009-2011)**

According to this table, average annual income for three years is around 114 million Rp, which has not been a huge difference, indicating that income of STA Mantung is stable. The following figure indicates shares of the income source.




Source: the STA Office

**Figure 3.1.14 Share by Income Source (2010)**

In 2010, around 56% on average was from the booth rental fee. Income in the first half of a year is relatively higher than that in the last half.

Expenditure

Expenditure of the STA consists of salary of the staffs, electricity, and administrative miscellaneous expenditures (meeting expenditure, report printing, computer, printer, etc.). Water is considered at no cost because of spring water. Detailed figures of expenditure were not available.

Current Condition of Utilization

According to the staff in the STA office, current utilization of STA, especially booth utilization rate is around 75% on average (it would be higher during Jan and Jul, and lower during the rest of a year than 75%). The number of vehicle entering is assumed around 3,000 per month on average, ranging from 2,500 to 3,500.

Balance of Income and Expenditure

Since the income (revenue) is paid to the government, necessary fund for the STA to meet required

expenditure cannot be clearly separated from the total government budget. A rough examination is attempted to understand the balance.

For the expenditure, a major part is the salaries; total annual salary is estimated around 220 million[3] Rp. In addition, some administration expenditures have to be added. Annual income is officially around 114 million. Therefore, with the salaries of 220 million, the current income is not enough.

On the other hand, assuming income is estimated based on information of the utilization, income from the rents is around 139 million[4] (actual 64 million in 2010); entry fee is around 108 million[5] (actual 13 million); and fee for weighing is 95 million[6] (actual 15 million); this indicates that income can be increased more in order to cover all the expenditures including salaries.

Information

Initially three desktop computers were installed, however there is only one computer, which can be used (two were out of order). There is a telephone line without fax, and no photocopy machine.

There is an information board in the office, which provides price information at several consumer places. E-mail is used since 2006 for a smooth communication (stamantung_kabumalang@yahoo.com). Moreover, there is a website for STA Mantung (http://mantung.malangkab.go.id). These computer-based information gateways are only used among the government agencies, not by farmers who do not use computers.

Actually on the ground, stakeholders of this STA (sellers, wholesalers, buyers) are often using mobile phones to get market information.

**5) Facilities of STA**

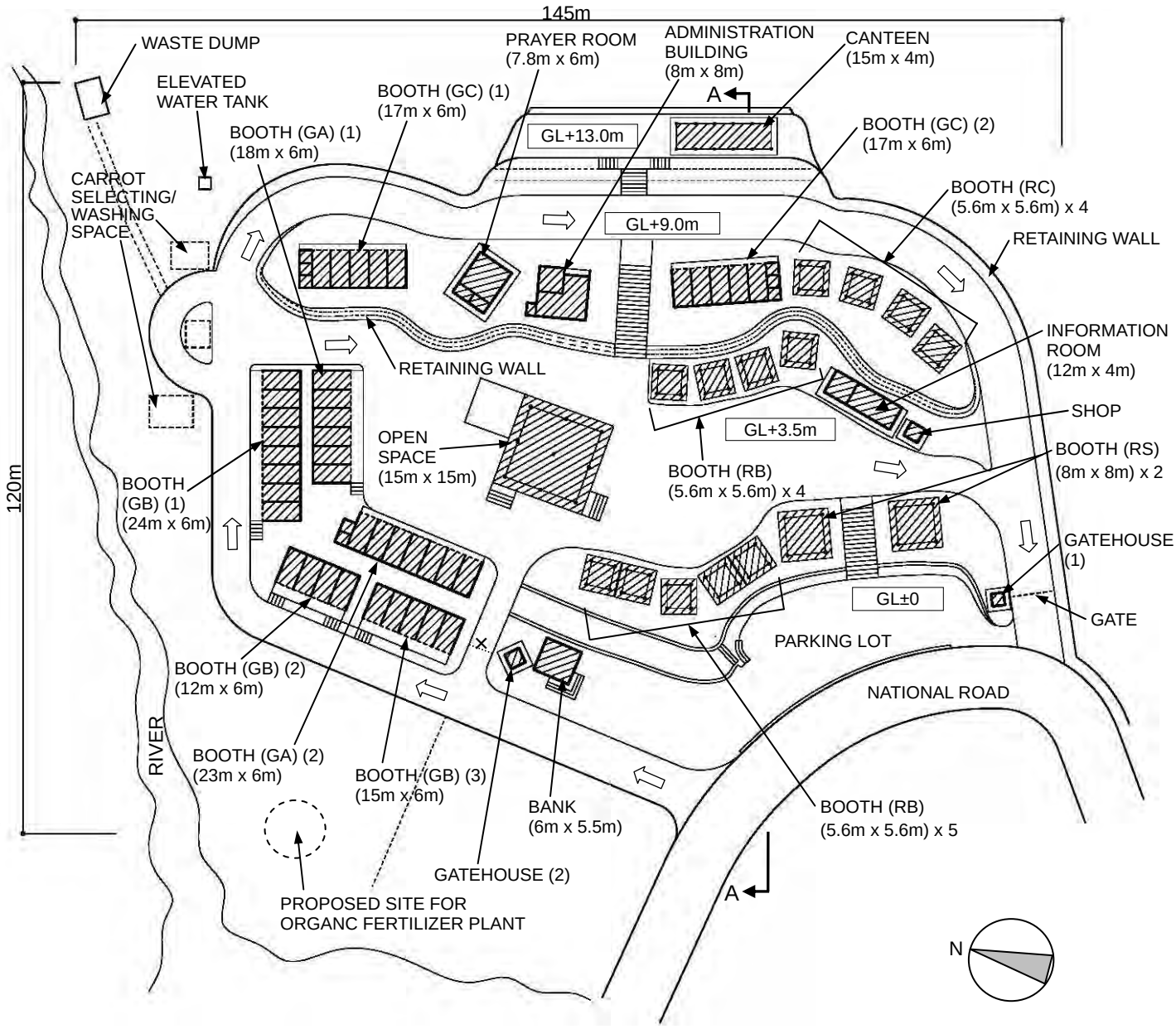
Facilities of the STA are explained as below. Layout plan is also shown in the following figure, and a detail list of facilities is shown in Appendices 5.2.

[3] The detailed planning survey report

[4] Calculated by the booth fee considering 75% of utilization rate

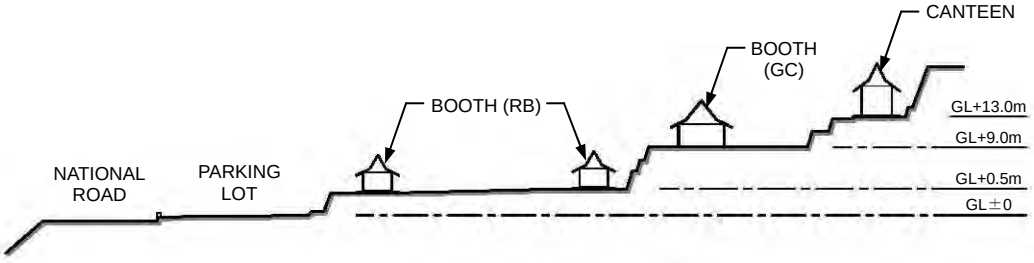
[5] 3,000 vehicles/month x 3,000 Rp x 12 months

[6] 65 ton/day x 365days x 600 Rp/150kg-sack




Source: JICA Study Team

**Figure 3.1.15 Layout Plan of the STA Mantung S=1:1,000**




Source: JICA Study Team

**Figure 3.1.16 Section A-A S=1:1,000**

STA Site

The site of STA Mantung is located at a height of around 1,000 m above sea level, and total site area is approximately 1.5 ha. The steep sloping terrain facing the national road was developed into four levels of terrace ground for the STA. Sloping roads and outdoor stairs connect each STA facility. The maximum difference of height of the ground level in the site is approximately 13 m. Therefore, a few retaining walls and sloping roads are provided in the site and it makes hard to use some parts of the facility clearly. The site is bordered on the west by the national road, and on the north by the river. The boundary to the south and east of the site is marked by retaining walls.

Situation of Facility Management

The facility of STA Mantung was built in 2002-2004 and is operated by the agency of agriculture of Malang Regency, for 24 hours a day. The driveways on the premise are one-way traffic and a crossing bar is installed to collect vehicle fee at the exit gate.

Outline of Utility

*Electric Power Supply*

Electric power is supplied through overhead power line of the national road by single-phase three-wire system, 230/400V, and 50Hz.

*Telephone*

Telephone line is installed to the administration building.

*Water Supply*

An elevated water tank and well pumps are installed at the northern area of the site; however, they are not used due to mechanical failure of well pumps. Currently, spring water is provided to each facility by gravity flow, and sufficient volume of water can be obtained.

*Drainage*

Rainwater is drained to outside of the site using road ditches. Septic tanks are installed in the site for sewer water from toilets.

Outline of Buildings

*Administration Building*

The administration building is made of bearing brick wall and consists of office room, manager's room and toilet. Two personal computers and a printer are provided in the office room (One is out of order).

*Prayer Room*

The building for Muslim prayers is located next to the Administration Building.

*Open Space Building*

The open space building is made of structural steel frames with roof and has no wall. It is located at the center of the site and the floor level of the building is 0.8-1.2 m higher than the surrounding ground level. Although it is originally considered as a space for auction, transaction by negotiation is conducted instead of auction.

*Rental Booth*

Rental booths are used as transaction space for traders. There are six types of rental booth buildings: Type GA, GB, GC, RB, RC, and RS. Total number of buildings is 22. Number of buildings/booths and floor area of each type are as described below:

- Type GA: 2 buildings; (1) 108 $m^2$, 6 booths; (2) 132 $m^2$, 7 booths with toilet
- Type GB : 3 buildings; (1) 144 $m^2$, 8 booths; (2) 74 $m^2$, 4 booths; (3) 90 $m^2$, 5 booths
- Type GC: 2 buildings; (1) 102 $m^2$, 5 booths with toilet; (2) 102 $m^2$, 5 booths with toilet

- Type RB: 9 buildings; 34 $m^2$/each
- Type RC: 4 buildings; 34 $m^2$/each
- Type RS: 2 buildings; 64 $m^2$/each

Buildings of type GA, GB, and GC are made of reinforced concrete frame, brick wall, and steel wire mesh partition. Each building has compartment of 18 $m^2$ (6 m x 3 m) and total number of compartments is 40. Steel wire mesh doors are provided at the front face of each compartment. Buildings of type RB, RC, and RS are made of structural steel frames and have no wall.

Two buildings of type GB ((1) and (2)) are facing steep sloping road and there is considerable difference in height between floor level of the building and facing road level. It makes it difficult to use the facility, and all the booths of these buildings are not used now. Some booths of the type GB building (3) are used as grocery shops and small restaurants. One building of type GC (1) is not used. The type GC building (2) and all of type RC buildings are currently used as temporary storage for agricultural products such as cabbage.

*Information Room*

The information room building was built for the purpose of exhibition regarding agricultural technology; however, it is not used now.

*Shop*

A small grocery shop is located next to the Information Room.

*Gatehouse (1) (2)*

Two gatehouses ((1) and (2)) are placed in the site. The gatehouse (1) is located at the southern part of the site with crossing bar and the vehicle fee is collected at this point. The gatehouse (2), which is currently not used, is located at the western part of the site.

*Bank*

The building that was used as a banking facility is not used now.

*Canteen*

The canteen building is made of wooden structure and located at the highest ground level in the site. Currently, it is not used and the roof of the building is partially deteriorated.

<u>Other Facility</u>

*Loading/Unloading Space*

The surrounding area of the open space facility and the rental booths are used as loading/unloading space for the commodity. Floor of the space is paved with paving bricks.

*Parking Lot*

Although the parking lot is provided at the western part of the site facing the national road, its use is less frequent.

*Outdoor Lighting*

Outdoor lighting equipment is furnished at the loading/unloading space and along driveways on a premise.

*Waste Dump*

Although the waste dump facility is provided at the northeastern area of the site near the river, it is not used now. Some garbage such as cabbage leaves is taken out of the site and provided as livestock feed for free of charge; however, the remaining is thrown away at the bank of the river. The STA is said to be planning to build a plant facility producing organic fertilizer from garbage at the northwestern area of the site.

*Carrot Selecting/Washing Space*

Two buildings for selecting and washing space of carrot are built and washing machines are installed at the northern area of the site. These buildings and washing machines were provided by private sector.

**(3) Current Condition of Other Nearby Markets**

**1) Other STAs in the Province**

According to the detailed planning survey report, there were six STAs in East Jawa Province (as of October 2009). Out of these, the Ministry of Agriculture of the central government financed three STAs, and respective regencies established the other three. Information of six STAs is shown in the following table and also in Appendices 5.2 for their location.

**Table 3.1.4 List of STA in East Jawa Province**

| No | STA | Location | Completion of construction | Fund source | Management | Main commodity |
|---|---|---|---|---|---|---|
| 1 | STA Mantung | Malang Regency Pujon sub-regency | 2004 | APBN | Regency government | Vegetable |
| 2 | STA Kota Batu | Malang Regency Batu, Kota Batu sub-regency | 2006 | APBN | Regency government | Vegetable |
| 3 | STA Bunga | Surabaya city | 2007 | APBN | City government | Vegetable and foliage plant |
| 4 | STA Nganijuk | not known | 2007 | APBD | Regency government | Vegetable and cereal |
| 5 | STA Lumajang | not known | 2008 | APBD | Regency government | Vegetable and cereal |
| 6 | STA Magetan | Magetan Regency Magetan sub-regency | 2000 | APBD | Regency government | Vegetable and cereal |

Source: The detailed planning survey report (hearing at Dinas Pretanian at East Jawa Province)
Remarks: Fund source: APBN=national budget, APBD=regional budget. STAs no.4~6 are not known by the central government.

**2) New TAs near Surabaya**

Recently, two agriculture wholesale markets (TA) have been established near Surabaya. One is financed and managed by East Jawa Province, and the other is by a private investor. These two TAs can be places to which vegetables are sent from STA Mantung.

Pasar Induk Puspa AGRO

The provincial government established one big TA around 15 km south from the center of Surabaya city (one-hour drive). According to the initial plan, total area will be 50 ha, and now 30 ha have been developed. Roles of the TA are not only just wholesale (commodities are cereal, meat, fish, vegetable, and fruit), but also center for issuing quality certification, provision of accommodation for traders, equipment of cold storage/processing facilities, and provision of education. Partial usage has already been started though the plan has not yet been completed. Management is by a company established and invested by the province.

Pasar Induk Puspa AGRO

Pasar Induk Osowilangun Surabaya

In February 2010, this private TA commenced its operation. It is located along with the sea, around 10 km northwest from the center of Surabaya city (30-minute drive). The area of the TA is around four ha. Since it has just started, utilization rate of booth is only around 30%, according to the information from the staffs of the TA. The management company is now making efforts to raise the utilization rate.

Pasar Induk Osowilangun

**(4) Characteristics of STA Mantung**

Based on understanding of the above current conditions, characteristics of STA Mantung are summarized as follows:

A Good Example of STA

The STA is apparently running/functioning very well, following typical definition of wholesale market. The current facilities are basically utilized well except for booths/kiosks which do not have good accesses for load/unload.

Complicated Price and Volume Mechanism

Transaction volume in the STA seems not to be associated with cropping patterns in the surrounding area. One of the reasons can be that the STA establishes a wider trading domain; therefore the STA tries to increase volume of vegetables during seasons of less production in the nearby area. However, there are huge fluctuations in price for a year. Further efforts to minimize price difference are desired.

Some Improvements Suggested in the Management

Two points are observed. One is provision of marketing information. Currently, the STA provides price information at the office. However, demand and quality information has not yet been provided. Farmers and buyers need demand and quality information for their faming/business activities to envisage market-oriented agriculture. Further improvement on provision of information is expected.

The other is related to the management system. According to the rough examination, there is a room to increase income by making fee collection strict. Also, garbage system can be improved. These will be taken up in our recommendations.

### 3.1.2 STA Saribudolok (North Sumatra Province)

#### (1) Current Condition and Future Trend of Horticulture Products in the Surrounding Area

##### 1) North Sumatera Province

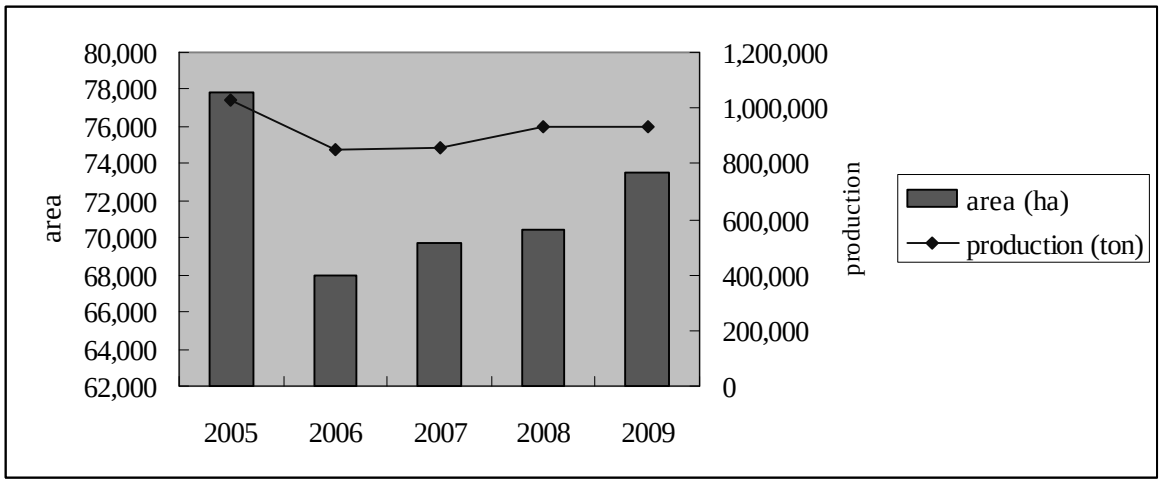
Agriculture in North Sumatera Province is characterized by its high productivity due to rich land and water resources, especially large production of vegetable and fruit in the vast highland around Toba Lake. Vegetable production[7] in the province was 930,000 tons (2009), and major vegetables grown are shown in the following table. Vegetables whose production exceeds 100,000 ton are potato, cabbage, and chili.

**Table 3.1.5 Production of Major Vegetables in North Sumatera Province (2009)**

| Vegetable | Potato | Cabbage | Mustard Green | Chili | Tomato | Cucumber |
|---|---|---|---|---|---|---|
| Production (ton) | 129,587 | 210,239 | 63,911 | 124,422 | 90,147 | 39,767 |

Source: Buku Lima Tahun Statistik Pertanian 2005-2009, Dinas Pertanian Propinsi Sumatera Utara 2010

Trends of production and harvested areas of vegetables from 2005 to 2009 (five years) are shown in the following figure.




Source: Buku Lima Tahun Statistik Pertanian 2005-2009, Dinas Pertanian Propinsi Sumatera Utara 2010

**Figure 3.1.17 Trend of Production and Harvested Areas of Vegetable 2005-2009**

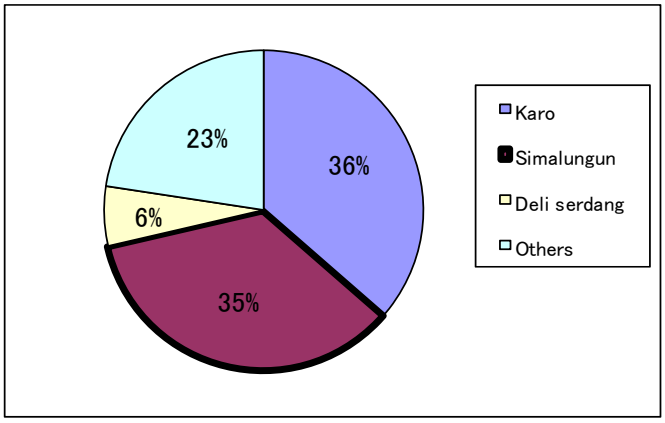
Although production and harvested areas decreased in 2006, production continued around 900,000 -1 million ton.

##### 2) Simalungun Regency (Kabupaten)

STA Saribudolok is located in Simalungun Regency, North Sumatera Province, on the north side of Toba Lake. Elevation is around 1,200 m, and the surrounding area is a highland like the area nearby STA Mantung. Climate is cool; terrain is relatively flat, and hence the area is suitable for vegetable production.

Vegetable production of Simalungun Regency where STA Saribudolok is located, is around 35% of total vegetable production in the province as shown in the figure below. Although the ranking is the second out of 27 regencies and cities, share of top three regencies (the first Karo and the third Deli serdang Regency, both are adjacent to Simalungun Regency) is almost three fourth of total provincial production, indicating that this northern part of the province is a large vegetable producing area.

[7] It should be noted that depending upon the statistical books (e.g. national level, provincial level, kabupaten level, or among provinces etc.), kinds of vegetables, which are used for the summation, are different to make total vegetable production.



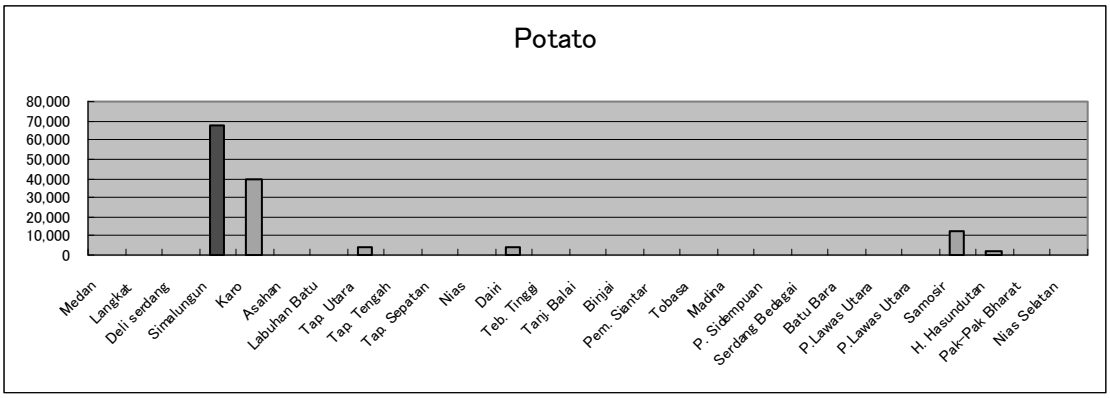


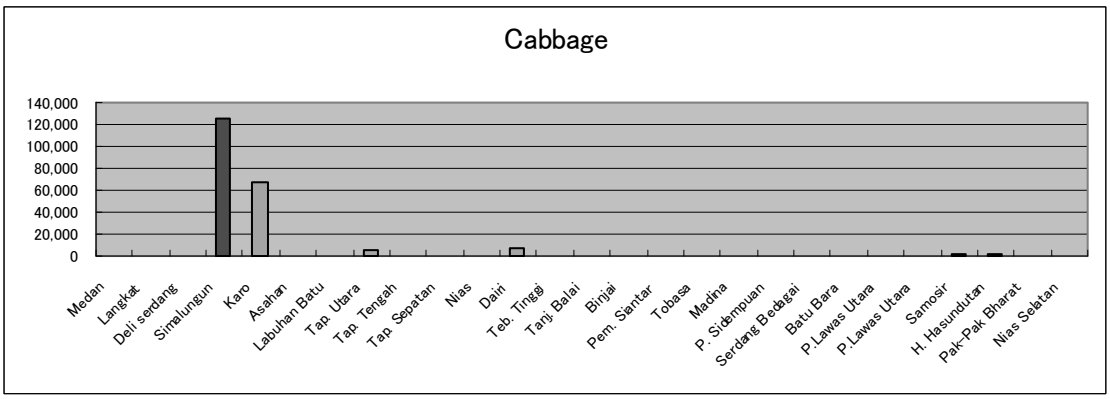
Source: Buku Lima Tahun Statistik Pertanian 2005-2009, Dinas Pertanian Propinsi Sumatera Utara 2010
*: Karo Regency is the area where “Kabanjahe” is mentioned in the map

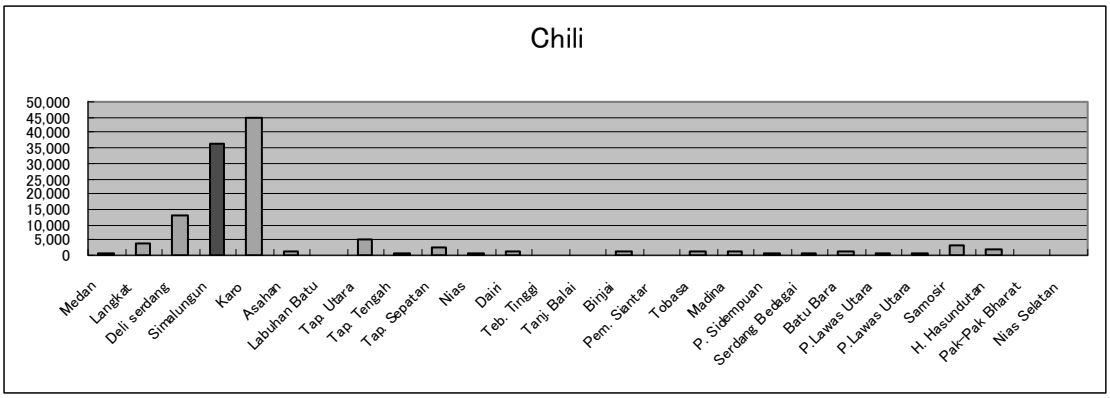
**Figure 3.1.18 Map of North Sumatera Province and Proportion of Vegetable Production of Regencies and Cities (2009)**

By variety of vegetable, the share of this regency out of total vegetable production of the province is high for potato, cabbage, and chili as indicated in the figure below.

(unit: ton/year)



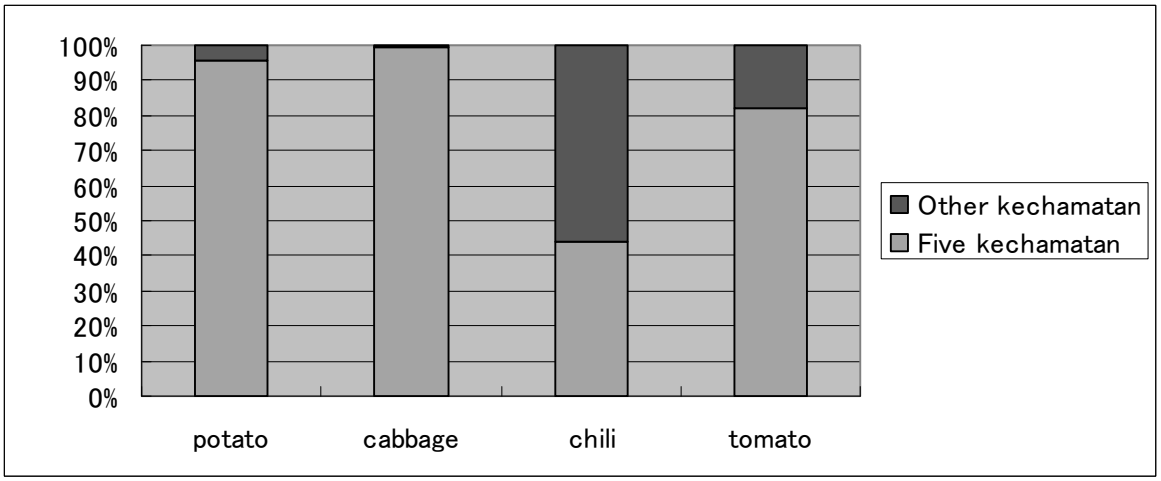



Source: Buku Lima Tahun Statistik Pertanian 2005-2009, Dinas Pertanian Propinsi Sumatera Utara 2010
Unit: ton/year

**Figure 3.1.19 Production of Major Vegetables by Regencies and Cities in North Sumatera Province (2009)**

### 3) Surrounding Area of STA Saribudolok

Simalungun Regency produced 324,724 ton[8] of vegetable in 2009, as the second-ranking vegetable producing regency in the province. The most produced vegetables in the regency are cabbage, followed by potato, chili, and tomato in this order. The regency is divided into 31 sub-regency (kechamatan), and five sub-regencies send vegetables to STA[9], namely, Silimakuta where this STA is located, Pematang Silimahuta, Purba, Haranggaol Horison, and Dolok Silau sub-regency The STA is opened only once a week. Share of major vegetable production in these five sub-regencies is more than 50% out of total regency's production, therefore, these sub-regencies are said to be a center of major vegetable production in the regency.



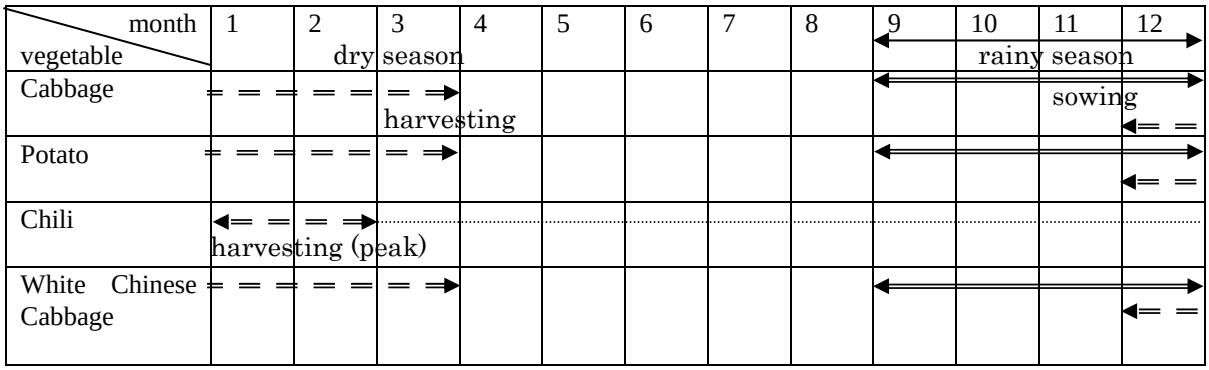

Source: The detailed planning survey report (Angka Tetap (ATAP) Tahun 2008 dan Angka Ramalan (ARAM) II Tahun 2009, Pemerintah Kabupaten SImalungun, Dinas Pertanian)

**Figure 3.1.20 Proportion of Major Vegetable Production of Five Sub-regencies (2008)**

Cropping Pattern in the surrounding area is shown as follows:

[8] Buku Lima Tahun Statistik Pertanian 2005-2009, Dinas Pertanian Propinsi Sumatera Utara 2010

[9] This information is referred to the detailed preparatory survey report. As of 2011 May, the activities of AGROMADEAR have been stopped, therefore number of sub-regencies may be smaller than five.




Source: The detailed planning survey report (hearing at the STA office in 2009)

**Figure 3.1.21 Cropping Pattern of Major Vegetables in Surrounding Area of STA Saribudolok**

Vegetables are in general sowed between September and December during rainy season and harvested between December and March. On the other hand, annual rainfall in this regency was 3,673mm (2008), and rain is available throughout a year as shown in the following table (rain is less during dry season, but it is available). Hence, vegetable can be grown throughout a year.

**Table 3.1.6 Rainfall and Rainy Days in Simalungun Regency (2008)**

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rainfall (mm) | 119 | 163 | 355 | 253 | 183 | 201 | 344 | 544 | 574 | 413 | 319 | 205 | 3,673 |
| Rainy days (day) | 14 | 7 | 21 | 10 | 12 | 15 | 17 | 15 | 22 | 22 | 18 | 18 | 191 |

Source: Simalungun in Figures 2009, BPS Kabupaten Simalungun

**4) Balance of demand and Production of Vegetables in Simalungun Regency**

Balance of demand and production of vegetables in Simalungun Regency is roughly reviewed. Population of Simalungun Regency was 853,112 in 2008. According to Food Balance Sheet of FAOSTAT, per capita consumption of vegetable was 37 kg/year (2007). Thus, food demand of vegetable is estimated around 31,565 ton/year. As mentioned earlier, the annual production of vegetable in this regency was 324,724 ton (2009), therefore, around 90% of its production is assumed as production-surplus and have to be shipped to other regencies. This area can also be a vegetable-supplying area to other places.

**(2) Current Condition of Commodity Flow and Operation of STA Saribudolok**

**1) Background of STA Saribudolok**

STA Saribudolok is located on the north side of Toba lake, around 100 km south from Medan (three-hour drive) in Simalungun Regency. Elevation is around 1,200 m, and access is considered good since the STA is close to the provincial road.

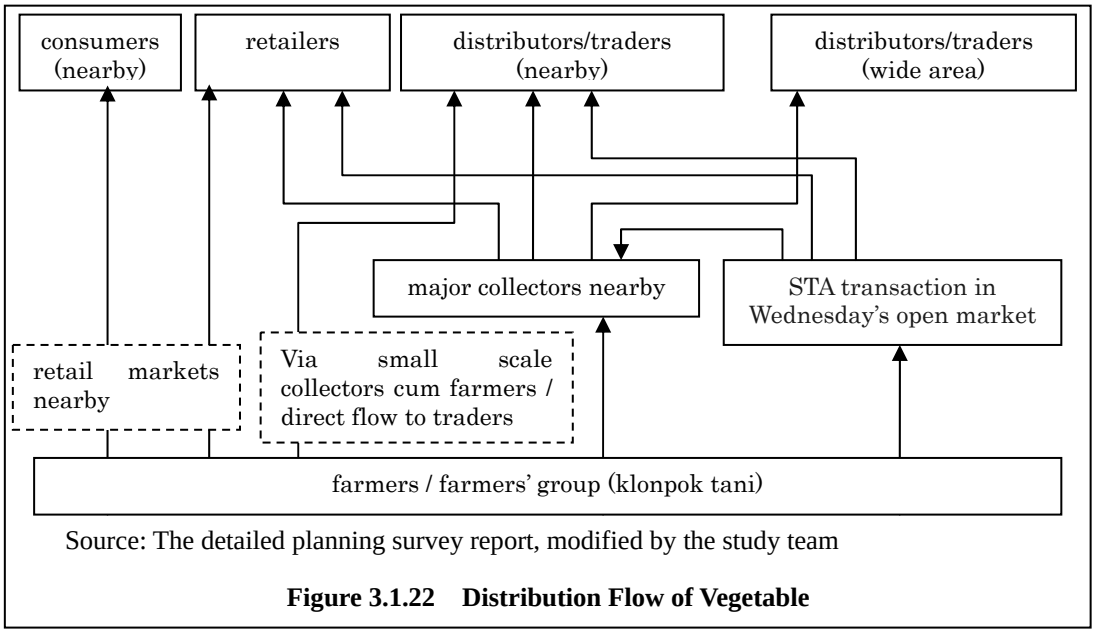
Following the policy of STA development by the Ministry of Agriculture of the central government, North Sumatera Province and Simalungun Regency decided to establish a STA at Saribudolok as a collection center of vegetables produced in the northern area of Toba Lake. The proposal was submitted and approved by the Ministry of Agriculture. The selected location (1.3 ha) is around 400 m away from the regency road, and construction was made including an approach road. Project cost was 10 billion Rp; of which two billion was borne by APBD (regional government budget), 1.8 billion by the Ministry of Agriculture, and six billion by the Ministry of Public Works, which was used for construction of the approach road. Operation of the STA was commenced in December 2008.

**2) Commodity**

As mentioned later in 4), this STA is opened only once a week, on Wednesdays. On this day, the area of this STA is divided into two, namely one for wholesale and the other for retail. Commodities in the wholesale part are mainly cabbage and white Chinese cabbage, and those in the retail part are fruit, and chili.

**3) Distribution Flow**

Distribution flow of vegetables in the surrounding area is shown as below.




Source: The detailed planning survey report, modified by the study team

**Figure 3.1.22 Distribution Flow of Vegetable**

Since the STA is not operated well, the key stakeholders are private collectors nearby in this current distribution flow. Along with the regency road, there are around 20-30 major collectors in the surrounding area with their own their storage/collection houses. They have trucks to collect vegetables from farmers, and sell to several places. In addition, there are also many small scale collectors (sometimes includes farmers).

In general, major collectors have their own customers; they get orders first from customers. Then, they buy vegetables from farmers, and sell them to their customers by sorting and grading in their storage facilities (e.g. a cabbage is wrapped by newspapers, and tomato is packed into wooden boxes). These collectors also give credit or give input assistance to farmers for their cultivation.

Major collectors nearby

Places to where vegetables are sent by major collectors are mostly Brastagi, Medan, Pematangsiantar, Tanjung balai, in North Sumatera Province, Padang in West Sumatera Province, Pekanbaru in Riau Province, Batam Island in Riau Island Province, Jakarta, Malaysia, and Singapore. These are all consumption areas and are mostly located in and around the northern part of Sumatera Island except Jakarta.

Based on the hearing results from private major collectors, the following rough estimation is made regarding the amount in the distribution flow. It is assumed that average private major collectors transact around 200 ton/month of vegetable on average. If 25 major collectors are available, total transaction volume by private major collectors in the surrounding area is estimated around 60,000 ton/year. On the other hand, 325,000 ton/year is the production volume in Simalungun Regency. In the surrounding area (five sub-regencies as mentioned in 1) c)), it is estimated at 195,000 tons assuming 60% of the regency production are produced. This rough estimation indicates that vegetable could be available more than major collectors' transacted vegetable, considering the existence of flows other than major collectors via Wednesday's open market (assumed around 1,733 ton/year, refer to the estimation mentioned later), small scale collectors, retail markets, and direct transaction between farmers and traders.

**4) Operation and Management of STA**

Management Body

An organization responsible for this STA is the government of Simalungun Regency. Since operation was commenced in December 2008, on a trial and error approach and continued the operation and management for around half a year. After June 2009, PD AGROMADEAR, established by the government of the regency at the end of 2007, started its operation and management of the STA. PD AGROMADEAR envisaged its own business that AGROMADEAR buys and sells agriculture commodities with relatively high quality. However, management by PD AGROMADEAR failed in 2010 and left the STA. Now, this STA has no permanently stationed staff for its management.

However, on Wednesdays, the STA is open for public, and a market is opened once a week under the least control of the regency government.

Income

Since there are no official activities going on in the STA, there is basically no income now. In Wednesday's open market, anybody can enter freely. It is said that the government of the regency collects Rp.1,000 per one trader, although this is not major issue. It is also reported that there are illegal fee collection for Wednesday's open market in addition to the official collection, however, this is no official one and these collection is not recognized as the government revenue.

Expenditure

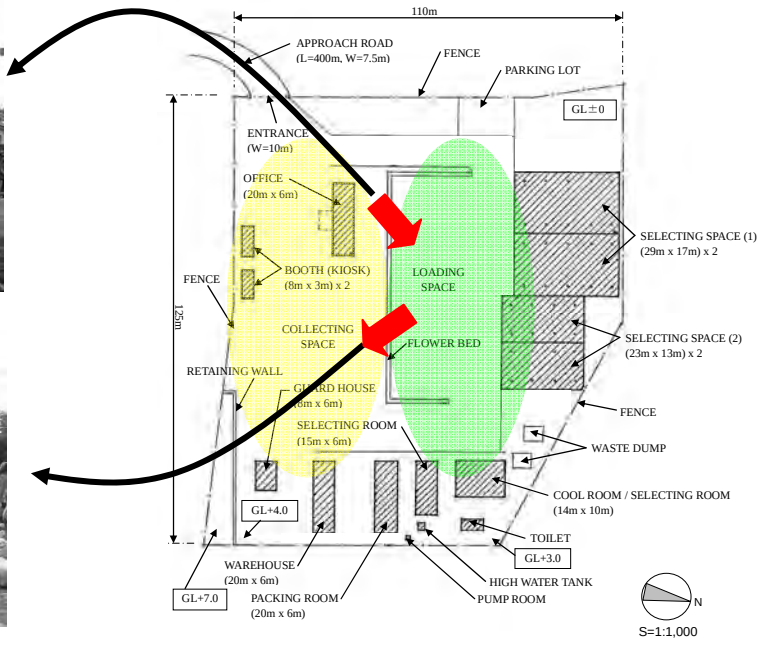
Similarly, no expenditures can be accounted for at this moment.

Current Condition of Utilization

As mentioned, only on Wednesdays, the STA opens for the public such as farmers, distributors/traders, and retailers. There are two types of transactions, one is for wholesale, the other is for retail. Accordingly the area of the STA is divided into two spaces for each purpose (as shown in the figure below). Commodities for wholesales are mostly vegetables such as cabbage and white chinese cabbage, and those for retail are chili, fruits, cloths, and daily sundries. Farmers bring vegetables for wholesaler gradually in advance in most cases, and distributors/traders come to buy them by trucks. Since there is no booth, there are no wholesalers in the STA.

Wholesale Space

Retail Space




Source of Photo: The detailed planning survey report

According to the data given by the agency of agriculture in Simalungun Regency, average vegetable transaction volume from January to April in 2011 is 36 ton/day (91 ton/day if food crops and fruits are

included). Assuming a four-month average is applied for a year, the annual transaction volume of vegetables is estimated as 1,733 ton/year.

In other days, some farmers/collectors spontaneously use the facilities (mainly loading and selecting spaces with roof) for their sorting, drying, simple grading works of agricultural commodities such as cabbage and maize, though they are unofficial usage without permission from the government of the regency.

maize (drying)

cabbage (sorting/packing)

Balance of Income and Expenditure

Business by PD AGROMADEAR was not successful, and it stopped its business just after almost one-year activity. Thus the balance was assumed to show negative although there is no data to verify.

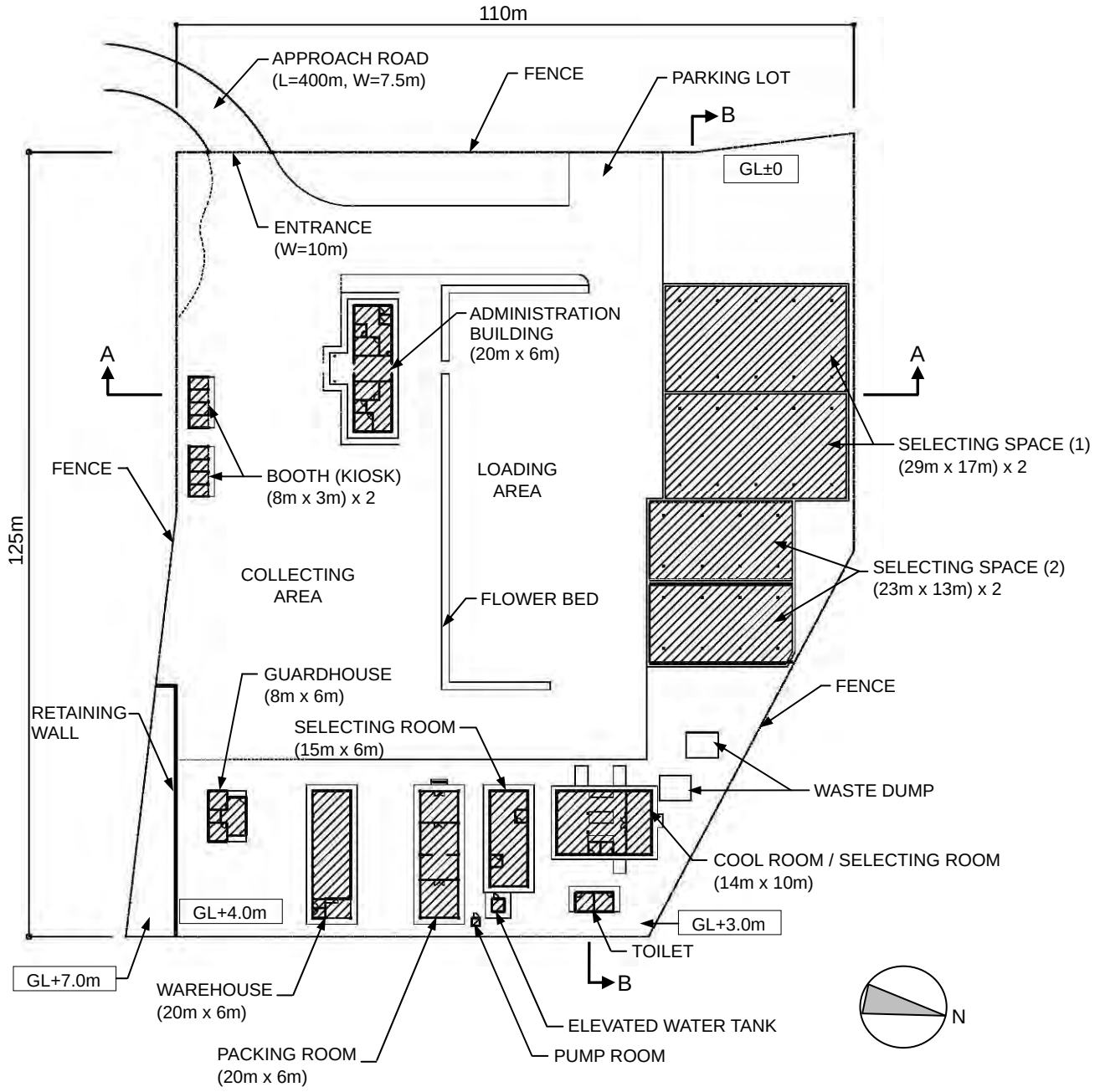
There are no major financial activities now on operation and management of the STA.

Information

Currently the STA does not do any activities related to any information.

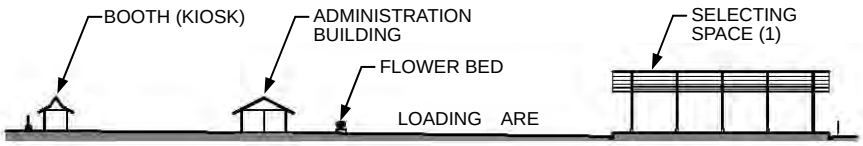
**5) Facilities of STA**

Facilities of the STA are explained as below. Layout plan is also shown in the following figure, and detail list of facilities is shown in Appendices 5.2.

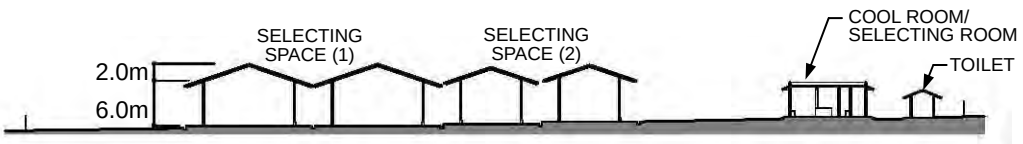



Source: JICA Study Team

**Figure 3.1.23 Layout Plan of the STA Saribudolok S=1:1,000**




Source: JICA Study Team **Figure 3.1.24 Section A-A S=1:1,000**




Source: JICA Study Team

**Figure 3.1.25 Section B-B S=1:1,000**

STA Site

The site of STA Saribudolok is located at a height of around 1,200 m above sea level, and total site area is approximately 1.3 ha. The site is in a form of deformed rectangular and has a gentle inclination of the land from southeast to northwest. An approach road (400 m in length, 7.5 m in width) is provided from the provincial road to the STA site and an entrance gate (10 m in width) is provided at the southwestern edge of the site.

Situation of Facility Management

The facility was built in 2006-2008 and operated by the AGROMADEAR. After the AGROMADEAR withdrew from the management of the STA, the facility have not been operated except on Wednesdays as a open market.

A janitor who is living in the guardhouse with his family seems to be taking minimum maintenance measures for the facility.

Outline of Utility

*Electric Power Supply*

The electric power line is provided from the approach road by single-phase three-wire system, 230/400V, 50Hz. However, electric power is not distributed because the electricity charges have not been paid since January 2011. Electricity for the guardhouse is available since it is supplied by other source.

*Telephone*

Telephone line is installed to the administration building. However, telephone receivers have been removed with the withdrawal of the AGROMADEAR.

*Water supply*

A groundwater pump and an elevated water tank are installed at the east area of the site, and water supply piping is installed to each facility. The janitor occasionally operates the groundwater pump using electric power supplied for the guardhouse and provides water for his own use and cleaning of the facility.

*Drainage*

Rain water is drained to outside of the site using ditches. Septic tanks are installed for sewer water from toilets.

Outline of Buildings

*Administration Building*

The administration building is made of bearing brick wall and consists of office rooms, storages and toilets. All furniture and equipment have been removed with the withdrawal of the AGROMADEAR and the building is not used now.

*Selecting Space (1) (2)*

There are two types of the selecting space buildings and each type has two buildings respectively; four buildings in total. Floor area and roof area of each type are as described below:

(1) Floor Area = Roof Area: 493 $m^2$ (29 m x 17 m)

(2) Floor Area: 299 $m^2$ (23 m x 13 m), Roof Area: 276$m^2$ (23 m x 12 m)

Every building is made of structural steel with ribbed iron sheet roof and has no wall. Eaves height is 6 m. The space is used as temporary stockyard for collectors on Wednesday's open market. The space is also used as crop-selection yard by neighboring collectors without permission. The floor of the facility is severely damaged. Rainwater from roof is collected by downpipes and drained to ditches surrounding the floor.

*Cool Room (Cold Storage)/Selecting Room*

The cool room/selecting room is a one-story building made of reinforced concrete structure and brick wall. A toilet and a generator room are attached to the building, but no generator is installed. The cool room has insulation wall and inner dimension of the room is 9.5 m (L) x 3.6 m (W) x 2.5 m (H). An air condition unit is installed outside the building. Currently, the cool room cannot be used due to the lack of electric power supply. Tiled working platform and sinks are furnished in the selecting room.

*Selecting Room, Packing Room, Warehouse*

Buildings of the selecting room, the packing room, and the warehouse are located in a row at the eastern part of the site. Currently, all buildings are not used. A significant amount of eaves ceiling board of the warehouse building is falling down.

*Guardhouse*

The guardhouse is made of bearing brick wall and consists of dining room with kitchen, bedrooms and toilet. Family of the janitor is residing at the house.

*Toilet*

The toilet building is located in the backside of the cool room/selecting room. Interior ceiling board is partially deteriorated.

*Booth (KIOSK)*

There are two booth buildings and each building has four compartments; floor area of each compartment is 6 $m^2$ (3 m x 2 m). Some compartments are used as storage and others are not used. Most of shutters at the front face are in disrepair.

*Elevated Water Tank, Pump Room*

The elevated water tank and the pump room are located at the eastern part of the site. The elevated water tank is a two-story building made of bearing brick wall. A control panel for well pump is installed on the first floor and the second floor is used as water tank.

Other Facility

*Collecting/Loading Area*

The collecting/loading area is located at the center of the site. The space is divided into two areas by flowerbeds and each area has an open space of approximately 300 m2. Floor of the area is paved with paving bricks which are severely damaged.

*Circulation Space for Vehicle*

The circulation space for vehicle is located around the collecting/loading area. The floor of the space is paved with paving bricks which are severely damaged.

*Fencing*

The fencing wall which is partially damaged is provided at the borderline of the site.

*Outdoor Lighting*

Outdoor lighting equipment is furnished at the collecting/loading area; however, it is not used due to lack of electric power supply.

*Water Taps*

Although outdoor water taps are installed at the collecting/loading area, water cannot be pumped due to lack of electric power supply.

*Waste Dump*

Two waste dumps are placed next to the cool room/selecting room building. One is extremely difficult to use because it is located very close to the building, and the other one has a broken wall. Currently,

both waste dumps are not used. Instead, a truck of the regency government collects wastes after a Wednesday's market.

**(3) Current Condition of Other Markets Nearby**

In North Sumatera Province, wholesale markets have been promoted positively. TA, which is the first in the province, was established at Pematangsiantar city which is 30 km east from Toba Lake. Including this TA, existing TA/STA are listed in the table below, and their locations are shown in Appendices 5.2.

**Table 3.1.7 List of TA/STA in North Sumatera Province**

| No | STA | Location | Completion of construction | Fund source | Management | Main commodity |
|---|---|---|---|---|---|---|
| 1 | PDR Dairi | Dairi Regency Sidikalang sub-regency | 2003 | APBN | Private firm | Sweet potato |
| 2 | STA Talun Kenas | Deli Serdang Regency STM Hilir sub-regency | 2004 | APBN | Private firm | Banana |
| 3 | STA Karo Merek | Karo Regency Merek sub-regency | 2001 | APBN | Farmers' group | Vegetable (initially orange) |
| 4 | STA Saribudolok | Simalungun Regency Silimakuta sub-regency | 2007 | APBN | Operation suspended | Vegetable and fruit only in Wednesday's market |
| 5 | STA Air Batu | Asahan Regency Air Batu sub-regency | 2004 | APBD | Farmers' group | vegetable and fruit |
| 6 | STA Toba Samosir | Toba Samosir Regency Lumban Julu sub-regency | 2007 | APBD | Operation suspended | - |
| 7 | STA Tapanuli Utara | Toba Samosir Regency Siborong sub-regency | 2008 | APBD | Operation suspended | - |
| 8 | TA Pematang Siantar | Pematangsiantar city | 2007 | APBN | Government (Operated only during night) | vegetable, fruit, and cereals |

Remarks: Fund source: APBN=national budget, APBD=regional budget. The central government is aware of six markets except no.1 and 8. No.1 was established with the assistance of the Ministry of Trade, as "supporting market."
Source: The detailed planning survey report (hearing at Dinas Pretanian at North Sumatera Province), modified by the study team (current situation of some STAs is modified but others' information is as of 2009)

As for STA No.3, STA Karo Merek located 10 km west from STA Saribudolok, vegetable was sorted/graded/packaged since May 2011. Originally this STA envisaged a wholesale market (or a collection center) for orange, but the operation failed. According to the hearing to the people at the STA, now a farmers' group has an agreement with the regency government to use this facility for vegetable transaction. However, a few members of the group conduct vegetable business using the facility for their own sake.

STA Karo Merek

In addition, there are several retail markets in the neighborhood, such as Merek Raya (open on Tuesdays, located 30km east from Saribudolok) and Haranggaol (open on Monday, located 15km

south east from Saribudolok along with Toba lake). There are some farmers who bring their agricultural products to such markets.

**(4) Characteristics of STA Saribudolok**

Based on the above current conditions, characteristics of STA Saribdolok are summarized as follows.

An Advantageous Location

The STA is located in a very advantageous place, namely vegetable producing area. As seen, vegetable production is stable and its production is more than the demand in the surrounding area. Although there are many private collectors, there are still potential needs for a place for vegetable transaction (this will be discussed more in 3.2.1).

A Fact That the STA Is Not Used

The STA is not used properly now, except once a week as a open market since PD AGROMADEAR declared bankruptcy in their business. Improvement of current operation and management is indispensable.

Different Concept of Facility Design

An important characteristic is its facility design. The concept of the facility design is actually not for wholesale market like STA Mantung; there are no booths for wholesalers. Instead, the concept is a facility for vegetable business for one agent. There are several loading/collecting/ selecting/packing spaces and places, and even a cold storage. This facility design should be considered for improvement of operation and management of the facilities.

Importance of Matching between Producer and Buyer

In the current distribution flow, private collectors are the key stakeholders whose function is to connect farmers and consumers area. Theoretically the wholesalers in a wholesale market can perform this function. In this sense, collectors are theoretically playing a role of wholesalers in a STA in this area.

Farmers still do not know where to sell[10], thus they need buyers who can certainly purchase vegetables for sure. If farmers do not know where to sell and just farm and produce more vegetable, the price goes down, and vegetable cannot be sold, which means the farmers lose their investment. Such a situation should be avoided by introducing some mechanisms to provide price, demand information to all stakeholders.

Based on a simple calculation, vegetable production in the surrounding area is likely to be more than total transaction volume of major collectors in nearby areas. Therefore, there might be still scope to increase number/place for players like current existing major collectors.

These points should be considered in the preparation of the improvement plan.

[10] This information was obtained at the stakeholder meeting.

### 3.1.3 STA Pattapang (Malino) (South Sulawesi Province)

#### (1) Current Condition and Future Trend of Horticulture Products in the Surrounding Area

#### 1) South Sulawesi Province

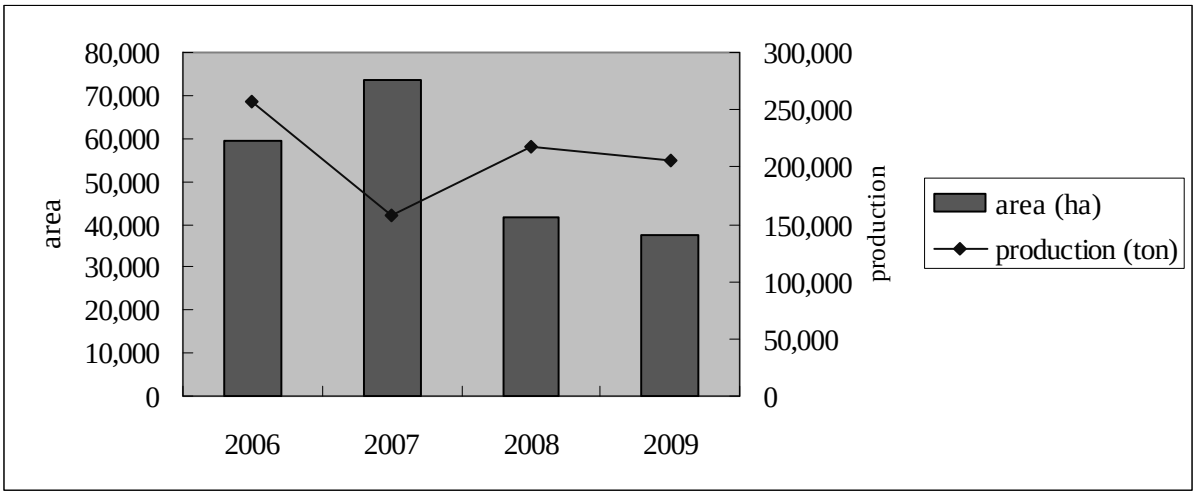
South Sulawesi Province is one of the major paddy producing areas in the Sulawesi Island. Vegetables and fruits are also produced in highland areas whose climate is cool. There are many irrigation facilities financed by Japanese Yen Loan, which have contributed to development of the province. Total vegetable production[11] of the province was 205,327 ton in 2009, which is smaller than the other two provinces. Major vegetables produced are shown in the table below, and vegetables exceeding 20,000 tons are cabbage, chili and tomato.

**Table 3.1.8 Production of Major Vegetables in South Sulawesi Province (2009)**

| Vegetable | Shallot (Red Onion) | Leek | Potato | Cabbage | Long bean | Chili (Incl. big and small) | Tomato | Egg Plant |
|---|---|---|---|---|---|---|---|---|
| Production (ton) | 13,246 | 11,378 | 11,802 | 31,303 | 11,322 | 20,982 | 30,981 | 11,474 |

Source: Statistik Pertanian 2009, Dinas Pertanian Tanaman Pangan dan Hortikultura Provinsi Sulawesi Seletan 2010

Trends of production and harvested areas of vegetables from 2006 to 2009 (four years) are shown in the following figure.




Source: Statistical books of agriculture/horticulture from 2006 to 2009, Dinas Pertanian Tanaman Pangan dan Hortikultura Provinsi Sulawesi Seletan

**Figure 3.1.26 Trends of Production and Harvested Areas of Vegetable 2006-2009**

Although production decreased[12] in 2007, it continued around 200,000 tons assuming the tendency remains stable.

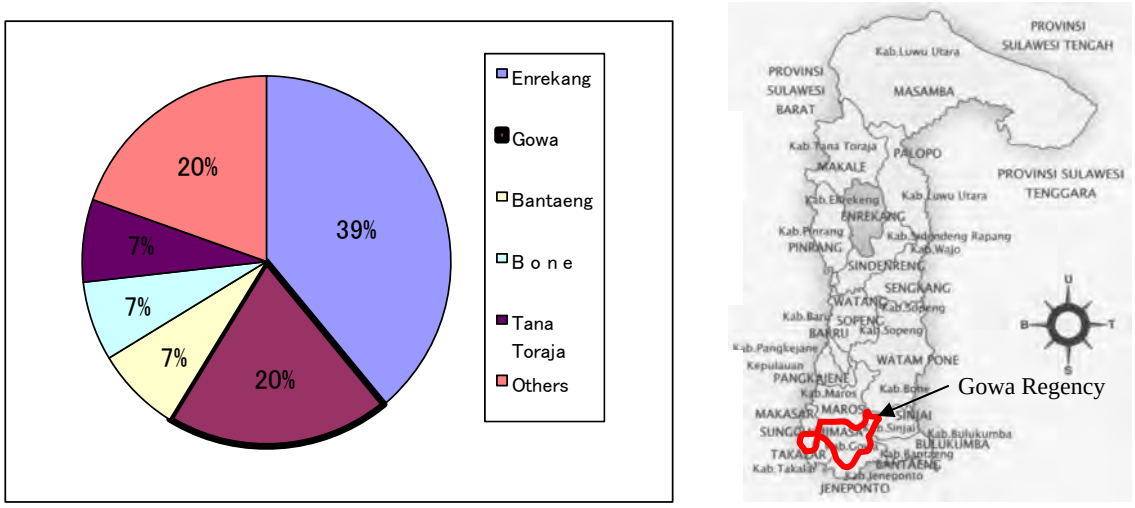
#### 2) Gowa Regency (Kabupaten)

STA Pattapang is located near Malino in Gowa Regency with 1,500m of altitude, hence climate is cool and ideally suitable for vegetable production like the other two places. Proportion of vegetable production of Gowa Regency is around 20% ranking second out of 23 regencies and cities in the province. Gowa Regency is located in the southern part of the province, and vegetable production of this southern part together with Bantaeng and Bone Regency occupies around one third of total provincial production. Similarly, the middle part of the province such as Enrekang and Tana Toraja

[11] It should be noted that depending upon the statistical books (e.g. national level, provincial level, kabupaten level, or among provinces etc.), kinds of vegetables, which are used for the summation, are different to make total vegetable production.

[12] Unit yield was exceptionally low in this year.

Regency also produces almost half of the total vegetable production of the province. In this province, these two parts are considered as the big vegetable producing areas.

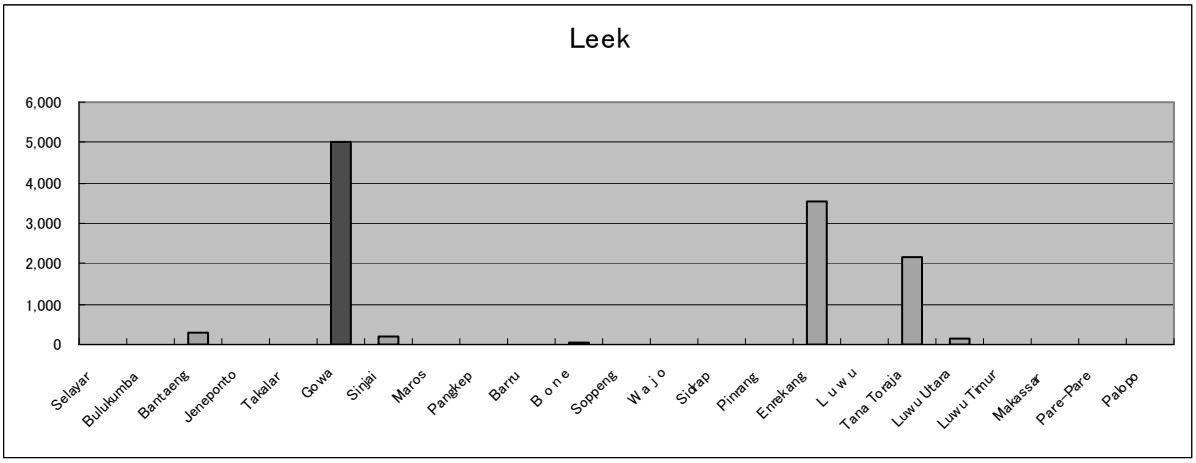


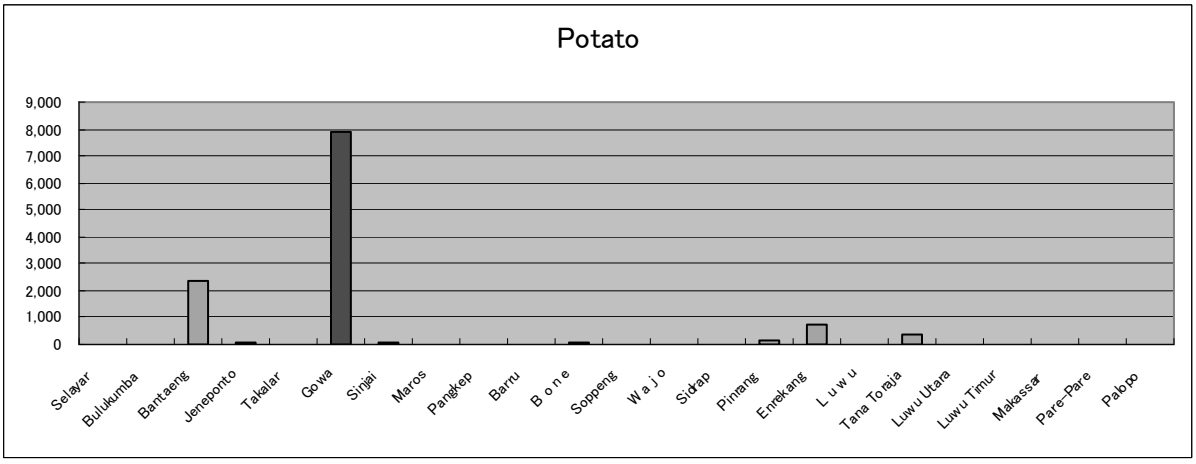

Source: Statistik Pertanian 2009, Dinas Pertanian Tanaman Pangan dan Hortikultura Provinsi Sulawesi Seletan 2010

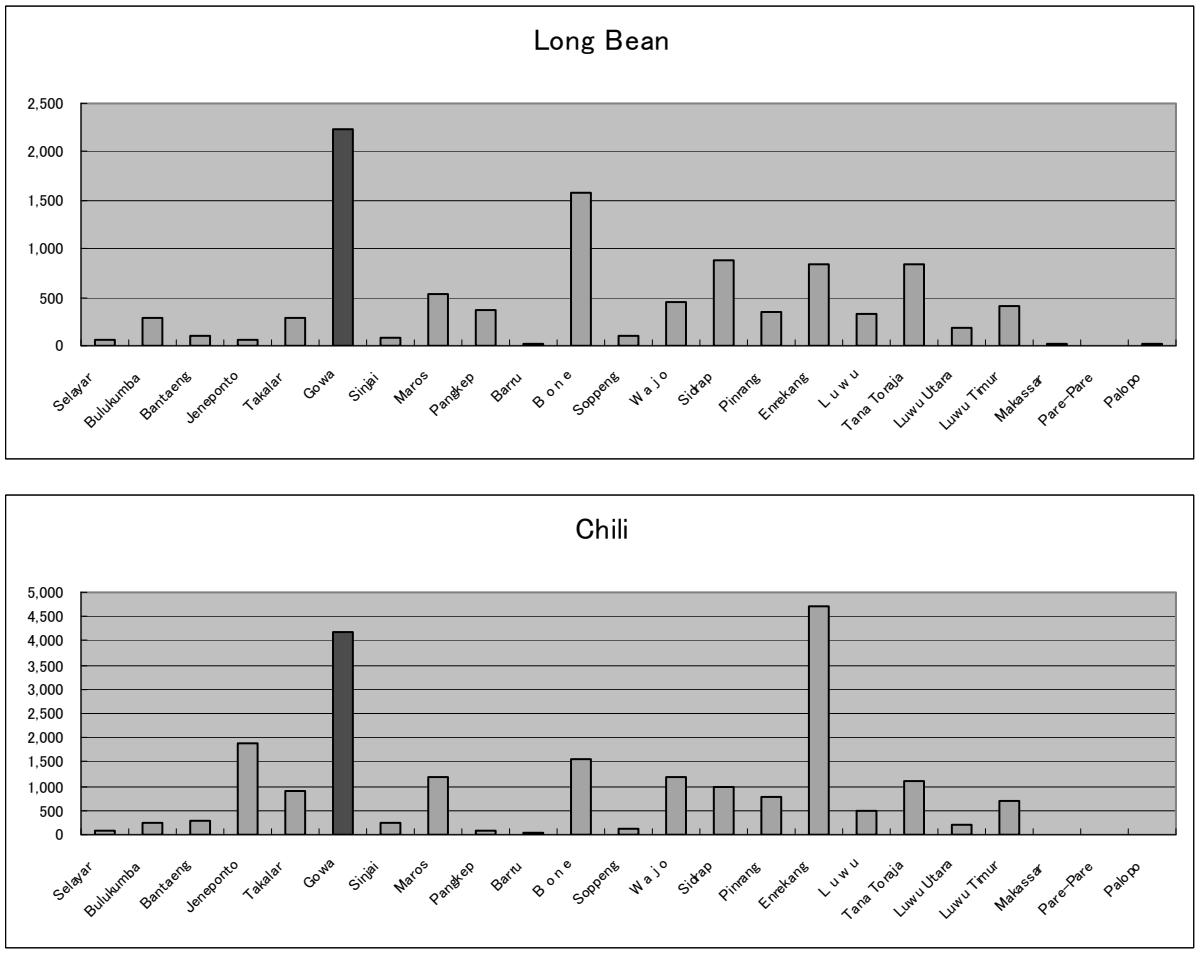
**Figure 3.1.27 Map of South Sulawesi Province and Proportion of Vegetable Production of Regencies and Cities (2009)**

By kinds of vegetables, Gowa Regency is a large producer of leek, potato, long bean and chili in the province as shown in the figure below.

Unit: Ton/year





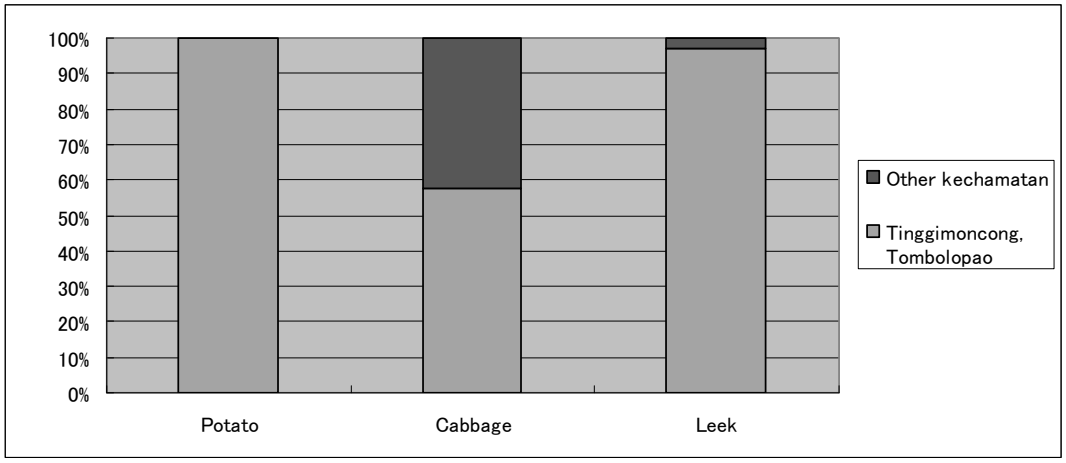

Source: Statistik Pertanian 2009, Dinas Pertanian Tanaman Pangan dan Hortikultura Provinsi Sulawesi Seletan 2010

**Figure 3.1.28 Production of Major Vegetables by Regencies and Cities in South Sulawesi Province (2009)**

### 3) Surrounding Area of STA Pattapang

Total vegetable production of Gowa Regency was around 40 thousand ton (2009)[13]. Major vegetables produced in the regency are potato, leek, cabbage, carrot, and tomato. The regency consists of 18 sub-regencies (kechamatan), and Tinggimoncong where this STA is located, and Tombolopao sub-regency which is its north east neighbor produce around half of total production of the following three vegetables in Gowa Regency, indicating the surrounding area of the STA is the major vegetable producing area in Gowa Regency.

[13] Statistik Pertanian 2009, Dinas Pertanian Tanaman Pangan dan Hortikultura Provinsi Sulawesi Seletan 2010




Source: The detailed planning survey report (internal data as of 2008 obtained from Dinas Pretanian Kabupaten Gowa)

**Figure 3.1.29 Proportion of Major Vegetable Production of Neighboring Sub-regencies (2008)**

Cropping Pattern in the surrounding area is shown as follows:

| Month / Vegetable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | rainy season | | | | | | dry season | | | | | |
| Potato | | | sowing | | | | harvesting | | | | | |
| Carrot | | | | | | | | | | | | |
| Tomato | | | | | | | | | | | | |
| Cabbage | | | | | | | | | | | | |

Source: The detailed planning survey report (hearing to farmers)

**Figure 3.1.30 Cropping Pattern of Major Vegetables in Surrounding Area of STA Pattapang**

Vegetables are in general sowed between February and May at the end of rainy season and harvested between June and August. For reference, annual rainfall in this regency was 2,933mm, and number of rainy day was 165 days as shown in the following table.

**Table 3.1.9 Rainfall and Rainy Days in Gowa Regency (2009)**

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rainfall (mm) | 1,182 | 793 | 114 | 140 | 24 | 30 | 35 | - | 1 | 5 | 135 | 474 | 2,933 |
| Rainy days | 28 | 24 | 18 | 19 | 10 | 3 | 10 | - | 7 | 4 | 14 | 28 | 165 |

Source: Gowa in Figures 2010, BPS Kabupaten Gowa

**4) Balance of Demand and Production of Vegetables in Gowa Regency**

Balance of demand and production of vegetables in Gowa Regency is briefly reviewed. Population of Gowa Regency was 617,317 as of 2009. According to Food Balance Sheet of FAOSTAT, per capita consumption of vegetable was 37 kg/year (2007). Thus, food demand of vegetable is estimated around 23,000 ton/year. As mentioned earlier, annual production of vegetable in this regency was 40,000 ton, therefore, around 50% of its production is assumed as production-surplus and has to be shipped to other regencies. This area can also be a vegetable-supplying area to other places.

**(2) Current Condition of Distribution Flow and Operation of STA Pattapang**

**1) Background of STA Pattapang**

STA Pattapang is located near Malino in Gowa Regency. This area is in the highland with elevation of

1,500 m and therefore noted for vegetable production. Access by road to this area is not so bad[14], taking around three-hour drive east from Makassar.

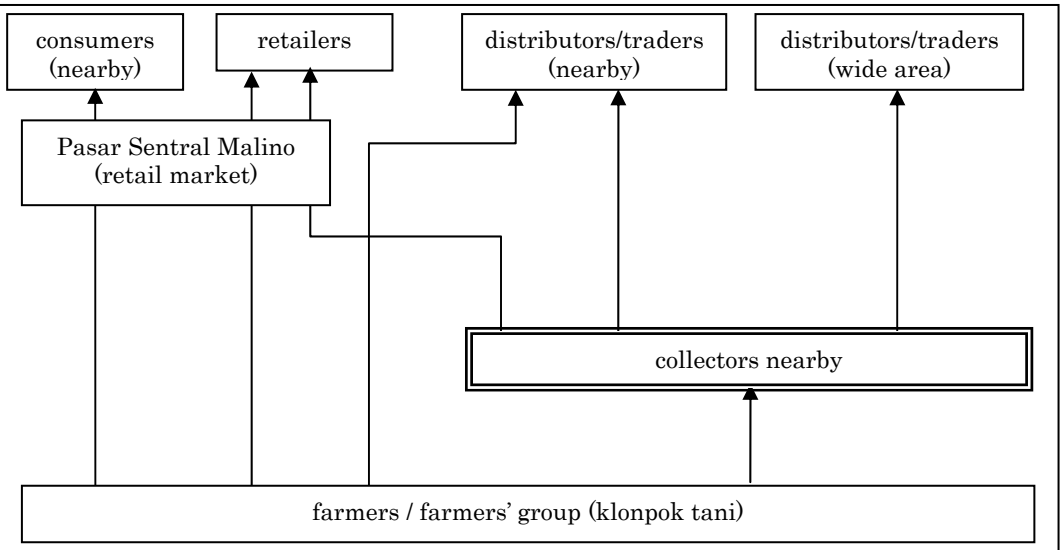
South Sulawesi Province and Gowa Regency decided to establish STA following the policy of the Ministry of Agriculture, Jakarta. The selected area was owned by an individual who provided free of charge for STA construction. Construction cost of physical facilities (500 million Rp) was borne by the central government. Facilities were constructed at the end of 2005 and supposed to be used from 2006. However, these facilities had not been used for around two years. Then, the regency government decided that PERUSDA (Holding Company Gowa Mandiri), a government-owned company, which was established in 2005, started to manage the STA, and four staffs, have commenced work at the STA since March 2008.

**2) Commodity**

There are now no activities as a wholesale market by PERUSDA hence there are no commodities transacted.

**3) Distribution Flow**

This STA does not function as a typical wholesale market. Apart from the STA, the distribution flow of vegetable in the surrounding area is shown as follows:




Source: The detailed planning survey report, modified by the study team

**Figure 3.1.31 Distribution Flow of Vegetable**

In the current distribution flow, private collectors in the nearby area play an important role. These collectors roughly are divided into two categories, one is for small scale and the other is for medium-large scale. Small-scale collectors are basically cum farmers, and send their products (or buy small amount from neighboring farmers) and bring to near retail traditional market such as Pasar Sentral Malino. On the other hand, medium-large scale collectors sell vegetables to distant consumer places. It is said that such medium-large scale collectors are around 100 (includes around 15 large-scale collectors).

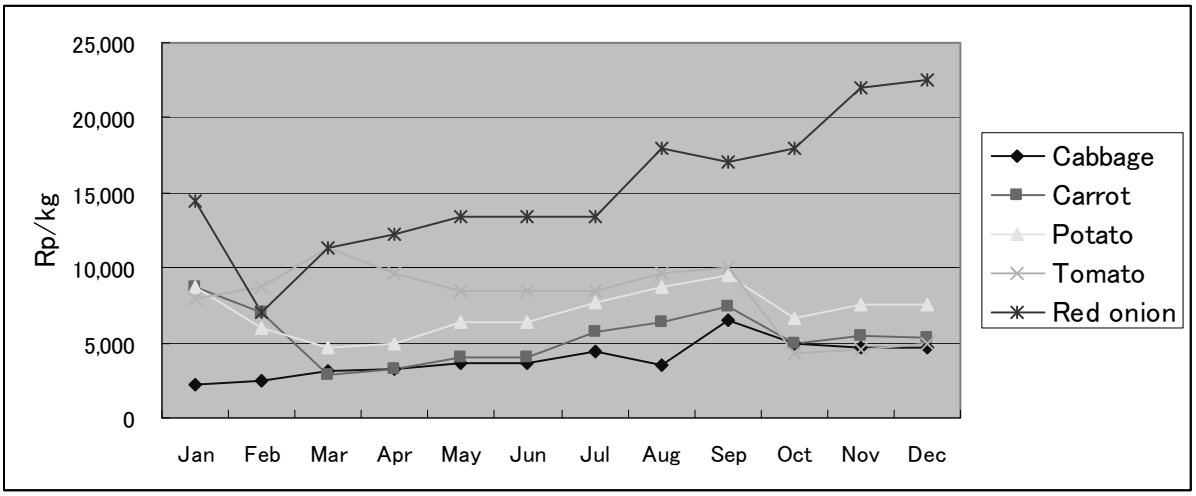
collectors nearby

As destinations, medium-large scale collectors send vegetables to Makassar, Sunggumhinasa, Bulukunba, Sinjai, Selayar, Bone, and Kendari (in the southern part of the Sulawesi Island), as well as Kalimantan (Balikpapan etc.) and Irian Jaya.

[14] Recently, there have been lots of trucks because of the construction works for Jeneberang river, therefore road conditions are not good. Road improvement works are being implemented in many parts of roads between Malino and Makassar.

As for the amount of vegetable in the current distribution flow, the following rough estimation is based on the hearing results obtained from private collectors. It is assumed that transaction volume by a large-scale private collector is on average around 60 ton/month of vegetable. If 15 large-scale collectors are available, total transaction volume by large private collectors in the surrounding area is estimated around 10,800 ton/year. In Gowa Regency, annual vegetable production is 40,000 ton. In the surrounding area (two sub-regencies as mentioned in (1) 3)), it is estimated at 24,000 ton assuming 60% of the regency production is produced. Considering the existence of medium and small scale collectors, it can be said that most of vegetable produced in the surrounding areas is handled by these collectors (other flows to Pasar Sentral Malino could not be major).

For reference, wholesale price of vegetable in 2010 in Gowa Regency is shown in the figure below.




Source: internal data as of 2010 obtained from Dinas Pretanian Kabupaten Gowa

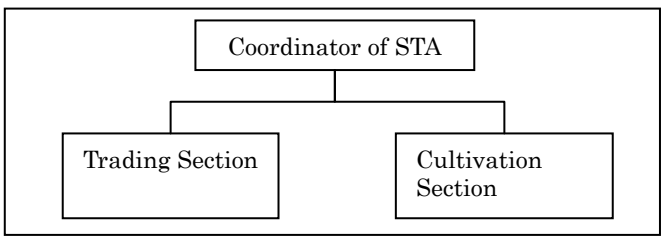
**Figure 3.1.32 Wholesale Price of Major Vegetable in Gowa Regency (2010)**

Except for tomato, the prices show an increasing tendency as months go toward the end of a year until September; prices fell after September except for red onions. These tendencies can generally correlate with the cropping patterns in nearby areas. In harvest season price goes down in/after around September. The prices gradually increase, as vegetable seems to become less (while the cultivation of vegetable is underway during this period).

**4) Operation and Management of STA**

Management Body

The government of Gowa Regency is responsible for the management of STA Pattapang, and the actual management body is PERUSDA, a government-owned company. Four staffs are dispatched to the STA, whose salaries are borne by PERUSDA (the government provides fund to PERUSDA). The current organization chart of the STA is shown below.




Source: The detailed planning survey report (hearing at STA office)

**Figure 3.1.33 Organization Chart of STA Pattapang**

There are four staffs, one female staff s a coordinator of STA, two staffs in charge of cultivation/extension, and a driver. PERUSDA commenced its business to purchase vegetable from farmers directly, and sell to supermarkets in Makassar since March 2008. The trading section

conducted this business. However, this business was over in 2009, and the activities of the trading section were accordingly stopped in 2010. However, PERUSDA conducts cultivation of vegetable by renting the land (two ha) under the cultivation section. Cultivation is the only activity of the STA now.

Income

Since there are no activities to get income, the revenue of PERUSDA (as income of STA) comes from the government of Gowa Regency). At least now, the salaries of staffs and cost of vegetable production are prepared by PERUSDA, and there is no budget for trading activities.

Expenditure

Current expenditure of the STA includes salaries, electricity, miscellaneous management expenditures, and expenditures needed for vegetable production activities. According to the accounting document of PERUSDA (PD Agribisnis) as of December 31 2010, expenditure of vegetable production for 2010 was 84 million Rp. Salaries of four members were estimated around 60 million Rp.

Current Condition of Utilization

As mentioned, the STA is not used as typical function of a wholesale market. Even, the PERUSDA's own business on vegetable sales was corrupted. Cultivation of vegetables on a small-scale is the only activity.

On the other hand, the landowner who provided the land for the STA cultivates potato in his land. During the harvested season (July to August), he uses the facilities of the STA for washing, grading/sorting, storing and packing of his potato.

Balance of Income and Expenditure

Currently, the activities are implemented within the possible extent of PERUSDA's budget as seen above. Profit and loss statement of the whole PERUSDA (PD.AGRIBISNIS GOWA MANDIRI) in December 31 2010 shows a loss of 84.5 million Rp. It indicates that the PERUSDA faces a difficult situation in terms of budget. Although this statement includes the activities of STA Chappa Bungaya (see (3) for more detail), this situation probably affects STA Pattapang as well.

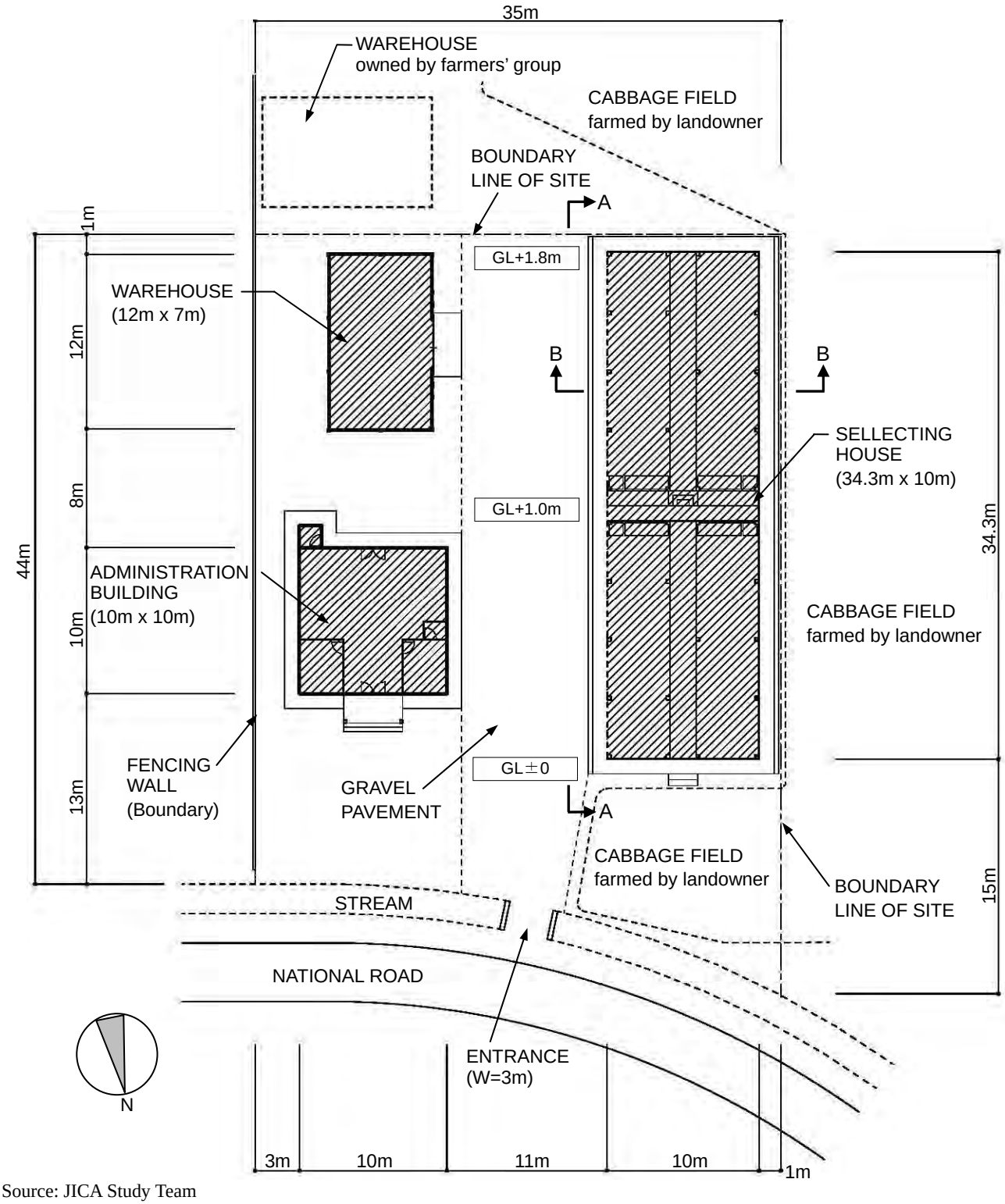
Information

Provision of information has not yet been implemented such as price, demand, and quality. On the other hand, socialization had been conducted for farmers to explain PERUSDA's activities.

The coordinator of the STA has a lap top computer and information of expenditure and past activities of PERUSDA are stored.

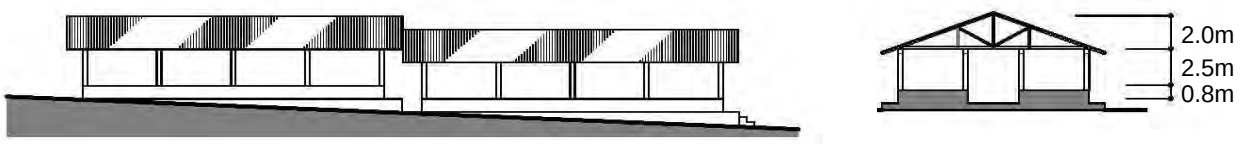
**e) Facilities of STA**

Facilities of the STA are explained as below. Layout plan is also shown in the following figure, and detail list of facilities is shown in Appendices 5.2.




Source: JICA Study Team

**Figure 3.1.34 Layout Plan of the STA Pattapang S=1:400**




Source: JICA Study Team

**Figure 3.1.35 Elevation A-A and Section B-B S=1:400**

STA Site

The site of STA Pattapang is located at a height of around 1,500 m above sea level, and total site area is approximately 1,500 $m^2$. The STA site is in the form of rectangular, and has a slight inclination of the land from south to north. The site is bordered on the north by the national road, and there is a small stream between the site and the national road. The entrance of the site above the stream is 3 meters in width. The STA facility was constructed in 2005 by the agency of agriculture of Gowa Regency in the land offered by the original landowner.

Situation of Facility Management

The facility has not been operated as a wholesale market, and the original landowner for his own use the buildings for selection and storage of agricultural products such as potato.

Outline of Utility

*Electric Power Supply*

Electric power is supplied through overhead power line of facing national road by single-phase two-wire system, 230V, 50Hz. Electricity bill is paid by the landowner.

*Telephone*

Telephone line is not installed to the site.

*Water Supply*

Spring water coming from outside of the site is piped to the administration building and the selecting space.

*Drainage*

Rainwater is drained to the facing stream using ditches in the site. A septic tank is installed in the site for sewer water from toilets.

Outline of Buildings

*Administration Building*

The administration building consists of office room, storage and toilet. The deterioration such as concrete cracks, color fading of paint and rusted iron sheets is observed on the exterior surfaces of the building. Some machines that are to be used at other facility are temporally kept in the building.

*Selecting Space*

The selecting space consists of two buildings, and difference in height of each building floor is 0.8 m. The floor level of the building is 0–1.0 m higher than surrounding ground level. The buildings are made of reinforced concrete frames and wooden roof trusses. Although no outside wall is applied at the completion of construction, the landowner has recently furnished corrugated iron sheet wall to the three sides of the building on his own fund. Washing tubs and water piping are installed in the building, but water is not provided now. The building is used as selecting and storage space for harvested potato by the landowner, and waste products and unidentifiable equipment are left in the building.

*Warehouse*

The warehouse building is made of reinforced concrete frames, brick wall, and steel roof trusses. Agricultural products of the original landowner are kept in the warehouse.

Other Facility

A warehouse owned by farmers' group is bordered on the south by the site and it is not possible to gain access to the warehouse of the STA without using the road in the STA. The road in the site is paved with gravel that is not in good condition. Fencing wall owned by the landowner is provided at the border on the east of the site. On the south and west side of the site, there is cabbage field owned by the landowner and no fencing is provided on the border of the site. There is no waste disposal facility in the site.

### (3) Current Condition of Other Nearby Markets

According to the information of the agency of agriculture in South Sulawesi Province, there were six STAs in October 2009 in the province; however, the central government has information of five only. The list is shown in the table below, and location map is shown in Appendices 5.2.

**Table 3.1.10 List of STA in South Sulawesi Province**

| No | STA | Location | Completion of construction | Fund source | Management | Main commodity |
|---|---|---|---|---|---|---|
| 1 | STA Cappa Bungaya | Gowa Regency Sungguminasa city | 2001 | APBN/ APBD | PERUSDA | Operation suspended |
| 2 | STA Sumilan | Enrekang Regency Alla sub-regency | 2003 | APBN/ APBD | Regency government | Vegetable, fruit |
| 3 | STA Pattappang (Malino) | Gowa Regency near Malino city Tinggimoncong sub-regency | 2005 | APBN | PERUSDA | Operation suspended (potato) |
| 4 | STA Lembang Perindingin | Tana Toraja Regency Gandang Batu Sillanan sub-regency | 2006 | APBN | Regency government | Vegetable, fruit |
| 5 | STA Soreang | Pare-Pare City Soreang sub-regency (kechamatan) | 2007 | APBN | Regency government | Vegetable, fruit |
| 6 | STA Bakka | Luwu Regency | 2008 | APBN | Regency government | Vegetable, fruit |

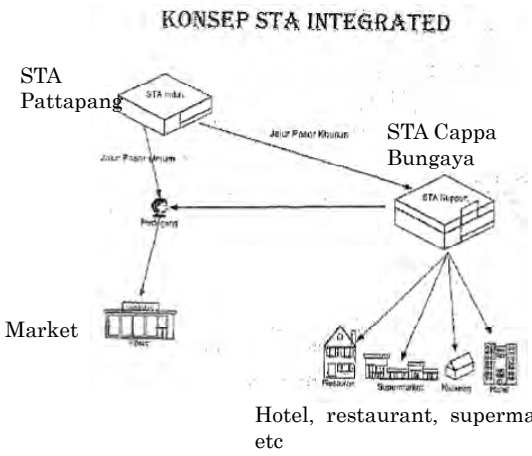
Source: The detailed planning survey report (hearing at Dinas Pretanian at South Sulawesi Province)
Remarks: Fund source, APBN=national budget, APBD=regional budget. Central govt. does not know STA No.6.

According to the directorate of domestic market of the Ministry of Agriculture, STA Sumilan is operated and managed well, and its operation is very active, for example, vegetable is sent to Kalimantan from the STA.

In Gowa Regency, there is another STA, STA Cappa Bungaya, which was built in 2001 in addition to STA Pattapang. Currently activities of these two STAs are not implemented well.

The agency of agriculture of the regency and PERUSDA have a concept of integration of two STAs. Vegetables are collected at STA Pattapang, and brought to STA Cappa Bungaya located in the consumer area. From STA Cappa Bungaya, vegetable is then distributed to retailers and consumers. This concept is dipicted in the following figure.

STA Cappa Bungaya




Source: The detailed planning survey report (Konsep Sub Terminal Agribisnis, Kabupaten Gowa, Sulawesi Selatan)

**Figure 3.1.36 Concept of Integrated Two STAs**

In Malino, there is only one big retail market, Pasar Sentral Malino. The management of the market is the agency of market of the regency. In this market, an open market is held three times a week (Sunday, Tuesday, and Thursday). During the open market, many farmers/traders open their shops on the streets in the market area. There is also a building facility where there are many booths inside, which are open everyday. In the market, not only vegetables but also daily sundries goods are transacted. Especially for vegetables, farmers (cum collectors) bring them into this market and sell to retailers who are in the market, and customers (consumers) who come from relatively wide areas such as Sidrap, Pare-Pare, Pinrang, Bone, Takalar, Makassar, and Maros, because Malino is famous as the vegetable producing area.

Pasar Sentral Malino

**(4) Characteristics of STA Pattapang**

Based on understanding of the above current conditions, characteristics of STA Pattapang are summarized as follows:

An Advantageous Location

Like STA Saribudolok, the STA is located in a very advantageous place, namely in vegetable producing area. Vegetable production is stable and producing more than the demand in the surrounding area, though scale of production is smaller than the other two cases.

A Fact That the STA Is Not Used

The STA is not used properly now since PERUSDA's business did not go well and has stopped. Improvement of current operation and management is indispensable.

Different Concept of Facility Design

Another important characteristic is its facility design. Similar to STA Saribudolok, the concept of the facility design is actually not for wholesale market like STA Mantung, but there are no booths for wholesalers. Instead, the concept is a facility for washing and grading mainly of root vegetables. This design concept should be considered for improvement of operation and management of the facilities.

Importance of Collectors' Cooperation

In the current distribution flow, private collectors are key stakeholders for improvement of the STA

operation, because their collectors are potential users of the STA considering the functions of collectors and definition of a wholesale market (will be discussed later in 3.2.1).

Simple calculation made in 2) c) suggests that most of vegetable production in the surrounding area could be handled by collectors. Therefore, cooperation of collectors is important for proposing improvement plan of STA's operation.

### 3.2 Overall Strategy for Improvement of Operation and Management of Three STAs

#### 3.2.1 Basic Concept for Improvement of Operation and Management of Three STAs

**(1) Opinions**

**1) STA Mantung**

Government

In East Jawa Province, Pasar Induk Puspa AGRO (TA) started its operation partly (the rest of the market facilities is still being constructed) as mentioned. The agency of agriculture in East Jawa Province has an idea of establishing linkage among all STAs in East Jawa Province and TA Puspa AGRO.

The agency of agriculture in Malang Regency undertook management of the STA since 2010 from the agency of industry and market. Basic operation has not drastically changed, however, some emphases have been made to provide assistance to farmers, such as provision of agriculture inputs, credit, and farming techniques.

**2) STA Saribudolok**

Government

The agency of agriculture in North Sumatera Province considers the STA as one of the most important STAs for the following reasons.

- The STA is close to consumer areas such as Medan and Pematang Siantar (three hours by car to both places).
- The surrounding area of the STA has a high natural resource potential in terms of suitability of vegetable production.

The agency of agriculture in Simalungun Regency, responsible for operation and management of the STA, gave the rights of its operation and management to PD AGROMADEAR in 2009. However, PD AGROMADEAR failed to operate and mange the STA in 2010. Hence, the agency of agriculture in Simalungun Regency considers the necessity to examine why management of PD AGROMADEAR has collapsed and to establish a good management system of the STA for its full usage.

Stakeholder Meeting

A stakeholder meeting was held on 27th May 2011 at STA Saribudolok to obtain their opinons. Number of participants was 54, from the regional government, farmers, and traders/collectors. Major opinions raised in the meeting are summarized as follows.

Farmers mainly emphasized the importance of demand information. Farmers want to cultivate vegetables depending upon demand. However, they do not know demand information; therefore overproduction by farmers often occurs. Additionally, they also want to know to whom they can sell their products. Currently, they cannot find buyers by themselves; hence they must rely on private collectors.

For collectors, there are needs for them to use the STA facilities. When they were asked “do you want to use the facilities?” they replied “yes!”. Some of them owned their private places to store, sort, and pack vegetables. Such collectors might not say they want to use, but others said yes, who want to expand their business.

A staff of AGROMADEAR was also attended and explained difficulties of their business. Main things explained are: a) poor facilities, b) high specification for vegetables required by international markets (less pesticide, organic fertilizer, etc.), c) uneasiness of contract with foreign buyers, and d) difficult to

establish cold chain for utilization of cold storage (cooling room).

**3) STA Pattapang**

Government

A responsible organization for the operation and management of the STA is the agency of agriculture in Gowa Regency, and the STA is practically operated and managed by PERUSDA, a holding company of Gowa Regency government. The activities of the STA have not been implemented except for vegetable production. Therefore, the agency of agriculture in Gowa Regency wants to reactivate the STA.

Collectors

During the study, opinions of sampled collectors (medium and large), considered as key stakeholders for improvement of the STA, were gathered. Major opinions related to their expectation for STA Pattapang are as follows:

They expressed their intentions to use the STA facilities in order to expand their businesses. However, the facilities must equip booths with wall and doors with keys. They also expect the STA to provide information of price (farm gate price). Price information is important when they buy vegetables from farmers. At this moment, it is difficult to find an appropriate price in the surrounding areas.

**(2) Basic Concept**

**1) Principle of STA**

Theoretical Understanding of Function of STA

Here, theoretical understanding of function of STA is reviewed.

First of all, there are no laws and regulations that specify definitions of STA in Indonesia. This means, anybody can legally establish any type of STA. Instead, there are following two governmental documents relating to STA.

- General Operating Guidelines for Agribusiness Sub-terminal (STA) in 2006 issued by the Ministry of Agriculture of the central government
- Thoughts: On the Development of Central Market & Supporting Market issued by the Ministry of Trade

The first one describes that STA constitutes the marketing institution and the STA activity is to give market services and increase value added to the product. In the second one, it is mentioned a supporting market is the same concept of STA. STA (supporting markets) has a supportive role for a central market (same as TA) and is a temporary collection point of agriculture products from farmers, which will be transported to a central market.

In Japan, there is a law of wholesale market, and the local agricultural wholesale market is regulated under the law. In the law, a wholesale market is defined to be opened continuously with a wholesale place, parking lot, and other facilities needed for transaction for the purpose of wholesale of fresh food. There are two wholesale markets mentioned, namely a central wholesale market, and a local wholesale market.

FAO also issues several reports on wholesale markets. According to a report[15], the function of wholesale markets is mentioned as follows: *The social institution or mechanism that forms the linkage between the producer (farmer) and the retailer is the assembly and wholesale trading system, which enables farmers to sell in small quantities and purchasing by traders and wholesalers to be made in bulk. With both rural assembly and wholesale markets, the number of transactions is reduced and the*

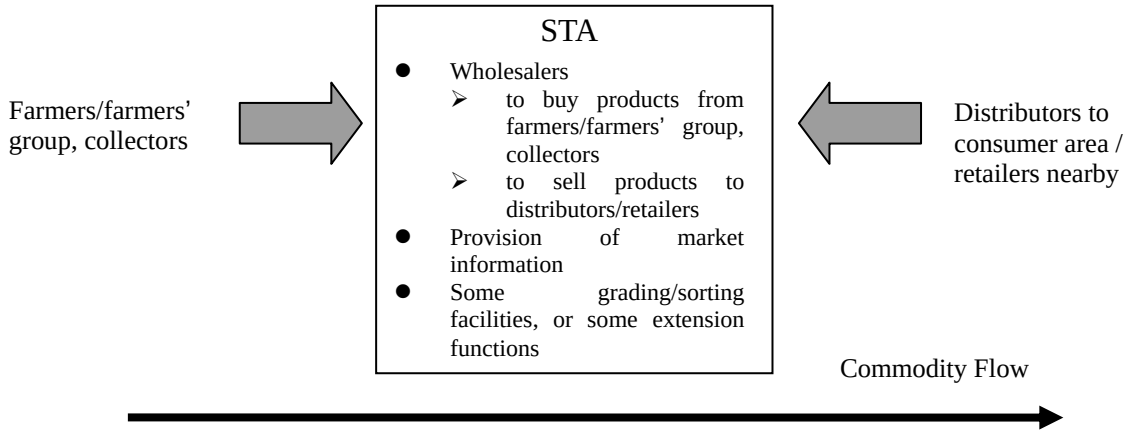
[15] Wholesale markets : planning and design manual (FAO agricultural services bulletin 90) by J.D. Tracey-White, 1991

*marketing process simplified.*

Based on the above review, functions of STA are understood here as follows:

- STA is a wholesale market established in agricultural producing area, connecting farmers and buyers who bring commodities to consumers' areas.
- In a wholesale market, major players (users of a market) are farmers/collectors, wholesalers, and buyers.
- An important function is to provide market information in order to mitigate price fluctuation.
- Involvement of the government would be limited to provision of information and management of a place of transaction. Real players of distribution flow (to produce, buy, and sell) can be private sectors.
- STA can have a value added facilities such as grading/sorting/cold storage etc, however they can be equipped in case that conditions permit.
- STA can provide some assistance for farmers such as provision of finance/credit and necessary extension services, however, they can be provided in case that conditions permit.

The above points are illustrated as below.




Source: JICA Study Team

**Figure 3.2.1 Theoretical Understanding of STA Function**

Important Points for STA Establishment

In order for STA to function well, the following points are considered important for STA establishment by looking at three target STAs.

*Selection of Location*

Needless to say, a STA should be established in vegetable (or fruits if targeted) producing areas. In addition, even in such areas, a location of a STA must be selected along with (or not far from) main roads which connect between the producing area and target consumers areas.

*Facility Design Based on Certain Concept*

Facility design must be matched with a concept adopted for a certain STA. If the concept of the above theoretical STA is followed, the most fundamental facilities are booths for wholesalers. Booths that are easy for expected wholesalers to use must be designed including truck access and car circulation paths in the area (one way from incoming to outgoing).

*Opinions of Users*

Key players are wholesalers who are expected to be in STA. At a planning stage, potential wholesalers must be identified (in most cases, there must be some collectors who have done trading business of vegetable in surrounding areas) as potential wholesalers, and it is important to collect their opinions

for future use of a STA.

*Socialization*

Socialization must be made for all of the current stakeholders especially in the current vegetable distribution flow. For farmers, it is important for them to know there is a place where vegetables are sold because they need information of where to sell. And for retailers or distributors in target consumer areas, it is also important for them to know there is a place where vegetables can always be purchased. For private collectors, it is indispensable for them to know that they can be in a STA to do their wholesale business as potential wholesalers.

For STA Mantung, all the above points are supposed to be fulfilled well. However, these points are not followed for STA Saribudolok and Pattapang. Although the two STAs are established in the vegetable producing areas, they are not fully utilized. One of the reasons is probably the concept of the two STAs and their reflection to their facility designs. Actually, the concepts of the two STAs seem to be envisaged as the ones for businesses by certain agents and different from what have been theoretically confirmed as above (wholesale markets), judging from the facilities' design. Accordingly, their facilities are not for theoretical wholesale markets. Now, since the business entities have failed to operate the business, the two STAs are not being utilized. To propose improvement plans, the above points have to be referred to.

**2) Basic Concept for Proposing Improvement Plan for Three STAs**

General

In the study, subjects of our recommendation on improvement are operation and management of target STAs. Therefore, in general, our recommendations do not include major changes/improvements of their facilities. However, depending upon a STA, some improvements on their facilities may be proposed at a minimum level in order to make STAs utilized.

Commodities for all three STAs are proposed basically to be vegetables. At this moment, commodities in STA Mantung are vegetables. There are many vegetable dealers in the surrounding areas of other two STAs. Thus, vegetables can be judged as potential and practical commodities to be transacted in STAs. Based on the record of Wednesday's open market of STA Saribudolok, food crops (maize and cassava) and fruits (pineapple and apple) are transacted. Although primary commodity to be transacted is proposed as vegetable, other agriculture products should not be excluded as long as wholesalers have intention to deal with them.

In preparation of our recommendations, the most important point is to decide a concept for a STA, because a concept totally affects facility design and activity/business plan. Especially for STA Saribudolok and Pattapang, the two STA were managed by the publicly owned companies, and their concepts were not typical STAs, but for their own business. And now the managements of the two have also failed. Considering this background, all concepts for target STAs are proposed to follow the concept of theoretical wholesale markets confirmed as above.

Based on the analysis of the current condition mentioned in 3.1 opinions of stakeholders, and confirmation of theoretical understanding of STA described above, basic concepts for improvement of current operation and management of target three STAs are examined and proposed as below.

STA Mantung

Basically, this STA is operated and managed well. Therefore, our recommendations must be made from the viewpoint of further improvement of current operation and management.

Based on the characteristics identified in 3.1.1, the following components are our recommendations for improvement of operation and management of STA Mantung.

- Strengthening of function of dissemination about price/demand information to related stakeholders

  By analyzing the data given by the STA office as seen in 3.1.1, there are still lots of price/demand fluctuations. Even this type of well-run STA still suffers from these fluctuations. One of the

important countermeasures is to provide price information to players. Prices (farm gate price and wholesale price) are distributed through SMS, or mobile phones which are specifically equipped in the STA office for this purpose, numbers of which are also distributed to farmers and buyers in the consumers area (e.g. Pasar Induk Puspa AGRO (TA)). For bigger buyers who are far from this STA and capable to access to computers, current homepage is recommended to be updated to disclose price information of commodities. Mobile phones and PC need to be upgraded.

For demand information, individual wholesalers have own customers and do their business at their own risks. However, in case of wholesalers facing some difficulties to buy vegetables, the management office has to provide information of places from where vegetables are sent. And, general tendency of transaction volumes in the STA can also be disclosed by mobile phones and homepages for potential customers, so that more customers are expected to approach to the STA.

- Improvement of fee collection system

  According to the rough estimate made in 3.1.1, there seem a lot of rooms to improve fee collection. Though the policy about income depends upon the agency of agriculture in the regency, it can be recommended to collect fee more strictly. For example, collection of rental booth fee and entry fee can be increased if the collection makes stricter. The increase of income by these activities could cover management expenditures, and even possibly cover salaries of staffs.

- Improvement of garbage treatment

  Current garbage (especially garbage from vegetables) treatment is not recommended. It is good that farmers/others bring back some of garbage for use as fertilizer or feed for animal husbandry. However, the rest is just thrown in the nearby stream that causes odor and imparts negative impacts to the neighborhood. At least, a waste place must be equipped and such garbage must be collected to the area. It is proposed to coordinate with a public garbage treatment agency to pick garbage up to dump or to burn it following regulations in the regency. For example, in Pasar Induk Kramat Jati, the management body makes garbage collection Refer photo below where garbage is put into the trucks. This can be referred for improvement.

Current garbage thrown


Current garbage place (not well used)

Garbage collection at Pasar Induk Kramat Jati

  According to the staffs, there is a plan to install a garbage treatment plant to make organic fertilizer. The idea is ideal, but a cost-benefit analysis should be done for its sustainable usage. At least a proper waste management has to be proposed for the time being.

- Capacity development of officers in the STA in the above mentioned fields

  To achieve above-mentioned components of improvement, training of staffs in the STA office is recommended. Fields of training are a) information dissemination including computer skills (homepage building and managing), b) fee collection, and c) garbage system.

In addition, it must be noted that our recommendations focus primarily on function of wholesale markets, not on function of agricultural extension related activities, which has been emphasized recently. Although extension activities for farmers are important, these activities are excluded from our

recommendations. However, it should be noted that for example, quality needed by the markets must be disseminated to farmers so that more products with reliable/good quality and even high price can be expected. Market driven agriculture is important, and the STA office can assist to achieve such agriculture in the surrounding area under coordination with extension workers because the STA knows market demand very well.

STA Saribudolok

In this STA, the starting point is the fact that the STA is not used now. Thus, the most important direction of our recommendations must be given to how to make this STA usable. Keeping in mind the theoretical STA's functions and the characteristics of the STA identified in 3.1.2., the following two concepts are compared.

**Table 3.2.1 Comparison of Two Concepts for STA Saribudolok**

| Concept | Business by managing body | Typical STA (wholesale market) |
|---|---|---|
| advantage | ● A managing body can do their own business by their own policy and interest. | ● The current collectors who are key stakeholders in the current distribution flow can be accommodated as users of the facilities.<br>● Some collectors want to use the STA.<br>● The role of the government can only be provision of transaction place and its management. All business risks will be taken by collectors (wholesalers)<br>● Some income from the STA is expected. |
| disadvantage | ● The management by AGROMADEAR has failed. Normally efficiency of publicly owned companies is lower than private-owned companies.<br>● A business entity will be a competitor to the stakeholders of the current distribution flow.<br>● It needs certain initial investments for their business. | ● The regency government might play a certain role for its management. |

Source: JICA Study Team

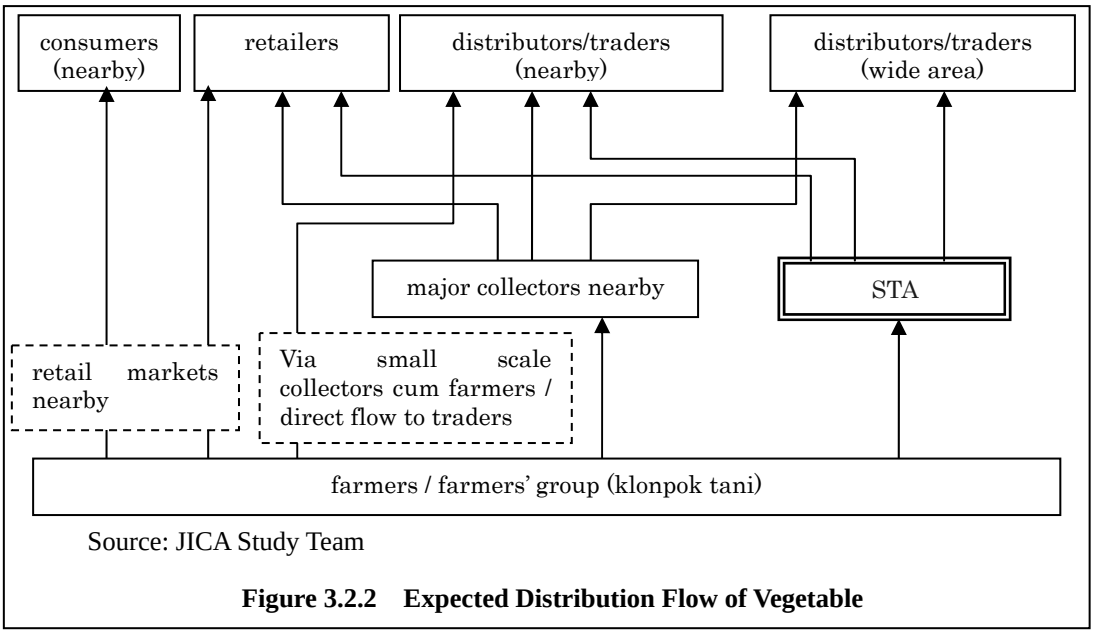
According to the above comparison, risks for the concept of typical STA seem less[16]. Therefore, there are three reasons to choose this concept as described below.

First, in this STA, a market is opened once a week and functions as a wholesale market to some extent. Therefore, it could be assumed that the current location has satisfied potential requirements for a wholesale market.

Second, there are some farmers/collectors who use this STA partially for vegetable sorting/packing, though they do not have any permission from the government. This shows that the STA has a benefit for collectors who may not have enough space for their business and think expansion of their transaction. In addition, collectors who attended the stakeholder meeting expressed their needs to use the facilities.

Third, current size of the STA (1.3 ha) can be roughly assumed to be able to handle around 56 ton/day (around 20,000 ton/year) according to the transaction record of STA Mantung. Based on the examination in 3.1.2, the surrounding area (vegetable production is 195,000 ton/year) could afford to accommodate this transaction volume, not competing against the major private collectors who have their own facilities and may not show interests in the new place. Expected distribution flow is assumed as below.

[16] If any private investors who are capable enough want to use the facilities for their own business, it can be one of the options with some certain conditions which may be required by the regency government.




Source: JICA Study Team

**Figure 3.2.2 Expected Distribution Flow of Vegetable**

Therefore, a new concept for improvement recommended is a typical STA (a wholesale market), considering the past failure of business and theoretical concept of STA. As seen in 3.1.2, the design of the STA facilities is not for a wholesale market; therefore some facilities must be renovated. Since the concept is recommended as a wholesale market, a model can be STA Mantung. Expected wholesalers in the STA are collectors from in the surrounding areas, or, potential collectors / farmers who have a will to do this business (they are presumably small scale collectors / farmers in the current flow).

Basically 24-hour and 365-day operation is envisaged as a wholesale market. Therefore, Wednesday's market, currently opened once a week, will be merged into the new operation.

Next, comparison about management body is made. At this moment, three candidates are proposed as shown below.

**Table 3.2.2 Comparison of Candidate Managing Bodies for STA Saribudolok**

| Managing body | AGROMADEAR | Regency Government | Farmers organization |
|---|---|---|---|
| Advantage | ● AGROMADEAR can use their past experiences. | ● The government is the management body of STA Mantung and this system works well.<br>● The government can directly implement their policy to connect farmers, wholesalers, and buyers. | ● Farmers can use the facilities for their own sake. |
| Disadvantage | ● Their management might not be efficient. | ● The regency government must dispatch management staffs to the STA. | ● It is possibly too low capacity to manage, e.g. they could not find customers, and could not manage the facilities well. |

Source: JICA Study Team

If the concept of a wholesale market is adopted, somebody must manage a market in addition to players, namely sellers, wholesalers, and buyers. In STA Mantung, the government itself manages the facilities. Although there are some cases that management has handled by publicly owned company, it is recommended that the regency government (the agency of agriculture) be a managing body, because AGROMADEAR has failed the business; it has been withdrawn; and lost its credibility. Farmers' organization is less advantage than others considering the capacity. Also, a neutral body for players

(producers, wholesalers, and buyers) is recommended to be a managing body.

The opinion raised more in the stakeholder meeting is the needs for provision of information. Farmers want to know where to sell at what price. Collectors want to keep the price stable, meaning that production volume should not fluctuate (farmers start sowing at once if they know vegetable price is high, then at the time of harvest, too much production leads price decrease). Such information can be provided by the STA to the surrounding area.

Under this concept, the management body will collect several fees from players. These fees should be carefully decided otherwise collectors would not use the facilities if they are too high. There is the illegal fee collection resulting in farmers' hesitation to use the STA. To avoid such hesitation, fee system must be transparent. At the initial phase, a goal of fee income can be set to cover expenditures except salaries of management staffs.

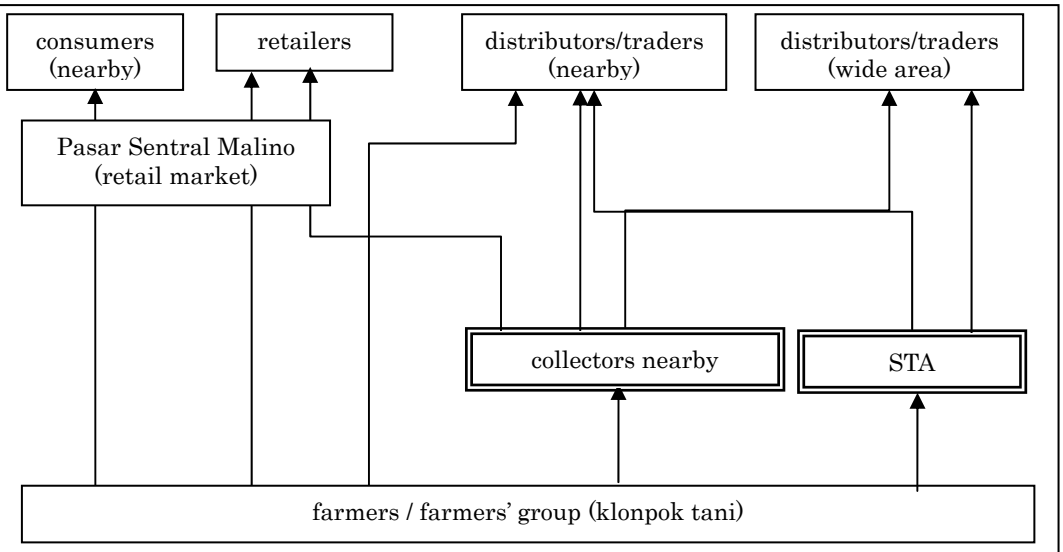
In summary, the following directions are proposed for the improvement plan.

- Opening the facility to collectors with rents, who are available in surrounding areas, by a form of extending the current Wednesday's open market
- Management by the agency of agriculture of the regency, providing marketing information to stakeholders and operating/managing the facility

STA Pattapang

Situation in STA Pattapang is similar to STA Saribudolok in terms of its operation, though the characteristics of the surrounding area are slightly different.

As for a concept of the STA, the table used for STA Saribudolok is applicable to STA Pattapang as well, and it is recommended that the STA is utilized by collectors in nearby areas like STA Saribudolok considering the theoretical function of STA. As seen in 2.3.3, the design of the STA facilities is not for wholesale markets; therefore some facilities must be renovated. Expected wholesalers in the STA are collectors available in the surrounding areas. Vegetable production in the surrounding area is assumed to be not more than the current transaction volume of vegetable by existing collectors. Therefore, cooperation with current collectors is indispensable. According to the opinions of the existing collectors, there are needs that they want to use the facilities of the STA, because some of them may not have enough facilities for their business. Therefore, the STA can be utilized, although the current flow may have to be changed. To see how the flow will be changed from the viewpoint of volume, future expected transaction volume at the STA is assumed. Current size of the STA (0.15 ha) can roughly be assumed to be able to handle around 6.5 ton/day (around 2,400 ton/year) referring to the transaction record of STA Mantung. This volume is small (24,000 ton of assumed vegetable production in the surrounding area) because the area of the STA is limited, and it is considered that this assumed amount at the STA could be accommodated in the current flow. Expected distribution flow is assumed as below.




Source: JICA Study Team

**Figure 3.2.3 Expected Distribution Flow of Vegetable**

Comparison about management body is made similar to STA Saribudolok as below.

**Table 3.2.3 Comparison of Candidate Managing Bodies for STA Pattapang**

| Managing body | PERUSDA | Regency Government | Farmers organization |
|---|---|---|---|
| Advantage | ● Involvement can be continued. Drastic new change is not necessary for improvement, because they are available at the STA. | ● The government is the management body of STA Mantung and this system works well.<br>● The government can directly implement their policy to connect farmers, wholesalers, and buyers. | ● Farmers can use the facilities for their own sake. |
| Disadvantage | ● There may be some concerns that PERUSDA is not capable to handle the management of the STA. | ● The regency government must dispatch management staffs to the STA. | ● It is possibly too low capacity to manage e.g. they could not find customers, and not manage the facilities well. |

Source: JICA Study Team

For this STA, PERUSDA is recommended to manage the STA. The reason is that there are staffs in the STA now, and they can relatively start its operation easily (AGROMADEAR has already withdrawn from STA Saribudolok). Although PERUSDA was not able to succeed in their business, they are expected to be able to manage the STA, which is a typical wholesale market. Farmers' organization is less advantageous considering its capacity here, too.

Following the management of STA Mantung, the management body has proposed to collect several fees from players. These fees should be carefully decided otherwise collectors would not use the facilities if they were too high. At the initial phase, a goal of fee income can be set to cover expenditures except salaries of the management staffs (at least better than the current situation).

One more important point is involvement of the landowners who provided the land of the STA for free of charge. Theoretically, the owner had already provided the land, and therefore the government can utilize the land. However, he still uses the facilities by himself (he says that is because PERUSDA does not use it). For example, last year, he invested to equip walls to the facilities by himself. So it seems, he still has some influences on the STA. To realize the above concept, the landowner is needed to act as one of the players. It is suggested that he is accommodated as one of wholesalers (or facility

users) rather than eliminating him.

In conclusion, the following directions are proposed for improvement plan for this STA.

- Opening the facility to collectors with rents, who are available in surrounding areas
- Continuous management by PESUDA, but not to implement its business, but to provide market information to stakeholders and operate/manage the facility

### 3.2.2 Improvement Plan of Operation and Management of Three STAs

**(1) STA Mantung**

Based on the basic concept mentioned in 3.2.1, improvement plan of operation and management of STA Mantung is proposed as follows:

- Strengthening of function of dissemination about price information to related stakeholders

  Market Information System is recommended to be established. STA staffs will collect price information (farm gate price in the surrounding area and wholesale price in the STA and consuming areas including Pasar Induk Puspa AGRO) and keep daily record. For demand information, the staffs collect information of transaction volumes in the STA (already collected from booths), monthly vegetable production in the surrounding area from the agriculture offices of sub-regencies, and demand in consumers' area from Pasar Induk, or major customers.

  To distribute the information, the following two measures are proposed. One measure is by mobile phones. Mobile phones specifically used for this purpose will be equipped in the STA office, and their numbers will be disseminated to farmers in the surrounding area and buyers in the consuming areas. When they want price/demand information, they can make calls or send SMSs to the phones, and the STA staffs respond.

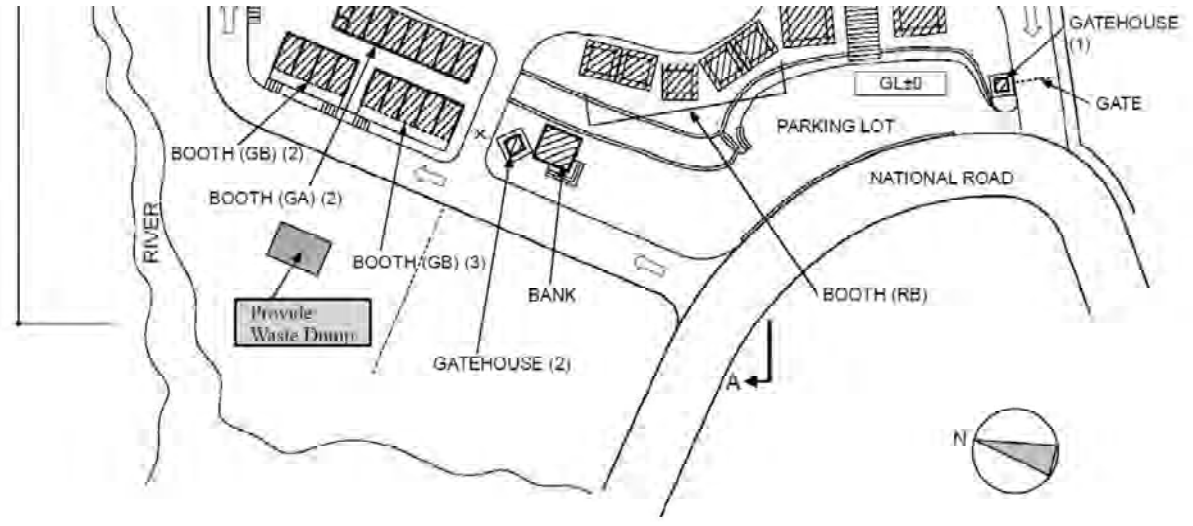
  The other is by homepage. The homepage has to be updated to disclose the above information daily and monthly by STA staffs. PC should be upgraded, and software of homepage building will be installed.

- Improvement of fee collection system

  The staffs are proposed to collect rental booth fee more strictly than now. Also at the gate, the staffs will make strict collection of entry fee from users of the STA.

- Improvement of garbage treatment

  A new waste dump has to be installed. The sketch is shown in the following figure.




Source: JICA Study Team

**Figure 3.2.4 Sketch of Waste Dump**

Location and structure of the dump should have easy access by trucks otherwise nobody will use it. The STA office has to prepare a rule that garbage must be disposed into the waste dump. The office then coordinates with a public garbage treatment agency to pick them up to dumping area periodically. Otherwise, the collected garbage must be burnt.

- Capacity development of officers in the STA in the above mentioned fields

  For provision of market information system, training is proposed to cover a) how to collect market information, b) how to provide such information to stakeholders including socialization, and c) skills of preparation and maintenance of website.

  For improvement of fee collection system, a study tour is proposed. There is a private Pasar Induk (PI Osowilangun Surabaya) in Surabaya. Normally private markets strictly manage income (collect fees), and as this Pasar Induk does. Although this private market has just opened and is not fully operated, staffs are proposed to visit this market to see how they operate.

  For garbage treatment, training to officers will include preparation of new treatment system (and rules), dissemination of rules to the market users, coordination to a public garbage treatment agency, and its implementation. A tour to Pasar Induk Kramat Jati is recommended.

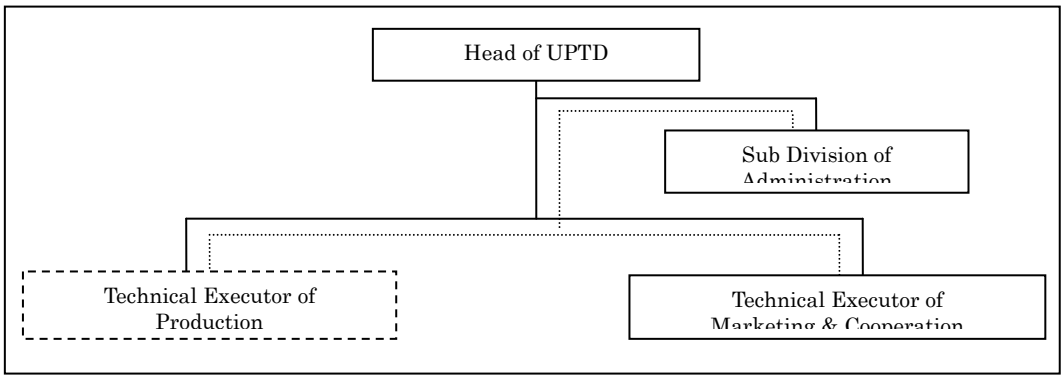
  The regional government officers will implement these training, or otherwise some consultants can be hired for this capacity development.

**(2) STA Saribudolok**

Based on the basic concept mentioned in 3.2.1, improvement plan (more concrete things to do) of operation and management of STA Saribudolok is proposed as follows:

**1) Establishment of New Management Body**

Following the operation and management of STA Mantung, the agency of agriculture in the regency is recommended to establish UPTD to manage this STA. One idea of proposed organizational chart is shown below.




Source: JICA Study Team, refer to Profil Sub Terminal Agribis (STA) Mantung-Pujon

**Figure 3.2.5 Proposed Organization Chart of STA Saribudolok**

Staffs specialized for this STA are proposed to be dispatched. A head of UPTD is responsible for overall operation and management of the STA. Staffs under sub division of administration have a role of budgeting (income and expenditure), and general affairs including waste management and security of the STA. Staffs under marketing and cooperation are to collect/disseminate information of marketing (price, transaction volume, sellers/buyers, demand of consumer area, and etc.). Technical Executor of Production can be established after this new system starts to work well. Dispatched staffs are always at the STA to continue their works on the ground.

Wholesalers (hopefully current collectors) are expected to use the facilities. Sellers and buyers can enter the STA, as they need. Private labors can work in the STA depending upon requirements by wholesalers as observed in STA Mantung. UPTD manages the activities of these stakeholders e.g. by setting rules and collecting several fees. New STA will be opened for 24 hours, and 365 days. Current

Wednesday' market will be merged into the proposed system.

**2) Roles of New Management Body**

Roles of UPTD are as follows:

Normal Operation and Management of the STA

UPTD is to collect several fees from users and conduct operation of the STA. The office must keep information of transaction volume by wholesalers, price of vegetables, kinds of vegetables, and its budgetary records. This information must be stored in personal computer.

Information Provision

Market information such as price, transaction volume, and demand are to be disclosed for anybody such as farmer, collectors, and distributors. Mobile phones for this particular purpose must be equipped at the office, and staffs in charge should phone calls to provide such information (SMS or call). Numbers of the mobile phones should be disseminated to related stakeholders. If and when the new management system operates well, information provision by website can be introduced for customers in the consumer areas.

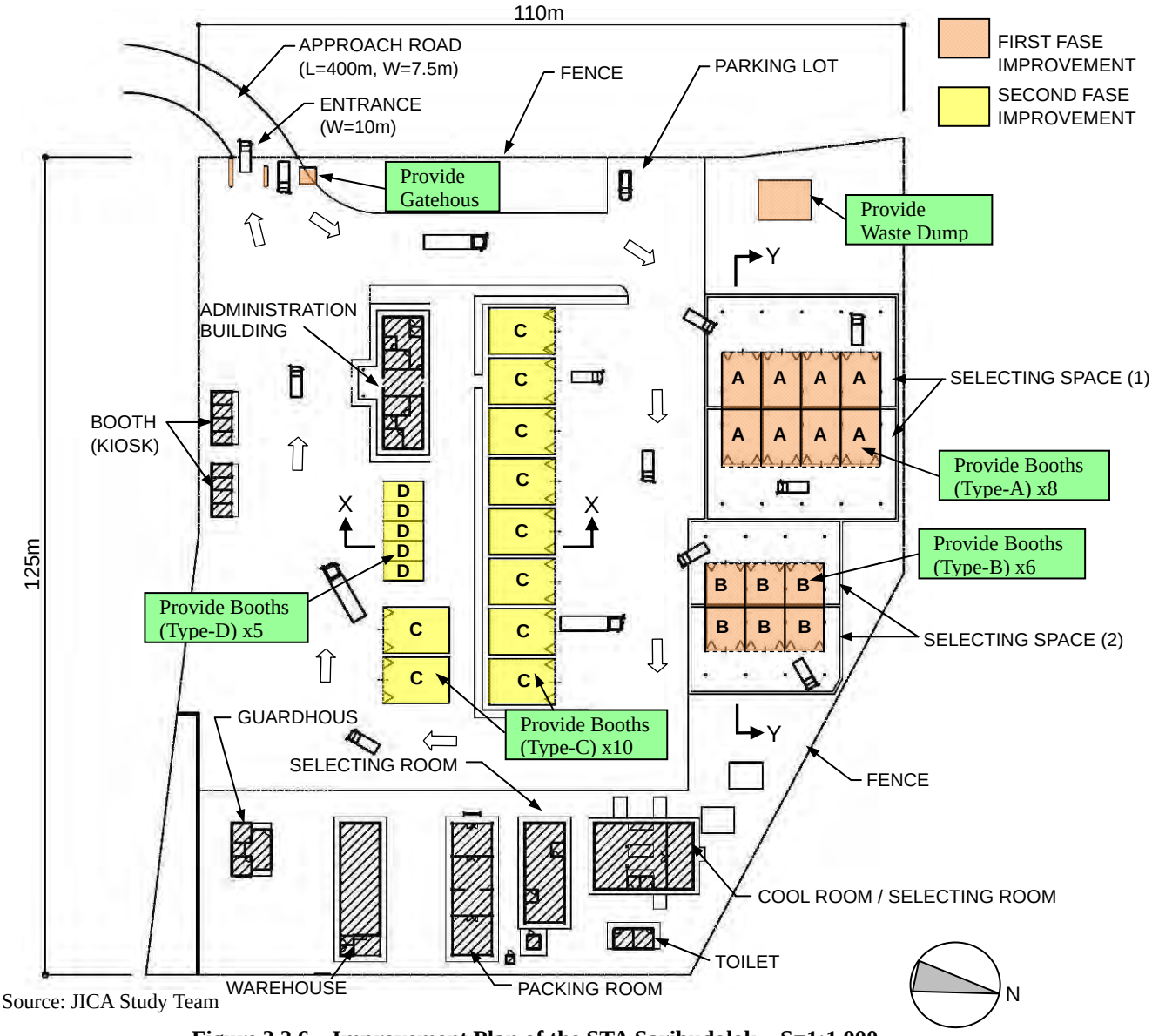
In addition, if high-end customers are aimed, information of required quality can also be disseminated by the STA (by technical executors of production after its establishment). This will not be an immediate action but in near future. It is recommended to establish a market-oriented vegetable production in the surrounding area through this STA. Required shape, post harvest (grading/sorting), farming technology such as less application of chemical, and even varieties will be disseminated.

Waste Management

Farmers can take most of the waste from vegetable as their organic manure for free of charge, and the rest must be managed properly. Current location of waste dump is not appropriate (very difficult to access by trucks). Such garbage must be temporarily kept in a renovated dump, stored, and requested to be disposed by a regional waste management agency for an official treatment (renovated dump site is shown in the figure in 3)).

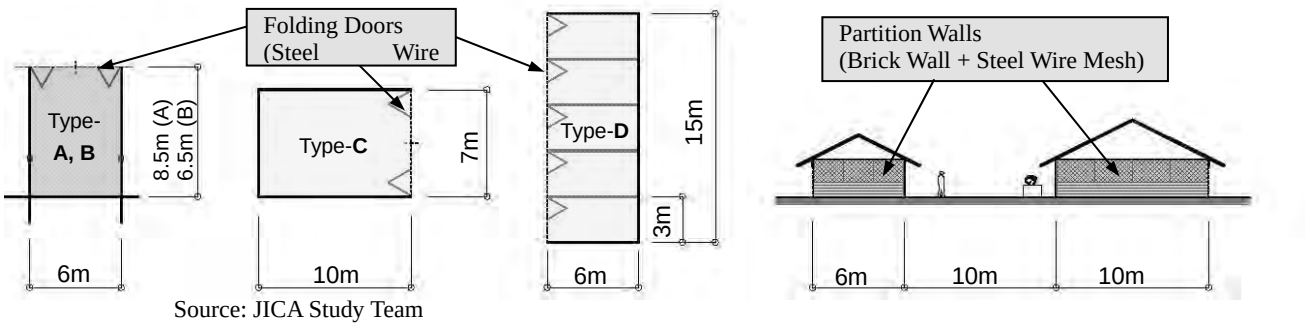
**3) Facility Renovation**

In order to realize the above-mentioned system, the following renovation is considered.



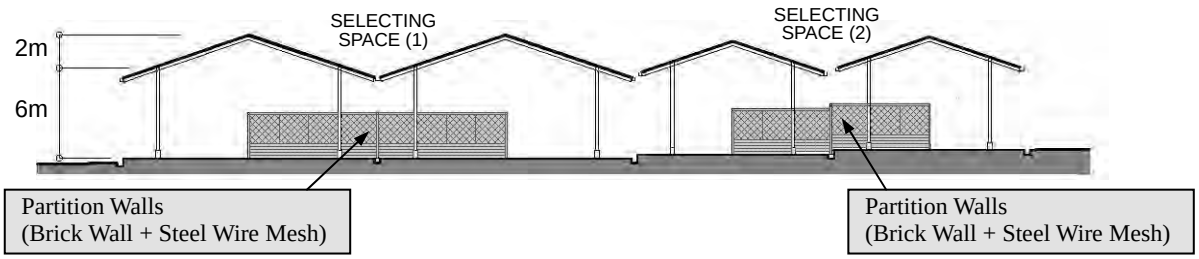

Source: JICA Study Team

**Figure 3.2.6 Improvement Plan of the STA Saribudolok S=1:1,000**




Source: JICA Study Team

**Figure 3.2.7 Booth Plan and Section X-X S=1:500**




Source: JICA Study Team

**Figure 3.2.8 Section Y-Y S=1:500**

The renovation proposed is to be divided into two phases. In the first phase, installation of gate, gatehouse, booths in the places with roofs, and waste dump are proposed as minimum physical improvement. In the second phase, more numbers of booths are proposed to be newly installed in the open area. This can be judged depending whether the new system works well in the first phase. By this physical renovation, the STA is expected to be utilized as a theoretical wholesale market.

Selecting rooms and a cool room (cold storage) is proposed to be kept as it is. Especially, a cool room is effective only if distributors have trucks with refrigerators for a cold chain. If anyone wants to use it, it can be rented out with some fee. Fruits may be good commodities if private collectors want to deal with fruits.

**4) Income and Expenditure**

For income, a system like STA Mantung can be followed. The proposed salaries of staffs are to be borne by the regency government, and other management expenditures for the STA are to be paid from collected fees (if excess income is available, it will be given to the regency government).

There are several fees at STA Mantung. Here at STA Saribudolok, the fees must be carefully decided, otherwise collectors may not utilize as fees may affect their profit margins. The following two kinds of fee are proposed considering the current size of the STA, and will be decided in consultation with potential users.

a) Entry fee

At STA Mantung, the entry fee is set as follows:

| | |
|---|---|
| Big size truck | 4,000 Rp/time |
| Medium size truck | 3,000 Rp/time |
| Small size truck | 2,000 Rp/time |
| Motorcycle | 1,000 Rp/time |

The fee can be collected at a newly installed gate at the STA.

b) Booth rental fee

The booth fee can be a major source of income of the STA. The existing fees at STA Mantung are

shown below.

| | |
|---|---|
| type GA booth with key (18 $m^2$ x 13 booths) | 391,500 Rp/month |
| type GB booth with key (18 $m^2$ x 17 booths) | 337,500 Rp/month |
| type GC storage with key (18 $m^2$ x 10 storages) | 337,500 Rp/month |
| type RB, RC booth open (34 $m^2$ x 13 booths) | 117,000 Rp/month |
| type RS booth open (64 $m^2$ x 2 booths) | 131,625 Rp/month |

For proposed booths in the both first and second phase, walls and doors are to be installed. Thus, the above GA, GB and GC type of fee can be one alternative that means, around 18,000 Rp/month/$m^2$. Rent for more simple type of booths (no roof, no wall) is around 5,000 Rp/month/$m^2$. These are bases of discussion, and socialization must be required to set appropriate fees.

**5) Socialization for Potential Players**

As a first step, the above-mentioned plan should be explained to farmers and collectors in nearby areas. Since potential users as wholesalers are collectors and farmers who can afford to do so, this plan should be disseminated to as many people as possible. Applications for booth rental will be invited to decide wholesalers in the STA. For farmers, it would be good to know that there will be a place to buy vegetables from them. Gradually, this new system of the STA will be extended to the surrounding area.

After establishment, consumption areas such as Brastagi, Medan, Pematangsiantar, Tanjung balai, in North Sumatera Province, Padang in West Sumatera Province, Pekanbaru in Riau Province, Batam Island in Riau Island Province, and Jakarta are target for socialization. Socialization must be implemented to let buyers in these areas to know the existence of this new improved STA, so as to attract more customers.

**(3) STA Pattapang**

Based on the basic concept mentioned in 3.2.1, improvement plan (more concrete things to do) of operation and management of STA Pattapang is proposed as follows (almost same as STA Saribudolok):

**1) New Management System**

As discussed, current PERUSDA is proposed to continue its operation and management of STA Pattapang. The current organization can be used, but the roles will be different.

The proposed facilities are to be utilized by wholesalers (hopefully current collectors). Sellers and buyers can enter into the STA as they need. PERUSDA acts as a management body of the facilities and rents out booths to wholesalers and collect fees. New STA will be opened for 24 hours, and 365 days as wholesalers need.

**2) Roles of New Management Body**

Roles of PERUSDA are as follows:

<u>Normal Operation and Management of the STA</u>

PERUSDA is to collect fees from wholesalers and conduct operation of the STA. The office must keep information of transaction volume by wholesalers, price of vegetables, kinds of vegetables, and its budgetary records. This information must be stored in personal computer. PERUSDA also must ensure the security (no thefts) and conduct waste management.

<u>Information Provision</u>

Market information such as price, transaction volume, and demand are to be disclosed for anyone such as farmer, collectors, and distributors. Mobile phones for this particular purpose must be equipped at the office, and staffs in charge should take the phone calls to provide such information. Numbers of the mobile phones should be disseminated to related stakeholders. Since the area of the STA is limited, information of price (farm gate price and wholesale price) is collected not only from wholesalers in the STA, but also from collectors in nearby areas.

In addition, similar to the other two STAs, if high-end customers are aimed, information of required

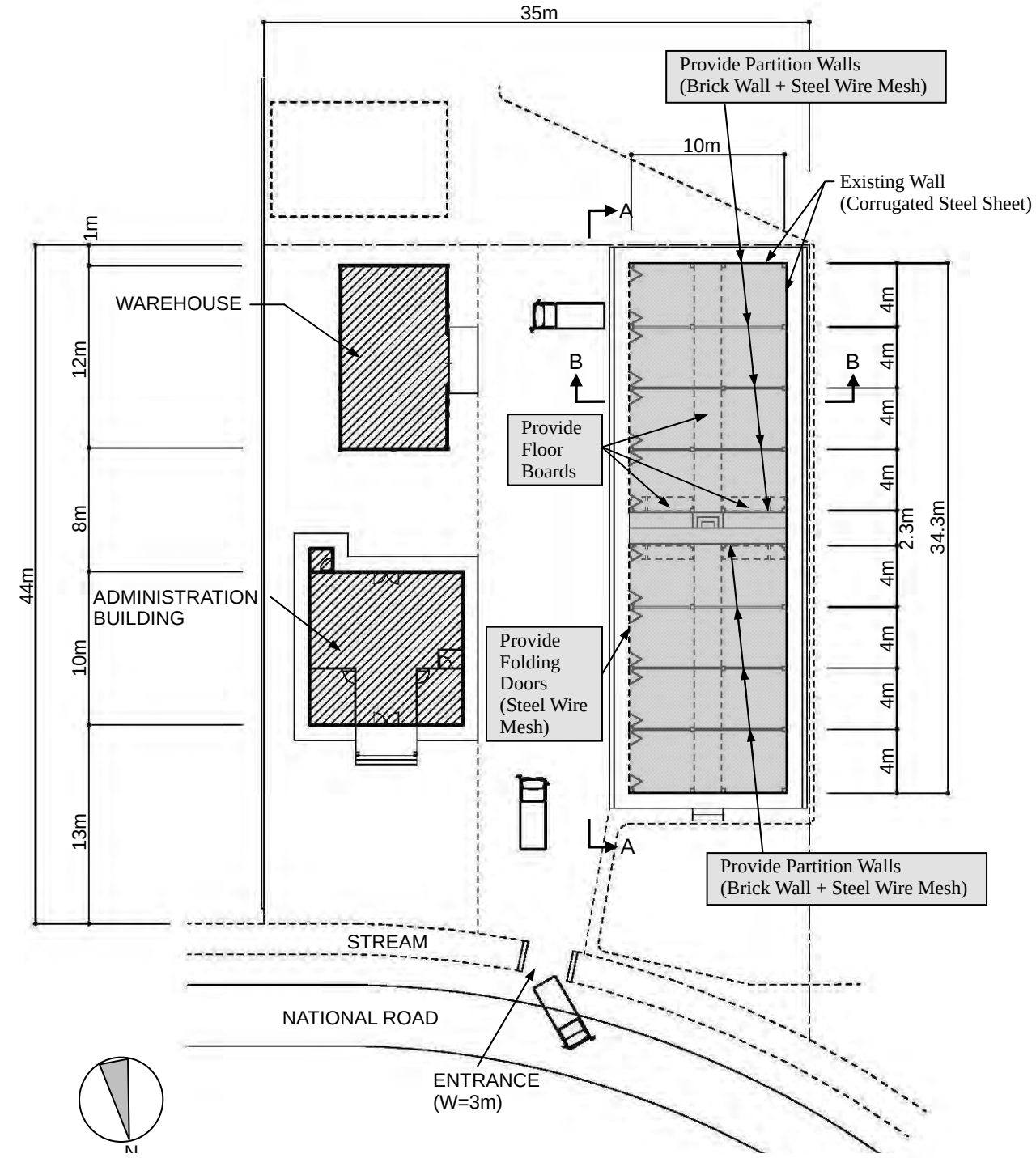
quality can also be disseminated by the STA (can be handled by cultivation section). This need not be an immediate action but in near future. It is recommended to establish a market-oriented vegetable production through this STA in collaboration with extension workers. The current activity of vegetable production can be continued, however provision of information is more important than vegetable production as the main activities as a wholesale market.

Waste Management

Farmers can take most of waste from vegetable as their organic manure for free of charge, and the rest must be managed properly. Such garbage must be temporarily kept at the side of the area, and then are to be disposed by a regional waste management agency for an official treatment; the expected garbage quantity may not be large. The system can be referred to the one of Pasar Sentral Malino.

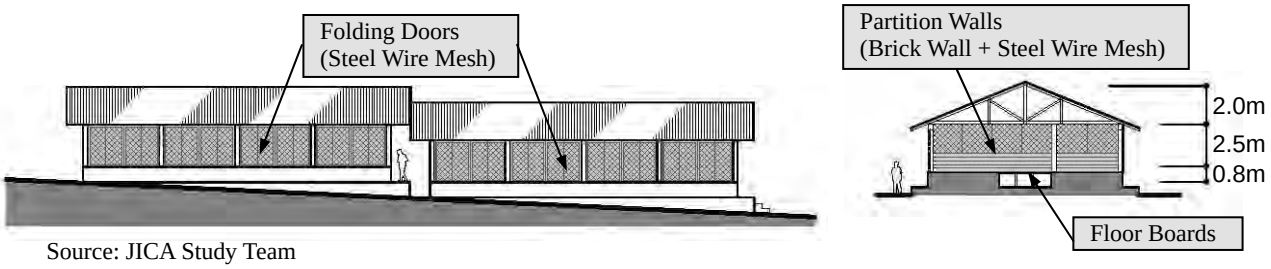
**3) Facility Renovation**

In order to realize the above-mentioned system, the following renovation is required.




Source: JICA Study Team

**Figure 3.2.9 Improvement Plan of the STA Pattapang S=1:400**




Source: JICA Study Team

**Figure 3.2.10 Elevation A-A and Section B-B S=1:400**

Installation of booths is very important; to create the booths, walls and doors will be equipped to the current facilities. By this physical renovation, the STA is expected to utilize as a theoretical wholesale market. A proposed storage facility is just to be kept as it is. If anyone wants to use it, it can be rented out with some fee.

By this renovation, eight booths will be established. The landowner who provided the land to the regency government will use one of the booths. It is advisable not to ignore the landowner, although the STA can be theoretically handled by the regency government as discussed in 3.2.1 (2). By accommodating the landowner, any confusion in the future are can be avoided.

**4) Income and Expenditure**

For income, a system like STA Mantung can be followed. Salaries of staffs are proposed to be borne by PERUSDA (established by the regency government), and other management expenditures for the STA are paid from collected fees (if excess income is available, it will be an income of PERUSDA).

There are several fees at STA Mantung. For STA Pattapang, the fees must be carefully decided, otherwise wholesalers may not utilize as the fees may affect their profit margins. Only the booth rental fee is proposed at this moment considering the current size of the STA (total vegetable production volume in the surrounding area is also less than the other two places, as well as the size of the STA), and it will be decided in consultation with potential users.

For new booths, walls and doors are proposed to be installed. Rent of similar type of booths at STA Mantung is around 18,000 Rp/month/$m^2$. Rent for more simple type of booths (no roof, no wall) there is around 5,000 Rp/month/$m^2$. Like STA Saribudolok, socialization must be required to agree fees with expected wholesalers.

**5) Socialization for Potential Players**

Similar to the proposed socialization for STA Saribudolok, two steps are recommended. As a first step, the above mentioned plan should be explained to farmers and collectors in nearby areas. Since potential users as wholesalers are collectors and farmers who can afford to do so, this plan should be disseminated to as many people as possible. Applications for booth rental will be invited to decide the eight wholesalers. For farmers, it would be good to know that there will be a place to buy vegetables from them. Gradually, this new system of the STA is expected to be a part of the current distribution flow in the surrounding area.

After establishment, consumption areas such as Makassar, Sunggumhinasa, Bulukunba, Sinjai, Selayar, Bone, and Kendari are target for socialization. Socialization must be implemented to let buyers in those areas to know the existence of this new improved STA, so as to expect more customers.

### 3.2.3 Comments on Improvement Plans

In order to explain and get feedback from regencies (the government organization in charge of each STA) on the proposed improvement plans, the following meetings were held. For all meetings, records and presentation materials are enclosed in Appendices 4-2.

**Table 3.2.4 Explanation Meetings**

| STA Mantung | STA Saribudolok | STA Pattapang |
|---|---|---|
| • Place : Agency of Agriculture, Malang Regency Office<br>• Date : 9 August 2011<br>• Time : 1.00 PM until 3.00 PM<br>• Attendants: 18 persons | • Place* : Regional Representative House Office of Simalungun Regency<br>• Date : 12 August 2011<br>• Time : 2.00 PM until 4.30 PM<br>• Attendants: 33 persons | • Place : Agency of Agriculture, Gowa Regency Office<br>• Date : 10 August 2011<br>• Time : 10.00 PM until 12.00 PM<br>• Attendants: 30 persons |

Note: Asterisk (*) refers to the minute of discussion in Appendices 4-2, agency of agriculture is written as this place, however, actual place of this meeting was held in the regional representative house office.
Source: JICA Study Team

In Malang Regency, the discussion was more on broader issues other than current operation of the STA. For instance, farmers commented the importance of creating awareness to increase vegetable consumption. Concerns toward imported vegetable and about competitiveness of domestic vegetable were also raised.

In Simalungun Regency, the issues discussed were on how to reactivate the STA for a full operation. A representative of cooperative of small scale collectors emphasized their strong needs to use the facilities of the STA.

In Gowa Regency as well, one of the major topics was how to improve the current operation of the STA. The agency of agriculture expressed the intention that PERUSDA needs to operate this STA properly, and PERUSDA expects the government involvement.

In conclusion, though some discussions and comments were made, there were basically no objections and requests for revisions on the recommendations about the improvement plans.

At Malang Regency

At Simalungun Regency

At Gowa Regency

# Part 4
# Conclusion and Recommendation

## 4.1 Conclusion

### 4.1.1 TA Development in Lampung Province

**(1) Selection of New TA Site in Lampung province**

Penengahan is selected among three candidate sites, as a project site for feasibility study on the new TA in Lampung Province by the Indonesian side, through a process of confirming government/ and provincial policies relevant to TA development, trading areas/distribution network, needs survey to stakeholders on the new TA.

**(2) Significance and Major role of New TA in Lampung Province**

The new TA in Lampung Province will have a function of transaction point for fruits and vegetables to be inter-regionally distributed from Lampung Province to DKI Jakarta. It will have a unique characteristic, wherein the functions of TA and STA are mixed, because its closeness to the production areas in Lampung Province; on the contrary, the existing TAs are located at the center of large consumption areas.

**(3)Major target products and function of New TA**

1) Total distribution volume in 2011 is less than 1,500 tons/day of fruits and vegetables, mainly fruits being distributed inter-regionally between Sumatra and the Jawa Islands. Among the potential volume that will be transacted through New TA, products with higher possibility are emphasized in the distribution from Lampung to DKI JKT. Among the products, banana is the highest potential product to be transacted at New TA and followed by watermelon and papaya.
2) In recent years, consumer demand for high quality fruits and vegetables in DKI JKT and imports of fruits have increased rapidly. In spite of this situation, there is a slow growth in modernization of traditional marketing system. New TA is anticipated to improve products quality and to establish an effective/efficient new marketing system.

Therefore, this new TA can be a model of modern inter-regional marketing system to contributing quality improvement and reducing waste in Jakarta (in the context of PERDA8 of DKI Jakarta).

There are two types of major beneficiaries of New TA. One is farmers and collectors of Lampung province, and the other is wholesalers and bulk-buyers in DKI JKT. Strengthening of linkage is indispensable for better functioning of New TA among various types of stakeholders as mentioned above.

**(4) Risks and issues in efficient functioning of New TA**

Several years will be necessary to reach a profitable operation after the commencement of New TA. Continuous effort and coordination are required among the relevant management authorities and stakeholders in order for them to receive adequate benefit as evidenced in the past of private sector wholesale markets.

The following issues should be taken into consideration to reduce the above-mentioned risks.

1) Lack of attractive services to attract/recruit stakeholders such as farmers, collectors and wholesalers
2) Lack of coordination among related persons/groups of stakeholders
3) Less understanding on the new TA by stakeholders through the provision of the clear-cut New TA Development Plan and its physical/management design
4) No experience on TA management by Lampung provincial government and management body, LJU

**(5) Impact of Sunda Strait Bridge Project**

With the Sunda Strait bridge completed (Refer to 2.2.2 (1)), the vehicles using the bridge would be passenger vehicles and cargo-trucks transporting high value-added products that can afford to pay toll charges considering the cost-effectiveness of the bridge. Hence, this planned bridge will have positive impacts on the new TA rather than any negative impact shown as follows.

a) Positive Impacts

The new TA will play a significant role when the bridge is in place, specifically providing value-addition on horticulture products, as mentioned below.

- Movement/transport of target horticulture products handled in the new TA shall shift from existing ferry service to the bridge.

  High value-added products in the new TA, such as banana, papaya and other fruits, will be transported using the strait bridge. Accordingly, value-addition of new TA is significantly noted.

- Target horticulture products handled in the new TA without shifting from existing ferry transportation to bridge

  Other commodities, such as watermelon, jackfruit, and fresh coconut, to which high value-addition is not be expected, will be transported using ferry-boat from Bakau Heni Port to avoid expensive toll charges of strait bridge.

- Other expected impact

  Lampung Province has a strategy to utilize the new TA as a hub of comprehensive development in eastern/southern Lampung. The bridge will also serve to transport other high value-added agricultural products. The traders will be expected to use the new TA for its service of value-addition.

b) Negative Impacts

If the quality control system in the production areas is strengthened, high quality products can be realized and transported from production areas (STAs or collection centers) to Jawa Island directly using the strait bridge. This situation is ideal for horticulture production in Lampung Province. But, such a drastic change in the production areas cannot be realized in short time. The reason is the production areas of horticulture products in Lampung, especially for banana, are scattered and small. The new TA still has to play a significant role in value addition in the production areas.

### 4.1.2 Improvement of Operation and Management of Three STAs

Targeted three STAs can be categorized into two groups in general, namely a good-example group and a group needing improvements in terms of their operation and management. Of the three, only one STA (STA Mantung) is in the good example group, and the rest of two (STA Saribudolok and STA Pattapang) are in the latter group. According to the data[1] of MOA, STAs that are judged as well-functioned ones are not so many. The three STAs visited showed the differences in their ideal functions and roles that depend on the responsible institutions charged with development, operation and management. As discussed in the STAs, STA Mantung is properly working as “typical wholesale market” with the facilities designed exactly for wholesale market. On the other hand, the other two STAs seem not to be intended as “typical wholesale market” judging from the facility design.

Improvement plans are proposed for each STA depending upon the site specific conditions. Especially for two STAs in the latter group, the plans focus on how to get started for activation, based on the theoretical understanding of STA with minor modifications on facilities.

## 4.2 Recommendation

### 4.2.1 TA Development in Lampung Province

**(1) Way of reducing risks of New TA operation**

1) In the proposed plan, initial target (80 ton/day of packaged and graded banana) and physical handling volume (510 ton/day for 11ha) are set at reasonably conservative quantity, and a step-wise development approach is proposed. Once the handling volume becomes larger, expansion can be

[1] The detailed planning survey report (Database Sarana dan Kelembagaan Pasar 2009, Directorate Pemasaran Domestic, MOA)

considered up to 50 ha as a next step.

2) From operational and management viewpoint, the proposed committees are recommended to be organized and to coordinate actions among all the related stakeholders, including initial efforts to attract the wholesalers of New TA through dissemination of advertisement and socialization.

3) In addition, mutual understandings and organizing of farmers group and collectors in Lampung and wholesalers in DKI Jakarta is advisable to enhance the utilization of the new TA and to expect quality improvement.

**(2) Technical training**

Technical training of key personnel of management body on the way of management and operation of New TA is indispensable on the following aspects.

In order to operate/manage the new TA sustainably, it is necessary for the MOA and agencies concerned in Lampung and DKI Jakarta provinces to provide technical assistance not only on the management issue of TA but also on technical and the financial issues in the following fields.

1) Management aspect:

   a. To organize the Committees and Management Body for New TA and to coordinate among relevant agencies,

   b. To make annual plan, formulate the regulation, implement operation, record/report regularly, monitor/supervise the operation, and maintain the New TA management.

2) Technical aspect:

   a. To conduct trainings and to hold workshops on products quality control, and on market information system including price/quality and trading volume through international training course as well as by domestic support from MOA and MOT and their relevant agencies.
   b. To provide techniques on the operation and maintenance of facilities and equipment.
   c. To provide knowledge and to train the operation of accounting system including fee setting/collection, formulation of income statement and cash flow tables.

**(3) Others**

From the Project implementation viewpoint, firstly it is important to complete the construction by 2014, and accordingly the EIA and land acquisition must be completed in 2012 in parallel with B/D, D/D and preparation of budget for construction.

### 4.2.2 Improvement of Operation and Management of Three STAs

Based on the above conclusion, the following recommendations are made related to STA (regarding the recommendations on improvement of operation and management for the specific three targeted STAs, please refer to the STA part in the report).

**(1) Promoting Proper Understanding of STA**

As discussed above, firstly, a policy is recommended on the improvement of operation and management of existing STAs in the latter group (not only to the two visited STAs, but also other STAs). Regency governments, institutions in charge of STA, are appropriately advised to understand properly the theoretical function and role of STA. As argued in the STA part, basic principle of STA on its functions are six, and the major four are; 1) STA is a wholesale market established in agricultural producing area; 2) in a wholesale market, major players (users of a market) are farmers/collectors, wholesalers, and buyers; 3) an important function is to provide market information in order to mitigate price fluctuation; 4) involvement of the government would be limited to provision of information and management of a place of transaction. In some regencies, there are cases that particular business entities (normally regency companies) is intended in STA. These cases may work, however if STA is intended to work in terms of typical wholesale market, regency governments are strongly recommended to understand the above-mentioned points. Once a proper understanding is made, the

following four points are recommended as practical considerations in proper planning of STA development and improvement: 1) selection of location, 2) facility design based on certain concept, 3) opinions of users, and 4) socialization (please refer to the STA part for more detail).

**(2) Strengthening of Marketing Linkage through STA**

After adopting the theoretical functions of STA as a wholesale market activates the STAs, that do not function well, the next step is to strengthen the marketing linkage through STA.

The horticulture farmer are small and scattered, and thus sub-collectors and collectors individually collect products from farmers and send them to consumption areas. Hence the actors are many, and marketing system is complex; price may become high, and quality loss may occur due to many actors in the system, leading to an inefficient marketing system. In order to improve the current horticulture marketing system, one of the solutions is to establish an efficient marketing system through introduction of STA. Especially for upper part of supply chain (related part of STA in horticulture producing area), it is expected that marketing system can be efficiently improved by providing a place of transparency, open transaction as STA, so that many actors can gather at one place, and complex system will be efficiently improved.

In addition, market linkage to downstream of supply chain via STA is important. Through introduction/activation of STA, it is expected that farmers (producers) can obtain marketing information, namely what consumers really want, from buyers (wholesalers, traders). Now free trade discussion is a hot issue, and free trade may be enhanced that agriculture commodities are freely traded across borders (more commodities with good quality may be imported), and hence competition is assumed to become intensive. Consumers are also realizing the importance of good and high quality. To cope with these increasing demands on high quality, farmers' efforts are required, not only just improving market system. Out of six points for the basic principle of STA as mentioned in (1) above, rest of two are; 5) STA can have a value-added facilities such as grading/sorting/cold storage etc; and 6) STA can provide some assistance for farmers such as provision of finance/credit and necessary extension services. As such, STA can play a certain role in this issue as well.

Considering the above-discussed issues, it is recommended that market linkage be strengthened via STA.