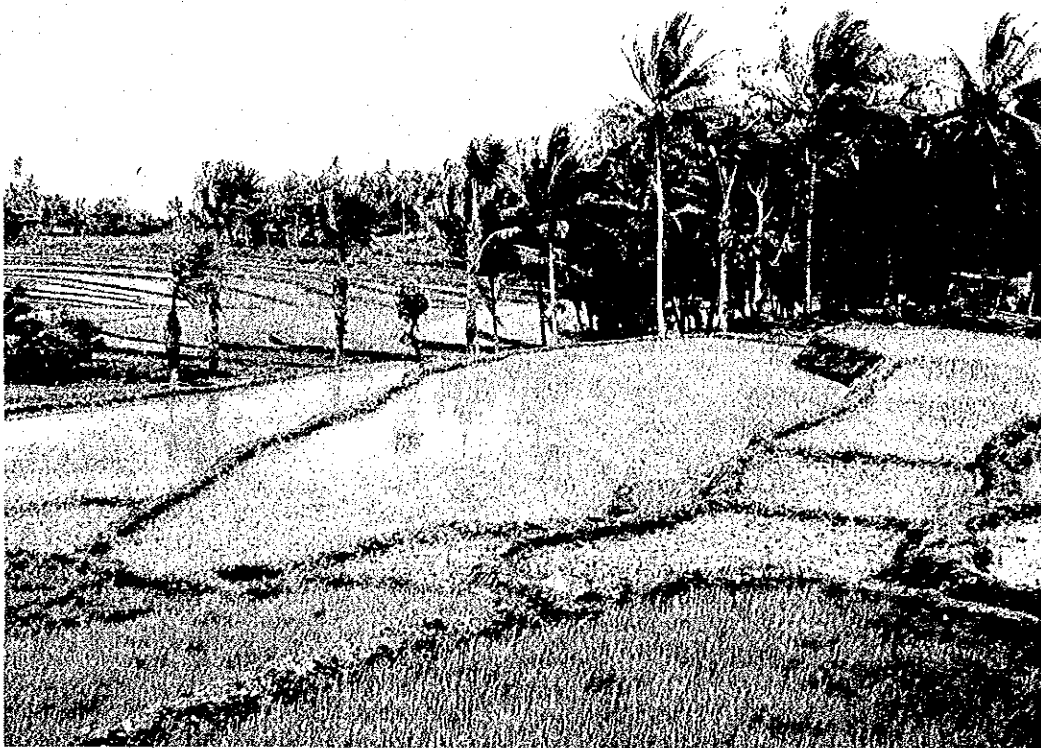


CHAPTER I. INTRODUCTION



CHAPTER I. INTRODUCTION

1.1 Background of the Study

In many conferences of supporting countries since the Tokyo meeting held in December 1999, all donors have confirmed the necessity of implementing projects for reconstruction and development in East Timor, and have been promoting strongly supporting activities. In addition to supporting projects provided through organizations of the UN, the Japanese Government has implemented an urgent study of reconstruction, development and support projects for the development and welfare of East Timor in January 2000. These works shall aim to accelerate the urgent reconstruction of East Timor by way of rehabilitation and maintenance of infrastructures, capacity building, agriculture and rural development.

Japan International Cooperation Agency(JICA) dispatched the first Study Team for the purpose of reconstruction of the agriculture sector to East Timor in September 2000. This Study Team assisted in the preparation of agricultural development plan for reconstruction, and execution of a development program through implementing pilot projects in the agriculture sector for the whole of East Timor. As a result of the consultation with UNTAET-ETTA, a decision was made to prepare a mid-term integrated development program for the agriculture, forestry and fishery sectors throughout East Timor. Also, the study shall provide for the execution of pilot projects for the improvement of the technical knowledge and capabilities of trainers, farmers and fishers.

In November 2000, JICA dispatched the second Study Team to East Timor. The implementation plan (S/W) and Minutes of Meeting (M/M) were signed between JICA and UNTAET-ETTA on November 28, 2000.

1.2 Objectives and Scope of the Study

1.2.1 Objectives of the Study

The purposes of the Study are as follows:

- To prepare a Mid-term Integrated Agricultural Development Plan to the year 2007 for the agriculture, forestry and fishery sectors in East Timor.
- To prepare a program that shall include pilot projects for the development of human resources and transfer of technology - that is most suitable for the current situation of the agriculture, forestry and fishery sectors in East Timor. Coordination with other donor agencies, culture, tradition, customs, historical background, capacity and intention of the community for the project implementation should be considered when areas and components of the pilot projects are selected.

1.2.2 Scope of the Study

The Study is to be carried out in two phases described below:

Phase-1 Study

- Preparatory works in Japan
- 1st stage field works (grasp the current situation and problems of East Timor, as well as commencement of an Village Survey (Suco Survey))
- 2nd stage field works (preparation of a Interim Report for preliminary Integrated Agricultural Development Plan for East Timor, and preliminary identification of pilot projects)
- 1st stage domestic works (preparation of Draft Integrated Agricultural Development Plan(1))

Phase-2 Study

- 3rd stage field works (preparation of pilot projects)
- 4th stage field works (continuation of pilot projects and their monitoring and evaluation)
- 2nd stage domestic works (preparation of draft Completion Report)
- 5th stage field works (presentation of final Completion Report)

1.3 Study Approach for Plan Formulation

The Mid-Term Integrated Agricultural Development Plan targeted at 2007 will be formulated based on the results of field works and discussion with related agencies and staffs, and also through the workshops held. In the Plan, necessary proposal and recommendations for the integrated development in terms of agriculture, forestry and fishery sectors after 2007 were also be mentioned.

For the formulation of Mid-Term Integrated Agricultural Development Plan, due considerations were paid for the following matters, which have been discussed during the seminar of Agricultural Joint Donors' Mission Meeting held from March 26 to April 7, 2001 and November 11 to November 19, 2001.

Agricultural Sector Strategic Frameworks proposed by Agricultural Joint Donor's Mission

- Overall Goal
 - Standard of Living Improved (income, nutrition, health, etc.)
 - Economic Growth Stimulated
- Project Purpose
 - Increased Food Security
 - Increased Production (crop, livestock, fisheries, forestry, etc.)
 - Increased Near-Term Employment Income
- Activities (refer to Figure 1.3-1)

Government Policy for Agricultural Sectors

- Lessening the Ministry of Agriculture and Fisheries (MAF)¹ burden as much as possible due to limited allocated budgets (no subsistence)
- Promotion for Participation of donors, private sectors, NGOs
- Introduction of possible open market economy system and full cost-sharing by beneficiaries (full cost recovery)

Therefore, although the plan formulation of Mid-Term Integrated Agricultural Development Plan will be basically made by following the above mentioned government policy on the basis of Agricultural Joint Donors' Mission Meeting, the plan would have some alternatives with adequate scenarios and menus to be able to cope with flexible situations, considering that the current situation in East Timor is under administration of UNTAET. For the issues, which will be different from key issues proposed by Agricultural Joint Donors' Mission, Study Team will fully explain its ideas and attach the background information.

In planning the pilot projects to be identified through the study on the Integrated Agricultural Development Plan, the followings will fully be taken into consideration;

- Community manageable small-scale projects under participation of them
- Improvement of existing systems and facilities not newly provision and construction
- Strengthening and raising capability building of community peoples for expecting sustainability of the projects

1.4 Implementation of the Study

First stage field works of Phase-1 Study was undertaken from March 18, 2001 to April 16, 2001, 2nd stage field works started from June 7, 2001 to October 16, 2001, and also 3rd stage field works started from February 13 to March 14, 2002. The members of the Study Team, listed below, are working in close collaboration with MAF staff and other related officers under UNTAET.

MAF Focal Points Counterpart

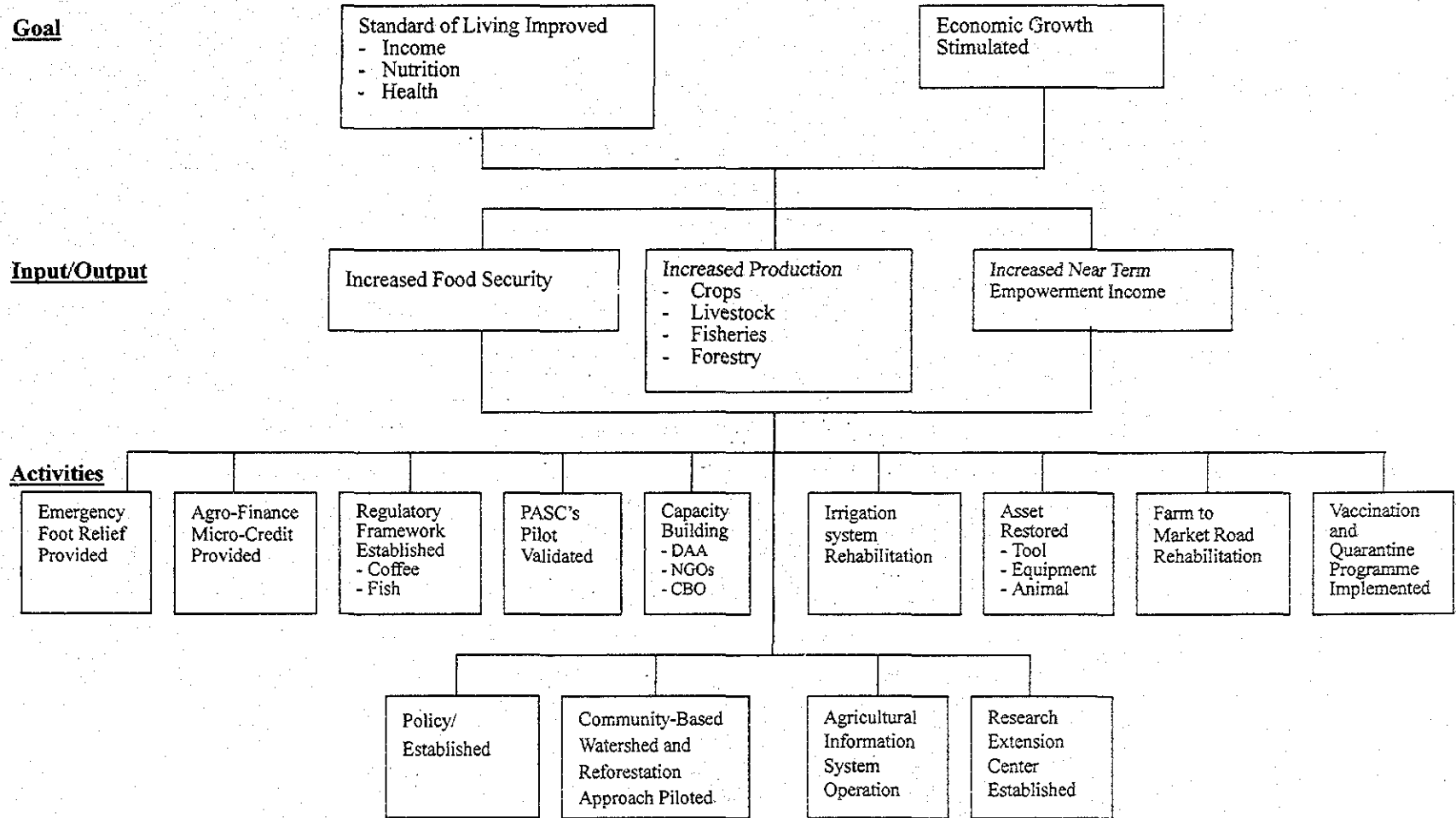
1	Mr. Cesar José Da Cruz	Focal Point for the Team Leader
2	Mr. Fernando Salsinha	Focal Point for Crops
3	Mr. Lourenco Amaral	Focal Point for Fisheries
4	Mr. Jose Orlando Magno	Focal Point for Livestock
5	Mr. Adalfredo Bio	Focal Point for GIS
6	Mr. Joao Martins	Focal Point for Administration
7	Mr. Mario R. Nunes	Focal Point for Forestry
8	Mr Egas Brites da Silva	Focal Point for Training

¹ Ministry of Agriculture and Fisheries (MAF) was reorganized into Ministry of Agriculture, Forestry and Fisheries (MAFF) in May 2002.

JICA Study Team

1	Mr. TAKEUCHI Seiji	Team Leader / Development Planning
2	Dr. William RUSCOE	Farm Management / Agronomy
3	Mr. TAMURA Sakae	Farm Machinery
4	Mr. SUZUKI Yasuyuki	Forestry Development
5	Mr. TERAO Toyomitsu	Fishery Development
6	Dr. Arsenio CALUB	Livestock Development
7	Mr. Silvino HERNANDEZ	Soil / Land Use
8	Dr. Abu H. MURSHID	Watershed Management / Natural Environment
9	Mr. Charles GREENWALD	Agro-Fishery Economist / Statistics
10	Mr. SUGITA Masami	GIS / Database Design
11	Mr. KAGEYAMA Shunro	Donors' Coordination for Agriculture, Forestry and Fishery Sectors
12	Mr. HOMMA Haruo	Agro-Fishery Infrastructure (1)
13	Mr. KOMADA Fumihiko	Agro-Fishery Infrastructure (2)
14	Mr. Renato GAMBOA	Rural Sociology / Institution (1)
15	Mr. IIZUKA Keiji	Rural Sociology / Institution (2)
16	Mr. OKABE Hiroshi	Farmers' / Fishermen's Organization
17	Mr. IEIZUMI Tatsuya	Facility Design / Cost Estimate / Construction Supervision
18	Mr. NATSUDA Shohei	Project Evaluation
19	Mr. OGAWA Takehiko	Macro-Economy
20	Mr. SHIBATA Eichi	Coordinator

Figure 1.3-1 Agricultural Sector Strategic Framework: Project Design Matrix for Improvement of Agricultural Sector in East Timor



1-5

Source: Agricultural Joint Donors Mission Report by World Bank, April 2001

CHAPTER II.
CHALLENGE AND OPPORTUNITIES
IN EAST TIMOR TODAY



CHAPTER II. CHALLENGE AND OPPORTUNITIES IN EAST TIMOR TODAY

2.1 Overview of the Country

2.1.1 General Features of the Country

East Timor is comprised of the eastern half of Timor Island, itself the easternmost of the Lesser Sunda Islands. It lies between latitudes 8° 15' and 10° 30' south, and longitudes 124° 50' and 127° 30' east. To the north, east, and west is Indonesia; and to the south, about 400 km across the Timor Sea, is Australia. East Timor has a length of about 400 km and a maximum width of 105 km. The land area is about 14,610 sq.km. According to a 2001 survey¹, the total population is about 737,800 (exclusive of returned people to East Timor) with a population density of 50.5 per sq km. From 1980 to 1998 population data, East Timor has averaged a population growth of 2.56 percent per annum.

East Timor is divided into 13 administrative districts. The smallest district in area is Dili with 372 sq.km, and the largest Viqueque with 1,781 sq.km. Dili District, which contains the capital of the country, has a population of about 128,500 and is located on the central North coast. Baucau, the second largest district, has a population of 93,400. Population is distributed as follows: Dili 17 percent, Baucau 13 percent, Ermera 11 percent, Bobonaro eight percent, Lautem and Viqueque seven percent each, Liquica, Covalima and Oecusse six percent each, Ainaro and Manufahi five percent each and Aileu and Manatuto four percent each.

In East Timor there is a very clear division between rainy and dry seasons. Average annual rainfall varies considerably between areas. The south coast has 1,500 to 2,000 mm of rainfall per year, the north coast 500 to 1,500 mm, and the central mountain areas of Ainaro, Same and Lolotoe 2,500 to 3,000 mm. The rainfall pattern in the north is different from that of the south. In the north, the rainy season is from December to February, and the dry season from March to November. In the south, there are two rainfall peaks from December to February and from May to June; the dry season runs from June to December.

2.1.2 Review of the National Economy in 1990s

East Timor was, and remains, primarily an agricultural economy with over 90 percent of the population living in rural areas, and according to the population census in 1997, 78 percent² of the labor force engaged in agriculture, primarily of a subsistence nature. Coffee is the only major export product. Throughout the 1990's domestic agriculture was not able to provide enough food, and so rice, wheat, maize and sugar were imported from Indonesia. East Timor

¹ Source: Poverty Assessment Project, Survey of Sucos in Timor Lorosa'e, ADB, 2001

² Source: East Timor in Figure 1997

Agricultural labor 349,407 / (Total population 881,600 - Non labor population 435,472) x 100 = 78.3 %

was, and still is, one of the poorest areas of Southeast Asia. There are significant problems including: malnutrition, widespread diseases, low education levels, poor transportation, communication, marketing, irrigation infrastructures, etc. About 30 percent of total households were estimated to live below the poverty line, which is double the Indonesian average. East Timor was Indonesia's poorest of all 27 provinces. In 1996 East Timor's average GDP per capita was 431 US\$ as compared to Indonesia's national average of 1,153 US\$.

The profile of East Timor's economy in 1997 and 2000 is presented as shown below;

East Timor's GDP in 1997 and 2000

Sector	1997		2000 (Estimated)	
	GDP (mill.US\$)	Percent (%)	GDP (mill.US\$)	Percent (%)
Agriculture	95.5	24.9	60.3	20.8
Public Admi.	89.2	23.3	111.1	38.3
Construction	83.1	21.7	16.2	5.6
Wholesale	39.8	10.4	24.1	8.3
Road Trans.	39.4	10.3	17.4	6.0
Other	36.0	9.4	60.9	21.0
Total	383.0	100.0	290.0	100.0

Source : IMF, East Timor, Macro-Economic Assessment, November 2000, and IMF, Donor Boston Institute for Development Economy
IMF, East Timor, Micro-Economic Assessment

Agriculture had the largest contribution to GDP making up about one fourth of activity. However, throughout the 1990's, the economy was heavily burdened by expenditures for military activities, administration by Indonesian authorities and related construction costs. Together these items made up slightly less than 40 percent of GDP. Had these activities been conducted at more normal levels, it is estimated that agriculture would have comprised about 50 percent of GDP. As a province of Indonesia, at that time other currency and macro-economic trends paralleled those of the rest of the nation.

2.1.3 Latest Economic Trends

The orgy of destruction in 1999, which occurred days after the popular consultation, caused massive loss of lives and property. The scale of destruction was enormous. It is estimated that 95 percent of schools, 77 percent of health facilities, 70 percent of houses and nearly all public buildings were damaged³. There was a consequent general breakdown of the entire social fabric and a sudden collapse of the economy. Due to the extensive destruction, economic recovery is anticipated to be difficult. Poverty remains widespread. GDP per capita for 1999 was estimated as 304 US\$⁴, a 30 percent decline from 1996. Estimates suggest that over 30 percent of the population live below the international established criteria of absolute

³ Building Blocks for a Nation, UN Common Country Assessment, East Timor, November 2000.

⁴ Building Blocks for a Nation, UN Common Country Assessment, East Timor, November 2000.

poverty of one US\$ per day.

Although the emergency phase has passed, East Timor remains with the challenge of building a sound economy. This has already begun. As shown in following table, there is an ongoing strong revival of economic activity led by growth in construction, commerce and basic services. Real GDP growth rate in 2001 is estimated at 15 percent. However, the revival is largely driven by demand created by the large UN and expatriate presence. There is little evidence of permanent businesses being established outside of the service sector. The main reasons for lack of investment include political uncertainty, lack of a commercial legal code, a confused situation with land and property rights, no labor code and lack of conflict resolution and arbitration mechanisms. Inflation appears to be running at an annual rate of about three percent. There are no comprehensive estimates of employment. However, there is little doubt that the agriculture sector provides most of the nation's employment such as 78 percent of labor force.

Main Economic Indices in East Timor

Category	Unit	Years					
		1997	1998	1999 Est.	2000 Est.	2001 Proj.	2002 Proj.
GDP (a)	US\$ Millions	383	390	245	290	344	407
GDP Per Capita	US\$	442	424	304	403	466	538
GDP Growth Rate	%	4	-2	-38	15	15	15
Inflation Rate CPI (Dili, Rp Based)	%	NA	80	140	20	NA	NA
Inflation Rate CPI (Dili, \$ Based)	%	NA	NA	NA	NA	3	3
Consumption	% of GDP	72	74	93	114	111	101
Investment	% of GDP	53	47	28	38	43	32
Domestic Savings	% of GDP	28	26	7	-14	-11	-1
Exports	US\$ Millions	48	54	49	16	30	38
Imports	US\$ Millions	142	135	89	100	161	130

Source: IMF, East Timor, Macro-Economic Assessment, November 2000, and IMF, Donor Meeting Staff Statement (Valdivieso), June 14 -15, 2001

(a) GDP in U.S dollars using 1996 as the base year and assuming a constant Purchasing Power Parity (ppp) exchange rate.

In general, the economy remains fragile. Imports outstrip exports by about three to one. There are only three private banks in the nation; and the foreign exchange market, although functioning on a modest level, is not well developed, although the private bank dealing with the foreign exchange is only one.

As seen in following table, revenues in 2002/2003 are expected to finance only about 17 percent of government expenditures. This occurs even though the 2002/03 revenue of 34.0 million US\$ includes 15 million US\$ of royalties and taxes associated with Timor Gap oil. The only possible relief is the expectation in about four years time (2002/03-2005/06) of major

income of 263 million US\$ generated by Timor Gap oil production⁵. The funding deficit from 2000/01 to 2002/03, averaged 220 million US\$, is expected to be made up through donor grant financing.

CFET Fiscal Profile

(unit : million US\$)

Category	Years		
	2000/01	2001/02	2002/03
Revenues	27	37	42
Expenditures			
Recurrent Expenditures	28	52	67
Capital and Development	248	279	171
Timor Sea Saving	3	6	2
Total	279	337	241
Balance (Deficit)	-252	-300	-199

Source: IMF, Donor Meeting Staff Statement (Oslo), December 2002

A picture of the FY 2000/01 local government expenditure plan (CFET) is given as follows. It is interesting to note that agriculture, the largest economic sector employing over 78 percent of the population, consumes less than two percent of the CFET budget.

Projected CFET Expenditures, FY 2000/01

Sector	Amount (' 000 US\$)	Rate(%)
1. Transitional Administration	7,387	11.6
2. Ministry of Internal Administration	7,938	12.5
3. Ministry of Justice	3,414	5.4
4. Ministry of Economic Affairs and Planning	7,564	11.9
5. Ministry of Agriculture and Fisheries	1,234	1.9
6. Ministry of Education, Culture & Youth	16,155	25.5
7. Ministry of Health	6,005	9.5
8. Ministry of Labor and Solidarity	287	0.5
9. Ministry of Foreign Affairs and Cooperation	696	1.1
10. Ministry of Finance	6,557	10.3
11. Ministry of Water and Public Works	5,629	8.9
12. Ministry of Communication and Transport	489	0.8
13. Whole of Government	90	0.1
Total	63,447	100.0

Source : East Timor Combined Sources Budget 2001-02, by Ministry of Finance

Following table indicates the expected levels of international and government expenditure in East Timor by type over a range of years.

⁵ East Timor Combined Sources Budget 2001/02, by Ministry of Finance

Estimated International and Government Expenditure

(unit : million US\$)

	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06
Bilateral & Multilateral	79	110	70	50	40	20
UNTAET	120	101	58	34	22	-
Combined Sources (a) + (b)	96	120	152	125	115	122
CFET (a)	45	63	97	112	115	122
TFET (b)	51	57	55	13	-	-
Total	295	331	280	209	166	142

Source : East Timor Combined Sources Budget 2001-02, by Ministry of Finance

2.2 Current National Development Strategy⁶

2.2.1 Performance of Emergency Action

The first development and welfare strategies were produced during the early emergency period with a very short time frame in mind, and carried out by international NGOs with emergency grant funding. There was no funding for extension and farmer training or any activity with a perspective longer than about five months. From October 1999 to March 2000, international NGOs distributed hundreds of tons of certified maize and vegetable seeds imported from Indonesia to start the process of asset restoration and distributed to those farmers needing seed. The NGOs also distributed simple hand tools, bagged seed, wheel barrels, carts, drying mats and other necessary items lost during the emergency period. World Food Program (WFP) supported a food for rice seed program implemented by NGOs that distributed almost 300 tons of rice seed. The rice seed was obtained from rice surplus areas in the Viqueque district and shipped to rice seed deficit areas in other parts of the country. NGOs provided the funding, trucks and staffing to move the seed around the country. Later in 2000 as a follow up to this program, the FAO, with Japanese funding, and two international NGOs had another WFP supported food for seed project that grew and distributed 110 tons of certified IR 64 rice seed. 80 tons of local variety maize seeds were also obtained by trade for food and provided to farmers who had lost their seed stocks or who were just returning from West Timor or from internal displacement.

The international NGOs did what limited agricultural training and extension programs for food crops that were carried out using emergency and welfare program funding. Essentially the early phases were just supplying lost equipment and attempting to assist farmers with physical items lost during the conflicts. The emerging Ministry of Agriculture and Fisheries (MAF) at UNTAET had a very limited operational budget, a limited number of temporary local staff no vehicles and very few competent international staff.

⁶ This strategy corresponds to the National development Strategy prior to the formulated National Development Plan.

2.2.2 Agricultural Development Strategy by World Bank Trust Fund

The agricultural development strategy in East Timor was closely formulated following the World Bank strategy of "user pays" and World Bank staff members designed all of the programmed field activities of the emerging DAA. The first plan involved i) providing replacement priority assets (buffaloes, cattle, chickens and hand tools) to poor farming families; ii) rehabilitating about 5,200 ha of community irrigation schemes and 50 km of agriculture access roads; iii) establishing the foundation for three Pilot Agriculture Service Centers (PASC) and disseminating information to farmers; and iv) establishing a Project Management Unit at the DAA.

Most of these activities, aside from a cattle vaccination program and the supply of other livestock to farmers who had lost animals during the disturbances, were involved in planning activities for the World Bank's center of activities: the PASC. These three PASC centers are purported to be able to privatize agricultural extension services following a private sector model with the expectation that East Timorese subsistence farmers are eager to pay for such extension services.

2.2.3 Agriculture, Forestry and Fishery Sectors in the Development Strategy

According to the donor's agricultural development policy for East Timor proposed by Agricultural Joint Donor's Mission Meeting mainly dominated by WB for the year of 2000 to 2005, it could be summarized as follows; a) lessening the government burden as much as possible due to limited allocated budgets (no subsistence), b) promotion for participation of donors, private sector, NGOs and others, c) introduction of open market economic system and full cost-sharing by beneficiaries (full cost recovery)⁷.

⁷ Regarding the donor's policy of introduction of open market economic system and full cost-sharing by beneficiaries, this report proposed following strategies on rice policy and cost-sharing.

Taking into account the fact that East Timor is presently not capable of self-supplying its staple food, rice, it would be difficult for East Timor to rapidly achieve the perfect self-sufficiency of rice in a short-term. When it is taken into account the fact that both draft National Development Plan for the agriculture sector and the Joint Donor Agriculture Mission emphasized the "sustainable" and "wide-range" approach for the food security in East Timor, the sustainable increase in the self-sufficiency ratio of rice as well as the comprehensive food security policies such as quality improvement, mitigation of post-harvest loss, improvement in access to market, etc. would be recommended so that the food security at community and household levels is well kept.

When considered current beneficiary financial capability and Indonesian time experience under the subsidization policy by government, proposal on full cost-sharing by beneficiaries are considered to be no realistic in current East Timor. Therefore, in this report, cost-sharing portion by beneficiaries is proposed to be only labor charges of the projects costs.

The sector investment plan for the above strategies will span the following three overlapping phases of rehabilitation (2000), transition (2001-2002) and sustainable development (2001-2005)

1) Sector-Based Coordination of MAF in ETPA

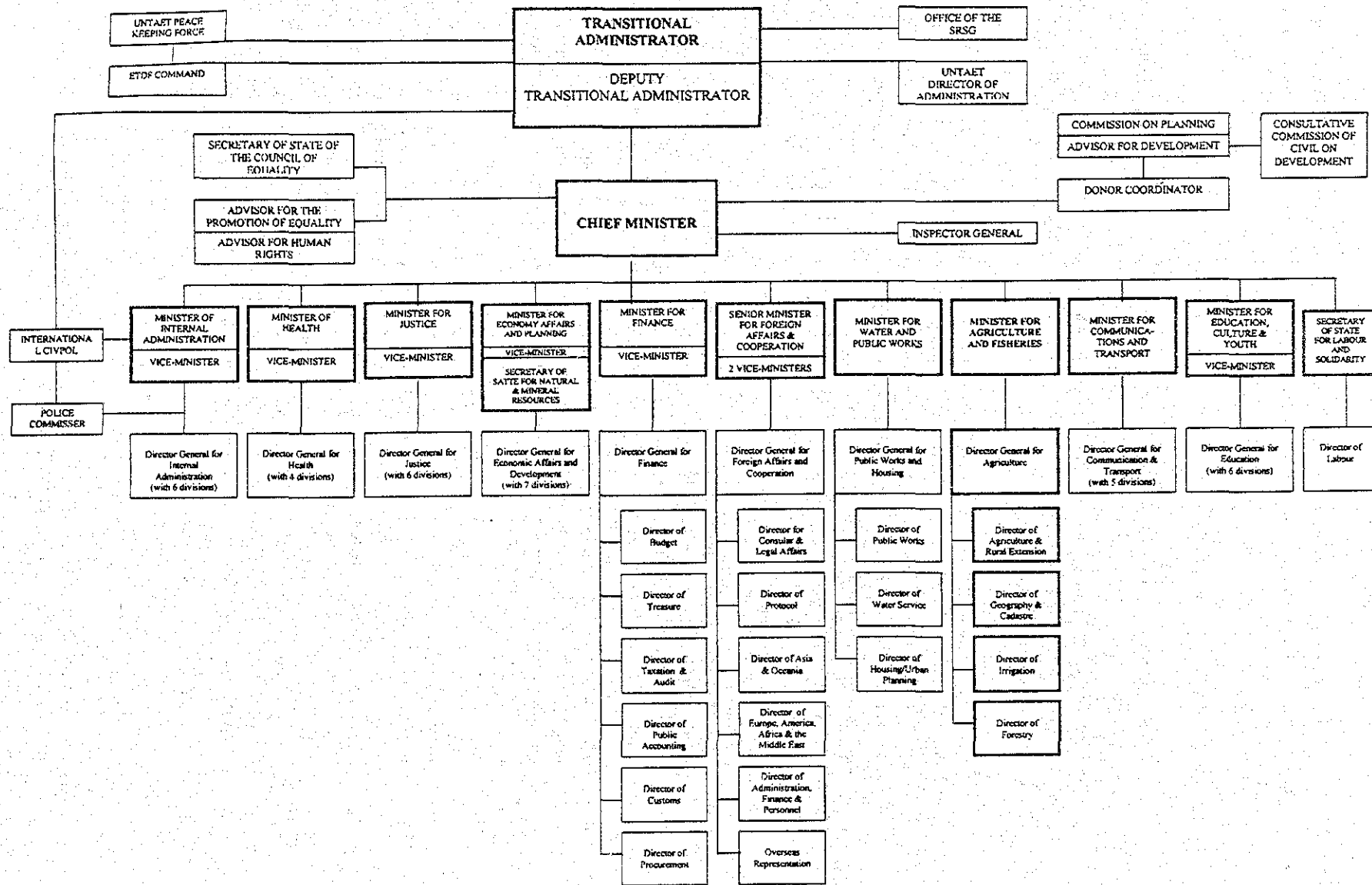
Central administrative organization in agricultural sector is Ministry of Agriculture and Fisheries (MAF) and agricultural activities are shifting from the transition and from emergency rehabilitation to longer-term goals of higher agricultural productivity, greater food security and sustainability of the sector to help the transition from a heavily subsidized sector to one with limited government funding.

The MAF has five major departments, which include the one each for Directorate of Agriculture, Division of Agriculture and Rural Extension, Division of Geography and Cadastry, Division of Irrigation and Division of Forestry,⁸ as shown in Figure 2.2-1. Work responsibility of each organized division is not yet decided at present. Former central administration of DAA was organized with three major units; agriculture, fishery and forestry. The agriculture unit was further sub-divided into crop production, livestock and irrigation. The MAF develops the plan and program directions and policies for agriculture. The following gives the outline of each activities of major units mentioned above for a reference;

- The Crop Production Unit will be responsible for the development and increase of crop production by reorienting farmers toward the utilization of better quality seeds/varieties. This is to be achieved while reducing extension staffing numbers with the expectation that farmers will pay for this assistance from the PASCs to be located in at least three locations
- The Livestock Unit aims to support the development and improvement of the quality and quantity of livestock by reducing their exposure to pests and diseases through vaccinations and the end result will be a unit responsible for animal health and veterinary and production support services for East Timor
- The Forestry Unit is responsible for: i) the reforestation and sustainable management of watersheds for protecting water sources, soil rehabilitation, erosion control and for meeting subsistence needs; ii) the management of forest resources and forest lands; and iii) the management of current and future Protected Natural Areas and Reserves within East Timor. Since funds for forestry are clearly limited, the programs must be based on local community consent and participation. The sustainable management of the watersheds, forest resources and forestlands, and Protected Natural Areas is critical to the survival and development of the communities of East Timor. The forestry strategy considers that the sustainable management of these will be best achieved when undertaken in an integrated manner by local communities adequately informed and empowered to do so.

⁸ These department and divisions are reorganized into latest one in accordance with reorganized Ministry of Agriculture, Forestry and Fisheries in May 2002.

UNITED NATION ADMINISTRATION IN EAST TIMOR
EAST TIMOR TRANSITIONAL ADMINISTRATION
SECOND TRANSITIONAL GOVERNMENT OF EAST TIMOR



2-8

Figure 2.2-1 Organization Chart of East Timor Public Administration (ETPA)

- The Fishery Unit Strategy of "fish for the future: a strategic plan for the fisheries of East Timor", places a priority on realization of the sustainable development of the fishery resource so that it can be utilized to a maximum extent for a longer time. As a result, the strategy is focused mainly on the ecologically sustainable development of fishery resources and related issues. The present situation and problems include: i) the short life and low seaworthiness of the local canoes; ii) some ineffective fishing gear and nets.
- iii) difficult marketing of catch due to lack of transport infrastructure; and iv) over exploitation of high-valued species like rock lobster. The fishing strategy also says that larger boats will not be licensed until the fishery resources are assessed. At present smaller boats or canoes equipped with outboard motor of 15PS or less, the majority of fishing fleet in the fishery sector in East Timor at present, will not require a license.

2) District Agricultural Organization and Activities under MAF

Besides the national level divisions, there are also similar organizational units at 13 district administrations. These supervise the agriculture plans and programs in the district and sub-district levels in accordance with the policies and directions set by the MAF.

The arrangements and coordination within the national level MAF divisions are replicated at the districts. The agriculture activities in the districts are coordinated and supervised by the District Agriculture Officers (DAO). Under each DAO are specialists and technical staff in crop production, livestock, irrigation and forestry. A number of staff providing administrative services is available.

Although there is District Field Officers (DFO) at the sub-district levels, most of the programs in agriculture at that level are implemented and supervised by the District Agriculture Office. The DFO can initiate agriculture programs but have to course it through the DAO.

There is 126 staff in 2001 for the whole of the MAF organization, from the national to the district level (36 staff in national level and 91 staff in district level). But this number will be increased in 160 staff by the end of 2002. Many of them had served as civil servant during the Indonesian time but at the lower level of the organization. Therefore, many of them had to be provided capability-building program to enhance their managerial and supervisory capacities. Numerous of these had been carried out by ETTA through the assistance of donor countries, many had been provided training locally and some had been provided the opportunity to train and undertake study tours outside of East Timor.

3) Current Poverty Alleviation

Although current statistics on income, income distribution and poverty profiles are very limited, consensus opinion is that the incidence of poverty in East Timor is a pervasive and serious problem. The nation is one of the poorest countries in Asia with over 30 percent of the population living below the poverty level (i.e., one US\$ per day). For the last five years, income per capita has averaged less than 400 US\$. The poor have been identified mostly as subsistence farmers producing nontraded goods in rural areas.

Furthermore, poverty is highly correlated with family size and lack of education. The continuing high incidence of poverty has a serious negative impact on economic development and political stability. Consequently, poverty reduction has been accorded high priority in the national development policy. On-going efforts by the National Planning Agency⁹ in close coordination with WB, ADB and UNDP are being made to improve the understanding of poverty incidence, prepare a poverty profile and develop a national strategy for poverty alleviation. The basic information needed to develop the poverty reduction strategy is provided from three surveys (e.g., suco level, household level, community level participatory poverty interviews). In addition to these long-term actions, immediate efforts in the field are currently underway such as the WB's Community Empowerment Project and most NGO programs.

4) Rural Development Approach

Approximately 90 percent of the nation's population lives in rural areas. The majority of these residents survive as subsistence farmers with limited access to improved infrastructure (electricity, water supply, irrigation, roads, markets). For example, only about 20 percent of East Timor's villages have electricity and only about 10 percent have water piped to their homes. Also the availability of food, health services and education is severely constrained.

The projects' village level survey indicted that rural infrastructure requiring improvement in order of priority was: i) irrigation; ii) drinking water; iii) schools; iv) roads; v) power; and vi) health clinics/hospitals. The poor quality of all these sectors is very serious matter that requires immediate attention. Unfortunately, resources are inadequate to overcome such a range of challenges in the short-term. However, to begin to address these difficulties, development programs are formulated on a per sector basis. The priority and funding for most of these programs is undertaken at the national level, primarily under the direction of the National Planning and Development Agency. For the present, mostly rehabilitation projects are being undertaken with donor assistance.

5) Formulation of National Development Plan

Agricultural sector of the National Development Plan was prepared by the groups of MAF's each division and organized Planning Commission members in collaboration with JICA and AusAID experts. Agricultural Sector's National Development Plan, of which target year is five years from 2003 to 2007, is formulating in accordance with financial frameworks proposed in the Mid-Term Fiscal Framework (MTFF).

Furthermore, JICA Study Team also formulated Mid-Term Integrated Agricultural Development Plan with a same period of target year. When considered the timing of completion of these plans, the Plan are desirous to harmonize with National Development Plan, especially in the aspects of strategies of the development plan.

⁹ National Planning Agency was reorganized to Planning Commission in September 2001.

2.3 Regional Economy and Development Policy

2.3.1 Dili City and Other Districts

Dili, the largest city and capital of East Timor, is the focal point of Dili district, and is the economic and governmental hub of the country. By population, it is the largest district containing about 17 percent of the population of East Timor. Dili is really the only true urban center in the country. It is estimated that over 80 percent of the nation's economic activity is concentrated in Dili. The city is home to the nation's major seaport, international airport and the country's only three private banks. Dili is presently the seat of government with central ministerial agencies located there.

During the destruction of 1999 about 50 percent of the city's buildings were damaged. To date about half of these have been repaired. The large influx of people from rural areas has placed serious stress on infrastructure, housing, schools and health services. Current issues that confront the capital district mirror those of the nation as a whole and include: i) high unemployment; ii) widespread poverty; iii) land disputes; iv) frequent power outages and v) poor sanitation.

East Timor's other 12 districts can be characterized as rural, economically underdeveloped and lacking in basic infrastructure. In total, they contain only about 20 percent of the nation's economic activity. In most cases, power, water and sanitation services are only available for limited hours in the district capitals. Nearly all economic activity is in the form of agricultural crop production. Most crops are consumed directly by farm families under subsistence agriculture. Forestry resources are also widely exploited, especially for firewood and building materials. A summary of economic conditions is shown as follows.

Regional Economic Profiles

No.	District	Population	Percent of Population (%)	Sucos with Electricity (%)	Secondary Schools	Hospitals
1.	Lautem	49,213	7	23	7	1
2.	Baucau	93,368	13	19	22	1
3.	Viqueque	54,315	7	15	10	1
4.	Manatuto	32,598	4	44	6	0
5.	Manufahi	35,500	5	13	10	0
6.	Dili	128,490	17	79	23	2
7.	Aileu	30,146	4	14	8	1
8.	Ermera	84,510	11	3	9	0
9.	Ainaro	36,969	5	6	5	0
10.	Liquica	43,406	6	14	5	0
11.	Bobonaro	62,273	8	7	10	1
12.	Covalima	42,506	6	7	9	1
13.	Oecussi	44,517	6	11	6	1
	Total	737,811	100	19	130	9

Source: Civil Registration in East Timor, UNTAET, July 2, 2001

2.3.2 Review of Economic and Social Sectors

Clearly, the 1999 post-ballot violence severely disrupted livelihoods for the majority of East Timorese. No reliable statistics for employment exist but it is commonly claimed that only 20 percent of residents are employed in the formal sector. While this number cannot be corroborated, it is important to note that community leaders and field workers flag *unemployment as the most pressing issue facing Dili District*. The demand for employment is further fueling by migration to Dili. This migration has the impact of increasing even more the unemployment problem in Dili district, and more specifically in urban Dili. While employment opportunities created by UNTAET-ETTA and NGOs have contributed to family incomes, employment opportunities still fall far short of the demand for work. Economic recovery, and consequent employment increase, is critically dependent on private sector development. The private sector has been recognized as the only viable vehicle to general economic and infrastructure recovery.

2.4 Donor's Activities for Agricultural Development

2.4.1 Basic Framework of Donor's Activities

East Timor is presently receiving big amounts of foreign assistance to reconstruct its economy. In agriculture sector, annual basis foreign grants over the transitional period (2000 to 2002) are likely to be approximately double the amount of annual tax revenues. Despite its small size and an economy based on subsistence agriculture, East Timor is presently one of the most complex external fund receiving areas. The basic framework for international funding is as follows;

Framework for International Financing

Source of Budget	Administrator	Funding for
UNTAET Assessed Contribution	UNTAET	governance and security
Trust Fund (CFET)	ETTA (CFET)	governance and security
Domestic Revenue of East Timor (CFET)	ETTA (CFET)	governance and security & reconstruction/development
UN Agencies	UNDP, UNESCO, FAO, UNICEF, UNHCR, etc	humanitarian aid, reconstruction and development
TFET	World Bank and ADB	reconstruction and development
CAP Fund	Consolidated Inter-Agency Appeal	humanitarian aid
Bilateral Assistance	Each Country	bilateral projects include both humanitarian aid, governance, reconstruction and development
NGOs	International and Domestic NGOs	humanitarian aid, reconstruction and development

Note: CFET: Consolidated Fund for East Timor (Trust Fund + Domestic Revenue (CFET))

2.4.2 Each Donor's Activity

Under this framework, the donors' funds for agricultural sector development in the transitional period mainly come from CFET, TFET, Bilateral Assistance and NGOs. Outlines of the of each donor's projects are shown below. Information/basic data of implementing stages projects by each donor in agriculture and rural development sector are summarized in attached Annex R.

JICA

- Urgent Rehabilitation Project: Topographic Mapping (2000.2-2000.6)
- Urgent Rehabilitation Project: Irrigation
- Study on Integrated Agricultural Development of East Timor (2001.3-2002.7)
- Provision of O&M Support of Hand Tillers (2000.3-2001.5)
- Aquaculture (2000.6-2000.8)
- Capacity Building in East Timor, Japan and ASEAN Countries (2000.7-)
- Rehabilitation and Strengthening of Capacity of Rice Farmers in Lautem ad Manatuto Districts (2000.2-2003.1)
- Recovery Programme for Village Based Economic Activates in Lospalos 及 〇 Manufahi Districts (2001.3-2004.3)
- Inland Fishery Development (2001.1-2001.8)
- Agricultural development Project in Baucau (2001.5-)

World Bank (TFET)

- Agricultural Rehabilitation Project (ARP) (2000.7-2001.12)
- Second Agricultural Rehabilitation Project (ARP-2)
- Small Enterprise (2000.4-2001.9)

AusAID

- Small-Scale Fishery Activities (200.6-2001.4)
- Fisheries-Development of Strategic Plan and Priority Project Proposals (2001.2-2001.31)
- Rat Management Control Programme (2000.8-2001.1)
- Agriculture and Forestry Land-use Mapping and GIS Development and Training (2000.12-2002.11)
- Community Based Watershed Management (2001.1-2002.12)
- Stock Assessment-Dili Harbor (2001.4-2002.8)
- Seeds of Life (2000.11-2003.10)
- Fisheries Management Planning (2002.2-2005.1)

FAO

- Coordination of Emergency Agriculture Intervention (2000.1-2000.12)
- Urgent Rice and Maize Seed Multiplication (200.4-2001.2)
- Agro-Economic Study on Rice Pricing in East Timor and ASEAN (2001.8-2001.9)
- Emergency Assistance for the Reduction of Post-Harvest Losses (2001.7-2002.2)

USAID

- Timor Economic Rehabilitation and Development project (TERADP) (1994-2002.12) (Support and Development Coffee Cooperatives)
- Transitional Engagement for Population Support Programme (TEPS II), Building

- Empowerment, Leadership and Engagement (BELE) (2001.10-2001.12)
- Civil Society (200.8-2001.12)

Portugal

- Research on Coffee Production (2000.11-2003)
- Re-plantation of Coffee Fields (2001.2-2003)
- Integrated rehabilitation of Constriction of Coffee Processing Facilities (2000.4-2003)
- Horticulture Research and Development Center (2001.2-2003)
- Aquaculture (2001.4-2003)
- Capacity Building (2001.4-2003)

Japan/UNDP/UNOPS

- Urgent Irrigation Rehabilitation Project (2000.3-2003.3)

China

- Provision of Equipment (2001.1-2001.6)

ACIAR

- Rehabilitation of Agriculture Faculty -UET (2001-2003)
- Seed of Life (2000.11-2003.10)

Germany

- Rehabilitation and Food Assistance to Oecussi and Covalima (2001.7-2002.4)

In emergency recovery (transitional) period, each donor agencies and ETTA government have grappled with difficult formation of development projects with limited basic data, information and human resources and institutional capacity in the period of confused condition.

Due to lack of implementation experience and weak institutional capacity of Administration (especially MAF) under limited human resources and budget constraint, actual implementation/progress of each committed project is, generally, seemed to be delayed from expected schedule.

Many kind of operation in emergency recovery (transitional) period, had been done by UN, many donors and NGOs. However, the following components have not covered sufficiently as a essential and emergency issues

- Agrarian reform, land development,
- Marketing system, distribution and transportation of agricultural products, storage/warehouse
- Post harvest treatment and processing
- Operation and maintenance of machines, tools, facilities and system
- Diversification of agricultural products and introduction of improved breed/seeds
- Technical extension services to farmers, technology transfer, research, etc.
- Institutional, organization and human resources development
- Statistic basic data collection, data collection system and proper policy making in

agricultural sector

- Micro-finance scheme to support agro-industry, to support diversification and to develop post harvest treatment and processing
- Budget allocation for agricultural development
- Watershed preservation and reforestation

2.4.3 Donors' Coordination

As mentioned above, many foreign donors have actively supported for urgent development and reconstruction of East Timor since September 1999. However, it could be observed that their cooperation and coordination extended by each donor for the purposed have not always been effectively and smoothly, although these support activities have been managed by UNTAET.

If the international donors' effective coordination is not achieved, efficient sustainable agriculture development is not easy to realize. The uncoordinated each donor's assistance that do not conform to an agreed agricultural development strategy and priority are very futile for attaining the effective development of East Timor.

For avoiding unexpected confusion, close and effective donors coordination should be attained through the following confirmation process;

- Actual status of current East Timor's economic situation and other donor's operation through periodical donor's meeting under chairmanship of East Timor Government and World Bank
- Grasp the correct direction of the East Timor Government Strategy, Policy, and Master Plan on the Agricultural Sector Development
- Effective co-ordination among all donors through information sharing in agriculture sector and understanding of framework for effective use of limited resources such as financial, human and natural resources and time frame for effective development
- Minimization of duplication of operations and the establishment of a close combination or a clear demarcation to attain efficient development between different donors' on-going, committed and/or planning stages projects in earlier opportunity.
- Draw up the realistic action plan to be agreed upon between the agencies concerned

Through this process, each donor's activity will reflects the fruits of other donors' projects and learns lessons from other donors projects, so that independent East Timor can realize the autonomous development process and self-sufficient and stable food supply.

**CHAPTER III.
THE STUDY AREA**



CHAPTER III. THE STUDY AREA

3.1 Location, Topography and Geography

East Timor is approximately located on the north-western part of port Darwin, Australia by only about 500 km, and in the southern part of Denpasar, Bali Indonesia. East Timor is bounded on the east by Jaco Island reserve for animal conservation with an area eight sq.km on the west. It is bounded by Kupang, the capital city of the West Timor. The East Timor is surrounded by the sea. On the northern portion Wetar Sea and Atauro Island, locally name Pulau Kambing while on the southern part it is bounded by the Sea of the Timor.

The area of East Timor is only about 14,610 sq.km and includes the enclave of Oecussi-Ambeno (about 814.3 sq.km) and inserted in the north coast of West Timor. The island of Atauro is (144 sq.km) to the north of Dili, the capital city of East Timor. The main Island of East Timor is measuring about 269 km long from western boundary to the eastern tip of the Island and the shortest width is about 12 km from the east of Tutuala and the greatest width from the central portion of East Timor measuring about 105 km distance.

The topography of East Timor is dominated by a massive central backbone of up to about 3,000 m. The Ramelau mountain range, which is dissected by deep valleys that is prone to flash foods towards the northern side; the mountain extend almost to the coast without extensive plains. To the south the mountain seems to taper off some distance to the sea leaving a wide littoral plain and is approximately 20 to 30 km, wide running almost the length of East Timor and widens at the eastern end with some isolated hills.

The hypsography of East Timor could be grouped into four landforms. These are the soils of the:

- Lowland plain
- High plain
- Hills and undulating mountain, and
- Rough mountain

On the northern side Baucau and Manatuto districts have potential for irrigated rice, while on the western side the low plateau of Maliana sub-district is also suited to irrigated Agriculture. Whilst the high plain of Lospalos shall be investigated for groundwater potential in order to tap the big plain for crop production. There are numerous river/streams flowing to the southern coast of East Timor that dissect the districts of Covalima, Viqueque, Ainaro and Lautem, and much more bigger plains were cultivated to rice, corn and vegetables which indicates that the land has vast potential for agricultural development.

3.2 Social Condition

The East Timor having a land area of about 14,600 sq km could be divided largely into three regions: Western (3,410 sq km or 23.3 percent of total), Central (4,520 sq km or 31.0 percent) and Eastern (6,680 sq km or 45.7 percent) as shown below. Of these areas, about 3,140 sq km (21.5 percent of total area) is topographically located between 0 to 100 m above mean sea level (msl), 6,420 sq km (43.9 percent) between 101 to 500 msl and 5,050 sq km (34.6 percent) above 500 msl. Details of different regions and their district are shown in Table N-1 and Figure N-1.

Area and Its Distribution - East Timor

Particulars	Area ^{1/}		Area and Percent by Elevation ^{2/}		
	sq. km	%	0-100	101-500	> 500
Western Region	3,408	(23.3)	818 (5.6)	1,534 (10.5)	1,056 (7.3)
Central Region	4,518	(31.0)	766 (5.2)	1,359 (9.3)	2,393 (16.4)
Eastern Region	6,683	(45.7)	1,553 (10.6)	3,523 (24.1)	1,607 (11.0)
Total	14,609	(100.0)	3,137 (21.5)	6,416 (43.9)	5,056 (34.6)

^{1/} 1997 East Timor in Figures

^{2/} Computed from figures presented in 1997 East Timor in Figures

Based on ethno-linguistic groups, the Western Region is dominated by the people speaking the following dialects: *Bunak*, *Kemak*, 'Southern Tetum', *Uab Meto (Dawan)*. The Mamba and Tokodede, Tetum and 'Dili Tetum' dominate the Central Region, while the Makassae dominates the Eastern Region with other groups such as *Galoli*, 'Southern Tetum', and *Fataluku*.

3.2.1 Demographic Profile

As indicated in the following table, the population in 2001 is about 737,800 and the distribution of which are: 20 percent in Western Region, 49 percent - Central Region, and 31 percent - Eastern Region. The population density at the national level is 51 persons/sq.km and the distribution of which are 44 persons per sq.km, 79 per sq.km and 34 per sq.km for Western, Central and Eastern Regions, respectively. Details by district are shown in Table N-1 and Figure N-2.

Of the total population, 43.9 percent is below 14 years old. Of these, 22.5 percent are males and 21.4 percent are female. 2.5 percent are 65 years old and above - of which 1.3 percent - males and 1.2 percent - females. The total percentage of these age groups is 46.4 percent - portion of the population that is considered as dependent. The rest, 53.6 percent, are

considered under the main working group. Of these numbers, 26.5 percent are males while 27.1 percent are females.

Based on these figures, the dependency ratio of the population of East Timor is 86.6 percent. Dependency ratio is the comparison of the children (below 20 years old) and elderly people (above 64 years old) with the number of people in the working ages - considered to be between 15 to 64 years old. The distribution of the population by age group and by sex are shown in Figure N-3 and Figure N-4.

The average population growth rate of 2.56 percent per annum was computed from the records of the 1980 to 1998 period (see Table N-2). This was consistent with the 2.4 to 2.6 percent per year in Section II - Social and Economic Conditions in East Timor (Columbia University-USA and Institute of Applied Social Science-Norway, 01 November 1999). The average population growth rates are: 2.43 percent - Western Region, 3.64 percent - Central Region and 1.22 percent - Eastern Region. The highest was computed for the district of Dili (5.91 percent) and the lowest at the district of Viqueque (0.32 percent).

Population Information - East Timor (2001)

Region	Population			
	No. ^{1/}	%	Density (person/sq.km)	Growth Rate (%) ^{2/}
Western Region	149,296	20.2	44	2.43
Central Region	359,021	48.7	79	3.64
Eastern Region	229,494	31.1	34	1.22
Total/Average	737,811	100.0	51	2.56

^{1/} Civil Registry Unit: Results - 2 July 2001

^{2/} Computed from the 1980 to 1998 Population Record
Details of population by district are given in Table N-3.

Population of East Timor in 1997 and 2001 corresponding before and after violence in 1999 was about 881,600 and 737,800, respectively, and the differences of these figures are considered to be repatriated people from West Timor and other country. At present some percentage of these people have already been repatriated to East Timor. In paragraph 5.4.1, 1) dealing the projection and analysis of supply and demand for staple food, it is assumed that 50 percent of these people will be repatriated to East Timor until the target year of 2007.

3.2.2 Land Tenure

Being a subject of almost 500 years of colonization, land tenure is a complicated issue in East Timor. There are many conflicting claims and those are normally based on either of the following bases. First is the traditional law or '*adat*' which is the basis of the clan ownership, where one has the right to use (*usufruct*) but has no right to dispose off. Second, the ownership

law enacted by the Portuguese when it was the colonizer. Third, the ownership law implemented during the Indonesian times.

The village survey (Suco survey) provided respondents' view of ownership or tenure system. The largest category was individual land ownership at 51.5 percent. Others in descending order are: public land 33.5 percent, 12.4 percent - others, corporate land -1.9 percent and community-clan owned lands - 0.7 percent.

Based on the partial results of the household survey, an average farm household in East Timor has 1.2-ha farm lot. On the average, 58 percent is planted to annual crops, 37 percent to plantation crops and the rest to other uses. In any of these cases, it is planted 73 percent most of the time.

Most of the farm lots are private-owned, 69 percent are acquired through inheritance, and nature of ownership is customary right (62 percent) and on the average has been with the owner for 16 years. See Section IV, Annex N for more details about land tenure in East Timor.

3.2.3 Results of Village and Household Surveys

Prior to beginning of the JICA Study Team, a consortium of the World Bank (WB), Asian Development Bank (ADB), and United Nation Development Programme (UNDP) were already undertaking a survey of comprehensive Joint Poverty Assessment (JPA) Project¹, which consists of following three components;

- Village Survey (Suco Survey)
- Household Survey, and
- Participatory Poverty Assessment.

To avoid duplication of effort, minimize disturbance to respondents and maximize cost and time efficiency, East Timor Transition Authority (ETTA) officials recommended that, where possible the Study should coordinate its work with the JPA. The Study Team has been able to comply with this request and joint with the other donors in the conduct of its surveys.

1) Results of Village Survey

From May to June 2001, the Study Team conducted its own village survey in East Timor. The village survey was executed jointly with survey of JPA. Cooperation with JPA allowed the Study Team to use previously trained individuals and save on personnel; vehicle and data processing cost in part. The target villages of 106 were selected at random throughout the nation. The Study Team participated with the other donors in selection of 106 target villages.

¹ The survey of Poverty Assessment Project was undertaken in collaboration with WB, UNDP, ADB and JICA, and Village Survey (Suco Survey) was initiated by JICA Study Team as a part of the Poverty Assessment Project.

The village survey questionnaire was designed by the Study Team members working in conjunction with their counterparts of ETTA, Division of Agriculture Affairs(DAA). It included questions from all the disciplines of crops, livestock, forestry and fishery. The NGO responsible for whole management of survey, ETADep, worked closely with ETTA's Census and Statistic Units (CSU) for the implementation and data analysis. A total of eight teams comprised of three persons each were used to collect the village data. These teams were supervised by a Field Manager. The primary respondent to the questionnaires was the village chief. However, when he was not sufficiently knowledgeable, additional information was sought from former village chiefs and irrigation managers. Villages surveyed are shown in below table;

Number of Surveyed Villages

No.	Districts	No. of Sub-Division	Villages	
			Total	Sampled
1	Lautem	5	34	9
2	Baucau	7	63	13
3	Viqueque	5	35	17
4	Manatuto	6	29	4
5	Manufahi	4	29	5
6	Dili	6	48	8
7	Aileu	4	43	4
8	Ermera	5	53	13
9	Ainaro	4	21	4
10	Liquica	3	23	6
11	Bobonaro	6	50	9
12	Covalima	7	45	10
13	Oecussi	5	25	4
	Total	67	498	106

Some of the survey's key findings are that:

- 63 percent of the main village roads are in poor condition with an average of 9.2 km of road requiring repairs.
- Only 18 percent of rural villages have access to electricity.
- Only 21 percent of rural residents get water comparatively from a well or pumped source. The remaining 79 percent rely open springs and rivers.
- 38 percent of the rural population have no access to credit at all, 48 percent can borrow from a formal sources such as middlemen/trader, and 14 Percent is from others..
- Respondents listed infrastructure requiring improvement in order of priority as:
 - Irrigation systems
 - Drinking water
 - Schools
 - Farm to market and other roads
 - Power
 - Health clinics/hospital

- Marketing facilities
 - Telephone systems
- 76 percent of villages report some form of irrigation. However, 89 percent of irrigations comes from simple, farmer made systems. An overview of all irrigation systems shows that at present 20 percent are no functional.
 - Generally crop yields are very low with no use fertilizer, herbicides or pesticides.
 - Livestock population has declined by about 40 percent since early 1999.
 - About one third of all villages contained some fishers. About half the villages follow some type of traditional rules. The number of full time fishers has declined by over 80 percent since early 1999.
 - There were very few processing and storage facilities of agriculture, forestry and fishery.
 - On average agriculture extension workers only visit a village once per year.
 - 75 percent of all villages report some type of erosion problems in their watershed. However, 60 percent of all villages are taking no measures to control erosion.

2) Results of Household Survey

JICA Study Team jointed with the WB, ADB and UNDP in the execution of the village survey. The household survey is implemented under the direction of the WB. Therefore, the Study Team with DAA input formulated their agriculture, forestry and fisheries questions and passed them on to the WB. The WB then inserted the Study Team's questions into their household survey questionnaire.

In total, CSU is using about 40 enumerators under the direction of 10 supervisors. About half of the enumerators were those trained under the village survey. The household survey intends to cover about 1,800 households randomly selected through out East Timor. The enumerators began the household survey on August 2001 and completed in March 2002.

Households surveyed are given in the following table;

Number of Surveyed Households

No.	Districts	Number of Villages	Households Samples
1	Lautem	6	108
2	Baucau	13	234
3	Viqueque	7	126
4	Manatuto	4	72
5	Manufahi	5	90
6	Dili	n.a	432
7	Aileu	4	72
8	Ermera	10	180
9	Ainaro	4	72
10	Liquica	4	72
11	Bobonaro	9	162
12	Covalima	6	108
13	Oecussi	4	72
	Total	76	1,800

The household survey includes 13 sections, household information, housing, access to facilities, expenditure/consumption, education, health, fertility and maternity history, employment, agriculture, transfers/borrowing and saving, other income, social capital and subjective well-being. The agricultural section has eight parts, plots, crops harvested, agricultural inputs, forestry, farming equipment, labor & farm produce, livestock and fishing and aquaculture.

Some of the survey's key findings are that;

- 76 percent of whole households have cultivated crops or owned/controlled some arable land during the last year (from a month to the month).
- In 89 percent of whole households, a head of household makes the decisions about their land.
- 33 percent of whole households own less than one hectare land, 37 percent own one hectare or over one hectare and less than two hectare, 30 percent own over two hectare. The average is 1.6 ha.
- 73 percent of whole land is used for annual crops or fallow, 24 percent is used for plantation. Each area of tree crop land, forest and house/building occupies one percent.
- 85 percent of whole arable land is planting the crop with cropping intensity more than 75 percent.
- The reason of 46 percent of not planted land is lack of manpower, 28 percent is crop rotation and seven percent is no water source, and 19 percent are others.
- Personal owners own 93 percent of whole land and four percent is public land. Each "part owners", "rented from someone", and "others" own one percent each.
- 80 percent of whole land is inherited, and seven percent is opened. Each "use right given by a local leader" and "occupied" is five percent, and purchase is three percent.
- 84 percent of whole land has customary right as an ownership right, five percent has its deed and one percent has its sales receipt as a legal title. Another one percent has no ownership right or legal title. Others are nine percent.
- 43 percent of whole land was acquired 10 or less than 10 years ago, 38 percent was acquired between 11 and 20 years ago, and 19 percent was 21 or over 21 years ago.
- Five percent of land owned by household has dispute of the ownership.
- 38 percent of whole land is priced less than 10 million Rp/ha, 58 percent is priced 10 million or over 10 million Rp/ha and less than 100 million Rp/ha and four percent is 100 million or over 100 million Rp/ha.
- 38 percent of whole land is flat, 38 percent is slight slope, 17 percent is moderate slope and seven percent is steep slope.
- Out of the irrigation area, semi-technical system covers 16 percent of land, technical of six percent, and 78 percent of non-irrigation.
- 27 percent of irrigated area is year-round and the remaining 73 percent is seasonal.
- Irrigation mode of 66 percent of irrigated area is river, 13 percent is spring, 12 percent is swamp and creak, and nine percent are others.
- Management system of 55 percent of irrigated area is self-managed, 25 percent is farmer community, 18 percent is community managed and two percent is agency managed.
- 98 percent of whole land is less than 500 m away from the nearby road, one percent is 500 or over 500 m and less than one kilometer away, and another one percent is one or over one kilometer and less than five kilometer.
- Order and the land proportion of main crops grown during the last year, during both dry and wet seasons, are as follows. 1st: maize (22%), 2nd: coffee (19%), 3rd: cassava (16%), 4th: sweet potato (11%), 5th: bananas (8%), and 6th rice (8%).

- 90 percent of arable land is cultivated by hands, six percent is cultivated by animals and four percent is by tractors.
- 19 percent of whole households harvested coffee in the past 12 months.
- The survey results of cropping areas, production and crop yield of staple crops are the
 - Annual yield of wetland paddy is 508 ton, growing area is 346 ha and unit yield is 1.5 ton/ha.
 - Annual yield of maize is 624 ton, growing area is 1,137 ha and unit yield is 0.6 ton/ha.
 - Annual yield of cassava is 492 ton, growing area is 857 ha and unit yield is 0.6 ton/ha.

Regarding the cropping areas and production for staple foods, furthermore detail survey by means of sampling survey, hearing, crop estimate by unit acreage sampling, etc. will be needed.

3.3 Administrative Conditions

3.3.1 Administrative Divisions

For administrative purposes, the whole country is divided into thirteen districts². Each of which is further sub-divided into sub-districts and each into villages. The smallest sub-division is *Aldeia*.

The organization structure for the administration and supervision of government affairs from the central transitional government (UNTAET-United Nations Transitional Administration for East Timor) down to the village level. Parallel to the transitional organization entity put up by the United Nations (UN), there also existed at all levels, from the national to the village levels, a parallel political organization consisting of people from the *Concelho Nacional Resistencia de Timorese (CNRT)*, the umbrella organization of all political parties of East Timor. Presently CNRT is dissolved.

Administrative structure during the Indonesia time are as follows; *Provinsi* (governed by *Gubernur*)—*Kabupaten* (*Bupati*)—*Kecamatan* (*Chamat*)—*Kelurahan* (*Lurah*). Current East Timor is one of the *Provinsi* of 27 *Provinsi* and called as *Provinsi Timor Timur*.

3.3.2 Distribution of Villages

Latest Village Survey (*Suco Survey*) and GIS data indicates that there are 498 *Sucos* and about 2,100 *Aldeias* in East Timor. The Western Region comprised *Covalima*, *Bobonaro* and *Oecussi* contains three districts, 18 sub-districts and 120 *sucos*. The Central Region comprised *Liquica*, *Dili*, *Ermera*, *Aileu*, *Ainaro* and *Manufahi* contains six districts, 26 sub-districts and 217 *sucos*. The Eastern Region comprised of *Lautem*, *Baucau*, *Viqueque*, and *Manatuto* contains four districts, 23 sub-districts and 161 *sucos*.

² District is *Kabupaten* in Bahasa Indonesia and *Concelho* or *Distritu* in Tetum. Sub-District is *Kechematan* and *Posto*; village is *desa* and *suco*; and hamlet is *kampung* and *aldeia*, in Bahasa Indonesia and Tetum, respectively

3.3.3 Historical Background of the Administration System

Prior to arrival of the European colonizing powers, social structure in East Timor is similar to most of the communities in Eastern Indonesia where majority of the people are organized into small or mini-kingdoms headed by powerful leaders which are referred to as *Sultans* towards the west of the archipelago (current West Timor) and as *Liurai* in East Timor³. These leaders are continuous jostling for power and territory with the population bearing the cost of these wars. Its political structure was hierarchical and feudal in nature. On top of the hierarchy are the *Liurai* with nobles assisting in ruling the smaller groups. Below these levels are several classes of population with the lowest ranked at the base of the pyramid.

During their period, the Portuguese followed the normal colonial strategy of utilizing the existing leadership to enforce the rule of law. Thus, the *Liurai* became the agent of the Portuguese government. The Portuguese also selected few *Liurai*, known as Dons, and put them in-charge of other *Liurai*. This was the only change made in the traditional political structure.

The Indonesians introduced elections - a new political system that placed into sideline the traditional *Liurai* leadership system. However, there were *Liurai* elected to the village political positions in those times and the people were able to maintain the traditional system through time. Up to the present, this is still the basis of the traditional self-reliance system that still exists in most of rural areas in East Timor.

3.4 Meteorology and Hydrology

3.4.1 Meteorology

The climate in East Timor is belonged to the tropical monsoon zone. Thus, the climate is divided into the wet and dry seasons and is generally hot and humid weather. Once every three to four years the islands is likely to suffer a significant EL-Niño drought.

1) Meteorological Stations

In the past, there were 60 meteorological stations consisted of 32 climatological stations and 28 rainfall gauge stations. All stations were equipped and operated during the Portuguese colonial period. However, most of stations are not functional at present and the available data are only those collected during the Portuguese colonial period from 1952 to 1974 due to the violence in September 1999. The location and geological information of each climatological stations and rainfall gauge stations are shown in TableD-1 and FigureD-1, and also an average monthly rainfall records for each meteorological stations are shown in Table D-2.

³ World Bank Social Assessment Report, April 2001

2) Rainfall

According to an available rainfall data, an average annual rainfall is estimated at the range of 1,200 to 1,500 mm. However, the climatic conditions differ substantially from mountainous area to lower altitude area due to the geographic position and topography and even regions of the same altitude have very different climates when separated by high mountains, which traverse from west to east of the central part of main island.

Therefore, the general climatic conditions will be classified into three zones; northern coastal area, mountain area and southern coastal area. An average annual rainfall are 500 to 1,500 mm in the northern coastal area, even at the same altitude and characterize that one rainfall peak appears within four to six months in the wet season, usually occurring in the December to February, while that are 1,500 to 2,000mm in the southern coastal area and characterize that two rainfall peak appears within seven to nine months in the wet season; the first peak appears between December and February and the second peak appears between May and June. In the mountain area around Ainaro, Same, Lolotoe and Soibada receives 2,500 to 3,000 mm of rainfall. The typical average monthly and annual rainfall patterns of three zones are shown in Figure D-2

3) Temperature

Based upon the available data, an average annual temperature in East Timor ranges between 21 and 27 °C. An average monthly temperature of three zones is shown in Figure D-3.

4) Relative Humidity

According to an available data, an average annual relative humidity in East Timor ranges between 70 to 80 percent. An average monthly humidity of three zones is shown in Figure D-3. The climate character of East Timor are shown below;

Climate Character of East Timor

Item	Northern Coastal Area		Mountain Area		Southern Coastal Area	
	Manatuto	Baucau	Ermera	Ainaro	Viqueque	Suai
Annual Rainfall (mm)	667	1,318	N.A	2,653	1,642	N.A
Average Temperature (°C)	26.3	23.5	20.5	21.0	27.0	27.0
Relative Humidity (%)	69	78	78	75	80	73
Annual Evaporation (mm)	1,812	N.A.	N.A.	N.A.	N.A.	N.A.

Source: Volume 2, Annex 1-5, Regional Physical Planning Programme for Transmigration (RePPProT) by Land resources Department ODNRI, Overseas Development Administration, Foreign and Commonwealth Office, March 1989

3.4.2 Hydrology

1) Watershed

There are 27 main watersheds (see Figure D-4); 11 in the north and 16 in the south, and they are spread over the country. Based upon the topographical maps in the scale of 1 to 50,000, they have nine perennial rivers and two intermittent rivers in the northern coastal area, while they have 15 perennial rivers and one intermittent river in the southern coastal area. It is noted that the existing irrigation scheme, which off-take the water from the rivers along the country border lines, have to be handled very carefully like in the district like Bobonaro and Oecussi. Some information for each watersheds are shown below;

Main Watershed in the Country

	Watershed	Catchment Area (sq.km)	River Length (km)	Annual Run-off (10 ⁶ cu.m)	Flowing Direction
1	Loes	2,028	116	1,884	North
2	Comoro	207	33	119	North
3	Laclo	1,366	98	269	North
4	Laleia	586	55	143	North
5	Vemasse	201	48	70	North
6	Seiçal	489	45	308	North
7	Nemui*	119	31	41	North
8	Laivai*	381	31	150	North
9	Radomoko	143	30	75	North
10	Malaclada	223	36	82	North
11	Tono	412	45	149	North
12	Namaluto*	178	24	121	South
13	Irebere	378	29	370	South
14	Bebui	224	23	66	South
15	Cuha	324	37	159	South
16	Wetuai	247	36	171	South
17	Luca	239	40	272	South
18	Dilor	279	43	292	South
19	Sahem	475	54	221	South
20	Clere	395	51	100	South
21	Laclo do Sul	328	49	159	South
22	Caraulun	667	52	739	South
23	Be-lulic	585	35	357	South
24	Mola	261	39	79	South
25	Loumea	353	36	520	South
26	Raiquita	125	27	54	South
27	Tafara	414	45	181	South

* shows the intermittent river.