

POLICY AND STRATEGY FORESTRY AND WATERSHED SUBSECTOR

**National Directorate of Forestry and
Water Resources (NDFWR)
Ministry of Agriculture, Forestry and
Fisheries (MAFF)**

November 30, 2004

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PREFACE

The agriculture-forestry-fisheries sector is a dominant stakeholder in ensuring food security and providing economic livelihood in Timor Leste's rural communities. Given that Timor Leste is basically a resource-based economy, and its transformation into a technology or knowledge-based state takes time, efficient and sustainable management of the country's natural resource endowments takes center stage. The National Directorate of Forestry and Water Resources (NDFWR) of the MAFF, recognizes the crucial importance of policy interventions in efficiently managing the natural resource endowments of Timor Leste.

NDFWR-MAFF has finalized the **Policy and Strategy : The Forestry and Watershed Sub-Sector**, to provide a clearer policy perspective and strategy on how the sub-sector can assist in the attainment of MAFF's goals of enhancing food security and generating rural employment. This final document is partly influenced by the following reports:

1. Mota, Fernando. 2002. East Timor: The New Forest of the New Century
2. Planning Commission. 2002. The National Development Plan
3. MAFF. 2003. Food Security Policy: Timor Leste
4. MAFF. 2003. National Prioritization and Sequencing (Final Report Submitted by the Planning Commission)
5. MAFF. 2003. Strategic Development Interventions in the Forestry and Watershed Sub-Sector of Timor Leste: A Policy Note (Draft Report)
6. Joint Donors Agricultural Mission to Timor Leste 2003. Draft Mission Report
7. MAFF. 2004. Agriculture, Forestry and Fisheries. Priorities and Sub-Sector Investment Program (Final Report)
8. MAFF. 2004. Policy and Strategic Framework

To the extent possible, this Report has also incorporated most of the comments and suggestions made during the past consultations.

ABBREVIATIONS

ADB	Asian Development Bank
ARP	Agriculture Rehabilitation Project
BDC	Business Development Center
CBD	Convention on Biodiversity
CBNRM	Community-Based Natural Resource Management
CFET	Consolidated Fund for East Timor
DPPPS	Directorate of Policy, Planning and Program Services
EC	European Commission
ESD	Ecologically Sustainable Development
FAO	Food and Agriculture Organization
GEF	Global Environment Facility
GoTL	Government of Timor Leste
GMO	Genetically-Modified Organism
GTZ	Gesellschaft fuer Technische Zusammenarbeit (German Agency for Technical Cooperation)
IUCN	International Union for the Conservation of Nature
JICA	Japan International Cooperation Agency
MAFF	Ministry of Agriculture, Forestry and Fisheries
MDE	Ministry of Development and Environment
MDG	Millennium Development Goals
ME	Ministry of Education
MH	Ministry of Health
MTCPW	Ministry of Transportation, Communication and Public Works
NDFA	National Directorate of Fisheries and Aquaculture
NDFWR	National Directorate of Forestry and Water Resources
NDP	National Development Plan
NGOs	Non-Government Organizations
NTFP	Non-Timber Forest Products
NWUP	National Water Use Policy
PAN	Protected Area Network
PNAs	Protected Natural Areas
SIP	Sector Investment Program
SST	State Secretary of Trade
TFP	Timber Forest Product
TL	Timor Leste
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNTAET	United Nations Transitional Authority in East Timor
WWF	World Wildlife Fund

1.0 BACKGROUND

The **agriculture-forestry-fisheries sector** is a very important component of the Timor Leste's economy. The sector contributes 26 percent of non-oil gross domestic product (GNP) in 2002. It is also a major source of income in 94 per cent of the villages and a provider of 80 per cent of the food and subsistence requirements of rural households, who comprise 40 per cent of population with incomes below the national poverty threshold.

In this regard, the sector is a prime stakeholder in the pursuit of attaining national development policy goals defined by the National Development Plan (NDP) – poverty reduction, and promotion of sustainable and equitable economic growth.

The sector however, is beset with several constraints and challenges that limit its proactive role in the development process. These constraints include, among others: limited institutional and human resource capability to undertake a wide range of tasks including effective planning, technical service delivery and coordination of its development intervention activities at the local level; inadequate transport, communication, processing and marketing infrastructures that are crucial in the transformation of Timor Leste's subsistence agriculture into commercial state; continuous deterioration of its natural resource endowments especially in the uplands; and declining financial capacity to meet recurrent cost commitments with donors and development partners.

The National Development Plan (NDP) has laid down two broad national development goals of: reducing poverty in all sectors of the nation; and promoting economic growth that is equitable and sustainable, improving health, education and well-being of everyone in Timor Leste (Planning Commission, 2002).

Likewise, the NDP had defined the sectoral vision, mission and goals of the agriculture-forestry-fisheries sector as follows:

Vision

“By 2020, Timor Leste will have sustainable, competitive and prosperous agricultural, forestry and fisheries industries that support improved living standards of the nations' people.”

Mission

“MAFF’s Mission is to efficiently deliver to agricultural, fishing and forestry communities in Timor Leste, services that support improved productivity, income earning potential and export and that, therefore, support improved social welfare in the rural areas of the nation, taking account of MAFF’s human, capital and financial resources.”

Goals

The major goals of the Ministry of Agriculture, Forestry and Fisheries (MAFF) are:

- **Food Security.** To attain food security and improve self-sufficiency; and
- **Rural Employment.** To generate rural employment to increase income, through farming systems diversification and agro-industrial development.

MAFF’s food security goal is centered on the availability and affordability of adequate food at all times, across all regions and groups. This goal can be achieved either by increasing the supply of adequate food, or by increasing the capability to pay for food available in the marketplace – which is in turn is closely linked with the generation of rural employment and incomes, MAFF’s second goal. The agribusiness activities of non-food crops, forestry, fisheries, and agro-processing have a high labor component and thus – when induced by enabling mechanisms and policies – will be central to employment creation in the rural areas.

MAFF’s goals are intrinsically linked with NDP priorities. Poverty reduction starts with food security, and MAFF seeks to provide the initial subsistence level carrying capacity to cover poverty thresholds. The promotion of rural employment through integrated farming systems, diversification and agribusiness, and agro-industrial development also fits closely with the NDP goal of promoting economic growth.

Since the approval of the NDP in 2002, several planning activities have been undertaken at both the economy and sectoral levels. These include the following:

- Development of sectoral road maps;
- Adoption of the UN Millennium Development Goals to complement the NDP and Road Maps
- Food Security Policy as Flagship Program of the National Development Strategy which was approved by the Council of Ministers in mid-2003;

- Sector Investment Programs identifying financial flows and gaps in funding with respect to high priority programs of the different ministries which started in late 2003 and finalized in mid-2004;
- Sub-sectoral policy draft documents of Fisheries Directorate which was initiated in 2001, and Forestry-Watershed policy initiated in 2003; and
- Policy and Strategic Framework which was approved by the Council of Ministers in September 2004¹.

The present document incorporates all the comments made during the past national public consultations on the earlier draft Forestry-Watershed Policy Note and the draft Forestry Management Policies and Strategies of Timor Leste. It is also developed within the context of the Policy and Strategic Framework of MAFF.

¹Please refer to Appendix 2, for the condensed version of this report.

2.0 THE SETTING: SUB-SECTOR TRENDS, PROBLEMS AND POLICY ISSUES

2.1 Current Status

There is a global significance of Timor Leste's biodiversity. Timor Leste is internationally recognized as a high priority for biodiversity conservation. It falls within the Wallace Zone of overlap between the Indo-Malaya and Australian biota which provides for high biological diversity, is recognized to have globally-significant biota, forms a central part of one of the earth's most valuable Ecoregions, as identified by the World Wildlife Fund and is within a Biodiversity Hotspot area as recognized by Conservation International.

The development of the forestry and watershed sub-sector is crucial to the maintenance of biodiversity, natural resource conservation and environmental sustainability. A completed Norwegian/UNDP Study (Sandlund, Brycesor, de Carvalho, et al. 2001) which covered six(6) ecological zones (marine and coastal zone, arid lowland areas, moist lowland areas, mountainous areas, highland plains and urban areas) of Timor Leste, indicated among others, that the integrated "watershed approach" is the most appropriate way to improve natural resource management in Timor Leste, and that "community-based" management of resources is best-means to achieve sustainable natural resource management (Canora, Inc., 2002).

A look at the state of development of the forest-watershed sub-sector of Timor Leste indicates that the sub-sector is very fragile and approaching its point of irreversibility. A JICA study (2002) indicated that forty three percent (43%) of the estimated cover of Timor Leste are critical forest areas.

On the other hand, there are around 100 rivers and brooks and 27 watersheds in Timor Leste with Loes comprising the largest watershed areas, but very few have permanent courses of water (JICA 2002). The proportion of the area that can be defined as forest-watershed area is high because around 600,000 hectares of Timor Leste have slopes greater than 40°. However, only around 110,630 hectares are considered as watershed areas.

A preliminary assessment of the Norwegian/UNDP Study on loss of forest cover from 1972 to 1999 using land sat imagery, indicated that some 114,000 hectares of the dense forest have been lost, a decline of 35% during the period and that sparse forest declined by some 24%, or around 78,000 hectares.

Several regulations were passed during the UNTAET regime to avert environmental degradation in the watershed sub-sector but had difficulty in being enforced because such regulations have not been clarified by way of a Directive. MAFF is currently in the process of evolving forest regulations and a forestry-watershed law.

To date, there are no activities in the forest-watershed sub-sector of Timor Leste that replicate long term sustainability. The sandalwood resources are almost exhausted, and now the trial breeding of their seedlings and planting activity are practiced in several rural communities. The big teak trees planted during the Portuguese regime are now reduced and only a small second growth forests are seen in several areas of Timor Leste.

In the central region of Manatuto, Ainaro and Manufahi districts, Eucalyptus urophylla trees still stand but already old and are attacked by parasites. In the areas of Covalima, Bobonaro, Baucau and Viqueque districts, limited candlenuts still exist. Likewise, in the sparsely populated Lautem district, sandalwood and narra trees still exist. (JICA, 2002).

Given the very limited information on forest and watershed areas of Timor Leste, the potentials of these areas are still unknown. A forest inventory study is being undertaken by MAFF but limited resources have slowed down the process.

A sustainable forestry-watershed sub-sector for Timor Leste implies a need for proactive policy and strategic development interventions to reverse the process of deforestation, watershed deterioration and eventually land and marine degradation.

2.2 Forest Resources of Timor Leste

Of the estimated 1.5 million hectares of land in Timor Leste, approximately, 57% or 854 thousand hectares are classified as forest (Table 1). Forests in Timor Leste are dominated by trees and grasses located in flat lands or in areas of

greater than 45° slope. Significant natural forests however can still be located in the districts of Manatuto, Viqueque, Lautem, Manufahi, Bobonaro and Covalima.

Due to several decades of misuse, the productivity of forest in Timor Leste is now declining. Marketable size of important tree species like Ai Kameli (*Santalum album*) and Ai Teka (*Tectona grandis*) are now gone. But the situation is reversible provided that there are appropriate management policies and strategies and supporting laws and regulations. The rehabilitation process may take time and requires involvement and strong commitment of various stakeholders.

2.2.1 Dominant Forest Cover

The dominant forest cover of Timor – Leste is significantly affected by the availability of rainfall. The northern part of the country which receives an annual rainfall of 500 – 1,000 mm/year is dominated by Ai Bubor (*Eucalyptus alba*) and Sukaer (*Tamarindus indicus*). In contrast, the eastern and southern parts of the country which receive an annual rainfall of 1,500 – 2,000 mm/year is dominated by Ai Kiar (*Canarium reidentalia*), Ai Na (*Pterocarpus indicus*), and Ai Saria (*To'ona sureni*). On the other hand, the mountainous areas that receive the highest amount of rainfall of 2,500 – 3,000 mm/year are dominated by Ai Ru (*Eucalyptus urophylla*) and several species of ferns.

In addition to inland forest cover, the country has also significant mangrove areas located within the small bay, estuarine and brackish water lakes. Significant areas of mangroves can be found in the Districts of Covalima, Manufahi, Baucau, Lautem, Dili/Hera and Liquica. Most of the tree species that grow within the mangrove areas belong to *Rhizophora* species.

Table 1: Land Use Classification, Timor Leste

Land Use Category	Area (Hectares)	Distribution (Percent)
Forest		
Lowland	761,486	51.0
Highland	92,768	6.0
Agricultural land		
Estate crops	74,578	5.0
Food and other	336,400	22.5
Non-productive land	203,152	13.6
Cities, towns, villages	19,934	1.3
Lakes	5,080	0.3
Total	1,493,398	100.0

Source: MAFF, ALGIS Unit, 2001

2.2.2 National Parks and Protected Natural Areas (PNAs)

Around 19 percent of total forest lands are set aside by the Government of Timor Leste (GoTL) as national parks and/or protected natural areas (PNAs) distributed in around 15 sites nationwide. The largest of these areas are found in Tutuala, Lautem district.

In addition to the lack of resources, a major problem in managing these PNAs is the proliferation of slash and burn farming, cutting of timber and hunting of wildlife, by the communities living inside the PNAs. Unless a long term partnership is forged between the communities and the government, and planning of alternative livelihood is envisioned, the problem of encroachment will continue in the near future.

Under a holistic land management scheme, the conservation of biodiversity, enhancement of livelihoods and active participation of communities are key goals in the National Development Plan, National Prioritizing and Sequencing Framework, MAFF Policy and Strategy and is reflected in the current NDFWR-MAFF Sub-Sector Strategy. Development of a national community-based Protected Area Network (PAN) is integral to the protection, enhancement and management of watersheds and natural resources whilst ensuring the conservation of natural and cultural assets. Since 2002, the Government has been committed to the development of a PAN, formalizing and expanding on the existing 15 Protected Natural Areas (PNAs) declared under UNTAET regulation 2000/19.

Timor Leste is largely a rural-based society, is heavily dependent on the use of natural resources for survival. Sustainable management of biodiversity and natural resources provides opportunities for local and regional development and long term poverty alleviation. The development of a community-based Protected Areas Network (PAN) will provide environmental, socio-cultural and economic benefits by:

- Conservation and sustainable management of nationally and globally significant biodiversity;
- Protection and enhancement of natural resources;
- Supporting environmentally sustainable development via integrated watershed management, land and soil conservation;
- Provision of opportunities for local and regional development;
- Providing alternative livelihoods; and
- Providing alternative livelihood methodologies to destructive practices such as shifting cultivation.

2.2.3 Watershed Areas

Around 27 watershed areas are identified in the country, covering a total area of 110,620 hectares. Significant watershed areas are located in Loes (19,190 hectares) and Laclo (13,660 hectares). The major river channels found in watershed areas have a total length of about 1,159 kilometers. Half of these river channels flow to the north direction while another half flows to the south direction. In addition to rivers, the country has also freshwater lakes. The largest of these lakes can be found in Ira Lalaro in Lautem District with the area of approximately 2,200 hectares and the rest are small lakes, which can be found in the northern and southern coasts.

The condition of most watershed areas is critical. Due to availability of water in these areas, they are normally subjected to shifting cultivation. This practice has led to other problems such as forest fire and soil erosion. Only 8 of the river channels (Laclo, Loes, Irabere, Vero, Sahe, Seical, Caraulon and Bebui) have permanent courses of water throughout the year. Some have available water below the riverbed. The rest dry up during dry season. The river channels are heavily silted resulting to flashfloods, which occasionally destroy irrigated riceland. The Irrigation and Water Management Division of MAFF estimated that about 279 hectares of irrigated riceland in 7 Districts are destroyed annually by river intrusions resulting to an approximate annual loss of paddy production of US\$ 80,561.00.²

2.2.4 Forest Tree Plantations

The available forest plantations in Timor Leste were established both during the Portuguese and Indonesian time. During the Portuguese time, a total of more than 3,384 hectares of Ai Teka (*Tectona grandis*) have been established. These plantations are estimated to be more than 40 years old and are located in Manufahi, Viqueque, Ermera, Lautem, Covalima, Ainaro and Oecusse Districts. The ownership of these plantations remains unclear. The Liu Rai (Village King), community groups and Government claim ownership of the area. Likewise, during Indonesian times, a total of 4,660 hectares have been established under the Industrial Tree Plantation/Community Forestry Program ("Hutan Tanaman Industri/Hutan Kemasyarakatan - HTI/HKM) of the Indonesian Forestry Department. The area is planted with tree species such as Ai Teka (*Tectona grandis*), Ai Teka Mutin (*Gmelina arbore*), Ai Kami'i (*Aleurites mullocana*), Kaisoti (*Cassia siamea*), Samtuku (*Paraserianthes falcataria*), and Mahoni (*Sweitenia macrophylla*). The diameter of trees in these plantations now ranges from 20 – 30 cm.

²Based on the average yield in irrigated areas of 1.75 mt/ha., cropping intensity of 150 per cent per year and price of paddy of US\$110/mt.

The tree plantations can be a potential source of government income in the future. At this stage however, there is a need to invest on the maintenance of the plantation to enhance its productivity. In addition, there is a need to clarify the status of ownership between the community and the Government.

2.2.5 Important Tree Species

There are 3 important timber species in natural forest that have been identified based on their economic importance. These species include Ai Na (*Pterocarpus indicus*), Ai Teka (*Tectona grandis*), and Ai Kamile (*Santalum album*). Ai Na has been observed to be abundant in 3 Districts such as Covalima, Manufahi and Lautem Districts while Ai Teka is abundant in only the districts of Manufahi, Covalima and Viqueque. Ai Kamile appears to be abundant in Covalima, Lautem, Liquica, Bobonaro and Oecusse. Due to the absence of data on the density of these trees in the wild, it is difficult to calculate the volume of these tree species. In the case of Ai Kamile, however, the recent results of the survey conducted by DFWR-MAFF in Covalima District revealed that majority of the available trees have diameters of less than 5 cm and available marketable trees (diameter >30cm) are less than 1% of the total tree population surveyed.

Important tree species like Ai Kamile has a great potential of becoming a major source of income for the country. Ai Kamile is a good example of renewable natural resource. Unlike mineral oil, Ai Kamile could continuously provide income to the community and government if managed properly. The price of Ai Kamile is higher than oil in the international market. Investing in the plantation of Ai Kamile has been proven feasible but it requires longer time to recover the investment due to the slow growing nature of the species. Anticipating the future decline of Timor Leste's income from oil, it is beneficial for the Government to start investing in the replanting of Ai Kamile. India for instance had invested in Ai Kamile replanting and the country is now selling Ai Kamile at the price of \$18,000 per ton. A well-managed plantation in favorable site can yield at least 180 tons in 30 years giving an approximate income of at least \$50,000 per hectare.

2.2.6 Non-Timber Forest Products

The major Non-Timber Forest Products (NTFP) in Timor Leste consist of bamboo, rattan, palm, tamarind and honey. Bamboo normally grows in Districts where rainfall is abundant. Eight (8) species of bamboos including Au Metan (black bamboo) have been observed to thrive in the country. Rattan has been observed to grow in 5 Districts such as Lautem, Viqueque, Manufahi, Covalima and Manatuto. Four(4) species of rattan, including the locally known "Rota Bo'ot" (big rattan) belonging to the genus *Calamus merrilli* are also abundant. Two important species of palms grow mostly in lowland dry areas in the country along

the coast; these are *Acadiro* (*Phalmeira sp.*) and *Tua na'a* (*Nipah fruticans*) and *Tale* (*Borrassus sp.*). On the other hand, honey is observed in coffee areas, rocky areas and in catchment areas with abundant trees like *Ai Netas* (*Esterculia foetida*), *Sarya* (*To'on sureni*), *Ai lele fuik* (*Gosan pinus*), and *Beringen* (*Ficus benyamina*). The widely utilized NTFPs include palm and honey only. Palms are commonly used as materials for house construction, and farm fences, production of local wine and handicraft. Honey is commonly used as food supplement and medicine for cough. Bamboo is minimally used as furniture, fish traps, house walling and material in traditional ceremonies while rattan is primarily used in furniture making. All major NTFPs provide income to the rural communities.

2.2.7 Important Wildlife Species

Timor Leste has significant biodiversity of wildlife species. The island is located in the area where the Indo – Malaysian and Australasian flora and fauna overlaps. It is believed that the wildlife species of Timor Leste are diverse but on a declining trend. For fauna, 9 reptiles, 4 mammals and 51 bird species have been identified (BirdLife International.2003). The existence of wild animals is highly threatened by hunting. Although complete inventory of these species is not yet available, it is generally believed that some of these species are now endangered.

Like with NTFPs, hunting of wild animals also provides cash income to rural communities and supplement to their food requirements. Based on the information collected by MAFF – DFWR, at least 17 species of wild animals are commonly hunted by people. Most of these species are birds, including the migratory birds from Alor and Wetar, Indonesia locally known as “Pombo” Kakatua and Loriko. The mammal hunted species include Rusa/Deer (*Rusa timorensis*), fahi fuik/wild pig (*Pork sp*), karau fuik/wild buffalo (*Bos Savanicus*) Cuscus (*Phalenger orientalis*) known as Meda, and Laco. Hunting is practiced throughout the year but the peak happens during the dry season just after harvesting time in swidden farms. Hunting methods are mostly traditional such as using spear, dog, bow and arrow and trap.

2.2.8 Potential Upland Farming Practices

Some of the observed traditional site-specific upland practices to arrest shifting cultivation include:

- a. Baucau District: Controlled burning and burying of crop residues in furrows across the slope during land preparation
- b. Bobonaro District: Terraced farming and improve fallow using *Sesbania grandiflora*.

- c. Aileu District: Mixed planting of fruit trees and agriculture crops and coffee intercropped with agriculture crops
- d. Dili District (introduced): alley cropping and planting of pineapple across the contour
- e. Liquica District: Planting of *Leuceana leucocephala* in the area before the planting of coffee.

In the promotion of agroforestry as alternative farming system to shifting cultivation, these practices have very high probability of adoption once introduced in specific location.

2.3 Problems and Policy Issues Facing the Sub-Sector

2.3.1 Factors Affecting Forestry-Watershed Degradation

Timor Leste is a country with fragile ecosystems. There are a multiplicity of factors that contribute to the degradation of the forestry and watershed sub-sector. Among others, these include lack of awareness and education in the community, climate and persistent needs, and lack of understanding and engagement in traditional and community management. These are disaggregated as: demographic pressure, deforestation, illegal cutting of important tree species, forest fires and shifting cultivation.

2.3.1.1 Demographic Pressure

The demographic pressure of Timor Leste expressed in annual population growth rate of 5.8 % (Census, Timor Leste, 2004) exerts influence on forestry watershed degradations in many forms. Poverty, one of the pervasive effects of unbridled population growth compels the low income and vulnerable groups to seek alternative sources of income to meet poverty threshold. It was estimated that a household can earn an annual income of US\$900 from the sale of fuel wood and other products from the forests. Given that the annual per capita income is approximately to US\$500 in East Timor, it would be difficult to stop forest depletion particularly fuel wood gathering as a major source of income among the poor.

The consumption of firewood as a source of energy is another form of demographic pressure. Forest supplies 93% of energy consumed in Timor Leste. Fuelwood for cooking is supplied directly by the forest and

vendors. Due to demographic pressure, the demand for timber and fuel wood far exceeds what the forest-watershed sub sector can supply. Thus, this is currently the major threat in the viability of forests. Using basic parameters gathered by the JICA study, there is a deficit of 28,975 m³ of timber and 977,776 m³ of fuelwood respectively beyond the allowable supply of what the forest-watershed can offer.

Cognizant of the problem, the NDFWR-MAFF initiated a system of issuance of permit to transport and sell fuelwood. From June to November 2004, the Directorate had issued permits to private individuals, equivalent to 1,338.5 m³. There is no evidence to date, whether permit issuances have controlled the gathering of fuel wood.

Shifting cultivation for the subsistence of poor families also contributed to the degradation of forest-watershed of Timor Leste. The fire is used as an effective tool to clean the vegetation. This awkward environmental practice of degrading the soil will also destroy the few organic matters in the land and accelerates the spiral loss of biological productivity, destabilizes soil leading to erosion, landslides, siltation and loss of infrastructures.

2.3.1.2 Deforestation

Based on available data on changes in forest cover from 1972 to 1999 (FAO,1999), it is estimated that the rate of deforestation in Timor Leste is equivalent to 1.1% per year, four times higher than the global average of 0.30 per cent. Within this period, it was estimated that about 114,000 hectares (35%) of dense forest was lost and 78,000 hectares (24%) of sparse forest were destroyed. Most alarming was an increase of more than 200,000 hectares of open areas. There are four (4) prime causes of deforestation that have been identified: forest fire, fuel wood gathering, shifting cultivation and indiscriminate cutting of trees.

As a result of deforestation, soil erosion has been accelerated, biodiversity and productivity of the forest are lost and changes in climatic pattern in some part of the country have occurred. The absence of enough vegetation coupled with the mountainous topography of the country with slope of more than 40° and high volume of rainfall in mountainous areas have promoted sever soil erosion. As a result, river channels are silted resulting to flashfloods in some areas during the peak rainy season. This in turn destroys properties including riceland areas. In some parts of the country, variations on the occurrence of rainy season are now taking place.

Deforestation initiates the chain of environmental degradation – loss of vegetation and soil leads to a loss of catchment protection and a decrease in the amount and quality of water due to siltation of watercourses. With this comes a decline in agricultural capability and capacity, shelter for crops and livestock, micro and macro climatic change, loss of biodiversity, and damage to marine habitats via increase in siltation runoff. The loss of forests also leads to an increase in flooding, which has major environmental, infrastructural and life-threatening consequences.

Habitat destruction due to forest destruction is globally recognized as greatest threat to the biodiversity (hence to watersheds) worldwide. East Timor is not an exception to this phenomenon.

The loss of biological diversity of flora and fauna due to deforestation, and the genetic erosion that follows it represents a strong limitation to these patrimonies in a small insular territory like Timor Leste.

2.3.1.3 Illegal Cutting of Important Tree Species

Illegal cutting of important tree species appears to be a highly complicated problem affecting the forest resources in Timor Leste. There are issues underlying this problem that calls for interventions at the highest level of leadership in the Government. As a result of this activity, it is believed that the stocks of important tree species in the natural forest are now very low.

The highly affected tree species by illegal cutting is Ai Kameli. From March 2002 to November 2003, the Police Authority has confiscated a total of around 800 tons of Ai Kameli mostly of low quality.

These data support the allegation that the stock of Ai Kameli in natural forest is now close to depletion. Based on the information received by MAFF, those illegally cut Ai Kameli that are unnoticed by the Police Authority are smuggled to the neighboring West Timor, Indonesia.

There are several factors that contribute to the increase of illegal cutting of Ai Kameli. These include the inadequacy of forestry regulations, the poor economic condition of the rural people, the lack of cooperation among the different sectors of the government, the high market value of Ai Kamile and the autonomous policy of West Timor, Indonesia. Although at present, Regulation 2000/17 is in place, this regulation is incapable of curbing illegal forestry activities. The regulation is too general and it lacks implementing mechanisms.

2.3.1.4 Forest Fire

Forest fire occurs mainly due to swidden farming, livestock grazing, fuel wood gathering and hunting. Forest fire normally happens in areas dominated by grasses, Ai Bubor (*Eucalyptus alba*), bamboo, Kakeo (*Casuarina equisetifolia*), and Ai Teka (*Tectona grandis*). Information on areas damaged by fire are incomplete but based on 1994 data, a total of 60,301 hectares have been damaged by fire within that year alone.

From the ecological point of view, it is true that fire is essential for the regeneration of species like eucalyptus. However, given Timor Leste's condition, this benefit is surpassed by disadvantage of soil erosion once the ground vegetation is consumed by fire. Forest fire occurs in the dry season thereby leaving the ground open during the rainy season. Soil erosion precedes the massive regeneration of eucalyptus.

Burning off and forest fires are important issues to the environment of Timor Leste. Effects include air pollution which in turn leads to health problems in the population; loss of habitat; loss of vegetation/forests and subsequent soil erosion leading to the sedimentation of rivers; loss of organic matter leading to reduction in soil fertility; disruption of soil microclimatic conditions and processes leading to a reduction of soil fertility and stability; and loss of income from forest-dependent economic activities.

2.3.1.5 Shifting Cultivation

Majority of Timor Leste's population are engaged in upland farming in the form of shifting cultivation. This practice contributes a lot to the degradation of the forest resources. Based on the survey conducted by MAFF – DFWR, each family occupies 1 – 2 hectares depending on the available labor in the family. Each family has 2 –3 farm areas. Most of the farm areas are located in the fertile soil along the river or creek within the watershed areas. Crops that are commonly planted include corn, cassava, beans and some vegetables. Cultivation period only lasts for 3 years. Dut Siam (*Chromolaena odorata*) or Dut Manolain (*Imperata cylindrical*) often dominate the area upon abandonment.

Non-restoration of these deforested areas would result to watershed degradation, loss of habitat of important flora and fauna and hence biodiversity loss. The irreversible loss of biomass and protective organic matter due to shifting cultivation can also lead to environmental effects like global warming and air pollution.

2.3.2 Other Outstanding Policy Issues

In addition to the central issue related to forestry and watershed degradation, other outstanding policy issues include the low level of human resource development and institutional capability at the National Directorate of Forestry and Water Resources; pending enactment of a Forestry Law and Forestry-Watershed regulations; lack of coordination among agencies involved in forestry rehabilitation activities and inadequate vital information on the sub-sector, making planning and policy formulation activities less effective.

2.3.2.1 Low Level of Human Resources

The demand for technical services in forestry and watershed sub-sector far exceeds the supply. The MAFF's National Directorate of Forestry and Water Resources (NDFWR) is manned by 57 staff or roughly 19 percent of the level during Indonesian occupation. Of the 57 staff of NDFWR, only 7 had finished bachelor's degree in forestry. Majority of the staff finished senior high school in forestry.

By sheer number alone, the MAFF-NDFWR staff cannot efficiently manage and monitor the country's forest. The ratio between district staff and forest guardians to forest area is 1: 17,400 hectares, far from the ideal 1:8,000 hectares benchmark in forest management. Likewise, the current staff had difficulty in fulfilling their functions because of the lack of facilities and equipment. There is a need therefore to revisit staff deployment strategy at the district level, with the end in mind of augmenting the number of NDFWR where they are urgently needed. In addition, there is a need to develop their technical capability and skills in managing natural resources in terms of on-the-job training and formal education in the long term.

2.3.2.2 Inadequate Facilities and Institutional Capacity

The NDFWR has three (3) sub-directorates to carry out its functions. Aside from limited number of staff, it is also lacking in facilities and equipment to facilitate its operation. The central and district offices of NDFWR are shared with other MAFF's departments and district staff.

Likewise, the Directorate does not have permanent nursery facilities that can be use in massive seedlings propagation and laboratory area that can be use in forestry research activities. Aside from inadequate facilities, the Department also lacks equipment specifically transportation and communication equipments for an effective forestry operation.

There is an urgent need to fully equip the DFWR to manage effectively the country's forest resources and to provide quality technical services to the community as they perform their role in forest management. Without sufficient facilities and equipment, good forestry policy and management plan becomes futile. It is essential to have these components available in addition to enough staff with enough capacity to achieve effective management of the country's forest resources.

The Directorate is also constrained by budget limitations. The budget that MAFF – DFWR receives from CFET is very limited. Since 2001, the DFWR only receives an annual average budget of US\$199,000. Considering the scope of activities to be implemented as interventions to improve the current forest situation, this budget is not sufficient to create significant impact. It is estimated that around US\$ 500,000 annual budget is needed for the DFWR to efficiently and effectively operate.

2.3.2.3 Pending Forestry Legislations and Regulations

Enforcing development policies on forestry-watershed conservation without enabling mechanisms for enforcement becomes an impossible task. For long-run stability in the sub-sector, the ideal situation will be the enactment of a forestry and watershed law that will clearly define the instruments and mechanisms for enforcement.

Timor Leste, before her independence was governed by Indonesian forestry laws. By subsidiarity, after independence, all laws of Indonesia on forest conservation and regulations (e.g. Forestry Regulations of Indonesia No. 42 Series 1999) including the Regulations promulgated by UNTAET (e.g. Regulations 2000/17 and Regulations 2000/19) are applicable to Timor Leste to date. However, these laws are not being implemented by the present judiciary system, due in part, to the lack of understanding and access to these laws (e.g. the Judges of the Judiciary system do not have internet facilities to research and access the Indonesian laws as basis for their decisions). What is needed is an easily accessible formal set of laws and regulations promulgated by the present Government which can be used as handy references of the Judges in making decisions. It is therefore imperative that Timor Leste should promulgate her own laws and regulations on forestry-watershed and related matters.

2.3.2.4 Lack of Coordination Among Agencies Involved in Forestry-Watershed Development Activities

The integrated community-based approach in natural resource management and environmental protection has been accepted as the benchmark in forestry-watershed management. This requires however, the highest level of coordination not only among members of the communities located near the forestry-watershed areas but also among agencies and NGOs involved in forestry-watershed and associated ecosystems development activities. Timor Leste is lucky to have several Local and International NGOs and International Agencies promoting various activities that could enhance the conservation and rehabilitation of the country's forest resources.

As of 2003, there were more than 40 organizations involved. At least 5 of these agencies are implementing major projects related to reforestation, agroforestry and soil conservation. The diversity of agencies working on forest resource management is beneficial but coordination is often the problem as the current experience of the country reveals. As a consequence of lack of coordination, sharing of information related to best approaches in project implementation for instance is not shared to everybody.

Information on project experiences are important in developing project strategies, to harmonize the project implementation strategies and for the Government to develop essential policies and regulations to back up potential strategies. In some instances however, strategies or approaches of some organizations contradict the Government's acceptable practices (e.g. an international organization providing support to community to buy chainsaws). Good coordination will lead to better implementation of suitable strategies in the sub-sector.

2.3.2.5 Inadequate Information and Data on Forestry, Hampering Effective Planning and Policy Formulation

The available data on forestry at present were taken during the Indonesian time. Some of these data illicit questions on their quality. In addition, most of the available data are descriptive. Very limited quantitative data are available that can be used in quantitative analysis. Although MAFF got support from AusAID to establish GIS Unit, the data generated are not enough and lack field validation (e.g. data on forest classification).

For example, there are no clear data on land classification delineating forest boundary areas relative to non-forest areas. Lack of

boundary data will be difficult for MAFF-NDFWR to exercise management authority over Government forest area. Other data gaps in the subsector include forest inventory, environmental data, and biodiversity, that would be crucial in making decisions on conservation and commercialization.

The lack of available forestry data hampers the decision-making related to forest resources utilization. Without accurate data from the field, it is difficult to decide whether to go ahead with commercial utilization of some available forest products. In the absence of sufficient data, it is wise for the Government to impose moratorium on commercial exploitation of all forest products. While the moratorium is in effect, management activities could be focused on protection and rehabilitation.

3.0 SUB-SECTOR GOALS AND POLICY OBJECTIVES

3.1 Mission

The **mission** of the sub-sector is management of sustainable forestry and watershed resources contributing to a competitive agriculture-forestry-fisheries sector and supporting improved living standards for the nation's people. A well-managed and sustainable forestry and watershed sub-sector enhances protection and conservation of the environment, biodiversity and productivity in the uplands, through alternative farming systems and agroforestry; enhanced production in the lowlands through sustainable irrigation systems, (i.e. good forest-watershed prevents erosion); and in the marine areas, by preventing unnecessary run-offs in the uplands leading to the possible destruction of coral reefs and other marine resources due to siltation.

3.2 Goals

Given the problems and constraints mentioned earlier, four (4) major goals are identified for the sub sector. These are:

1. Reduction of forest and watershed degradation and conservation of remaining forest resources and biodiversity in protected areas;
2. Establishment of a suitable policy and legislative framework for trade and effective sustainable resource management and protection of the sub sector;
3. Development of human resources, institutional capability and resource data, commensurate with the needs for forestry-watershed management of Timor Leste; and
4. Ensure effective coordination and participation among major stakeholders in forestry and watershed development.

4.3 Policy Objectives

In the short to medium term, four (4) policy objectives related to forest resources conservation are identified for the forestry and watershed subsector. These include the following:

1. To arrest the deterioration of Timor Leste's forest and watershed, improve its state of development in order to meet domestic needs of communities and contribute to economic growth, while ensuring environmental sustainability for future generations;
2. To evolve a forestry and watershed policy, effective legislation, and tenurial arrangements that define long term directions among the state, community and private sector, and regulations on resource conservation and utilization;
3. Enhance the human resource development and institutional capability at NDFWR-MAFF, with high budgetary support for programs, and provide information for improved forest management and planning; and
4. Develop mechanism for effective coordination and linkages among forest-watershed stakeholders for a sustainable resource management.

4.0 SUB-SECTOR STRATEGIES

4.1 Guiding Principles

The sub-sector strategies presented here are centered on an integrated community-based approach in developing and managing the forest-watershed resources of Timor Leste. It recognizes the critical role that forest-watersheds play in environmental protection and conservation of biodiversity. The following strategies draw heavily on previous work, such as Strategic Development Interventions in the Forestry and Watershed Sub-Sector of Timor Leste, Forest Management Policies and Strategies of Timor Leste, MAFF Policy and Strategic Framework, and the Sector Investment Program.

These sub-sector strategies are developed with the following guiding principles:

- The capacity of rural communities to become self-reliant by increasing productivity, income and employment opportunities shall be gradually enhanced. The Government together with non-governmental organizations, and private sector will play a role in delivering essential services to communities.
- Government is an enabler and facilitator of agricultural and natural resource development instead of a dominant decision maker. Farmers and rural communities decide for themselves what economic activities to undertake.
- The integration between agriculture, livestock and natural resource management will be strengthened when planning government's programs in rural areas.
- Participatory processes tailoring management approaches and technological options to the highly diversified needs of communities should guide interventions at community level.
- Government will promote gender equality to allow equal access of women to opportunities and higher representation in decision making.
- Recognizing that agricultural development takes place in a fragile natural environment, all actors will make sure that environmental sustainability is built into productivity-enhancing options in a genuine element (e.g. in land, water and forest).
- Further deterioration of natural resources shall be prevented through the intensification of agriculture on existing land, community

participation in management systems, and the active protection of designated habitats and species.

Given the guiding principles above, management will implement six (6) interlinked strategies in the sub-sector. These are: (1) promotion of community-based natural resource management and environmental protection, (2) enactment of a forest-watershed law, (3) enhance HRD and institutional capability building at NDFWR-MAFF, (4) ensure effective coordination and linkages among agencies involved in forest-watershed development activities, (5) establish efficient data collection system, and (6) seek bilateral and multilateral funding for NRM activities.

4.2 Promote Community-Based Natural Resource Management

The major long term strategy for the subsector is to improve, conserve, manage and sustain the natural forests and watersheds of Timor Leste, through a participatory, community-based natural resource management approach. The basic approach involves community participation in community and national policy development for NRM, resource allocation and participatory planning, including identification of basic needs in the communities, and development of social-political and economic mechanisms to ensure accountability and sustainability. The NDFWR will initially identify pilot forest-watershed areas for project implementation.

Community-based NRM for the forestry and watershed subsector recognizes the vital role of the rural communities, who generally comprise the poor, that the poor people themselves have capacities to lift themselves out of poverty if right support and incentives are in place. Furthermore, poor people are increasingly the stewards of the forestry-watershed environment that sustains their livelihoods and well-being (DFID, EC, UNDP and WB, 2002). To help reduce the pressures on forest resources to meet the poor people's immediate economic needs, integrated alternative livelihoods will be established in rural communities involving various agricultural subsectors in agriculture.

The poor will invest in environmental improvement when incentives are favourable. They can mobilize enormous resources, particularly labour. Another reason why NRM has to be community-based is that indigenous people have the enormous store of technical knowledge for resource management. This indigenous technical knowledge which is often undervalued if not ignored should be tapped in the implementation of forest rehabilitation and conservation activities.

The community-based NRM will allow integrated approach to forestry and watershed management within MAFF's different directorates and divisions, other ministries, NGOs, rural communities and donor sponsored programs. In the short

term, this strategy will permit the establishment of genetic conservation programs for sandalwood, rosewood and teak; study the feasibility of both forest and non-timber products development; and establishment of fast growing community-based tree plantations to satisfy domestic firewood demand.

In the medium to long term, the NDFWR-MAFF will expand the piloted areas into other watershed areas in the country; provide high quality sandalwood seeds/seedlings for planting programs; estimate long term demand and supply for forest and non-forest products and explore solid programs for its stability; and where feasible, commercial forest plantations.

The fundamental role that a healthy environment plays in the quality of human life and that biological and non-biological resources play in underpinning the life-support functions of the planet are now widely known and accepted. In this regard, there is also a need for protection and conservation measures linking the community-based NRM to broader conservation and environmental protection strategies nationwide. As a strategy to provide sustainable conservation measures, a community-based Protected Areas Network (PAN) must be established.

4.3 Evolve a Forest-Watershed Law

To enhance conservation of forest and watershed, there is a need to draft into law, a Forestry-Watershed Act that defines the legislative framework and enabling mechanisms and regulations in managing the subsector. Draft policy studies are available for initial reference and will likewise incorporate vital information generated by NDFWR and other studies made by NGOs and other agencies involved in the subsector. The proposed legislation should be consistent with existing policies on water use (e.g. National Water Use Policy) and environmental policies. The legislation should also be closely coordinated with the Ministry of Justice especially in the resolution of land tenure issues.

Under a well defined forestry-watershed legislative framework, long term activities can be directed towards participatory, community-based forest management planning, integrating biodiversity and watershed conservation; identification of long term commercial opportunities for timber (sandalwood, teak, rosewood) and non-timber products; and identification of sustainable agroforestry farming systems.

The NDFWR-MAFF will also develop policy, legislation and regulations for the PNAs within the context of holistic land management and ecologically sustainable development (ESD), and establish a community-based Protected Areas Network (PAN) as a strategy in providing environmental, socio-cultural and economic benefits to the rural communities.

4.4 Enhance Human Resource Development and Institutional Capability Building at NDFWR-MAFF

The demand for technical services in forestry-watershed subsector outstrips what the NDFWR can supply. This deficiency is in terms of both number of staff and needed skills to plan and manage public development programs in the subsector. To achieve substantial improvements in forest-watershed management and conservation, the current extensionist-forest area ratio of 1:17,400 hectares has to be improved to approximate ideal level.

In addition, staff of NDFWR are not all fully trained for their job description. The National Directorate is manned by 57 staff, and only 7 have finished bachelor's degrees. Majority finished senior high school. There is a need to develop a long term training and HRD development plan for NDFWR staff commensurate with their professional terms of reference.

There is also a need to build institutional capability at NDFWR-MAFF in terms of vehicles for inspection and forest surveillance, nurseries for selected tree species, seed storage, laboratory processing facilities and computer-based data system facilities to store vital information on forestry and watershed.

4.5 Ensure Effective Coordination and Linkages Among Agencies and Stakeholders Involved in Forestry-Watershed Development Activities

A sustainable forest-watershed management implies a long term participatory partnership and coordination among the NDFWR-MAFF, the rural communities, NGOs, private sector, and development agencies involved in the subsector. The personnel and staff of NDFWR at the central and district offices are just too few to handle the gargantuan tasks of forest-watershed management and therefore it will be desirable for it to establish transparent and well defined coordinating mechanisms with development partners across all areas of forestry-watershed development activities. Development agencies, most especially NGOs, have the comparative advantage of actual physical presence and just a "pulse beat" away from the rural communities. In this regard, they should be taken in by NDFWR-MAFF as long term development partners on forestry-watershed development activities. This modality has been followed successfully by the NDFWR-MAFF in the recent past and should be pursued with vigor in the medium to long run.

Since the forestry-watershed sector is at the forefront of environment related issues in Timor Leste, NDFWR-MAFF must also pursue appropriate coordination and linking strategies within MAFF and outside of MAFF. The Ministry of Transportation, Communications and Public Works (MTCPW) is developing a power sector master plan of Timor Leste, which has development implications on

the forestry-watershed subsector. Because of the energy-fuel wood substitution issue, MAFF must be able to link with MTCPW in developing a long term energy-fuel wood policy.

Another project undertaken by the government with the help of ADB is a technical assistance for Water, Environment and Natural Resource Management, which will integrate activities of the three ministries: MAFF, MTCPW and MDE. A high level steering committee is established in this integrated water resource management project with no less than the 3 Ministers as members. They have already drafted a National Water Use Policy which has implications to the forestry-watershed development of Timor Leste. It must be stressed however, that the integrated forestry-watershed modality of resource management adopted by NDFWR-MAFF is very congruent with the National Water Use Policy under the MDE. Institutional coordination is imperative to adopt the integrated watershed approach as central to the National Water Use Policy.

For more effective coordination of forestry-watershed development activities, NDFWR-MAFF must develop mechanisms for coordination and collaboration activities with major stakeholders. These include, jointly identifying pilot watershed areas to test different modalities of community-based and integrated resource management, community-based participatory forest-watershed planning, and community-based resource conservation and protection through community reforestation, and identification of forest timber products and non-timber products for commercialization.

4.6 Establish an Efficient Data Collection System for the SubSector for Effective Planning and Policy Formulation

There is a dearth of data and information as basis for long term planning and policy analysis for the subsector. Baseline information on resource level sustainability, national forest inventory, and socio-economic profiles of households near the forestry-watershed areas, must be collected in the short term as basis for policy analysis of initial development interventions in the medium term. NDFWR-MAFF must aspire to establish in the long term, an effective statistical data collection system and pursue other special studies for policy and planning. This can be done in collaboration with DPPPS and other directorates of MAFF.

4.7 Seek Bilateral/Multilateral Funding for Long Term NRM Activities

The problems related to natural resource management have long term solutions and therefore, it would be desirable for MAFF to explore the possibility of long term external financing for NRM development activities. By 2007, at the end of

the current Medium Term Plan, the Trust Fund for East Timor (TFET) will soon end. It is therefore prudent to plan ahead of time to mitigate the likely effects of TFET withdrawal. The SIP document pointed out potential problems in sourcing out funds for the recurrent costs from TFET. Likewise, it projects a decline in external funding for the sector as a whole.

MAFF should explore jointly with NGOs and rural communities, long term financial grant to continue collaborative activities in expanding pilot watershed areas into community-based reforestation and commercialization of forest timber products and non-forest timber products.

5.0 INSTITUTIONALIZING THE STRATEGY

5.1 Community-Based Natural Resource Management

The strategy described in this report adopts the community-based and participatory approaches in natural resource management. The choice of these modalities, implies a more proactive role of NDFWR-MAFF in providing stronger technical service delivery system to rural communities within the forest-watershed areas at the district and sub-district levels; more effective coordination and communication with the directorates of MAFF and other Ministries involved in forest-watershed development activities outside of MAFF; and more transparent working guidelines with development partners, donors, NGOs and other stakeholders.

5.2 Inter Governmental Linkages

In particular, NDFWR should forge a stronger collaboration with the Directorate for Policy, Planning and Program Services (DPPPS). DPPPS has in place a Donor/NGO Coordination Secretariat, and a coordinator for bilateral and multilateral donors. NDFWR can tap the networking activities that DPPPS has already started.

Likewise, NDFWR-MAFF should put in place a stronger inter-ministry collaboration, especially with the Ministry of Development and Environment (MDE). A Rural Development Coordinating Committee as suggested by Joint Donors during the Maubisse II Conference might be established to strengthen this strategy. The proposed Committee is composed of representations from MAFF, MDE, Ministry of Health, development partners and NGOs. The linkage can be done at all levels of service delivery from the central to the districts, sub-districts and suco levels.

5.3 Ad Hoc Units at NDFWR

Within NDFWR, two ad hoc units are already formed to provide more effective collaboration and linkages with major stakeholders. One is the Forestry Policy Research Team that acts as sounding board for the urgent policy research issues related to forest-watershed reforestation and rehabilitation, protection and resource management, and forest utilization and law enforcement.

The other ad hoc unit is the Forestry Policy Advisory Committee to act as a forum for ventilating relevant issues related to forestry-watershed management. As envisioned, it will be composed of representatives from the donor community, NGOs, academe, private sector and other stakeholders in the subsector.

5.4 Monitoring and Evaluation

To monitor and evaluate impacts of the prioritized forestry-watershed development projects, it will be desirable to institutionalize within the NDFWR-MAFF, a program benefit monitoring and evaluation system (PBMES) unit that handles up to date status of the projects. Among others, the proposed PBMES Unit at NDFWR will develop quantitative and qualitative impact indicators of forestry-watershed development programs and monitor and evaluate progress of projects at both the beneficiary and program levels.

5.5 Collaborative Mechanisms and Communications Strategy

Clearly, the NDFWR-MAFF strategy for a stronger collaboration and linkages with development partners, donors, NGOs, and major stakeholders also necessitate an effective communication strategy within and outside of NDFWR. Logistics and training must be provided to ensure a good communication system.

5.6 Staff and Institutional Capabilities

Finally, the policy objectives and strategies described here imply a major re-engineering of staff and institutional capability of NDFWR-MAFF to effectively comply with its new mandate. Given the limited CFET funds to cover basic expenditure needs, external fund sourcing for long term development activities will be a logical step to institutionalize these strategies.

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ANNEXES

Annex 1. Matrix of Priority Issues, Goals, Policy Objectives and Strategies of Forestry-Watershed Sub-Sector

Matrix of Priority Issues, Goals, Policy Objectives and Strategies of Forestry-Watershed Sub-Sector

PRIORITY ISSUES	GOALS	POLICY OBJECTIVES	PROPOSED STRATEGIES	
			SHORT TERM	MEDIUM AND LONG TERM
Continuing forest degradation and deforestation	Reduce forest degradation and deforestation	<p>Arrest deforestation and improve forest condition to meet community requirements for forest products and services.</p> <p>Work with other MAFF Divisions to encourage sedentary agriculture.</p>	<p>Develop integrated approach to land and watershed management with other divisions of MAFF, NGOs, rural communities and aid projects.</p> <p>Introduce community-based reforestation and agroforestry approaches using local tree species with high capacity to regulate surface run-off, improve the quantity and quality of water for irrigation and domestic use</p> <p>Establish regional nurseries with the capacity of producing seedlings for direct planting in identified reforestation sites for distributions to interested groups and individual community members.</p> <p>Conduct inventory of potential upland farming practices and develop demonstration sites with other MAFF Divisions, of alternative agroforestry technologies in strategic areas.</p> <p>Begin establishment of community-based Protected Area Network in two (2) pilot sites and in collaboration with the CBNRM initiatives and wider environmental programs.</p>	<p>Expand the integrated management approach to other watersheds.</p> <p>Conduct detailed study of all watershed areas to collect physical, socio-economic and cultural information for the development of an integrated, participatory Forest-Watershed Master Plan.</p> <p>Provide high quality sandalwood seed for planting programs.</p> <p>Estimate future demand and explore avenues for meeting national and local demand for forest products, e.g. fuel wood.</p> <p>Establish commercial plantations.</p> <p>Continued establishment and management of community-based Protected Area Network in collaboration with CBNRM initiatives and wider environmental programs.</p>

**Matrix of Priority Issues, Goals, Policy Objectives and Strategies of Forestry-Watershed
Sub-Sector**

PRIORITY ISSUES	GOALS	POLICY OBJECTIVES	PROPOSED STRATEGIES	
			SHORT TERM	MEDIUM AND LONG TERM
Lack of forest policy, forest law and regulations	Establish a suitable policy and legislative framework for trade and resource management	<p>Develop a forestry policy approved by the Government.</p> <p>Timor Leste to have effective forest legislation.</p> <p>Define the tenure of all forested land (State, communal, private)</p>	<p>Finalize draft forestry policy document for Government.</p> <p>Develop a Forest Law and accompanying regulations.</p> <p>Coordinate with District Administration and local leaders how to incorporate Tara Bandu as an inherent part in the development of local ordinances to protect the forest-watershed areas.</p> <p>Work closely with the Ministry of Justice and rural communities on progressive resolution of land tenure issues and forest boundaries.</p> <p>Facilitate the formulation of the following regulations: moratorium on the commercial extraction from natural forest, ai kameli, redwood and Ai Teka; ban on the hunting and selling of endangered animal species; forest fires and chainsaws.</p> <p>Provide tenurial security of output to community groups participating in reforestation and rehabilitation activities.</p> <p>Develop regulations for Protected Natural Areas (PNAs) and establish a Protected Areas Network (PAN).</p> <p>Develop guidelines for the documentation of unprotected areas and NPAs, ban the hunting and selling of endangered wild animal species, under the Convention on Endangered Species and establish an animal sanctuary as temporary shelter of confiscated wild animals before releasing them in their original habitat.</p>	<p>Work with local communities to achieve policy objectives</p> <p>Commence forest management planning, integrating biodiversity and watershed conservation, local timber requirements in partnerships with communities.</p> <p>Develop a resource management and marketing system for sandalwood that optimizes long term benefits to the nation including community reforestation.</p> <p>Establish cooperation with Ministry of Education to integrate forest rehabilitation and conservation and environmental preservation as part of the school curriculum.</p>

**Matrix of Priority Issues, Goals, Policy Objectives and Strategies of Forestry-Watershed
Sub-Sector**

PRIORITY ISSUES	GOALS	POLICY OBJECTIVES	PROPOSED STRATEGIES	
			SHORT TERM	MEDIUM AND LONG TERM
Limited human and institutional capacity and lack of reliable data.	Ensure that staff skills and resource data are matched to the needs for forest management in Timor Leste.	Agency capacity will be adequate to provide high quality support to all programs. Provide information necessary for improved forest management and planning.	Carry out in-service training to make best use of existing staff. Identify skills required to be in-house and those that will be hired in. Build operating capacity, such as vehicles, nursery and seed storage facilities, to address forest rehabilitation. Carry out a comprehensive baseline resource level national forest and biological inventories	Develop international linkages for forestry research. Training needs analysis followed by HRD plan. Develop effective statistical data collection systems.
Inadequate coordination and linkages among major stakeholders in forestry-watershed development activities.	Ensure effective coordination and participation among major stakeholders in the sub-sector.	Develop an effective mechanism for coordination at NDFWR-MAFF with donors, NGOs, church, development partners and private sector.	Jointly identify pilot forest-watershed areas to test modalities of collaboration in integrated land watershed resource management.	Expand watershed pilot areas for environmental conservation and protection activities through community-based reforestation, conservation and utilization of viable Forest Timber Products and Non-Forest Timber Products. Seek bilateral and/or multilateral funding for long term NRM activities.

Annex 2. The Policy and Strategic Framework of MAFF¹

The “Policy and Strategic Framework” (MAFF 2004) officially defines the broad Policy and Strategy of the Agriculture-Forestry-Fisheries sector. The heart of the document is the statement of vision, mission, policies and sector objectives and key strategy for implementation.

2.1 Vision, Policies and Sector Objectives

The **vision** laid down in the National Development Plan is to have by 2020 sustainable, competitive and prosperous agricultural, forestry and fisheries industries that support improved living standards for the nation’s people.

As agriculture, forestry, fisheries will continue to be the most important source of livelihood for the majority of the population and the principal economic activity in Timor Leste for the next 10 to 15 years; these sub-sectors have to make an important contribution to the objectives of the National Development Plan and the Millennium Development Goals.

Table 1: Sector Policy Objectives and Indicators

Policy objectives	Indicators
Improve the level of food security of the rural population and to raise self-reliance.	Fifty per cent increase in average daily kilocalories in-take by rural households during scarcity months (November – February) by 2008.
Increase value-addition of agriculture, forestry and fisheries products by fostering output processing and marketing.	An increase of at least 5 per cent in GDP in Agriculture, Forestry and Fisheries.
Achieve sustainable production and management of natural resources.	National inventories of forest and fishery resources completed by end 2007. National management plans for fisheries and forests, based on new inventory data, completed and accepted by Government by end of 2008. Forest and Fisheries Laws and regulations passed by Government by end of 2006.
Contribute to the balance of trade by gaining revenue from commodity export and by substituting imports.	At least 3 per cent improvement per year in the agricultural trade balance.
Increase income and employment in rural areas	At least 2.5 per cent increase per year in indirect employment in agriculture and related agro-industries.

¹Condensed from MAFF (2004)

The achievement of the sector objectives is crucial to the development of the country. The three great challenges facing MAFF are to achieve increased food production, reduce rural poverty and to work toward the sustainable management of agriculture, forestry and fisheries.

The proposed sector strategy and continued substantial investments by the Government and development partners are expected to translate the recovery since 1999 into sustained strong economic growth. The NDP projects agricultural output to expand at an average of close to 6 percent a year in real terms during 2003-2007. If this is to be achieved, more than \$30 million would be added to GDP during the Plan period, thereby raising value added per capita in rural areas from about \$150 in 2001 to about \$200 in 2007 (all at year 2000 constant prices).

Growth of the agricultural GDP should far exceed the annual population growth² in order to increase availability of food and to contribute to the balance of agricultural trade. Although growth in commercial crops and livestock will be higher than average, a significant share of the growth has to come from food crops to provide for food security at household level.

Sustained growth in agriculture can have a strong impact on the incidence of poverty. The number of people in absolute poverty would decline by about 40,000 from 2001 level of 330,000 people and the incidence of poverty would decline to about 30 percent by 2007.²

Specifically, the MAFF objectives for the agricultural sector are to:

- increase production,
- improve food quality,
- improve animal production,
- support the development of agricultural industries for domestic and export markets,
- provide effective agricultural planning based on improved data,
- provide an appropriate legislative and regulatory framework, and
- greatly increase the amount and quality of information services to farmers in the upland and dry lowland areas, which will require increased effort directed to capacity building.

²Government of Timor Leste, et al. Timor Leste, Poverty in a New Nation: Analysis for Action. May 2003

The overall objective for the forestry sector is to manage forest resources in a way that supports sustainable production. Forestry is specifically charged to increase rural incomes, generate employment in rural areas, and, consequently, reduce poverty and improve the welfare of rural communities, assist in achieving food security, increase export earnings, replant forests and protect watersheds.

The specific forestry objectives are therefore:

- set in place a firm national forest policy, forest law and accompanying regulations,
- address the issue of forest degradation with an integrated, watershed-based approach to land management in cooperation with other arms of MAFF, rural communities and NGOs, and
- strengthen institutional capacity and to obtain the necessary forest resource data on which to base resource management,

The primary objective for fisheries development in Timor Leste is to ensure that marine resources remain in good condition. The fisheries sector will then be able to provide consistent sustainable yields that will contribute increasingly towards food security, improved nutrition, poverty alleviation, employment and economic growth.

The priority fisheries objectives are to:

- Improve marine resource planning and management,
- Develop a fisheries policy and legal and regulatory framework that supports the development of both commercial and subsistence fisheries and ensures the sustainable management of the resource base,
- Encourage and support the private sector to develop an offshore fishery and to provide facilities for production, storage, processing and distribution of local fish supplies, and
- Strengthen the local capacity to plan and manage fish resources in a sustainable way.

While aiming to achieve the sector objectives mentioned above, MAFF will adhere to the following guiding principles when developing specific sector policies and strategies:

- To the extent that local production and storage is feasible, all households at all times of the year shall have enough affordable food available in

adequate quality for a healthy life, thus reducing the need for food aid distribution.

- The capacity of rural communities to become self-reliant by increasing productivity, income and employment opportunities shall be gradually enhanced. The government, together with non-government organizations and the private sector, will play a role in delivering essential services to farming communities.
- The Government is an enabler and facilitator of agricultural and natural resource development instead of a dominant decision maker. Farmers decide themselves what they produce and how to market what they produce. The Government expects that the private sector gradually assumes a larger role in agribusiness, marketing and input supply and acts as a main driver of commercialization once market incentives emerge.
- The Government needs to create an enabling environment for rural producers and the private sector, but should keep direct involvement to a minimum with a focus on public good type of services like creating an enabling environment for markets and providing access to information and other essential services.
- Where benefits of public services accrue to individuals, cost-recovery mechanisms will be introduced over time.
- The integration between agriculture, livestock and natural resource management will be strengthened when planning Government programs in rural areas.
- Participatory processes tailoring management approaches and technological options to the highly diversified needs of communities should guide intervention at community level.
- The government will cater for the specific needs of women, children and disadvantaged groups when designing programs. Gender equality will be promoted to allow for equal access of women to opportunities and higher representation in decision-making.
- Recognizing that agricultural development takes place in a fragile natural environment, all actors will make sure that environmental sustainability is built into productivity-enhancing options as a genuine element, e.g. in land, water, forest and pest management.
- Further deterioration of natural resources shall be prevented through the intensification of agriculture on existing land, community participation in

management systems, and the effective protection of designated habitats and species.

2.2 Key Strategies for Implementation

The key strategies are focused on: a) agriculture, specifically food security, market-oriented agriculture, improved service delivery and effective planning; b) forestry; and c) fisheries.

2.2.1 Agriculture

The policy and strategy development process has identified several major challenges that MAFF must address in the short term. Decisions are to be made on the trade-offs due to budget limitations in implementing programs for irrigation, livestock vaccination and upland cropping. It will not be possible to optimize investments in all areas. So far, MAFF and its development partners have tended to concentrate on the restoration of irrigation capacity and on livestock production. This was justified at the time. Given that the bulk of the food supplies come from upland agriculture, it is now time to focus more efforts on increasing productivity and resilience of upland farming activities, minimizing the vulnerability to climatic and economic variability. At the same time, the managed transition of subsistence systems into market-oriented agriculture has to be facilitated.

These strategic directions are expected to result in greater benefits, increasing economic activity and employment. This approach involves:

- Increased emphasis on improving productivity of farming systems in upland and dryland areas.
- Increased emphasis on direct service delivery to communities to affect farming system improvement and market-oriented production. This will require the development of an adaptive research and extension capacity within MAFF, and strengthened coordination between MAFF, NGOs and the emerging private sector.
- Greater integration of programs on the ground between different sections of MAFF, not just within agriculture, but also with forestry and watershed management, and with other ministries and local government agencies. This will require MAFF to evolve new cross-sectoral management systems for the delivery of services.
- A much more integrated and participatory approach to rural development, working with rural communities to increase food production, and improve forest rehabilitation, watershed protection and biodiversity conservation.

This change in direction does not mean that activities of a broad scale nature, such as the livestock vaccination program, will cease. They should continue, perhaps with some modification such as gradual introduction of cost recovery.

The Ministry's programs need to develop a balance between long and short-term components to deliver rapid outcomes wherever possible, while maintaining a core of long-term support activities. It must also balance the needs of subsistence communities against the needs of transitional and commercial producers.

Support programs for subsistence agriculture will be introduced and are expected to improve food security by increasing community resilience and self-sufficiency. Incentives for farmers to produce more than is needed for domestic consumption are limited, and may remain so for some time. Longer-term strategies for improving productivity centre on the development of physical and human assets, diversification into high value crops for domestic and export markets, improved farm technologies, greater use of complementary inputs, improved access to markets, expanding opportunities for agro-processing, the creation of off-farm employment opportunities, and other infrastructure and supporting services such as agricultural education, extension and credit. A shift into higher value crops that raise farm income will allow poorer families to purchase food in lean periods during the year and improve food security.

It is expected to work with and support the private sector but not to engage in commercial activities itself. MAFF is clearly expected by Government to be more than a regulatory and data-gathering agency. It has to be actively engaged in the provision of key services to farmers, NGOs, the non-farm private sector including agribusiness, communities and rural based organizations.

2.2.1a Food Security

The major element of improved food security is the production of more food of better nutritional quality. Measures for increasing food production and improving nutrition are well understood. The key issue is to facilitate change among rural communities to adopt them and change practices, given their limited resources and the potential risks involved. Lack of an effective extension process has handicapped previous efforts to improve food production.

For increased food production the way forward is by improving the crop production efficiency of the main crops (rice, maize, cassava) through the use of better farming systems, better seed varieties and (where possible) greater use of

inputs such as fertiliser. Incentives such as improved market access will also be essential if production is to rise above subsistence levels. Other measures, such as reducing post harvest losses, can enhance the gains made in the production phase.

Improving food quality basically means increasing protein intake, which can be done by increasing livestock production and consumption, especially of chickens, goats and pigs, by growing more vegetables and by greater use of legumes in farming systems. Stimulating livestock production will involve continuing animal health programs and better forage management. MAFF will seek to develop links with the Ministry of Health to produce a revised Food Security Policy and optimize the positive nutritional impact of its programs.

By taking an integrated approach to rural development in a designated area, so that several aspects of farming system improvement are addressed at the same time, and achieving better coordination of activities between Government, NGOs, private sector and donor projects, MAFF expects to have far greater impact than dispersing its efforts over a larger area. The watershed makes a convenient planning and operational unit. By working in watersheds in a participatory way with communities, bringing forest rehabilitation and watershed protection aspects into the picture, it shall be possible to advance on several fronts at the one time. Achieving large-scale impact will take a long time and a sustained commitment.

2.2.1b Market Oriented Agriculture

A successful commercialisation strategy needs specialisation on products where there is a comparative advantage and where the producer is able to compete. It also needs emphasis on value added, processing and market development as engines for sector development.

In contrast to the food security strategy, the agribusiness development strategy cannot, by its nature, aim at an even distribution of support measures across the country. Successful interventions depend on clustering of resources, building on positive reinforcement effects of networks between actors in the commodity chain. Support has to focus on achieving economies of scale. This implies targeted support for particular selected commodities, located in favourable locations. The potential for coordination with other programs such as road rehabilitation will be explored. Carefully targeted support is even more important in view of the macroeconomic obstacles for Timor-Leste to build a viable agricultural export/import substitution industry.

MAFF sees its role as facilitator and regulator of the development of vigorous internal and export market oriented industries. This provides for a market-responsive rather than a supply-driven approach to services, and avoids the traditional focus on production issues only. The supply-chain approach also offers a basis on which MAFF's technical specialists and information systems might be better aligned with the industries they serve. Currently, the most important sector is coffee export, but there is a potential to develop other commodities along those lines.

Promoting industry-wide standards and certification procedures will assist the development of the coffee industry. Strict adherence to the requirements of organic and fair-trade certification must be maintained to increase the prospects in high-value niche markets. There is also a need to support the rehabilitation of old coffee plantations. There are also opportunities for assisting the further development of the coconut processing industry. Other niche market opportunities may emerge over time, e.g. export of cattle.

For internal market development, MAFF will encourage the expansion of access to microfinance and rural credit by coordinating with other players. Rural producer groups will be supported by linking them to private sector actors. Furthermore, the development of cooperatives remains an important political and economic objective to promote the development of private sector in rural areas.

MAFF will continue to develop the quarantine services to protect agricultural industries against new weeds, pests and diseases, while keeping abreast of overseas quarantine regulations as they affect the potential for exports from Timor-Leste. This includes the development of policies and regulations related to the introduction of GMOs.

2.2.1c Improved Service Delivery

MAFF cannot itself deliver all services that are likely to be demanded by communities. The previous strategy has been to rely on civil society, principally the NGOs and the private sector, to interface between MAFF and communities, but this has proved to be inadequate for the task. MAFF and the NGOs have been working to improve their cooperation. MAFF's indicative strategy is to better coordinate field activities, and to provide support to NGOs and development partners for engaging communities in land and forest management based around a combination of traditional community boundaries and watersheds as the starting point for participative analysis and planning of improvements to farming systems. MAFF will support all actors engaged in service delivery by establishing laboratory capacity and conducting applied research in fields such as soil analysis, pest and disease control, seed testing and information services.

Research is also needed to adapt available technology options to the wide variety of local farming systems.

MAFF will develop links with the Ministry of Education to encourage wider vocational training for specialist skills in agriculture, agro-industry processing and agribusiness management. Technical training in these areas is highly gender-positive by helping women to improve their economic independence. The development of off-farm employment in rural areas will be facilitated in collaboration with the Business Development Centre program of the Ministry of Development and Environment.

2.2.1d Effective Planning

The next element of the strategy aims to improve the capacity of MAFF to better manage its programs and resources, including the further development of policy and supporting legislation. Evolution and maintenance of a legal and policy environment, appropriate to this stage of Timor-Leste's development, is important for achieving sustainable agricultural production, creating efficient markets and management of natural resources. MAFF will consult with other relevant Government agencies to promote an enabling policy environment for areas within its mandate.

MAFF's institutional structure is still being finalized, although the higher-level structure and positions are in place. There is some institutional flexibility that will allow MAFF to adopt the program-based approach to its activities. Capacity building for the management support staff, particularly in the new Directorate of Policy and Planning Services, is a very high priority. Policy development, legislative drafting, strategic planning, in-house monitoring and evaluation, resource and market economics and donor coordination are areas requiring new or additional support and development. Liaison with development partners and NGOs represents one of the major demands on executive time.

Development of ALGIS to full operational level is another priority task for MAFF. ALGIS will be an essential tool in watershed planning, and MAFF will need to build its internal capacity in the application and interpretation of its outputs. ALGIS may also be an important tool for targeting food aid in a more consistent way.

It will also support efforts by other agencies to improve the rural road and transport network and create an enabling environment for small and medium scale enterprises. It will work closely with the State Secretary of Trade to promote agricultural exports and will play its part by developing product quality

standards and phytosanitary controls to facilitate exports. Tax incentives and tariff exemptions for the use of essential agricultural inputs such as seeds and fertilizer and for foreign direct investment will be introduced to stimulate investment in agriculture.

2.2.2 Forestry

The National Development Plan emphasizes a sustainable approach to development and management of the forest resources of the country. The Plan recognizes that these forests are important for their biological diversity. Its conservation is a priority task in forest management planning.

The strategies take into account the limited ability of NDFWR to support field programs and are essentially focused on improving that capability and assisting in the provision of the basic building blocks that will enable the agency to commence working towards the national objective of sustainable management of forests. The strategies also attempt to make a contribution to the relevant Government short-term global objectives, such as rural poverty alleviation.

NDFWR intends to make a major advance in combating deforestation and forest degradation by initiating, in close cooperation with other sections of MAFF, a series of integrated programs, working with NGOs and rural communities. The approach is based on the fact that, unless improvements are made to existing agricultural systems, it is not possible to reduce the adverse effects of shifting cultivation and other pressures on forests. A participatory approach will be used that builds on community participation to protect rehabilitated forest. The process will also address land tenure and usufruct rights to forest products, fodder, etc. By working on a watershed basis, water resources will also receive improved protection. Harvesting of some non-timber forest products would stimulate additional rural economic activities and might also provide an alternative to cutting timber for fuel wood for off-farm income.

A start will be made on biological diversity conservation by setting up a program aimed at the conservation of the genetic resources of sandalwood. This program will collect germplasm from a wide variety of sites in Timor-Leste and establish the material in a secure location that can be used as a future seed source.

MAFF needs to urgently complete the national forest policy and the forest law and regulations. Forest legislation in Timor-Leste will be complex, as it needs to make provision for partnerships between NDFWR and communities, assign usufruct rights, make provision for future timber resources, and provide an environment that encourages the cultivation of precious timber species such as

sandalwood, while discouraging theft of trees. A sandalwood marketing system that provides for equitable sharing of the proceeds of carefully managed timber sales between Government and local communities is essential. Leading to its future focus on integrated watershed-based rural development, MAFF will continue to work with other Ministries on the National Water Policy.

As with other sections of MAFF, institutional capacity is a significant limiting factor in the ability of the Forestry Directorate to fulfill its mandate. Lack of information on forest resources is a major handicap to improved planning and management. A national forest inventory is urgently required to provide that information. In the short term, new Forest Guardian staff will need training in facilitation and extension skills to play the required role under the proposed integrated approach to land and watershed management outlined above.

2.2.3 Fisheries

The Fisheries Directorate lacks access to resource data that could serve as a basis for sustainable management of the fishing industry. Adequate planning and management of the sector requires a comprehensive study of fish stocks and of the population dynamics of the principal target species. A biological, economic and social evaluation of the offshore and inshore fisheries will be undertaken to develop strategies and instruments for the support of private sector activities in fisheries that improve food security and rural livelihoods as well as increase income and employment.

NDFA will soon start to implement a licensing system for all commercial fishery operations, with provision for catch record keeping, so that catch levels can be matched to license quotas. This includes a database system that allows staff to monitor catch data to ensure that quotas are being adhered to. Such systems in turn entail considerable development of staff skills in data collection and database management. Training needs assessment that matches the requirements for the sustainable management of fisheries should be implemented at an early date. Monitoring and surveillance of fishing operations involves travel by NDFA officers to remote coastal villages for which some equipment, such as motorcycles, is necessary.

Protection of the marine environment is an important aspect of the modern ecosystem approach to fishery management and planning. This requires an understanding of the coastal zone environment and biology, for which a detailed assessment of coastal habitats is necessary.

Aquaculture is an area with some potential for expansion, both on a small scale for local use inland, and on a larger scale for commercial production. The latter has potential adverse effects on aquatic environments, so needs careful evaluation.