

**THE STUDY  
ON  
BUSINESS OPPORTUNITIES DEVELOPMENT  
OF TIMOR-LESTE**

**FINAL REPORT**

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**JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)**

**WORLD BUSINESS ASSOCIATES Co., Ltd.  
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1 US Dollar = 100 Centavos

## List of Abbreviation

Abbreviation	English Name or Portuguese Name
ADB	Asian Development Bank
APORTIL	Administração dos Portos de Timor-Leste (En.) Port Authority of Timor-Leste
ASEAN	Association of South East Asian Nations
ATJ	Alter Trade Japan, Inc.
AusAID	Australian Agency for International Development
BFZ	Berufliche Fortbildungszentren der Bayerischen Wirtschaft (En.) Bavarian Business Training Services
BNCTL	Banco Nacional de Comercio de Timor-Leste (En.) National Bank of Commerce of Timor-Leste
CBTL	Centru Banbu Timor-Leste (En.) Bamboo Center in Timor-Leste
CCI-TL	Chamber of Commerce and Industry of Timor-Leste
CCT	Cooperative Café Timor
C/P	Counterpart
C&F	Cost & Freight
DAC	Dezenvolve Agricultura Comunitaria (En.) Development of Agriculture Community
FAO	Food and Agricultural Organization (of the United Nations)
FOB	Free On Board
F/S	Feasibility Study
GAP	Good Agricultural Practices
GIS	Geographic Information System
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (En.) German Society for International Cooperation
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit (En.) German Agency for Technical Cooperation
IADE	Instituto de Apoio ao Desenvolvimento Emprezarial (En.) Institute for Business Development Support
ILO	International Labour Organization
JETRO	Japan External Trade Organization
JFPR	Japan Fund for Poverty Reduction
JICA	Japan International Cooperation Agency
MAF	Ministry of Agriculture and Fisheries

Abbreviation	English Name or Portuguese Name
MAF DNADC	Director Nacional de Apoio ao Desenvolvimento Comunitário Agrícola (En.) National Directorate for Agricultural Community Development
MAF DNAH	Director Nacional de Agricultura e Horticultura (En.) National Directorate of Agriculture & Horticulture
MAF DNFA	Director Nacional de Formação Agrícola (En.) National Directorate for Agricultural Education
MAF DNPA	Director Nacional de Pescas e Aquicultura (En.) National Directorate of Fisheries & Aquaculture
MAF DNPIAC	Director Nacional das Plantas Industriais e Agro-Comércio (En.) National Directorate of Industrial Crops & Agribusiness
MAF DNPP	Director Nacional de Política e Planeamento (En.) National Directorate for Policies & Planning
MAF DNPV	Director Nacional de Pequária e Veterinária (En.) National Directorate for Livestock & Veterinary Services
MAF DNQB	Director Nacional de Quarentina e Biosegurança (En.) National Directorate of Quarantine & Biosecurity
MCIA MCIE	Ministerio de Comercio, Industria, e Ambiente (En.) Ministry of Commerce, Industry and Environment
MoF	Ministry of Finance
MoI	Ministry of Infrastructure
MoJ	Ministry of Justice
MoTC	Ministry of Transport & Communications
NGO	Non-Governmental Organization
NSD	National Statistics Directorate
	National Statistics Office
SDP	Strategic Development Plan
SPS	Sanitary and Phytosanitary
TOT	Training of Trainers
UMIT	United Nations Integrated Mission
UNDP	United Nations Development Program
USAID	United States Agency for International Development
VAT	Value-added tax
WB	World Bank
WFP	United Nations World Food Programme
WTO	World Trade Organization
YEP	Youth Employment Promotion

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## Summary

### CHAPTER I Background of the study

#### I.1 Industrial policy and economic trends in Timor-Leste



Figure 0-1 Timor-Leste and surroundings

Timor-Leste is eastern half of the Timor island where the Indonesian east end of Java island and the Australian north end. And its population is approximately 1,100,000. Its area is about 15,000 square km. According to the national data of the Japan Ministry of Foreign Affairs, GDP of Timor-Leste not including resource income in 2010 is USD 875 million, and GNI including resource income is USD 2,704 million, heavily relying on oil income as a limited resources.

Currently running gas oil field is prospect that production is possible up to around the year 2023, it is necessary to take measures to set up a strategy that aims to depart early from the current structure of economic. To that end, discovering and fostering non-oil industrial sector, giving diversity in economic activity has become an important issue in the country.

Strategic Development Plan (SDP 2011-2030) was formulated in July 2011. SDP 2011-2030 is equivalent to a medium-and long term national development plan, to become a middle-income

country by 2030 promoting economic modernization. SDP 2011-2030 pointed out the “agriculture”, “tourism”, “oil industry” as the triple important fields in Chapter IV, and focused on the agriculture sector that more than 70% of the house hold depending on, to raise and strengthen the industry first as the major industry of the country.

## **I.2 Current state of agriculture in Timor-Leste**

The agricultural sector is the almost only one field that real economic activity is being carried out in the country; the traditional agriculture has remained still immature as an industry. Small-scale farming by small-scale cultivation area, lack of access to financing institutions, absence of government support for market information and agricultural technology, lack of human resources in all sectors, non-maintenance of roads or other means of transportation, the complexity of land ownership, as well as absence of related private businesses, various obstacles and difficulties have been pointed out.

Rice, maize, cassava, sweet potatoes, as the major crops, are mainly self-sufficient production. Especially the domestic production amount of rice as the staple food is only 27,000 tons in 2007 while total demand for rice is 105,000 tons; direct demand for rice 77,000 tons and alternative demand from other grain 28,000 tons shortage of 77,000 tons needs to rely on imports. (MAF, Commodity Profile Series, No 1 Version 3. RICE).

On the other hand, the largest export crop is a coffee; export volume is small and remains around ten thousand tons per year.

## **I.3 Socio-Economic State**

### **I.3.1 Administrative system**

There are three regions in Timor-Leste (four, if counting Oecussi separately), namely, East, Central, and West. And there are 13 districts as municipal governments, then broken down to 65 sub-districts, and then, 442 sucos.

### **I.3.2 Population**

The Population and Housing Census 2010 revealed the total population of 1,066,000. The share of urban population was 29.6%, and the growth rate of urban population was 2.41%. At this rate, urban population would double within 30 years.

### **I.3.3 Labor Force Size and Economic Activities**

Census data in 2004 indicated that 79% of the nation’s labor force (250,000 people) was employed

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by agriculture, forestry, and fishery.

## **CHAPTER II Purpose, scope and outline of the study**

### **II.1 Purpose of the study**

It is necessary to gather the information in order to clarify the areas that Japan can cooperate through ODA, such as (1)strengthening the development of industry, (2)the development of industrial human resources, (3)cooperation and improvement of the environment. It is also necessary to organaize the challenges for the agricultural sector and the related businesses to become the key industry, and the role and challenges being sought to the stake holders such as the government, the employees like farmers, and the private sector. It is necessary to gather and analyze the information of agricultural production, logistics, processing, legislation, market, and to have a discussion with the related agency (government, local private enterprises, domestic private enterprises, local communities, etc.), and also to narrow down the sub-sectors and extract important matters in the process of industrialization as Japan cooperation through ODA in the future.

### **II.2 Basic policy of the study**

#### II.2.1 Industrial development in the agricultural sector

The basic policy of this study is to investigate the possibility of business development in the agricultural sector, although the original title is “development of new business”.

#### II.2.2 Export-oriented agriculture

The basic policy of this study is to select the export of agricultural products as business development in the agricultural sector.

#### II.2.3 Business development-oriented

The basic policy of this study is to investigate the possibility of the development of the specific business as exporters of agricultural products.

#### II.2.4 Long term plan-oriented

The basic policy of this study is to investigate the possibility of the development of agricultural exports business through a period of long-term of about 10 years, and moreover, the possibility of the favorable impact to the industry as a whole including the related business. .

#### II.2.5 Determination of the possibility

The goal of this study is to assume a strategic scenario and to find out the physical possibility of

the scenario. The feasibility study (F/S) will be implemented in two phases. This study corresponds to a part of the first phase.

A) Choosing and summarizing the strategic scenario to achieve the strategic objective is the first step referred to as the outline F/S. At the stage of strategic scenario, it is required to evaluate and determine the validity and the possibility of the plan. The possibility at this stage is a so called physical possibility. The physical possibility in this case is the following three points.

- a) Market acceptability
- b) Production supplyability
- c) Business motivation and business capacity

## **CHAPTER III Current state of industrial development mainly in agricultural sector**

### **III.1 Current state of business environment for industry development**

#### III.1.1 Government policy of Timor-Leste

Government of Timor-Leste released “The Strategic Development Plan” (2011-2030) (SDP 2011-2030) in July 2011. This plan presents the mid-term national development in which the government targets to become a middle income country by 2030. It says agriculture, travel and petroleum are the 3 industries to be focused as the main industry. Above all, the priority is put on the agriculture, in which 80% of the population is engaged. The Chapter IV mentions the details on the agriculture, indicating the mid-term goal in 2015, 2020, and 2030.

#### III.1.2 National budget in Timor-Leste

The national budget in 2011 shows the income in non-petroleum sector has increased, though the most part of the income is occupied with the petroleum. And it also suggests that the budget for agriculture and fishery remains small.

#### III.1.3 Legal system in Timor-Leste

The laws are already generally organized in the industry related area. For example, the law of the cooperative follows the international standard. The laws for promoting foreign direct investment and tax are active. On the other hand, such preferences are limited to apply for the enterprises invested in the rural area. This means the investment such as logistic bases or manufacturing factories in the capital city can not get benefitted. The relaxation of the areal limitation is needed to be taken into account.

The law of the public company is established per each public company. In case the future export development is assigned to a public company, the time for the establishment procedure should be taken into account.

#### III.1.4 Infrastructure in Timor-Leste

##### A) Seaport

There are 6 chief seaports in this country, but only the Dili port is capable of the exportation of the agri-products.

##### B) Storage facilities in the Dili port

Dili port equips with a weather-proof container-yard, which enables 24-hours approach.

##### C) Commercial flow

There are 16 forwarders in this country. They mainly handle the import procedures and very few portion for the coffee exportation.

Final quality/size inspection is always done by wholesalers because of poorer interest in quality on the farmers' side.

#### III.1.5 The Horticulture crops market and distribution channel

##### A) The Sales place of horticulture crops

Generally, a wholesale market has the facilitation function which aggregates distribution between farmers and retailers. Regarding domestic horticulture crops, there are several public markets as sales place in Dili and each district according to the precedent investigation report. When common farmers sell horticulture crops, they ship the crops to these public markets or sell them directly to consumers

There are also several high-quality supermarkets in Dili that sell fresh vegetables or fruits there.

##### B) The Transportation

Common farmers bring their crops directly to a public market or entrust to transport operators which have a distribution function.

##### C) Transportation infrastructure

Depending on the precedent investigation report, the lack of a cold chain is a problem for distribution. However, the situation is gradually changing and a few refrigerated trucks contribute to providing cold chains. In spite of bad road conditions, certain amounts of horticulture crops are delivered to Dili; demand power promotes distribution.

##### D) The delivery system of spices

A company exports a very small amount of spices and collects them from farmers.

#### III.1.6 Agricultural finance

BNCTL(Banco Nacional de Comercio de Timor Leste) and the Credit Unions have financial functions for the local farmers.

## **III.2 Natural conditions and area-wise trend**

### III.2 Summary

#### A) Natural conditions and suitable crops

Because of various types of ecosystem due to different natural conditions attributed to the differences in elevation, it is possible to produce from tropical crops to cool temperate climate crops. In addition, the temperature of given location stays relatively stable, which enables certain crops to be cultivated more than once a year. However, the suitable area for cool climate crops can be limited, and thus, they might not be possible to produce large quantities for viable export. Furthermore, due to narrow band of temperature fluctuation, those crops that require severe chill and vernalization are not suitable.

#### B) Suitable areas

In Timor-Leste, it is rare to find data on agricultural production even for very commonly grown crops; it is especially so for the crops that are not very common. This limitation kept the Study Team from identifying leading crops of particular crops. However, based on climatic characteristics, herbs and spices can be grown in substantially wide areas; in hot lowland, pepper, nutmegs, cardamom and so on can be produced. And in cooler areas such as Ermera and Aileu Districts, vanilla for spices and coriander for herb can be grown. These conditions apply to vegetable so that in humid areas or areas with irrigation water large operation of temperate climate vegetables can be grown. As for fruits, in lowland, many types of tropical fruits including custard apple and lychee, and in highland, subtropical to temperate climate fruits such as mandarin, loquat, and fig can be grown provided that there is enough water.

## **III.3 Related actors (Government)**

### III.3 Summary

The interview targeted on the export of potential crops in the field of the economic development. SDP 2011-2030 indicates that the nation mainly needs the import substitutes and food security in the agricultural sector. Under this national policy, the Study Team surveyed interests in export, organization chart, roles in business development of each ministry.

## **III.4 Related actors (Public company)**

### III.4.1 Case of the public corporation “Timor-Leste Bamboo Center”

The Timor-Leste Bamboo Center is a public company in the manufacturing industry to produce bamboo furniture and miscellaneous goods located in Tibar, Liquica district. The Timor-Leste

Bamboo Center only delivers to domestic consumers now, but Mr. Rua anticipates that the domestic market will be very small; he exhibited its products at a furniture fair in Malaysia in 2012. The company could potentially produce the Timor-Leste goods to export.

### **III.5 Related actors (Private sector)**

#### III.5.1 Cases in private companies

##### A) Timor Global , Lda.

Timor Global was founded in 2005, with 60% of Singaporean and 40% Timorese capital. The business model of TG in export of agricultural products can be one of the good examples for Timor-Leste for expansion of exports since they handle the products other than coffee. The business models with the communities such as use of land, contract of labor and crop sharing can also be a good model for us to implement the production.

##### B) Alter Trade Japan

This is a Japanese exporter of coffee beans who cultivates it in Ermera. They annually export 20~50 tons of coffee beans purchasing from 500 contracted farmers in that area.

#### III.5.2 Case of a farming company

The farming company which exports items does not exist at present. But the Study Team could find a few farming company which produce on a large scale so that distribute to super markets, hotels and procurement division of facilities like defence force; and intends export .

### **III.6 Related actors (Coorporative)**

#### III.6.1 Cooperatives

There are 12 fishery cooperatives, 6 in agriculture, 3 in tais(traditional weaving), 1 in livestock, coffee, horticulture.

#### III.6.3 Agricultural Service Center (ASC)

ASC has been established in the 3 area, Mariana, Viqueque and Aileu financially supported by Word Bank. Its mission is to support the provision of tools, and marketing. ASC targets the positive involvement of the farmers in certain kinds of training, and sharing information.

#### III.6.4 Centro Logistic National (CLN)

Their economic ground is fragile because of the output from the farmers occupies 2.4% out of the total harvested product.



### **III.7 Related actors (Doner)**

#### III.7 Summery

The study by JICA at this time, selected potential crops from over 470 items, and attracts other donors because no one has ever tried before.

### **III.8 Challenges for agriculture sector as leading industry**

#### III.8.1 Basic policyof industry development

##### A) Product Market Matrix

This study is preceding along the strategy of agricultural export assumed to have the most potential as industrial development and is avoiding duplication with proceeding project at the same time.

##### B) Strategic planning approach

It is to set strategic objectives based on certain assumptions first, to formulate a method for the realization of the strategic objectives, and then to investigate and examine the validity and potentiality in comparison with the current situation.

##### C) Hypothesis testing approach

This strategic planning process is based on a number of hypotheses, these hypotheses are verified whether the correct combination of facts and data.

##### D) Problem-solving approach

When there is a gap (strategy gap) between ideal situation and reality, it is tagetted to take the minimum means necessary to fill the gap. This is due to minimization of time and energy and for the realization of strategic objectives and ensurance its implementation.

By applying uniformly strategic planning approach, hypothesis testing approach, problem-solving approach, the ultimate goal is that the strategic scenario will be logical in a compact and easy to start running as practical.

#### III.8.2 Strategic scenario

##### A) Three segments of the world food market.

###### a) Segment 1

Consumer needs of this segment is the basic needs for “food”, is nutrition low price and easy availability.

###### b) Segment 2

Consumer needs of this segment is high grade needs for food, is taste, appearance, and freshness. In general, this need will go stronger as the income increases.

###### c) Segment 3

Consumer needs of this segment is matured needs for food, is safety and security, health,and

nature.

#### B) Positioning of Timor-Leste

It is good for Timor-Leste to select C-2 differentiation concentrated referred to here. It is good to aim at segment 3 as a target, and to strengthen and to refine the core technology for segment 3, in order to differentiate it.

#### C) Target market

If the target market is the segment 3, the first consideration is the high-income countries and the following is the middle-income countries. To pick up USA, EU States, Japan, Australia, as high-income countries, and to pick up the ASEAN 4, Thailand, Malaysia, Philippines, Indonesia as a middle-income countries.

#### D) Strategic policy

Reactivation of Japanese agriculture has been touted from around 2000 recently, seen examples of many formation of production corporation and shipping group of agricultural production, and entrants from different industries and the cooperation of commerce and agriculture, various attempts have been made. As principles that are common in these cases, many observers have pointed out A) the industrialization of agriculture, B) idea of market in, C) the use of business skills. It is recommended to adopt those three principles as the strategic policy of agricultural industry development in Timor-Leste.

#### E) Movement of the revitalization of agriculture in Japan

It is believed from the above that there are many cases can refered for the agricultural development strategy of Timor-Leste and there are many technologies and business models to be introduced.

### III.8.3Promotion of industrial development step

#### A) Steps of product development and business development

From the standpoint of the market in mentioned above, steps of product development and business development are divided into three steps as Marketing→Production→Sales. In the case of agriculture, Production is divided into Raw Material and Processing.

#### B) Development steps and performing entity

In Timor-Leste, farming company is primarily responsible for agricultural production and marketing company is primarily responsible for the marketing and logistics. In order to develop the export industry of agricultural products over 10 years, it is necessary that the strong principal entity will promote the industry as a driving force, and it is desirable that the business entity with certain size and long term continuity is to promote. Individual farmers will be going to participate in the agricultural export industry as contract farmaers by the help and the guidance of the farming company and marketing company.

## **CHAPTER IV Japanese food market as target of export**

### **IV.1 Market size by category**

#### IV.1.7 Target categories and potentiality of export

Items importing to Japan from these countries, onions, asparagus and yams are listed in higher ranking so it will be required to investigate more on these products to be produced in Timor-Leste in terms of climate, soil and other related conditions to production. It is also necessary to take a close look on banana, pineapple, mango and papaya as tropical fruits. It would be better for the Study Team to investigate possibilities of dried or preserved in syrup. Chicken meat is imported to Japan with bone-less frozen condition. In terms of seafood, shrimp/prawn, yellow-fin tuna and big-eye tuna are listed in higher place as import from neighbor countries of Timor-Leste. But these products again required big farms, processing facilities and freezing storage as well as processing and storage techniques.

### **IV.2 Sale channel candidate in Japan**

There are three major channels of imported agricultural products in Japan; (1) food retailers, (2) food processing makers, (3) food service companies. For sales to these channels, it is available to use exhibitions or contact companies directly.

#### IV.2.1 Food retailers

The distribution channel of the food retailers has plural patterns by a product type or a target.

##### A) Fresh vegetables and fruit

As for the circulation of fresh vegetables and fruits, it is common to distribute from import companies to wholesale markets, to wholesalers, to retailers, and finally consumers.

#### IV.2.2 Food processing makers

There are various type of food processing makers depending on foodstuff such as agricultural products, livestock products and marine products. Among these products, the Japanese food processing makers have overseas factories in China or Thailand where personnel expenses are low and procure cheaper. The makers precede high value products which are too expensive to precede in domestic.

#### IV.2.3 Restaurants and home-meal replacement industries

The food service market size in 2009 is about 300,000 million USD and by 2.7% decrease from 2007. The restaurant business is the biggest market with USD 158,000 million just as same as 2007.

Considering that the food service industry has approximately USD 300,000 million and import value have been moved steadily, and there are increasing concerns for food safety due to the bird flu

and BSE (Bovine Spongiform Encephalopathy) issues, the potential demand for Timor-Leste agricultural product which is grown by organic or without use of pesticides.

#### IV.2.4 Required conditions and competitive advantages to Timor-Leste

Required conditions to Timor-Leste from Japan would be compliance with applicable laws and regulations as the minimum ones, and also the items shall not be listed by legal restrictions and shall be adopted sanitary and phytosanitary measures. Regarding the third segment such as safety or healthy, it may be fulfilled by Timor-Leste utilizing and improving its current technique of agriculture.

#### IV.3 Sample hearing of Japanese companies

The Study Team visited several Japanese companies which might be importers or users of agricultural products of Timor-Leste, and the Study Team tried to find out their requirements on agricultural products.

#### IV.4 Consideration about ASEAN 4

ASEAN4 countries (Indonesia, Malaysia, Philippine, Thailand) are importing agricultural products now, and economic development and the income increase of wealthy segment make the market attractive. This facts means that ASEAN4 countries are expected as high added value product markets in very near future.

On the other hand, ASEAN4 countries request the regulations of quarantine and food labels as well. It is necessary to acquire the organic authentication which each ASEAN4 country has its own system to appeal organic products. ASEAN4 countries also approved ASEAN GAP (Good Agricultural Practice) in November 2006. The ASEAN will complete free trade environment with abolition of the duty of agriculture products trade by 2015. Thus, the making standards of the agriculture product are completed in ASEAN4. As the result, to enter ASEAN4 markets are not necessarily easier than a Japanese market. Timor Leste must manage high quality standard to ASEAN4 countries as well as Japan.

### CHAPTER V Potentiality of agriculture sector as leading industry

#### V.1 Selection of items or sub-sectors

##### V.1.1 Selection of items or sub-sectors

A) Criteria for the selection of export candidates are the two groups, one is the items that the export market demands and other one is the items that Timor-Leste can produce at a little effort.

B) Items that the export market demands are the selection criteria in terms of the market, from the point of market demand trends, import status by category, competitive conditions of import countries, and requirements of export sales channels, it is required to refine the selection criteria and the candidate items more specific.

C) Items that Timor-Leste can produce at a little effort are the selection criteria in terms of the production, from the point of natural conditions such as climate and fertility, cultivation experience and technology, and also the difficulty of the cultivation of its own material, the difficulty of implementation, procurement and technology of equipment, it is required to refine the selection criteria and the candidate items more specific.

#### V.1.2 Export market demand

##### A) The Criteria of Competitor

The relatively easy products may be the ones from ASEAN4 countries (Indonesia, Malaysia, Philippines and Thailand).

##### B) The Criteria of QCD Evaluation

###### a) Quality Evaluation

The commodities which are rarely cultivated in Japan, or for which, the quality is, therefore, hard to determine correctly are relatively easy into Japanese market.

###### b) Cost (Price) Evaluation

Because the production side has little charm about the cheap thing, the Study Team selects expensive items in Japanese market.

###### c) Delivery Evaluation

It is good to choose an item easy to ship in a changeover period in Japan or transportation, and to be able to tolerate long-distance transportation

#### V.1.3 Product at a little effort

##### A) Natural conditions

Animal and plant species of food and raw materials for cultivation are normally selected in accordance with the local natural conditions such as, climatic conditions, soil characteristics, water type, water temperature, distance to processing plant and market, and so forth. In addition, for those crops that enjoy economy of scale, land availability can be another constraint because its most economically efficient plot size might not be attainable in Timor-Leste.

##### B) Necessity of initial investment including seeds, fertilizer, and tools

The Government of Timor-Leste and donors distribute free seeds and other inputs to farmers aiming an increase in production

##### C) Difficulty in production and cultivation

For the short-run, those agricultural products that can be demanding in terms of cultivation and pre-processing should not be considered for export. If farmers' moral becomes high in the middle to

long-run, producing products with greater difficulty could be introduced and/or promoted.

D) Limitation on harvest and transportation

It is difficult to consider those agricultural products, that require storage in site or prompt delivery for export.

E) Difficulty in preprocessing by farmers

Extra assistance is indispensable if producers (farmers) are expected to finish preprocessing, such as salting, pickling, and fermentation; especially those involving advanced knowledge.

## **V.2 Challenges and conditions for the candidate items**

### V.2.1 Selection of candidate of items

The 15 products of interest by the Japanese companies requires primary processing and cold chain, while the 23 items selected by the Study Team require only selection and dried out in which need to take new technologies or equipments. It would be realistic that the export shall start with the products with existing technique, and gradually move to the products require for primary processing and/or cold chain.

### V.2.2 Current state of agriculture production

Livestock animals graze in these grasslands, which, in turn, can cause land degradation and soil erosion; this problem has to be taken care of in the near future. Processing and retail face challenges as well; it is necessary to build modern abattoirs and to establish the systems of hygiene and sanitary management at the points of export and import.

### V.2.3 Shipments

A) Processing, Quality Control, Cost, Labor quantity and quality

The crops with high immediate export potential to Japan are those that are light, durable, and high-value. Therefore, spices and herbs can be listed as the immediate candidates for export among the crops currently produced in Timor-Leste.

B) Equipment of packaging

The packing materials are not produced in this country.

C) Equipment of harvesting

The agriculture remains in the primitive stage in this country.

D) The flow of the logistics

It takes approximately one month to reach the goods.

E) Quarantine

The government staffs do not conduct inspection in order to fulfill the requirement of importing countries.

#### V.2.4 System status

##### A) Quality approval

There is no public organization who deals with the quality licensing. Ministry of Agriculture and Fisheries (MAF) quarantine and former Ministry of Tourism, Commerce and Industry (MTCI) had been discussed necessity of the establishment of an organization for SPS improvement, but it hasn't yet been realized. On the other hand, no one in this country could be a specialist to be in charge of this field.

##### B) Land Ownership

There are following four issues due to the historical backgrounds; 1) based on local customs, 2) certificates issued by the Portuguese ex-colonial authority, 3) certificates issued by the Indonesian authority before Timorese independence, and 4) other types of vested long-term land use right. This complexity delays establishment of an effective land ownership system.

#### V.2.5 Current situation relating to human resource development industry

##### A) Difficulty on the production and cultivation techniques

For spices and non-essential commodities, the preprocessing levels of Timorese farmers were in the very early stage, which indicated currently farmers could not meet the required qualities for exporting the products to Japan. Timor Global's story depicts this problem vividly.

##### B) Agricultural extension workers

It is said that there is one senior extensionist in each 12 districts. And 376 of extensionists are allocated in the suco level. They are staff members of MAF, supporting rural farmers by giving technical trainings.

##### C) Agricultural education institutions

###### < Agriculture Vocational School >

There are minimum equipments in the laboratory which allows the students to do basic experiment but it would be not enough for inspections and data collection due to the lack of equipments. There are limited numbers of book stocks in library and it would not be good enough for research.

###### < National University of Timor-Leste >

The graduates play important roles in the future agricultural sector, agri-business above all. And it is necessary to give a capacity building to those teachers first of all. The university will challenge in the collaboration with private sectors, and promotion of exchange with foreign human resources.

## **CHAPTER VI Proposal for development of agricultural sector as leading industry**

### **VI.1 ODA assistance and private business**

#### VI.1.1 To be assisted with ODA

##### A) Human resource development

There are not enough local human resources specialized in agricultural technology, marketing, management, and SPS.

Considering the making use of an existing organization, the IADE (Instituto de Apoio ao Desenvolvimento Emprezarial), under the Ministry of Commerce, Industry and Environment(MICE), could be an option. This institution has various business training courses under the support by International Labour Organization(ILO). It already has much experience in giving training to farmers. Besides, it provides the services like the provision of the governmental tender information, business matching, support for business planning, and microfinance. Based on this scheme, IADE can be a counterpart who can offer the inclusive support co-working with JICA, for instance, in the selection of potential farmers, giving lectures, giving the opportunity of OJT, certifying the course.

##### B) Infrastructure

Necessity of infrastructures is mentioned in various reports issued by donors, and the support in this field will remain as one of the most important.

#### VI.1.2 Local private enterprises

An attractive product based on market demands is created, reasonably that product will match the demand to be exported to the neighbor countries.

#### VI.1.3 Cooperation between ODA and the Japanese private sector

It is not easy for Japanese experts to make strategic solutions to approach the detailed ASEAN market even if they investigate the industries in a developing country. On the contrary, they can easily access to detailed market information. This suggests that the ODA can help effectively not only the industry in developing countries but Japanese enterprises' marketing activities in the foreign market.

#### VI.1.4 Collaboration with local private sectors

The agriculture in this country remains in primitive level, due to various constraints. However, there are a few very potential farmers.

### **VI.2 Industrial development model -1 :Public Corporation model**

As an industrial development method of component 2, two models of promotion entity and



support system are proposed. Those are the Public Corporation model and the private enterprise model. Ten years project period can be divided into three stages; first stage is preparation period one year plus three years, second stage three years, and third stage three years. The image of each stage is illustrated as follows.

The Public Corporation model as a model-1 is explained follows. The Public Corporation means a company owned by the government. The annual income of the Public Corporation belongs to the government as shareholder as a rule. That is, when the deficit has come out at the end of the year the government is to compensate, when the surplus has come out the government is to absorb as dividends. As a support system, the funding agency and the information support agency will be established. The information support agency will provide information, especially will offer business matching opportunities with the destination sales channel. The funding agency will provide two grants; market development grant and product development grant in order to reduce the initial cost and risk especially early stage.

### **VI.3 Business development model -2: Private enterprise model:**

As the second model of business development method, the private enterprise model is proposed. It is to select the production company engaged in agricultural production from domestic private companies and the sales company engaged in the marketing and wholesale trade. And to make the group in combination of those two companies. It is to foster this group as export industry by information support and business matching with export sales channels, and by grant support to market development and product development in particular. Although there is a grant aid, the final profit or loss will belong to the group as the private sector and the risk and cost will be born by the group to some extent. Instead, when the profit came out then the groups also can enjoy return. The Study Team could find two candidates of production company and also two candidates of marketing companies. It is expected that there is a large number of candidates a little more.

### **VI.4 Required competence and human resources development**

For implementing the human resources development, it would be effective to set so called Japan Center where the provider can concentrate its resources in one place and the receiver can get the total education or training at one place, and the Japan Center will provide management school curriculums and agricultural production techniques trainings.

## **CHAPTER VII Conclusion of the study**

### **A) Market acceptability**

It is judged there is a movement of decentralization and diversification of the importing country by the Japanese food market, there are major opportunities for new entrants with respect to items of imports from China and ASEAN countries. However, there are strict requirements for quality and safety, particularly strong demand for traceability.

On the other hand, it is necessary to take the countermeasure so that it is not with a bottleneck because the quarantine inspection system and the quality guarantee system are undeveloped in Timor-Leste. There are some countermeasures such as

- a) to look up at the instruction of the achievement method clarified by the export partner company
- b) to perform the primary processing such as shredding, heating, drying etc
- c) to consider the acquisition of the GAP or organic certification of Japan or EU.

In either case, the export destination company (and the agent) and the choice of the export item are important.

### B) Production supplyability.

It is judged there is a good possibility of cultivation and development of a wide variety of items since natural conditions with difference in elevation and actual example of new items cultivated in recent years. It seems that export by material or simple primary processing is possible, and the start should choose such an item at first. However, it may be necessary to start on cold chain by technology introduction and investment on sometime during the project period. because the demand of the candidate export partners is strong.

### C) Business motivation and business capacity.

It is judged there may be a couple of candidates in private companies having the business motivation and capacity since the Study Team could find a few candidates this time. However, it might be necessary toward general farmers to give the success stories and to let them change mind. These companies will mainly promote the export business as "corporation" or "sales company + production company" and moreover have a role to bring up outside farmers as the contract farmers.

The end of Summary

## **CHAPTER I Background of the study**

### **I.1 Industrial policy and economic trends in Timor-Leste**

Timor-Leste is eastern half of the Timor island where the Indonesian east end of Java island and the Australian north end. And its population is approximately 1,100,000. Its area is about 15,000 square km. According to the national data of the Japan Ministry of Foreign Affairs, GDP of Timor-Leste not including resource income in 2010 is USD 875 million, and GNI including resource income is USD 2,704 million, heavily relying on oil income as a limited resources. Further, according to GDP per capita ranking by purchasing power parity in 2010 announced IMF, Timor-Leste is USD 2,861 per person and becomes 131th rank within 178 countries. Poverty rate is 41%(as of 2009 CIA Factbook), and Timor-Leste calls herself the “fragile states”. On the other hand, the country is pooling funds from oil revenues to the “national oil fund” and forecast balance at the end of 2011 is USD 9.3 billion.

Currently running gas oil field is prospect that production is possible up to around the year 2023, it is necessary to take measures to set up a strategy that aims to depart early from the current structure of economic. To that end, discovering and fostering non-petroleum industrial sector, giving diversity in economic activity has become an important issue in the country.

Strategic Development Plan (SDP 2011-2030) was formulated in July 2011. SDP 2011-2030 is equivalent to a medium-and long term national development plan, to become a middle-income country by 2030 promoting economic modernization. SDP 2011-2030 pointed out the “agriculture”, “tourism”, “oil industry” as the triple important fields in Chapter IV, and focused on the agriculture sector that more than 70% of the house hold depending on, to raise and strengthen the industry first as the major industry of the country.

The industrial development policy in Chapter IV of SDP 2011-2030 mainly focused on private sector development and emphasized cooperation and community development. In addition, it enumerated marketing research, business matching, marketing strategy, business plan, business evaluation, technical education, technique training, and financial support as the item which you should support in an agriculture sector.

The change of the constitution of the GDP according to the industry is as follows. The constitution ratio of the agriculture, forestry and fisheries industry in the non-petroleum sector falls from 28% to 21%. Wholesale, retail, etc. and government sections sharply increased and have overtaken the agriculture, forestry and fisheries industry in 2010. The development of the second industry shows a figure of the irregular economic development in

which the constitution ratio of the third industry increases as insufficiently.

Table I-1 The industry-wise constitution of the GDP

(in millions of US\$)	2004	2005	2006	2007	2008	2009	2010	2010
GDP	1,063	1,814	2,757	2,875	4,415	3,283	4,131	100%
Oil Sector	640	1,360	2,312	2,350	3,750	2,495	3,255	79%
Non-oil sector	423	454	445	525	665	788	876	21%
Non-oil sector	423	454	445	525	665	788	876	100%
Agriculture	120	128	136	145	165	181	188	21%
Manufacturing	9	13	11	13	17	22	27	3%
Construction	24	31	25	34	47	53	64	7%
Trade,Trans	94	106	87	105	159	183	211	24%
Real estate	61	58	61	76	87	90	101	12%
Public adm	64	68	73	84	115	162	188	21%
All Others	51	50	52	68	75	97	97	11%

(MoF : National accounts 2004-2010)

On the other hand, the number of employed persons engaged in the agriculture, forestry and fisheries industry is calculated to be 79% from the data of the 2004 census. From the 2010 census, the number is calculated to be 66%, however the definition has been changed to include employees with more than ten years employment. It is estimated that since the agriculture, forestry and fisheries industry employ many young families, the percentage is going to be low. Also the SDP 2011-2030 has indicated that 70% or more of families are dependently on the agriculture, forestry and fisheries industry.

The industry policy of Timor-Leste will be discussed in Chapter III.

## I.2 Current state of agriculture in Timor-Leste

The agricultural sector is the almost only one field that real economic activity is being carried out in the country; the traditional agriculture has remained still immature as an industry. Small-scale farming by small-scale cultivation area, lack of access to financing institutions, absence of government support for market information and agricultural technology, lack of human resources in all sectors, non-maintenance of roads or other means of transportation, the complexity of land ownership, as well as absence of related private businesses, various obstacles and difficulties have been pointed out.

Rice, maize, cassava, sweet potatoes, as the major crops, are mainly for self-sufficient production. Especially the domestic production amount of rice as a staple food is only 27,000 tons in 2007 while total demand for rice is 105,000 tons; direct demand for rice 77,000 tons and alternative demand from other grain 28,000 ton. The shortage of 77,000 tons needs to be imported. (MAF, Commodity Profile Series, No 1 Version 3-RICE).

Therefore, promotion of agricultural mechanization, maintenance of irrigation facilities,

improvements in cultivation techniques, and as a result, the recovery of their productivity, the improvement of the distribution to consumption centers such as the capital Dili from the local place, those have been the issues. In addition, the plan is being undertaken to adopt agriculture extension workers of about 200 to 300 people, and to train to place in the county.

On the other hand, the largest export crop is a coffee; export volume is small and remains around ten thousand tons per year. Because the amount of agricultural and livestock products with export performance (buffalo, mung beans, etc.) is also limited, Timor-Leste government has started the effort to expand its export to and via Indonesia, such as preparing to open the border trade place between the two countries.

### I.3 Socio-Economic State

#### I.3.1 Administrative system

There are three regions in Timor-Leste (four, if counting Oecussi separately), namely, East, Central, and West. These are not administrative bodies (except for the agricultural high school system that places one school in each region), and there are 13 districts as municipal governments, then broken down to 65 sub-districts, and then, 442 sucos. There is smaller entity than suco, which is called aldeia; there are 2,225 aldeias. “Locasi” is a smaller entity than aldeia, which is not an administrative body. Sucos are divided into “urban” and “rural” sucos, and 95% of sucos are rural and only 5% are urban (Timor-Leste, 2011).

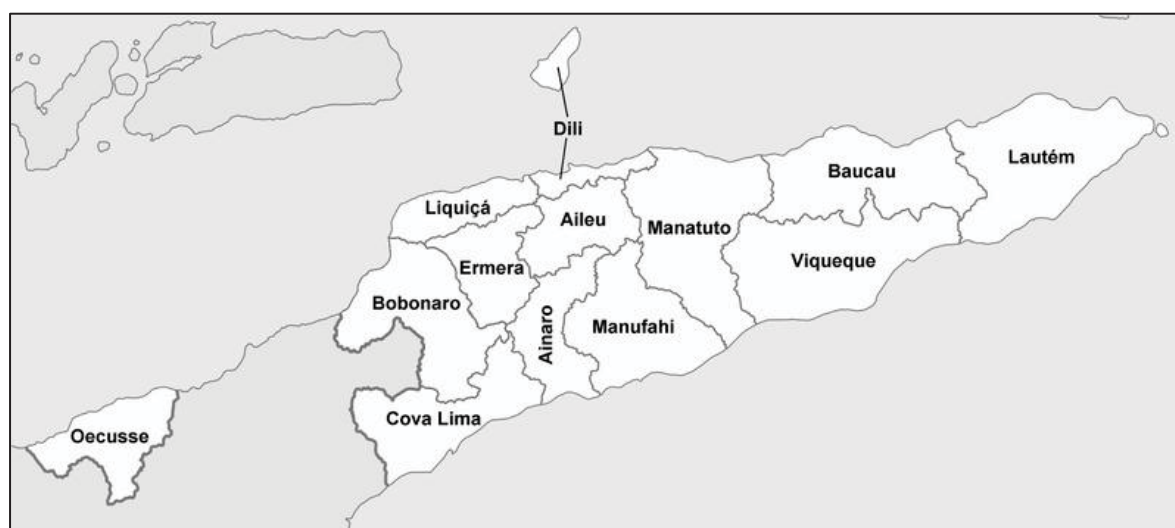


Figure I-1 Districts of Timor-Leste

(Source: Wikipedia)



Economic development requires coordination among districts. The Strategic Plan lists 6 National Strategic corridors as follows, and many of the activities of economic development will take place along these corridors.

Table I-2 Economic Corridors and Districts Included

No.	Corridor	District included
1	Dili-Tibar-Hera	Dili
2	Suai-Betano-Beaço	Cova Lima, Ainaro, Manufahi, Viqueque
3	Liquiça-Ermera-Aileu	Liquiça, Ermera, Aileu
4	Manauto-Baucau-Lautem	Manatuto, Baucau, Lautem
5	Bobonaro-Cova-Lima	Bobonaro, Cova Lima
6	Oe-Cusse Ambeno Enclave	Oecussi

### I.3.2 Population

The Population and Housing Census 2010 revealed the total population of 1,066,000, of which 544,000 were males and 522,000 were females, resulting in a female to male sex ratio of 104%. The number of households was 184,652, which gave an average family size of 5.8 persons. The share of urban population was 29.6%, and the growth rate of urban population was 2.41%. At this rate, urban population would double within 30 years.

The population density was, in average, 71 persons/km<sup>2</sup>, and that for urban areas was 325 and that for rural areas was 53. This uneven distribution is explained by Dili's prominent population size, which was 21.9% of the national total. Population concentration in urban areas is one of the major concern (Timor-Leste, 2011).

Table I-3 Populations of Districts in 2004 and 2010

District	2004	2010	%	Growth Rate	Area (km <sup>2</sup> )	Population Density
Aileu	52,480	59,175	5.5%	2.1%	870	68.0
Alinero	37,967	44,325	4.2%	2.8%	676	65.6
Baucau	100,748	111,694	10.5%	1.8%	1,508	74.1
Bobonaro	83,579	92,049	8.6%	1.7%	1,381	66.7
Covalina	53,063	59,455	5.6%	2.0%	1,207	49.3
Dili	175,730	234,026	21.9%	5.5%	368	635.9
Ermera	103,322	117,064	11.0%	2.2%	771	151.8
Liquisa	54,973	63,403	5.9%	2.6%	551	115.1
Lautem	56,293	59,787	5.6%	1.0%	1,813	33.0
Manufahi	45,081	48,628	4.6%	1.3%	1,327	36.6
Manatuto	36,897	42,742	4.0%	2.6%	1,786	23.9
Oecusse/Amb	57,616	64,025	6.0%	1.9%	817	78.4
Viqueque	65,449	70,036	6.6%	1.2%	1,880	37.3
Total	923,198	1,066,409	100.0%	2.6%	14,955	71.3

## I.3.3 Labor force size and economic activities

According to the Population and Housing Census 2010, the labor force size was approximately 500,000, which accounts for 47% of the total population was 1,06,000. This means one in two people participates in the labor market. About 245,000 were males and 245,000 were females, and thus, the male to female ratio is almost one to one. Sex ratio varies among districts; the size of female labor force was 83.6% of that of male in Dili District, and that for Lautem District was 111.4%. This contrast greatly reflects uneven distribution of sexes between males and females, and urban areas favor male labor force.

Census data in 2004 indicated that 79% of the nation's labor force (250,000 people) was employed by agriculture, forestry, and fishery. Larger industries after these primary industries were public sector (6%), then, commerce (4%). Next to the primary industries, a large part of female labor force was employed in family small scale manufacturing.

Table I-4 Size of Labor Force (age groups between 17 and 60)

District	Total	Male	Female	Female/Male
Aileu	23,536	11,923	11,613	97.4%
Alinara	20,000	10,264	9,736	94.9%
Baucau	48,556	24,063	24,493	101.8%
Bobonaro	41,175	19,941	21,234	106.5%
Covalina	26,189	12,955	13,234	102.2%
Dili	135,285	73,697	61,588	83.6%
Ermera	51,848	25,929	25,919	100.0%
Liquisa	28,978	14,581	14,397	98.7%
Lautem	24,464	11,574	12,890	111.4%
Manufahi	21,376	10,925	10,451	95.7%
Manatuto	18,913	9,602	9,311	97.0%
Oecusse	29,295	14,081	15,214	108.0%
Viqueque	28,773	13,989	14,784	105.7%
Total	498,388	253,524	244,864	96.6%

(Source: the Population and Housing Census 2010)

The following figure shows the sizes of male and female labor forces by district, and depicts a heavy distribution in Dili District; the combined size is 135,000.



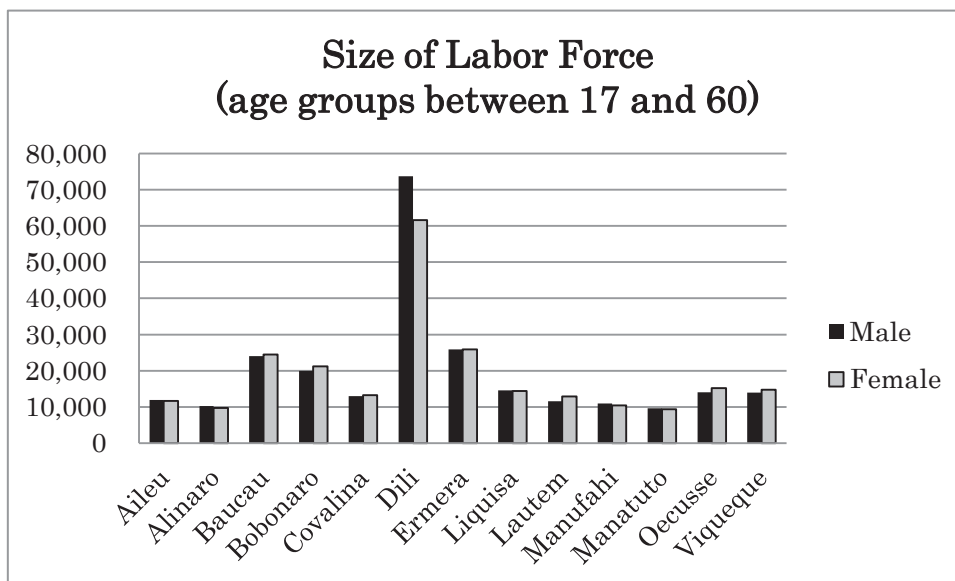


Figure I-3 Size of labor force (age groups between 17 and 60)

(Source: Population and Housing Census 2010)

## **CHAPTER II Purpose, scope and outline of the study**

### **II.1 Purpose of the study**

One of the biggest challenges in Timor-Leste is to increase employment, and income growth, business development; business development is regarded as an important means. It is necessary to develop the agricultural sector as a leading industry, and to consider what should be done for it.

II.1.1 It is necessary to gather the information in order to clarify the areas in which Japan can cooperate through ODA, such as (1)strengthening the development of industry, (2)the development of industrial human resources, (3)cooperation and improvement of the environment. It is also necessary to organaize the challenges for the agricultural sector and the related businesses to become the key industry, and the role and challenges being sought from the stake holders such as the government, the employees like farmers, and the private sector.

II.1.2 It is necessary to gather and analyze the information of agricultural production, logistics, processing, legislation, and market, and to have a discussion with the related agency (government, local private enterprises, domestic private enterprises, local communities, etc.), and also to narrow down the sub-sectors and extract important matters in the process of industrialization as cooperation from Japan through ODA in the future.

### **II.2 Basic policy of the study**

#### **II.2.1 Business development in the agricultural sector**

The basic policy of this study is to investigate the possibility of business development in the agricultural sector, although the original title is “development of new industries”. The reason is the following

A) About 80% of population of Timor-Leste is engaged in agriculture, a number of positive impact to the public such as production value increase, employment increase, income increase, may widely be provided in the case of successful industrial development in agriculture.

B) SDP as national development strategy of Timor-Leste points out three priority fields, “agriculture”, “tourism”, “petroleum industry”, and declares to focus on the development of agriculture first as major industry. It is desirable to study the industrial development along this national strategy.

C) Support Activities for industrial development of the foreign donors in Timor-Leste are concentrated in the agricultural sector, so the cooperation activities and the synergy effect can be

expected when JICA is to assist industrial development in the agricultural sector.

D) Fostering of relevant domestic industry in the vertical direction of value chain can be expected if industrial development in agriculture is successful. In the downstream of value chain, birth and growth of domestic enterprises such as picking, storage, transport, processing and sale of agricultural products can be expected. In the upstream, birth and growth of import and sales and finally production company such as equipment for agriculture, tools and material for agriculture, packaging materials, can be expected.

The governmento policy of development will be dicussed in Chapter III.

### II.2.2 Export-oriented agriculture

The basic policy of this study is to select the export of agricultural products as business development in the agricultural sector. The reason is the following.

A) Until the moment the agricultural sectorof Timor-Leste is mostly for the domestic market with the exception of the coffee that is the only agricultural exports. The earnest efforts of agricultural exports have not been made until now with the exception of 1 or 2 experimental trial. Even in SPD 2011-2030, exports are scattered in various places, and there is not necessarily a unified description. The Study Team decided to set up the agricultural products export as an independent theme and to investigate that possibility.

B) The export industry gives major impact in foreign currency acquisition, production increase, improving employment, and income growth, if successful. In particular, the export can lead to a great deal of GDP increase by a little gain of market share because overseas market is huge comparing to the size of the domestic market of Timor-Leste.

C) The segment of export market to be targeted is rapidly expanding and the competitors are rapidly growing, there is a risk of losing the entry timing unless takes action now. Also the standard has been developed in high-income countries like the USA and the EU such as by adopting certification system for organic farming since 2000, and good agricultural practices (GAP) from around 2005. The goal and the criteria for Timor-Leste have also become clear. On the other hand, whether the level of agriculture in Timor-Leste can reach a level of export should be the subject of this study.

The export market will be discussed in Chapter IV.

### II.2.3 Business development-oriented

The basic policy of this study is to investigate the possibility of the development of the specific business as exporters of agricultural products. The reason is as follows.

A) The industrial development is defined as “Many product development and the business development are individually performs in the industry, the industry is increasingly active as a result, outcome increase, employment growth, and income growth will result”. The product development is to develop new products or to improve existing products in the area of the existing business entity. It is relatively low risk since there are few changes in business activities other than the products. The

business development is to start a new business or to improve existing business in the new company or existing company. It increases a risk since it is necessary to improve many aspects of new business activities other than the product.

B) Therefore, in order to develop industry, it is necessary to help the promotion of individual business development or product development, and to formulate and strengthen policies, systems, institutions, and mechanisms consistently and without a double without leakage.

C) In the case of agriculture, a lot of business entity is individual farmer or family unit and is heavily constrained by the nature of small-scale. However, the importance, procedure and the risk of product development or business development are the same as the case of companies.

#### II.2.4 Long term plan-oriented

The basic policy of this study is to investigate the possibility of the development of agricultural exports business through a period of long-term of about 10 years, and moreover, the possibility of the favorable impact to the industry as a whole including the related business.

A) When a private company is planning a new business, a common method is to divide the 10 years project period into 3 stages such as first period of one year preparation period plus 3 years, second stage of 3 years, and the third stage of 3 years, and to clarify the strategic scenario for each stage.

B) In the case of new business, the most important point is the sustainability and the expandability of the project. It is necessary to confirm whether to continue or not for at least about 10 years, and how to extend on each stage in the form of a strategic scenario.

C) When the strategy scenario has been approved and agreed, a next general procedure is to formulate a business plan and to calculate the economic figures for 10 years. Then, when the business plan has been agreed and approved, the following will be the execution phase of the project and to control the plan and actual result using medium-term management plan of three years usually and one-year budget. If the performance is significantly different from the original business plan or strategic scenario, it is required to modify the business itself or to make a decision of withdrawal.

#### II.2.5 Determination of the possibility

The goal of this study is to assume a strategic scenario and to judge the physical possibility of the scenario. The feasibility study (F/S) will be implemented in two phases. This study corresponds to the first phase. The second phase is intended as a different project of this study, to be carried out separately to continue.

A) Choosing and summarizing the strategic scenario to achieve the strategic objective is the first step referred to as the outline FS. At the stage of strategic scenario, it is required to evaluate and determine the validity and the possibility of the plan. The possibility at this stage is a so called physical possibility. The physical possibility in this case is the following three points.

a) Market acceptability

b) Production supplyability

c) Business motivation and business capacity

B) When the strategic scenario has been approved and agreed upon by the government of Timor-Leste, the next step is to put together things into the business plan as a second stage while doing the detail FS. Whereas the strategic plan is concept oriented, the business plan is financial figure oriented with estimated financial report and the return on investment (ROI) for 10 years generally. It is required to consider mainly the financial feasibility in the second stage.

C) The reason why to precede the feasibility study in two stages in this way is to save time and energy of research work. In other words, the projects that have not been approved and agreed upon in the strategy scenario of the first stage, is not to proceed to the work of the business plan of the second stage. Also, the decision-making of the project can be made in two times and be examined more carefully.

## **CHAPTER III Current state of industrial development mainly in agricultural sector**

### **III.1 Current state of business environment for industry development**

This chapter mentions about the important regulations and policies in the industrial promotion.

#### **III.1.1 Government Policy of Timor-Leste**

Government of Timor-Leste released “The Strategic Development Plan” (2011-2030) (SDP 2011-2030) in July 2011. This plan presents the mid-term national development in which the government targets to become a middle income country by 2030. It says agriculture, travel and petroleum are the 3 industries to be focused as the main industry. Above all, the priority is put on the agriculture, in which 80% of the population is engaged. The Chapter IV mentions the details on the agriculture, indicating the mid-term goal in 2015, 2020, and 2030.

##### **【By 2015】**

- The tonnage for rice (grain adjusted for losses) will have increased from 37,500 tons to 61,262 tons
- The productivity of maize will have increased from 1.25 to 1.54 per ha
- The Timor-Leste Agricultural Advisory Council will be formulating national policies for the sector and overseeing implementation
- The Timor-Leste Research and Development Institute will be guiding and planning additional investment into research, development and extension for all major agricultural sub-sectors.

##### **【By 2020】**

- The food supply will have exceeded demand
- The area of irrigated rice will have increased by 40% from 50,000 ha to 70,000 ha
- Average maize yields will have increased to 2.5t/ha
- At least 50% of fruit and vegetables will be grown locally
- Livestock numbers will have increased by 20%
- Coffee production will have doubled following the rehabilitation of 40,000 ha of coffee plantations
- There will be at least three types of aquaculture activities supporting coastal communities
- The fisheries sector will be export based and have expanded to include ocean fishing

##### **【By 2030】**

- On-farm rice storage losses will have reduced from 20% to about 5%
- Timor-Leste will have at least four niche cash crop products that can be consistently exported

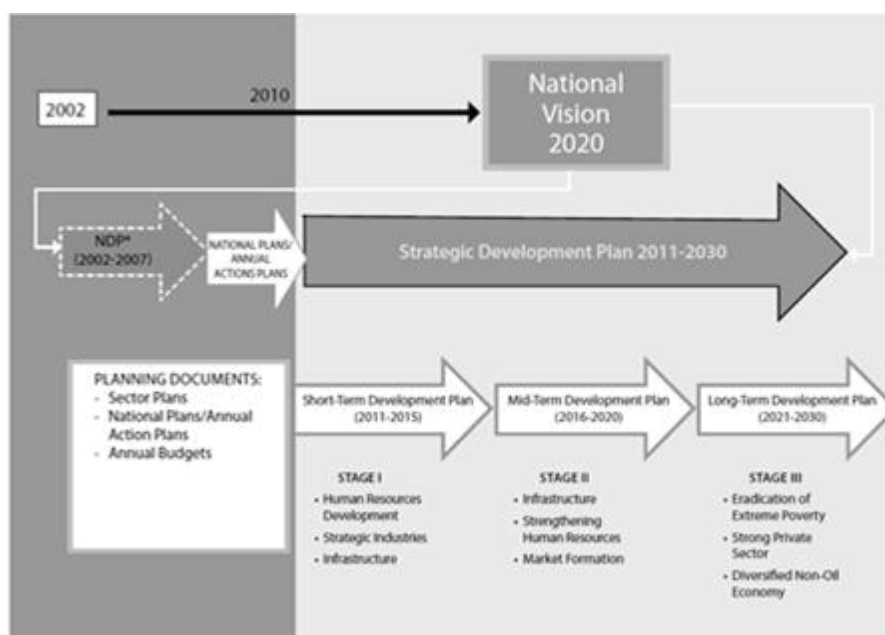


Figure III-1 The outline of the SDP

Ministry of Agriculture and Fisheries(MAF) follows the national SDP 2011-2030 by setting its own SDP. There are 4 development objectives in it.

#### 4 development objectives of SDP

1. Sustainable increase in production and productivity of selected crops, livestock species, fisheries and forestry subsector; increase the quantity of food production to ensure food security and self-sufficiency of main staple foods;
2. Enhance and improve market (domestic and export) access and value addition;
3. Improve the enabling environment; and
4. Ensure that MAF and related agencies are strengthened and appropriately configured and equipped to deliver on SDP and MAF's Strategic Plan.

In the SDP of Ministry of Commerce, Industry and Environment (MCIE), there describes 8 challenges in realizing the continuous development of the trade and industry as the strategic goal.

1. the development of business activities based locally;
2. the creation of a conducive business climate and certainty;
3. the accommodation of trade interests in international forums East Timor in the development of foreign trade;
4. improving the competitiveness of the product realization Timor-Leste in overseas markets;
5. The establishment of processing industries as supporting tourism, agriculture in the broad sense and mining products and services to grow and develop with the use of natural resources and human resources of local small and medium scale.

6. The establishment of processing industries for natural resources and supporting industries to grow and develop by relying on natural resources and human resources of local medium-large scale;
7. The realization of local human resource capacity to support the development of the industry that utilizes high technology and capital.
8. The realization of capital-intensive industries and technology-intensive to grow and develop with the support by local human resources.

The SDP of the Cabinet shows the national strategy that the increase of food production is targeted as the nearest goal. The exportation of fishery products and 4 nich cash products will follow it by 2030. The SDP of MAF and MCIE don't mention any concrete plans, but the both show the arrangement of the exportation circumstance as one of the challenges.

### III.1.2 National budget of Timor-Leste

The national budget in 2011 shows the income in non-petroleum sector has increased, though the most part of the income is occupied with the petroleum. And it also suggests that the budget for agriculture and fishery remains small.

Table III-1 Details of the budget in 2011

【Income】 From January to December, 2011	
Non-petroleum	USD 110,000 Thousand (USD 94.7 million in 2010)
Petroleum	USD 2,288,000 Thousand
Amount	USD 2,398,000 Thousand
【Expense】	
Ex. MTCI	USD 27,000 Thousand
MAF	USD 13,000 Thousand
Social solidarity	USD 105,000 Thousand
Education	USD 70,000 Thousand
National defense	USD 51,000 Thousand
Domestic affairs	USD 47,000 Thousand
Infrastructure	USD 42,000 Thousand
Economic Development	USD 9,000 Thousand

(Made by the Study Team based on MF data)

### III.1.3 Legal system in Timor-Leste

#### A) The law of a public company

As in Japan, each public company needs legal approval for its establishment. At present, there is

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only one public company as a TV broadcasting center in this country. The bamboo center had not been approved by the president, and it still runs as a part of the government. This center was controlled under the Ministry of Economic Development, but no public department is controlling it at present.

In case new public company should be established, it requires the time for fixing a controlling department, preparation of a draft of the law, and approval in the government.

B) The law of a cooperative

At the period of July, 2012, there are 98 active cooperatives. The total number of their member is 7, 102, and the total asset values USD 1.74 million. 52 out of 98 are the credit union, 12 fishery cooperatives, 6 agricultural, 3 tais(traditional weaving), and others. These cooperatives are under the control of the department of the cooperative in the MICE.

The cooperative is classified in the national constitution as one of the three juridical persons, with private corporate, and public company. In addition, Decree of Law 16/2004 regulates the necessary procedures to establish a new cooperative based on the regulation in the international cooperative alliance. Therefore, those who want to establish a new cooperative need to join in the 1-day socialization program and the 4-days basic program.

Cooperatives are reliable for the monthly account record and its disclosure etc. On the other hand, they are free from the income tax.

C) Tax law

Table III-2 Tax rate

Wage Income Tax For residents	Below USD 500/month : Free Over USD 501/month : 10%
Wage Income Tax For non-residents	10%
Service Tax	5% for the services in hotel, bar, restaurants, and telecommunications
Withholding Tax	10% for the profit by the rental of land and estates
Income tax	Individual : Sales below USD 6000 : Free Sales over USD 6000 : 10% Enterprises : 10%
Import Duty	2.5% of CIF cost
Sales Tax	2.5% of (CIF cost + import duty + Excise tax)

D) Private investment law

This law regulates the direct foreign and domestic investment.

Table III-3 The outline of the private investment law

<p>Minimum value for investment (Article 10)</p>	<p>1.A national resident investor shall only have access to the incentives and benefits set out in this Law should the investment made by such investor reach a minimum amount of USD50,000. The percentage of which invested in cash shall be at least 50% of the total value of the investment or re-investment.</p> <p>2.A foreign or national non-resident investor shall only have access to the incentives and benefits set out in this law should the investment or re-investment made by such investor reach a minimum amount of USD1,500,000. The percentage of which invested in cash shall be at least 50% of the total value of the investment or re-investment</p> <p>3.In the event of contracts of association between foreign investors and national residents, where the national residents control at least 75% of the shares with voting rights of the companies involved, the minimum value of the investment or re-investment shall, for the purpose of access to benefits and incentives, be of USD750,000</p>
<p>Land ownership and its use (Article14)</p>	<p>The State shall grant the right to private property in order that investment or re-investment projects are undertaken, subject to the limits set out in the constitution and in legislation on land and commercial companies.</p>
<p>Tax benefits (Article 21,22)</p>	<p>1. A company involved in an investment or re-investment project may be exempt from income tax to the value of 100% for a period of;</p> <p>a) Five years as of the date of commencement of the project, as set out in the Investor’s Certificate, in the event it is not an investment or re-investment to be totally or partially realized in Rural Areas or Peripheral Areas;</p> <p>b) Eight years as of the date of commencement of the project, as set out in the Investor’s Certificate, in the event it is not an investment or re-investment to be totally realized in Rural Areas;</p> <p>c) Ten years as of the date of commencement of the project, as set out in the Investor’s Certificate, in the event it is not an investment or re-investment to be totally realized in Peripheral Areas;</p> <p>2. Besides the periods of exemption established in paragraph 1</p>

		<p>above, up to 100% of all expenses incurred with the construction and repair of road access infrastructures not associated with the exercise of taxable business activities which benefit workers and populations in the corresponding areas shall be considered as costs, for the purpose of determining the tax base.</p> <p>3. The holder of an Investor's Certificate may be exempt from sale tax to the value of 100% in relation to all capital goods and equipment used in the construction or management of the investment or re-investment project, for a period of; (same condition as 1. a),b), and c)</p> <p>4. The state shall define by Decree-Law the categories and quantities of capital goods and equipment exempt from payment of sales tax in relation to each sector of economic activity, as well as their retail conditions upon customs clearance.</p> <p>5. The holder of an Investor's Certificate may be exempt from service tax to the value of 100% in relation to developments geared towards the provision of specific services, as set out in the General Tax Law, for a period of; (same condition as 1. a),b), and c)</p>
Leasing Property (Article 24)	State	The state may enter into a lease agreement concerning property belonging to the State with the holder or an Investor's Certificate a maximum time period of fifty years, renewable once for an equal period of time.
Training of workers (Article 25)		In addition to the periods of exemption set out in article 21, up to 100% of expenses incurred with the vocational training of permanent Timorese workers undertaken under the terms set out in the empowerment plan specified in the IC shall be considered costs for the purpose of determining the tax basis.

The laws are generally organized. For example, the law of the cooperative follows the international standard. The laws for promoting foreign direct investment and tax are active. The cooperative tax imposed 10% to all sizes of enterprises, though in Japan the imposed cooperative tax to small and medium enterprises is 19%, and in Indonesia, 12.5% in principle. On the other hand, such preferences shown in the above table are limited to apply for the enterprises invested in the rural area. This means the investment such as logistic bases or manufacturing factories in the capital city can not get benefitted. The relaxation of the areal limitation are needed to be taken into account.

The law of the public company are established per each public company. In case the future export development is assigned to a public company, the time for the establishment procedure should be

taken into account.

### III.1.4 Infrastructure in Timor-Leste

#### A) Seaport

There are 6 chief seaports in this country, but only the Dili port is capable of the exportation of the agri-products.

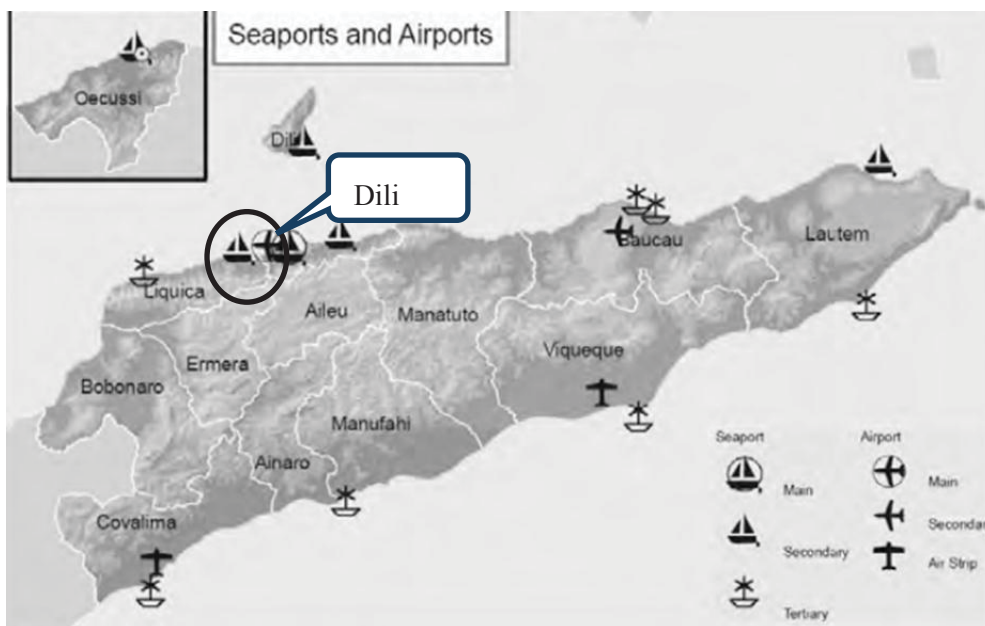


Figure III-2 Seaports and airports

(Source: Report of Project for Promotion of Agribusiness in Timor-Leste)

The main two challenges of Dili as an export base are as follows;

- a) The port is too small and to handle with containers effectively. The layout is ineffective as well.
- b) The port locates close to the downtown, which does not enable to expand the capacity.

On the other hand, new port is planned to start its construction within 2013. It is expected to increase the container-handling capacity. In addition, Suai district, the southern part of the country, has a plan to construct a large seaport. However, according to the due department (APORTIL), this is just a plan and no construction had been started.

Other seaports are so small that it must not be easy to utilize them for the exportation. Dili seaport is the only choice as the export base for the time being, considering the necessary cost for building new ones.

Table III-4 Main seaports

Port	Location	Situation
Caravela	100 km east from Dili	Used only for cement
Com	170 km east from Dili	Not in use Plan of export livestock to Surabaya
Tibar	12 km west from Dili	Used only for oil Simple equipment only Too shallow to approach for large vessels
Hera	27 km east from Dili	For military use Reconstructed by ADB in 2003
Atauro	North from Dili	In an island located Northern Dili
Oecussi	West from Dili	Reconstructed by Japanese ODA in 2010
Suai	Southern part of the country	Just in the planning process



Dili port



Tibar port

There are 4 airports, but only the Nicolau Lobato in Dili is the international one. This is equipped with 30m x 1,850m landing field. This has the direct services to Singapore, Denpasar, and Darwin. Delivery by air costs more than that by vessels, but this can be an option for a delivery of light and valued products.

Baucau airport was used before for air-force base. Suai airport has a 1,050m landing field. Oecussi airport is not paved.

The cost and lead-time exporting from Dili are as follows;

Table III-5 The export services from Dili

【Vessel】Destination	Frequency	Delivery	Cost (SDV price)	Remarks
Singapore	3 services/week	6 days	USD1200/20ft	Max20t, 38m <sup>3</sup>
Darwin	3 services/week	2 days	USD1200/20ft	Including Freight, BAF, TAX
Surabaya (TBA)	3 services/month	3 days	N/A	-

\*Approx. 2 weeks from Singapore to Yokohama

\*Thermo container requires additional USD90/day

【Flight】Destination	Frequency	Delivery	Cost (SDV price)	Remarks
Singapore (SilkAir)	3 services/week	1 day	USD5/kg	Limitation in weight and volume (Silk: 150kgmax) (Silk: 169cmx133cmx117cm)
Denpasar (MerpatiAir)	1 service/day	1 day	USD5/kg	
Denpasar (BataviaAir)	3 services/week	1 day	USD5/kg	
Darwin (AirNorth)	1~2 services/day	1 day	USD7/kg	

\*Limitation in weight and volume due to using passenger plane

## B) Storage facilities in the Dili port

Dili port equips with a weather-proof container-yard, which enables 24-hours approach in 2007, provided by the Japanese assistance. In its second phase, a warehouse for bonded goods was built.

The 16 forwarders are handling with imported containers, and cranes and lifts in the seaport belong to these companies, not to the related public department.

This port doesn't install refrigerators, but some forwards can prepare thermo-containers, which cost USD 90 per day.

## C) Commercial flow

### C)-1 Forwarders

Forwarders generally deal with the transportation of containers, documentation for the custom clearance, and the shipping procedures. There are 16 forwarders in this country, including large ones such like TOLL (Australian) and SDV (French). They mainly handle the import procedures and very few portion for the coffee exportation.

### C)-2 Custom clearance

Shipper loads their products, coffee beans, into containers by his own. A staff member from both the customs office and the quarantine come to the loading site for their inspections. After those procedures, the forwarders make shipping documents, get an approval from the customs, and bring the container to the port. In case of LCL(Less Container Load) cargo, the forwarders collect small cargos to load into a container. The custom clearance charge cost USD 50. The whole procedure completes within 3 days after the application.

### C)-3 Crop-collection and wholesale

Collection of crops is done by wholesalers. They pick up crops that farmers put in front of their house by small vans. One of the individual trucking companies is sometimes delegated to farmers instead. There is a cooperative of trucking enterprises that deal with containers or large cargos.

However, those small truckers have no cooperative. They work very individually depending on seasonal reason or quantity.

Final quality/size inspection is always done by wholesalers because of poorer interest in quality on the farmers' side. Machines can replace this process, but for example, Coorative Café Timor(CCT) employs women for securing domestic women employment.

### III.1.5 The horticulture crops market and distribution channel

#### A) The sales place of horticulture crops

Horticulture crops have characteristics like the quality being easy to change by the freshness and prices changing by yield amount. Therefore in Japan, there is a wholesale market forming prices by auctions, and the local governments establish and operate its market according to the Japanese law.

Generally, a wholesale market has the facilitation function which aggregates distribution between farmers and retailers. In other words, once a farmer delivers to a wholesale market, the products must be sold at market price. Also the price information can help farmers to consider about appropriate delivery time and making cultivation plans. However, there is not a wholesale market in Timor-Leste, so farmers who want to sell their crops need to find retailers or transporters by themselves.

Regarding domestic horticulture crops, there are several public markets as sales place in Dili and each district according to the precedent investigation report. When common farmers sell horticulture crops, they ship the crops to these public markets or sell them directly to consumers

There are also several high-quality supermarkets in Dili that sell fresh vegetables or fruits there. The supermarkets mainly supply domestic crops from contract farmers, and also import fresh vegetables or fruits from abroad.

#### B) The Transportation

According to the precedent investigation report, common farmers bring their crops directly to a public market or entrust to transport operators which have a distribution function.

Recently, a buyer itself has become in charge of transportation. In case of a USAID support farmer group in Aileu, Kmanek, the contract buyer of the farmer group owns a refrigerated truck and delivers every day except for Sunday. Farmer groups are divided by area and send crops certain days of the week. Different area groups send different on days, and this can give the Kmanek store every day supply and can merchandise in constant quantity

There is another case like farmer owned transportation means. In the case of the Josephina Farm, it holds a refrigerated truck and delivers three times a week. The Josephina Farm has several buyers; restraints and hotels who give orders each time, so they are not considered to be contract cultivation closely, but a similar type of it. The farm transports their crops to their warehouse in Dili, and then does assortment and measurement according to buyers' orders.

Both the farmer group supported by USAID and the Josephina Farm give very quick delivery; they leave the farmland in the early morning, arrive during the morning and the crops are displayed on

the shelves around noon. The packing is still less carried out. The Josephina Farm ships the crops promptly in trucks to secure load capacity. In addition, SAURUDO co. Ltd which is contracted with Bucoli Green has bought two refrigerated trucks and delivers to Australian Defence Force, then, the diversification of the distribution channel is gradually appearing.

C) Transportation Infrastructure

Depending on the precedent investigation report, the lack of a cold chain is a problem for distribution. However, the situation is gradually changing and a few refrigerated trucks contribute to providing cold chains. In spite of bad road conditions, certain amounts of horticulture crops are delivered to Dili; demand power promotes distribution.

D) The delivery System of Spices

There are delivery systems about spices other than horticulture crops. Timor Global exports a very small amount of spices and collects them from farmers. The company shows a purchase price to the contract collectors who live in the district and they collect the products.

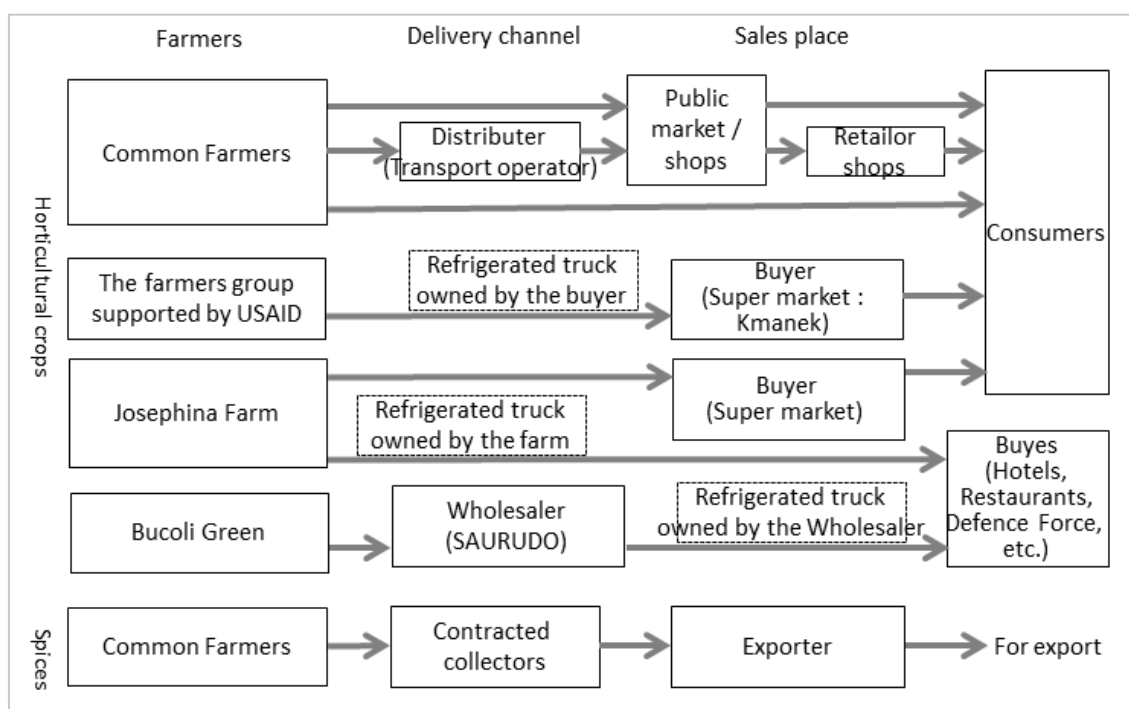


Figure III-3 Horticulture distribution channel in Timor-Leste

III.1.6 Agricultural finance

A) BNCTL: Banco Nacional de Comercio de Timor Leste

BNCTL was founded in 2005 by international donors and became a Timor Leste government 100% owned bank in 2012. The current financial situation is USD10,000,000 of capital, 30% out of capital gross margin, and 5 to 6% of operating income.



The major lines of business of BNCTL are a) Micro finance, b) Agriculture Loan, c) Micro Enterprise Loan, d) Market vendor Loan and e) Payroll for Government Staff. Interests of the loan are 16.0% per annum for Micro finance and 18.0% per annum for other loans.

The value wise ratio of uncollectible loans is about 40% in Micro Finance and 2 to 3% in Agriculture Loans, and 0.48% overall which is dramatically reduced from 12% in year 2002 due to an increase of the loans to stable projects.

For the agricultural sector, there are three categories such as a) for households: USD2,000 of limitation, b) for groups (consist of 5 households): USD 2,000 times the size of households, and c) center (consist of 8 groups): USD2,000 times the size of households. Interest rate is 18.0% per annum to all categories. Term of the loan is usually 6 to 9 months depending on time of harvesting, and the interest is paid monthly and the principal is paid during the last month of the loan period. Deposit interest is 0.5% per annum against the loan interest of 18% per annum. Collateral of the loan is farming land with calculation of USD 200 equal to a hectare basis. BNCTL does not provide loans for agricultural equipment except for general-purpose properties. BNCTL does not handle any investment fund because the risk is too high here in Timor Leste. BNCTL mentioned that around 3% of the spread margin is not good enough for the operation of the bank because the collection of the loan is troublesome and costly in Timor Leste. It would be difficult for BNCTL to build a scheme of a “Two Step Loan” in providing farmers with low interest loans.

#### B) Credit union

There are 98 cooperatives in this country. 52 of them are established as a credit union. This kind of cooperative has the functions of deposit and loan. There is a restriction by the law on the interest fixing the maximum as 3 % on the balance.

### III.2 Natural conditions and area-wise trend

#### III.2.1 Natural conditions

##### A) Geographical characteristics

Timor-Leste consists of the east half of Island of Timor, which is a part of the Sunda Archipelago and is located in the band between 8 and 10 degrees south latitude, and an enclave of Oecussi in the west part of the island, which belongs to Indonesia. The territory spans 265km from west to east and 92 km from north to south. The total area is approximately 15,000 square kilometers, which is slightly larger than the State of Connecticut, USA (14,357 km<sup>2</sup>). In the north, the Timor Island is separated from the other islands of the Lesser Sunda Archipelago by the Ombai Strait and the Wetar Strait. And in the south, the Timor Sea separates the Island from Australia. Its geographical conditions vary great deal; there are Ramelau Mountains whose highest peak is Tatamailau with an elevation of 2,963 m, and divide the southern part of the country from the northern part. The country's geographical characteristics are more or less defined by slopes from the Mountains. On the one hand, in the north,

the coastlines reflect the steep slopes of the Mountains forming landscape with many cliffs facing the straits, and thus, there is little floodplain. On the other hand, there are many floodplains in the southern part of the Island because the slopes are not as steep and there are some larger rivers (e.g., Be Luriq River and Tuco River), which forms substantial floodplains and marshlands. As a result, the coastline does not start abruptly in the south. One of the demerits of lowlands is that they are subject to the damages caused by high tide, and thus, these lowlands are not well developed for agricultural use.

The Atauro Island is located in the north of Dili and belongs to the District of Dili. This islet is of volcanic origin and has a area of 14 square kilometers. Including this islet, the large part of the country's soil is originated from limestone and marine sediment of metamorphic rock, and shows a low fertility. The ground surface is susceptible to erosion; combined with rapid vegetation loss with steep slopes, erosion is a very common phenomenon during rainy seasons. The floodplains are susceptible to floods, which often cause surface soil losses and damage to roads and farmlands.

According to a report by FAO/WFP in 2011, a total of 600,000 hectares are suitable for agriculture, of which, 56,300 are irrigated farmland.

#### B) Climate

The climate of Timor-Leste belongs to tropical monsoon, where there are distinct rainy and dry seasons. Rainy season, accompanied with northwest monsoon, continues from December to April. It is not uncommon for the mountainous areas to receive precipitation during the dry season and the amount depends on the geographical conditions.

The average precipitation is 1,000mm and below in the northern part of the Island, and greater than 3,000mm in some part of the central mountainous areas, and from 1,000 to 2,000 mm in the south. In the southern part of the Island, including a shorter rainy period, there are two rainy seasons. Based on the number of rainy season and total amount of precipitation, MAF divides the country into 6 climatic zones: 3 zones in the north of Timor-Leste's backbone the Ramelau Mountains: the coastal zone with a precipitation below 500mm, the slope zone from 1,000mm and 1,500mm, and mountainous zone a precipitation greater than 1,500 mm. Another 3 are in the south of the Ramelau, coastal zone with a precipitation below 1,000mm, slope zone between 1,000and 2,000mm, and mountainous zone with a precipitation greater than 2,000mm (see the table below). On the contrary to the short rainy season of 4 to 7 months in the north, it lasts 5to 7 months in the south, which enables rice cultivation twice a year. However, due to monsoon, lowlands are susceptible to damages caused by high tides and overflows of river water (JICA, 2011).

Table III-6 six agro-climatic zones based on rainfall and elevation and area size (km<sup>2</sup>)

Zone	Name	Characteristics	Area km <sup>2</sup>	%
A	North Coast Lowland	Northern Lowlands – Coastal land and valley floors below 100 m mean annual rainfall <1000 mm, four to five month wet season from November to March	147,000	10%
B	Nothern Slopes	Northern Slopes – Northern hills between 100 and 500 m Mean annual rainfall of 1000–1500 mm, five to six month wet season, October to March	337,000	23%
C	Northern Uplands	Northern hills and mountains above 500 m, Mean annual rainfall >1500 mm, six to seven month wet season, October to April	290,000	20%
D	Southern Uplands	Southern hills and mountains above 500 m, Mean annual rainfall >2000 mm, nine month wet season, November to April; May to July	215,000	15%
E	Southern Slopes	Southern hills between 100 and 500 m Mean annual rainfall 1500–2000 mm; eight month wet season, November to April; May to July	305,000	21%
F	Southern Coast Lowland	Coastal land and valley floors below 100 m, Mean annual rainfall about 1500 mm, seven to eight month wet season, November to March; May to July	167,000	11%
	Total		1,461,000	100%

### C) Elevation

As mentioned earlier, elevation is one of the major factors to divide Timor-Leste into 3 major geographical zones. The coastal zone of elevations below 500 meters accounts for 65% of the total territory, distributed in both the northern and southern parts of the country and accounts for about 60% of total population. A large part cultivated land distributed in this zone. The slope zone of elevations from 500 and 1,500 meters accounts for about 40% of total population. This zone includes coffee producing western districts such as Ermera. The mountainous zone with elevations greater than 1,500 meters has an insignificant share to the total area and total population (JICA, 2011). The temperature of a given location in Timor-Leste is greatly influenced by the elevation. In the coastal zone of lower elevation, the average maximum temperature ranges from 26 to 32 degrees Celsius in dry season, and that of the slope zone and the mountainous zone stays relatively cooler. For example, the average temperature for Ainaro is slightly warmer than 20 degree Celsius (Gusmao, 2004).

### D) Soils and Land Use

The common types of soils of Timor-Leste originated from marine limestone. In 1997, Monk et al. of the US Department of Agriculture (USDA) published a research paper on Timorese soils distribution in accordance with the US soil classifications. According to the distribution map, the most common soil order is Inceptisols, and the types of soils under tropepts, a sub-order of Inceptisols can be easily found. These types of soils develop in areas with plenty of moisture in tropics. Low viscosity of limestone-originated soils combined with recent population pressure is the cause of soil erosion in the slope zone (Gusmao, 2004).

The table below shows land use of Timor-Leste in 2000. Four types of cultivation, namely,

plantation, smallholder farming, upland and food crops, wetland cultivation, and shifting cultivation, account for 27.5%. FAO (2000) reported a total forest area of 854,254 hectares, or 57.2% of the total area, and had predicted it to be 742,000 hectares, or 50%, by 2010.

Table III-7 Land use of Timor-Leste

Land Use	Class	Area (ha)	Percent
Coastal Forest	Forest	19,709	1.32%
Coastal Forest-Mangroves	Forest	1,802	0.12%
High land Forest-MoistMixed	Forest	65,103	4.36%
High land Forest-Single Species	Forest	2,356	0.16%
Dry Lowland Forest-Single Species	Forest	135,720	9.09%
Moist Lowland Forest-Sparse	Forest	174,992	11.72%
Moist Lowland Forest-Dense	Forest	261,694	17.52%
Dry Lowland Forest-Mixed	Forest	189,080	12.66%
Montane Forest	Forest	2,611	0.17%
Wetland Forest-Swamp	Forest	269	0.02%
Man Made Forest	Forest	918	0.06%
Estate Crops	Agriculture	68,074	4.56%
Smallholder-State Crops	Agriculture	6,504	0.44%
Lake	Aquaculture	5,080	0.34%
Cities and Large Towns	Other	13,346	0.89%
Villages and Mix Garden	Other	6,588	0.44%
Dry Land Arable-Food Crops	Agriculture	284,300	19.04%
Wet Land Arable	Agriculture	45,856	3.07%
Shifting Cultivation Areas	Agriculture	6,244	0.42%
Grass Land	Other	107,090	7.17%
Savanna	Other	93,378	6.25%
Bare Land	Other	2,279	0.15%
Shrubs, Grasses, and Reeds	Other	405	0.03%
Total		1,493,398	100%

Timor-Leste owns 735 km of coastline and 75,000 km<sup>2</sup> of Exclusive Economic Zone (EEZ), but borderlines of it have not been determined. The coastlines with rich coral reefs are distributed around the Atauro Island. Because the Strategy Plan of Timor-Leste describes a plan to promote aquaculture, it is expected that there will be fish farms along the coast.

### III.2.2 Natural conditions and suitable Crops

#### A) Natural conditions

##### a) climates

The determining factors of suitable crops are natural conditions such as temperature, precipitation and irrigation water, and soil characteristics (fertility and pH), which are greatly influenced by geographical characteristics. As shown below, the country's geographical characteristics are more or less defined by the degrees of slope from the Mountains.



Figure III-4 Geography of Timor-Leste (Source: UNMIT GIS Unit)

On the one hand, in the north, the coastlines reflect the steep slopes forming landscape with many cliffs facing the straits (in yellow color, in the figure above), and thus, there is little plain. From west to east, a part of Bobonaro, Dili, Manatuto, Baucau, and Lautem are in grey color indicating alluvial plains. On the other hand, there are many floodplains in the southern part of the Island because the slopes are not as steep and there are some larger rivers. From west to east, Cova Lima, Ainaro, Manufahi, the southern coast of Manatuto, Viqueque, and the southern coast of Lautem have relatively large plains.

##### b) Temperature

The average high temperature is 26 to 32 degrees Celsius in the coastal lowlands, and the average low temperature is 18 to 21 degrees Celsius (in the table below, Faumaca, Dili is the nearest point). From the slope areas to highland, it stays relatively mild all year around. In general, the amount of rainfall is smaller in coastal zone, which is between 1,000 and 1,500 mm per annum. It increases in mountainous areas, reaching 2,000 mm in some parts for a wet year. Ermera and Aileu are in the northern slope zone; when the Study Team visited, the border areas between these two district seemed very dry for this climatic zone. This can be because this area is basin-like that moisture from both north and south seemed stopped by the outer rim of the basin. In the following table, Faumac and Dale are in the northern slope zone, Aileu and Maubissi are in the northern mountainous zone, Betano

is in the southern coastal zone. Note that the data was derived from multiyear observation from 2010 to 2011, which were extremely wet that some observed rainfalls were far off of normal ones. The Study Team saw rich spring water in the mountainous areas including Same, Aileu, and Maubissi. However, because large rivers remain dry almost all year around, one needs to seek water sources in case irrigation is necessary during the dry season.

Table III-8 Rainfall data

Town name	Fatumaca, Dili				Aileu, Alieu				Maubissi, Ainaro				Dare, Manatuto				Betano, Manufahi			
Elevation (m)	612				900				1500				460				30			
Year Recorded	2010-11				2005-06				2010-11				2010-11				2010-11			
Month	Average Temp.			Rainfall	Average Temp.			Rainfall	Average Temp.			Rainfall	Average Temp.			Rainfall	Average Temp.			Rainfall
	Min	Max	Mean	mm	Min	Max	Mean	mm	Min	Max	Mean	mm	Min	Max	Mean	mm	Min	Max	Mean	mm
Jan	21.33	28.15	23.7	0	19.32	28.05	22.7	118.5	15.7	23.7	18.7	57.7	22.6	29.6	25.0	103.5	23.7	32.9	27.3	165.3
Feb	21.24	28.31	23.6	0	19.71	28.05	22.8	130.0	15.7	24.7	19.0	141.6	22.6	29.5	24.7	174.5	23.5	32.9	27.2	113.0
Mar	21.03	28.30	23.4	0	20.11	29.03	23.1	34.0	15.3	24.5	18.7	126.5	22.5	30.8	25.2	65.0	23.4	32.7	27.1	176.5
Apr	20.86	28.00	23.2	0	16.95	28.73	21.2	0.0	15.3	23.6	18.4	226.0	22.7	31.8	25.6	232.5	23.3	32.0	26.7	147.3
May	19.43	27.56	22.5	0	19.79	28.87	23.2	3.3	14.4	21.8	17.1	145.3	22.1	30.7	24.8	53.5	22.6	30.5	25.5	221.8
Jun	18.67	26.68	21.7	0	17.13	27.27	21.5	41.0	12.1	20.0	15.4	47.3	21.2	30.4	24.3	14.5	21.1	28.8	24.2	112.0
Jul	19.48	26.80	22.2	0	17.81	27.67	22.0	81.5	13.0	19.9	15.7	100.3	21.3	30.3	24.3	84.3	21.4	29.2	24.4	140.8
Aug	18.04	27.69	22.3	0	14.69	28.20	20.7	8.8	12.3	20.9	15.8	48.5	20.9	30.2	24.1	2.0	19.8	29.8	24.2	157.8
Sep	18.03	29.36	22.9	3.6	12.73	28.90	20.1	38.3	13.8	22.6	17.4	59.4	21.4	30.5	24.4	31.8	20.5	31.3	25.5	15.8
Oct	19.64	30.38	24.0	486.0	15.27	29.39	20.7	113.8	14.8	24.1	18.4	140.1	22.2	30.4	24.9	97.0	21.9	32.2	26.7	49.5
Nov	19.01	30.44	23.9	99.0	15.91	30.06	20.9	227.3	14.7	24.8	18.1	200.1	22.7	30.3	25.4	142.0	23.2	33.6	28.0	25.0
Dec	20.91	29.26	23.9	924.6	17.63	28.37	21.3	171.8	16.1	24.5	18.8	201.6	22.8	29.6	25.1	63.5	24.2	33.3	27.8	150.3
Total				1513.2				968				1494.2				1064.0				1474.75

(Source: MAF National Directorate for Policies and Development)

### c) Soils

Coastal soils in alluvial plains of the Timor Island are often alkaline due to the lack of iron and zinc; in the contrary, generally the reverse is more common in the mountainous areas. For the case of extensively cultivated crops, such as soybeans, soil improvement is not economical, hence, soil conditions are the limiting factors.

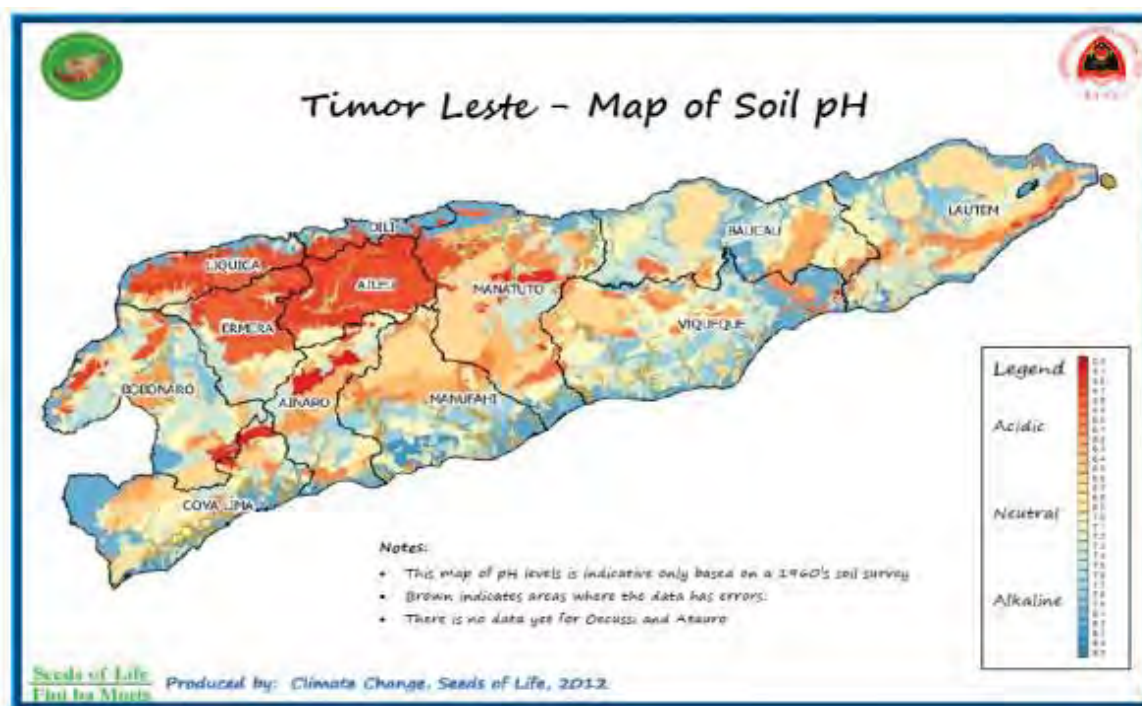


Figure III-5 Distribution of soil pH in Timor-Leste (acidic in darker red, alkaline in darker blue)  
(Source: Seeds of Life)

Owing to the natural conditions described above, it is possible to produce from tropical to cool temperate crops in Timor-Leste. Note that, for some, suitable area might be very limited and there are exceptions due to stable temperature and daylight length throughout the year, including those crops that require cold treatment for sexual reproduction, such as stone fruits (peach and almond), and that has a strong photoperiodic nature (middle latitude rice varieties). Soil conditions could be changed, and especially, organic farming applies tons of compost resulting in a significant soil improvement. Thus, soil conditions would not be limiting factors.

#### B) Production and quality by agro-ecological zones

As shown above, Timor-Leste is divided into two principal zones of the northern part with single shorter rainy season and the southern part with two rainy seasons. Then, these two principal zones are broken into three agro-ecosystems each, six in total, depending on the rainfall determined by elevation. As Table III-8 indicates, the average temperature of Betano, a town in the coastal lowland, stays in narrow, and relatively higher range between 24 and 28 degrees Celsius. Starting from this temperature range, applying a lapse rate 0.55 degree every 100 m increment, the average temperatures are expected to be between 19 and 24 degrees Celsius at the elevation of 1,000 m, which is comparable to the summer average temperatures of Japan's northern region.

Convention farming in Timor-Leste solely depends on local knowledge, in which, farmers only sow seeds, then left crops unattended until harvest; only weather knows if farmers can have harvest. Even rice, the major staple crop, is no exception. The majority of the rice paddies are not equipped

with irrigation facility, though a few of them are under modernization projects, thus, are depending on rain water, spring water and river water; latter two are greatly influenced by geographical conditions. Terraced paddy fields employ plot-to-plot irrigation. Because of such a traditional farming manner, they have no concern about the quality of their products; they occasionally sell surplus after self-consumption. Labor force is their family members, and group work can be seen during the peak seasons. The agricultural productivity is low; the average yield per hectare was 1ton for rice (dry), 1.25 tons for maize, 7.5 tons for tuber crops in 2010 (SDP of Timor-Leste, 2011, p 112).

Timorese agriculture is grouped into two, namely upland farming in the slope zones and rice-centered farming in lowlands. Characteristics abovementioned apply to both farming types, and both types raise livestock throughout the country, such as cattle/cows, buffalos, pigs, goats, sheep, horses, and chickens.

Rice-centered farming in lowlands (coastal alluvial plains):

The most preferred grain is rice so that farmers try to grow rice wherever possible. If water is not abundant enough for rice, farmers grow other staple crops including maize and cassava, and a broad range of vegetables, beans (soybean, mungbean, common bean (red, kidney etc.)), peanuts, banana, mango, coconuts, candlenut, and cacao.

Upland farming in the slope areas (central areas):

In the slope zones, it is difficult to find sufficient water and flat land for paddy rice, but upland rice can be seen. Other crops commonly seen are maize, cassava, potato, vegetables (pumpkin, mungbean, common beans (red, kidney, etc.), peanuts), mango, pineapple, citrus and so forth.

Soybean and mungbean have been exported to Indonesia in the past, and thus, pose a great possibility for Timor-Leste to resume export of these commodities. Currently, since cheap soybean is imported from Indonesia and other countries, import substitution is the main objective.

### III.2.3 Agricultural Production in the Districts

In the coastal lowland and slope areas, import substitution of rice and maize, the staple grains, for which the nation currently relies on import. Although rice and maize have an increasing trend, meeting the domestic demands is the priority, these pose no export potential. Vegetables are also produced in cooler mountainous areas, such as Aileu and Maubissi, in order to meet the domestic demand created mainly by the foreigners living in Dili. The quantity is not yet enough and so many high value and quality vegetables are imported from other countries including Indonesia and Australia that import substitution is also the priority for the vegetable production.

During this study period, the Study Team visited Aileu, Ermera, Maubissi, Natarabora, Baucau, an Lospalos, and saw the realities in agricultural production.



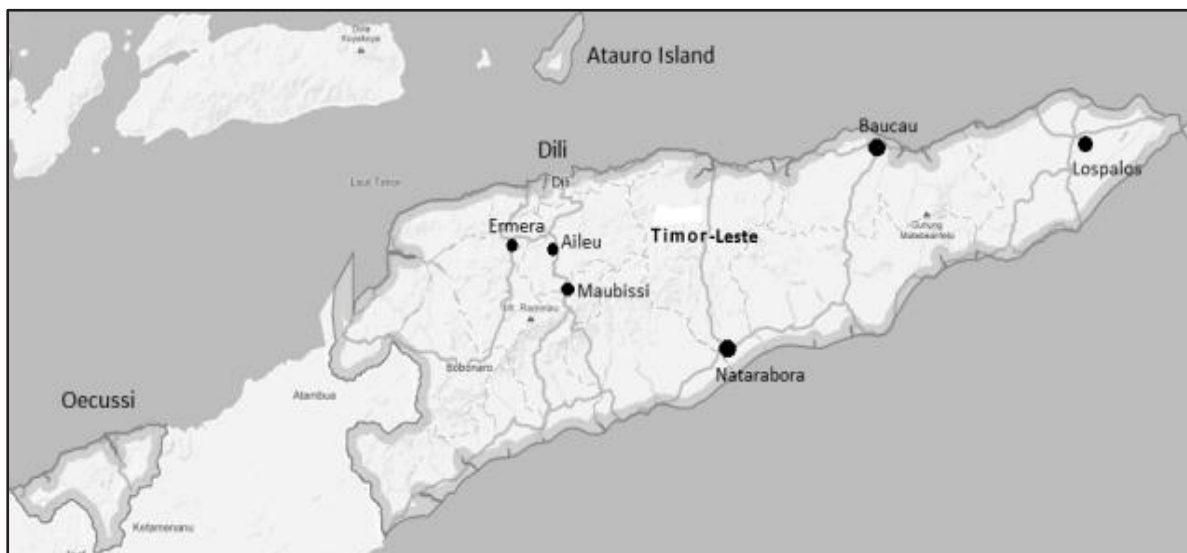


Figure III-6 Locations of the points visited by the Study Team

#### A) Vegetable Production in Aileu, Aileu District

Aileu is located in a mountainous area with elevation 900 m along the principal route stretching southward from Dili. As shown in Table 5.1-1, the average maximum temperature is stable within a range between 27 and 28 degrees Celsius, and the average rainfall is less than 1,000 mm. These indicate this area is relatively warm and dry.

USAID implements an assistance project called *Dezenvole Agricultura Comunitaria (DAC)* helping farmers in and around the city of Aileu collaborating with Kmanek, one of the Dili's major supermarkets in order to meet the demand for vegetables. As of September 2012, there were 9 farmer groups supplying leafy and fruit vegetables to Kmanek. USAID and Kmanek supply agricultural inputs and technology transfer to the farmers, and then, farm management is done by the farmers. Supported inputs are tunnel type greenhouses, vegetable seeds, and group activity management, and transfer of vegetable production skills. As one of project staffers, a Kmanek technician works fulltime with the farmers, and gives pointers about quality. For the farmers who are the target group of agricultural technology transfer, such an extension scheme in which the assisting organization takes the initial risk and the recipient farmers only take variable cost seems acceptable.

DAC has already introduced about 30 different crops, mainly vegetables, including those for trial bases such as beet and iceberg lettuce, and coriander (Table III-9). The member farmers became reliable suppliers of leafy lettuce, tomato, cauliflower, bok choy and so on. In effect, they employ both "market-in" and "product-out" approaches; the former means to produce what the market demands and the latter to sell what are produced. If these member farmers continue producing commodities with vegetable first, they might gain the ability to meet export requirements.

Table III-9 Crops produced by the member farmer of DAC

Type	Crop Name
Leafy and Salad	Bok Choy, Cabbage sprout, Red Cabbage, Cabbage, Celery leaves, Chinese Cabbage (nappa), Cabbage, Iceberg lettuce, kale, parsley, Sylver beet, red mustard, Ork leaf lettuce
Flowers and Buds	Broccoli, Cauliflower
Bulbs and Stem	Onion, Leek
Fruits	Bitter gourd, Eggplant, Lebanon cucumber, Chili pepper, Cucumber, Ziccini, Pumpkin, Okra, loofah, cantaloup
Roots and Tuberous	beet, radish
Herbs	Coriander

DAC faces no problem in implementing the activities, but they have no clear exit strategy despite its termination in 2014. The Study Team believes that all the knowhow and techniques will be transferred to the farmers in a timely manner, and then the farmer groups will become able to manage vegetable production by themselves. However, considering a similar project supported by World Vision, which had formed farmer groups, before USAID did not result in sustained group activities, it might be necessary to continue support to the farmers after the DAC project in order for sustainability. One idea is to establish a NGO by the current project local staffers and this NGO provides coordination services to the farmers. Another idea is to transfer the coordination function to the public organizations such as extension officers.

Other challenges are that construction of greenhouse incurs the initial investment of USD200 per house, which is relatively large for the local income level and that entrant farmers would need technical assistance. These might deter unsupported farmers to start vegetable production using a greenhouse. As for export-oriented agriculture production, it would be desirable to continue support for the farmers until this area gain ability to produce enough vegetable in terms of quality and quantity. Even if these farmers grew to be reliable producers of vegetable, they would still need assistance in securing export markets. The exodus in December 2012 of UN PKO officers and their families, estimated to be greater than 1,000 foreigners in total, will causes a serious dent in the domestic demand for vegetable. This is one of the reasons why assistance for export-oriented agriculture promotion would be a necessary option to consider.

#### B) Highland vegetable production in Maubissi, Ainaro district

Maubissi is located one-hour drive to south from the DAC project site along the main southbound route. The elevation here is much higher at around 1,400 m. Here, one can find Josephina Farm, an organic vegetable producer. Table III-8 shows that the average maximum temperature stays between 20 and 25 degrees Celsius and the average annual rainfall is about 1,500 mm, which implies Maubissi has a relatively cooler and moist climate.

Josephina Farm has an ability to produce high quality commodities using techniques learned in Japan, and is ready to expand its operation to other locations, such as Baucau (discussed later). This

company is expected to increase its supplying capacity.

Josephina Farm is managed as incorporation consisting of about 50 farmers who contribute farmland and labor; the technicians/managers of Josephina Farm, Mr. Guido Ximenes Sequeira and Mr. Teofilo Lourdes Martins, teach the farmers organic farming and take the leading role in marketing. These two managers/technicians had received training on organic farming from OISCA, a Japanese NGO, and thus, Josephina Farm is making the most of such techniques. One example is generous application of compost; in order for soil improvement, 20 tons per hectare are applied. Another one is that tunnel greenhouse is used to produce seedlings controlling sunlight and insect pests.

The types of crop they produce are decided taking into consideration the advice from the buyers such as Landmark supermarket in Dilli. Landmark supermarket advises Josephina Farm to produce as many types of vegetables as possible in small quantities because the demand for each item is relatively small. Therefore, a number of crops are grown as shown below.

Table III-10 Crops produced by the member farmer of Josephina Farm

Type	Crop Name
Leafy and Salad	Bok Choy, Cabbage, Chinese Cabbage, Iceberg lettuce,
Flowers and Buds	Broccoli, Cauliflower
Bulbs and Stem	Onion, Leek
Fruits	Capsicon, Tomato, Cucumber, Zucchini, Pumpkin,
Roots and Tuberos	Carrot, Potato

Josephina Farm has a warehouse in Dili and a refrigeration track provided by MCIE, which means that this company has cold chain, no matter how primitive it is. The vegetables sent to the warehouse are weighed and sorted, then delivered to the customers.



Figure III-7 Vegetable fields of Josephina Farm

Josephina Farm's organic farming and its contribution to rural development is highly appreciated, and some farmers in other districts invite the technicians for technology transfer. Because of this high reputation and expectation from the relevant actors, there will be more farmers joining the company, hence, one can expect that the company and their associate farmers to be prospective suppliers of export commodities. However, it is needless to point out that the company would face the same challenge of contracting domestic vegetable market as the DAC members in the near future. For this reason, it is wise that the managers of Josephina Farm to think of including export-oriented marketing in their business strategy.

C) Rice and industrial crops in Natarabora, Manatuto district

Natarabora is located in a fertile agricultural area developed in a southern alluvial plain of Manatuto District. The close location is Betano, Manufahi District, and its elevation is also low and around 50 m. In this area, the average maximum temperature stands high around 30 degrees Celsius and the average rainfall is 1,500 mm during the 9-month rainy season with monthly rainfall greater than 100mm. Irrigation water for agriculture is supplied by rain and simple waterways connected to rivers. Wherever possible, rice is grown even during dry season.

Rice seed is provided by MAF free of charge and the variety is RC18, whose potential is 5 tons per hectare within 120 days. This means RC18 can be harvested 2 to 3 times a year, or 10 to 15 tons per hectare. Currently, the Government buys up rice at 25 centavos per 2kg, hence, as long as a farmer produces rice, cash payment is guaranteed. If there is not enough water to grow rice, there staple crops including maize, cassava, and sweet potato. In addition, many farmers produce coconuts, cashew nuts, and teak.



Figure III-8 Teak Plantation of Natarabora Agricultural High School

The Study Team has not encountered any group with export potential, but this area poses high

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production potential depending on crops. Indonesian buyers visit this area time to time to purchase teak timber.

#### D) Agriculture Companies in Baucau

In the coastal Baucau District, although small, a part of northern coastal alluvial plain is distributed, where paddy rice is very common. Irrigation systems are very fragile, but if there is any, even plot-to-plot irrigation, the land productivity jumps up to 4 tons per hectare whereas the national average is about 1 ton.

In the slope zones, upland farming is the most common form, where farmers grow such crops as maize, potato, sweet potato, cassava, and peanut. In general, animal husbandry is very common; cattle and buffalo are kept as assets and for occasional meat source, and goat, pig, chicken are for meat. The Study Team visited two commercially farming groups, namely Bucoli Green and the future site of Josephina Farm.

##### a) Bucoli Green

Bucoli Green is located in Bucoli Suco of Baucau District, 20-minute drive to west from the city of Baucau. A Kenyan surgeon, Dr. Phillip, is the owner, and he is still actively performs medical surgeries. His wife is from Indonesia, and the Doctor's right-hand person. The farm hires mostly local people between 80 and 180. The land size has not been measured, but eyeballed figure was between 10 and 15 hectares. The land Dr. Phillip rents was once left uncultivated. The land surface is full of rocks in various sizes, probably originated from volcanic larva, and the top soil layer is very thin. The Doctor removed rocks little by little and applied organic matters in order to improve the quality to a suitable level for cultivation.

They decide the crops taking into consideration the requests from the buyers; currently a broad range of vegetables are grown including tomato, onion, red onion, Chinese cabbage, cabbage, lettuce, eggplant, chili pepper, cucumber, snowpeas, and bitter melon mainly varieties brought from Indonesia with import permits issued from the Timorese Government. The elevation of the farm is around 500 m, and suitable varieties are those for highland, rather than those for lowland. The crop produced most is tomato, which is grown and sold all year around. The company employs modern techniques such as plastic mulch and fencing to support plants, which demonstrate distinct differences from the neighboring farmers. For the next challenge to commercially produce pigs, goats, and chickens, he is efficiently fattening them with unmarketable produces. If export is considered, Dr. Phillip guesses that the high export potential crops are spices, especially, saffron poses the highest (it might be too demanding to the Timorese farmers to produce, especially, in harvesting and lightly fermenting processes).



Figure III-9 Vegetable fields of Bucoli Green

This modern farming company is showing such good examples to the surrounding farmers that some of them started adopting the techniques. For instance, though complained by the neighboring farmers in the beginning, fencing the borders of farmlands in order to demarcate clearly and to stop wandering animals trespassing and damaging the company's crops has become widespread among the neighboring farmers as an effective method to protect their crops. Dr. Phillip argues that the biggest challenge to promote agriculture in Timor-Leste is not the problem themselves, but the characteristics of the farmers who do not strive to find solutions to the problems.

#### b) Josephina Farm's Prospective Baucau Branch Site

The prospective site of the Josephina Farm Baucau branch is located in hilly Wibiwana Aldeia in Griuai Suco, about 40-minute drive south of the city of Baucau. When the Study Team visited in November 2012, Mr. Guido of Josephina Farm was in the middle of coordination with 10 prospective member farmers, an entire locasi (hamlet), and their family members. Each prospective member farmer has 1 hectare of farmland, therefore, about 10 hectares will be collectively managed by the group.

The land of the hamlet belongs to the slope zone, where the surface is full of rocks of various sizes, probably originated from volcanic larva. If left wild, this area is savannah with man-height grass and dispersed short trees. The farmers selected the parts infested with fewer rocks, then removed them for cultivation. The soil shows bright red color, typical in the tropics, which indicates severe nutrients loss. However, the soil texture seemed acceptable owing to good manner of plough and management.

Josephina Farm's organic farming with generous use of compost will be definitely beneficial for such a land; especially the farmers cultivate the same pieces of land year after year.

Traditionally, they grow maize, potato, peanuts, sweet potato, cassava, and pumpkin. From this year, as soon as delayed rainy season starts, they will plant tomato, cabbage, carrot, cucumber, melon, watermelon. In addition, they are planning to produce fruits such as papaya and lemon in the virgin lands which are infested with rocks.



Figure III-10 Josephina Farm's prospective site in Baucau

According to the prospective member farmers, Timor Global tried peanuts production with a farmer group neighboring to the locasi of the prospective Josephina Farm member farmers during the rainy season from 2011 and 2012. Timor Global provided seeds and tractor ploughing, but it failed because seeds were not enough and Timor Global did not come to teach cultivation techniques, and thus, the farmers did not even sow the seeds. It sounded that Timor Global might have assumed the farmers would automatically plant peanuts as long as seeds and land preparation were granted since the farmers in this area had traditionally grown. This incident indicated that the farmers in this area might be excessively dependent on external assistance. For this reason, thorough extension and monitoring might be necessary.

E) Farmers in Ermera District

a) Coffee Producers

Ermera District is located in the slope zone, hence, agriculture takes place in sloped fields, and

coffee is suitable. In the recent years, among the farmers near the consumption centers such as the city of Gleno, little by little, more farmers start growing vegetables in rice paddies and lands with milder slant and sell in the consumption centers. Deep mountainous areas still has no other choice but depending heavily on coffee production.

This district is under strong influence of CCT due to its primary coffee producer status. CCT had promoted vanilla in addition to coffee in this district, but misfortune of vanilla price crash resulted in a drastic decrease in the number of vanilla producers; many farmers cleared vanilla vines and went back to coffee monoculture with small production of staple food such as cassava and sweet potato for home consumption.



Figure III-11 Coffee field in Ermera District

#### b) Self-Sufficient Farmers in Drier Mountainous Area

The border area between Ermera and Aileu Districts climbs up to the elevation around 1,200 m and are comparatively dry, and the vegetation is that of savannah. Thus, coffee does not seem suitable to this area, and farmers, often teaming up with other extended family members, grow crops for self-consumption including maize, taro, cassava, and sweet potato. They occasionally sell surplus in the consumption centers, which is about 1 hour microlet or angguna ride. In addition, the farmers living next to the main route connecting the two districts sell firewood by the route for cash. This area is one of very difficult places to make living unless cultivating sufficiently large fields. If not, farmers rent others' virgin land for no fee for a couple of years. This is because the tenant farm takes up hard



task to clear and prepare the piece of virgin land, and it will be returned as a fully operational crop field. The owner does not charge anything as a reward.

F) Lautem district

a) Farmer Groups assisted by MAF

Alluvial plains are distributed in the mid to southern parts of the district. Around the city of Lospalos, to which the Study Team visited, rice-centered agriculture is commonly seen. The soil of rice paddies was dark black indicating rich in organic matters. According to MAF staff, more than 1,000 hectares around the city belong to the government, and because of immigration into this area at the time of independence from Indonesia in 1999, the majority of the Government-owned land is under cultivation.

The farmer groups supported by the extensionists of MAF run collective vegetable farms, and the middlemen buy and ship their vegetables, such as cucumber, even to Dili, to which it takes more than 6 hours by car. A broad range of vegetables are produced, such as mustard, tomato, cabbage, cucumber, lettuce, Chinese water spinach, eggplant and so on.



Figure III-12 Vegetable field in Rice Paddy

b) Coconut Producers

Lautem District occupies the third position in terms of coconut production among the districts, but the Study Team found it difficult to encounter coconut farmers of commercial production. This is because each family owns coconut trees for home consumption, thus, coconut production in total

becomes large, but not many farmers have coconut plantation. MAF's extensionists do not assist coconut farmers, and they have no information on coconut farmers.

The Study Team luckily found a coconut producer. He makes coconut oil and sells in the local market, but if labor cost is considered, coconut oil production would not pay. This is a typical behavior of peasants that they normally do not see their own labor as a cost. For profit, it is necessary to reduce production cost and to add value by improving the quality of coconut oil.

#### III.2.4 Summary of local visit

Because of various types of ecosystem due to different natural conditions attributed to the differences in elevation, it is possible to produce from tropical crops to cool temperate climate crops. In addition, the temperature of given location stays relatively stable, which enables certain crops to be cultivated more than once a year. However, the suitable area for cool climate crops can be limited, and thus, they might not be possible to produce large quantities for viable export. Furthermore, due to narrow band of temperature fluctuation, those crops that require severe chill and vernalization are not suitable.

In Timor-Leste, it is rare to find data on agricultural production even for very commonly grown crops; it is especially so for the crops that are not very common. This limitation kept the Study Team from identifying leading crops of particular crops. However, based on climatic characteristics, herbs and spices can be grown in substantially wide areas; in hot lowland, pepper, nutmegs, cardamom and so on can be produced. And in cooler areas such as Ermera and Aileu Districts, vanilla for spices and coriander for herb can be grown. These conditions apply to vegetable so that in humid areas or areas with irrigation water large operation of temperate climate vegetables can be grown. As for fruits, in lowland, many types of tropical fruits including custard apple and lychee, and in highland, subtropical to temperate climate fruits such as mandarin, loquat, and fig can be grown provided that there is enough water.

### III.3 Related actors (Government)

#### III.3.1 Total picture of related ministries

The Study Team has interviewed to various ministries and related organizations such as agriculture, fishery, micro and small enterprises support, justification, export procedure, finance etc., as the Study Team didn't have specific counterpart. The interview targeted on the export of potential crops in the field of the economic development. SDP indicates that the nation mainly needs the import substitutes and food security in the agricultural sector. Under this national policy, the Study Team surveyed interests in export, organization chart, roles in business development of each ministry.

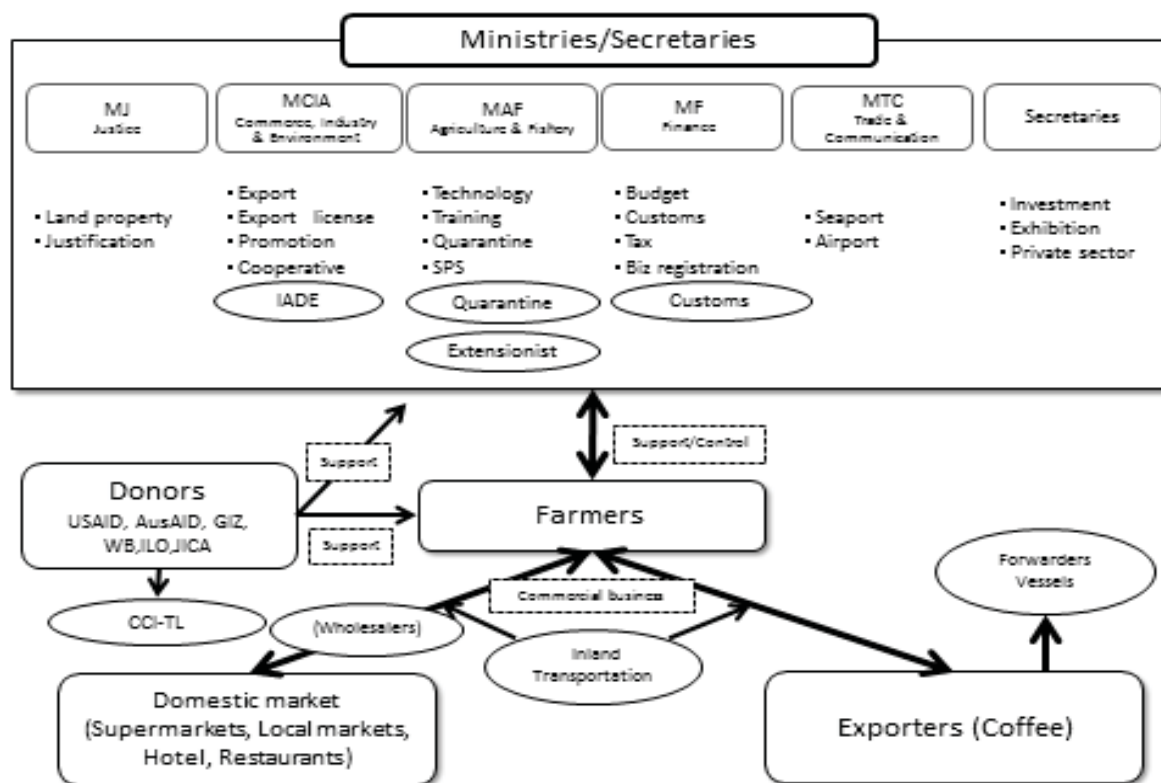


Figure III-13 Relation map of the stakeholders

### III.3.2 Ministry of Agriculture and Fisheries (MAF)

The Ministry of Agriculture and Fishery (MAF) was amid of writing up the Strategic Development Plan (SDP) for the years from 2014 to 2020 when the Study Team visited. The purposes of the visit to the Director General of MAF were to improve our grasp on the SDP and on the policies of MAF. In the meantime, the Study Team explained to the Director General about our objective to study on the export potentials of agriculture, fishery, and animal products to Japan. The Director General fully agreed on the point due to the understanding commonly held by many Timorese that the Timor-Leste should diversify its export commodities beyond coffee.

The Director General explained to us that the Ministry of Commerce, Industry and Environment (MCIE) was in charge of administrating export commodities and MAF only could assist in increasing production of agricultural commodities. He considered vegetables, fruits, live cattle, and seafood as the highest potential sub-sectors for immediate export. He continued that export from Timor-Leste, even to the neighboring countries including Indonesia, has been extremely limited due to its underdeveloped sanitary and phytosanitary capacity. On the contrary, the production of grains and beans is promoted aiming for import substitution and for that their potential for immediate export is negligible. As for seafood, current export is limited to tuna and bonito, which are fished by foreign companies, but not dealt by Timorese actors, and inshore fishery by the local offers little export potential.

MAF has implemented a number of activities since its creation in 2000, it has also faced constant

shortage in human resource and experiences due to its short history. In addition, owing to the restructuring upon the election of new government executives, MAF staff members are in slight confusion and disorientation. The following organogram shows the current MAF structure.

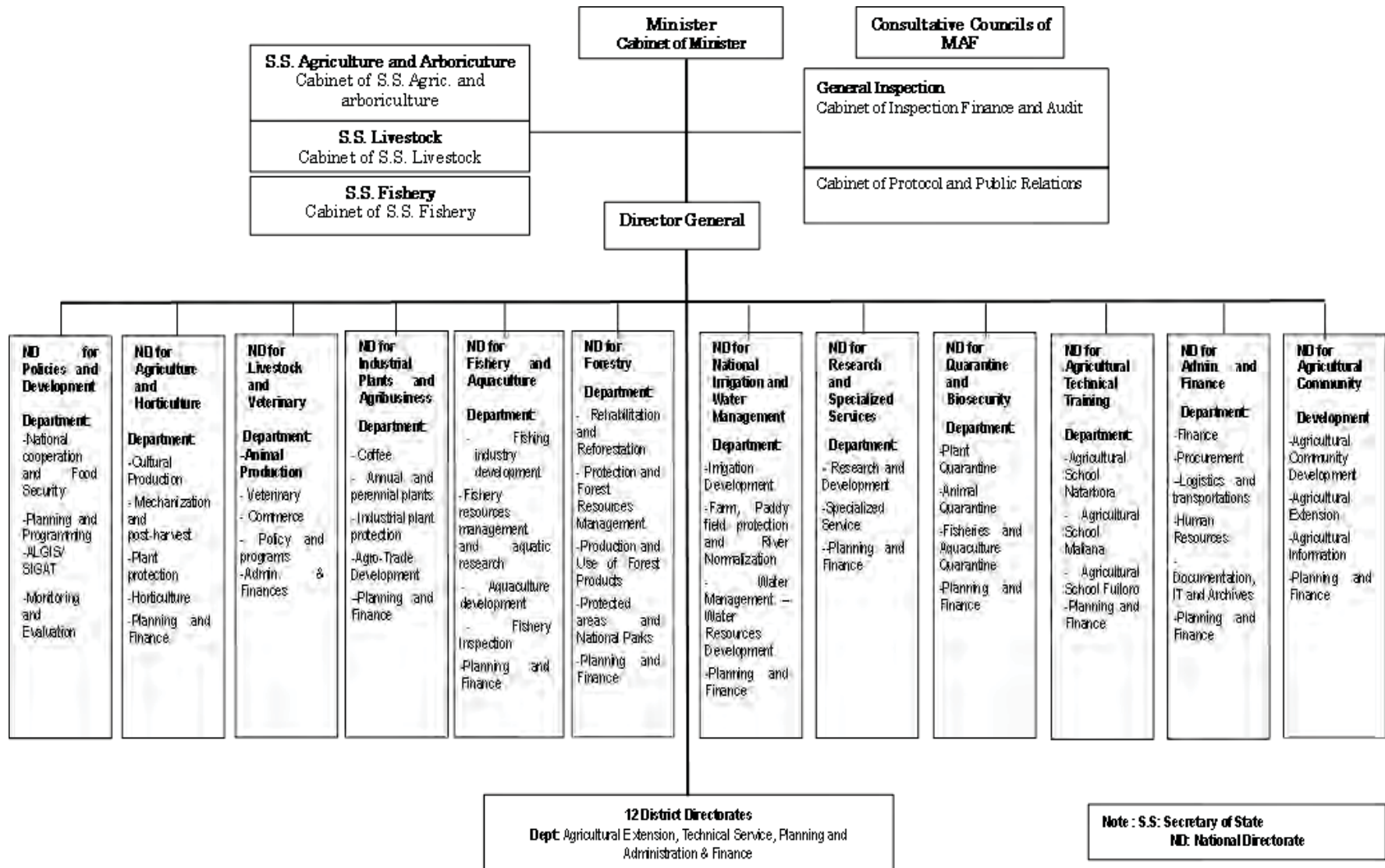


Figure III-14 Structure of the Ministry of Agriculture and Fishery

A) National Directorate for Policies and Development (NDPD)

This directorate coordinates policies, consolidates, and monitors their implementation and progress. In particular, when the Study Team visited MAF, the directorate was finalizing SDP of MAF before submitting to the Minister for Agriculture and Fishery. It consists of four objectives as shown below. Other directorates are expected to form their respective action plans in accordance with these objectives by the end of January 2013.

Four development objectives of SDP 2011-2030

1. Sustainable increase in production and productivity of selected crops, livestock species, fisheries and forestry subsector; Increase the quantity of food production to ensure food security and self-sufficiency of main staple foods;
2. Enhance and improve market (domestic and export) access and value addition;
3. Improve the enabling environment; and
4. Ensure that MAF and related agencies are strengthened and appropriately configured and equipped to deliver on SDP and MAF's Strategic Plan.

Promoting agriculture, forestry, livestock, and fishery products for export also directly helps to increase their quantity and to improve their quality. Therefore, export oriented subsector development is perfectly aligned with the MAF's SDP objectives. In particular, the second objective is "Enhance and improve market (domestic and export) access and value addition", which concerns promotion of export commodities. This objective is broken down into six specific objectives as follows.

Specific Objective 2.1; To improve the capacity of MAF for regulation and enforcement especially in safety standards and quality assurance across crops, livestock, fisheries, and forestry products.

Specific Objective 2.2; To promote the use of high quality inputs, planting, and stocking materials, and fishing equipment.

Specific Objective 2.3; To promote value added activities within the subsector. Timor-Leste is an exporter of mainly unprocessed commodities.

Specific Objective 2.4; To provide the necessary rural market infrastructure including appropriate structure to improve post-harvest losses.

Specific Objective 2.5; To promote collective marketing, support to Farmers Groups and Farmers Association.

Specific Objective 2.6; To promote private sector engagement in input supply and product marketing.

Consequently, it is desirable for assistance projects to be carried out in conjunction with these policies whose final drafts will be submitted by the end of January 2013. Specific assistance activities need to be implemented in line with directorates' action plans. In the following sections, the Study

Team will discuss the export potential for subsectors represented by the directorates of MAF based on the information obtained through interviews with them. In the following sections, the Study Team discusses the directorates that administrate the commodities that were thought be pose possible immediate export.

B) National Directorate for Fishery and Aquaculture (NDFA)

MAF NDFA is responsible for fishery management and aquaculture; neither of them offers export potential by the Timorese as the main player. For seafood to be exported, Timor-Leste lacks appropriate system and facilities for every part of market chain including necessary gear to catch fish sufficiently and to raise aquatic creatures, cold chain, and sanitary. Some seaweed collected in the Atauro Island is dried and processed for occasional export to Indonesia. It is hard to imagine the Atauro Island can become a reliable seaweed supplier for its very limited sea shelf. The total area of the island itself is about 140 km<sup>2</sup>. In addition, tuna and bonito are caught by a Japan-Korea joint company offshore near the Atauro Island, and are already exported to the United States.

When it comes to aquaculture in Timor-Leste, it is inland freshwater aquaculture in order to supply fish to the inland residents with a difficulty in accessing marine fish. In particular, small scale fish ponds are used to raise carp, tilapia, and catfish in Same in Manufahi District, Gleno in Ermera District, Maliana in Bobonaro District, Viqueque in Viqueque District, which are all far from the coasts. Marine aquaculture demands such a large investment for substantial facilities that Timorese are stay away of trying it.

In the future, as necessary facilities and systems are established such as fishing boat harbors, transport routes, transport services, and cold chain, it is possible for Timorese actors to export seafood depending on the available fish species.

The following table shows the varieties of fish at the family level that are distributed in the Timorese waters based on the Timorese marine fish species list provided by the directorate . Tuna and bonito belong to the group of fish species currently exported from Timorese water, and there are ten species. Global trade control over these species is expected to be tightened in the near future. The most numerous family in terms of the number of species is sea perch family (Lutjanidae), whose members count 18, and are currently limited to local consumption. The list shows 127 species including 14 rockcod species, 12 parrotfish, 10 trevally and so on. The directorate does not have lists for crustaceans (shrimps, lobsters and crabs) and mollusks (squids, cuttlefish, and octopi).

Table III-11 Fish Families observed in the waters of Timor-Leste (source: NDFA)

Family	No. Spp.	Local Name	English Name
Lutjanidae	18	Tanggalara, Kamara, Karungu	sea perch
Serranidae	14	Garopa	rockcod
Scaridae	12	Niru	Parrotfish
Lethrinidae	10	Baduma	Emperor
Scombridae	10	Bulkumo, Kasareta, Bainar	Tuna, Mackerel, Bonitos
Carangidae	10	Koku mutin, Salar	trevelly, scad
Acanthuridae	8	Kafir fatuk (kalepan tasi leten)	Surgeonfish
Haemulidae	8	Talun	Javefish
Caesionidae	5	Bainar fatuk	Fusilier
Nemipteridae	5	Kurisi fatuk, Bandeia ikun naruk	Breams
Labridae	4	Niru	Wrasse
Mullidae	3	Biz nanga	goat fish
Siganidae	3	Kitan	spinefoot (rabbitfish)
Holocentridae	2	Karon, Karoma	Soldierfish, Squirrel fish
Kyphosidae	2	Spreo	Drummer
Mugilidae	2	Saltao	Mullet
Baloniidae	1	Daun	Long tom
Chanidae	1	Salmaun/ikan be'e	Milkfish
Coryphaenidae	1	Karongo metan	Common dolphinfish
Clupeidae	1	Sardina tilun modok	Slender Sardine
Elopidae	1	Dardina kobi	Oxeye Herring
Exocoetidae	1	ikn manu	Flying fishes
Gerreidae	1	Katarina	Siler-biddy
Hemiramphidae	1	Samber	Garfishes
Leiognathidae	1	Bete-bete debe door	Ponyfish
Polynemidae	1	Ilou mugoru/Salomon	GiantThreafin
Terapontidae	1	Rongkador	Crescent Grunter

### C) National Directorate for Livestock and Veterinary (NDLV)

The director of NDLV is very pessimistic about exporting livestock products because of the lack of export support systems. Even live cattle export is banned by Indonesia due to the underdeveloped sanitary and phytosanitary capability; live cattle export from Timor-Leste to Indonesian West Timor was once very common. Thus, the director sees very small possibility in terms of exporting animal product to Japan in the immediate future.

Nevertheless, as the country improves its livestock production, abattoirs and processing facilities, transport routes, transport services, and cold chain, and sanitary measures, it is possible for Timorese actors to legally resume animal products export, especially to Indonesia.

The following table shows the numbers of livestock by district in 2010. According to 2010 Census, the most numerous livestock was chicken with approximately 700,000, then followed by cattle and cows with approximately 160,000. Although livestock for meat slightly increased from the 2008 levels, the change in numbers of horse and buffalo was slightly negative or negligible. Timorese still deems dogs as livestock for meat, especially in rural areas, but there is no official statistics of the number of dogs.



Table III-12 Number of livestock by district in 2010

District	Chicken	%	Pig	%	Sheep	%	Goat	%	Horse	%	Cattle/Cow	%	Buffalo	%
AINARO	32,142	5%	16,466	5%	1,095	3%	6,317	4%	6,382	11%	6,435	4%	4,958	5%
AILEU	23,687	3%	12,638	4%	830	2%	5,928	4%	2,462	4%	4,697	3%	1,782	2%
BAUCAU	84,482	12%	35,490	11%	23,121	55%	25,831	17%	12,040	21%	6,165	4%	14,566	15%
BOBONARO	76,602	11%	40,565	12%	2,060	5%	18,010	12%	3,345	6%	29,235	18%	7,559	8%
COVALIMA	47,457	7%	31,609	10%	716	2%	7,038	5%	1,591	3%	22,378	14%	2,545	3%
DILI	69,310	10%	28,571	9%	1,784	4%	14,486	10%	1,430	2%	3,597	2%	1,467	2%
ERMERA	65,229	9%	27,501	8%	1,229	3%	9,230	6%	3,525	6%	11,255	7%	3,728	4%
LIQUIÇA	47,554	7%	22,317	7%	744	2%	16,391	11%	1,492	3%	8,018	5%	2,355	2%
LAUTEM	67,394	10%	24,816	8%	2,454	6%	8,570	6%	6,046	10%	16,874	10%	15,378	16%
MANUFAHI	36,396	5%	16,471	5%	359	1%	5,013	3%	4,235	7%	7,559	5%	5,893	6%
MANATUTO	24,635	4%	14,363	4%	4,048	10%	8,575	6%	3,115	5%	6,204	4%	8,551	9%
OECUSSI	46,158	7%	25,004	8%	1,027	2%	13,344	9%	1,372	2%	16,562	10%	1,791	2%
VIQUEQUE	81,428	12%	34,624	10%	2,387	6%	13,627	9%	10,784	19%	22,675	14%	25,911	27%
Total	702,474	100%	330,435	100%	41,854	100%	152,360	100%	57,819	100%	161,654	100%	96,484	100%

(Source: 2010 Census)

In the following table, chicken was not shown in order to make conspicuous the changes in numbers of other types of livestock; the number of chicken increased to 700,000 from 660,000.

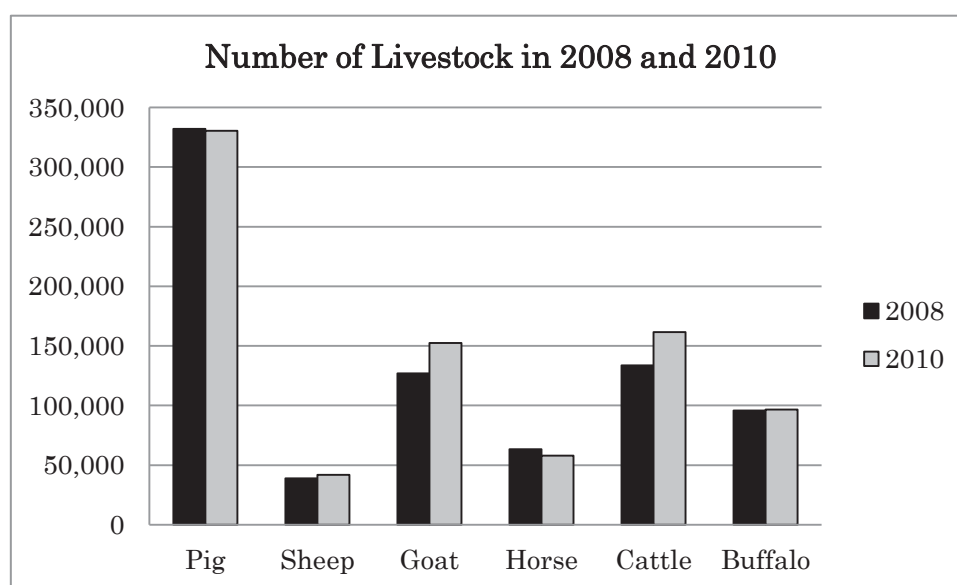


Figure III-15 the Numbers of livestock

(Source: for 2008, JICA 2011; for 2010, Census 2010)

#### D) National Directorate for Industrial Plants and Agribusiness (NDIPA)

This directorate was created by combining the directorate for Industrial Plants and that for Agribusiness in 2011. The latter originally had started as the coordination arm of MAF for donor-supported projects, and for decreasing number of such projects, this directorate and the directorate for Industrial Plants were merged. Current director of the directorate is from the Industrial

Plants side, and he has the tendency to value more the activities related to industrial plants. The director believes that promotion of industrial plants, in turn, would stimulate and promote export of those plant commodities.

The crops under this directorate include coffee, cashew nuts, coconuts, cocoa, candlenuts, spice (black pepper, vanilla, clove etc.), which are light, durable, and high-value; hence ideal candidates for immediate export to Japan.

The productions of the major industrial crops have changed as shown in the following table. Current champion of industrial crops is coffee. The total area of coffee production has slightly increased to approximately 54,000 hectares in 2011 from approximately 52,000 hectares in 2008; a half of it is distributed in Ermera District. Yield has been unstable. For example, it was 12,800 tons in 2010, but dropped to 8,320 tons in 2011. This is partly explained by low productivity of the existing coffee trees, which are much older than that of high productivity. Thus, the productivity is 250kg/ha in green coffee beans, and NDIPA is aiming at 750kg/ha by replacing old tree.

There is an increasing trend for coconuts and cashew nuts, but the quantities remain still not significant if compared with other major producers; for example the Philippines' coconuts production in 2010 was close to 20 million tons.

Table III-13 Productions of the major industrial crops, 2008- 2011

Crop	Description	Year				
		2007	2008	2009	2010	2011
Coffee	cultivated area (ha)	.....	52,332	53,734	54,025	54,341
	Harvested area (ha)	.....	52,332	53,734	54,025	54,341
	Total harvest (t)	12,786	14,009	10,206	12,800	8,320
	Productivity (t/ha)	0.24	0.26	0.2	0.23	0.15
Coconuts	cultivated area (ha)	.....	14,623	14,623	14,823	14,823
	Harvested area (ha)	.....	14,623	14,623	14,823	14,823
	Total harvest (t)	.....	8,760	8,740	8,940	8,940
	Productivity (t/ha)	.....	0.6	0.59	0.6	0.6
Candlenuts	cultivated area (ha)	.....	3,266	3,266	3,466	3,466
	Harvested area (ha)	.....	3,266	3,266	3,466	3,466
	Total harvest (t)	.....	809	822	1,022	1,022
	Productivity (t/ha)	.....	0.24	0.25	0.29	0.29
Cashew nuts	cultivated area (ha)	.....	1,635	1,635	.....	.....
	Harvested area (ha)	.....	1,635	1,635	.....	.....
	Total harvest (t)	.....	132	139	.....	.....
	Productivity (t/ha)	.....	0.08	0.08	.....	.....

(Source: MAF NDIPA)

Note that, although the national Government does not possess district-wise production data on coconuts and cashew nuts, they shared a common view that coconuts is heavily distributed in

Viqueque District and Baucou District and cashewnuts to Manatuto District, Manufahi District, the northern part of Bobonaro District, and coastal Cova Lima District.

Candlenuts would not be of our interest since Japan imports none; however, this section only mentions that NDIPA is striving for multiplication of this crop as the light source in rural area. Candlenuts are processed in same areas of production up to the present day, and its quality is not assured. NDIPA sent candlenuts harvested from 50 hectares of land under its management to a candlenuts processing plant in Darwin and tried to improve the quality of oil. The follow-up activities regarding candlenut promotion is to be determined while making NDIPA's action plan in line with MAF's SDP.

It seems difficult to export fresh coconuts to Japan because of potent competitors such as the Philippines and Indonesia, however, coconut oil extracted from copra, flesh of coconut fruit, might win popularity in Japan as a raw material for healthy food and cosmetics. Shear butter is one of analogies, and coconut oil could follow this example if the marketing strategy is right. Conveniently, coconut oil solidifies at 26 degree Celsius, which could be advantageous during transport.

E) National Directorate for Agriculture and Horticulture (NDAH)

This directorate is responsible for promotion of major food grains and beans, vegetables, and fruits; its responsibility is grave because a large sum of food items depend on import and the country places emphasis on the effort for import substitution for food items. Although production of those major crops is promoted toward import substitution, some of those crops offer immediate export potential, which include soybeans and mungbeans; since they had already been exported. The following table shows production of major food crops from 2007 to 2011. The quantities fluctuated, especially, from 2010 to 2011, due to an extremely wet weather, many farmers missed sowing timing and lost fields to floods, and for those reasons, yield figures did not necessary reflect the increasing trend visible for the preceding years.

Table III-14 Productions of the major food crops, 2007 – 2011

Crop	Description	Year				
		2007	2008	2009	2010	2011
Rice	Harvested area (ha)	38,582	45,635	38,998	36,548	35,561
	Total harvest (t)	60,424	80,257	120,775	112,925	98,297
	Productivity (t/ha)	1.56	1.76	3.16	3.09	2.76
Maize	Harvested area (ha)	72,480	79,433	71,340	70,255	21,699
	Total harvest (t)	71,526	100,173	134,715	148,891	30,666
	Productivity (t/ha)	0.98	1.26	1.88	2.08	1.41
Mungbean	Harvested area (ha)	1,488	1,448	2,217	762	.....
	Total harvest (t)	1,381	1,221	2,193	809	.....
	Productivity (t/ha)	0.87	0.84	0.99	1.06	.....
Soybeans	Harvested area (ha)	749	892	1,532	358	.....
	Total harvest (t)	740	800	1,818	362	.....
	Productivity (t/ha)	0.92	0.99	0.82	1	.....
Peanuts	Harvested area (ha)	1,080	1,129	3,255	1,154	.....
	Total harvest (t)	1,103	1,269	6,258	1,567	.....
	Productivity (t/ha)	1.01	1.08	1.34	1.36	.....
Cassava	Harvested area (ha)	11,200	10,006	10,757	6,120	.....
	Total harvest (t)	41,212	35,532	37,301	27,857	.....
	Productivity (t/ha)	3.62	3.6	3.5	4.55	.....
Sweet Potato	Harvested area (ha)	3,007	3,567	4,807	4,082	.....
	Total harvest (t)	7,646	8,954	12,790	9,584	.....
	Productivity (t/ha)	2.41	2.5	2.5	2.3	.....
Potato	Harvested area (ha)	1,135	1,123	766	1,073	.....
	Total harvest (t)	2,538	2,616	1,922	1,214	.....
	Productivity (t/ha)	2.01	2.2	2.04	1.10	.....

(Source: MAF NDAH)

The table below compares productions of paddy rice and maize from 2009 to 2011 using the data obtained from MAF. Paddy rice decreased to approximately 98,000 tons from 121,000 tons and maize also drastically dropped to approximately 30,000 tons from 135,000 tons. This is because it was extremely rainy and wet in 2011 that many maize fields were lost to floods.

Table III-15 Production of paddy rice and maize by district from 2009 to 2011

District	Paddy Rice			Maize		
	2009	2010	2011	2009	2010	2011
AILEU	1862.5	930.0	2,114.0	2,720.0	2,211.4	2,461.5
AINARO	4418.98	2,651.9	1,378.0	3,750.0	2,141.1	2,693.9
BAUCAU	29440	34,024.2	33,020.8	7,284.2	23,036.4	1,768.5
BOBONARO	15922.64	21,127.6	15,556.6	12,078.1	16,722.2	1,575.1
COVALIMA	13405.5	14,642.4	4,670.2	17,004.8	20,334.9	2,335.5
DILI	201	110.2	162.0	2,160.0	1,634.8	475.0
ERMERA	2704.93	3,586.7	1,135.6	4,878.0	1,376.1	1,256.4
LAUTEM	3951.88	6,504.0	9,892.8	26,128.0	42,106.2	4,443.4
LIQUIÇA	2175	306.7	411.2	2,295.0	2,210.6	5,589.5
MANATUTO	12795	3,883.7	6,654.4	8,847.3	6,728.0	543.2
MANUFAHI	2436.6	2,765.3	1,976.0	8,734.0	3,822.3	3,091.2
OECUSSI	15856.92	5,500.0	7,237.9	17,112.0	11,160.0	2,478.0
VIQUEQUE	15603.84	16,892.9	14,087.5	21,723.9	15,406.9	1,955.1
Total	120,774.8	112,925.4	98,297.1	134,715.2	148,890.8	30,666.3

(Source: MAF NDAH)

The estimated demand for rice was 107,000 tons for 2011 and is expected to grow to 144,000 tons by 2020 as the population grows as shown in the following table. Because the current rice production level is far from meeting this rising demand, Timor-Leste intends to increase rice production by dedicating more land to rice cultivation.

Table III-16 Demand forecast for rice from 2011 to 2020

No	Item	2011	2012	2013	2014	2015
1	Population	1,193,386	1,232,231	1,272,298	1,313,646	1,356,340
2	Demand for rice (Ton)	107,405	110,901	114,507	118,228	122,071
No	Item	2016	2017	2018	2019	2020
1	Population	1,400,415	1,445,885	1,492,771	1,541,059	1,590,861
2	Demand for rice (Ton)	126,037	130,130	134,349	138,695	143,177

Source: Population Projections are derived from *Timor-Leste Census 2004*, demands for rice are calculated

Various types of vegetable crops such as onion, mustard leaves, watercress, tomato, carrot and so forth have increased production. The following table depicts recent changes in production for some selected vegetables.

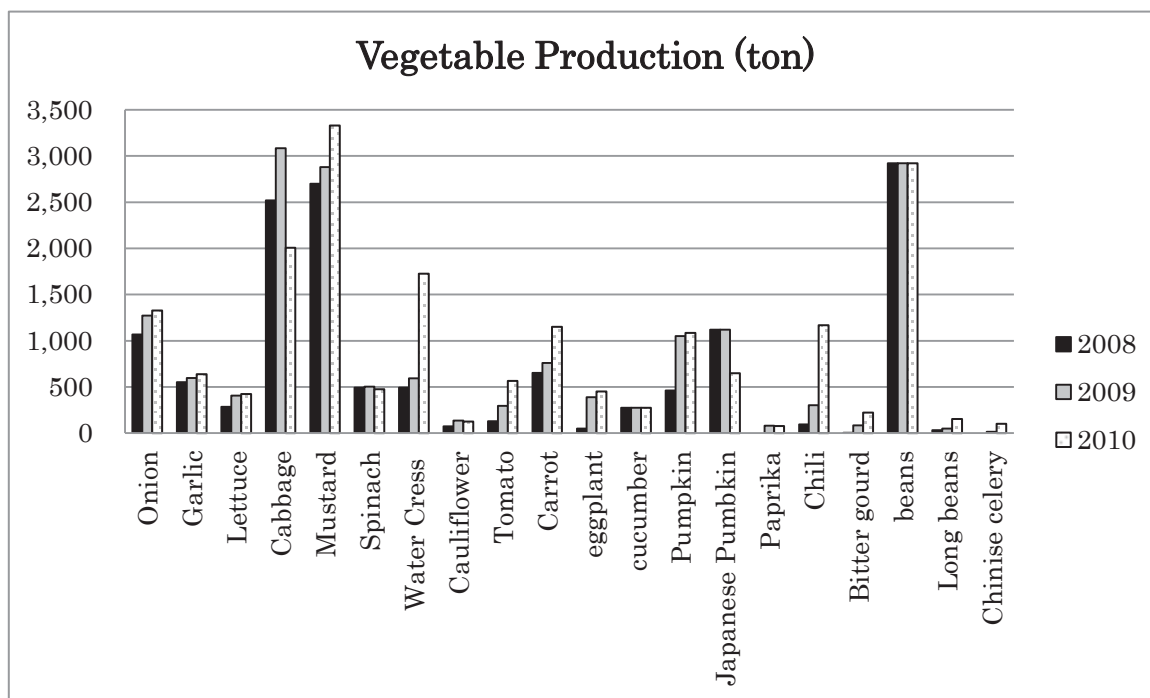


Figure III-16 Vegetable production from 2008 to 2010  
(Source: Directorate National for Agriculture and Horticulture)

This directorate also supervises fruits production. Among many fruit types the most common fruits in Timor-Leste are avocado, mango, jackfruit, papaya, banana, breadfruit most. As indicated in the following figure, fruit production has not been increased in the recent years. Supermarkets in Dili sell well-off customers high quality fruits, such as oranges, kiwis, apples, and pears, imported from distant countries including Australia, New Zealand, USA, and China.

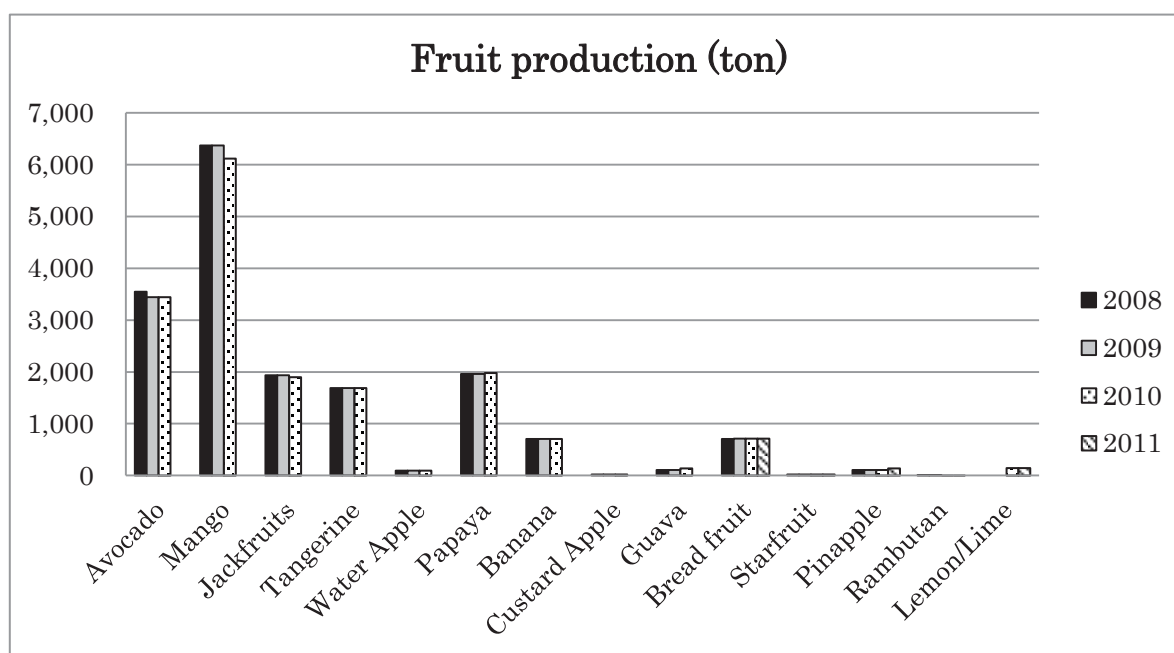


Figure III-17 Fruit production from 2008 to 2010  
(Source: Directorate National for Agriculture and Horticulture)

Even though the formation of their action plan is in progress, the director mentioned that, in addition to rice, the following crops to be promoted.

Table III-17 Tentatively targeted crops for promotion and their approaches

Crop	Approach
Rice	Increasing cultivated land by 30,000 ha
Maize	Increasing cultivated land by 45,000 ha
Tuber Crop	Increasing cultivated land by 25,000 ha
Vegetable	Trial cultivation in 250 ha, Free seedling distribution with a ceiling 300,000 USD
Citrus, Mango, Rambutan, Avocado	Free seedling distribution targeted between 20,000 and 30,000

(Source: the Director of MAF NDAH)

#### F) National Directorate for Agricultural Community Development (NDACD)

A total of 70 % of Timor-Leste's population is distributed in rural areas. Hence, this directorate is one of leading actors in terms of improvement of the standard living of rural peoples of this country. Because agricultural extension service is one of the most important activities of the Government when

it comes to rural poverty reduction since it can enable the poor farmers to improve productivity to produce more food and to generate more income. The Department of Agricultural Extension of this directorate hired a total of 500 junior and senior extension officers (extensionists) and began extension service. These extensionists were trained directly by MAF with the support from EU and GIZ prior to their deployments to sucos. It is planned to place 2 to 3 extensionists every suco of 441, but currently only one if any according to our finding. This fact highlighted the gap between policies and delays in implementation on the ground.

Agricultural extension service aims to modernize Timorese farmers' practice and in turn improve agricultural productivity. The traditional farming practice in Timor-Leste is very primitive that farmers prepare land with hand hoe, make sowing holes on the ground surface with a wooden stick and place seeds in them, then let the nature do the job until harvest. The traditional major crops include, coffee, maize, common beans (red beans and kidney beans), and mungbeans in highland, and, maize, rice, and soybeans in lowland.

The department of agricultural extension are striving to promote production of not only the traditionally important rice, maize, and beans, but also vegetable and cash crops such as cashew nuts, soybean, cacao, potato (Granola variety, in particular, which differs from the Seeds of Life varieties), broccoli, carrot, onion, garlic, and leafy vegetables (brassica family). The department also experimented vanilla and black pepper in Ermera, Sama, and Aileu, but does not include them in target crops because of lack of domestic market.

Because of the limited capacity of agricultural extension service, it is not realistic to launch a nation-wide campaign to promote agriculture for export, but it seems doable to do so in selected areas with selected crops. Especially, the department of agricultural extension has conducted cultivation experiments with vanilla and black pepper, which must have let the staff and extension officers accumulate experience in such activities regarding technology adoption. In case of starting up a public company owned by the Government or by the third sector for promotion of selected crops, its technical staff should be able to collaborate with or reinforce the extensionist assigned to the relevant sucos.

#### G) Agricultural Affairs in the Rural Areas

##### a) District Offices of MAF

There are district offices to which staffers are assigned, including directors. The structure of district offices is standardized to have the departments of planning, extension, and technology. The extension officers, often referred to as "extensionist" are employed at the central level, and dispatched to district offices; however, many of them are from their assigned districts.

In particular, the district office of MAF in Baucau has 17, 43, and 75 staffers for the departments of planning, extension, and technology, respectively. This office covers approximately 110,000 people, of which, 90,000 are in the rural area, and 20,000 strong households. The district consists of 6 sub-districts that contain 59 sucos. The district office targets to allocate 1 extensionist per suco, and so far, 43 have been covered.



The district office is responsible to compile monthly production data at sub-district level and submit it to the central government; however, it does not store the data locally. The officer whom the Study Team had an interview with explained that the data was stored in the central government. This contradicted the claim by the central government that the district and suco level production data were kept at the respective district governments, thus the central government had directed the Study Team to the district offices for detailed data. This incident depicted the serious challenge to collect data on agricultural production. The central government compiles the sub-district-wise data into district-wise one. Some selected crops were most commonly produced in each district based on their national ranking in 2010.

District offices group up farmers into 10 to 20 each, and provide them with group-wise extension service. In addition, tractor ploughing service is available for free of charge upon farmer group's request. However, such extension services are not yet universal, and concentrated around the district capitals. A farmer whom the Study Team interviewed in a mountainous area of Ermera had never received any service of MAF or visit by agricultural extensionist.

District offices also implement programs and projects supported by donors, such as Seeds of Life of AusAID. Hence, the member farmers of such projects have access to MAF's services, otherwise none for many farmers.

As for promotion of agriculture, those technicians of CCT and that are hired by the projects implemented by donors and NGOs are providing significant contributions. Except Seeds of Life, there was no significant collaboration between district offices of MAF and other projects. For example, PARCIC, a Japanese NGO, works in its target area independent of district offices of MAF. Another example is that Timor Global distributes clove seedlings to its associate farmers without collaborating with district offices of MAF.

#### b) MAF Extensionist

The Study Team interviewed with MAF extensionist and tried to find out how the extensionist involved in the farmers. Interviewee was an extensionist in MAF Baucau.

He graduated agricultural school in Natarbora in 1994, and his major was grains. Then he started rice importing business until the convulsion at independence. After independence he applied for extensionist and passed the qualification.

The job is to provide technical training to farmers and he visits 1 group per day. He has 510 households of farmers in his territory, and most of them are formed by groups. There are 15 groups and each group has about 20 farmers, there are also individual farmers. Their main product is corn and they also grow vegetables. Annual objective is provided by the government called OBINAM in which the target harvest quantity is given, and he calculates the targets by suco or village in the territory and develops an implementation plan. There are 0.5 hectares of demonstration farm land in the territory and he uses the land for training for farmers.

Foreign donors provided him with notebooks and motorbike, but he still needs hardware such as

GPS equipment, moisture tester and digital camera. He thinks that training for the new product provided by the government is not efficient to promote to the regional farmers. Improvement on irrigation system in his territory is also required for efficient farming.

The Study Team found that the demonstration farm is in location for training to the regional farmers, and it can be a good tool to promote new agricultural products for export. And it is also found that cultivation technique cannot be appropriately provided to the farmers due to lack of hardware and irrigation system, so it would be necessary to improve those.

It would be very useful for expanding the cultivation of exporting products to utilize the knowledge and experience of extensionist. It would be realistic for cultivation technique to be expanded from the foreign donor to the extensionist, then from the extensionist to the farmers.

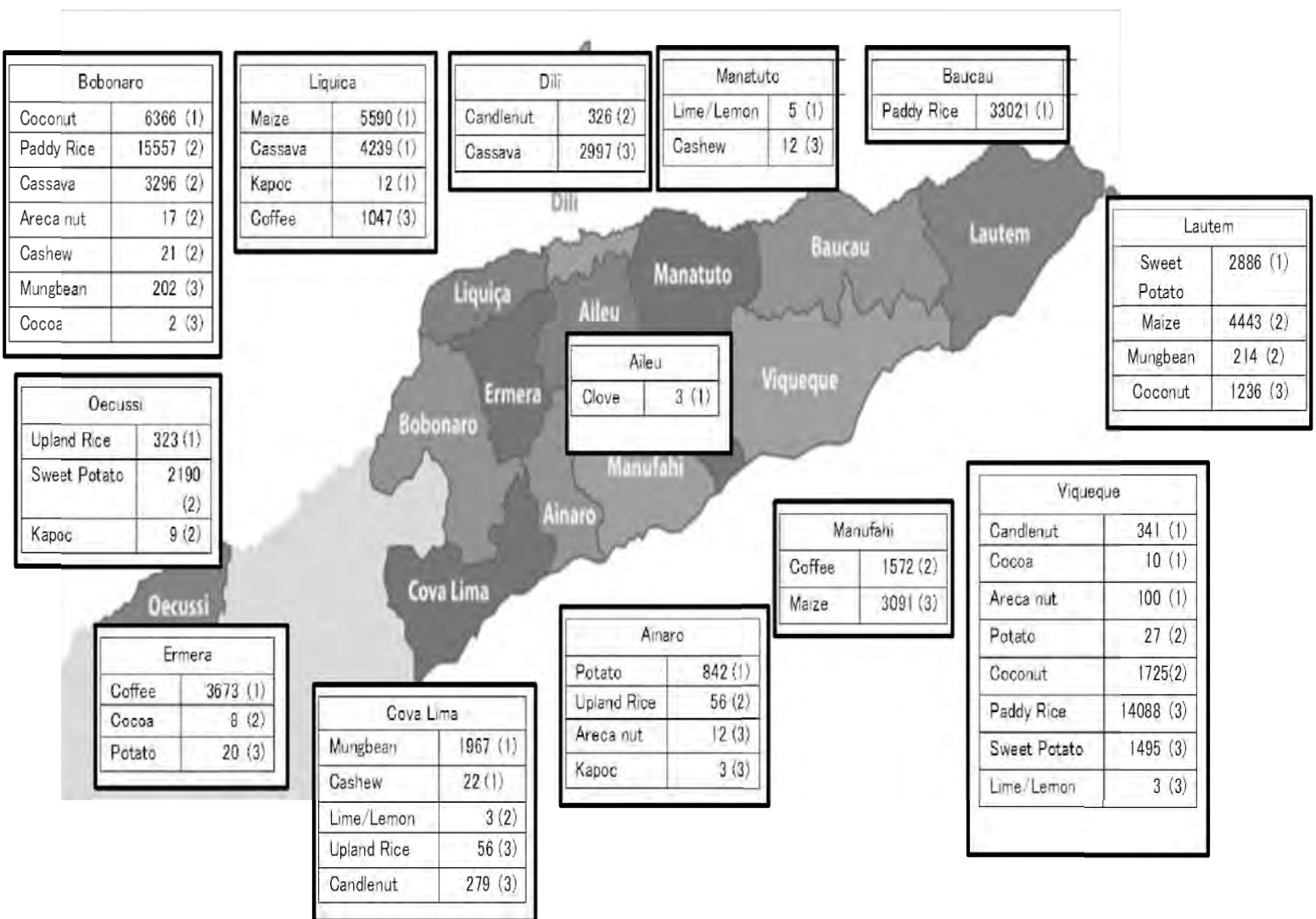


Figure III-18 District-wise major crops, Nation's top 3 producer districts  
Amounts produced in metric ton (national ranking in the parentheses)

### III.3.3 National Directorate of Quarantine and Biosecurity

The Study Team studied on quarantine system in Timor Leste which will be one of the critical factors for exporting agricultural products to Japan.

The headquarters of National Directorate of Quarantine and Biosecurity (NDQB), under Ministry of Agriculture and Fisheries, is located in the Dili Airport. 76 staffs are working for the Directorate's offices at major subdivision cities. A laboratory is located in Komoro area with 3 permanent staffs.

The current NDQB system does not comply with the quarantine systems of WTO or ISPM (International Standards for Phytosanitary Measures.) The Directorate is now working for implantation of ISPM with a technical support by Indonesia.

Current exporting products from East Timor are very limited such as coffee, copra, candlenuts, teakwood and etc. Inspection over those products is only done by visual check to find pests, and they do not conduct inspection in order to fulfill the requirement of importing countries. Under the current resources, they recognize their challenge would be strengthening skills and knowledge of staff members, and enhancing inspection equipment in the laboratory.

It is obvious that the current resources of NDQB cannot fulfill the requirements of quarantine by Japanese government. The Study Team will study more on gap of quarantine system between Timor Leste and Japan so that the Study Team will find out what Timor Leste should do further to meet Japanese quarantine requirements.

### III.3.4 Ministry of Commerce, Industry and Environment (MCIE)

Ministry of Commerce, Industry and Environment (MCIE) is a newly established ministry separated from Ministry of Tourism, Commerce and Industry as "Tourism" became an independent ministry and a function of "Environment" was added to the remaining organization. Important issues and measures concerning of MCIE are promoting agriculture business and tourism industry, as they are now developing the final mission statement of the ministry.

Timor Leste has a history of agricultural product export such as mung bean, turmeric, candlenuts, coconuts and live cattle, and the export was not done by Timor Leste government policy but by demands of import countries. That is why exporting of mung bean was stopped by price competition against Indonesia's domestic price and exporting of lice cattle had to be changed to unauthorized route and its price is dramatically reduced from the authorized one.

MCIE is expected to be an important government organization in terms of industrial development, trading of agricultural commodities, development of industrial human resources and various project implementations. The Study Team will study more on possibilities for those cooperation as the Study Team watch on MCIE's missions statements and its organizations.

### III.3.5 Instituto de Apoio ao Desenvolvimento Emprezarial (IADE)

Instituto de Apoio ao Desenvolvimento Emprezarial (IADE) is an organization under Secretary of

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State of Support for Promotion to Private Sector, and IADE is providing information and human resources development program to entrepreneurs.

Its organization consists of 3 departments such as Administration & Finance, Business Network & Information and Training. IADE has 9 business Develop Center (BDC) nationwide and they will open 2 more by the end of this year and continuously increase the number of BDC in the year 2013. They have 94 staffs in Dili, and 130 staffs in subdivisions. IADE currently collect membership fee from its registered members since the given budget from the government is not enough to manage their activities.

Major operations of IADE are Information Networking, Business Matchmaking Network and Consultation. In Information Networking, they provide with tender information to entrepreneurs by SMS which is provided by Timor Telecom free of charge though TIS (Tender Information System). In Business Matchmaking Network, they support horticulture commodities. Josephina Farm in Maubisse is a member of IADE, and Josephina Farm has 3 important roles such as “Member of IADE,” “Service Provider” to regional farmers and “Marketer” of horticulture commodities. In Consultation, IADE provides support to members with business planning and micro finance.

IADE has a strong relationship with CCI-TL especially for support to the Focus Group of contractors of construction industry and also Focus Group of horticulture farmers. In terms of development of entrepreneurs, IADE provides nationwide educational campaign for problem resolution on business matters via radio program, which is a major media for local members to get news and information. The radio program is produced by easy and fun concept that is a imaginary character “Super Trainer” will appear and resolve the practical business issues.

IADE guarantee its trainers quality level by continuous training for trainers provided by ILO and issuance of Master Trainer authorized by IADE. They have 16 trainers and they provide the training related to the members requirements. IADE is now focusing on construction and agriculture industries. There are two types of training courses. One is for potential entrepreneurs to find out business opportunities and to provide with practical information on starting up business, and another is 6 practical business training courses such as marketing, cost accounting, inventory control and etc.

IADE will be an important organization for cooperate in the field of human resources development. For example, IADE and Josephina Farm will be able to provide not only technical training but also marketing and management trainings. The Study Team will study more on possibilities for cooperation.

### III.3.6 Ministry of Justice, Directorate of Land and Property

The Study Team studied management and regulations about land and property in Timor Leste.

Foreign entity is not allowed to own real estate in Timor Leste. It is legally allowed to have contract of lease of land with a contract term less than 50 years. Foreign entity can legally own buildings, but the ownership of the building shall be transferred to the land owner, so the foreign entity has substantially no right to have ownership of buildings after an expiration of the lease

contract.

Land ownership in Timor Leste became very much complicated through years of Portuguese and Indonesian occupation, and there is no land management established in Timor Leste makes the situation more complicated. It would be better for foreign entities to designate third party for arrangement of lease contract for multiple landowners since there is no real estate companies. Timor Leste government can also provide such services, and one of the good examples is land arrangement of Timor Plaza. The entity shall be required to ask consultation over lease contract to be authorized by Association of Lawyers and Directorate of Land and Property, Ministry of Justice.

### III.3.7 Ministry of transportation and Communications, Administration of Ports in Timor Leste (APORTIL)

There are six ports in Timor Leste including Dili ports as major ports, Oecussi, Atauro, etc. The port of Dili is located close to the downtown Dili and APORTIL and other related administration offices are also located in Dili port premises. The current use of Dili port is for importing from Indonesia, Singapore, Australia and China with a monthly average of 50 vessels. 16 agencies are now working in the premises with their own equipment and 3 container operators are handling containers. The number of those handling containers has increased from 11,000 in 2007 to 23,000 in 2011. 6 cargo handling companies are also working in Dili port. The depth of the sea at Dili port is only 8 meters and Panamax size vessels cannot access to the port. Cargo needs to be shipped further than Indonesia or Singapore, and transshipments arrangements shall be required there.

The new Dili Port is now in the planning with its location just 10km west from the current port, and construction will start from 2013. The Panamax size vessels can access to the new port and the new premises have a large enough size to have additional facilities. APORTIL does not have proper information of the new port so the Study Team has to wait for the detailed information to be released.

It is practical for us to develop logistics and shipping based on the current port and also consider transship at Surabaya or Singapore to Japan as the Study Team watches the progress of the new port.

### III.3.8 Ministry of Finance, National Directorate of Customs

National Directorate of Customs is organized under Ministry of Finance, and it has four departments such as Commercial Complaints, Operation, Border Control and Risk Management. 250 staffs are working for the Customs and 78 out of 250 staffs are in Dili. Both airport and seaport are the major points for importing and exporting for Timor Leste.

For exporting, there are no custom tax charges over the products, and sea gravel is the only item for export ban.

With regards to export custom clearance, business registration, tax identification number will be required in addition to ordinary custom related documents, and the procedure is normally completed

within 3 working days unless the application forms are insufficient. Custom clearance fee is 50 centavos per item. The customs dept. staff usually goes to container van point together with the quarantine dept. staff so that they provide quarantine inspection and custom clearance at once. The customs dept. is capable for handling of 900 to 1,000 containers per month now. Foreign based custom related private companies are working in Timor Leste now.

As far as I studied on custom clearance, there would not be major problems or issues on the custom clearance since the custom clearance is finished within 3 working days, it is done at the container van point and exporters can ask foreign based private companies for complicated procedure.

### III.3.9 Ministry of Finance, National Directorate of Statistics

The Study Team studied accessibility and availability of statistical data of Timor Leste.

National Directorate of Statistics is one of the Directorates belongs to Ministry of Finance.

Statistical data required to our study such as National Census, Consumer Price Index, Import and Export Statistics, etc. Most data provided by National Directorate of Statistics are available in English so that international donors can use, and those data are also available from the government website. Consequently, the data the Study Team may need for the study in Timor Leste is mostly available from the current statistical data provided by the government.

### III.3.10 Council of Ministry, Secretary of State for Support and Promotions for the private sector, Agency of Investment and Trade

This section lies under the Prime Minister, and in charge of the foreign/domestic investment promotion. In the past, with the cooperation of the embassy of Japan and JETRO, they invited several Japanese enterprises located in Indonesia to Timor-Leste. They also hold trade fairs and exhibitions.

They plan to develop mainly 4 areas; Suai as the logistics base, Same as the chemical plant, Vetano as entertainment, and Veaso as LNG gas plant. In this plan, these 4 areas will be connected by a highway.

Besides, they have a plan of the touristic development. They have a plan to build a fishery park in Los Palos, and a large resort area near Atauro islands connected high-speed ferry boat. This plan includes the equipment of Casino facilities.

### III.3.11 Secretary of State for Support and Promotions for the private sector

This new secretary started in the middle of 2012 with newly assigned personnels. Therefore they had little information though this secretary was in charge of the system of the public company. The public company scheme had been controlled by the Ministry of economic development, but there is no public sector who controls this scheme after the abolition of this Ministry.

#### III.4 Related actors (Public company)

##### III.4.1 Case of the public corporation “Timor-Leste Bamboo Center”

The Timor-Leste Bamboo Center is a public company in the manufacturing industry to produce bamboo furniture and miscellaneous goods located in Tibar, Liquica district. It started its activities as a vocational training school in 2005, and received a fund injection of 210,000 USD by the government, and it became a public company in 2009. It has put products on the market since 2009. The products are office furniture, tables, bamboo curtains and so on.

The cost for the fiscal year 2011 was 158 thousand dollars on sales of 47 thousand dollars. The company employs 51 people and all productions are build-to-order manufacturing by government offices, foreign companies, and hotels, etc. The process of manufacturing in its own factory is as follows; cutting bamboo to appropriate length, boiling for insecticides, and drying and gluing for making plywood. After this a craftsman/woman makes a table or a bookshelf and most of the procedures are mechanized.

UNIDO (United Nations Industrial Development Organization) supports this manufacture technically. It procures bamboo from the Liquica district and Ermera district, it started to purchase from farmers in the Aileu district with a buying contract since 2012.

Although the sales have increased every year, a deficit has continued up to the present fourth year. Due to the public company held by the government, it can still operate as a going concern. According to Mr. Sabino Rua; the manager director, he devises an annual business plan and has authority such as the business execution, and the adoption of the employees; business management is well operated. On the other hand, finance functions are under control of the Ministry of Finance; sales revenue is delivered to the account of the Ministry of Finance. Therefore on the occasion of withdrawal of the petty cash, approval of the Ministry of Finance is necessary and takes long time. This means, it is hard to do flexible cash flow management; the company cannot buy materials even when market price is low or when a sudden order needs unexpected materials. Mr. Rua mentioned he can reduce cost if he can even get finance autonomy and improve profit.

The Timor-Leste Bamboo Center only delivers to domestic consumers now, but Mr. Rua anticipates that the domestic market will be very small; he exhibited its products at a furniture fair in Malaysia in 2012. The company could potentially produce the Timor-Leste goods to export.

#### III.5 Related actors (Private sector)

##### III.5.1 private companies

###### 3.5.1 Cases in private companies

###### A) Timor Global (TG), Lda.



The Study Team visited Timor Global (TG), Lda to study how to operate a private company in Timor-Leste. TG was founded in 2005, with 60% of Singaporean and 40% Timorese capital. The lines of business are production and export of coffee, import of grains, and export of agricultural products of Timor-Leste. The Main product of TG is coffee. 99% of import and 1% of export consist of the TG business excluding coffee. Headquarters of TG is located in Railaco, and a warehouse is located in Dili. The Business result of TG in 2011 was a slight deficit due to poor harvest of coffee, but this year they expect a profit. The number of employees is 450 maximum at harvest of coffee and 250 for normal time, and the balance number is generated by an employment of fixed term employment for coffee harvest.

In import business, TG imported 2,500 ton of soybeans, 2,000 tons of maize, 800 tons of kidney beans yearly, and sold these to Timor Vita for production of nutritious supplements for children and pregnant women. In production, TG has contract of use of land with 1,300 hectares. The contracting party is a community. The chief of the community, an advisor appointed by the government and TG are the signatories for the contract. There is also government owned land other than community owned land, and it is much faster to finalize a contract with the community owned land than the government owned land. TG also has contract with farmers for a work on harvesting, and selecting of products. TG has another contract with the farmers as crop sharing with 60% for TG and 40% for the farmer. TG provides the farmers with agricultural equipment, seeds, fertilizer, fuel and etc. The current farming lands are 1,500 hectares for peanuts over 3 villages and 2 hectares for kidney beans. Seeding of peanuts is usually in July and harvesting is in March, and the current harvest is 1.0 – 1.4 tons per hectare now.

TG believes that clove is one of the promising products for export. Its FOB price is around USD8.00 to 9.00 per kilograms and which will be USD16,000 per hectare. Production of cloves does not take a lot of trouble and higher income is expected. In spite of these advantages, however, the farmers do not grow cloves because it usually takes 5 years to harvest and they grow the products to get cash in a short term. Other promising products in Timor-Leste for export are herbs such as raksa, oregano, coriander, mint and curry leaf and airfreight of those products is inexpensive, as low as USD0.70 to USD1.10 per kilogram. For collection of the products, TG asked the collectors for USD0.05 per kilogram, and they could get 400 tons of the products in a week.

In the export business, TG has a contract with a Belgian company for peanut export, but they could not meet the contracted volume of minimum of 3,000. The actual harvest was 500 tons and it was sold to Singapore. TG also exports mung bean, pepper and clove to Singapore and Thailand, and turmeric to India via Hong Kong. It usually takes two days for quarantine and custom clearance with advanced notice to the departments.

The business model of TG in export of agricultural products can be one of the good examples for Timor-Leste for expansion of exports since they handle the products other than coffee. The business models with the communities such as use of land, contract of labor and crop sharing can also be a

good model for us to implement the production.

#### B) Alter Trade Japan

This is a Japanese exporter of coffee beans who cultivates it in Ermera. They annually export 20~50 tons of coffee beans purchasing from 500 contracted farmers in that area. The key factors and remarks for the success are as below;

##### 【Key factors】

- Increase of coffee demand in Japanese market
- They already had a domestic sales channel as a subsidiary of a cooperative society
- Dry coffee beans keep their quality during 3 weeks transportation
- Continuous support to farmers (Provision of incentives, purchase of all harvest, technical supported quantity)
- The enterprise picks up beans at the farmers' sites so that farmers don't need to bring them.

##### 【Remarks】

- All packing materials (plastic bags, papers) are imported.
- Farmers pay less attention to quality which might causes poorer quality once the supports from the enterprise go away.
- It costs approx. USD1700 (max.18~20Mt) to transport 20ft container to Japan
- It takes a month by vessel including export procedures and transportation.
- LCL container shipment enables cheaper transportation, but it requires more days

#### III.5.2 Case of a farming company

The farming company which exports items does not exist at present. But the Study Team can find a few farming company which produce on a large scale so that distribute to super markets, hotels and procurement division of facilities like defence force; and intends export .

#### A) Josephina Farm

One of those companies is Josephina Farm which takes organic farming and was established as a limited-liability company. Mr. Guido Ximenes Sequeir, Director, and Mr. Teofilo Lourdes Martins had trained farming technique instruction by OISCA, intrnational NGO and have an experience of agricultural training in Japan. Josephina Farm business include technical guidance to farmer groups, getting order from buyers, and transporting to them. Now, Josephina Farm gives agricultural training to a farmers group which includes 55 members and 3ha farm land in Maubisse, Aileu and supplies organic vegetables to the high-quality supermarkets, hotels and restaurants in the Dili.

Josephina Farm cultivates leafy vegetable like pok choi and Chinese cabbage, fruits vegetable like green pepper and tomato, roots and tuberous like carrot and potatoes, onion and leeks, so on. Farmlands are owned by member farmers and Josephina Farm doesn't pay land rent.

Mr. Sequeir has a plan to orgainze new farmers group in Ermera and Baucau, too. It is difficult to

cultivate in rainy season in current farmland in Maubisse, on the other hand, in Baucau whole year cultivation is possible so that supply to buyer through a year he will organize 10 family farmers with 30 members, and cultivate not only vegetables but also the fruit such as papaya, lemon, melon and watermelon.

Josephina Farm has a refrigerated truck which was subsidized by the former Ministry of Economic Development and uses it for transporting from Maubisse farmland directly to supermarkets, restaurants and hotels in Dili. Mr. Guido Sequeir is Timorese and has strong sense of mission that he needs to give a local farmer technical guidance by Timorese like him.

ILO and IADE collaborate to support Josephina Farm as a service provider which give assistance to farmers.

#### B) Bucoli Green

The other farming company is Bucoli Green. Bucoli Green is a proprietor. Mr. Phillip Mwaura, a surgeon in a local hospital manages the farm substantially. The farmland is around 15ha and locates in Bucoli, Baucau. Mr. Mwaura borrows almost abandonment farmland and pays the land rent and borrows farmland. The farm employs local youth who have no experience on farming; around 80 workers both monthly employment and daily employment.

Bucoli Green cultivates leafy vegetable, fruits vegetable, roots and tuberous, also deals about small scale hog rising and poultry farming. The half sale of Bucoli Green is for local markets in Dili or Baucau, and other half is for facilities; Australian Defence Force and National Police Timor Leste. For facility customers, Bucoli Green sales only a class products by sorting and supplies through a wholesale, SAURUDO Co Ltd, which is their sales partner. SAURUDO Co Ltd is in charge of delivery to customers with two refrigerated trucks and customer acquisition.

Bucoli Green only deliveries to Baucau town center and doesn't go to facility customers.

The cultivation method of Bucoli Green is not organic farming, but modern custom cultivation with chemical fertilizer or herbicide. Mr. Mwaura thinks that the organic farming is not suitable in Timor Leste from a point of a natural condition.

Mr. Mwaura came Baucau as a medical doctor in 2002, and because of his profession he had been anxious about people cannot eat very expensive vegetable, so that decided to begin agriculture in 2009. While he works at a hospital, extends farmland and increase amount of production. Mr. Mwaura and his partner, SAURUDO Co Ltd aim export in the future.

#### III.5.3 Others

##### A) BFZ (The Training and Development Center of the Bavarian Employer s' Associations)

###### a) The Overview of the activities

BFZ is supporting organization mainly on vocational training, and is affiliated with a private German company. It invites experts from Brazil and Indonesia, so on.

###### b) Action in the Field of Agriculture

GIZ is, from the point of vocational training, developing local specialty products or crops and organizes so called focus groups which include same industry workers in same area. Now, around twenty focus groups are organized over the country and provide workshop style training. There is a fishermen group in Atauro Island, the cabinet maker group in Dili, the ceramic pottery group, the coconuts wine group and so on. It emphasizes a methodology and building a mindset. It dispatches local staff in districts who select local specialty products to be supported.

Their activities are providing the focus groups a facilitator and holding workshop style meetings which include the environmental analysis (SWOT analysis) and the building action plan of six months. The participants can learn business management, finance, and marketing, etc., which are indispensable to do business; on the other hand, it does not provide technical training of each industry.

The characteristic activity of BFZ is to perform the co-operation with the Chamber of Commerce in Timor-Leste (CCI-TL). The CCI-TL recognizes the benefit to collaborate with BFZ, because the CCI-TL does not have enough human resources to build the human resources training; and also because participants of the focus group become enrollment candidates for the CCI-TL.

### III.6 Related actors (Coorporative)

#### III.6.1 Cooperatives

The agriculture in this country stays in primitive level. The farmers work with their family, relatives, and people living in the neighboring area traditionally. The lack of education causes illiteracy, so it is very difficult for rural people to do agri-business individually. In this background, the establishment of a cooperative is popular in this country. There are 12 fishery cooperatives, 6 in agriculture, 3 in tais(traditional weaving), 1 in livestock, coffee, horticulture.

#### III.6.2 Case of a cooperative system

CCT (Cooperativa Café Timor) is a coffee-farmers' cooperative established in 1994 with the support of USAID. This cooperative produces 40% of national coffee production. Most of their products are exported to the USA. They have financially been independent for 8 years after their establishment. The key factors and remarks for the success are as below;

##### 【Key factors】

- 60 local staff give technical assistance so that the farmers can keep quality of beans high.
- Vanilla, black pepper, coconut, and cassava are harvested as well.
- Program implementation such as women employment or rural development
- Renewal of an European organic certification
- An American big café chain had possibly been a potential customer when they started the project.

##### 【Remarks】

- It costs much for getting approval of organic certification.

- Continuous training to farmers to maintain quality for that license
- Small vans are mainly used for crop-collection from farmers.
- Hemp bags are all imported from Bangladesh.
- Paper packages for domestic sales are all imported from Indonesia.
- Free riding by lazy members.

### III.6.3 Agricultural Service Center (ASC)

ASC has been established in the 3 area, Mariana, Viqueque and Aileu financially supported by WB. Its mission is to support the provision of tools, and marketing. ASC targets the positive involvement of the farmers in certain kinds of training, and sharing information. ASC in Mariana, started the operation in 2001, focuses on rice, in Viqueque, started from 2002, copra and candlenuts, and in Aileu, from 2002, coffee and maiz. ASC in Mariana has been keeping up a good operation, but Aileu was closed. Viqueque's activity is suspended because of illegal accounting. ASC Mariana center hires a manager, several proper staffs, and temporal staffs. And the number of its membership farmers is 4,107.

### III.6.4 Centro Logistic National (CLN)

CLN buys rice paddy from farmers and sells after polishing for the purpose of promoting rice production. It owns a warehouse with the capacity of 3,500t in Dili, Manatoto, 500t, Mariana 1,500t, Baucau, 500t, and Viqueque 500t. According to IRCP, their economic ground is fragile because of the output from the farmers occupies 2.4% out of the total harvested product.

### III.7 **Related actors (Doner)**

The donors, shown below, are implementing support programs in Timor-Leste. In this survey, policies, contents of programs and possibility of cooperation have been confirmed through interviewed with them. This information would help our final proposal be original.

Table III-18 Donors

Organization	Persons	Title
USAID/DSP	Ms. Catherine Johnston (DAI)	Chief of Party
AusAID	Mr. John B. Dalton, Mr. Decio Ribeir Sarmiento	Seed of Life, Australian Team Leader Senior Coordinator
GIZ	Mr. Alwin Schuchmann	Principal Advisor
BFZ gGmbH	Ms. Maria da Penha Pacifico	Project Coordinator
ADB (Ministry of Justice)	Mr. Michael McDermott	Evaluation Specialist
ILO	Ms. Jenny Ikelberg	Local Economic Development and Value Chain Development Expert
World Bank	Mr. Hans Anand Beck	Senior Economist, Poverty Reduction and Economic Management East Asia and Pacific Region
UNDP	Mr. Rui. A. Gomes	Assistant Country Director, Head Pro-Poor Policy Unit

### III.7.1 USAID (The United States Agency for International Development)

#### A) The Aim and Overview of the activities

USAID gives support of a new nation building for a democratic state with an open and free economy. In the field of agriculture, USAID provides support to Timor Coffee Cooperative (CCT) and so on. It also carries out Development Agriculture of Community (DAC : Dezenvolve Agricultura Comunitaria) which is a support processes of horticulture crops from the cultivation to sale for farmer groups since 2010.

#### B) DAC Program

USAID gives this DAC program to farmer groups in the Sarin area in the Aileu district. The feature of this program is to support horticulture crops as cash crops which even farmers have never eaten until now. It secures a buyer; the buyer chooses items and defines the quality standard which meets the taste of the consumers. This makes the supply chain of vegetables robust.

#### a) The role of USAID

USAID is in charge of the security of a buyer, providing the cultivation materials, and cultivation technical guidance. Relating to the cultivation materials, it provides greenhouses which can help farmers cultivate in the rainy season. About the cultivation technical guidance, it instructs an interregnum to prevent a crop rotation disorder.

From the farmers' point of view, they have not cultivated the horticulture crops which are ordered by a buyer, so the technique guidance is essential.

b) The role of a buyer

“Kmanek”, high-quality supermarkets in Dili, have become a partner as a buyer of this program. Kmanek operates retail shops and also have the wholesale function of import goods. The role of the buyer is the designation of the crops and the quality standard. It also provides logistic means. At first, regarding the designation of the crops, it supplies farmers with seeds of crops which are considered to be popular among consumers. For example, broccoli had not been cultivated so far in Timor-Leste, thus it has been in high demand as an import substitute. In addition, the buyer orders about 30 items including cucumbers, green peppers and so on.

Regarding delivery, the buyer holds a refrigerator truck to transports the crops from the Aileu district to Dili. The buyer also dispatches instructors to farmers, and at the time of collecting crops, they confirm whether the crops are appropriately sorted or have met the quality standard. Once the crops are delivered to the store, the store staff deals with preprocessing such as tearing off outside leaves in a backyard, wrapping vegetables and attaching a price tag depending on their weight.

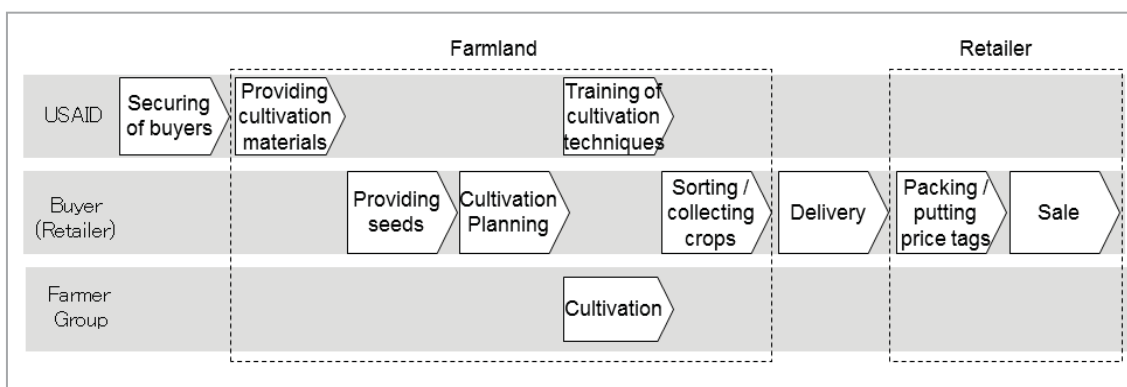


Figure III-19 Flows from production to sale and the allotment of players  
(Prepared by Study Team based on hearing)

c) The Effects of the Project

At the beginning of the project, USAID built a greenhouse; size 55 x 20 square meters and cost of 15,000 USD, but the beneficiaries of farmers were only around fifteen. So now, it provides plastic tunnel houses which are much cheaper to build instead of greenhouses. USAID hires local staff that lives in the Aileu district and devises various methods to operate farmer groups. The local staff coordinates meetings among the Kmanek and farmers to make the quality standard or collection rules of crops, and also direct the cultivating planning according to the buyer’s demand which can be supplied a certain quantity stably every week. The farmers are satisfied with the increase of income and try to earn much more. Besides they save on the maintenance expense of the greenhouse in the future.

C) Examination about the Export of Horticulture Crops

USAID has examined possibilities about the export of horticulture crops. At the time, they assumed Kmanek would be an exporter and would realize export by 2015, but currently, it has judged

export prematurely, because conditions such as the logistic cost did not balance, or the quarantine inspection was not set. So, USAID gives priority to delivery to the domestic market especially to Dili.

### III.7.2 AusAID (The Australian Agency for International Development)

#### A) The Aim and Overview of the activities

AusAID supports the productivity improvement of the farmers by enforcement of the Seed of Life project for the purpose of being an activity in food security. The project provides the seeds or nursery plants which are in higher productivity than native species to the farmers, and realizes the poverty reduction by increasing a yield. This project aims at food security as its principal objective, and the point of the nourishment is not intended.

#### B) Action in the Field of Agriculture

The Seed of Life project began in 2000 and phase 3 of this project aims at the extension of improved variety of crops for 81,000 farmers since 2011. Kinds include seeds or nursery plants of rice, maize, peanut, a sweet potato and cassava. The project produces the pure line seeds with certification in six public seed production stations and, through the cooperation groups (each group includes 12~18 farmers) it supplies the seeds to nearby farmers. The method of this support utilizes a model established in Nepal. It plans the promotion of beans as new variety for a cover crop in the future.

#### C) Support for Agriculture Crops Marketing

AusAid is going to provide the Market Development Facility Program in 2012. It has built the structure to supply vegetables to hotels in a Fiji. This program is aimed at poverty reduction of the farmers by preparing the marketing channels.

#### D) Relationship between NGOs

AusAid makes collaboration with NGOs; World Vision, CARE, Marcy Corps, HIVOS, CRS and so on. Specially, the relations with World Vision are very close. AusAID supports a farmers group in the Bobonaro district with NZAID and EC and World Vision gives technical training to the farmers. World Vision enforces programs with food security as the principal objective. The current program that regards food security has finished in 2012 and will begin activity for cash crop production to bring farmers increased income.

World Vision has been already supporting the vegetable cultivation in neighboring Dili since 2009. Three farmer groups cultivate crops such as bok choy, cabbage, tomato, and green peppers and deliver to high-quality supermarkets in Dili. In addition, World Vision carries out the value chain analysis of some crops and is going to give information to farmers so that they can choose profitable items from the result.

### III.7.3 GIZ (The German Development Agency)

#### A) The Aim and Overview of the activities

GIZ works on support for the purpose of peacekeeping. It participates in the fourth Rural Development Program of the Ministry of Agriculture and Fishery. In addition, by the collaboration



with the other donors, it deals with Seed of Life of AusAID, and the organization of Portugal, too.

#### B) Action in the Field of Agriculture

GIZ investigates the value chain in rice, a soybean and maize; staple food and coffee; main crop for export, then analyzed the price at each stage of distribution. About the rice, the distribution channel becomes multi-layer, because there is much import and there used to be the government purchase system. (According to the hearing from IADE, the purchase system by the government of rice is finished in March, 2012). It does not include the horticulture crops in these value chain analyses. In addition, about the export of crops except coffee, it concluded that export would be a future issue.

GIZ also holds information about the feasibility study of exporting horticulture crops to a European country by a private company. The study assumed green pepper and sunflower seed as export items and made economic calculation. However the result was that the bottom line was negative and farmers could not get profit because of expensive logistic cost, though improving of harvest quantity might contributes sales amount. It plans another study about cacao as cash crops in November, 2012.

#### C) Support to youth

GIZ is conducting the Youth Employment Promotion (YEP) activity which provides various supports to youth who graduated vocational school with their living and make them to be an independent member of the community.

The activity consists of a) developing training trainers for community, b) providing advisory serviced for entrepreneurs, and c) give subsidies to entrepreneurs for their start up expenses. The program started in 2008 and there are 6 staffs working for this program.

In training program, there are courses of agricultural production technique, marketing, accounting and business related practical trainings. In terms of agricultural production technique, they provided it to 20 groups. They support agricultural product processing groups in Manatuto and Baucau. In advisory services, they provide consultation services to those who started business with their issues. The subsidy is for a use of start up of business; purchase of equipments, seeds and other materials or working capital. The maximum amount is USD3,000 per person and accumulated amount until now is approximately USD300,000 to 120 groups.

The Study Team had a chance to visit an agricultural product processing group in Baucau. A full-time staff of GIZ for YEP and 6 local staffs are working at the facility. They produce and sell banana chips, pop corn, peanuts and etc., and they also developed the new market in supermarket in Dili and kiosk in a ferry boat between Dili and Oecussi.



Figure III-20 Agricultural product processing groups in Baucau

YEP is a very effective program especially for young people who try to start business. For export of agricultural products, not only agricultural production but inland transportation and manufacturing of agricultural supply will be also required. This program shall be of help to those entrepreneurs in terms of training and funding. There is a possibility to cooperate with such supporting organization like GIZ to promote export business.

#### III.7.4 ADB (The Asian Development Bank)

##### A) The Overview of the activities

ADB supports infrastructure, financial services, and the skills training required to meet the needs of a growing economy and through these activities; it promotes development of the private sector.

##### B) Action in the Field of Agriculture

ADB does not provide the direct support of agriculture. It reorganizes the long-established complicated land ownership matters; the Portuguese colony period and Indonesia rule era, so that it tries to establish new land tenure.

Farmlands are also an object of this activity; it dispatches experts on land evaluation in the Ministry of Justice from abroad.

#### III.7.5 WB (World Bank)

##### A) The Overview of the Activities

The World Bank covers a broad range of sectors aiming to activate Timorese economy. Concrete examples are monitoring system on economic development activities (water purification project), technical support for fiscal management, economic policies, and linking agriculture with markets

##### B) Activities in the Field of Agriculture

The World Bank had conducted a study entitled “Expanding Timor-Leste’s Near-Term Non-Oil

Exports, Diagnostic Trade Integration Study (DTIS)” in 2010 as a part of assistance to export-oriented agriculture promotion, and had identified high export potential agricultural commodities, namely, coffee, live cattle, and mungbean for the short-run, to mainly West Timor of Indonesia. For mid- and long-run, vegetables and fruits could be exported as cold chain is once established.

At this moment, none of the activities listed in DTIS is implemented, but there are some assistance activities in order to accelerate commercialization of the agriculture sector; for instance, testing marketability, which means to evaluate for the better approach between cost-based and value-adding approaches for a given commodity, entering fair-trade, boosting general trustworthiness as supplier by improving in various aspects such as village-wise collective shipping, quality control on produces, and basic extension activities.

Mr. Hans Anand Beck, the Senior Economist argued that scores of problems needed to be solved in order to secure export from Timor-Leste. Firstly, the skills to add value, such as drying, packing, storing, and so forth are limited. Secondly, labor cost for the public sector is expensive with a minimum wage of USD 115 per month, which, in turn, raises that for the private sector. Thus, it is passed onto the final product price. Thirdly, it is not known how to maintain motivation among the farmers to maintain the quality of produces. It is challenging to raise their moral to produce “commodities” rather than the food items of home consumption.

### III.7.6 UNDP (United Nations Development Programme)

#### A) The Overview of the activities

UNDP focus is helping countries build and share solutions to the challenges of Poverty Reduction and Achievement of the MDGs, Democratic Governance, Crisis Prevention and Recovery, Environment and Energy for Sustainable Development.

#### B) Action in the Field of Agriculture

UNDP doesn't support agriculture sector directly. However, it carried out the seminar titled “Forum on Inclusive Growth “that 500 people participated in. On the seminar, best practices of small and medium size enterprises or cooperatives doing agribusiness were introduced. Through these concrete cases, it was held for the purpose of creating employment and smooth business development. It is said that the support for the farmer in rural areas as Poverty Reduction and Achievement of the MDGs programme indirectly leads to agriculture promotion as well as this seminar.

### III.7.7 ILO (International Labor Organization)

#### A) The Overview of the activities

ILO have two programmes in Timor Leste with the government. One is programme about vocational training, offering labor market information and improvement of employability; the other is productivity improvement programme which is collaborated with Institution of Support Business Development ( IADE).

#### B) Action in the Field of Agriculture

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Among the going on project, ILO supports the value chain development as one of productivity improvement programme. ILO takes a company as a service provider which gives farmers technical guidance, and supports this service provider, instead of assistance farmers directly. Now, ILO supports include Josephina Farm; an organic farming company and cow Fattening farmhouse in Timor Leste. For the Josefina farm, ILO provide support such as management skill training, counseling and also held business matching party inviting super markets, restaurants and hotels as a potential buyer.

ILO made a small movie to introduce an activity of Josephina Farm. The movie includes farmers voices because farmers are sometime illiterate, and aims to inspire farmers who want to begin new activities.

### III.8 Challenges for agriculture sector as leading industry

#### III.8.1 Basic policy of leading development

##### A) Product Market Matrix

The Study Team selected the export of agricultural products as the industrial development strategy and decided to confirm the position of export in the overall agriculture. Divided into domestic and export markets, and divided into raw material and processed products, there can be the four matrix.

Current state of agricultural sector of Tmor-Leste is mainly domestic X raw material; there is a strategy of import substitution by increasing production volume and improving quality for this box. Many foreign ODA agencies are acting in this box.

The prior JICA project, “agricultural products processing and distribution industry promotion”, can be positioned in the box of domestic X processing with the goal to increase the value added by processing.

The strategy assumed by the Study Team focuses on the box of exports X (processing and / or material), so that all four boxes of the matrix are covered by this. While there is a need to focus on each matrix of the four as a nation, this study is preceding along the strategy of agricultural export assumed to have the most potential as industrial development and is avoiding duplication with proceeding project at the same time.

In addition, it is different by the selected item and the demand of the export destination whether it is the export of the raw material or the processed product thing.

Product	Processed	Domestic X Processed	Export X Processed/RM
	Raw material	Domestic X RM	
		Domestic	Export
		Market	

Figure III-21 Market and product matrix  
(Prepared by Study Team)

B) Strategic planning approach

Upon investigation of industrial development to formulate agricultural exports, the Study Team adopts the method of so-called strategic planning approach. In other words, it is to set strategic objectives based on certain assumptions first, to formulate a method for the realization of the strategic objectives, and then to investigate and examine the validity and potentiality in comparison with the current situation. It is a deductive approach, a top-down approach, and a method that is generally employed if the company is planning a management strategy. In order to study the development of innovative plan to overcome the current situation of Timor-Leste, this approach is deemed effective methodology.

The strategy means the selection and concentration and, types and strategic planning approach is intended to clarify the position in order to achieve goals by selection and concentration. Have been developed many techniques and flame works in strategy of product development and business development at the company, and can take advantage when the analysis of outernal business environment and internal management resources of agriculture of Timor-Leste.

As a contrary approach there is a status quo stance approach. It is to analyze the current situation first and to consider the following goals and methods based on it. It is an induction approach, a bottom-up approach. It is is a valid approach in order to find the following improvements in the companies that have reached the level of advanced management. This approachi is not adopted in this study because it is likely to lose sight of the goal caught by the lack of too many at the current level of Timor-Leste.

C) Hypothesis testing approach

When planning a management strategy, hypothesis testing approach is generally adopted. In this study this hypothesis testing approach is adopted.

First, there is some upper level goal and lower level goals are planning to achieve it and one

execution goal is selected from them. “Strategic objectives” for implementation and “strategic policy” for achievement will be set and the way to achieve can be summarized as a “strategic scenario” or “business plan” in accordance with strategic direction. This strategic planning process is based on a number of hypotheses, these hypotheses are verified whether the correct combination of facts and data.

At the idea stage, the strategy does the thought experiment as much as possible in the hypothesis testing. It will carry out in keeping with the reality of the current state and hypothesis testing in the next study stage. In addition, after the start of the run, it will be verified in the face of the facts. The “strategy scenario” will be verified and validated and more sophisticated through hypothesis testing cycle like hypothesis→testing→ hypothesis→testing.

#### D) Problem-solving approach

When there is a gap (strategy gap) between ideal situation and reality, it is tagetted to take the minimum means necessary to fill the gap. It is required to clarify the issues in order to achieve the strategic objectives and to plan the limited means for solving the problem.

This is due to minimization of time and energy and for the realization of strategic objectives and ensurance its implementation. An attempt to enumerate the problems and the issues that seem relevant to the strategic objectives thin and to formulate a solution for all becomes losing focus for strategic objectives rather, eventually there is a risk of not achieving anything.

By applying uniformly strategic planning approach, hypothesis testing approach, problem-solving approach, the ultimate goal is that the strategic scenario will be logical in a compact and easy to start running as practical.

### III.8.2 Strategic scenario

#### A) Three segments of the world food market.

Looking at the world food market, it is possible to organize and classified the consumer needs for “food” into the following three segments.

##### a) Segment 1

Consumer needs of this segment is the basic needs for “food”, is nutrition low price and easy availability.

Although the needs of all people of all nations have, it is a strong demand among people in low-income countries in general. The core technology to meet this need is, large-scale, mechanization, chemical pesticides, chemical fertilizers, agricultural development has been brought about by the development of these core technologies.

On the other hand, those core technologies provided adverse effect such as environmental impact, health anxiety, huge investments, and supply oligopoly. It also resulted in the gap between underdeveloped countries agriculture and developed countries one.

Domestic consumer needs of Timor-Leste will be estimated to be the majority in this segment. Agriculture of Timor-Leste is very late in the core technology such as chemical fertilizers, agricultural

chemicals, mechanization, and large-scale. Imports from overseas have increase and become a self-sufficiency rate of about 40%.

In order for Timor-Leste to correspond to this segment, it is required to introduce high-technology and to invest initially a great deal of, and it will always face to price competition with advanced agricultural countries of cost leadership strategy.

b) Segment 2

Consumer needs of this segment is high grade needs for food, is taste, appearance, and freshness. In general, this need will go stronger as the income increases. Core technologies to meet these needs are breeding, cultivation techniques, transportation and storage technology. Was On the other hand those core technologies provided adverse effect such as higher cost, increased loss rate, and increased energy consumption. In general it can be said this segment is greater in high-income countries and middle-income countries.

c) Segment 3

Consumer needs of this segment is matured needs for food, is safety and security, health, and nature. As a reflection on the adverse effect from the segment 1 and the segment 2, those needs have been growing rapidly in recent years and have become a global trend. It is estimated at this time, but a large segment of high-income countries in general, and in the near future is going to be a major segment in the middle-income countries. Core technologies to meet these needs are organic fertilizer, no pesticide (biopesticide), and traditional varieties and are intended to deny the core technologies that have evolved for the segment 1 in particular. As a result of the course, the adverse effects will be in the face again which have been overcome in segment 1, such as low productibility, fluctuation crops, and risk of no harvest. In order to overcome those negative effects, the use of latest agricultural technology of breeding and cultivation and the use of non-agricultural management skills have been attempted. It is estimated that initial investment and introduction of technology to enhance and to refin are the relatively small because the core technology is an extension of the current state of Timor-Leste.

	Segment 1	Segment 2	Segment 3
Countries	Low income countries	Middle income countries	High income countries
Needs	Nutrition Low price Easy to get	Taste Appearance Freshness	Safety, trust Health Nature
Core technology	Chemical fertilizer Agriculture chemicals Mechanization Large scale	Breed improvement Cultivation technology Storage/transportation	Organic fertilizer Non-chemicals Conventional breed
Bad effect	Environment load Health fear Large investment Oligopoly	High cost Increase of loss Energy consumption	Low productivity Fluctuation crops Risk of non harvest

Figure III-22 Segmentation of food market (Prepared by Study Team)

#### B) Positioning of Timor-Leste

When considering the strategic direction, “strategy type” of M. Porter would be helpful. M. Porter has the type of competitive advantage to be able to focus on two types of low cost and differentiation. The two are associated with the target market segment and has produced three basic strategies.

##### a) cost leadership strategy

It is a strategy of establishing a low-cost position compared with competitors thoroughly to utilize economies of scale, to achieve experience curve effect, to develop unique technology, to secure raw materials by reducing the overall operating costs, such as design, procurement, production and sales.

##### b) differentiation strategy

It is a strategy to develop unique products and services with features and to win customer loyalty by establishing a brand. Due to the heigh quality and functionality of products and services, such as marketing and distribution system in a way characteristic, that is deemed to be important from a customer, it is possible to justify a higher price than other companies.

##### c) centralization strategy

It is a strategy that targeted to a particular market segment such as a particular region, customers, products, for example. There are two types of C-1 cost concentration strategy to pursue a cost advantage in a particular segment and C-2 differentiation concentrated strategy to pursue a differentiation in a specific segment.



		Price Low ← → High	
Range of Target	Broad ↑ ↓ Narrow	<b>A Cost leadership</b> ● Scale merit ● Unique technique ● Advantageous material	<b>B Differentiation</b> ● Quality, function, service
		<b>C-1 Cost concentrated</b> ● Region, customer, product ● Cost superior	<b>C-2 Differentiation concentrated</b> ● Region, customer, product ● Differentiation superior

Figure III-23 Strategic position

To aim at the wide range, it requires a large amount of resources such as land, capital and labor. So it can not be well suited to Timor-Leste with limited quantitative resources. In addition, to pursue the cost advantage, it requires economy of scale and accumulation proficiency by experience. So it can not be said to be well suited to the country.

Therefore, it is good for Timor-Leste to select C-2 differentiation concentrated referred to here. It is good to aim at segment 3 as a target, and to strengthen and to refine the core technology for segment 3, in order to differentiate it.

C) Target market

If the target market is the segment 3, the first consideration is the high-income countries and the following is the middle-income countries. To pick up USA, EU States, Japan, Australia, as high-income countries, and to pick up the ASEAN 4, Thailand, Malaysia, Philippines, Indonesia as a middle-income countries. To compare GDP per capita, the total population, distance to major cities from Dili, in 2010 numbers.

In high income countries, U.S and EU (27 countries, 500 million populations) are far away of distance and are not suitable for the first candidate as an export market to enter by Timor-Leste. In terms of distance, Japan and Australia would be candidates, but Australia has small population and also has mechanized and large scale farming different from the current state of Timor-Leste agriculture. On the other hand, Japanese agriculture has been developed on small scale family farming as well as Timor-Leste, and Japanese market has accepted a lot of agricultural goods from small family business. It is estimated that there is a possibility relatively acceptable for Timor-Leste. From the above, It is reasonable to set the Japanese market for the primary target market within high-income countries.

ASEAN (Total 10 countries, 600 million populations) will be the next target as middle income

countries. In the case of exports, individual country should be investigated, so first thought of market will be limited to the ASEAN 4 countries. It is unknown how much is currently consumer needs of the segment 3 in these countries, but ASEAN 4 will be the second target market because of the expected increase in demand in the near future. However, ASEAN 4 countries are ahead in terms of exports to high income countries such as Japan; will become the competitor at first because they already have a certain share.

	Country	Population(MI)	GDP \$/H	Main city	Distance from Dili (Km)
High income countries	USA	310	47,284	NY	15,968
	France	63	34,077	Paris	13,129
	Germany	83	36,033	Berlin	12,267
	Japan	127	33,805	Tokyo	5,144
	Australia	22	39,699	Sydney	3,851
Middle income countries	Thailand	69	9,187	Bangkok	3,721
	Malaysia	28	14,670	KL	2,954
	Philippine	93	3,737	Manila	2,627
	Indonesia	240	4,394	Jakarta	2,084
	Timor Leste	1	2,861	Dili	0

Figure III-24 Target market



Figure III-25 Timor-Leste and surroundings-2

D) Strategic policy

Reactivation of Japanese agriculture has been touted from around 2000 recently, seen examples of

many formation of production corporation and shipping group of agricultural production, and entrants from different industries and the cooperation of commerce and agriculture, various attempts have been made. As principles that are common in these cases, many observers have pointed out A) the industrialization of agriculture, B) idea of market in, C) the use of business skills. It is recommended to adopt those three principles as the strategic policy of agricultural industry development in Timor-Leste.

a) Industrialization of agriculture

The industrialization of agriculture means to recognize agriculture as a business and to develop, foster, strengthen agriculture as an industry. In general, the stage of development of the industry is to start from a family run, to commercialize through qualitative improvement and quantitative expansion, and to evolve into a corporate style management. However, there are many cases that agriculture remains in small family business in any country. They have a thought that agriculture is ancestral occupation and is good enough to make a living. They have strong resistance to change and progress. In addition, the balance of income and expenditure between households and agriculture is unresolved, only few farmers have a practice to fill the accounting records. To develop strategic industries from agriculture, it is necessary to change this perception of agriculture first. Agriculture is an industry to aim to profit and is able to make a profit also as well as other industries depending on how to operate. There is a need to share this recognition by not only the farmers but also all interested parties. Since it will take some time to share all over the entire agricultural industry, it is necessary to ensure this recognition within the products that have been selected as the export industry (sub-sector) in the case of Timor-Leste.

b) Market in concept

Market in is the concept of “making things market demands” and is the current mainstream thinking in marketing. Product development and business development in other industries has been addressed in this market in idea. In the case of industrial development as well as in agriculture, it is necessary to build on this idea. Order relation of production, sales, and marketing are as follows. History of marketing has been developed in these three stages.

(a) Production→Sales

“Only to make it, it may be sold.” Before marketing. In agriculture, there are many at this stage yet.

(b) Production →Marketing→ Sales

Product out concept. “How to sell things already made.” Initial stage of marketing.

(c) Marketing →Production → Sales

Market in concept. “To make things to be sold or market demands.” Mainstream of current marketing.

Even when formulating strategy of industrial development, it is necessary to be based on the concept of market in. It is believed that the industrial development strategy in the position of the government is to investigate fully what is required in order to select the things that seem to sell, to

product for sell, to sell actually, and is to plan the policy, the institution, organization, and the system for the development and support.

c) Use of business skills.

By taking advantage of the introduction of management technology and business skills that have been developed in other industries, it is important to plan of modernization and rationalization in farming management. Business skills and management techniques mentioned here are not only internal necessary skills such as marketing, production, processing, sales, finance, and human resources, but also external business skills such as division of labor, cooperation and collaboration, forming a group as building relationships with others.

However, there are a lot of wide varieties of management technology and some of them are high degree of difficulty to introduce. Therefore it is important to select only necessary one and to introduce accordingly. As the criteria in the selection of technology, it is extremely important to have the market in idea, the concept of management skills needed to sell. Agricultural cultivation technology is positioned as a part of related skills to production.

E) Movement of the revitalization of agriculture in Japan

It is to describe here the trend of revitalization of Japanese agriculture because they contain a number of cases to serve as a reference for Timor-Leste.

Agriculture in Japan, until recently it was the history of the decline from the end of World War II. The land reform was carried out in 1950 which was aimed to increase food production while promoting democracy in postwar Japan; peasant land lord relationship was demolished and subsistence farmer serged. It is said that Japanese agriculture was most brilliant in 1950's, for actual production amount increased and 1930's generation became more farmers. When high growth period of Japanese industry started young workers were absorbed by the second and the third industry, and income gap between other industries and agriculture was increasing then the number of farmers was decreasing accordingly. Although Agricultural Basic Law was enacted in 1961 aiming price support policies and large scale agriculture, part time farmers increased and large scale farming did not go into increase. Lowering of agriculture area in Japanese land area, a decrease of farmer's proportion in total labor population, the decline of the ratio of agricultural production in GDP, has progressed until around 2000. Then, even the situation of abandoned farmland and land possession by non farmer was increasing and progressing. In addition, there is also a problem has been the aging of the agriculture population and the lack of successors. It can not talk about the history of Japanese agriculture is set to without the presence of JA (Agricultural Cooperatives), which came out many voices discussing the merits and demerits in recent years.

It began to see signs of change in the flow of downdraft finally around the year 2000 however. New basic law has been enacted in 1999, which was aimed to shift to consumer-oriented agricultural policy and the introduction of market principles. Regulations on land began to be mitigated; entry into

the agricultural sector by corporation has become possible in 2003 and lease of farmland in 2005. Around this time, the establishment of agricultural production corporation begins to activation, the new entrance by big business and many related industries such as food processing, distribution, food service, has been increasing and large and small business participation into agricultural industries. Also, “farmers face to face” “farmers master” or “good farmers” in traditional farmers become famous, a new movement began to stand out, such as direct sale or shipment groups. Green roof plant, factory farm, tour experience farming, farmer training business, net recruitment of agriculture, agriculture fund, also, overseas business has been to expand the wide variety, such as imports and export vegetables, vegetable export courier delivery, farm house overseas to import to Japan or to export to third countries. Surprisingly many cases have been published in books or NET etc. It is not clear yet whether these cases let reverse the trend of decline as a macro of Japanese agriculture, but there is no doubt that vigorous activities at the micro is a sign of the revitalization of Japanese agriculture.

Japanese agriculture is already the world's top level in quality of taste, appearance, freshness, and in productivity of yield per unit area and in technology of processing of agricultural products. The technology and know how related to those 3 points are fully available for export, and there are a number of cases that are actually exporting. Also is developed a business model that combines the management techniques introduced from other industries and the external business skills such as organization, division of labor, human resources, cooperation between companies and complementary resources, brought into agriculture by new entered companies in recent years. For example, projects in China in the name of “agricultural management formula of Japan” or “Japanese formula agricultural technology” are becoming progress. It is believed from the above that there are many cases can refered for the agricultural development strategy of Timor-Leste and there are many technologies and business models to be introduced.

### III.8.3 Promotion of industrial development step

#### A) Steps of product development and business development

From the standpoint of the market in mentioned above, steps of product development and business development are divided into three steps as Marketing→Production→Sales. In the case of agriculture, Production is divided into Raw Material and Processing.

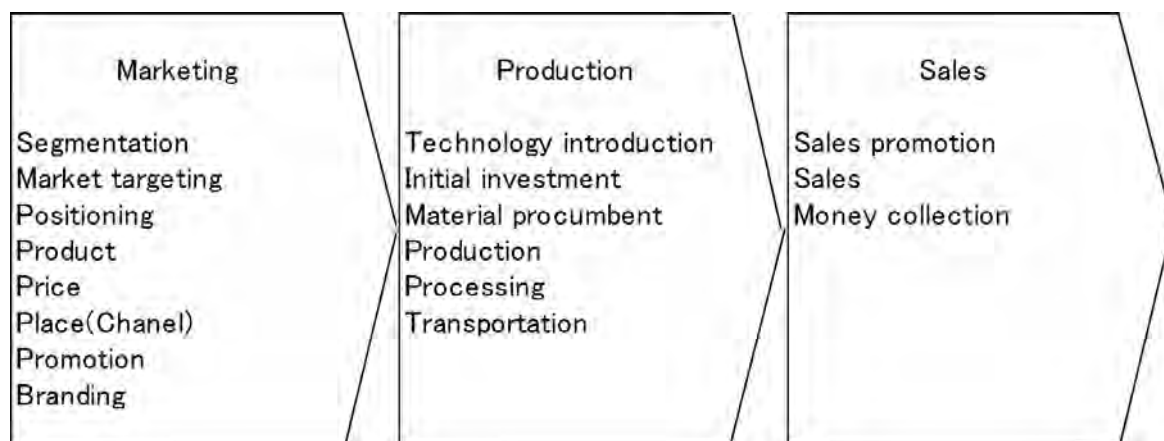


Figure III-26 Busines development step

< Marketing >

Marketing can be further subdivided into three steps. STP → 4P → Branding

a) To determine the STP first. STP means Segmentation (S), Targeting (T), and Positioning (P).

Segmntation was descrided in “3 segment”, Targeting in “target market”, Positioning takes the focus “differentiation concentrated” by using the core technology of segment 3 such as organic fertilizers, pesticide free (bio pesticides), traditional varieties. STP should be mutual and unified in the development strategy proposed by the Study Team; an individual business agrees and participates the STP established at one place than conducted individually.

b) To determin 4P in corresponding to STP. 4P means Product, Price, Place (sales chanel), and Promotion.

Product is a raw material or processed goods, it will be selected as a candidate for the “things that seems to sell.” The introduction of technology is also determined at the same time necessary for improvement. Because it is desirable that a lot of variety of products will be developed in the industry development, it is ideal that the government will promote and help in order for a lot of individual business to select and to develop a number of things to seem to sel.

Price will pursue market acceptance price relatively high for segment 2 or 3 rather than the competitive price relatively low for segment 1.

Place or sales channel will be three main route of export country, food distribution industry as items for sale, food production industry as raw material, food service and restaurant industry as food. Sometimes wholesalers, importers, and exporters will enter in the middle. In order to avoid that it will not continue and become after the product development of only single item or the business development of only single shot, is crucial the sales channel. It is desirable to aim at 3 business line having many enterprise, food distribution, food production, food service or restaurant, to avoid too much specialized channel, to avoid too large corporation with cost leadership strategy, to avoid too small companies for difficulty of continuity and expandability, and to approach for mid sized companies with differentiation focus strategy. The case for Timor-Leste to sell directly to consumers

in the export country, it is not realistic in terms of order processing, delivery, payment collection.

Promotion which is advertising, publicity, human sales force, and sales promotion tools in general, but promotion to general consumers will be delegated to the sales channel of the export destination country. Because it is the buyer of the channel in export destination country to whom to sell directly, Timor-Leste enterprise or the agent of the country will perform human sales to the buyer.

It is desirable that a lot of product development will be done, but it is inefficient in the industry as a whole to pioneer sales channel for each product. It is idealistic that the industry as a whole will pioneer several sales channel at least in the early stage, an individual business will determine the individual prices and individual product and continue to flow on mutual sales channel in sequence. The government will provide development or outsourcing of mediation of sales channels and sales promotion as industrial development of export agriculture, provision of information on products and prices, financial assistance etc, to an individual business.

(c) To do branding. Brand is intended to ensure identification of the goods and to give a value, means Commercial product = physical product + communication. The brand becomes a three tier of product brand, corporate brand, and region or country brand, and there are many cases that notoriety of individual products will hurt local or country brand (country). It is important to control and manage the brand from the beginning as administration of industrial development.

There is a certification system as this tool. Many countries have created a certification system with respect to organic farming under the laws of the country; there is a system JAS organic certification in Japan. It is expected that brand of JAS certification has been established and valid in export to ASEAN countries. In addition, there is a Good Agricultural Practices (GAP) as part of process management in agricultural production. It is the norm such as methods and procedures to be carried out in agriculture. It is a mechanism to review and to certify that it is operating correctly. There is a J-GAP as Japan GAP in Japan, there is a EUREPGAP of EU as the de facto global standard. It is often required traceability of food in the food market, so it is necessary to increase the level of process control in the agricultural production to meet this requirement. Judging GAP certification and organic certification to be necessary and possible, Timor-Leste we should consider measures to promote and support so that individual businesses acquired.

< Production >

(a) Technology introduction. When the goods are selected by the 4P, since becoming clear target level of quality and features required from the sales channel, it would have almost decided to introduce what technology. To use the technology actually is a farmer, it is of decisive importance to provide and to search information such as how, what, where, from whom, can purchase or introduce the technology.

(b) Initial investment. When the technology to be introduced is determined, the initial investment for

facilities and equipment has nearly determined the content. Provision of information and meditation of procurement for technology and facilities would become necessary.

(c) Purchase materials. Product and technology that has been determined may need to purchase seeds and agricultural materials continued. Provision of information and meditation for purchase is required.

(d) Production. Raw material production. Product is selected, the level of demand for quality and features become clear, technology introduction, initial investment, and material purchase is prepared, then individual farmer is actually to produce. The education and training is required for farmers to be able to understand and use technologies, equipment, and materials, it is desirable to set up mechanisms to maintain the motivation for achieving the required level.

(e) Processing. When the selected item is the processed foods it is to require processing step. This is the same as production. There are two types, one is for raw material producer to process by himself or another is for other processing company to process raw material separately.

(f) Transport. The transport path is longer in the case of exports. The path will be producing area→export port→import port→point of sale, may also be via a storage location in the middle. Though initial investment, purchasing, production, and processing will be carried out by individual enterprise for each individual product, transportation is more efficient by using the common means of transport. The transport timing can be the same if they have the same sales channel.

#### < Sale >

Unlike the case of domestic business, in the case of export, things to be performed by the enterprise of Timor-Leste are relatively small.. Sale to the general consumer will be performed by sales channels, sale to the channel by the enterprise.

(a) Sales promotion. Point-of-purchase advertising to general consumers (POP) will be performed by the channel. Sales promotion to the buyer is the same as already mentioned in the marketing.

(b) Sales. Sales contract with the channel.

(c) Collection of receivables. Collecting payment from the channel.

#### B) development steps and performing entity

Who will do each step, outline of the idea is as shown in the figure below. © means the entity that primarily engaged in the principal and ○ means the entity that served as secondary or supporting.

The following figure is a "theoretical model" which combines the functions to be fulfilled and the execution entity or player to be considered. The Study Team will conduct a field survey based on the theoretical model and research the entity whether it really exists in the execution, and also, determine the skill level if there is.



		Timor Leste				Destination		
		Farming company	Related corporations	Marketing company	Government	Agent	Channel	Related corporations
Marketing	Segmentation			⊙				
	Market targeting			⊙	○			
	Positioning			⊙				
	Product	⊙		○			⊙	
	Price	⊙		○			⊙	
	Place(Channel)			⊙		⊙	⊙	
	Promotion			⊙		○	⊙	
	Branding	○		⊙	⊙	○	⊙	
Production	Technology introduction	⊙	○			○		⊙
	Initial investment	⊙	○			○		⊙
	Material procurement	⊙	○			○		⊙
	Production	⊙		○			○	
	Processing	⊙	○	○			○	
	Transportation		○	⊙		⊙	○	
Sales	Sales promotion			○		○	⊙	
	Sales	○	○	⊙			⊙	
	Money collection	○	○	⊙			⊙	

Figure III-27 Development step and entity

In Timor-Leste, farming company is primarily responsible for agricultural production and marketing company is primarily responsible for the marketing and logistics. In order to develop the export industry of agricultural products over 10 years, it is necessary that the strong principal entity will promote the industry as a driving force, and it is desirable that the business entity with certain size and long term continuity is to promote. Individual farmers will be going to participate in the agricultural export industry as contract farmers by the help and the guidance of the farming company and marketing company.

It is important to clarify how to reduce the costs and risks of early stage in particular in order to foster the export industry of agricultural products. In addition, it is important to provide the information on market and technology, and especially the introduction of specific sales channel and of business matching. In Chapter VI, it is proposed that the two models on the farming company and marketing company as the business environment, and the support measures required minimum.

Related company in Timor-Leste means a company that would be born newly accompany with the agricultural export industry. It is expected to be responsible for the function of the logistic, processing, and transport. Also, technology introduction, capital investment, and purchase materials, initially there will be a need to import from “related companies” in the export destinations, it is expected that domestic related companies will play those functions in the future. It is expected that the development of agricultural export industry will be the incubator of domestic related industries. .

Agent in the export country is a private company to act on behalf of the exporter in Timor-Leste based on the contract. Development of sales channels and the development of suppliers of equipment, facilities, and technology in export destination country, will be the main role.