



Sustainable Development in Timor-Leste

**NATIONAL REPORT TO THE UNITED
NATIONS CONFERENCE ON SUSTAINABLE
DEVELOPMENT (UNCSD)
On the run up to Rio+20**



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Abbreviations

ADB	Asian Development Bank
ALGIS	Agriculture and Land Use Geographic Information System
ATA	Alternative Technology Association
ATSEF	Arafura Timor-Sea Experts Forum
AusAID	Australian Agency for International Development
AECID	Agencia Española de Cooperación Internacional al Desarrollo
BESIK	Timor-Leste Rural Water Supply and Sanitation Program
CBOs	Community Based Organizations
CDM	Clean Development Mechanism
CEA	Country Environmental Analysis
CPLP	Comunidade de Paizes de Lingua Oficial Portuguesa
CPS	Community Police Section
CTI	Coral Triangle Initiative
CT-6	Coral Triangle 6
CTSP	Coral Triangle Support Partnership
EIA	Environmental Impact Assessment
ESD	Education for Sustainable Development
E4A	Energy for All
FAO	Food and Agriculture Organization
FDTL	Falantil-Força Defesa de Timor-Leste
GEF	Global Environment Facility
GDP	Gross Domestic Product
GHG	Green House Gases
GoTL	Government of Timor-Leste
GTZ	German Technical Cooperation
HDI	Human Development Index

ICM	Integrated Coastal Management
IDPs	International Dialogue on Peace building and Statebuilding
INC	Initial National Communication
INGOs	International Non Governmental Organizations
LDCs	Least Developed Countries
LTC	Legal Training Centre
MAF	Ministry of Agriculture and Fisheries
MDGs	Millennium Development Goals
MEAs	Multi-lateral Environmental Agreements
MED	Ministry of Economy and Development
M	Million
MPA	Marine Protected Area
NAPA	National Adaptation Plan of Action
NAP	National Action Plan
NBSAP	National Biodiversity Strategy Action Plan
NDFA	National Directorate of Fisheries and Aquaculture
NDES	National Department of Environmental Services
NDFA	National Directorate for F
NGOs	Non Governmental Organizations
NOC	National Operations Centre
NPP	National Priority Process
NSDS	National Strategy for Sustainable Development
ODS	Ozone Depleting Substance
OECD	Organization for Economic Co-operation and Development
PDTOL	Only Australian Company that does e-waste management
PEMSEA	Partnership in Environmental Management in the South-East Asia
PoWPA	Program of Work in Protected Areas
PSGs	Peacebuilding and Statebuilding Goals
PNTL	Policia Nacional Timor-Leste
PV	Photovoltaic

RDTL	Republica Democratica de Timor-Leste
REMP	Rural electrification master plan
SDP	Strategy Development Plan
SEA	Strategic Environmental Assessment
SEFPE	Secretary of State for Energy Policy
SEPE	Secretariat of State for Energetic Policy
SIA	Social Impact Assessment
SIDS	Small Island Development States
SLM	Sustainable Land Management
SDP	Timor-Leste-Strategic Development Plan
TL	Timor-Leste
TL-SDP	Timor-Leste-Strategic Development Plan
UN	United Nations
UNCBD	United Nations Convention on Biological Diversity
UNCCD	United Nations Conventions to Combat Desertification
UNCED	United Nations Conference on Environment and Development
UNCLOS	United Nations Convention on the Law of the Sea
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UN-MDGs	United Nations-Millennium Development Goals
UNTAET	United Nations for Transitional Administration in East Timor
UN Woman	United Nations woman organization
UNICEF	United Nations International Children’s Emergency Fund
UNESCO	United Nations Education Science and Culture Organization
UNDP	United Nations Development Programme
UNCSD	United Nations Conference on Sustainable Development
UNDESD	United Nations decade of Education for Sustainable Development
WFP	World Food Programme

Executive Summary

Timor-Leste became an independent state on 20 May 2002, after 450 years under Portuguese rule followed by 24 years under Indonesian occupation. As a new country, Timor-Leste faced many development challenges such as conflict and fragility, lack of trained human resources, natural and environmental degradation, inadequate job opportunities for its growing population, and high levels of poverty. Moreover, as in all other countries in the world, the livelihoods of Timorese people depend on a healthy and productive environment. Now as an independent country, Timor-Leste is looking back at its history and exploring ways in which it can harness its social, cultural, economical and natural capital to move forward towards a sustainable and equitable future.

In 2002, soon after independence, a Conference on Sustainable Development was held in Dili where people from all over the country expressed their concerns about the future development model for Timor-Leste. The Conference was inspired by the theme of a “new beginning” with an emphasis on doing things differently. Stakeholders identified the principles of sustainable development as starting points for Timor-Leste’s nation building. Ten years later, in preparations for Rio+20 UN Conference on Sustainable Development, Timor-Leste has taken a big step towards assessing its strengths and weaknesses for achieving a sustainable development model. An extensive stocktaking exercise was undertaken initially to highlight policies, rules, regulations, activities and projects as well as challenges at the sectoral level. Based on these findings, a stocktaking report was produced which identified sector specific strengths, challenges, opportunities and potential entry points for sustainability. A workshop was then held in Dili on 30 November 2011 involving all stakeholders to discuss the sectoral findings, share good practices and create synergies for the way forward. This National Report brings together these processes to articulate on the overall country progress in pursuing sustainable development and moving towards a greener economy since Timor-Leste’s independence in 2002.

The National Report concludes that there is widely accepted national consensus on the importance of sustainable development principles and many of these are already being implemented in various projects across sectors. However there is still a high potential for Timor-Leste to adopt greener and more sustainable development path which can only be achieved with a strong political will, financial commitment and joined effort from all stakeholders involved.

Timor-Leste does not have a National Sustainable Development Strategy (NSDS) as such, but the recently approved Strategic Development Plan (SDP) provides a road map to implement sustainable development, demonstrating the Government’s commitment to securing the

wellbeing of the Timorese people. The Government of Timor-Leste (GoTL) has also recognised that peace building and state building are essential foundations for sustainable development and has taken a lead role within the g7+ group of 19 fragile and conflict-affected countries by recognising that peace, development and environmental protection are interdependent and indivisible. This role provides a good opportunity for the GoTL to promote a green economy towards sustainable development and working with other fragile states.

The main challenges faced by Timor-Leste include poverty, low education, rapid population growth, high rates of rural-urban migration, high rates of unemployment especially amongst the youth, depletion of natural resources, food insecurity, vulnerability to natural hazards and climate change. Another challenge for the GoTL is how to best invest the income from country's non-renewable resources of petroleum and natural gas for the sustainable development of the country. To address these issues, the SDP recognises that the starting point is to build social capital and improve the country's infrastructure, supported by an emphasis on management strategies for natural resources and environmental care and protection.

Human wellbeing and quality of life for every citizen in Timor-Leste depends on healthy and productive natural and environmental resources as 75 % of its people live in rural areas and rely on natural resources for their livelihoods and incomes. However, they mostly lack the knowledge, skills or means to manage their resources sustainably and, as a result, their natural resource management practices are unsustainable. Effective implementation of the SDP would help to ensure more sustainable utilization of natural resources, minimize natural and environmental degradation, alleviate poverty, reduce unemployment, and improve food security. This needs a strong emphasis on capacity building for all stakeholders – farmers, fishers, civil society, private sector and Government agencies – so that they are able to implement the SDP in a cohesive manner. It would also require that Government plans for the country's future set out in the SDP are implemented in a holistic and integrated manner to improve the livelihoods of the Timorese people.

The GoTL acknowledges that existing programs and plans that are based on sectoral approaches, limited coordination, and a lack of integration remain as major challenges for the country. Moreover, existing laws and regulations remain weak due to poor implementation, a lack of enforcement and limited dissemination as a result of inadequate human resources and capacity. The SDP provides the GoTL with an opportunity to reshape and refocus its plans and policies in order to integrate various sectors within the country in line with the MDGs in a coherent manner. A significant achievement made by the GoTL is the Transparency Portal, which allows all citizens to access and monitor available budgets both from the government and from development partners. This program is designed to strengthen good governance and transparency, and provides a model to minimize corruption and manipulation. Although a secretariat or national commission for sustainable development is needed in order to

implement sustainable development in an effective and coordinate manner, this report proposes that the National Development Agency (NDA), established under the SDP 2011-2030, provides a suitable institution for carrying out the functions of such a national commission by coordinating and monitoring sustainable development activities in TL within the framework of the SDP. The extension of the concept of the Transparency Portal can also be very instrumental to monitor progress towards MDGs and sustainable development priorities in TL.

The GoTL carried out the 2010 National Census of Population and Housing, to provide the Government, its own citizens and Development partners with sound information on the current status needs and priorities of the country as a whole as well as those of each of the sucos (villages) in the country. The GoTL has also established a new Directorate to support and strengthen the traditional custom of *Tara Bandu* to protect and conserve natural resources in order to achieve environmental sustainability, as well as a means to build trust within communities, and resolve conflicts. In addition, the GoTL has also demonstrated political will to implement Multi-lateral Environmental Agreements (MEAs) obligations both at country and regional level, as well as to strive to achieve its Millennium Development Goals (MDGs). This commitment was articulated in the SDP 2011-2030, which encouraged all parties to take integrated actions to achieve collective objectives for short, medium and long term development.

Implementation of sustainable development needs strategies not only at the national level, but also at rural levels, given the complex nature of natural resources that require holistic approaches and local action. The GoTL has made a political commitment in the SDP to establish new Municipalities in 2013 in order to reform local government and promote decentralization - this would provide a basis for formulating and implementing Local Agenda 21 in the sucos. Local government will then be able to make their own decision on how they can develop their economy and other key sectors based on their local priorities. This would include the application of *Tara Bandu* at a wider spectrum which is already being implemented by the government staff as an instrument to build social capital.

All in all a green and sustainable development model enables economically viable growth that goes hand in hand with environmental sustainability, thus protecting the inheritance of future generations. The national report emphasises that sustainability is an essential and vital goal for Timor-Leste and can only be translated into tangible outcomes with a strong political will, financial commitment and joined effort from all stakeholders involved.

I. Introduction

In 1992, 108 heads of State from all over the world gathered in Rio de Janeiro to discuss how to achieve a more environmentally sustainable human development model. Known as the “Earth Summit”, the United Nations Conference on Environment and Development (UNCED) added a crucial issue to the World’s Political Agenda: current development models are not taking into account the limits to growth, non renewable natural resources are limited and they are not currently managed sustainably. In June 2012, twenty years later, heads of States from all over the world will gather again in Rio de Janeiro at the UN Conference on Sustainable Development to assess progress since the Earth Summit and to discuss how to achieve a greener, more equitable and more sustainable development path.

In the last years, the concept of a “Green Economy” has emerged as an alternative to current economic development models. A Green Economy is an economy where governments determine, reshape and refocus their policies, investments and spending towards a range of sectors, such as clean technologies, renewable energies, water services, green transportation, waste management, green buildings, sustainable agriculture and forest services, that promote environmentally-friendly and socially equitable sustainable development. Greening the economy or developing an economy along green principles refers to the process of configuring businesses and infrastructure to deliver better returns on natural, human and economic capital investments, while at the same time reducing greenhouse gas emissions, extracting and using less natural resources, creating less waste and reducing social disparities. Economic valuation of ecosystem services and creating a market for green jobs are key components of a green economy. Countries from all over the world are adopting Green Economy Strategies in their transition towards a more sustainable human development model; Rio+20 aims to support countries that are adopting such strategies.

Among the world’s 7 billion inhabitants, 20% are currently living in fragile states. The voice of fragile states and their experiences promoting sustainable development in post-conflicts contexts needs to be heard so that other states can learn from their experiences. Timor-Leste became an independent state on 20 May 2002, after 450 years under Portuguese rule followed by 24 years under Indonesian occupation. As a new country, Timor-Leste faced many development challenges such as conflict and fragility, lack of trained human resources, natural and environmental degradation, inadequate job opportunities for its growing population, and high levels of poverty¹. During the Indonesian occupation mass destruction of the environment took place. Forced resettlement practices that removed people from their sacred lands or the use of napalm bombing are only some examples of the practices and violence that put stress on

¹ Oxford poverty and human development initiative (OPHI), 2011. Country Briefing: Timor-Leste.

an already fragile environment. However, in less than a decade since independence, Timor-Leste has made significant progress in addressing issues of poverty, unemployment, environmental degradation, peace building and state building². Timor-Leste has benefited from offshore oil and gas deposits and has established a system to define national development priorities, which have been identified through the National Priorities Process (NPP). The NPP guides the dialogue between the Government and development partners, one of its main outcomes being the agreement on priorities that meet the concerns of all stakeholders. That way, in the past decade, Timor-Leste has achieved 9% decrease in poverty, double digit economic growth and wide improvements in health and education. Moreover, the country is achieving high transparency while managing oil revenues, becoming one of the eleven fully compliant countries in the Extractive Industries Transparency Initiative (EITI). The government is working hard to consolidate efforts to lay a strong foundation in order to build a prosperous nation.

Geographically, Timor-Leste (TL) is located at the eastern end of the Lesser Sunda archipelago, between latitudes 8'15 and 10'30 south and longitudes 124'50 and 127'30 east. Timor-Leste occupies the eastern half of Timor Island (see Figure 1) and includes an enclave within the Indonesian province of West Timor (Timor-Kupang). To the north, TL is met by the Sawu Sea and Straits of Wetar. To the South, the Timor Sea fills the 500-km gap between TL and Australia (Ministry of Economy and Development, 2011). TL occupies a land area of about 15,000 km². The country is characterized by hills and mountains - about 44 % of the Island has a slope of 40 % or more that cause's soil erosion during heavy rainfall. The island's numerous rivers and streams are prone to flooding (Dolcemascola, 2003). The highest point of the country is Mount of Tatamailau, which is at 3,000 m above sea level. TL has a population of approximately 1.1 million people, with more than 50 % below the age of 19 years (National Directorate of Statistic, 2010). The geographical terrains of Timor-Leste as well as the country's demographic profile indeed have some implications on its development progress which are elaborated further in this report.

Although some progress have been achieved in areas such as education, health, and infrastructure and poverty reduction (UNDP, 2011) TL still faces many challenges particularly in terms of increased environmental and natural resources degradation caused by shifting agriculture and illegal cutting of trees for fuel wood and cash incomes. As a primarily natural resource based economy, these challenges pose risks to sustainable social and economic development of the country. The Timorese economy has been nearly entirely dependent on its non-renewable natural resources (oil and gas). Due to fragile geological, topographical and climatic factors, the use of country's renewable natural resources needs to be carefully managed. Therefore, achieving poverty reduction, improving food security and ensuring

² Progress of Timor-Leste towards the MDGs: a Fact Sheet, 2011

sustainable water and energy supplies depend heavily on the government’s strategy and approach on how to manage its fragile natural resources. Poverty eradication and human wellbeing goals will not be achieved if environmental sustainability is not integrated into the development planning and state building agenda.



Figure 1. The map of Timor-Leste

A petroleum wealth fund has been set up and the country is trying to work out how it can best use the petroleum wealth to develop TL’s non-oil economy, especially to address rural development constraints such as lack of employment. A strong focus on rural development is a matter of urgency because most of the population (approx 75 %) live in rural areas and are totally reliant on their environment and natural resources for food security and livelihoods. Urban migration remains high and has resulted in high unemployment rates (around 54 %). Many youth migrate to urban areas such as Dili in search of jobs but lack the skills to be able to secure employment. To address these high rates of unemployment it is crucial to develop the economy as a whole, i.e. including both the subsistence and formal sectors, in a socially equitable and environmentally sustainable manner. This requires good governance and sound investment in the country’s infrastructure and human development.

Environmental sustainability is not a new concept to Timorese people. Sustainable Development is deeply enshrined in Timor-Leste traditional knowledge. Ceremonies such as Tara bandu show that the people from Timor-Leste traditionally don’t dissociate environmental conservation from peace, unity and stability. The GoTL has also recognised that peace building and state building are essential foundations for sustainable development and has taken a lead role within the g7+ group of 19 fragile and conflict-affected countries (TL is currently the chair of that group) in order to propose a New Deal as essentially an agenda for sustainable development. The New Deal proposes key peace building and state building goals (PSG), focuses on new ways of engaging, and identifies commitments to build mutual trust and

achieve better results in fragile states”³. Having a leading role within g+7 countries, Timor-Leste recognises that *sustainable poverty reduction and sustainable peace keeping will not be achieved if environmental sustainability is not integrated into the development agenda and if collaboration among national and international partners is not strengthened.*

As a responsible member of the global community, Timor-Leste has demonstrated a strong commitment to achieve sustainable development through tackling the challenges of poverty eradication, climate change, land degradation, and loss of biological diversity in order to deal with regional and global environmental issues as well as to achieve national prosperity. Timor-Leste recently approved its Strategic Development Plan 2011-2030. This plan provides fundamental guidance for Timor-Leste’s development stakeholders and can be considered as the country’s Sustainable Development Strategy. Moreover, since its independence in 2002, Timor-Leste has ratified the three Rio Conventions, namely the United Nations Framework Convention on Climate Change (UNFCCC), the United Nations Convention on Biological Diversity (UNCBD) and the United Nations Convention to Combat Desertification (UNCCD). In response to these conventions, under the leadership of the Ministry of Economy and Development, the GoTL has produced three strategies and Action Plans, namely, the National Adaptation Plan of Action for Climate Change approved by the Council of Ministers in 2011 (NAPA), the National Biodiversity Strategy and Action Plan (NBSAP) and the National Action Plan for Sustainable Land Management (SLM), both awaiting approval of the Council of Ministers.

Together with the Strategic Development Plan 2011-2030, ratified conventions, prepared action plans and this national report, Timor-Leste has already achieved big milestones. *By highlighting current challenges, gaps, and opportunities in each sector and also identifying the priority areas and targets to be achieved in the short and long term development plans, Timor-Leste has the foundations to implement ideas, strengthen successes, improve weaknesses and build on the existing systems to achieve a greener and more sustainable future.*

II. Approach and Method of National Preparations for Rio+20

The preparations for Rio+20 in Timor-Leste included three phases:

1. A stocktaking report is produced based on extensive literature review as well as interviews and consultations with the key stakeholders.
2. A national multi-stakeholder workshop is held in Dili following the completion of the stocktaking report.

³ “A New Deal for engagement in fragile areas” available from the g7+ website: <http://www.g7plus.org/news-articles/2011/12/1/download-the-new-deal-document.html>

3. A final national report is produced through the integration of outcomes of both the stocktaking report and multi-stakeholder meeting.

A. Objectives of the Rio +20 National Preparations

Stocktaking Exercise

The principal objectives of the stocktaking were to:

- a. Collect information on the programs, projects, policies and laws (ongoing and completed) that are related to Sustainable Development and Green Economy.
- b. Create a dialogue on the importance of integrating sustainability approach into development agendas and identify main challenges as well as opportunities to implementing sustainable policies and projects.
- c. Analyse the level of cooperation among key stakeholders and highlight opportunities and areas of improvement to achieve sustainability and a green economy in Timor-Leste.

Multi Stakeholder Workshop

The principle objectives of the multi-stakeholder workshop were to:

- a. Invite knowledgeable and senior representations of stakeholder groups including government representatives, local and international organizations representing groups such as women, farmers, youth.
- b. Create a platform for stakeholders to discuss and move towards consensus on a national assessment of progress, remaining gaps, experiences and opportunities.

National Report

The principal objectives of the national report were to:

- a. Integrate the proceedings of the multi stakeholder workshop and the stocktaking report
- b. Develop a national strategy that is based on the present state, experiences gained and aspirations of the country.

B. How are the Rio+20 national preparations undertaken?

Rio+20 National Preparations Team

The three phased Rio+20 national preparations involved the following personnel from the Government, UNDP and UNDESA:

People involved in the consultations, stocktaking exercise and organization of a multi stakeholder workshop:

- (1) Mr. Egidio da Costa Guimaraens (National Director for Environment Services)
- (2) Mr. Nelson Madeira (National Directorate of International Environmental Affairs)
- (3) Mr. Arlindo Silveira (National Directorate of International Environmental Affairs)
- (4) Geraldino Bianco (National Directorate for Environmental Services)
- (5) Marta Baraibar (UNDP – Poverty Reduction and Environment Unit)
- (6) Merve Hosgelen (UNDP – Poverty Reduction and Environment Unit)
- (7) Abilio da Fonseca (UNDESA Local Consultant)

People involved in drafting and finalizing the national report:

- (1) Abilio da Fonseca (UNDESA Local Consultant)
- (2) Nizar Mohamed (UNDESA International Expert)
- (3) Marta Baraibar (UNDP – Poverty Reduction and Environment Unit)
- (4) Merve Hosgelen (UNDP – Poverty Reduction and Environment Unit)

Method of the Exercise

Key stakeholders were identified after intensive consultation and literature review on the partners involved in development projects in Timor-Leste. A total number of 55 stakeholders were approached to conduct interviews. These included 32 from government ministries, 12 from bilateral and multilateral development agencies and 11 from civil society. In-depth interviews were conducted with the stakeholders to explore current activities, challenges and gaps in various sectors and also identify the opportunities for each sector. Published and unpublished documents were used to strengthen the overall understanding of the efforts towards Sustainable Development in the context of TL. Based on these findings, a comprehensive stocktaking report was produced and circulated to stakeholders for their comments.

Following this process, a multi-stakeholder consultative workshop was organized in Dili on the 30th of November 2011 to create a platform for attendees to present success stories, discuss and move towards a consensus on a national assessment of progress, remaining gaps, experiences and opportunities.

Based on the proceedings of the workshop and the findings of the stocktaking report, an inclusive national report was produced capturing the outcomes of the overall Rio+20 preparation process. National Report was circulated to the government agencies and United Nations partners for review. Suggested changes were integrated into the finalization of this national report.

III. Overall Picture of Sustainable Development in Timor-Leste

- Timor-Leste is a young country that regained independence in 2002. It is emerging from a difficult past, burdened by colonialism and violent conflicts. It is still a fragile state facing enormous challenges. The Human Development Index (HDI) for Timor-Leste in 2011 was 0.495, with a rank of 147 out of 187 countries. Since regaining its independence, Timor-Leste has made tremendous progress in creating the institutions of state essential for running the country's economy. However, on a number of fronts, structural challenges need to be addressed⁴. Main problems include: a stagnating oil economy⁵; fragile security characterized by weakened social cohesion; high unemployment, particularly in urban areas and among young people; weak public sector and customer service focus; and a dormant indigenous private sector, with dependency on public sector contracts. A slow economy, with high unemployment rates among young people constitutes a security risk, threatening the process of democratization and the legitimacy and construction of a viable state (FAO, 2010). Moreover, Timor-Leste is passing through a demographic transition of unprecedented proportions, the population being estimated at 1.05 million with three quarters (786,000) of people classified as living in rural areas. The average fertility rate of seven births per woman (one of the highest in the world), places the annual population growth rate over 3.5 % and the population is expected to double in 17 years.
- Timor-Leste is not overly well endowed with natural resources with relatively unproductive soils and low rainfall; however, its oil and gas reserves are among the few high value resources that can be exploited for economic purposes (Anderson, 2001).
- Development Strategies, such as the National Development Plan, 2002, the SDP 2011-2030, and NAPA have been approved and adopted as National Strategies by the Government. These provide a framework for sustainable development for the country, and today, Timor-Leste is ready to enter into the implementation phase of those strategies and Action Plans. However, although there are some existing laws and regulations to promote sustainability in the country, their enforcement remains weak. Currently The GoTL utilizes some regulations from the Indonesian era⁶, some from the

⁴ Government of TL. September 2008. Timor-Leste – State of the Nation. National Commission for Research and Development

⁵ Despite the per capita Gross National Income increasing from USD 395 in 2002 to USD 1,510 in 2007, the non-oil Gross Domestic Product (GDP)

⁶⁶ Indonesian Law is used as subsidiary Law as new that is successfully replaced as new laws (largely based on Portuguese law), are passed by the government.

United Nations Transitional Administration in East Timor (UNTAET) and some from the RDTL. Although the Decree-Law on the Environmental Licensing was approved by Council of Ministers in 2011, and is currently being disseminated, the Environmental Basic Law is still in the legislative process, while the Policy and Strategic Plan for Environment is waiting to be presented to Council of Ministers for approval. This report suggests that the main issues addressed in this report need to be articulated in the drafted the Policy and Strategic Plan for Environment. The Petroleum Act has been in force since 2005, and JPDA regulations from before that.

- Environmental Impact Assessments legislation exists and was approved by the Council of Ministers in 2011, but is not being implemented and currently lacks sanctions. Overall, work needs to be done in terms of enforcement and penalties of existing legislation. Moreover, the benefits of its implementation and enforcement for particular civil society groups such as women and children also need to be recognized and communicated in an effective way.
- Integrating Sustainability into formal education, across all the sectors constitutes a fundamental step to ensure long term human wellbeing for the people of Timor-Leste since lack of human resources is one of the main challenges experienced across all sectors.
- Consultation and socialization of Laws, such as the process undertaken for the Decree-Law on the Environmental Licensing, could be improved. Enhanced consultation and socialization could potentially strengthen communities' ownership of development initiatives.
- Lack of awareness of Sustainable Development and Green Economy mean that few policies or projects support this model.
- Although Timor-Leste showed great commitment to Sustainable Development in 2002 when hosting the Conference on Sustainable Development, many of its expected outcomes haven't been reached. The Task Force on Sustainable Development that was planned to be created as an outcome of the Conference of Sustainable Development in 2002 and that was expected to be hosted by the National University of Timor-Leste is not operational⁷. This task force was aimed at being a key agent in Strategic Planning for

⁷ The Task Force had to be established by a Sustainability Unit, affiliated with UNTIL's Research Centre. The Task Force aimed at including stakeholders from all sectors including government, the university, civil society, the church, business, and the community. It was aimed to carry forward the conference strategies and recommendations, and will be able to contribute to a national sustainable development strategy.

Sustainable Development. The enthusiasm with which the Timorese participants greeted the conference made it clear that there is a strong desire for sustainable development in Timor-Leste. Over the long 7 days of the conference, a comprehensive range of sustainable development issues were addressed. This conference had brought together Timorese and international experts to discuss and reflect upon development issues in Timor-Leste. The majority of participants were Timorese. Although the great efforts that were done at the time of the Conference, stakeholders have failed to effectively follow up the process.

Box 1. Environmental Development in Timor-Leste. Source: *Timor-Leste perceptions of culture and environment, Conference on Sustainable Development, 2002*

Environmental Development in Timor-Leste

In general, there have been three different stages of environmental development in Timor-Leste. The first stage is the pre-European colonization period. Data on environmental development during this period is scarcely available and only few reports can be obtained which are more or less praising tales about T-L's beautiful forests, the scenic beauty of the island, and the abundance of sandalwood as well as the mosaic diversity of its culture. During that period, each ethnic group controlled its own environment that was under its social, economic and political jurisdiction.

The second phase is the European, most notably the Portuguese colonization period. This period can be associated with rapid exploitation of native crops for commercial purposes by the Portuguese and extinction of a number of native plants and crops as well as the introduction of foreign crops into the territory. Moreover, studies have yet to count the massive loss of life, destruction of vegetation and the suffering that the Timorese had to endure as a result of Japanese and Australian government's engagement in the territory during World War II.

The third stage of environmental development is the period during Indonesian occupation. This period saw a mass destruction of the environment throughout the territory, both as a result of deliberate action by the Indonesian government and the army, and the lack of understanding of the Timorese people about how to preserve the environment. Forced resettlements of Timorese by the Indonesian military detached people from their sacred lands and forced them to give up their lands to move elsewhere. In return, slash and burn practices prevailed. In fact these traditional land clearing practices to "save time and energy" are still used widely today and exacerbate the risk of land erosion, deforestation, and air pollution including increase in greenhouse gas emissions.

- **MDGs** are another priority area that the GoTL has given significant attention. The GoTL is working hard to implement MDGs and it has achieved or made some progress in different areas e.g. improved food security, child nutrition, reduction in infant mortality, environmental and natural resources protection, and poverty reduction (UNDP-Human Development Report, 2011 & Progress of Timor-Leste towards the MDGs: a Fact Sheet, 2011). Some progress in rural infrastructure, cooperatives and renewable energy has been achieved even in very isolated areas. In coming years the GoTL has planned to carry-out a series of tangible actions in rural areas. Starting from 2011 to 2015, the GoTL

promised to build houses for all vulnerable people in all villages across the country. These villages are planned to be supplemented by affordable energy, water and sanitation for all poor. These initiatives have been defined in the SDP, 2011-2030. The GoTL has taken serious actions to implement MDGs. One of the main steps was the creation of MDGs Secretariat head by Minister of Finance (2009). The main role of the secretariat is to organize and coordinate key agencies in order to work in a holistic way to implement MDGs in line with government priorities and budgeting. The GoTL has decided to highlight those MDGs that are “off-track”; these include MDG number 1 and number 5 on nutritional issues and maternal mortality ratio (UNDP - Human Development Report, 2011 & Progress of Timor-Leste towards the MDGs: a Fact Sheet, 2011).

A. Government of Timor-Leste (GoTL) responses to Multilateral Environmental Agreements

The Timor-Leste Constitution enshrines the conservation and protection of natural resources and aims to safeguard all natural resources for sustainable development and human prosperity. Article 61 of the Constitution of Timor-Leste states that:

- *Everyone has the right to a humane, healthy and ecologically balanced environment and the duty to protect it and improve it for the benefit of the future generations.*
- *The State shall recognise the need to preserve and rationalise natural resources.*
- *The State should promote actions aimed at protecting the environment and safeguarding the sustainable development of the economy.*

The Ministry of Economy and Development (MED) is the lead government agency responsible for these MEAs, under the portfolio of the Secretary of State of the Environment. Executing agencies for these conventions and protocols include Ministry of Agriculture and Fisheries, Ministry of Tourism, Trade and Commerce, Ministry of Infrastructure and Communication, and the National University of Timor-Leste; civil society partners such as local NGOs as well as development partners are also involved in implementation. Although the GoTL has made a commitment to many of these MEAs, it still needs to carry out initiatives under these MEAs; Annex 1 lists the Conventions and Protocols related to sustainable development that have been ratified by the GoTL and Government responses.

Climate change – National Responses

The National Adaptation Plan of Action (NAPA) identifies probable climate hazards in key sectors and defines possible adaptation actions in order to minimize the impact of climate change and manage associated risks (Ministry of Economy and Development, 2011). This identification was made through stakeholder’s engagement and some studies and observations

of climate hazards in several districts across the country. At the end of this process, nine priorities were identified and ranked in the NAPA report according to their importance. These sectors include Agro-forestry, Agriculture and Livestock, Water Availability, Terrestrial, Freshwater and Marine Ecosystem and Biodiversity, Human Health, Human Settlement and Infrastructure as well as Disaster Management. Although the NAPA has been approved by the Council of Ministers (October, 2011) and included as priorities in the SDP, the strategies need to be strengthened by integrating them into national planning processes so as to mainstream climate change into policy development. This will require the key sectors to work in a collaborative way in addressing these issues in an acceptable and sustainable manner.

Kyoto Protocol: Under the Kyoto Protocol, the GoTL has established a Designated National Authority (DNA). The main role of the DNA is to coordinate with key agencies and private sectors to promote and develop alternative affordable and environmentally friendly sources of energy through the Clean Development Mechanism (CDM). The MED and Asian Development Bank (ADB) are currently working on the assessment and training of staff capacity in order to further strengthen the stakeholders' capacity on CDM and to promote potential CDM projects in Timor-Leste. The main areas covered include: key aspects of CDM project initiation and viability, CDM methodologies and application, project ideas, preparation of a design document and its key components, and a template for voluntary carbon market and national appropriate mitigation actions.

Vienna Convention and Montreal Protocol have been ratified by the GoTL, and the Government is now encouraging companies and industries in TL to work more closely to phase-out or minimize Ozone Depleting Substance (ODS) that impact on the ozone layer, and pose threats to human health and the environment.

Biological Diversity - National Responses

The GoTL has approved the Environmental Basic Law and an Environmental policy and strategy has been drafted, and is ready to be presented to the Council of Ministers. A National Biodiversity Law and a Wildlife Conservation Law have also been drafted.

The Program of Work on Protected Areas (PoWPA) promotes and reviews existing initiatives and strategies on conservation in protected areas. This program is currently underway, and a livelihoods and ecological study will help to define relevant issues. An appropriate approach on capacity building for MPA managers including a sustainable financial strategy development is also under formulation.

United Nations Transitional Administration for East Timor (UNTAET) regulations for Protected Areas and Prohibition for logging trees and export were introduced to protect natural resources. Some other government regulations and resolutions enacted include:

- Government Resolution no. 8/2007 protection on Marine and Terrestrial;
- Government Resolution no. 9/2007 on National Forestry Policy and Strategies that will encourage all entities to manage and protect all natural resources for long term economical benefits.
- In fisheries the Government law decree no. 211 for Quarantine was established to prevent new species that may harm or threaten local species and other sources of biological diversity.
- The GoTL has also strengthened traditional laws (i.e. *Tara Bandu*) to protect and preserve natural resources across the country - the customary law of *Tara Bandu* (TB) has been described as Timor-Leste's traditional ecological wisdom (see Box 2). It is an agreement made by a local community to protect a particular area such as forests, crops, marine resources, or areas for hunting or fishing for a period of time. *Tara Bandu* regulates the relationship between humans and the environment surrounding them. The custom not only preserves nature but also regulates social daily matters. In fact, the customary law is a major tool for conflict prevention and resolution at the local community level. The custom is also a tool for creating respect for the environment and passing this knowledge to the younger generations. It is a means for building trust in the community while preserving the environment, managing natural resources sustainably and keeping peace at the local level. It allows local authorities to find solutions to their own problems to achieve unity, stability and sustainability. The GoTL has strongly supported the customary law of TB, because so far TB is one of the potential instruments to solve many conflicts around countryside both for social conflicts and natural/environment resources issues. The commitment was made through the establishment of a new Department called Department of Peace-Building and Social Cohesion in 2010, under the Ministry of Social and Solidarity. This commitment is also aligned with the National Constitution of RDTL section 56 (Social Security and Assistance) Point 2: *The State shall promote, in accordance with its national resources, the establishment of a social security system.* The role of the new department is to support and mediate social conflicts around the country in close cooperation with community leaders, Council of Villages, Churches, districts officers, as well as development partners e.g. UNDP. The new department has also played a crucial responsibility to train mediators at national level to be able to work with community leaders and promote peace and security across the nation. This scheme is a part of peace building efforts to advocate Timorese's culture and dignity in order to address social conflicts in a constructive manner.

Tara bandu

Timor-Leste is a land of people who survived centuries of Portuguese colonization, almost 3 decades of Indonesian occupation and a long lasting resistance period. It is a land where people experienced a bitter history and relied on the nature for their survival. Now Timor-Leste stands as an independent country looking back at its history and exploring its social cultural economical and natural capital to move forward for a sustainable future.

It is true that Timor-Leste is a post-conflict country and like every other country it needs to develop its own sustainable development model based on its roots, history and its experiences. Right at this point, Timor-Leste has the opportunity to learn from its past and build on its own customs and traditional practices to manage its resources sustainably. It has the chance to build trust within the communities while conserving the environment and developing in a sustainable way.

Within the context of TL's colonial history and occupation, the customary law of 'Tara Bandu' stands out as a way for traditional societies to regulate both social daily matters and the relationship between humans and the environment surrounding them. In fact, the customary law of 'Tara Bandu' is a major tool for conflict prevention and resolution at the local community level, both for management of natural resources and for social issues.

Tara Bandu varies widely in form and content throughout the country, and is known under different names (e.g. Lobu and Kerok) in different parts of Timor-Leste. This customary practice is used mainly by traditional leaders to build trust within a community, helping to shape consensus on how a village would like to prevent and resolve conflict, and also preserve their environment. Tara Bandu is generally used to prohibit certain unsustainable practices, such as hunting, fishing, cutting trees, and harvesting crops, during certain periods of the year to allow the land to naturally renew itself. The customary law also allows a community to deal with conflicts within the community such as land disputes, as well as social problems at the household level.

The customary physical representation of a Tara Bandu is a wooden pole, strategically placed in a village or hamlet, with parts of plants and animal remains attached to it. The plants are economically valuable species, common grasses, and other plants; the animal remains may be cattle skulls, chicken feet, etc. Except for the grasses, the features of a Tara Bandu pole are symbols for what the ban is all about. What is symbolised on the pole is protected within a certain area for a certain period of time. There is also a second part of the Tara Bandu, and that is a place where the guard of the ban places his proof that he is performing his duty. Normally he would

Figure 2. Tara bandu symbol delimiting sacred area



Figure 3. Tara bandu ceremony



place a strand of a certain grass or plant on the pole, so that its level of decay indicates how frequently he visits the pole.

Although Tara Bandu was banned during the Indonesian occupation, it is actively practiced in various parts of Timor-Leste today. Civil society groups such as KSI and Haburas are advocating for the revitalization of this custom in other parts of the country and encouraging its implementation at the national level for peace and trust building, and to foster social and environmental sustainability. Development partners also acknowledge the importance of Tara-Bandu particularly in its ability to preserve and resolve conflict at the community level. As the UNDP country director Mikiko Tanaka said *'The Tara Bandu shows how far Timor-Leste as a country has come in dealing with conflict. The Timor-Leste dialogue and Tara Bandu for peace is unique in that it combines the local cultural customs and more modern mediation methods'*. The Government is working in partnership with UNDP to create the Department of Peace-Building and Social Cohesion within the Ministry of Social Solidarity, and to train national mediators in the districts of Ermera, Dili and Baucau to intervene in local disputes when they turn violent or when villagers are unable to reach agreements on their own. The methods used by these mediators in dealing with conflict issues are a blend of the local cultural practice of Tara Bandu and modern mediation techniques – a combination that is unique to Timor-Leste.

For example, an article on the UNDP website reports that on 29 July 2011, a *"Long running violence in a rural village just outside Timor-Leste's capital ended yesterday with a dance, a prayer, a speech, and the sacrifice of a goat and a pig. For years, rival youth groups in two communities in the hilly sub-district of Metinaro, fought fiercely over land issues. Nothing could put an end to their aggression, until now. A ceremony, known locally as a Tara Bandu, brought villagers together to make a communal promise. In this case, nearly three dozen members of three rival martial arts groups and elder representatives from two villages signed a document pledging them to respect the environment, cease using violence to solve their disputes, stop occupying others' land, and end hunting in protected areas. More than 500 villagers came to witness this traditional ritual that ended in an animal sacrifice to seal the deal."*

Thus, Tara-Bandu is not only a tool for building trust within a community and keeping peace at the local level, but also a means to create respect for the environment in order to manage natural resources sustainably, and for passing this knowledge to younger generations. This practice empowers local authorities to find their own solutions to their problems to achieve unity, stability and sustainability. Therefore, Timor-Leste, by investing in a traditional practice such as Tara Bandu to build trust and resolve natural resource conflicts, can provide an example for other fragile states in achieving their peace building and state building goals.

Biological Diversity - Regional Responses

- Timor-Leste (TL) has joined five other countries in the region in the Coral Triangle Initiative (CTI). The CTI defines five main components namely Sea Scapes, Ecological Approach for Fisheries Management, Marine Protected Areas, Threatened Species and Climate Change. The main objective of this initiative is to develop and strengthen cooperation among the six countries in order to preserve marine and coastal resources that approximately 150 million people depend on. The major issues faced by CT-6 countries are illegal, unregulated and unreported (IUU) fishing activities.

- Partnership in Environmental Management of the South East Asia (PEMSEA) defines 11 components to be implemented in the short, medium and long term. This partnership is made up of 13 countries within South East Asia. PEMSEA concentrates on coastal areas such as coastal management and improving peoples' livelihoods in coastal areas. PEMSEA, in collaboration with Ministry of Agriculture and Fisheries, is doing some activities in coastal areas such as seaweed culture and production in Liquisa district to improve peoples' livelihoods, while in Manatuto district seaweed culture and post harvesting are the main activities to promote livelihoods, particularly for women and children who are engaged in fish post harvest activities. Capacity building and on the job training is another component that focuses on fishery staff both from national and district level.
- Arafura Timor-Sea Expert Forum (ATSEF) comprises three countries (Timor-Leste, Indonesia and Australia) that cooperate to identify existing gaps, particularly on the trans-boundary issues of the Arafura-Timor Seas. Part of the study will give more attention on governance issues that consider institutional, legal and policy environments both at national and regional level. Urgent programs to be addressed include coastal and marine biodiversity, IUU fishing, coastal marine tourism, land-based sources of marine pollution, climate change and sea level rise and other marine and coastal environment issues. Researchers from Indonesia, Australia and Timor-Leste are doing fish stock assessment within Indonesian and Timor-Leste territorial water. This assessment will be concluded by the end of 2012.

United Nations Convention to Combat Land Degradation (UNCCD) – National Responses

Under the UNCCD, the GoTL has endorsed a Sustainable Land Management (SLM) plan in 2009 – this is a national action plan (NAP) to minimize and rectify land degradation caused by unsustainable practices such as shifting agriculture and illegal logging around the country. The NAP document will help to improve land productivity, conserve and protect biological diversity, improve food security, livelihoods and political stability.

B. Institutional Framework for Sustainable Development

As a new country, Timor-Leste still lacks laws and regulations as appropriate instruments to manage its natural and environmental resources. At the present the GoTL still utilizes some regulations both from Indonesia as well as from United Nations for Transitional Administration in East Timor (UNTAET). The GoTL has produced some laws and regulations to ensure the environmental sustainability but these regulations are weak due to a lack of government staff capabilities to implement these laws across the country. Below are some subsidiary laws and

regulations from Indonesian and UNTAET era that are still relevant and have been adopted by the GoTL. These laws and regulations will be successively replaced as new laws and regulations are passed by the GoTL.

- The Indonesian Environmental Management Act (1997) is the primary piece of legislation governing environmental pollution.
- Indonesian Government Regulation No 20, 1990, regarding water pollution.
- Indonesian Government Regulation No 27, 1999, regarding environmental impact assessment.
- Indonesian Government Regulation No 41, 1999, regarding the control of air pollution.
- Indonesian Government Regulation No 85, 1999, regarding the management of dangerous or toxic waste.
- UNTAET Regulation 2000/17 *on the Prohibition of logging operation and the export of wood from East Timor*, which prohibits the cutting, removal, logging and export (in any form) of wood, and the burning or any other destruction of forest.
- UNTAET Regulation 2000/19 on Protected Areas.

Notes: The Indonesian Environmental Management Act (1997), the primary piece of legislation governing Environmental Pollution has been successively replaced by Environmental Licence No 5/2011.

Partnerships

Partnerships between all stakeholders are fundamental to the successful implementation of development strategies such as the SDP for short, medium and long term objectives in line with the MDGs. Partnership arrangements are important for setting priorities, defining responsibilities, defining results and for evaluating and monitoring progress. Engagement of all stakeholders and mainstreaming all sectors into the development process helps to draw on the broadest base of expertise to maintain and strengthen commitment for actions, particularly for sustainable development. There are many ways to engage communities, civil society and the government both at national and district level - these include consultation, planning and dissemination. The participation of stakeholders depends on factors such as the types of issues being addressed, planning approaches, resources available, and scale of the program. At the community level the stakeholders can be involved in the design of programs through public meetings and workshops, environmental education programs, site visit and monitoring and evaluation processes. Table 1 below represents partnership arrangements and the key roles and responsibilities that can be shared between the government, civil society, private sector and the development partners to pursue sustainable development.

Table 1. Possible Roles and Responsibilities of Key Stakeholders

Key stakeholders	Possible Roles and Responsibilities
Government (GoTL)	<ul style="list-style-type: none"> - Initiate and take the lead in the formulation of a national scale development plan (SDP) and implementing it through inter-ministerial group. - Identify management issues and program implementation strategies of the SDP in line with MDGs to achieve the collective objective of the SDP. - Conduct monitoring and evaluation on the overall implementation of all government programs and initiatives. - Develop an environmental and natural resources program for primary school and higher education curriculum. Conduct national education and public awareness through provision of information to the general public. - Design and provide training for all staff gradually both at national and district level to improve staff capabilities to enable them to exercise their roles and responsibilities in an acceptable way. - Define budget and its allocation for all programs and initiatives and do the monitoring and evaluation accordingly. - Strengthen bilateral and multilateral collaboration in order to secure sustainable support i.e. financial, experts and technology.
Local Communities	<ul style="list-style-type: none"> - Participate in the SDP implementation and identification of management issues at district and sub-district level based on priorities defined, and do the monitoring and evaluation. - Coordinate all existing programs with development partners, government at national level and other international NGOs in order to execute the existing initiatives and programs in a sustainable manner.
Local NGOs and International NGOs	<ul style="list-style-type: none"> - Identify overall management issues on sustainable development base on the government priorities. - Work more closely with the government both at national and district levels to promote activities which are related to their roles and responsibilities i.e. promote alternative energy which is environmentally friendly and affordable, a good example: Haburas, PERMATIL and Mercy Corps are working on that area. - Conduct capacity building and public awareness campaign particularly in relation to utilization of natural and environmental resources.

Development Partners	<ul style="list-style-type: none"> - Assist the GoTL to implement government priorities and plans at country and district level. - Work closely with the government members and staff to identify government priorities and challenges and together with the government to address that issue in acceptable way. - Provide adequate budget as needed by the government in order to facilitate the implementation of the government plans and strategies particularly SDP implementation.
Private Sector	<ul style="list-style-type: none"> - Support the GOTL in promoting sustainable and pro-poor economic growth through investment in green economy projects. - Assist the GOTL to create more jobs for the Timorese population, especially among the young and the poor, and providing on-the-job training. - Support GOTL initiatives that promote a domestic market for locally-produced goods and services. - Explore external markets for Timorese products that would encourage a greener and more sustainable economy. - Collaborate with government and other development partners to strengthen a more enabling environment for green investments and green jobs.

1. National Actions in Support of Sustainable Development

As a fragile state, Timor-Leste is “off-track” to meet its MDGs. This is because security and stabilization are pre-conditions to social and economic development. Achieving security has been a top priority for the nation. Rebuilding security institutions and promoting principles of good governance are national priorities as well (Timor-Leste: Strategic Development Plan, 2011). The GoTL has demonstrated strong political commitment to state building and peacebuilding both at national and international level.

Internal Security

There are two institutions (Timor-Leste Defence Force and *Policia Nacional Timor-Leste*) which are responsible for national security and public safety in TL. However, the primary responsibility for internal security is the *Policia Nacional Timor-Leste* (PNTL). This responsibility, outlined in Article 2 of Organic Law 8/2004, is to guarantee the maintenance of public order, security and peace in line with internal security legislation, “*situations of institutional*

normality” (TL-Security Sector Reform, 2008). In the coming years, security will be an increasingly important for peacebuilding and state building for the GoTL because internal security is a fundamental issue and a pre-condition to speed up the development process in the short and long term.

The GoTL has initiated strengthening cooperation between the PNTL and the Timor-Leste Defence Force (F-FDTL) as an effective working mechanism in order to reduce the risk of conflict resulting from differences in opinion between the F-FDTL and the PNTL as experienced in the national crisis of 2006. In order to address all security issues in TL, the PNTL must be able to assign members to work more collaboratively with all entities across the country. To exercise this approach the PNTL has applied a participatory security model that encourages all people to participate in creating security including involving customary organizations at the countryside level and government laws/regulations. This would help increase awareness of government regulations in rural areas and enable village institutions to maintain security of the villages (Parks, 2008). Decentralization of security would be consistent with local agenda 21 principles, and help promote peacebuilding and state building, whilst sharing responsibility with local communities in all villages and sub-villages.

A positive step made by the GoTL is the establishment of a Community Policing Section (CPS) under PNTL (2010). The main role of this new CPS unit is to work closely with community leaders and churches to reduce social conflicts within a village. However there is need for capacity-building and implementation of feasible programs on the ground to operationalize the role of this new unit. In these circumstances, the role of UN Police mission still remains crucial to improve the capacity of the PNTL.

The Justice sector

The justice sector is a priority area for the GoTL. However, the area is still fairly undeveloped due to limited infrastructure, lack of trained human resources and that court proceedings take place in the official language, Portuguese, which only very few people (around 7 % of the total population) speak. Given the language problems, poor communications infrastructure, and high level of illiteracy, public knowledge of formal laws (as opposed to customary laws) remains low, particularly in rural areas (Law and Justice in TL, 2008 and Myrntinen, 2009). Conversely, the international efforts have made significant progress aimed at training a local judiciary from scratch as well as teaching judges, lawyers and other judicial officers to work in Portuguese. The government has also made notable progress in formal justice sector since 2002. The GoTL aimed at building significant infrastructure, recruitment of new staff, judges and new prosecutors as well as public defenders. This means that justice sector is improving and the nation has already made considerable progress in establishing the rule of the law for peacebuilding and state building.

The ability of the courts to function effectively was greatly disrupted by social and political instability that affected national development in the short and medium term (Security Sector Reform Monitor, 2011). Progress has been made towards a fully functioning court system, professional training, mentoring and on-the-job-training for judges; for example, the superior council of the Judiciary was established and is now operational. Moreover, this agency also has established a Legal Training Centre (LTC) for professionals, which plays an important role in strengthening national justice capacity. One of the most significant outcomes of the program is the appointment of 27 national professionals in June 2007. Currently there is a huge demand for ongoing training programs through the LTC to ensure that the human resources required for the justice system can be met, for fully trained, professional, and national justice professionals. Overall, a comprehensive human resources strategy for the justice sector remains an absolute necessity in order to change political environment, to address existing judicial issues and to respond to increasing demands on the justice system. This is to ensure meaningful access to justice, particularly at district level and to promote self-reliance and national ownership of the justice system.

Public Sector Management and Good Governance

Good governance and professional staff are prerequisite to deliver good services in public sector. Developing strong human resources is an important building block for laying a solid foundation for the nation's progress to achieve national sustainable development. Strengthening the decentralization of decision making is also very important for rural development.

Since 2009 the GoTL has formulated programs and initiatives for decentralization of decision making to all districts and sub-districts. Some progress has been made since 2006; however human resources are lacking at the district level to adopt participatory planning tools. Government staff mostly does not have the necessary skills as due to lack of on the job training. Moreover the capacity in the public sector is not on merit based recruitment and performance based promotion (UNDP-Human Development Report, 2011).

The government has devoted more attention on the capacity building of the staff to develop their skills and provision of job security in order to encourage them to exercise their mandate in an acceptable way. Investment in capacity building particularly at districts level is very limited due to lack of donors and government budgets. The Secretary of State for Professional Training and Employment is responsible for mediating, formulating and providing vocational training. In cooperation with donors and employers, this Secretary of State also administers an employment and vocational training fund and overseas fellowship and workers program. This program is underway but skill levels are inadequate and much of the training is not appropriate. Meanwhile, government's structure at district and sub-districts are not clear yet. The roles and

responsibilities are still poorly defined. Decentralization is just an idea at present and is not conceptualized in the context of Local Agenda 21. However, the GoTL has strong political commitment through SDP 2011 to establish new Municipalities in 2013 that will reform local government. In line of this, the GoTL will develop and promote decentralization - this would provide a basis for formulating and implementing Local Agenda 21. Local government will then be able to make their own decisions on how they can develop their economy and other key sectors based on their local priorities.

Other examples of good governance initiatives include: the formulation of the Strategic Development Plan (SDP) for 2011-2030; the introduction of a system for transparency for government revenues; and carrying out detailed census in each of the sucos as a basis for decision-making and allocation of resources. These national initiatives are beginning to put into action some of the components of the New Deal for TL.

For example, the SDP, which is described in detail in Chapter IV of this National Report, is a country-owned plan for inclusive development for TL and was prepared through a nationwide consultation process involving a range of stakeholders. This plan which was approved by the Council of Ministers in July 2011 is based on the national vision for TL that was formulated after independence in 2002, and provides the One National Vision, One Plan for the transition out of fragility. Thus it directly supports the FOCUS component of the New Deal, i.e. “Engagement to support country-owned and –led pathways out of fragility”.

Another example of a good governance initiative in support of the PSGs is the Transparency Portal set up by the GoTL. This portal directly addresses the TRUST component of the New Deal, i.e. the introduction of systems for Transparency to monitor both the actions of Government and those of its Development Partners. Thus the Transparency Portal provides a means for the people of TL and development partners to monitor how country’s resources particularly from non-renewable natural resources and development aid is being used and allocated for Timor-Leste’s equitable and sustainable development.

The objectives of the Transparency Portal are:

1. To provide a transparency window
2. To democratize government decisions through increased and better participation of the citizens
3. To reduce the risk of corruption
4. To increase the credibility of financial information
5. To provide free access to state information
6. To promote a culture of transparency in the Timor-Leste

7. To promote greater control of citizenship and civic participation

The transparency systems currently operating within the GoTL include:

- A Budget Transparency Portal that provides free access to an information web platform and allows citizens to get complete financial information on the national budget in an interactive manner.
- An Aid Management Platform designed to improve aid and development assistance effectiveness. The AMD allows citizens to see how much assistance is provided by development partners and how it is spent.
- A procurement portal that allows for monitoring of goods, services and contracts awarded by the GoTL.
- A Government results based portal that allows monitoring of Government priorities, delivery of programs, and who benefits from Government projects.

Currently access to these portals is available particularly to civil society, private sector and donors that have good internet access. For the majority of the population of TL, the constraints of illiteracy (the adult literacy rate is 51%) and lack of internet facilities (only 0.2% of the population are internet users), mean that their only access to this information is through the work of civil society organizations such as La'o Hamutuk. However, the Government has plans for improving the rates of literacy through MDG2 on universal primary education and through literacy programmes for adults. The SDP also has as one of its targets under infrastructure development that by 2015, *“There will be reliable, affordable and high speed internet access available in all district capitals and surrounding areas”*. These initiatives and investments will help to ensure that TL is able to put in place the basic building blocks of good governance in support of the PSGs.

Another example of good governance is the 2010 National Census of Population and Housing, which provides the Government and Development partners with sound information on the needs and priorities of the country as a whole as well as those of each of the sucos (villages) in the country. This comprehensive census has been used for example, in the SDP to provide information for all the sucos on areas such as access to water, numbers of livestock, crop production, population density, levels of education, nutrition status etc, thus allowing the Government to target specific needs and priorities for each of the sucos in the SDP and to allocate resources accordingly. The Census therefore goes some way towards the need identified in the Dili Declaration for reliable data and statistics for evidence based policy making for state building and peace building.

National Development Agency (NDA)

This model of this agency is initially expressed in the SDP, 2011 and is expected to be established in the very near future. The main role of this agency is defined to set up

instruments and tools to implement the SDP 2011-2030 in an effective and sustainable manner. This agency is proposed to cooperate with the MDGs Secretariat at the Ministry of Finance's office in order to implement and monitor MDG related activities such as provision of housing for the vulnerable; provision of adequate water and sanitation as well as alternative energy sources. This agency is also planned to be responsible for monitoring and evaluating large government projects that promote economic growth, poverty eradication and job creation and for reporting on the execution of strategic infrastructure development. In addition, this agency is proposed to be responsible to conduct research and track socio-economic and financial indicators to contribute to long and short term economic and social development plans and strategies.

Effective implementation of sustainable development activities requires the establishment of a national oversight body such as a Commission for Sustainable Development that would coordinate activities and monitor their effective implementation to achieve national agreed priorities. As sustainable development requires an integrated approach across all sectors: social, economic and environmental as well as the active participation of all stakeholders – Government, private sector, and civil society, this central coordinating body would need to have a clear mandate and terms of reference and be acceptable to all stakeholders.

The NDA proposed under the framework of SDP, 2011-2030 therefore provides a suitable institution to carry out the functions of a national commission on sustainable development, particularly as this agency is also responsible for monitoring progress towards the MDGs in TL. The NDA, which reports to the Prime Minister and is under the portfolio of the Minister of Finance, would help to ensure that all ministries cooperate and participate in cross-cutting and synergic projects and policies and ensure effective and efficient implementation of cross and multi-disciplinary as well as multi-sector projects. In this regard, the transparency portal established by the GoTL, provides a good model for monitoring sustainable development activities in the country. Therefore, one of the key activities in implementing the SDP in TL would be to explore how this concept of a transparency portal could be extended and strengthened so as to provide access to all stakeholders on how TL is doing in terms of progress towards achievement of MDGs as well as sustainable development goals that encompass social, economic and environmental priorities.

2. International Commitment in Support of Sustainable Development

Foreign Affairs

As a small island state which is located between other countries, it is really important to strengthen TL relationships with neighbouring countries e.g. Indonesia, Australia, Singapore, Malaysia and Papua New Guinea, as well as countries and donors that are involved in the

development process of TL such as the United States, China, the European Union, Japan, Brazil and Portugal. This coordination and bilateral cooperation has substantial benefits for TL to maintain its own security and to coordinate actions in areas such as marine resources management, including marine boundaries to conserve TL's biological diversity. This collective responsibility and common use of the marine and coastal resources are extremely important to feed Timorese people who rely on these resources for their livelihoods and cash income. These efforts are supported by the TL National Constitution section eight that sets out the principles of foreign policy. Collaborative approaches to foreign policy will encourage Timorese people to form stronger cultural, economic and trade relations with other countries and it is very important to maintain this position as a new nation.

The g7+ Group of Fragile Nations

As a fragile post-conflict nation, TL has taken part with other fragile countries in the world to share experiences of social conflicts and ways to address these conflicts. TL has also worked to promote appropriate mechanisms to contribute to the global development dialogue, and to explore new possibilities for solidarity action in fragile countries. Engagement in the g7+ is of benefit for TL because through this channel, it can access sources of funding and be able to share experiences with 19 countries across the world in state building and peacebuilding. As mentioned in the introduction to this National Report, the Government of Timor-Leste has taken a lead role in the formation of the g7+ group that brought together 19 fragile and conflict-affected countries under a common umbrella. The g7+ held its inaugural meeting at the first Organization for Economic Co-operation and Development (OECD) International Dialogue on Peacebuilding and Statebuilding (IDPS), held in Dili, Timor-Leste in April 2010. As a result of this meeting, countries agreed on the Dili Declaration that now acts as the Charter for the g7+. Acknowledging that conflict and fragility are major obstacles to achieving the MDGs for fragile and conflict-affected states by the target date of 2015, the Dili Declaration recognized the importance of state building and peacebuilding as precursors to achieving the MDGs.

The g7+ group of fragile states adopted the Peacebuilding and Statebuilding goals (PSGs) as stepping stones to achieve progress on development, with each country being able to identify their own peacebuilding and state building priorities within the common framework for sustainable development provided by the PSGs. The five PSGs are:

- **Legitimate Politics** - *Foster inclusive political settlements and conflict resolution*
- **Security** - *Establish and strengthen people's security*
- **Justice** - *Address injustices and increase people's access to justice*
- **Economic Foundations** - *Generate employment and improve livelihoods*
- **Revenues & Services** - *Manage revenue and build capacity for accountable and fair service delivery*

As stated in the Dili Declaration, these five goals “*create the foundations for inclusive economic development, employment and effective management of natural resources*”.

As Chair of the g7+ group of fragile states, TL has taken a lead role in ensuring that the needs and priorities of the g7+ feature prominently in the development agenda. At its recent meeting in Busan, Republic of Korea, the g7+ group, development partners and international organizations that make up the IDPs, agreed on a New Deal for engagement in fragile states:

- The use of the PSGs as a foundation for achieving progress towards the MDGs;
- A FOCUS on inclusive country-led and country-owned transitions out of fragility;
- Building mutual TRUST by providing aid and managing resources more effectively and aligning these resources for results⁸.

Thus the five PSGs, along with the other two components of the New Deal – FOCUS and TRUST, provide the framework for sustainable development and guidance for g7+ countries on building a Green Economy for equitable and sustainable economic development built on sound management of each country’s natural resources.

Following the meeting of the IDPS, at the High Level Forum on Aid Effectiveness in Busan, the priorities of the g7+ featured prominently in the outcome statement of the Forum; those countries that have endorsed the New Deal as a way of promoting sustainable development in situations of conflict and fragility⁹ pledged their support for its implementation through:

a) The Peacebuilding and Statebuilding Goals (PSGs), which prioritise legitimate politics, people’s security, justice, economic foundations and revenues and fair services - as an important foundation to enable progress towards the MDGs to guide our work in fragile and conflict-affected states.

b) FOCUS - a new country-led and country-owned way of engaging in fragile states.

c) TRUST - a set of commitments to enhance transparency; manage risk to use country systems; strengthen national capacities; and improve the timeliness and predictability of aid - to achieve better results.”¹⁰

CPLP (Community of Portuguese Speaking Countries)

TL takes part in this forum that consists of 7 countries in Africa plus Brazil and Portugal. The main role of the forum is to discuss economic development issues, environment and climate change issues and how each can contribute and support each other to address these development challenges. Therefore, sharing experience and information among these countries have been the main activities to date.

⁸ A New Deal for Engagement in fragile states, IDPS, November 2011.

⁹ As of 2 December 2011, in addition to the 19 original members of the g7+, 17 development partner countries and five international organizations are members of the IDPS.

¹⁰ Busan Partnership for Effective Development Cooperation.

Partnership with Asian Countries

TL as a signatory of many conventions particularly Rio Conventions and other Multi-lateral Agreements, has demonstrated a political will to work with neighbouring countries at regional and international level in order to implement conventions obligations in sustainable manner. A range of programs and initiatives have been done so far such as biological diversity - see the GoTL responses to regional level (chapter 2) and other conventions i.e. climate change.

C. Achievements and challenges across Sectors

The following section highlights sectoral achievements and challenges to achieve sustainable development in Timor-Leste.

1. Agriculture, Rural Development, Forestry and Watershed Management



Table 2. Policy and Legal framework on Agriculture, rural development and Forestry

Policy and Legal framework
<ul style="list-style-type: none">• The National Adaptation Programme of Action for Climate Change (NAPA, 2010) has identified project activities addressing current problems such as slash and burn, deforestation and land degradation. These include proposing activities towards a more sustainable model for the agriculture sector, including agroforestry, integrated land management, reforestation, land erosion reversal, integrated watershed management and improving planning and the legislative framework for food production.• Prior to the Enactment of the Constitution, regulations passed under the United Nations Transitional Administration in East Timor (UNTAET) including: <i>UNTAET Regulation 2000/17: On the Prohibition Of Logging Operations And The Export Of Wood From East Timor</i>¹¹, which prohibits cutting, removal, logging and export (in any form) of wood, and the burning or any other destruction of forests. <i>UNTAET regulation 2000/19 on Protected Areas</i>• A Forestry Sector Plan has been equally developed (Diploma ministerial no, 429/2010).• Under the UN Convention on Biological Diversity and the UN Framework Convention on Climate Change respectively the draft National Biodiversity Strategy and Action Plan (NBSAP¹¹) has been completed and the National Adaptation Programme for Climate Change (NAPA) has been developed through multi-stakeholder processes and led by the Ministry of Economy and Development through the Secretary of State for the Environment.

¹¹ Currently still a draft

- Led by the Ministry of Agriculture, the National Action Plan for Land Degradation¹² under the obligations of the country for the United Nations Convention to Combat Desertification has been drafted.
- Timor-Leste lacks a land tenure policy. The Lei da terras is still in draft form and awaiting review by the National Parliament. This is having a direct impact on the way communities perceive their rights and obligations on the land and ultimately on the way they manage their land¹³.
- Decree Law No. 26/2011 on the creation of an Interministerial Commission for Rural Development (Article 16, Organic law, Ministry of Economy and Development).
- Decree of Law on Sustainable Rural Development (Decreto Lei No.26/2011 de 2008 de Junho)

Artigo 16 Lei Organico do MED

- In partnership with MAF, FAO developed a Strategic Programme for promoting agricultural growth and sustained food security
- Draft Agriculture Policy prepared by MAF with FAO's support in 2005
- Some sub-sectoral laws and decrees have been drafted but not finalized/updated, such as the Decree Law on Farm inputs of Forestry.
- Some sub-sectoral policies have been drafted but not finalized/updated such as those on agricultural extension, agricultural mechanization, fisheries, food security, land management and animal health.
- The 2002 Constitution of TL states that all land and natural resources are owned by the state. However, the GoTL has recognized the potential role that communities can play in forest management.
- A Forest Policy¹⁴ (2007) recognises the importance of private and community forestry. In 2008, FAO assisted GoTL to prepare a Forest Resources Management Decree which provides the legal regulatory framework for participatory forestry management. However, implementation has been weak.

Background

Agriculture and food security

Timor-Leste, as one of the newest country of the world, is a fragile state in the process of recovering from political instability, rehabilitating livelihoods, and strengthening the national economy. Primary sectors such as agriculture, fisheries and forestry provide employment to around 78% of the population (CTSP, 2011).

¹² Currently still a draft

¹³ At present land claims consist of a complex layering of customary tenures, holders of titles issued during the Portuguese era, holders of titles issued in Indonesian era, and current occupiers (Fitzpatrick 2002, East Timor Land Law Programme 2005)

¹⁴ Diploma Ministerial no, 429/2010

Timor-Leste's people are chronically food insecure. Floods, strong winds, drought and pest infestations occur annually, and result in loss of food production. Meanwhile the country imports almost half its cereal-equivalent consumption requirements (FAO/WFP 2007) and over 50% of children below five years of age are undernourished (NSD, 2010). Food insecurity has worsened in rural areas over the recent years, with 79% of the population suffering at least one month of low food consumption, compared to 51 % of the urban population (FAO, 2010).

Timor-Leste covers 14,847sq km and over half of this area is either at risk of erosion or degradation¹⁵ with rapid deforestation, overgrazing, shifting cultivation practices and lack of irrigable land, along with rapid population pressures. Any poverty reduction strategy in Timor-Leste needs to systematically address the acute and growing problems of unemployment and low rural productivity, particularly as 90% of the rural poor and over half of the urban poor depend on the agricultural sector for their livelihoods.

According to the UNCCD, unlike many neighboring islands that are derived from volcanic rock, TL is derived from limestone and metamorphosed marine clays (They are much less fertile than soils derived from volcanic rock). The island has relatively unproductive, low fertility, fragile soil. In most areas, this low fertility is compounded by the rapid decomposition of organic matter due to tropical climate. As much as 44% of TL may have a slope of more than 40%. Steep slopes with shallow soils are very susceptible to erosion. The country's very low agricultural productivity stems in part from traditional practices (with very low reliance on inputs) and from a culture of dependence on Government subsidies and artificial markets which characterized the Indonesian period. Post harvest and agriculture losses are very high and quality problems continue to hinder exports. In addition, only 13% percent of Timor-Leste's land area is suitable for agriculture. Low agricultural productivity and limited opportunities in non-agricultural sectors are major causes of persisting poverty and high incidence of food insecurity. As three-quarters of its population depends on agriculture for its livelihood, sustainable development of the agricultural sector is critical to the reduction of poverty and hunger and the overall economic growth of the country (FAO, 2010).

Forestry

It is thought that East Timor was originally largely forested. Human impacts, including repeated burning and clearing land for cultivation, hunting and grazing have resulted in the loss of most of the original forests¹⁶ (Anderson, 2001). Very little primary forest remains. Vegetation now largely consists of secondary forest, savanna and grasslands. Forests and shrub cover about 86% of the country's land area. Much of this is integrated into the farming systems in various

¹⁵ Draft Land Use Survey, UNDP 2010.

¹⁶ Data on deforestation rate varies depending on the source. Between 1972 and 1999, the Democratic Republic of Timor-Leste had reduced its forest cover at a rate of 1.1 % per annum or by 24 % in total. At present, forests in the country cover only about 35 % (or 0.5 million ha) of the total land of the country (1.5 million ha).

ways, some as part of long rotation shifting agriculture, other providing livelihood and other benefits to farmers (FAO, 2010). Under Indonesian rule, timber was unsustainably harvested as an export commodity and war in the late 1990s heavily damaged forests, turning many areas into degraded scrubland. This problem has been exacerbated more recently by large-scale forest fires. Efforts to increase food production have also contributed to deforestation as farmers practice slash and burn techniques in order to enlarge and enrich arable land. Deforestation has further caused soil erosion, landslides and flash floods, and eventually affected the people's life in major river basins (JICA, 2010). Deforestation has also increased the vulnerability of coastal and upland populations to disasters such as storms, mudslides and coastal flooding. Most farmers depend heavily on forest resources to support their livelihoods. Improving forest management and the flow of resources to farmers has the potential to play an important role in reducing poverty and improving rural livelihoods.

Sandalwood, a symbol of pride for the East Timorese people, was one of the principal resources that brought the Portuguese to East Timor. It is a slow growing parasitic species. Wholesale exploitation of sandalwood by the Portuguese brought it close to extinction. The few remaining stands were harvested by the Indonesians, and today, very little sandalwood remains.

Agricultural development

Due to the lack of access to local markets and financial services, difficulties in selling local products and the low price of agricultural goods with no incentives to produce a surplus for cash sale mean that people in TL generally produce just enough food to feed themselves. Hence, the majority of the population depends on subsistence farming for their food security (FAO, 2010). Rehabilitation of the agricultural sector is of key importance to rural development and to the overall development of Timor-Leste as 75% of the people rely on agriculture for their living. Apart from its clear relevance to food security, agricultural sector provides a source of income in rural areas, supplies raw materials (from crop surpluses and natural resources) for agro-processing and agri-business. The sector has also a huge potential to help address major national problems such as unemployment and under-employment among the youth. Sustainable development of the agricultural sector can also help the conservation of natural resources and slow down the rural-urban migration (FAO, 2010).

Irrigation development

Current government policy is to encourage rice farming in all irrigated areas in order for the country to achieve self-sufficiency in rice production. Over the period 2002, 2007, proportion of irrigated land increased significantly, from 34,700 ha to 56,300 ha. The construction of irrigation systems has accounted for a large share of MAF's budgets and donor's investments (FAO, 2010). Despite these investments, the use of those large scale irrigation systems has resulted to be inefficient.

Watershed management

The National Directorate for Forestry of MAF considers 10 of the country's 15 watersheds to be "critically degraded" because of widespread deforestation caused by "slash and burn" cultivation, firewood extraction and timber production.

Progress

Development of primary sectors such as agriculture, fisheries and forestry which provide employment to 78% of the population constitutes a top priority for the GoTL. In order to support the GoTL's efforts to sustainably increase food production, FAO undertook a multi-disciplinary mission of policy and agricultural experts to analyze the existing challenges to agricultural growth and food security and identifies a coherent package of interventions to address them. The strategic programme includes four core components which comprise a total of 23 key elements, namely: 1) stakeholders coordination, information gathering and policy development; 2) Rehabilitation and strengthening of agricultural support services; 3) rehabilitation of farm capacity, improvement of rural household economy, and promotion of sustainable livelihoods through the introduction of new and improved technologies; 4) Demonstration of integrated and collaborative watershed management approaches to sustainable rural development and rehabilitation and strengthening of farmer-managed irrigation schemes.

Primary sectors such as agriculture, forestry and fisheries offer an opportunity for sustainable economic development. Coffee constitutes Timor-Leste's number one non-petroleum export with approximately 28% of households earning some income from coffee. One third of coffee crops are sold in niche markets for high quality, organic and/or fair trade certification earning a 20-100% mark-up.

Since 2002, the GoTL has directed its attention towards agricultural development and invested in the sector through provision of heavy machinery, high yielding seeds, fertilizers, training and supervision through agricultural extension workers. However, many weaknesses remain with the *extensionista* system and the state budget for agriculture remains weak. According to a local NGO, the SDP may run the risk of promoting unsustainable agricultural practices if sound management systems are not fully in place.

The Australian government assisted MoAF to establish ALGIS in 2001, to meet mapping and spatial analysis needs for irrigation, forestry, agriculture, and aquaculture. Various mapping projects, supported by external funding, have helped establish GIS systems in a number of government agencies and produced an impressive array of geospatial products, including the Atlas of the 2004 Population Census (CTSP).

Overall, there is evidence from Government, donor and NGO supported projects on sustainable farming practices in Timor-Leste. For instance, the increase of upland rain fed systems can provide acceptable returns for investments in improved seed varieties, improved agricultural

practices such as agro-forestry, conservation agriculture, integrated plant nutrient management and integrated pest management, and reduction in post-harvest losses. Although upland soils are generally shallow and poor in fertility, there is sufficient moisture-holding capacity for improved agricultural practices to have a significant impact, especially in terraced areas following an irrigated crop and southern parts that have a bi-modal rainfall pattern.

A comprehensive census was undertaken in 20120. This indeed provides a good basis for rural development planning. In addition, under the leadership of the Ministry of Finance, a monitoring system based on the results of the census has been established at the suco level, Census Fo Fila Fali.

(See annex for table with information on sustainable Agriculture, rural development and forestry)

Factors likely to put pressure on Agriculture and Forestry

The following may put further pressure on agriculture and forestry sector:

Migration from rural to urban areas; diet/acclimated preferences for imported, processed food and drinks; promotion of the green revolution model of high input, chemically dependent agriculture; potential projects promoting biofuels or export-oriented agriculture that take arable land and water away from local food production for local consumption.

Table 3. Challenges and Needs in Agriculture and Forestry

Challenges and Needs in Agriculture and Forestry	
Land tenure and sustainable management	<ul style="list-style-type: none"> - Need for a Land Law and Policy. - Need to implement the Action Plan produced under SLM.
Commercial farming and mechanization	<ul style="list-style-type: none"> - Lack of a policy for the sustainable use of chemicals and fertilizers (which are being promoted to increase production). - To ensure that EIA (and SIA) is carried out for all new major technologies that are introduced to increase production. - Need to revise MAF programmes to improve food production and productivity in all sectors (FAO & MAF, 2010). - Need to review the GoTL mechanization policy (vis a vis other labour saving practices).
Forestry	<ul style="list-style-type: none"> - Although the use of firewood for cooking has been forbidden, no affordable alternative is available to households to meet their energy needs. - Lack of mapping of dependence on forestry.
Extensionista system	<ul style="list-style-type: none"> - Under resourced agricultural extension workers. Their technical assistance to farmers is very limited since their access to transportation

	and technical agricultural knowledge are lacking (they are not provided with motorbikes or fuel for them to go to the farms in the sub villages).
Sustainable agricultural practices	<ul style="list-style-type: none"> - One of the biggest challenges: increasing staple food production through intensification, diversification and expansion of cultivated areas. - Need to build capacity to implement the priority strategies identified in the Action Plans that have been developed under the Conventions (UNCCD, UNFCC, and UNCBD). - Implementation and enforcement of Tara bandu in some rural areas - Upland rain fed farming systems needs to receive more attention (given its importance for food security). - Scaling-up small rain fed production initiatives into national planning and development programs.
Unsustainable farming techniques	<ul style="list-style-type: none"> - Culturally engrained and widely used unsustainable farming techniques such as slash and burn. - Communities face difficulties in storing their harvests and seeds, leading to heavy post-harvest losses. - Need to reduce focus on irrigated rice, since 70% of farmers don't have access to irrigated paddy.
Markets	<ul style="list-style-type: none"> - Lack of markets and profit making incentives. - Creating better domestic market for local agricultural products in order to encourage production and reduce reliance on food imports as well as creating off-farm employment.
Low budget allocation	<ul style="list-style-type: none"> - Low financial resources currently allocated to the Ministry of Agriculture and Fisheries. This year, they accounted for less than 2% of the total budget. An insufficient allocation to undertake proper agricultural research or to run a good technical extension system.
GIS	<ul style="list-style-type: none"> - The longer-term maintenance of GIS infrastructure (including the hardware, software, and technical capacity of the government staff) beyond the lifetime of these projects is lacking. - Upgrade the existing GIS facility and staff skills to a minimal functional level, as well as foster a closer working relationship between ALGIS and NDFA (To support the role of ALGIS as the geospatial support unit for MoAF, it is necessary to). - Train on the use of GIS to key public officials of Ministries (e.g. staff at ALGIS and NFDA) to develop Timor-Leste's national capacity for deploying knowledge-based approaches in planning and managing primary resource-based sectors.
General	<ul style="list-style-type: none"> - Lack of coordination among actors operating in the field. - Gender biases in the design and implementation of agricultural development activities. - A short term project life that makes difficult for longer-term interventions required to influence the course of the normally slow pace of the agricultural sector.

- Low involvement of farmers in decision-making processes.
- Climate Change due to unpredictable droughts and floods, especially for traditional rain fed upland areas.
- Cultural and social constraints, rural people not having a concept of employment.
- Logistics and poor road conditions limit project implementation
- Majority of products sold without value-added processing.
- Increasing off-farm employment opportunities (e.g. in the field of processing, storage, marketing, transportation and information services).
- Lack of reliable statistics on a range of agricultural topics.

Opportunities

- Generating revenue from sustainable certified export products such as organic coffee.
- Value-added labour intensive industries offer the most promising solution to increasing incomes and reducing rural poverty. One third of coffee crops are already sold in niche markets for high quality, organic and/or fair trade certification earning a 20-100% mark-up.
- Taking advantage of world market for organic products.
- Strengthening existing traditional systems of sustainable management of resources such as Tara bandu.
- GIS are particularly useful in spatial planning and geographical targeting of development strategies and programs.
- Increase upland rain fed systems can provide acceptable returns for investments in improved seed varieties, improved agricultural practices (e.g. agro-forestry, conservation agriculture, integrated plant nutrient management and integrated pest management) and reduction in post-harvest losses.
- According to FAO and MAF, growth targets for agriculture have to reach at least four to five percent annual growth per capita before there can be some clear results in poverty reduction over the medium term¹⁷ (FAO, 2010).

¹⁷ Government of Timor-Leste & European Commission “A draft Strategic Framework for Rural Development in Timor-Leste (2010-2020)”.



2. Water Management, Sanitation, Waste Management and Pollution Control

Table 4. Policy and Legal Framework Water management, sanitation and waste management

Policy and Legal framework

- The National Adaptation Plan of Action for Climate Change, (NAPA, 2011) has identified project activities related to sustainable water management infrastructure.
- BESIK is currently supporting the Government of TL to redraft its National Water Resources Policy.
- Decree on Clean Water Consumption and Waste Management.

Background

As mentioned previously, the population is growing at an annual rate of 3.5% and if it continues, the population will double in 17 years. Many young people are expected to be attracted to urban areas, and Dili is already experiencing a rapid population growth (from 175,730 people in 2004 to 234,026 in 2010).

The country is currently having problems with its urban pollution since there is no effective waste management system in place. This becomes especially problematic in highly populated and coastal areas. Since its independence in 2002, the country still lacks facilities to support the management of solid waste. At present, collection and transportation is undertaken by some private companies, sometimes contracted by the government. Tibar landfill site, constructed

under Indonesian rule, is the only site that is used as final disposal of Dili. It is managed directly by the GoTL, through the Ministry of Infrastructure¹⁸. This site also accepts medical waste (a separation is undertaken between “medical waste” and “non hazardous waste”). However, open dumping has been undertaken without any treatment, facility or equipment¹⁹. Regarding water waste management, a facility was constructed in Tasi Tolu in 2004, and is managed by the Directorate of Water Supply and Sanitation (Ministry of Public Works), the Directorate of Environment (MED). The facility has three treatment ponds.



Figure 4. Waste Water Pond Tasitolu, managed by the Government. Source: Carlos Ximenes (2011)

A facility for the storage of used oil²⁰ was also constructed in Tibar, under the Secretariat of State for the Environment. However, waste from used oil still constitutes a problem in Timor-Leste since its collection is not yet widespread and dumping of used oil is currently affecting ground water quality, and eventually damaging also other terrestrial and aquatic living micro organisms.

Electronic waste is also a concern in Timor-Leste. Since its independence imports of electronic equipments (e.g. computers, TVs, Radios etc) have increased significantly and there is currently no recycling or facility to process e-waste. PDTOL, an Australian company is currently the only one that has been working on the collection of e-waste in Timor-Leste.

¹⁸ Relevant Ministries at the government that are in charge of the waste management are the Ministry of Economy and Development, Ministry of Infrastructure, Ministry of Health and District Administration.

¹⁹ Only two compactor machines are operated from the Directorate of Water and Sanitation and also equipped with operator house, access road and warehouse.

²⁰ This includes 7 tanks with a capacity for 120.000 liters each, including two collection trucks. See Annex for pictures



Figure 5. Liquid and Solid Waste in Dili



Figure 6. Solid waste abandoned in the country side

In Dili, little attention has been given to environmental issues in the post-crisis period, as major attention has been focused only on emergency and rehabilitation needs. Dili does not have sewerage system for waste water treatment. The waste water management practices in Dili consist of onsite disposal facilities either with pit latrines or with septic tanks. The existing water and sanitation situation in Dili provides opportunities for contamination of drinking water by different infectious pathogens responsible for diarrhoeal diseases, viral hepatitis and other water borne infections. In addition, absence of proper drainage systems are increasing the breeding sites for vectors of malaria, dengue fever, Japanese encephalitis, filariases and visceral leishmaniasis in the city and surrounding areas.

Progress

- A national water quality sampling program is being developed (by the government and NGOs) and strengthened with initial results showing that bacterial contamination is the main area of concern.
- The first (draft) hydrogeology map has been used to identify communities that are vulnerable to climate variability impacts on water supply, with some insights gained on community drought coping strategies.
- The National Rural Water Guidelines include environmental assessment checklists.
- The Ministry of Health made a campaign on Environmental Health and the Secretary of State for Infrastructure, water and sanitation on the sustainable use of water after the Decree Law on Clean Water consumption and waste management.

- Regarding water management, while great efforts have been put by the government to address the needs, most of the efforts have been concentrated on water supply rather than on water treatment and sanitation.

(See annex for table with activities undertaken in water management, sanitation, waste management and pollution control)

Table 5. Challenges and needs water management, sanitation, waste management and pollution control

Challenges and Needs: Water management, sanitation, waste management and pollution control	
Waste management and Control	<ul style="list-style-type: none"> - Need of legislation and fines for polluters. - Control import and use of chemicals. - Strengthen system for used oil storage and treatment. - Need of regulations on the use of Plastic (e.g. plastic bags, plastic bottles). - Need to strengthen recycling practices. - Encourage the use of traditional materials. - Use of new technologies to reduce/recycle plastics. - Forecast future waste from petrochemical Tasi Mane Heavy Oil project. - Limited human resources in waste management and limitation of equipment to support the programs. - Limited State budget for waste management could result in increased expenses on public health. - Rubbish can become the breeding place of disease vectors.
General	<ul style="list-style-type: none"> - Poor consultation by development partners leading to local people feeling uninvolved in the implementation of projects, regulations and policies.
Infrastructure	<ul style="list-style-type: none"> - Integration of environmental and social objectives into waste management and control infrastructure projects in order to promote green jobs.
Water management	<ul style="list-style-type: none"> - Blind spots in the legislation on land rights and water management. - Lack of information about water quantity and quality.

Opportunities

- Potential for creating green jobs in water sanitation and treatment.
- Potential for private sector involvement in waste management and recycling, with subsequent job creation.
- According to World Bank CEA economic estimations, proper clean water, appropriate sanitation, and hygiene would save the GoTL about 17 US\$ millions (losses due to illnesses and premature deaths) equivalent to 5% of the GDP in 2006.
- Improving health through simple, effective, and low-cost interventions: education on hygiene, hand-washing with soap, building of latrines, disinfection of water at the household level, and so on.
- Use of traditional materials (job creation in development of traditional and ecological materials).

3. Urban Planning, Energy, Infrastructure and Transport

Table 6. Policy and Legal framework in Urban Planning, energy, infrastructure and transport

Policy and Legal framework
<ul style="list-style-type: none">• Currently there are no policies on Urban Planning.• The National Adaptation Program of Action for Climate Change (NAPA, 2010) has identified project activities related to sustainable infrastructure. This includes activities related to ecological and climate resilient infrastructure.• Law on Sustainable Alternative Sources of Energy “Sucos auto suficiencia da energia”.²¹• A draft Base Law for Renewable Energies is being prepared for submission to the Council of Ministers. The draft law predicts the creation of a fund for the renewable energies and mechanisms of its exploitation.• A Draft Law has been produced on Rural Electrification.• The Rural Electrification Policy has been submitted to the Council of Ministers and awaiting for approval.• The Secretary of State for Energy Policy is responsible for the design and implementation of the government’s rural energy program. National energy policies are approved by the Council of Ministers, and the Secretary of State for Energy Policy takes responsibility for developing legal and regulatory frameworks for all activities related to the use of energy resources. The Secretary of State for Energy Policy plays an essential role in ensuring coordination with other ministries and operators involved in the energy sector in Timor-Leste.

²¹ According to Lao Hamutuk, local NGO, many “non green” policies and practices could have been listed in this section.

Background

Infrastructure

In late 1999, about 70% of the economic infrastructure of Timor-Leste was destroyed by Indonesian troops and anti-independence militias. Three hundred thousand people fled westward. Over the following three years a massive international programme, of 5000 peacekeepers (8.000 at peak) and 1.300 police officers, led to substantial reconstruction in both urban and rural areas. The country continues to face great challenges in rebuilding its infrastructure, strengthening the civil administration, and generating jobs for young people that enter the work force (Ximenes, 2011).

Energy

Regarding energy supply, conventional rural electrification through grid extension is being implemented based on a national rural electrification master plan (REMP). To date, only 36% of Timor-Leste's one million people have access to electricity, with most of these concentrated in the capital Dili²². Access to electricity in rural areas is limited to 6 -10% of households (World Bank, WORPLAN 2005). However, Timor-Leste is committed to full electrification and access to affordable energy for all by 2020, ensuring the country benefits fully from its natural energy resources (both fossil and renewable sources). The majority of households currently depend on kerosene and candles to meet their lighting needs.

Fuel wood is (and for some time to come will continue to be) the cheapest cooking fuel in Timor-Leste, compared with liquefied petroleum gas (LPG), kerosene and electricity, even after accounting for different cooking equipment efficiencies. Around 95% of the population of Timor-Leste uses therefore firewood as their primary source of energy²³. This indeed signals rural people's dependence on forests for cooking heating and cash income at a great extent and stands as one of the main reasons for rapid deforestation in the country.

Consequent indoor air pollution is a cause of great concern for human health. Moreover, according to the World Bank, Indoor Air Pollution from open fires causes 300 deaths per year and respiratory diseases in some 125,000 people.

According to a baseline study undertaken by Mercy Corps²⁴, each household: spends \$ 14,30 on energy per month (20% of rural household income); spends 3,5 hours per day cooking and six hours per week collecting firewood; and households use 9,3 kg of firewood per day (over 3 tons per year), causing deforestation and impacting negatively on agriculture. This price is a

²² World Bank. Rural Electrification Master Plan: Timor-Leste. August 2006.

²³ World Bank. Rural Development and Agriculture in Timor-Leste <http://web.worldbank.org>

²⁴ Energy for All Programme (E4A) Timor-Leste (2011), Mercy Corps

huge burden on families' limited income and for the very poorest families is prohibitively expensive meaning many have no light source after dark. In a baseline study conducted by Mercy Corps, communities identified a series of income generating activities, requiring light, that are restricted because of a lack of power. These include income generating activities including sewing and repair of fishing nets; handicraft production or cooking snacks for sale (Mercy Corps, 2011). But equally as important are activities including school study, community meetings and general household lighting. There is a gender aspect here too: as one informant stated, *most household activities are done by women and children* – a lack of lighting impacts them the most.

The Strategic Development Plan advocates for a combined system to achieve reliable energy for everyone in the country: "This will be achieved through investment in new power plants and upgraded transmission and distribution systems, along with the rapid expansion of renewable energy systems". As indicated previously electricity and energy in rural areas are extremely important. The government acknowledges the need to promote and improve rural energy that is affordable and environmental friendly. However to implement projects at a great extent such as "distribution of energy efficient cook stoves in rural areas" would require Ministers i.e. agriculture, energy policy, rural development to work closely with civil society and NGOs in order to address the complex issues in a coordinated manner.

Combining renewable and non-renewable energy is a model followed by most of the countries. Recently, several non renewable energy projects have been approved by the GoTL, among them, the Hera, Comoro and Betano power stations, Tasi Mane petroleum infrastructure facilities, and the National Electric Grid²⁵. According to SDP, *"Timor-Leste has access to vast reserves of gas in the Timor Sea. The availability of natural gas for electricity generation has the potential to provide much cheaper and cleaner fuel than liquid fuels"*²⁶. According to SDP, the National Electricity Grid provides the flexibility to convert to natural gas (more environmentally friendly) once domestic supply becomes available (SDP, 2011). *"The establishment of 9 new sub-stations will allow distribution feeders from the sub-stations to reach every corner of the country other than Oe-cusse Ambeno and Atauro Island [...] Atauro Island will be a priority for renewable energy projects"*.

²⁵ According to Lao Hamutuk, the non-renewable electricity project alone will cost a billion dollars to build, more than is allocated for all green and other infrastructure and agriculture combined. When operational, it could cost more than \$200 million every year to fuel and maintain – twice the salary budget for the entire government.

²⁶ According to SDP, a feasibility study will be carried out to assess the long-term prospects of attracting gas processing facilities to Timor-Leste.

Renewable energy

Special emphasis is made in the SDP 2011-2030 to the high potential of Timor-Leste for renewable energy development. Approximately 50,000 households (25% of population) will remain off-grid for at least the next decade. According to SDP, the REMP aims at providing renewable energy supplies to more remote areas unable to access the Grid. “The rural electrification programme will provide financial and technical support to communities to install renewable energy sources”. This represents potentially a good entry point for renewable energy solutions such as Solar Power or Energy Efficient Stoves. As contained in the SDP:

“Renewable energy supplies have the potential to make dramatic contribution to economic growth and help to reduce poverty levels in remote areas. [...] By 2020, at least half of Timor-Leste energy needs will be met from renewable energy sources. The development of renewable energies in Timor-Leste will help drive economic growth and allow Timor-Leste to embrace new technologies that will make us a model of sustainable development”.

Table 7. Potential renewable energy projects identified by the SDP

Potential renewable energy projects (450 MW)	
Hydro (wire-to-water and regulation)	252 MW
Hydro pumping	100 MW
Wind	72 MW
Solar	22 MW
Biomass/Solid Waste	6MW

According to SDP, there is a range of relatively low cost and easy to install solar and wind projects that could be providing 10% of Timor-Leste energy needs by 2012. The SDP also considers the sale of carbon credits as a way of assisting the viability of renewable energy projects²⁷.

Table 8. Renewable energy potential, table adapted from SDP PART III, Infrastructure development “renewable energies and the rural electrification programme” (see annex for specific targets contained in SDP)

Renewable energy potential	
Hydroelectric power ²⁸	There is potential for mini-hydro projects in Timor-Leste that do not require rivers to be dammed. While the majority of mini-hydro projects only have access to enough water to provide power during the wet season, they are still economically worthwhile as the savings on the import of fuel will help meet the costs incurred to develop the projects. Construction activity will generate jobs and there are also potential crossover benefits for agriculture.

²⁷ The National Development Agency would be responsible for ensuring the allocation of carbon credits necessary for the projects to develop.

²⁸ An analysis of potential hydroelectric sites in Timor-Leste conducted for the SDP identified nearly 40 sites that could generate between 1,2 MW and 50 MW.

Wind power	A preliminary survey of potential sites in Timor-Leste has identified a number of areas suitable for wind turbines. Testing at five weather stations over a 12 months period and the results of technical computer analysis have revealed Bobonaro and Lariguto as having conditions best suited to wind power.
Solar power	Standalone and single household solar installations will be used to provide electricity in the very remote areas of Timor-Leste with difficult terrain where it will not be possible to access the electricity distribution system. The results of a survey contained in the SDP suggest that the entire territory of Timor-Leste has the potential to successfully generate solar power. Moreover, the SDP states that a programme for solar lightening will be supported, and provide approximately 100,000 families with access to electric light by 2020. To demonstrate the potential of solar energy a Solar Energy Center will be established in Dili by 2015
Biomass energy	Biomass energy (produced either by plant or animal waste material) can be processed to form biogas, which can be bottled and used for cooking or other activities. An analysis conducted for SDP, found that the highest concentration of plant biomass is associated with tropical forests in upland areas and also areas with middle and lower density forest. The districts of Manatuto, Viqueque and Lautem were identified as having most potential for the installation of new developments in biomass conversion electricity ²⁹ . A feasibility study will also be conducted on the viability of building a thermoelectric power plant to generate electricity from Dili's household and industrial areas.

A wide range of actors from different sectors have been involved in energy project or business development in Timor-Leste. The diversity of actors is complemented by a diversity of energy sources that have been piloted including agro-energy, biogas, hydro, fuel efficient stoves, solar and an emerging interest in wind.

According to Mercy Corps, a variety of management models have complemented these, and only community-based models have shown potential for success. No project has shown capacity to succeed on a self-sustain economic scale. Major obstacles to sustainable projects have been identified: Energy installations in public buildings are not maintained; lack of understanding about energy installations leads to misuse of facilities; volunteerism to support energy project does not work; a lack of standards and guidelines results implementing poor

²⁹ Feasibility studies are planned to be conducted under the SDP on potential biomass projects in those regions.

quality systems with communities; communities in rural areas do not have access to service providers and suppliers of spare parts; complicated technology is difficult for communities to maintain; social aspects and a sense of ownership are ignored in projects; lack of data and information; no proper coordination channel for locals when they face problems; complete absence of any access to finance for enterprise development in the energy sector.

Progress

Sustainable infrastructure and urban planning

While much has been achieved in rebuilding infrastructure, there is a clear need to develop sustainable infrastructure models. Likewise, little has been done in urban planning. In 2011, there was no budget allocation for Urban Planning for the City of Dili. An assessment conducted by the GoTL and UN-HABITAT (*"Dili City Upgrading Strategy"*) provided the first citywide assessment of housing conditions. There are no stakeholders working at the moment in sustainable urban planning (e.g. transport, ecological infrastructure, energy efficiency).

Renewable energy

In terms of renewable energy, in 2009, the Secretariat of State for Energetic Policy (SEPE) launched a renewable energy programme that covers the following sectors: Biogas, Solar Panels, Biodiesel, Hydro and Wind³⁰. No investments on wind have been made yet but it is still indicated in the project plan. The 2011 budget for renewable energy is 1 963 000 USD and the just approved budget for 2012 is 1, 700 000 USD. The investments on renewable energy continue at least until 2012.

To date, most of the renewable energy projects are being implemented by international donors and local and international NGO's and are tiny compared with national energetic programmes (such as the National Grid or the Tasi Mane Heavy Oil Plant). Efforts to address energy poverty have been made by government, international organizations including World Bank, UN Agencies and NGOs through studies and piloting technology models. Yet none has brought about a self-sustaining economic model that survives after project cycles ended; none has therefore been sustainable.

³⁰ In 2009, the funding was 1, 738 235 USD; Biogas: 31 000 USD; Solar Panels: 1 407 185 USD; Biodiesel: 200 450 USD; Hydro: 99 600 USD. In 2010 funding was 4 619 587 USD; Biogas: 165 217 USD; Solar: 3 591 100 USD; Biodiesel: 497 500 USD; Hydro: 365 770 USD.

Box 3. Case study Renewable energy in Timor-Leste

Renewable Energy for Poverty Alleviation in Timor-Leste

A study assessing the potential for several renewable energy sources available in the national territory (such as wind, hydro, biomass and solar energy) was conducted by the GoTL under the Secretary of State for Energy Policy and is serving as a basis to develop TL national renewable energy policy. The study shows that TL has a very high potential for renewable energies development. If these are well explored, altogether, they can produce an installed capacity for 431 megawatts, or in other words, enough energy to supply the whole country.

The SDP 2010-2030, acknowledges this high potential and under the leadership of the Secretary of State for Energy Policy, several successful projects have already been conducted. Current policies such as the Rural Electrification Plan, already being executed give high priority to renewable energies. The GoTL off-grid strategy is presently defined for providing individual households with standalone solar photovoltaic (PV) systems. From 2007 to 2010, more than 2.000 PV systems for households and community centers were provided at no cost to recipients, financed with infrastructure funds provided annually to the *sucos* (villages) by the central government. It is estimated that about 60.000 households nationwide are provided with access to electricity service only with PV. The GoTL is planning to establish a research laboratory on renewable energy's development.

Other stakeholders such as INGO's and local NGO are already achieving promising results in alleviating poverty through the use of renewable energies such as solar panels or energy efficient stoves. Mercy Corps with its "Energy for All project"³¹ (E4A), funded by the European Commission and with a market based approach and the Alternative Technology Association³² (ATA) with its several solar panel projects, are taking the lead in the development of solar energy and energy efficient stoves³³. SEFOPE, in partnership with ATA³⁴ is undertaking training to install solar panels. Coupled with village lightening schemes,³⁵ solar water pumps in Oecussi, renewable energy for schools, solar power for community centers and clinics; those constitute some of the best practices that are already having impacts on people's livelihoods. Renewable energy has proven to be an excellent cost-effective opportunity to address the chronic problem of energy poverty that is prevalent in TL.

Figure 7. Training to install solar panels



Figure 8. Energy efficient stove



Figure 9. Solar Panel installation. Source: Alternative Technology association

³¹ The programme began in May 2011 and is a 36 months initiative funded by the European Commission, and will be implemented in 3 districts of Timor-Leste: rural Manufahi and Ainaro districts and peri-urban areas of Dili district.

³² Major Australian environmental organization promoting sustainable technology and practices that shares office with Permatil

³³ There is a "Energy Efficient Stoves" Working group chaired by Mercy Corps and a "Timor Solar Power Working Group" promoted by Alternative Technology Association.

³⁴ AusAid is funding this project

³⁵ Project summaries accessible at http://www.ata.org.au/wp-content/projects/2009_ipg_report_email.pdf

Sustainable Timorese Architecture, materials and technologies

Traditional materials and building techniques have been developed in response to sustainability concerns over generations. Many have been discarded or adapted in some areas due to various colonial or other influences. Not all of these changes have been beneficial. Many Timorese report how hot and uncomfortable 'modern' homes are. A new Sustainable Timorese Architecture is needed; one that blends the best of both contemporary and traditional materials and design from a comfort, health and ecological point of view but that is affordable. Is there support in Timor-Leste to try to take a jump ahead of the 'developed world' to use the best of sustainable techniques from around the world and adapt them to suit Timor-Leste?

Sustainability Example 1: Renewable Structural Materials

Consideration should be given to expanding the access of the entire Timorese people to indigenous building material resource species. One of the fastest growing timber resources available is bamboo. Local studies and traditional practices have identified an indigenous Timorese bamboo that grows up to 200mm in diameter with wall thicknesses up to 15mm, albeit with a limited geographical distribution. The potential for the use of bamboo suitable for major structural loads could be highly advantageous given such bamboos mature to structural size (+100mm) and capacity in as little as 4 years. With large areas devoid of forest cover structural bamboo could hold much promise as well as providing significant potential as a food source and export. The suitability for expansion of the availability of this and other building material resource species needs to be researched. A program is required to: identify the climatic/geographic suitability of the various species for widespread distribution to climatically suitable nurseries to be operated by the community within villages; establish the most suitable way to preserve (particularly bamboo) from insect attack; expand the educational opportunities of the community in the use of traditional materials.

Source: Adapted from *Conference on Sustainable Development, 2002*

(See annex or table with relevant activities on urban planning, energy, renewable energy, infrastructure and transport)



Figure 10. Biobricket. Source: Haburas foundation



Figure 11. Biomass Biobrickets. Source: Haburas foundation

Factors likely to put pressure on the environment³⁶

A number of factors are likely to put pressure on the environment. Among them are non-renewable energy infrastructure developments such as the National Electrical Grid, the construction of the Hera and Betano power stations, the expansion of the Comoro power stations. Companies that have been assigned the role of developing Dili's urban planning and water management/treatment, if they don't incorporate a sustainable development perspective are likely to generate high costs in the future.

Stakeholders currently working in road construction and infrastructure development haven't undertaken any social and environmental impact assessment. Big infrastructure development without assessing its long term impact on ecosystems services could result in losses of human wellbeing on the long term. Green infrastructure can improve sustainable land use³⁷, however, this opportunity is being missed and current construction practices are putting high burden on ecosystems. If not sustainably constructed, a road can result in deforestation, excavation/erosion of soil and siltation of streams and rivers.

Table 9. Challenges and Needs on Infrastructure and Urban Planning

Challenges & Needs on Infrastructure and Urban Planning	
Sustainable Infrastructure development³⁸	<ul style="list-style-type: none"> - Need to set up a demonstration model of sustainable Timorese architecture (e.g. design aesthetic in accordance with cultural context). - Need to identify and use sustainable materials, e.g. indigenous/traditional materials and methods and increasing efficiency of use of non-renewable resources. - Establishing environmental and social quality indicators and benchmarks. - Need to facilitate improved climatic and culturally sensitive design using hybrid contemporary and traditional technology and construction methods. - Need to increase energy efficiency and reduction of emissions in all energy consuming activities (including insulation, window area, shading, color, natural ventilation and lighting, ventilation corridors and solar access). - Recycle and re-use materials from damaged buildings. - Use of green infrastructure to reverse land degradation.
Unsustainable Infrastructure	<ul style="list-style-type: none"> - No compensation schemes have been established (such as aforestation, ecosystems rehabilitations) when big

³⁶ Refer to Annex III for further description of some key activities that are likely to put pressure on the environment

³⁷ European Environment Agency "How green infrastructure can improve sustainable land use"

³⁸ We understand here infrastructure in its broader meaning (housing, transport, waste management, water, drainage, roads, communications and other aspects)

development	<p>infrastructure projects are carried out.</p> <ul style="list-style-type: none"> - Environmental sustainability is not prioritized and integrated into big infrastructure projects. - Work with companies that undertake unsustainable and inefficient design and construction of buildings.
Non renewable energy projects	<ul style="list-style-type: none"> - According to in country Environmental Licensing regulation, EIA's should be conducted previous to construction of non-renewable energetic projects.
Sustainable Urban Planning	<ul style="list-style-type: none"> - Need for a design of a cohesive Timor-Leste village or urban area planning. - No budget allocation in 2011 for Urban Planning, little allocation in the proposed budget for 2012. - Conventional Town Planning needs more consideration. - Need for eco-sanitation. - Need for public transport development (including reducing environmental impacts of transport, e.g. emissions). - Need for adequate waste management (including recycling, re-use and sewage treatment). - Need for development of buffer zones for environmental protection in urban areas. - Need for landscaping standards and perma culture promotion. - Water conservation and re-use issues.
Renewable energy	<ul style="list-style-type: none"> - Need to convene government, private sector and the NGO-Donor community to take a united and systematic approach to the problem of energy poverty. - Achieving sustainable business models for financing and sustaining energy poverty solutions. - Ensuring standards for equipment and community mobilization. - Job creation in alternative energy solutions and fuel wood planting.
General	<ul style="list-style-type: none"> - Government favors a green economy but transforming these ideas into practice is very difficult the problem is not a lack of will but the capacity to implement ideas. - General lack of markets, specifically for sustainable businesses to survive. - Donor transparency and donor interest being obstacles to sustainable development. - The design of projects does not take into account environmental concerns or community involvement to ensure sound environmental management. - There is a belief that inclusion of sustainability measures increases the cost of project implementation.

- Lack of a market for green jobs in sustainable infrastructure, energy and transport projects.

Opportunities

- Given high current household energy expenditure, the introduction of solar power and energy efficient stoves would greatly reduce household's expenses, and therefore has the potential for reducing poverty levels. Assessed benefits for the household are likely to include:
 - 1) A reduction in the very large amount of time spent cooking each day and greater ease of cooking, in particular benefiting women and girls;
 - 2) Reduced exposure to smoke, and associated health problems;
 - 3) Reduction in time spent collecting firewood, benefiting all household members;
 - 4) Improved harmony and well-being for the family unit.

According to World Bank CEA, if indoor air pollution is reduced, this could save the GoTL medical costs associated to air pollution related diseases. That is estimated around \$13 million per year, which was around 1.4 % of TL GNI or 3.5 % of GDP in 2006.

Moreover, the impact on firewood consumption and harvesting would be substantial: an anticipated efficiency saving of 40% would result in 1,360kg less firewood use per year for each stove-using household, reducing deforestation and the pressure on natural resources in target areas.

- Green infrastructure can improve sustainable land use³⁹. Green infrastructure can be an ecological corridor connecting two habitats to enhance species migration, a restored floodplain minimizing the risk of flooding during extreme weather events or a piece of community woodland that improves the recreation and well-being of urban dwellers. A new report from the European Environment Agency (EEA) explores the concept of green infrastructure and mechanisms that could help integrate greener infrastructure into a range of policies.
- Green jobs in public transport development ecological architecture and urban planning. There is an opportunity for roads to be strategically designed and enhance ecosystems services.

³⁹ European Environment Agency "How green infrastructure can improve sustainable land use". New report from the European Environment Agency (EEA) that explores the concept of green infrastructure and mechanisms that could help integrate greener infrastructure into a range of policies.

- Community-based models of sustainable infrastructure or renewable energy have shown potential for success.
- Green jobs in renewable energy production, distribution and installation and improve energy efficiency.
- Public awareness campaigns on waste management aimed at reducing the use of disposable non-biodegradable items.
- Research on how to promote the use of ecological material.
- Traditional and local materials have many advantages compared to imported materials and modern technologies can be used to complement traditional designs.
- Decrease of time spent in traffic jams, which leads to increase in human wellbeing and productivity.
- Example could be taken from other cities that have undertaken sustainable urban planning such as Curitiba in Brazil, where a sustainable environmental policy and public transport system were progressively implemented over the last 40 years.

4. Biodiversity, Fisheries and Coastal Management



Table 10. Policy and Legal Framework Biodiversity and Fisheries

Policy and Legal Framework
<ul style="list-style-type: none">• The National Biodiversity Strategy and Action Plan (NBSAP) has been finalized and is now waiting for the Council of Ministers' approval.• The Fourth National Report to the UN Convention on Biological Diversity has been completed.• Prior to the Enactment of the Constitution, regulations passed under the United Nations Transitional Administration in East Timor (UNTAET) including: <i>UNTAET Regulation 2000/19: On Protected Areas is the principal piece of legislation protecting Protected Areas in TL. The regulation aims at establishing protected wild areas and protecting endangered species, coral reefs, wetlands, mangroves, and historic and cultural artistic places. Under this regulation, 15 Protected Areas⁴⁰ were designated; seven of them include coastal areas.</i>• The Proposed Biodiversity Decree Law specifically targets biodiversity conservation concerns such as the protection of habitats and ecosystems, threat and management of invasive alien species, trade in species and the penalties, and other provisions.• The National Adaptation Programme of Action on Climate Change (NAPA, 2010) includes proposed adaptation activities in Ecosystems and biodiversity (marine and terrestrial).

⁴⁰⁴⁰ E.g. Jaco Island together with surrounding rocks, reefs, and other surface and sub-surface features, Tutuala Beach, and adjacent forest, Cristo Rei Beach and hinterland, Manucoco Reserve on Atauro Island, Riverlet Clere Sanctuary, Tilomar Reserve, and Lore Reserve).

- A Fisheries Sector Plan and a series of Policy Papers on Fisheries and aquaculture have been produced.
- Strategic Action Plan (SAP) for Timor-Leste’s Programme of Work on Protected Areas (PoWPA).
- The fisheries in East Timor are governed by Law No 6/2004 and Decree No 5/2004 on General Fishing Regulations.
- MoAF is responsible for coordinating and supervising the agriculture, livestock, fisheries, and forestry sub-sectors in Timor-Leste. In 2004, MoAF prepared the Sector Investment Program (SIP) for these sub-sectors, which highlighted the need to evaluate the potential of aquaculture—including marine aquaculture—within the fisheries sub-sector. More recently the MoAF’s National Directorate of Policy and Planning prepared a priority plan for proposed interventions, which included the formulation of an aquaculture policy, law, regulation, and development framework.
- Regarding Coastal-Marine Legal and Regulatory framework⁴¹, UNCLOS (UN Convention on the Law of the Sea) 1982 defines a coastal state’s jurisdictional rights for internationally recognized maritime zones, including inland waters, the territorial sea, the contiguous zone, and the Economic Exclusion Zone (EEZ) (UN 2007). In 2002, TL enacted the Law 7/2002 on Marine Boundaries which is based on international convention, in particular UNCLOS. Under this convention, the country’s territorial sea, continuous zone and EEZ have been set at 12 nm, 24 nm, and 200 nm, respectively. However, the definition of precise maritime boundaries with Australia and Indonesia is still pending (CDU, 2009).

Background

“My environment has been here for generations, since the days of my great ancestors. They lived here, they were buried here. It was them who looked after our gardens, our trees, our flowers, our animals, our water, our life. I should not give this land to other people. Should I give this land to other people, my ancestors will punish me.”

TRADITIONAL AUTHORITY IN THE VILLAGE OF MATAHOI (WATOLARI, 2000)

Timor-Leste is positioned in a biodiversity hotspot, known as Wallacea, which harbors a number of globally significant ecosystems and endemic species⁴².

Coastal Management

Timor-Leste has valuable, biologically-diverse marine and coastal natural resources: 735 km coastline; narrow coastal fringe of coral reefs, mangrove forests and sea-grass; attractive coastal landscapes; offshore pelagic and deep-water fish populations and abundant marine mammals. Coastal communities and fishing households are currently poor and deriving few benefits from marine and coastal resource exploitation. Marine and coastal resources could sustain a range of livelihoods such as eco-tourism; fishing – inshore and offshore and fish-

⁴¹ The National Directorate of Fisheries and Aquaculture (NDFA) and the National Department of Environmental Services (NDES) are the two main agencies responsible for coastal and marine environment in TL.

⁴² Timor-Leste’s Fourth National Report to the UN Convention on Biological Diversity.

farming, but they are limited in extent and productivity, and are vulnerable to over-exploitation, inappropriate development, and pollution. These impacts are already affecting sites and species in several locations. There is a critical need for sound management of coastal and marine resources to guide sustainable livelihoods and development, poverty alleviation and conservation.

In 1999, prior to the unrest, about 20,000 Timorese were engaged in the seafood industry. Sea fishing had a net production of around 2,600 tonnes and contributed about three million USD to the income of the country. Unfortunately, in September 1999, the militia destroyed all the hatcheries and the supply was stopped.

Progress

Since 2002 several initiatives have been implemented to conserve biodiversity. These activities include establishing Protected Areas, developing environment policies and setting-up institutions that support conservation of biodiversity and natural resources. However, much remains to be done if the country is to improve its capacity to protect its biodiversity and improve human wellbeing.

Efforts to date include the establishment of a network of protected land and marine areas as representative of Timor-Leste's biodiversity; these are included as priority targets in the country's SDP. Although biodiversity concerns have been incorporated in the development plans on education, health, energy and tourism, they haven't been yet effectively implemented on the ground. Currently there are 30 declared protected areas and 16 Important Bird Areas (IBA's), counting up to 261 identified bird species in Timor-Leste.

Some stakeholders are already working in biodiversity conservation for poverty alleviation, such as JICA with its work on Community-Based Integrated Watershed Management in areas suffering from significant level of deforestation and over exploitation of natural resources.

Fisheries

The Fisheries and Aquaculture sector in Timor-Leste is underdeveloped mainly due to limited skills and knowledge of the fishermen. Fishermen use very simple and unsophisticated equipment for their fishing activities that are on a small scale. Currently there are 5,265 fishermen that consist of 1,034 groups around the country who are operating and engaging in fishing activities particularly on the northern part of the country. Annual production is very low - approximately 3,877 tons in 2010 (National Directorate for Fisheries and Aquaculture, 2011). However, the GoTL through MAF is working hard with NGOs and development partners in order to enhance the capacity of fishermen as well as MAF's staff to develop more productive fishing

methods whilst managing the marine resources in a sustainable manner. The GoTL has recognised that at the village level, the fisheries sector offers a significant opportunity to contribute to sustainable livelihoods, cash incomes, improved diet as well as food security (SDP, 2011). At the same time the GoTL has improved the fisheries value-chain by improving product handling, hygiene, product distribution and improving the local market system with affordable prices. To support this scheme MAF has developed 151 landing centres around the country.

The primary objective for developing Timor-Leste's fisheries is therefore *“optimal utilisation of living aquatic resources giving increased but sustainable consumption and export of locally caught and locally farmed product whilst providing people with long-term social and economic benefits”* (Fish for Sustainability, 2006). Through this approach, the fisheries sector will be able to produce consistent sustainable annual yields that in turn will contribute directly towards national food security, poverty alleviation, and wealth creation. This concept encompasses the sustainable utilization of fisheries resources in harmony with the environment. It means that the use of capture and aquaculture practices which are not harmful to ecosystems, resources or their quality.

To implement an “optimal utilization of living aquatic resources” the GoTL has developed many approaches and partnerships, particularly under the umbrella of CTI, PEMSEA, ATSEF as well as other existing regional instruments. These partnerships aim to promote and improve scientific knowledge regarding the marine and coastal resources, their biology, abundance, distribution and fluctuations. The GoTL is trying to systematically assess the impacts of fishing, aquaculture and other activities affecting the marine environment particularly on coastal areas through the NAPA and NBSAP programs.

The government promotes not only sustainable fishing activities in marine areas, but also explores the potential of aquaculture in inland areas across the country. Aquaculture in inland areas can significantly contribute to food security, livelihoods and nutrition for the rural poor. MAF is actively promoting the culture of carp and tilapia in freshwater ponds as well as milk fish in brackish waters. These species do not require specialised knowledge, equipment or technology to breed and rural communities can easily use the products both for cash incomes and food security. This would help promote locally based enterprises that bring investment, jobs and increase food security while reducing poverty. To help ensure continued small fish supply, the government has built two hatcheries: one on the western part (Same district) and one on the eastern part (Luhono in Viqueque district). A total of 2,262 people are currently involved in aquaculture.

MAF in partnership with FAO and AECID is undertaking a regional fisheries livelihoods program which tries to build capacity of small scale fishermen communities and institutions on which

they rely to improve their livelihoods. The program also includes undertaking a census of fishermen and fishermen boats⁴³ and their capacity to sustainably exploit fish stocks.

Several activities are currently underway to establish Marine Protected Areas (MPA). The National Directorate for Fisheries and Aquaculture (NDFa) in collaboration with FAO and PEMSEA is undertaking surveys to identify potential sites for MPAs in Atauro Island, Manatuto, and Liquisa (dos Santos Silva et. Al 2007; RDTL and UNDP 2007). In response to a decline in fish numbers that could be caught, the fishing communities of Atauro island for example have established two community based MPAs in the Bikeli region with assistance of the local NGO Roman Luhan. FAO has also established an MPA in Atauro Island. While considerable progress has been made in developing community-based MPAs on Atauro Island and around the Nino Konis Santana Marine Park, no other MPAs have been established elsewhere in TL.

Regional partnerships

- Timor-Leste is part of the Coral Triangle Initiative (CTI).⁴⁴
- Partnership in Environmental Management of South East Asia (PEMSEA)⁴⁵. In December 2006, TL signed the Haikou Partnership Agreement for the implementation of the Sustainable Development of the Seas of East Asia (SDS-SEA). For TL first steps under Haikou Partnership Agreement was the formulation of an SDS-SEA Work Program for the country.
- Partnership with Australia and Indonesia in Arafura Timor-Sea Experts Forum.
- Timor-Leste is part of GEF Small Grants Programme (SGP), which includes small grants for community based organizations in the area of biodiversity⁴⁶, climate change, persistent pollutants, international waters and land degradation.

⁴³ The census is expected to be finalized in May 2012

⁴⁴ See Table and Annex for detailed information on Timor-Leste CTI National Action Plan

⁴⁵ Regional programme with 12 Countries

⁴⁶ The programme is managed by UNDP/UNOPS

Green Bank: mangrove reforestation for income generation

Over 50% of the world’s mangrove forests have been destroyed (WRI, 2000). And with them ecosystem services with high economic value such as a fish breeding habitat, a filter soil carbon and a protector of other habitats, notably sea grasses and coral reefs. There is now evidence that mangroves have also a role in slowing and assisting coast with erosion caused by sea level rise.

The carbon stock per unit area of the mangrove ecosystem is enormous, as the entire mangrove ecosystem acts as a carbon sink.

Some organizations, such as Haburas Foundation are undertaking mangrove reforestation activities for income generation and poverty reduction. Mangrove reforestation allows coastal communities to restore their livelihoods, with the employment created by the reforestation project, and by the economic benefits obtained after reforestation activities. These activities are currently improving fishery communities livelihoods while at the same time contributing to the long term survival of the fishing industry.



Figure 12 Mangrove reforestation. Source: Haburas foundation

(See annex for activities related to Biodiversity, coastal management and fisheries)

Table 11. Challenges and Needs on Biodiversity, fisheries, and Coastal Management

Challenges and Needs on Biodiversity, fisheries, and Coastal Management	
Sustainable fisheries⁴⁷	<ul style="list-style-type: none"> - Currently the maximum sustainable yields for fisheries are unknown. - Weaknesses in policy and limited capacity to manage, monitor, and protect these resources exposes the country to illegal, unregulated and unreported fishing by foreign fleets that threaten to deplete fish stocks, and local fisheries dependent communities likely to be the most affected. - There are currently no established procedures for aquaculture licensing, site selection, or zoning in Timor-Leste. There is an urgent need to establish a National Aquaculture Strategy—with related capacity building, infrastructure development, and outreach activities—that considers complex social issues in Timor-Leste. - Coastal policing is not adequate to avoid illegal fishing. - In fisheries, middle men have the dominant power and therefore fishers do not get the full benefits from their fishing efforts. - Community based coastal management for protected areas needs to be promoted in order to stimulate income generation. However problems may arise about the distribution of the income generated amongst the community. - Inland communities have limited access to coastal and marine fish catches to fulfill their nutritional requirements. Underdeveloped

⁴⁷ Sustainable fisheries is where the “level of fishing mortality does not jeopardize the capacity of the fishery to produce the maximum sustainable yield on a continuing basis” (NMFS and NOAA 1997:7).

	<p>infrastructure, transportation and supply chains result in high fish prices that are beyond the means of subsistence farmers.</p> <ul style="list-style-type: none"> - Lack of mapping on communities' dependence on fisheries. - There are currently no specific national Marine Protected Area policies or strategies for Timor-Leste to guide the identification, planning, establishment and management of a national system of MPA's. - Coastal Marine legal and regulatory framework in RDTL is highly centralized. Within the four-tier governance structure (central-district-sub district-village), most of the legislative and financial authority lies with the central government (Weaver, 2008), which poses particular challenges for establishing and effectively managing protected areas in regional and remote areas. All natural resources are owned by the State (Palmer and Carvalho 2008), with the entire coastline and national maritime waters of TL lying within the jurisdiction of the central government, with exception of the coastline of Dili that falls under jurisdiction of the Port Authority of TL. - While the fisheries resources are important to creating a sustainable economy, this can only be achieved if the development of fisheries is sustainable.
Economic valuation of biodiversity and ecosystems services	<ul style="list-style-type: none"> - Economic valuation of ecosystem services provided by biodiversity and the economic cost of degradation haven't been considered yet as effective advocacy tools. - Fair and equitable sharing of the benefits arising from the use of genetic resources. - Ecosystem services provided by Timor-Leste's estuaries and oceans range from the provision of fish for consumption and sale, to tourism focused on highly diverse coral reefs and associated ecosystems. - Balancing the multifarious requirements and uses of marine resources will require coherent government policies (CTSP, 2011).
Protected Areas	<ul style="list-style-type: none"> - Inclusion of local and indigenous people in the management of PA. - Conflict between traditional and current management practices.
Environmental Safeguards	<ul style="list-style-type: none"> - Construction and operation of the Hera and Betano power plants and associated infrastructure, and the Tasi Mane petroleum infrastructure projects, should include environmental safeguards so as to protect coastal ecosystems. - Capacity for clean-up/recovery from spills and accidents is extremely limited⁴⁸.

⁴⁸ [See Chapter 6 of LH's 2008 report on Sunrise LNG: <http://www.laohamutuk.org/Oil/LNG/chap6.htm>]

Opportunities

- Sustainable fisheries can provide opportunities to improve people's living conditions.
- According to CTSP and through consultation with government officials it is clear that marine and freshwater aquaculture opportunities must serve the development aspirations of Timorese people. CTSP scoping mission has already established a proposed plan of action that are; 1) establishing an aquaculture spatial plan for NKS; and 2) establishing a pilot seaweed aquaculture project.
- According to CTSP, opportunities would range from non-extractive use of natural resources, to aquaculture, and to the development of land-based activities such as freshwater fish production. Sustainable management of Timor-Leste's marine resources will require long-term strategies, sufficient capacity for implementation, and support from both government and communities.
- A defined MPA system and its effective implementation would improve management of current PA, such as the Nino Konis Santana Marine Park, and support the livelihoods of local communities.
- Species with high economic value such as tuna, skipjack, mackerel, and snapper could be exploited sustainably to support the national economy.
- Existing traditional systems of sustainable management of resources such as Tara Bandu can be strengthened.

5. Tourism and Recreation

Table 12. Policy and Legal Framework relevant to Sustainable Tourism and Recreation activities

Policy and Legal Framework
<ul style="list-style-type: none">The Plan for Forestry includes reference to promoting eco-tourism in National Protected Areas (Diploma ministerial no, 430/2010).

Background

As contained in the SDP *“Timor-Leste is blessed with tropical waters rich in marine life, white sand beaches, spectacular mountains ranges, unique Timorese culture, Portuguese colonial heritage and resistance history”*. According to the SDP, Timor-Leste can seek to attract visitors seeking “adventure and eco-tourism” experiences. The tourism sector is at an early phase of development with small number of international tourists and with emerging touristic infrastructure. Figure 13 contains the number of visitors with a “touristic visa” that entered the country from 2009 to 2011.

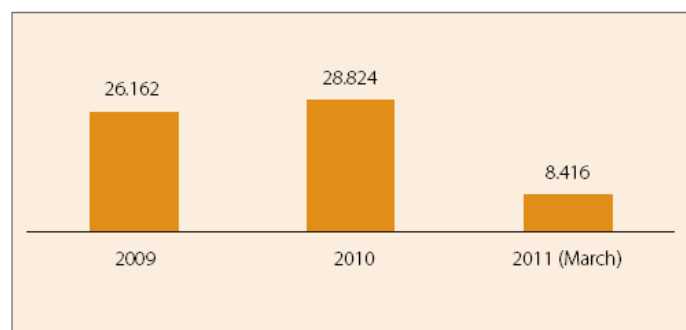


Figure 13. Timor-Leste tourist arrivals, 2009 to March 2011. Source: SDP 2011-2030

Basiuk (2006) identified key ecotourism issues, constraints and opportunities in TL and highlighted the opportunities that MPAs can have for community based, eco-tourism development. The need to prioritize MPAs was also highlighted.

The following MPAs were identified for protection and management: 1) Pertamina Jetty; 1) Metinaro Manatuto (K35-K57) (popular day trip dive destinations and under increasing fishing pressure; 3) Atauro (the whole island, exceptional quality of coral and marine life); 4) Tutuala, Com, Jaco (exceptional quality of coral and marine life).

Progress

According to SDP *“In a global market seeking new and authentic tourist offerings, Timor-Leste will position itself to provide a range of tourism experiences that take advantage of our natural beauty, culture and heritage. This will allow Timor-Leste to differentiate itself from mass market tourist offerings and appeal to the growing market segment seeking boutique and unique experiences and locations”*. The SDP (see annex for specific targets in tourism) states explicitly that the following markets will be targeted: eco and marine tourism, historic and cultural tourism, adventure and sports tourism, religious and pilgrimage tourism and conference and conventions tourism.

To date, eco-tourism initiatives have been successfully developed in Tutuala, Liquisa, Maubisse, Atauro and Maubara. Laws and other regulations have been drafted.



Figure 14. Timor-Leste, as part of the Coral Triangle is among the world best diving sites



Figure 15. Community Development project of ethical tourism in Tutuala

(See annex for activities relevant to sustainable tourism and recreation activities)

Table 13. Challenges in Tourism and Recreation

Challenges in Tourism and recreation	
Infrastructure and health	<ul style="list-style-type: none"> - Poor conditions of the country's road network. - The problems related to safety, diseases like malaria, sanitation, transport, erratic electricity, poor roads, limited language skills and professional experience among staff working in the tourism sector.
Cost of recreation and tourism activities	<ul style="list-style-type: none"> - The cost of living and holidaying in Timor-Leste is high compared to neighbouring countries (limited accommodation options and expensive air links). For example Bali provides a safer and cheaper holidaying experience with numerous accommodation options.
General	<ul style="list-style-type: none"> - The number of eco tourism projects is very limited and the sector is underdeveloped. - Recreation Centres and tourism businesses are mainly owned by foreigners. - Involvement of local communities is limited.

Opportunities

- Developing eco-tourism is already enshrined in the SDP.
- Given the success of current eco-tourism projects, those could be scaled up to give form to the model of tourism promoted by SDP, that is to say: “eco and marine tourism, historic and cultural tourism, adventure and sports tourism, religious and pilgrimage tourism and conference and conventions tourism”. In a nutshell, a kind of tourism that would *“allow Timor-Leste to differentiate itself from mass market tourist offerings and appeal to the growing market segment seeking boutique and unique experiences and locations”* (SDP, 2011).
- Opportunity to be part of environmental management certification schemes and regional programmes such as the “Green fins” initiative promoted by UNEP or Green Globe label for Environmentally responsible tourism businesses.



6. Education for Sustainable Development

Table 14. Policy and Legal Framework for Education for Sustainable Development

Policy and Legal Framework

- Regulations relevant to the Education sector include: a Basic Law on Education promulgated in 2008; an Organic Law of the Ministry of Education.
- The SDP includes a specific section on the GoTL policies on Education.
- The Article 59 of the Constitution of Timor-Leste makes specific reference on the right of citizens for education and culture. The article guaranties the access to education for the people of Timor-Leste, and makes particular reference to children between 6 and 17 (Basic education). The article contains also provisions to the right of the Timorese people to a quality education in current globalized and modernized world.
- Decree Law No 26/2011, Article 13, on research and national planning.
- NAPA makes reference to education and awareness raising activities related to Climate Change adaptation.
- NBSAP includes a Communication and Education for Public Awareness (CEPA).

Background

During the Indonesian and Portuguese period, school curriculum didn't contain any subject related to environmental education or education on sustainable development. However, the GoTL is undertaking great efforts to improve the quality of education curriculum. As stated by the SDP, coupled with the achievements in improving the number of children enrolled in basic education and in secondary education, there is urgency in continuing to improve education quality. Improving education quality includes without any doubt integrating sustainable development considerations.

According to UNESCO “Education for Sustainable Development Division”, *“Education is essential to sustainable development. Citizens of the world need to learn their way to sustainability. Our current knowledge base does not contain the solutions to contemporary global environmental, societal and economic problems. Today’s education is crucial to the ability of present and future leaders and citizens to create solutions and find new paths to a better future.”* According to UNESCO, Education for Sustainable Development (ESD) is not a project, or a programme, it is a way of learning that promotes efforts to rethink educational programmes and systems (both methods and contents) that currently support unsustainable societies.

As a young nation, the first generations of young teachers in TL are currently being trained at the university, a fact that is likely to increase notoriously the quality of education in the years to come.

Progress

Although draft guidelines have been produced by the GoTL and UNESCO⁴⁹ to integrate sustainability into education system (under the leadership of the Teacher Education Centre), education for Sustainable Development has not been yet integrated formally into schooling system, university curriculum or currently available courses.

National universities are currently expanding, and working on the effective integration of sustainability into their *faculties: Agriculture; Engineering; Science; and Technology; Medicine and Health Sciences; Economy and Management; Education, Arts and Humanities; Law and Social Sciences. To support the critical area of training in engineering, a modern Faculty of Engineering complex will be built at Hera”.*

Until today a number of “education for sustainable development” initiatives have taken place but they were isolated from wide GoTL education programmes. However with the continued political will of the GoTL to achieve quality education and current efforts taken place to expand program quality offered at UNTL will provide excellent entry points for integrating sustainable development into formal education.

⁴⁹ “National Education for Sustainable Development (ESD) Guidelines for Changing the Climate of Teachers Education to address Sustainability: Putting transformative education into practice in Timor-Leste (2011)”, Ministry of Education

Partnerships

- The Ministry of Education has been attending regional seminars, trainings and workshops organized by UNESCO Jakarta on “reorienting teachers’ education to address sustainability”.
- TL is a member of UNESCO NatCom and adopted thus the philosophy of the United Nations Decade of Education for Sustainable Development (UNDESD).

(See annex for activities relevant to Education for Sustainable Development)

Table 15. Challenges and Needs in Education for Sustainable Development

Challenges & Needs in Education for Sustainable Development	
Integrating education for sustainable development into formal education curriculums	<ul style="list-style-type: none"> - Integrating sustainable development and environmental considerations into schools and university curriculum (for example, courses such as Economics at UNTL could integrate topics such as sustainable development, the economic benefits of ecosystem services and cost of degradation into their curriculum). - Lack of trainers and teachers with an environmental background. - Lack of awareness of sustainable development considerations in general. - Poor access to internet and unavailability of reliable electricity supply. - Lack of coordination between donors to utilize available training efficiently. - Lack of funding for environmental education. - Few available instructional materials, especially ones appropriate to the local context.
General	

Opportunities

- Current training programmes for basic, secondary education and university teachers constitute excellent entry points for ESD and there is high potential to integrate sustainable development courses into existing programs.
- Current programmes supported by development stakeholders such as the ones undertaken by the World Bank on education curricula or the ones undertaken by JICA to support the teaching staff in the Faculty of Engineering at UNTL or programmes that include trainings or Master Degrees abroad⁵⁰ can be taken as models to improve governments strategy to enhance education quality and these projects can be rolled out throughout the country.
- The following sustainable development education programs were identified as needed during broad consultations took place in 2002: language training, traditional law and cultural education, internet training, work skills, health, nutrition, maternal health and hygiene education, political education and the functioning of civil society, marketing skills, technical education on water catchment, environmental protection, reforestation and environmental health as well as leadership training. Education programs were asked to be both formal and informal and aimed at students, rural communities, women, fishermen and farmers, construction workers, tourist operators and staff in the tourism sector and beyond. Practical examples were encouraged to be used like demonstration of sustainable farming techniques; construction methods, maintenance and repair of appropriate technology, implementation of alternative renewable energy sources, recycling, waste reduction and disposal and rainwater harvesting.
- Public education on sustainable development issues can be communicated more effectively through media and other communication tools such as public awareness campaigns.

⁵⁰ See Annex IV for more detailed activities that could represent entry points for ESD



BUY LOCAL.
BUILD TIMOR-LESTE.
SOSA IHA RAI LARAN
NO HARI'I TIMOR-LESTE.

7. Economic Development, Finance, Trade and Industry

Table 16. Policy and legal framework Sustainable Economic Development, Finance, Trade and Industry

Policy and legal framework

- In February 2011, Timor-Leste enacted the Environmental Licensing Decree (Law. No.5) creating a system of environmental licensing.
- A new investment law has been produced to encourage private sector.
- Petroleum regimes in Timor-Leste:

Petroleum Act, Law 2005/13: Article 8 of the Model Production-Sharing Contract under the Petroleum Act allows an NOC to become a partner in petroleum exploration in Timor-Leste's joint and exclusive areas, with up to a 20% share, without investing its own money. The NOC must declare its interest within 60 days of when a company declares a field as a "commercial discovery" after exploration finds profitable quantities of oil and/or gas.

Background

Economic development and environmental assets

Macro-economics and the environment are closely linked. These linkages have implications for how government should establish and maintain environmental assets and quality (Bouma, 2002). Environmental resources such as land, forests and minerals are inputs into economic growth. Also, outputs from economic activity, such as green house gases, solid and liquid

wastes are dispersed back to the environment (Anderson, 1990). Environmental assets are positive inputs into growth and however from economic growth, residuals (pollution) are transmitted back into the environment. The transfer of residuals is a positive for economic growth, but the impact on the environment can be negative. The ability to protect environmental assets comes from environmental maintenance management and investment. Until now the GoTL hasn't invested much in an economic development model that maintains and invests in environmental assets.

Table 17. Employment in Timor-Leste by sector

Sector	Employment %
Agriculture, fishing and forestry	78
Public administration, education, health sector, social services & defence	6
UN agencies & diplomatic mission	4
Wholesale, retail, hotels, restaurants & cafes	4
Home industries	3
Finance, real estate, transportation, storage & communications	2
Not stated	2
Mining, oil, manufacturing, construction, electricity	1

Source: Government of Timor-Leste. 2004. *Timor-Leste Census of Population and Housing 2004*

Private sector development

According to SDP, at present, private sector is only able to provide approximately 400 new formal jobs every year in all of Timor-Leste. However it is growing and “company registrations steadily increased from 171 in 2007 to 17,999 in 2009. Micro-business registrations increased from 1,212 in 2007 to 5,232 in 2009. Some initiatives such as the new investment law and establishing the Timor-Leste Chamber of Commerce and Industry “provide the foundations for developing a strong private sector across the nation. At present there is no specific policy to prioritise development of green businesses.

Trade

Table 18. Balance of Trade 2010 (millions of US Dollars). Source: GoTL and Lao Hamutuk estimates - Lao Hamutuk 2012a

Category	Imports	Exports	Balance
Goods	\$289 (DNE reports)	\$17 (96% coffee)	(\$272)
Other goods (extra-legal)	\$200 (Lao Hamutuk estimate)	\$0.3 (Lao Hamutuk estimate)	(\$200)
Services	\$505 (2009, from BPA)	\$3 (Lao Hamutuk estimate remittances)	(\$502)
Total excluding oil & gas	\$994	\$20	(\$974)
Petroleum receipts (to state)	...	\$2,016 (incl. \$294 Petrol. Fund interest)	\$2,016
Total	\$994	\$2,036	\$1,042

The petroleum revenues in Timor-Leste are expected to end in less than a generation. High levels of government spending together with high inflation (currently around 13%) may cause "Dutch Disease" if the local economy can't absorb the large amounts of money being spent. More than 85% of donor spending and at least 70% of the Government budget is spent outside of Timor-Leste. Therefore it can be concluded that trade policy is not very sustainable and do not serve solely for the people of Timor-Leste.

Figure 16. State Expenditures

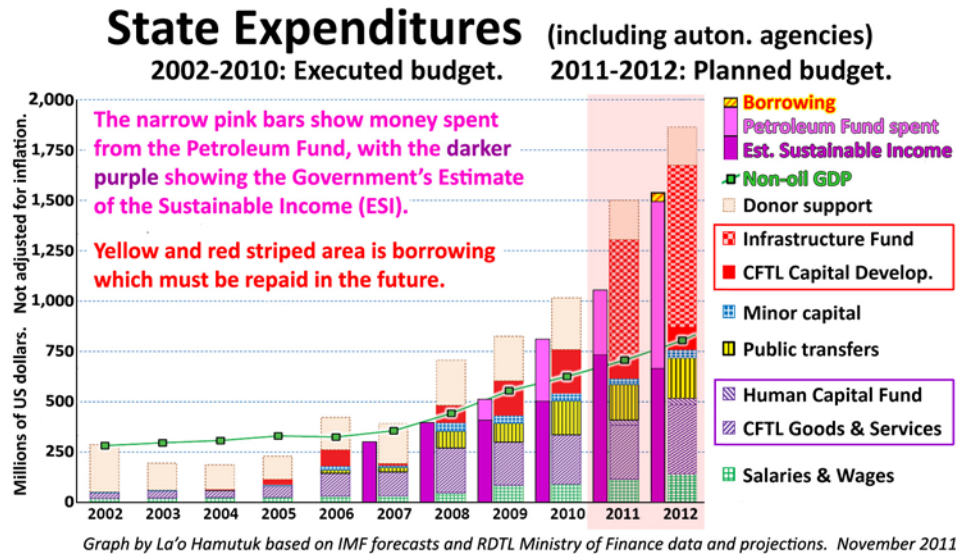


Table 19. State budget for 2012 by category of expenditure. Source: GoTL⁵¹

The total budget for 2012 is thus of \$1.674,130 billion U.S. dollars:

- \$140,000,000 (one hundred and forty million U.S. dollars) for Salaries and Wages (~8%);
- \$376,268,000 (three hundred and seventy six million, two hundred and sixty eight thousand U.S. dollars) for Goods and Services (~22%).
- \$199,579,000 (one hundred and ninety nine million, five hundred and seventy nine thousand U.S. dollars) for Public Transfers (~12%);
- \$42,917,000 (forty two million, nine hundred and seventeen thousand U.S. dollars) for Minor Capital (~2%);
- \$915,295,000 (nine hundred and fifteen million, two hundred and ninety five thousand U.S. dollars) in Capital Development (~54%).
- The Infrastructure Fund was assigned with \$761,000,000 (seven hundred and sixty million U.S. dollars), whilst \$30,000,000 (thirty million U.S. dollars) was approved for the Human Capital Development Fund.

Mineral resources

Mineral resources and their exploitation were overlooked by colonial powers and currently very little have been exploited. Geologically, there is still a lot of work to be done to determine

⁵¹ The Sate Budget Law for 2012 was approved in its final vote, having obtained 39 votes in favor, 20 votes against and 1 abstention.

accurately the full potential of Timor-Leste's mining industry. In addition to the Timor Gap and other offshore mining activities, studies indicate that there is onshore oil, gold, silver, chromite, bentonite, clay, sandstone, marble, limestone, basalt, silica and few other minerals in the country.

Progress

Little progress has been achieved in terms of promoting a Green Economy. However some examples of good practices are arising which are discussed in this report.

Finance of a Green Economy

There is high potential in Timor-Leste, through the Petroleum Fund, to finance the transition towards a Green Economy. There is already emphasis on renewable energy in the SDP and some local NGOs are undertaking micro-finance for renewable energy, in particular for solar photovoltaic (PV) systems. Moreover, some organizations such as Mercy Corps are promoting a market based approach for sustainable businesses such as renewable energy technologies installation and distribution.

Environmental Impact Assessments

In February 2011, Timor-Leste enacted the Environmental Licensing Decree (Law No. 5) creating a system of environmental licensing for public and private projects that are likely to produce environmental and social impacts on the environment. This is known as the environmental impact assessment or EIA Law and is included in the draft Basic Environmental Law. The EIA process applies to any development proposals that include activities such as mining, petroleum, coffee processing, plant and farming projects, as well as major government infrastructure projects, including irrigation. This Law aims to create conditions to minimize or eliminate negative environmental and social impacts of project implementation and determines measures for environmental and social protection. The Environmental impact assessment process involves two significant steps: the first is the documentation of the results of a comprehensive study which shows the significant environmental impacts of a development proposal; and the second is the documentation of an environmental study plan which sets out the ways and mechanisms on how the environmental impacts will be managed and monitored. One major requirement of the EIA is the inclusion of information on the community consultation that is conducted for the development proposal. An active consultation (minimum 30 days) with the community who are likely to be affected by the development is a requirement for approval of the development proposal.

Although the EIA process provides the grounding for mitigating negative environmental and social impacts of implementation of a development proposal, it is not yet well understood in Timor-Leste and, as a result, is not adequately applied. Most infrastructure projects are undertaken without conducting or taking into consideration the findings of an EIA. The limitations of the EIA process include the lack of sanctions and provision for potentially impacted communities to have a legal voice.

The social, economic, environmental and cultural impacts of development projects are important and need to be carefully considered as without adequate assessment and provision for mitigation, the effects and benefits of development activities such as infrastructure projects are mostly shared inequitably among the society. In many cases, the adverse effects of project implementation mainly affect the lives of vulnerable groups such as women, indigenous people, youth and the aged, whereas men tend to reap most of the benefits.

Inclusive and sustainable growth as a development model for Timor-Leste would require that the EIA process actually has an instrumental role in addressing and integrating gender issues into project implementation, and to bring equitable distribution of benefits to both sexes and to vulnerable groups through enforcement of the principles of encouraging equal participation (equal labor force participation, equal wages etc.), equitable access to and control over productive resources, and environmental conservation. At present, these are not spelt out clearly in the EIA requirements and the government needs to consider revision of the Law on Environmental Impact Assessment so that guidelines for the Environmental Management Plan specifically outline mechanisms for minimizing negative cultural and social impacts and strengthen equal distribution of benefits among both men and women.

Table 20. Activities related to Finance for Sustainable Development, Green Procurement and Green Financial Management

Executing agency	Activity/programme	Description	Risks and opportunities	Status
Moris Rasik, Mercy Corps	Micro-credits for Solar Photovoltaic Systems	Sustainable business network for the distribution of renewable energy technology (solar PV and fuel efficient stoves) to clients and community members.		
JICA	Environmental Impact Assessment (EIA) Advisor (Sep 2009 to Jun 2011)	As the economy of Timor-Leste grows, infrastructure development expands together with EIA needs for the proposed projects. JICA actually deployed an advisor to Ministry of Economy and Development for capacity development of EIA procedure.		2009-2011

Pressures on the natural resource base

A number of activities are likely to put pressure on the natural resource base. If no environmental considerations are integrated to procurement and financial management, stakeholders that are currently working in promoting business development or attracting foreign investments, are likely to increase the pressure on the natural resource base⁵².

Table 21. Challenges and Needs for the development of a Green Economy in Timor-Leste

Challenges and Needs for the development of a Green Economy in Timor-Leste	
Achieving an economic model that internalizes the real value of environmental assets	<ul style="list-style-type: none"> - Insufficient environmental investment and conservation can lead to an economy which reduces the level of environmental assets in the long run which eventually would affect the livelihoods of people and the poverty levels. - Protection of environmental assets for continued development aimed at rapid economic growth is a challenge (Anderson, 1990). - Need for the GoTL to take action to ensure environment is conserved and the benefits are shared equally together with economic development. - Need to achieve both private and public awareness. - Need to increase budget allocation to sectors that are key to the country's economy such as agriculture. - Need for proper regulation of natural resources market⁵³. If natural resource markets are under priced and inappropriately regulated, economic actors can over-exploit the resources.
Green Businesses promotion	<ul style="list-style-type: none"> - Need for a vision of economic development based on small and medium enterprises those foster green businesses which promote equitable and environmentally sustainable job-creation. - Need for strengthening Green Procurement and promoting private and public green investments. For example, the concept of "Green Businesses" could be promoted by the National Directorate for Industry for both private and public Investments. - Need for certification of sustainably produced goods and services and credible "eco-labelling".

⁵² See Annex VIII for a detailed information of some development projects that could potentially put pressure on the natural resource base

⁵³ The Comoro River bed in Dili provides a case in point here where a lack of regulations and control resulted in uncoordinated extraction of gravel, which is clearly a public resource and therefore, subject to government control.

<p>Conditionality of loans to green standards</p>	<ul style="list-style-type: none"> - Need for ensuring that forthcoming loans from the ADB, WB, JICA and China Ex-Im bank for infrastructure projects, comply with “green” standards or guidelines, either from the GoTL or lenders.
<p>Finance of Green Economy Transition</p>	<ul style="list-style-type: none"> - As a result of the economic crises in Europe and elsewhere, donor funds are likely to be scarce.
<p>Trade and Foreign Direct Investments</p>	<ul style="list-style-type: none"> - Need for establishing fiscal regimes that ensure environmental standards are respected. - Need for foreign investment policy that defines legal rights and obligations for foreign firms. - Need for establishing a trade policy and institutional framework that build trade, industry, business and entrepreneurship for the sustainable socio-economic development of Timor-Leste. - Need for increasing exports by increasing the quality of the products in the country and decrease imports.
<p>General</p>	<ul style="list-style-type: none"> - Need for changing the emphasis of donors and government’s funds on short term projects which are not necessarily sustainable to investing in long-term programmes that incorporate sustainable development principles and integrate economic, social and environmental priorities. - Financial arrangements for investment, foreign borrowing and budget allocation require research and appropriate data analysis.

Opportunities

- A sustainable economy can be developed on industries such as: agriculture, fisheries, forestry, eco-tourism or organic coffee.
- It is possible to include environmental considerations while promoting private sector development and investments across the country for long term wellbeing of the people of Timor-Leste.
- Government can support sustainable local enterprises such as a recycling industry for both liquid and solid wastes.
- Integrating appropriate green technologies, investing on alternative green income generation, improving access to micro-credit schemes for green investment and certification of organic products can all provide opportunities for sustainable economic development.
- Government can implement Strategic Environmental Assessment (SEA) to the work of all development stakeholders.
- Stakeholders such as the National Directorate for Industry (NDI), that have the mandate to promote industrial development, have high potential to promote “Green Businesses” and green private and public Investments.
- Donors that are already working with the Government of Timor-Leste in capacity building in the areas of financial management and procurement could represent good entry points to introduce green procurement and to further integrate sustainable development considerations into the general state budget.
- TL Petroleum Fund can be used to finance the transition towards a Green Economy.

8. Climate Change Adaptation and Mitigation

Table 22. Policy and legal framework Climate Change Adaptation and Mitigation

Policy and legal framework
<ul style="list-style-type: none">• Timor-Leste ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 2006 and has produced a National Adaptation Programme of Action (NAPA, 2010). With the Ministry of Economy and Development as leading institution in this process, the Government has agreed to implement national adaptation and mitigation activities identified in the NAPA.• The Government is currently preparing its Initial National Communication to the UNFCCC. It covers a number of components: a national greenhouse gas (GHG) inventory, assessments of how TL is able to mitigate GHGs as well as its vulnerability & ability to adapt to climate change, options to mitigate and adapt to climate change, training and public awareness and integration of climate change into sustainable development plans and programmes.• The National Environmental Health Strategy (2006) makes explicit reference to the need to improve the quality of the environment in Timor-Leste in order to enhance wellbeing through improved human health and reduce illness, injury or death.• A law on industrial emissions has been drafted, and is currently being used to recommend standards by which relevant industries have to comply with.• The Decree Law on Environmental Licensing System includes a Pollution Control Law.

Background

The country is located in a region particularly sensitive to the unpredictable impacts of El Niño and climate change. In 2007 El Niño events caused a drought that led to a reduction by 30% in cereals and 20% rice production across the country.⁵⁴ Indeed, it is expected that El Niño events may become more frequent. In terms of climate change, warmer temperatures are likely to increase the incidence of vector-borne diseases such as malaria and dengue fever. Rainfall is also expected to increase in intensity, which may exacerbate soil erosion, landslides and local flooding. Changes in rainfall patterns may impact agricultural productivity and water availability. Sea-level rise may also increase coastal erosion and destruction of infrastructure – particularly in Dili; and salinization of water sources for both drinking and agricultural production (PEI, 2008).

One third of land in Timor-Leste is at high risk of erosion, and approximately half at risk of degradation and fertility decline.⁵⁵ Due to this wide spread degradation, natural water storage in upper catchments is reduced, jeopardizing downstream water supplies. Landslides and serious downstream flooding are common occurrences, damaging land, infrastructure and inshore marine ecosystems (PEI, 2008)

The World Bank's Country Environmental Analysis⁵⁶ has assessed the costs of water and indoor air pollution. The economic cost of indoor air pollution is estimated at approximately \$13 million when looking at income losses and medical costs and is equivalent to 3.5% of the 2006 GDP; lack of clean water, appropriate sanitation and hygiene is costed at \$17 million per year, equivalent to 5% of the 2006 GDP, in terms of illness and premature death (PEI, 2008).

Progress

After ratifying the UNFCCC, the Kyoto Protocol, the Montreal Protocol on Substances that Deplete the Ozone Layer and the Vienna Convention for the Protection of the Ozone Layer, the GoTL is ready to start implementing the activities under the Strategic and Action Plans that have been produced (e.g. NAPA).

(See annex for activities relevant to Climate Change mitigation and adaptation)

⁵⁴ <http://uk.oneworld.net/guides/timorleste/development>

⁵⁵ Draft Land Use Survey, UNDP 2010.

⁵⁶ World Bank (2009) Timor-Leste: Country Environmental Analysis. *Unpublished draft*.

Table 23. Challenges and Needs related to Climate Change Adaptation and Mitigation

Challenges related to Climate Change adaptation and mitigation	
Impacts on livelihoods	<ul style="list-style-type: none"> - As a new and urgent issue, climate change is likely to affect the prospect for sustainable development in Timor-Leste. As a recognised Small Island States (SIDS) and Least Developed Countries (LDCs), Timor-Leste is classified extremely vulnerable to climate change (Barnett, 2007; Barnett <i>et al</i> 2007; Wever, 2008; Christoff 2008; McCleod <i>et al</i>, 2010). Projections show that climate change impacts are likely to be significant and livelihoods and wellbeing of people and the status of nature will be affected (Barnett, <i>et al</i> 2007). - Farmers find rain fall very unpredictable. With climate change this situation will be worsened and the frequency of having unpredictable seasons will be higher. - Maize production will be particularly under stress with the predicted 1.5 °C temperature increase. - For coffee production, the producers may need to plant trees at a higher altitude not to be affected by 1.5°C increase. This means more fragile land will be under stress. - Population growth will put more stress on the environment particularly land and forests. - People do not have the incentive to invest their time and effort to undertake activities to tackle climate change.
Understanding of Climate Change Issues	<ul style="list-style-type: none"> - People are aware of climate change but understanding of it is very low. - Myths about climate change and misguided information is widespread.
GHG	<ul style="list-style-type: none"> - As an exporter of fossil fuels, TL is responsible for climate change resulting from GHG emissions in Japan, Australia and other places where TL’s oil and gas is burned. The Darwin LNG plant for Bayu-Undan for example vents a lot of carbondioxide gases, CO₂.

IV. National Strategic Development Plan

Timor-Leste does not have a National Strategy for Sustainable Development or NSSD as such, but the Strategic Development Plan (SDP), 2011-2030, recently approved by the Council of Ministers, provides a comprehensive guide for Timor-Leste to pursue sustainable development. The SDP is an integrated package that brings together the plans and strategies of all sectors that are to be executed in the short, medium and long term. This integrated package was formulated within the framework of the country's MDGs and was designed to be implemented in a coherent way, providing a roadmap to implement the country's development in a sustainable manner. The SDP intends to build core infrastructure, strengthen human and socio-economic development, and promote sustainable management of natural resources, as well as to encourage partnerships between the private sector, civil society and government to achieve the collective objective of the SDP. The SDP focuses on agriculture, tourism and natural resources (including petroleum) as the main resources to be explored to enhance peoples' livelihoods, job opportunities and to help achieve poverty eradication.

The SDP sets out the urgent priorities based on national needs, focusing on three broad areas: social capital, infrastructure and economic development. These key sectors will be built on a strong foundation through an appropriate institutional framework and sound macroeconomic direction. The main specific goal of the SDP is to set up and realize "nation building and peace building" as a precursor to achieve the social and economic development objectives of the nation that has been articulated in Timor-Leste's Vision: "Our Nation Our Future".

Although plans and initiatives are defined in the SDP, the strategic plan does not effectively address the interlinkages between social, economic and environmental aspects in a consistent way so as to provide a roadmap for sustainable development. For example, it does not adequately address how climate change adaptation measures can be mainstreamed into agriculture so as to address both food security and livelihoods. In addition, the SDP does not fully tackle the importance of strengthening policy coherence and coordination so that social, human development, economic and environmental objectives are addressed by Government in a coherent fashion. The SDP also does not give estimates of the specific financial resources that will be needed both from the government and development partners.

However, the GoTL is aware of the importance of these developmental challenges, and is formulating plans to address them in a sustainable fashion. Below are the key sectors that the GoTL has strongly highlighted to pursue sustainable development in coming years:

Agriculture Sector

The Agriculture sector is one of the main areas to which the government has given considerable attention. This is because more than 750,000 people live in rural areas, and agriculture is the

backbone both for food security and livelihoods for the rural poor throughout the country. Accordingly, sustainable agricultural production is a priority in order to fulfil people's needs for food security and livelihoods as well as generating economic growth and creating job opportunities in rural areas. However, in spite of the importance of agriculture, farming in Timor-Leste has for many decades been dominated by subsistence agriculture as farmers and fishers concentrate on household food security rather than on selling their products in order to earn cash incomes. Food security is a major constraint to rural development in TL and is adversely affected by low land productivity, primitive farming methods, soil degradation and climate-related impacts such as increased drought and changing rainfall patterns. This has been confirmed by the experiences of development partners - NGOs such as Oxfam Australia, UN agencies such as FAO and bilateral donors such as GTZ - working on improving food security in several districts around the country (see annex 2). They have also found that lack of capacity amongst farmers and fishers on farming system also contributes to food insecurity, famine and malnutrition. Moreover, extension workers who work with farmers and fishermen also lack the necessary skills to manage and implement agriculture methodology in an acceptable fashion.

The lack of investment in the agriculture and fisheries sector means that farming systems have been neglected, there is an absence of markets and storage facilities in rural areas, and the country lacks infrastructure such as rural roads to support agricultural development. At present, only two commodities in TL are processed in order to add-value: coffee and coconut oil. However, only a few people own coffee plantations in two or three districts, whilst coconut production is limited because most coconut trees are old and have very low production.

To address these issues, the government has endorsed in the SDP, the importance of mainstreaming rural development, agriculture and food security into the national development agenda. Through the rural development framework, the SDP intends to promote and encourage all parties (Civil Society, NGOs, line Ministries and the Private Sector) to work together in order to overcome these challenges facing communities and farmers across the country. The SDP aims not only to create job opportunities, but to also reduce food insecurity and poverty eradication (Timor-Leste: Strategic Development Plan, 2011). The government is working with development partners to promote poverty reduction, job opportunity and food security in rural areas. Areas that will be addressed in agricultural development include improved marketing systems, greater diversification of crops and livestock, investment in capacity building for farmers, fishers and extension workers, as well as processing and marketing to add value to agricultural products. A major focus of the SDP is to invest oil revenues in order to develop the non-oil economy, particularly the agriculture sector, to address issues of sustainable growth, human development and poverty eradication in rural areas. In this way, the government aims to introduce an appropriate national framework so farmers are encouraged to shift from subsistence agriculture to more market-oriented

production and to gradually adopt modern agricultural practices. The Government also hopes to increase the integration of agriculture and other sectors such as rural development, infrastructure, natural resources, environment and energy into the national economy.

Rural development

Rural development requires human capital, financial resources and political will from the government. Although the agriculture sector provides only a fifth of GDP, there is a potential for the Green Economy to minimise food shortages, provide job opportunities and alleviate poverty in TL. However, there is first a need to build farmers technical capacity, followed by improved access to productive assets. Capacity building for farmers and other communities for rural design, trade, processing and handling of agricultural production are crucial points to be considered by the government that would enable farmers to increase their land productivity, diversify and process their products. Some examples of activities and initiatives under rural development are presented in Annex 3.

The GoTL has also made some investment in rural development through development of mini-markets in order to help farmers to sell their agricultural products and also to support them with access to micro-credit to enable them to set up small businesses in rural areas. Access to bank credit for agriculture sector in rural areas in TL is a constraint and is associated with low agricultural production, a lack of farmers' capabilities, and land laws and tenure systems that limited land use for agricultural production, making investment in agriculture unattractive. A lack of banks in rural areas also makes it difficult for farmers to access credit. Therefore, the Ministry of Economy and Development has provided financial support called *Micro Finances* to support community through saving and credit cooperatives. The government recognises that the cooperatives are important and need to improve in coming years. This is because the cooperatives play important roles in promoting people's livelihoods and job opportunities. This type of cooperative also has been implemented by an international NGO (Paz y Desarrollo). This NGO provides fisheries tools and equipment to support fishermen and their families. Women are strongly encouraged to work on the cooperative on post fish harvest. Promoting savings and credit schemes is the main mandate of the cooperative. This cooperative has 56 members in a fish processing centre in Baucau district. Another aspect is marketing of fish production and delivery to final consumers both in form of fresh and processing products.

Infrastructure Development

Infrastructure is a key factor in agriculture and rural development. Infrastructure development such as roads, communications and electricity are strongly related to agriculture development. Therefore, there is a need for relevant ministries to take an integrated approach to the development of infrastructure, energy and rural areas by taking into account the needs of agriculture development in their master plans and development strategies at national and local levels. This integrated approach would allow for more efficient and effective use of scarce

resources in responding to existing constraints and creating more benefits for the poor in rural areas. Inadequate infrastructure such as poor road development has led to high transportation costs for agricultural inputs and products.

The GoTL has a strong commitment to enhance rural infrastructure in order to support agriculture and business as well as petroleum related activities in rural communities. The SDP acknowledged that roads are in very bad condition, with poor maintenance and about 95 % rural roads impassable in the rainy season (Timor-Leste: Strategic Development Plan, 2011). The GoTL intends to improve road conditions, beginning in 2011; this will not only improve roads but also provide short and long term employment in rural areas. The government also has enacted road codes for safer and cleaner transportation several years ago. The government considers that transportation and developing rural areas are extremely important in order to enhance rural transportation and services for rural communities. The ADB is assisting the GoTL to fix and enhance road quality particularly in remote areas. This assistance is focused on improving road connections between districts and sub-districts because these roads are believed to have highest interchange volume in transportation of good and services (Timor-Leste: Strategic Development Plan, 2011). Road maintenance requires environmental impact assessment prior to the project being carried-out in order to adhere to quality standards for disaster risk mitigation, particularly where roads those are located in areas vulnerable to land slides and flood or inundation areas. Annex 4 lists some activities and initiatives for infrastructure and energy development across the country.

Rural Energy

Affordable energy which is also environmentally friendly is one of the infrastructural enablers for agricultural growth particularly in rural areas. The level and intensity of commercial energy use in the agricultural sector is a key indicator of economic growth, and development. At present, electricity in rural areas is very limited and very expensive, leading to reduced rural investment, particularly in processing and storage facilities for farm products such as fruits, fish and other seasonal farm products. However rapid improvements are being made and the electricity power plants are built all over the country aiming to provide electricity to all.

In TL, there is a need for the agriculture, energy, electricity and urbanisation sectors to work together to develop a comprehensive energy and electricity master-plan to develop and promote agro-industry in rural areas. The SDP promotes alternative sources of renewable energy such as biogas, solar panel and hydropower; these resources are not only environmentally friendly and affordable, but also more accessible for everybody in remote areas. Private sector and NGOs are encouraged to support this activity. So far some International agencies are working in rural areas to set up alternative energy such as solar power and energy efficient stoves that has been implemented by Mercy-Corps, AusAid, WFP

and Work Bank. These agencies are working closely with communities, particularly in the districts of Dili, Baucau and on the western part of Maliana and Ermera.

The SDP states that energy resources in rural areas are one of the high priorities for TL as approximately 180,000 people across the country do not have access to electricity. The limited energy available is also very expensive as there is a lack of fuel availability and human resources for maintenance of diesel generators. The GoTL has declared that by 2015, all Timorese people will have access to electricity which is affordable and sustainable across the country as everyone has a right to access to energy to support their livelihoods and to maintain their prosperity. The government also intends to promote renewable energy which is affordable and environmentally friendly for people who are living in very remote areas that can not be reached by the grid. This scheme is intended to help all people regardless of their income or circumstances, and is part of the Government's commitment to implement the Kyoto Protocol at the National level.

Improvement of alternative and renewable sources of energy that are environmentally friendly is one of the most important contributions that a green economy can make to TL. At present, people in all areas cut trees for firewood for cooking, lighting and heating as well for house construction; these results in deforestation and desertification that limits future agricultural and agro-forestry productivity, as well as causing indoor pollution that is a serious health hazard for the poor in rural areas. Therefore, promoting alternative and renewable sources of energy in rural areas would help to improve environmental health, provide fuel for cooking, as well as light for households, schools, businesses and telecommunications.

The draft Rural Energy Policy prepared by UNDP in partnership with the Government of Timor-Leste puts great emphasis on the importance of expanding the use of different indigenous renewable energies and introducing more efficient cooking stoves. Cooking facilities in Timor-Leste are overwhelmingly simple (three stones) and very inefficient, leading to an excessive consumption of fuel wood and rapid deforestation as well as a smoky environment, causing significant health risks by affecting the respiratory system as well as the eyes, in particular to women and children.

The draft policy indicates that the GoTL need to be determined to reduce the average amount of fuel wood used for cooking in private households by one third by 2020 by introducing fuel substitution and supporting the use of energy-efficient stoves; and keep the total amount of fuel wood consumed in Timor-Leste by 2020 below the level of 2004. The government needs to acknowledge the findings of scientific measures and articulate on the successes experienced in pilot projects and approve the Rural Energy Policy to strengthen efforts to work in line with the policy document principles and in partnership with other agencies in the sector.

Natural Resources and Environment

Natural and environmental resources are the main basis for agricultural production and sustainable livelihoods. Land degradation has continued to increase due to shifting agriculture and cutting trees for cooking, heating and for cash. So natural and environment resources degradation is the main challenges faced by TL particularly in pursuing economic development. Moreover, population growth, expansion of human settlements and unsustainable land use systems and lack of waste management pose serious threats to the environment across the country. These threats contribute to unsustainable development patterns such as through land degradation from deforestation, soil degradation, loss of biological diversity and other risks (see annex 5 and 6). Consequently, poverty will be difficult to eliminate particularly for those who are reliant on natural and environment resources in rural areas.

Timor-Leste has enormous oil resources that can be explored for short, medium and long term to support national development. The GoTL attempts to provide more funds to support and promote the non-oil economy, particularly the agriculture and fishery sector. Mountains, hills and the marine life can serve as a great basis for tourism which is a non-oil economy and green growth. This is an appropriate basis for a green economy growth, human development as well as poverty reduction to attain sustainable development. The GoTL has committed to establish a firm basis for pro-poor growth in achieving MDGs of poverty reduction and environmental protection by 2015 (Timor-Leste: Strategic Development Plan 2011). Promoting pro-poor and human development is the pre-requisite to address poverty reduction and reduce employment rate across the country as part of non-oil economy development. Through, this scheme sustainable development will be attained because it will create significant improvements in living standard for the country's future.

Social Capital

A strong society is a necessary condition for economic development; the GoTL has therefore made efforts to strengthen social capital as a precondition to achieve social and economic benefits. To achieve the collective objectives, the GoTL has declared within the SDP (2011) to enhance the education and health systems between 2011 and 2015. TL can not strengthen social capital in an acceptable way without an adequate education and health system in place. The main challenges now are how to balance economic growth with resources sustainability and appropriate human resources to manage them.

In addition, the GoTL through its political commitment has encouraged national and local actions to sustainably manage all natural resources and environment that most Timorese people rely on for livelihoods and incomes. This is because natural resources management are the very foundation of successful sustainable development and require the full support of the community and civil societies both from urban and rural areas. The GoTL acknowledges that

natural resources across the country have been destroyed and environmental degradation continues to increase due to an economic pressure. Tackling these will need human resources within rural and urban communities with adequate skills and knowledge. In order to achieve this, the GoTL has introduced environment and natural resources education into the national curriculum from elementary school to high school. Moreover, the Secretary of State for the Environment under the MED is doing an enormous effort in terms of education and public awareness since 2007 across the country. The government staff are working very closely with community leaders, districts officers and other key entities to preserve the environment and local livelihoods when they band together to protect local natural resources i.e. forest, lakes, rivers from destruction and pollution through teaching environmentally-friendly practices locally and also in strengthening the local customary law – *Tara Bandu*. These social norms and values define shared cultural beliefs and provide a tool to address social conflicts in relation to the environment. These norms and values bear on all other forms of social capital that need to be strengthened and be appreciated.

V. Green Economy, Understanding, Progress and Challenges

Globally, the concept of a Green Economy has emerged as an alternative to current economic development models. A Green Economy is an economy where governments reshape and refocus their policies, investments and spending towards a range of sectors, such as clean technologies, renewable energies, water services, green transportation, waste management, green buildings, sustainable agriculture and forest services. Greening the economy refers to the process of reconfiguring businesses and infrastructure to deliver better returns on natural, human and economic capital investments; while at the same time reducing greenhouse gas emissions, extracting and using less natural resources, creating less waste and managing wastes appropriately, and reducing social disparities. Economic valuation of ecosystem services and creating a market for green jobs are also key components of boosting a green economy (UNEP, 2011).

Countries from all over the world are adopting Green Economy Strategies to undertake their transition towards a more sustainable human development model. Rio+20 aims to support countries those are in favour of undertaking such strategies to walk towards a Greener Economy. This report is a milestone for developing the foundations of a development strategy for Timor-Leste towards a greener and sustainable future. It is an instrument to highlight the existing knowledge on successes, failures, gaps and challenges to be submitted to Rio+20 conference and build on the existing capacity to take necessary steps in the near future.

The concepts of a green economy and sustainable development are challenges for Timor-Leste as they are new ideas for most Timorese people including high level decision-makers (Carascalão, 2002). However, some programs and activities are already being implemented but not under the title of a green economy as people do not as yet fully understand what a green economy is all about. For example, Secretary of State for the Energy Policy is working towards a green economy in rural areas i.e. promoting and provide alternative energy of biogas in couple of districts and sub-districts which is affordable and environmentally friendly. By using biogas, people will save more money, minimise the use of firewood and reduce the cutting of tress for fuel wood. One of the key dimensions of poverty in TL is access to fuel wood and some two-thirds of the population suffer from deprivation in terms of their access to fuel wood.

A study assessing the potential for several renewable energy sources available in the national territory (such as wind, hydro, biomass and solar energy) was conducted by the GoTL under the Secretary of State for Energy Policy and is serving as a basis to develop TL's national renewable energy policy. The study shows that TL has very high potential for renewable energies development. If these are well exploited, altogether they can produce an installed capacity for 431 megawatts, or in other words, enough energy to supply the whole country.

The SDP 2010-2030, acknowledges this high potential and under the leadership of the Secretary of State for Energy Policy, several successful projects have already been conducted. Current policies such as the Rural Electrification Plan, already being executed give high priority to renewable energies. The GoTL off-grid strategy is presently defined for providing individual households with stand-alone solar photovoltaic (PV) systems. From 2007 to 2010, more than 2.000 PV systems for households and community centers were provided at no cost to recipients, financed with infrastructure funds provided annually to the *sucos* (villages) by the central government. It is estimated that about 60,000 households nationwide are provided with access to electricity service only with solar PV system. The GoTL is planning to establish a research laboratory on renewable energy's development. Other stakeholders such as INGO's and local NGO are already achieving promising results in alleviating poverty through the use of renewable energies such as solar PV systems and energy efficient stoves. Mercy Corps with its "Energy for All project"⁵⁷ (E4A), funded by the European Commission and with a market based approach and the Alternative Technology Association⁵⁸ (ATA) with its several solar panel projects, are taking the lead in the development of solar energy and energy efficient stoves⁵⁹.

⁵⁷ The programme began in May 2011 and is a 36 months initiative funded by the European Commission, and will be implemented in 3 districts of Timor-Leste: rural Manufahi and Ainaro districts and peri-urban areas of Dili district.

⁵⁸ Major Australian environmental organization promoting sustainable technology and practices that shares office with Permatil

⁵⁹ There is an "Energy Efficient Stoves" Working group chaired by Mercy Corps and a "Timor Solar Power Working Group" promoted by Alternative Technology Association.

SEFOPE, in partnership with ATA⁶⁰ is undertaking training to install solar panels. Coupled with village lightening schemes⁶¹, solar water pumps in Oecussi, renewable energy for schools, solar power for community centers and clinics; those constitute some of the best practices that are already having impacts on people livelihoods. Renewable energy has proven to be an excellent cost-effective opportunity to address the chronic problem of energy poverty that is prevalent in TL.

VI. Lessons Learned from Stocktaking Exercise

- Better collaboration and actions are needed to ensure that sustainable development initiatives within the SDP 2011-2030 are implemented in line with national priorities. The ministries need to work more closely together and communicate with one another effectively to translate ideas into projects. In order to execute the SDP effectively, the existing legal framework needs to be strengthened and enforced.
- Sustainable financial support and political commitment need to be in place at the government level to broaden sustainable development and green economy practices. This includes continued and specific budget allocation for sustainable development and green economy initiatives. Systematic coordination with donors is required to demonstrate the benefits of sustainable development projects, and to share this information with the beneficiaries and stakeholders.
- Policies and programs need to support priorities enhancing people's livelihoods in an acceptable way and create opportunities to manage natural resources in a sustainable manner. Moreover, to achieve a socially equitable development, special attention should be paid to vulnerable and poor people particularly those in rural areas.
- Synergies between government, academia, research institutes and NGOs need to be strengthened in order to secure sustainable development in short and long term. Improved monitoring and evaluation mechanisms would assist government to identify lessons and best practices and to scale up and/or replicate successful projects.
- Education and capacity building need to be prioritized. More integrated approach is needed where the institutions have better coordination and there are more entry points for locals to get trained and be the beneficiaries of the projects. Empowerment of the local communities needs to be the foundation of all policies and project designs. This

⁶⁰ AusAid is funding this project

⁶¹ Project summaries accessible at http://www.ata.org.au/wp-content/projects/2009_ipg_report_email.pdf

will require: capacity building at community level to promote knowledge and experience sharing as well as skills development; consultation, piloting, learning and effective delegation of authority; support for community rights to manage land and traditional enforcement mechanisms; clarification of property rights; and recognition of customary laws which deal with marine and natural resources.

- Inadequate community consultation and the absence of good baseline data to support policy formulation and programme design and development have jeopardized sustainability of development projects therefore this gap needs to be addressed.
- Policies are needed to promote green and equitable investments which reduce the burden on the environment and allow benefits to be shared more equitably. Examples include new and green technologies to reduce oil dependency and deforestation rates and alternative sources of energy such as hydro-electricity and solar power to reduce the use of firewood.
- In order to kick start the transition to a Green Economy, TL needs to strengthen its political and financial commitment to promote environmental sustainability with budget allocations that reflect this commitment. For example in the proposed 2012 State budget, physical infrastructure will receive 48% of public expenditures, while health, education and agriculture will receive only 2.9%, 6.3%, 1.1% respectively. This indicates that the allocation for the agriculture sector is very low. Appropriate indicators and tools need to be identified to measure achievements in ecological integrity, economic resilience, social well-being and good governance. The transparency portal provides an opportunity to also monitor sustainable development activities in the country.

VII. Conclusion: Challenges for Sustainable Development in Timor-Leste

This National report on sustainable development has highlighted the policies programs and activities undertaken towards a Sustainable Development model and a Green Economy, pointed out some of the lessons learnt and identified gaps and challenges in different development sectors in Timor-Leste context.

The goal of sustainable development provides Timor-Leste with an opportunity to put its national vision, articulated in the SDP into practice in order to improve people's well-being, i.e. reduce poverty, improve food security and strengthen the economy to achieve the collective objectives within the framework of SDP 2011. The GoTL has a crucial responsibility to strengthen its legal framework to better promote and implement the principles of Sustainable Development and a Green Economy model. The integration of these principles into decision making requires that the government has strong and capable institutions with skilled staff, effective inter-ministerial coordination and an integrated sectoral approach to develop strategies policies and laws. In this respect the government could identify champions who are promoting ideas of Sustainable Development and a Green Economy so that they can encourage ministers across all sectors to be involved in the process. This will also need effective coordination and collaboration among all stakeholders: government, donors, the private sector, development partners and civil society.

Timor-Leste's environment is already under various pressures adversely affected by climate change, rapid population growth, shifting agriculture and natural hazards. It is extremely important that the policy makers and other key stakeholders recognise the value of the environment and its limits to growth. This depletion of natural and the environmental resources are the major concern in most parts of the country - these contribute significantly to increased poverty, food insecurity and unemployment as well as social conflicts. However, the GoTL has taken a number of significant steps; these include the establishment of a new Directorate to support and strengthen the traditional custom called *Tara Bandu* to protect and conserve natural resources in order to achieve environmental sustainability. In addition, the GoTL has also demonstrated political will to implement MEAs obligations both at country and regional level, as well as to strive to achieve its MDGs. This commitment was articulated in the SDP 2011-2030, which encouraged all parties to take integrated actions to achieve collective objectives for short, medium and long term development.

In order to implement sustainable development in effective and coordinate manner a secretariat or national commission for sustainable development is needed. This report proposes that the National Development Agency (NDA), established under the SDP 2011-2030, provides a

suitable institution for carrying out the functions of such a national commission by coordinating and monitoring sustainable development activities in TL within the framework of the SDP. In addition, it would also be helpful to explore the extension of the concept of the Transparency Portal to monitor progress towards MDGs and sustainable development priorities in TL.

Main challenges ahead for sustainable development in Timor-Leste

- **Legislative framework:** One of the main challenges that lie ahead for TL is that existing laws and regulations on the environment and natural resources are ill suited to the prevailing conditions in rural areas due to economic pressure. Dealing with this challenge will require a sustained effort on the part of policy makers and their constituents to re-think and re-define appropriate measures of wealth, prosperity, well-being including a legal framework that promotes sustainable natural resources management to support poverty alleviation.
- **Agriculture and Food Security:** Food security is a major recurring problem for the country. This strongly impacts on malnutrition, human health and famine. The Demography Survey 2009/2010 found that food insecurity has significant impacts for children less than five years and reduces women's productivity and heightens risk of adverse pregnancy outcomes. Food insecurity is also a potential trigger for social conflicts due to loss of income and vulnerability to famine. Sustainable agriculture will require a shift from traditional subsistence-based farming systems with the adoption of new environmentally-friendly technologies and cropping practices, and market orientation. The adoption of policies that support ecologically balanced farming systems would promote the growth of sustainable agriculture. Through this approach, pressure on natural and environmental resources, as well as food insecurity and poverty issues can be minimized. Sustainable agricultural growth also needs a sound agricultural marketing policy including investment in irrigation, road infrastructure, market, power and other key facilities as well as technological information in the agricultural production system.
- **Natural Resources and the Environment** is the basis of the economy and continued degradation of the environment and natural resources constitute a major challenge to economic development. Timorese people have very limited knowledge on how to utilise and conserve natural and the environment resources in a sustainable way under intensive modern farming practices. However, currently, the GoTL has committed (under the Ministry of Social and Solidarity) to support *Tara Bandu* (TB) that regulates the relationship between human and natural resources. In the past, TL has had difficult experiences in managing its natural resources due to foreign aggression and roles. For

that reason, TL has tried to construct its own sustainable development pattern based on its historical roots and its own experiences, using TB as a traditional practice to conserve and protect natural and the environmental resources. Through the conservation approach of TB, people will not only learn to trust each other, but will be able to promote environmental sustainability.

- **Population growth**, changing patterns of human settlements, expansion of urban areas, and unsustainable land-used systems all pose serious threats to the environment across the nation. Over the last decade, environment and natural resources were largely viewed as the means for economic development, job creation, and poverty reduction. As a result, economic pressure has compelled people in rural areas to exploit natural resources in an unsustainable way for food security and livelihoods. The result has been increased poverty for a large section of the population that relies on natural resources. One of the major challenges faced by the GoTL is the rapid growth in population (3.2 % per year; National Directorate for Statistic, 2010) and high rates of migration to urban areas i.e. Dili city. Consequently, in the coming years, the GoTL has to allocate financial resources to reduce high fertility rates in rural areas and to provide more job opportunities in rural areas to help reduce the high current levels of rural-urban migration. High rates of unemployment amongst the young is an additional burden for the GoTL, the main problems are that the young not only *“lack appropriate skills when jobs are available, but also lack job opportunities due to the weak state of the non-oil economy”* (UNDP-Human Development Report, 2011). Moreover, there is no network available that can connect people to available jobs around the country. Petroleum revenue will sooner or later decline and the non-oil economy is the only option that the government has to address unemployment in the long term. Although the increasing population can provide a source of human resources for the future, unless the problems of education and job opportunities are addressed, the increase in numbers of young unemployed people could be a potential source of social conflicts and political instability around the country. However this can be turned into a demographic window of opportunity which means if the youth is educated and have jobs, TL can experience very high levels of economic growth because of the small number of people who depend on the youth. Therefore the education and skills development as well as job creation are crucial considerations for the GoTL.
- **Climate Change and natural hazards:** As a small island state, and part of Pacific Islands, TL is vulnerable to climate change and other related risks, including climate variability such as *El-Niño*, *El-Niña*, and natural hazards such as strong storms, sea level rise, inundation and floods. These climate-related events will adversely affect human settlement, food security, and landslides as well as fishing communities on coastal

areas. TL has limited capacity to address the issue of climate change and natural hazards. Climate change adaptation will require a strong commitment from all stakeholders in order to address the issues in a sustainable manner. Timor-Leste is classified extremely vulnerable to climate change and natural disasters (Barnett, 2007, Barnett *et al* 2007, Wever, 2008, Christoff 2008 & McCleod *et al*, 2010). Building settlements in safe areas, developing early warning system, protecting ecosystem and improving agricultural methods are all links to sustainable development as they minimise risks to community life and livelihoods, and also increase communities' resilience to all natural hazards. There is limited cooperation/coordination among key agencies to formalizing collaboration and the coordination of the climate-related risks reduction activities through a multi-sector mechanism such as engagement of key sectors and civil society in order to address of climate hazards.

There has been some progress so far e.g. establishment of climate-hazards structure at districts levels in order to control and monitor floods and roads conditions. But it does not work very well due to human resources limitation and technological capabilities to do so (UNDP-TL-Human Development Report, 2011). The important steps under this program are obtaining high quality of information on climate change and natural hazards and their likely future changes. Thus, assessing climate hazards and providing good quality briefing to all decision makers and all vulnerable groups are important in order to protect natural resources from climate change and natural hazards. Moreover, improved education and public awareness amongst vulnerable communities is needed to help them cope with climate change and natural hazards such as floods, fire, landslides and inundation at village and sub village level. Strengthening existing disaster risk management policy is an investment in disaster risks preparedness, mitigation as well as prevention that would help to reduce vulnerability to the impacts of climate-change and natural hazards, and contribute to sustainable development. Lack of financial commitments is another barrier to address the issue of natural hazards, and is aggravated by a lack of capacity amongst staff and a lack of clarity about institutional mandates. The current mandate for Directorate of Natural Disaster focuses more on recovery rather than preparedness and prediction of likely climate hazards in the future (Ministry of Economy and Development, 2011).

- **Illegal Unregulated and Unreported (IUU) fishing activities:** the issue of IUU fishing is one of the most serious problems facing the management of marine fish stocks at present in TL. Timor-Leste is one of the world's poorest countries and a developing nation that has been a victim of IUU activity since its inception. In 2009 more than 32 vessels were operating illegally and with impunity in Timor-Leste's territorial waters because TL simply does not have the ships and staff to properly monitor its coastal waters.

The Timor-Leste Fisheries Department estimates that in 2008, some 18,000 metric tonnes of fresh fish and other marine life worth more than US \$36 million were illegally harvested from TL, endangering its natural resource base and denying its citizens access to vital food stocks (National Directorate for Fisheries and Aquaculture, 2008). Given the abject poverty in which many of TL citizens live, the loss of these vital sources of food and income to vulnerable coastal communities threatens the lives as well as the livelihood of TL citizens. To really be successful, however, TL needs to cooperate with neighbouring countries particularly under the umbrella of CTI, ATSEF, and PEMSEA to minimize IUU activities. *“We need to take urgent action in accordance with international law as reflected in the relevant provisions of the 1982 United Nations Convention on the Law of the Sea to cooperate to conserve our collective marine resources. To this end, I would like to encourage that neighbouring countries like Indonesia, Australia, and Papua New Guinea to establish an international task force through the various fisheries departments, naval forces and International NGOs to develop and implement an action plan to combat illegal fishing within the CTI area without prejudice country’ sovereignty (President RDTL – Ramos Horta’ Speech at the Joint Declaration for the CTI in Menado, Indonesia, 2009).*

- **Depletion of natural and the environmental resources** are the major concern in most parts of the country - these contribute significantly to increased poverty, food insecurity and unemployment as well as social conflicts. However, the GoTL has taken a number of significant steps; these include the establishment of a new Directorate to support and strengthen the traditional custom called *Tara Bandu* to protect and conserve natural resources in order to achieve environmental sustainability. In addition, the GoTL has also demonstrated political will to implement MEAs obligations both at country and regional level, as well as to strive to achieve its MDGs. This commitment was articulated in the SDP 2011-2030, which encouraged all parties to take integrated actions to achieve collective objectives for short, medium and long term development.
- **Strategic Environmental Assessment (SEA):** there is a need for a thorough environmental performance assessment for TL, similar to the ones carried out in many countries in SE Asia and funded by the ADB. The SEA would help the GOTL assess the current status of the environment in the country and to identify ways in which it can incorporate environmental considerations into policies, plans, programs and strategies such as the SDP.

Timor-Leste does not have National Strategy for Sustainable Development, but the SDP provides a road map to implement sustainable development. In this Plan, the GoTL has underlined six key sectors (agricultural sector, rural development, infrastructure development, rural energy, natural resources and environment and social capital) that collectively have the potential to put in place systems for sustainable development in Timor-Leste. Institutional arrangements are a key factor to ensure that these activities are implemented in a sustainable way. This will require a partnership model that not only defines roles and responsibilities, but is founded on state building and peace building as these are pre-requisites for sustainable development. Partnerships with existing bilateral and multilateral channel are also important in order to secure financial, technical and technological support.

The GoTL acknowledges that existing programs and plans that are based on sectoral approaches, limited coordination and a lack of integration remain as big challenges. Thus, sustainable development in TL is still far way and needs extra efforts to be realized. Existing laws and regulations remain weak due to poor implementation, a lack of enforcement and limited dissemination as a result of inadequate capacity. In spite of that, the GoTL has articulated a new strategy in the SDP, 2011 to reshape and refocus its plans and policies in order to integrate various sectors within the country in line with the MDGs goals in a coherent manner. Another significant achievement made by the GoTL is the Transparency Portal, which allows all citizens to access and monitor available budgets both from the government and from development partners. This program is designed to strengthen good governance and transparency, and provides a model to minimize corruption and manipulation.

Moving towards a green economy will require lots of attention e.g. prompt and firm support from the government institution, political will, engagement of civil societies, and research institution collaboratively. TL still suffers from poor economic performance, high unemployment rate, weak democratic institutions and famine, all of which increase the risks of the country becoming a fragile nation.

By leading the g7+ group of fragile states, TL is in a position to share and promote peace building and state building experiences with other fragile countries in order to strengthen and promote people's security and justice as key foundations to enable progress towards the MDGs, and to guide TL to achieve sustainable development through the effective implementation of the SDP.

VIII. References

- Acil, C. (2006) *Preparing the Road Network Development Project – TA 7100*. Ministry of Infrastructure, Timor-Leste. Final Report.
- Alternative Energy Association (2009) *International Projects*. http://www.ata.org.au/wp-content/projects/2009_ipg_report_email.pdf
- Anderson, R & Deutsch, C. (2001) *Sustainable Development and the Environment in East Timor: Proceedings of the Conference on Sustainable Development in East Timor*. Conference held from 25-31 January 2001. Paper presented at the Conference on Sustainable Development in East Timor, Dili.
- Andrew, N., K.S. Pheng, M. Philips (2011). *Fisheries Dependence in Timor-Leste: A Scoping Study*. Coral Triangle Support Partnership. 27 pp. Accesible online from: http://www.coraltriangleinitiative.org/sites/default/files/resources/CTSP_ManagingFisheriesDependence_TL_Sept2011.pdf
- Barnett, J. (2007) *Climate Change and Security in Asia: Issues and Implications for Australia*.
- Barnett, J., Dessai, S., Jones, R. N., (2007) *Vulnerability to Climate Variability and Change in East Timor*.
- Basiuk (2006) *Sustainable Tourism Sector Development and Institutional Strenghtening, Republic of Timor-Leste*, Environmental Planning Inputs. Dili, UNWTO/UNDP Project for the Government of Timor-Leste:53.
- Benefits of green infrastructure (2011) *Report by Forest Research*, Government of UK. Accesible online from: [http://www.forestry.gov.uk/pdf/urgp_benefits_of_green_infrastructure.pdf/\\$FILE/urgp_benefits_of_green_infrastructure.pdf](http://www.forestry.gov.uk/pdf/urgp_benefits_of_green_infrastructure.pdf/$FILE/urgp_benefits_of_green_infrastructure.pdf)
- Carlos X. (2011) Third Meeting of the Regional 3R Forum in Asia “*Technology Transfer for promoting the 3Rs –Adapting, implementing, and scaling up appropriate technologies*” Singapore, 5-7 October http://www.uncrd.or.jp/env/spc/docs/3rd_3r/Country_Analysis_Paper_Timor-Leste.pdf
- Charles Darwin University (2009) *The Timor-Leste coastal/marine habitat mapping for tourism and fisheries development project*, project number 4, conservation values, issues and planning in the Nino Konis Santana Marine Park, Timor-Leste, final report. Accesible online from: <http://www.cdu.edu.au/research/atsef/36091-project4-secured-final.pdf>
- Carascalão, M. (2002). Address to Conference on Sustainable Development. Sustainable Development in East Timor.
- Constitution of the Democratic Republic of East Timor, (2002). Democratic Republic of Timor-Leste.
- Christoff, P. (2008). Pacific Ark. *The Diplomat*. **6**: 40-42.
- Crisis Group (2008). Timor-Leste: Security Sector Reform , Working to Prevent Conflict Worldwide, Asia Report N°143.
- Democratic Republic of Timor-Leste (2010) *Timor-Leste’s Fourth National Report to the UN Convention on Biological Diversity*

- Democratic Republic of Timor-Leste (2009). Secretary of State for the Council of Ministers “Decentralization of Justice System delivers results.” The Secretary of State for the Council of Ministers and Official Spokesperson for the Government of Timor-Leste: Press Release, December 5. Available at: <http://timor-leste.gov.tl/?p=1982&lang=en>
- Dolcemascola, G. (2003). Climate Risk and Agriculture in Timor Loose. Paper Presented at Seminar on Climate Change and Severe Weather Events in Asia and the Caribbean, Barbados July 25-26. Inter-American Development Bank, Washington DC.
- European Commission (2010) *Green Infrastructure*. Accesible online from: <<http://ec.europa.eu/environment/nature/info/pubs/docs/greeninfrastructure.pdf> .
- Fish for Sustainability (2006). Our Strategic Plan for Fisheries, 2006-2011. Ministry of Agriculture and Fisheries, Democratic Republic of Timor-Leste.
- Graham, J. (2008) Culturally Informed Urban Development and the Role of the Vernacular in Present and Future Dili, Timor-Leste. Queensland university of Technology.
- Government of TL. September 2008. Timor-Leste – *State of the Nation*. National Commission for Research and Development
- Government of TL (2011) *National Parliament approves the State Budget for 2012*, Accesible online frm: < <http://timor-leste.gov.tl/?p=6176&lang=en&n=1>>
- Lao Hamutuk (2012) *RDTL General State Budget for 2012*. Accesible online from: <<http://www.laohamutuk.org/econ/OGE12/100JE2012En.htm>>
- Lao Hamutuk (2012a) Rights and Sustainability in Timor-Leste’s Development, Briefing for Media and Others, Accesible online from: <http://www.laohamutuk.org/econ/training/PresentUNTL-VUEn.pdf>
- Lao Hamutuk (2011) RDTL General State Budget for 2011, Accesible online from: <http://www.laohamutuk.org/econ/OGE11/100JE2011.htm>
- Mercy Corps (2011) *Baseline study for Energy for All Programme (E4A)* Timor-Leste. Available online.
- Mcleond, C., J. Barnett (2009) *Global Environmental Change* vol.19 pp :105-112.
- Ministry of Agriculture, Forestry and Fisheries (2007) *First National Report on Land Degradation in Timor-Leste*, submitted to the Secretariat of UNCCD. Accesible online from: <<http://www.unccd.int/cop/reports/asia/national/2006/timor-leste-eng.pdf>>
- Ministry of Finance, National Directorate for Statistic (2010). Population and Housing Census. The Government of the Democratic Republic of Timor-Leste.
- Ministry of Economy and Development, Secretary of State for the Environment (2011). National Adaptation Plan of Action. Democratic Republic of Timor-Leste.
- Ministry of Economy and Development, Secretary of State for the Environment (2011). National Biological Diversity Plan of Action. Democratic Republic of Timor-Leste
- Ministry of Agriculture and Fisheries, National Directorate for Fisheries and Aquaculture (2008). Illegal Fishing Report. Democratic Republic of Timor-Leste.
- Myrttinen, H. (2009). A Relapsing “Success” Story of Timor-Leste. Taiwan, Journal of Democracy, Volume 5, No. 1:219-239.
- New Aid Deal Endorsement (2011) *International dialogue of peace building and state building*. Available online.

- PERMATIL (2008) *“Kuidadu Ba Rai, Kuidadu Ba Malu, Ho Futuru Timor-Leste. A Permaculture Guidebook from East Timor”*, Created and Published by PERMATIL (Permakultura Timor Lorosaé).
- Poverty Environment Initiative in Timor-Leste (2008) (draft project document) United Nations Development Programme – United Nations Environment Programme, internal document.
- Parks, T. (2008). In *Timor-Leste: The Politics of Internal Security*.
- Pinto, J. T. (2003). *A Secure Future. A Focus Group Report on Public Attitudes regarding the Defence and Security of East Timor*. Universidade Dili, Timor-Leste.
- SEAU: *Dili Urban Planning in the back burner until 2012* (2011), *The Dili Weekly*, Accesible online from: <http://www.thediliweekly.com/en/news/development/460-se-pereira-urbanizasaun-seidauk-bok-hein-oje-2012>
- Security Sector Reform Monitor (2011). *Addressing International Governance. Democratic Republic of Timor-Leste*.
- The GoTL Strategic Development Plan (SDP) 2011-2030. Available online from: http://www.tls.searo.who.int/LinkFiles/Home_NATIONAL_STRATEGIC_DEVELOPMENT_PLAN_2011-2030.pdf
- The Asian Foundation (2008). *Law and Justice in Timor-Leste. A Survey of Citizen Awareness and Attitudes Regarding Law and Justice. A Bilateral Co-operation between the GoTL and Australia*
- The Government of Timor-Leste/FAO (2010) *Strategic programme for promoting agricultural growth and sustainable food security in Timor-Leste*. Democratic Republic of Timor-Leste, Ministry of Agriculture and Fisheries, prepared with technical assistance of the Food and Agriculture Organization of the United Nations, Regional Office Bangkok, Thailand.
- The Government of the Democratic Republic of Timor-Leste (2010-2020). *Strategic Framework for Rural Development (2010-2020)*. Ministry of Economy and Development.
- The Government of the Democratic Republic of Timor-Leste (2011). *Timor Leste - Strategic Development Plan, 2011-2030*.
- The Government of the Democratic Republic of Timor-Leste (2011). *Progress of Timor-Leste towards the MDGs: a Fact sheet*. Timor-Leste.
- UNDP - Human Development Report (2011). *Managing Natural Resources for Human Development. Developing the Non-oil Economy to Achieve the MDGs*.
- United Nations Environmental Programme (2011). *Towards a Green Economy: Pathway for Sustainable Development and Poverty Eradication – A Synthesis for Policy Makers*. www.unep.org/green. economy
- United Nations Support to the ‘MDG Architecture’ in Timor-Leste, 2011.
- *Valuing farmer’s words and wisdom (2011) A report on Consultation with Farmers*. Available at: <http://www.laohamutuk.org/Agri/Konsult/RelKonsultAgricultor9Sep11En.pdf>
- Weaver, L., (2008) *Assessing Management Challenges and Options in the Coastal Zone of Timor-Leste*. Griffith Centre for Coastal Management Research Report No 86. Griffith University, Australia

- World Bank (2010) *Asia Sustainable and Alternative Energy Programme (ASTAE)* http://siteresources.worldbank.org/INTEAPASTAE/Resources/TimorLeste_RuralEnergy_Policy.pdf
- World Bank (2010) *The Lay of the Land: Land Access and Dispute Resolution in Timor-Leste*. Justice for the Poor, briefing note. Accessible online from: http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2010/08/02/000334955_20100802041407/Rendered/PDF/560060BRIQJ4P1149468B01PUBLIC1print.pdf

IX. Annex

Annex 1. Multi-lateral Environmental Agreements (MEAs)

No	Conventions/ Protocols	Status of Ratification	Activities Implemented	Description	Outputs	Remarks
1.	UNCCD	Ratified, 2003	SLM	To enhance the capabilities of Timorese people to conserve and sustained their land degradation to improve land productivity, biological diversity to increase human wellbeing in acceptable & sustainable manner.	NAP	NAP has been endorsed by the GoTL
2.	UNFCCC	Ratified, 2007	NAPA, INC	The main objective of the NAPA is to identify biophysical & socio-economy that are vulnerable to climate change & provide possible adaptations in order to minimise the effect of climate hazards and related risks.	Seven components have been identified	NAPA document was endorsed by GoTL. Implementation of the seven components will be conducted in 2012. While INC is underway implementation.
3.	UNCBD	Ratified, 2007	NBSAP	To conserve & protect biological diversity around TL in sustainable way in order to improve human wellbeing. These activities will be conducted through development of Agriculture, Tourism, Forestry and Fisheries.	Five priorities strategies have been identified.	The report has been concluded and under way process for endorsement by the government
4.	Kyoto Protocol	Ratified, 2009	Designated National Authority (DNA)	To introduce Clean Development Mechanism which is environmentally friendly, promoting sustainable energy systems in a cost effective manner in order to achieve sustainable	DNA has been established within the Dept of Environment	Activities are under implementation

				development.		
5.	Vienna Convention	Ratified, 2009	-	To promote and develop alternative technology from key agencies to minimise ODS that can harm the environment and human health.	-	-
6.	Montreal Protocol	Ratified, 2009	Identification and prevention of ODS	Alternative technology is important to carry-out in order to minimise the depletion of ozone layer.	Identification of potential impact caused by ODS	
7.	UNCLOS	-	-	IUU fishing still remains a potential issue that require an integrated approach among neighbour countries particularly in relation to marine boundaries. The illegal fishing & other threatened activities on the sea should be controlled with a legal instrument at National, Regional and Global levels without prejudice any country sovereignty right.	-	Cost/benefit analysis has been done

Annex 2. Activities on Sustainable Agriculture, rural development and forestry

Table 24. Activities on Sustainable Agriculture, Rural Development and Forestry⁶²

Executing agency	Activity/programme	Description	Funding and constraints	Status
Sustainable Agriculture and Forestry				
DNMA, Haburas, funded by AusAid	Green Bank: Mangrove reforestation for income generation	Haburas provides support to young people to replant mangroves in Ulmera (cost of one mangrove replanted in 5 years: 5 \$). Every year they disburse money to the cooperative and they train them to do other small sustainable businesses. Now the project is self-sufficient and they make use of their own funds.		O
DNMA, National Directorate for Forestry	Plant New trees in Dili in 2010	Plant new trees on the road from the airport to Delta	Half of the trees died because of poor maintenance	C

⁶² Refer to MAF and FAO's "Strategic Programme for promoting agricultural growth and sustainable food security in Timor-Leste for more accurate analysis of stakeholder's programmes and areas of intervention.

DNMA, UNDP	Sustainable Land Management Project	The project covers the following outcomes: 1) SLM mainstreamed into national policies, plans and legislation; 2) Human resources and institutional capacities needed for SLM are developed; 3) Capacities for knowledge management for SLM are developed; and 4) National Action Programme (NAP) is completed.		C
MAF, National Directorate to Support Community Agricultural Development	Training in Sustainable Land management to 6 extension workers in 2010			
National Directorate for Forestries, GIZ, JIPA, MED, MTCL, UNDP	Plantation, reforestation, production and protection		Limited budget, the state of land, coordination among relevant ministries	
MAF, Seeds of Life.	Seeds of Life is a program within the Ministry of Agriculture and Fisheries (MAF). Funded collaboratively by MAF and the Australian Government, through AusAID and the Australian Centre for International Agricultural Research (ACIAR)	Seeds of Life activities can be divided into four components: 1) Strengthening seed production, storage and distribution systems within East Timor, 2) Evaluating new germplasm and associated technologies on MAF research stations, 3) On-farm demonstrations and trials (OFDTs), 4) Capacity building and institutionalisation of SoL within MAF.		
Permatil, funded by Trocaire, Fundeso, Oxfam, CCFD and Caritas	Permaculture. Nurseries, local seed production, compostery building, home gardens, tree planting, terracing up-land.	Work with local seeds, participatory assessments, permaculture. They provide trainings to communities in Sucos (they undertake them with visual material, since there is high levels of illiteracy among the communities they work with). In all their activities they work with local materials.		
Mercy Corps, funded by European Commission	SECURE Sustainable crop production, utilization, and resource management through capacity enhancement in two districts of Timor Leste	The purpose of the project is to increase food security and incomes for vulnerable communities in Ainaro and Manufahi districts in Timor Leste		
Mercy Corps, funded by AusAid	Effective seed storage programme	Introduce appropriate and effective post-harvest storage systems through a sustainable market-based approach.		
World Vision Deutschland E.V., Stichting Hivos, funded by European Commission,	Several projects on Food Security and resilience of rural households (31 Sucos in Lautem, Baucau	The overall objective is to work with communities of Timor Leste to develop community based solutions to achieving improved food security, through the appropriate use of natural resources, improved technologies and practices, and		

	and Viqueque)	increased income		
Oxfam	Sustainable Farming	Working with local farmers to create sustainable farming methods that will increase production and sustain the land. Helping people to plant kitchen and market gardens to grow food for their families and trade at local markets. Farmers are trained in fertilising, composting and harvesting, which increases the yields of their crops so they have enough food to feed their families. Any surplus vegetables grown are then sold at markets to generate income.		
Trocaire	Sustainable Agriculture	Secure access and availability of food in a climate change environment. Partners are working on: crop production, increasing primary crops (maize and cassava). To increase production they use sustainable techniques such as: composting, home gardens, terracing (swilds). For seed storage you can use “drowns” that allow to store the seed until 2 years (usually 9 months)		
KSI, funded by Trocaire, CCFD, CAFOD, Oxfam	Social transformation through livelihoods	This program is part of the strategy to develop people’s economy at the community level through learning together and building up ideas and practices of cooperatives. KSI conducts PRA (participatory rural appraisal) and facilitates ICAP (Integrated Community Action Plan) to each target sub village, promotes and creates Home Gardens to the household level, Market chain analysis		
HASATIL	Network of more than 30 organizations and farmers unions.	Conducting projects and campaigning for sustainable agriculture and food sovereignty.		
FAO	Reforestation programme Baucau 2011-2012			
FAO ⁶³	Training on Sustainable Agriculture to Ministry of Agriculture and Fisheries			
World Bank (TFET)/ European Commission	Agriculture rehabilitation project (ARP, I, II, III)		8,9 M US\$	2003 to 2007

⁶³ Most of the activities implemented by FAO are related to sustainable agriculture and Forestry, however, they have been included in Table 2 under the “food security” section.

GEF/IFAD	Arresting land degradation and promotion of sustainable land management in Indonesia, Malaysia, Singapore, Philippines, Brunei and Timor-Leste	Sustainable Land Management	400,000 US\$	2006-2008
JICA	Agricultural Policy Advisor	To promote national agenda such as improvement of agriculture productivity, "SIPI" (Suco Ida, Produto Ida/ One Village, One Product) Movement, etc., JICA dispatched an advisor to Ministry of Agriculture and Fisheries.		
JICA	Mapping Advisor (Mar 2009 to Mar 2011)	The advisor has been dispatched to National Directorate of Land and Property and Cadastral Services of Ministry of Justice.		2009-2011
JICA	The Study for Promotion of Agribusiness (Apr 2009 to Mar 2011)	The project aims to prepare Master Plan for agribusiness promotion as well as to develop capacities of counterpart staff. To make the Master Plan feasible, the Study Team is implementing five Pilot Projects such as Strengthen of Agricultural Cooperatives, Value Chain Improvement, Promotion of Small Scale Business, Diversification of Corn Product, Support on 'Local Product, Local Consumption' – Cooking Classes.		2009-2011
Thai Battalion EM Project in Association of the Crop Production Division of Agriculture, ETTA	Building a self sufficient economy	The self-sufficiency economy initiative is a project of the Kind of Thailand, it espouses the idea that the fulfilment of food needs and the continuation of life depend upon the individual.		2002
Rural Development				
European Commission	Second Rural Development Programme for Timor Leste (RDP II – 2005)	This programme has as objective to help East Timor to attain food security and sustainable livelihoods for poor rural communities in particular in the Western Region. Budget of: 9,000,000.00. Rural development and public works in Covalima & Bobonaro Districts, Timor-Leste		12/2006 to 12/2011
European Commission, Landell Mills Limited	Rural Development Phase III – RDP III – Technical Assistance – PMU			07/2009 to 01/2013
European Commission	RDP IV			

Food security				
European Commission, Care International	Hadia Agrikultura no Nutrisaun (HAN)	Improve food security in favour of the poorest and the most vulnerable through a set of actions which ensure overall coherence, complementarily and continuity of community interventions, including in the area of transition from relief to development		01/2010 to 12/2013
European Commission, NGO's	Food security projects			
AECID, MAF, FAO	Rural Development (mainly focused in Liquisa, Baucau, Maliana, Viqueque). Main areas include: food security, access to market, access to labor market and economic and social empowerment.	AECID, the Spanish cooperation Agency is working in partnership with MAF to fund several projects implemented mainly by FAO and local and Spanish NGO's to implement projects on Rural Development (Refer to the attached matrix for detailed information on each of them)		2009 to 2012
FAO, UNICEF, WFP, WHO (MDG Fund)	Joint Program Promoting Sustainable Food and Nutrition Security	This UNICEF-WFP-FAO-WHO joint programme aims to address the conditions which create chronic and acute malnutrition. The Joint Programme, funded by the MDG Achievement Fund (MDG-F) (\$3.5 million over 3 years), has been developed with the Government and is in line with national strategies, plans and goals.	3,5\$ over 3 years	
FAO Activities under the Joint Programme promoting Food Security	Joint Program Promoting Sustainable Food and Nutrition Security	The main FAO's activities of this program are the following: 1) Establishing 1,000 home gardens; 2) Establishing 100 School gardens and training the school groups; 3) Training and promotion of small scale livestock production and aquaculture to 45 communities; 4) Training in good agricultural practices to 100 farmers. Area of implementation: Baucau, Manatuto, Aileu and Oecusse Districts.		
NDP, UNICEF, WFP, ILO, UNFPA and FAO	Community Mobilization for Poverty Reduction and Social Inclusion in Service Delivery (COMPASIS)	The main FAO's activities of this program are the following: 1) Provide agricultural based livelihood skills to 120 self help groups; 2) Provide technical support and post-harvest equipment to 50 self help groups and silos for 400 households; 3) Provide integrated agriculture activities to 30 self help groups Area of implementation: Oecusse and Ermera Districts.		
Irrigation				

MAF, National Directorate for Irrigation, JICA	Rehabilitation and Improvement of Irrigation and Rice Cultivation	JICA has conducted several projects for rehabilitation and improvement of irrigation and rice cultivation. One of the significant project is "Irrigation & Rice Cultivation Project in Manatuto District (Phase I: Jun 2005 to Mar 2010, Phase II: 2010 to 2013)", and this project aims to improve existing irrigated rice farming system; and to establish functional Water Users' Association (WUA). As a result of first phase, the yield increased from 1.4t/ha to 2.6t/ha. The other is "Rehabilitation of Irrigation Systems (Laclo and Maliana)", which enabled Maliana I Irrigation area to receive stable irrigation water and expanded irrigation area from 600ha to 1050ha for increasing rice productivities.		2005-212
MAF, National Directorate for Irrigation	Building, designing and implementing irrigation projects in 2011 in Bebui, Cassameta, Tono	The project is implemented by MAF, and by National and International companies	Financial resources, availability of material in the market	
FAO	Rehabilitation of 6 old irrigation systems in Baucau			
Watershed management				
National Directorate of Forestry (NDF), Ministry of Agriculture and Fisheries (MAF), JICA	Comoro Laclo Community-based Water Shed Management Pilot Project	The Study area covers the watersheds of the Laclo and Comoro rivers, which extends over six (6) districts, namely, Liquica, Ermera, Aileu, Ainaro, Manifahi, and Manatuto, with an approximate area of 160,000 hectares. The Comoro and Laclo watersheds have the respective important values for the people in Timor-Leste. The former is the catchment of the Comoro river running through Dili city and has a source of major water supplies to the city in itself, while the latter supports one of the major rice producing areas in the country by supplying water to its irrigation system.		2005-2010

Annex 3 Activities relevant to water management, sanitation, waste management and pollution control

Table 25. Activities relevant to Water management, sanitation, waste management and pollution control

Executing agency	Activity/programme	Description	Constraints	Status
Water Management and sanitation				
Asian Development Bank	Dili Urban Water Supply Sector Project	The water supply system will be improved in parts of Dili by this project, with an emphasis on the distribution system. The project is to provide a model approach that can be replicated across the remainder of Dili and other urban areas.		
Asian Development Bank	Oecussi and Ermera Water Rehabilitation Project	Project to help Pante Makasar in Oecussi and another district capital manage their urban water supply system. The project will also rehabilitate the Debo Lehumo Lake in Eraulo. Community Construction of erosion control structures for the lake will be funded by the Technical Assistance		
JICA	Rehabilitation of Water Supply System	Two grant aid projects "Water Supply System in Dili" (US\$10.9mil) and "Water Supply Project in Same and Ainaro" (US\$9.94mil) were completed in May 2007 and March 2008. Now new grant aid project "Urgent Improvement Project of Water Supply System in Bemos-Dili" has been implemented (US\$8.2mil). For the capacity development of DNSAS (National Directorate for Water and Sanitation Service), especially in the field of maintenance and operation, the technical cooperation project "Capacity Development for Water Supply System" (Nov 2008 to Mar 2011) is now on-going.	US\$10.9M US\$9.94M US\$8.2M	
European Commission and Austrian Red Cross	Siege: Integrated Rural Community water and sanitation project	Integrated water and sanitation project		10/2007 to 09/2011
AusAid, programme implemented by IDSS an Australian Managing Contractor in partnership with the TL's National Directorate of Water and Supply	BESIK, Rural water supply and sanitation programme	BESIK is supporting National Directorate of Water Resource Management (DNGRA) within Ministry of Infrastructure with a legal adviser to work on water resource management and climate change. DNGRA capacity development has increased through mentoring in water resource management techniques. The first (draft) hydrogeology map has been used to identify communities that are vulnerable to climate variability impacts on water supply, with some insights gained on community drought coping strategies. The resultant database will be used to inform water resource planning. A national water quality sampling program is being developed and strengthened with initial results showing that bacterial contamination is the main area of concern. At a policy level, BESIK is supporting the GoRDTL to redraft National Water Resources Policy, to support DNGRA to strengthen institutional capacity and to		2007-2012

		establish systems for managing water resources. BESIK supports partners to raise awareness of relationship between the water catchment and water sources and to promote community actions, such as spring protection. BESIK is providing ongoing and planning further support to SDFs on skills to promote spring protection including protection of trees in the watershed region, along with the GMFs and others such as suco councils etc. The National Rural Water Guidelines include environmental assessment checklists.		
MoH, WHO	Vulnerability Assessment	WHO plans to support the MoH to conduct vulnerability assessment particularly in the area of water and sanitation due to the impact of climate change. This will be implemented in the next 1-2 year(s).		
UNESCO,	Water for Healthy People and the Environment 2010 – 2013	Two components: developing and implementing eco-technologies for water supply and sanitation (WSS); developing a school water and sanitation programme that adopts the same concepts of rationale use, resource recovery and reuse, linked to the development of a “green school” concept		
Pollution Control				
Ministry of Economy and Development – National Directorate for the Environment (NDMA)	Monitoring pollution in Dili and districts 2008-2011			
World Bank	Study on the economic cost to the Government of in-door air pollution			
Solid waste management				
NDMA, ETATAL (PDD), Companhia Vox da Vinci	Build waste management system in Tibar – Liquisa 2011	This company builds waste disposal systems in Timor-Leste and has capacity for waste collection in the whole Country . The BOQ and design for Tibar waste disposal system have been completed, but construction hasn't started yet		
Empreza Diak	Recycling of Used Glass Jars	Launching a campaign to collect used glass jars (with lids) regardless of their sizes and shapes, to recycle them with a social impact. They provide the women groups that produce pineapple jam in the hills of Atauro with the glass recipients essential to develop their businesses. Access to glass jars for juice production will provide economic value to pineapples.		
PDTOL	E-waste collection	Australian company that undertakes e-waste collection		
Anteater (Private sector)	Waste collection from households	Waste Collection Household and Industrial Cleaning Household and Industrial Services Beverages and Ice Food and Beverages. Registered with MTCI		

Annex 4. Activities relevant to Urban Planning, energy, renewable energy, infrastructure and transport

Table 26. Activities on Urban Planning, energy, renewable energy, infrastructure and transport

Executing agency	Activity/programme	Description	Constraints	Status
Urban Planning				
Ministry of Public Works, Government of the Democratic Republic of Timor-Leste, UN-HABITAT	The Dili City Upgrading Strategy provided the first citywide assessment of housing conditions.	Areas in highest need of assistance have been mapped and analysed based on levels of infrastructure, socio-economic status and vulnerability (e.g. insecurity of land tenure). Four pilot project areas have been identified and communities have formulated action plans to improve their living conditions. Key government departments provided support through technical assistance and adopted these community action plans within their infrastructure planning.	248,320 US\$	
Energy				
European Commission, Mercy Corps,	Energy for All (E4A) Energy poverty programme (three districts)	Aims to facilitate access to alternatives sources of energy and renewable sources of fuel in three rural and peri-urban districts of TL through sustainable market driven approaches. The programme is working in 15 vulnerable communities to provide solar lanterns and fuel efficient stoves to 4.500 households. Agro-forestry plantation will also be developed and managed with the community involvement to provide a sustainable source of fuel and to mitigate the impact of erosion. The final aim of the project is to ensure replication and extension of the project by the TL Secretary of State for Energy Policy. The programme has a focus on lighting and cooking fuel needs while incorporating natural resource management and climate change adaptation.	USD 1,43 M	2011-2014
SEPE-led project	Renewable energies development	<p>The SEPE-led project (follow-up of the UNDPs PREDP project) started in 2009 and it covers the following sectors: Biogas, Solar Panels, Biodiesel, Hydro and Wind. Funding is from the state budget. In 2009, the funding was 1, 738 235 USD; Biogas: 31 000 USD; Solar Panels: 1 407 185 USD Biodiesel: 200 450 USD; Hydro: 99 600 USD. In 2010 funding was 4 619 587 USD; Biogas: 165 217 USD; Solar: 3 591 100 USD; Biodiesel: 497 500 USD; Hydro: 365 770 USD</p> <p>No investments on wind has been made yet but it is still indicated in the project plan.</p> <p>The 2011 budget for renewable energy is 1 963 000 USD and the just approved budget for 2012 1, 700 000 USD. The investments on renewable energy continue at least until 2012.</p>	<p>2009: 1,738 235</p> <p>2010: 4 619 578</p>	Starts in 2009

JICA	Clean Energy by Solar Power Electricity Generation System	To promote and introduce clean & sustainable energy in Timor-Leste, solar power electricity generation system will be installed in 16 basic schools, the National University of Timor Lorosae, and Ministry of Education.	US\$5.9mil	
Ministry of Economy and Development DNMA	"Gariwai Mini Hydro Power 2010			
Secretary of State for Energetic Policy – National Directorate for Alternative Energy	Implement programmes of biogas from 2007 to 2011	Install Biogas at the request of the communities. SEPE works with MARTIFIER (EOLICA, NORPLAN: HIDRO POWER)	Limited Human Resources and Budget	
WFP	Energy Efficient Stoves for Schools	"WFP" School Feeding Programme supports fuel efficient or energy saving and biogas stoves in 30 schools and started in 2010. Area: Bobonaro, Ermera, Liquisa and Manatuto.		
World Bank	Energy Services Delivery Project	It aims at stabilizing the power services in Dili by restoring or improving operational efficiency, reliability, safety and availability of the power supply, and to promote long-term sustainability of the power sector.		
UNDP	Participatory Rural Energy Development Programme			2007
Alternative Technology Association, funded by AusAid. The ATA delivered the training in partnership with the Secretary State for Professional Development and Employment (SEFOPE) in particularly with the National Institute for Labour Force Development (INDMO)	Solar Power Training	The Timor-Leste Solar Power Training Project aims to train trainers to deliver quality education for solar power installation, maintenances and selection. Though out its development, ATA brings together a group of stakeholders from the Timorese solar power industry, training providers and the Government to discuss and approve the competency standards for the training. This project is supported by the Australian Governments Aid Program- AusAID and is delivered in partnership with two important Timorese Ministries: SEPE (Renewable Energy) and SEFOPE (Education). INDMO is a subset of SEFOPE and is responsible for the administration of the competency standards.	In February 2010 ATA trainers delivered the first round of training to Timorese teachers. The most exciting part of the project will occur later in 2010 and 2011. This is when the trained Timorese technicians will graduate and begin working in the field.	
Alternative Technology Association	Solar Panel installation	They are working particularly in Oecusse on instalment of solar panels and other alternative sources of renewable energy		
Alternative Technology Association	Oesilo Water Pumping Project (Oecussi)	Solar pump in Oecussi, that allows local women and children to save time. The seven 130watt solar modules to power the pump controller and Tenesol 1000 helical rotor pump were wired up and ready for action afterjust a few long hard days.		
Alternative Technology	Village Lighting	The Village Lighting Scheme aims to improve the living		

Association	Schemes	standards of remote communities in Timor-Leste. In three different villages a program is operating to replace polluting light sources with solar powered lighting. Each household receives a small power system with two or three lights and contribute an upfront fee and ongoing contribution to a community fund.		
Alternative Technology Association	Solar Power for Mau Nanu Clinic, Ainaro	Primary health services are critical for the well being of rural communities. This project aimed to improve the services offered at clinics through the provision of basic lighting. A basic 12v lighting system consisting of 2 x 80W BP solar panels, a 100Ah battery bank and low voltage DC lighting. The large solar array was chosen to 117maximize available electricity during the extensive wet/cloudy season.		
Alternative Technology Association	Oecussi Community Lighting – at Mahata, (Nitibe) community centre, Maunaben (Pante Macassar) medical clinic	These systems are part of an ongoing scheme to provide lighting for community centers and medical clinics around Oecussi. Basic lighting systems consisting of 80W BP panel, 100Ah battery and 12v DC lights.		
Alternative Technology Association	Hatu Builico Community Centre	Hatu Builico is one of the highest towns in central Timor. It is a majestic location at the foot of Mt Ramelau. A newly refurbished community center required a power supply for local administration, community meetings and events. The installed system consisted of 3 x 80W BP solar panels charging a 12v 200Ah battery bank. The community centre was powered through a 200W Selectronic inverter.		
Alternative Technology Association	Venilale Administration	The sub-district administration has difficulty with its administration due to a lack of electricity during the daytime. This system was installed in the newly acquired administration office to power basic computing, printing and lighting. 4 x 80W BP solar panels charging a 200Ah battery bank with a 600W selectronics inverter.		
Alternative Technology Association	Berelau School	The Berelau School is in the district of Aileu south of Dili. Located a significant way from the nearest town a request was made for light and power. A system was designed to light the school and adjacent buildings as well as provide 240V AC power for computer facilities. The installed system consisted of 3 x 80W BP solar panels charging a 12v 200Ah battery bank. The school was powered through a 200W Selectronic inverter.		
Haburas Foundation	Bio Briket.	Manufacturing biobrickets from organic materials. Haburas foundation is getting youths making bio-briquettes. This not only addresses the need to create jobs in Dili, but it takes on the problem of Timor-Leste’s trees being cut down for use as fuel wood.		
Haburas Foundation	“Manatuto-made, fuel-efficient,	Stoves can reduce the amount of money families spend on cooking fuel as well as the amount of smoke produced while		

	briquette-specific stoves”	cooking.		
Moris Rasik	Sustainable Business network for the distribution of renewable energy technology	Establishing a sustainable business network for the distribution of renewable energy technology (solar and fuel efficient stoves) to clients and community members.		
Mercy Corps	Baseline study on Solar, energy efficient stoves and forestry	Mercy Corps has undertaken a baseline study on energetic poverty in Timor-Leste. The study was funded by the European Commission under the programme “Energy for all (E4A)”.		
World Bank	Study of “Timor-Leste Key Issues in Rural Energy Policy”	This study includes		
Private sector	Import and installation of energy efficient stoves			
Secretariat of State for Energy Policy and Young Men’s Christian Association (YMCA) (Korean NGO)	Photovoltaic central in Rotuto, Same	The Rotuto population is made up of 350 families, divided into 5 villages. Each family received a 6 watt lamp and a rechargeable battery. The charging central is installed at the suco headquarters.		
Norwegian Cooperation	Hydro-power	Hydro-power project		
The Enterprise Challenge Fund	Supports a local solar PV supply company “Solutech Solar Power”.	AusAID (46%) and Solutech (54%): AUD\$575,500 National	USD 575.500 \$	01/10/09 To 30/09/12

Annex 5 Activities relevant to Biodiversity, coastal management and fisheries

Table 27. Activities related to Biodiversity, coastal management and fisheries

Executing agency	Activity/Programme	Description	Constraints and funding	Status
Biodiversity				
MED, Secretary of State for the Environment, UNDP	National Biodiversity Strategy and Action Plan	The project assists GoTL to conduct a comprehensive assessment of the existing information of biodiversity in Timor-Leste, prepare National Report to the UNCBD COP, prepare a National Biodiversity Strategy and Action Plan and establishment of an operational Clearing House	The Strategy is awaiting Council of Ministers’ approval.	

		Mechanism (CHM).		
JICA	Improvement of Watershed Management	JICA has conducted series of cooperation in the field of natural resource management. The first cooperation was "The Study on Community-Based Integrated Watershed Management in Laclo and Comoro River Basins (Nov 2005 to Mar 2010)" and it developed community-based watershed management plan/guidelines in Laclo and Comoro River basins for sustainable land management while alleviating poverty in areas suffering from significant level of deforestation and over exploitation of natural resources. Followingly, new project "The Project for Community-Based Sustainable Natural Resource Management" is now under preparation.		2005-2011
National Directorate of Forestry, Ministry of Agriculture and Fishery, JICA	Project for Community-based Sustainable Natural Resource Management	The project aims at developing Community-based sustainable natural resource management (CB-NRM) in the target area and to develop an operational mechanism of CR-NRM at suco level.		01/12/10 to 01/10/15
MAF, National Directorate for Protected Areas	Series of assessments for the establishment of Protected Areas	At present, 30 Protected Areas have been identified.		
MAF, National Directorate for Forestries	Establishment of first National Park Nino Konis Santana in Lautem district in 2007 ⁶⁴	The National Park has been established as IUCN category V, protected area, in order to reflect the areas significant natural and cultural values, its importance for local livelihoods as well as the human influence in the landscape.		
MAF, National Directorate for Forestries	Park Nino Konis Santana	To promote eco-tourism, Preserving local culture & natural resources, To generate local economy through tourism, To educate people how to take care of their environment, culture heritage, wildlife, etc.		
MAF, National Directorate for Protected Areas, FAO	Study on Important Bird Areas in Timor-Leste in 2007	The Study identified 16 sites of global importance for the conservation of Birds and their Habitats.		
MAF, National Directorate for Protected	Two marine protected Areas			

⁶⁴ See Annex VI for detailed Map

Areas, FAO	have been established			
Haburas	Tarabandu as traditional ecological wisdom	They collaborate with local villages, assess existing capacity, gaps, to find if they do have existing techniques/ways to cope with the environment and poverty		
KSI	Tarabandu as traditional ecological wisdom	They collaborate with local villages, assess existing capacity, gaps, to find if they do have existing techniques/ways to cope with the environment and poverty		
PoWPA, MAF, Secretary of State for the Environment	Programme on Protected Areas (Programme of Work for Protected Areas)	This project is executed by UNOPS, it concerns physical establishment, management and maintenance of a Network of Protected Areas (PAN).		
NDMA, Norwegian Cooperation	Environment comprehensive database	Establish a metadatabase for environmental information.		
Coastal Management				
World Bank, Asian Development Bank, USAID	Coral Triangle Initiative (CTI) on Coral Reefs (Philippines, Indonesia, Malaysia, Timor-Leste, Solomon Islands and Papua New Guinea).	The establishment of effective marine protected areas is a major objective of the CTI. Strengthening coastal and marine resources management in the Coral Triangle of the Pacific. Better assessment of status and main threats, working with industries that put pressures on the reefs.		
GoTL, NDFA, PEMSEA	Integrated Coastal Resource Management Project	Main components of this project are a) the development and adoption of an integrated coastal and marine policy and a "State of Coast" (SOC) reporting system; b) the development and implementation of a community based alternative livelihood program through seaweed farming and coastal resource conservation and c) the development and implementation of site-specific strategies and management plans for coral conservation and Marine Protected Areas within an Integrated Coastal Management (ICM) Framework		2007-2010
NDFA, FAO	Marine Protected Area in Atauro	Establishment of a marine protected area in Atauro Island		
Roman Luhan, local Communities from Atauro	Two marine Protected Areas	Establishment of two community based, MPAs in the Bikeli region (under the Bikeli Marine management Project), together with regulations.		
NDFA, World Bank	Community based coastal resource management and training	Development of a co-management of community based coastal resource management framework	There was no follow up on the scheme	
MAF, consortium of agencies of the Australian northern	6 collaborative, coastal marine research and training projects with a consortium of	Coastal marine research and training projects to assist in conservation and sustainable, regional economic		

territory	agencies in the Northern territory	development of marine industries (particularly eco-tourism and fisheries).		
Fisheries				
MAF, FAO, AECID	Regional Fisheries Livelihoods Programme for South and Southeast Asia	Reinforce the capacity of small scale fishermen communities and institutions on which they rely improving their livelihoods and their capacity to sustainably exploit fish stocks. Main activities: 1) capacity building on Co-management for sustainable use of fish resources ; 2) measures to reduce vulnerability and increase off-shore security; 3) measures to improve fish products's quality (processing, stock etc) and access to markets; 4) diversify income of fishermen families; 5) promote access to microfinance; 6) promote sharing of knowledge and good practices at the regional level.		
Oxfam Australia	Support to fishermen with training in microfinance, allowing them to purchase better nets and equipment.		Not sure if this one is sustainable	
Coral Triangle Initiative, USAID	Fisheries Dependence in Timor-Leste: A Scoping Study	This project was funded under the USAID supported Coral Triangle Support Partnership (CTSP). As part of the US Coral Triangle Initiative Support Program ⁶⁵ .		2011
MAF, Charles Darwin University	Study: The Timor-Leste coastal/marine habitat mapping for tourism and fisheries development project	Conservation values, issues and planning in the Nino Konis Santana Marine Park, Timor-Leste		

Annex 6. Activities relevant to sustainable Tourism and Recreation

Table 28. Sustainable Tourism and recreation activities

Executing agency	Activity/programme	Description	Constraints and funding	Status
Eco-Tourism				
Haburas, districts Local Authorities, NGO, Government , local	Tutuala Eco-tourism (traditional House lodge) in	Community based tourism, that includes food, beverage, 121accommodation, trekking to the forest and to Jaco (it provides 50.000 \$ of income per year). They also sell local		

⁶⁵ CTSP is supported by USAID in cooperation with the national governments of the Coral Triangle and the international community.

communities, funded by European Commission	2005	handicrafts, creating local market with those activities. They promote conservation/management of the national park. Everything is managed in a cooperative way.		
Haburas, European Commission	Liquisa Eco-tourism	Two craft shops. They train the community to produce handicrafts, with local materials.		
Haburas	Eco-tourism in Maubara			
Haburas, European Commission	Eco-tourism in Maubisse	Community guest house built with local materials in the mountain close to the coffee plantations (produces around 50.000 \$ of benefits a year). The guest-house is managed in a cooperative way. Horticulture, maximizing land surrounding the houses. Income generation through sustainable land management. They train them to adopt permaculture techniques. They also work with post-harvest and diversification of the production.		
National Directorate for Protected Areas and Natural Parks, FAO	A marine map for ecotourism has been prepared			
MCTI, National Directorate for Tourism	Community-Based Tourism programs, year of 2007, 2010 & 2011	Encouraging local community to get involve in tourism industry. As an effective tool for supporting poverty alleviation		
European Commission, Centro De Informacao E Documentacao milcar Cabral Associacao	Ahimatan ba 122uture – Reducao da pobreza em Timor-Leste atraves do turismo de base comunitaria	To reduce poverty in Timor Leste through promotion of local capacity to set up activities which generate revenue and are based in sustainable management of natural resources		
Roman Luhan	Eco-lodge development on Atauro Island in 2003	The project aims at promoting sustainable tourism, Generating job opportunities for local people, Safeguarding local culture & environment and Promoting awareness between local people and tourists		
Local Development of dive facilities with Behau Community				
MAF, consortium of agencies of the Australian northern territory	6 collaborative, coastal marine research and training projects with a consortium of agencies in the Northern territory	Coastal marine research and training projects to assist in conservation and sustainable, regional economic development of marine industries (particularly eco-tourism and fisheries).		
UNTL	PR trekking at Cristo Rei			

Annex 7. Activities relevant to Education for Sustainable Development

Table 29. Education for Sustainable Development Activities

Executing agency	Activity/programme	Description	Constraints and funding	Status
Secretary of State for the Environment	Environmental Education	Environmental education all over the territory		

UNTL	PR trekking at Cristo Rei			
NDMA, Norwegian Cooperation	Environmental Management training and capacity building	Build a professional skilled level capacity to handle environmental matters related to the petroleum industry, 2) Develop Timorese capacity in Environmental Impact Assessment and Emergency Response. 6 people are training public 123 officials from NDMA to be able to deal with oil companies and understand the EIA and cost/benefit analysis		
UNESCO – Education for Sustainable Development	Support to the Ministry of Education to integrate Sustainable Development into School Curriculum	This project is just a proposal, but it is expected to build on the lessons learnt from “Support for Science and Technology education in Timor-Leste” which consists in training 13 fully qualified primary school teachers for 13 districts		Not started yet
Live and Learn	Environmental Education in 4 and 6 Grade			
FAO	School Gardens in Baucau			
UNESCO	Mobilizing knowledge and expertise for Sustainable Development in Asia and the Pacific through Information and Communication Technologies.	Capacity building for the National University of Timor-Leste in ICT to share knowledge among the region.	Electricity is a constraint. The programme hasn't focused much on Sustainable Development knowledge sharing	
AusAid, Alternative Technology Association, Secretary State for Professional Development and Employment (SEFOPE), National Institute for Labour Force Development (INDMO)	Solar Panel's Installation Training	The Timor-Leste Solar Power Training Project aims to train trainers to deliver quality education for solar power installation, maintenances and selection. Throughout its development, ATA brings together a group of stakeholders from the Timorese solar power industry, training providers and the Government to discuss and approve the competency standards for the training.		2009-2011
Permatil	Permaculture and environmental Education	Perma-scouts and training on Permaculture each Saturday's in Dili. They have permaculture scout camps. In Dili there is 40 perma-scouts. They are planning to have other camps in Turkisa, Lada and Atauro. They introduce to young people permaculture techniques that are simple to implement. They undertake international permascouts camps with Portugal and Australia (last one was undertaken in Tasitolu). 5 days camps with small training. In Dili Trainings are undertaken every Saturday and they usually have from 12 to 25 attendants.		

Care International	LAFAEK Publication every 3 months	Publication with illustrations of agricultural techniques, technology, energy etc. It has been working for 10 years, really positive feedback from the communities. 250 copies every two months.		
HASATIL (network of environmental NGO's in Timor-Leste)	Training in Sustainable Farming			
University of Timor-Leste	Centre for Scientific Research	Established in 2001		
Oz GREEN	Development and education on ecologically sustainable livelihoods	Working in partnership with the Oecussi administration, the government and Haburas, Oz GREEN, provides training and capacity building on environmental monitoring, community education and participation techniques. They involve local villagers in assessing the environment, developing village environmental action plans and then assessing them implementing the plans. They also teach on how to establish community kitchen gardens that provide a practical demonstration of sustainable gardening techniques.		
Eco-capoeira	Dili			

Annex 8. Activities relevant to Climate Change mitigation and adaptation

Table 30. Key activities relevant to Climate Change mitigation and adaptation

Executing agency	Activity/programme	Description	Constraints	Status
Climate Change adaptation				
Ministry of Economy and Development, UNDP	National Adaptation Programme of Action (NAPA)	The projects aim to respond to the commitments of Timor-Leste under the United Nations Framework Convention on Climate Change (UNFCCC) through the identification of both vulnerabilities to climate change, and potential means to adapt to these. They furthermore aim to build Timor-Leste's institutional, scientific, technical, informational and human capacity so as to facilitate the country's effective implementation of the Convention in a sustainable manner.	The Strategy hasn't been implemented yet	Strategy Completed

Department of Environmental Health, WHO	Climate Change Adaptability Education	WHO supported the Department of Environmental Health to work with other departments and Ministry of Education to conduct pilot projects targeting 3 primary schools in Dili district to promote Climate Change adaptability. Similar project will be extended in 6 schools in another 3 pilot districts.		
Seeds of Life, funded by AusAid. This initiative is implemented by the Australian Centre for International Agriculture Research (ACIAR) in partnership with MAF.	Climate Change adaptation	A climate change position was created in SoL at the beginning of October, 2009. A Climate Change Adaptation Adviser developed a plan which is being integrated into the ongoing research programs. The Climate Change Adviser was tasked to assist with adaptive research and climate change adaptation within the program. The work of Climate Change Advisor is now continued into the third phase of the program from 2011 to 2016.		2009-2016
UNESCO	StResCom: Resilience of Communities to Climate Change and increased hidrometeorological events	Strengthening resilience of coastal and small island communities towards hydro-meteorological hazards and climate change impacts. It focuses on linking indigenous knowledge such as lifestyle, survival, coping and mitigation strategies with science, creating policies on disaster risk reduction and climate change for communities		Hasn't started yet (2010-2013)
BESIK, AusAid	Vulnerability to Climate variability impacts on water supply	The first (draft) hydrogeology map has been used to identify communities that are vulnerable to climate variability impacts on water supply, with some insights gained on community drought coping strategies.		
Climate Change mitigation				
Ministry of Economy and Development, UNDP	Initial National Communications	It covers a number of components ranging from Adaptation and Mitigation planning, Green House Gas inventory, and an awareness element. The Initial National Communication on Climate Change aims to address the lack of mitigation policies, legal and instrumental instruments for mitigation measures. And the lack of national strategy for Green House Gas Emissions.		

Climate justice	Several NGO networks are educating and advocating that industrialized countries need to be more active in reducing the causes of climate change. See Oilwatch and CJN statements.			
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Annex 9. Links between Sustainable Development Issues in Timor-Leste

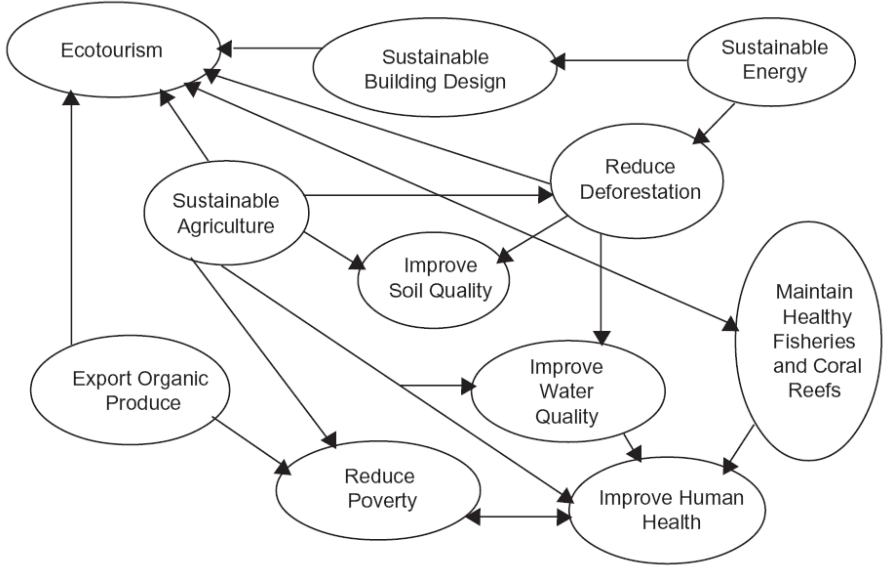


Figure 17. Source: Conference on Sustainable Development, Dili, 2002

Annex 10. Unsustainability links between Development Issues in TL

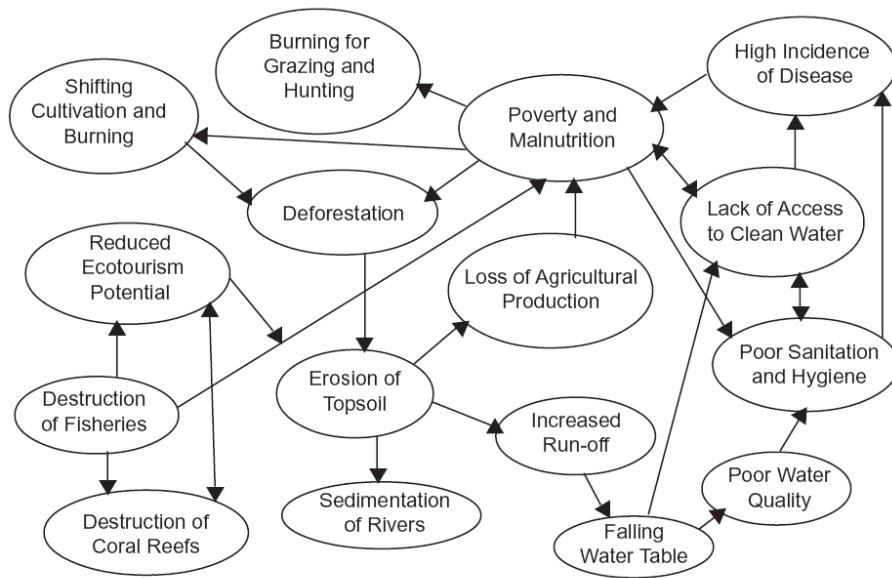


Figure 18. Source: Conference on Sustainable Development, 2002, Dili

Annex 11. List of stakeholders interviewed

Government of Timor-Leste

- **Ministry of Economy and Development**
 - National Directorate for International Environmental Affairs**
 - National Directorate for Environmental Services**
 - National Directorate for Rural Development**
 - National Directorate for Research**
 - National Directorate for International Investment and Nat investment**
- **Ministry of Agriculture and Fisheries**
 - National Directorate for Fisheries and Aquaculture**
 - National Directorate for Policy & Planning**
 - National Directorate for Research and Seed of Life**
 - National Directorate for Forestry**
 - National Directorate for Protected Areas**
 - National Directorate for Food crops production**

National Directorate for Irrigation

National Directorate for ALGIS

National Directorate for Extension

National Directorate for Coffee and Plantation)

- **Minister of Health**
National Directorate for Environmental Health

- National Directorate for Policy and Planning**

- National Directorate for External relationship**

- **Ministry of Tourism Trade, Commerce and Industry**
National Directorate for Policy and Planning

- National Directorate for Tourism**

- National Directorate for Trade and Industry**

- **Ministry of Infrastructure**
National Directorate for Water & Sanitation

- National Directorate for Policy and Planning**

- National Directorate for Road Development**

- **Ministry of Transportation and Communication**
National Directorate for Meteorology and Geophysics

- National Directorate for Policy and Planning**

- **Ministry of Education**
National Directorate for Curriculum

- **Ministry of Planning and Finance**
National Directorate for Policy and Planning particularly for External Assistant

International NGO's

- Mercy Corps
- Care International
- Oxfam

National NGO's

- Haburas
- Hasatil
- KSI
- Permatil

Academia

- University of Timor-Leste

Multilateral Organizations and Multilateral Development Banks

- World Bank
- Asian Development Bank
- UNDP
- WHO
- IOM
- ILO
- UN Woman
- WFP
- UNESCO
- FAO

Bilateral Agencies

- AECID
- AusAid
- European Commission
- Norwegian Cooperation
- Chinese Cooperation

Annex 12 Energy targets contained in SDP

TARGETS

By 2015:

- Everyone in Timor-Leste will have access to reliable electricity 24 hours a day
- Two new power stations will have been constructed in Hera and Betano providing 250 MW of electricity to support social and economic development across Timor-Leste
- A new management model for Timor-Leste's electricity sector will be in place based on international best practice
- The Lariguto wind farm will be constructed as a model wind farm development
- A Solar Centre will be established in Dili to demonstrate the potential of solar energy
- Feasibility studies will have been conducted on the long-term prospects of attracting gas processing facilities to Timor-Leste; on potential mini-hydro sites throughout Timor-Leste; and on the viability of building a thermoelectric power plant to generate electricity from Dili's household and industrial rubbish

By 2020:

- At least half of Timor-Leste's energy needs will be provided by renewable energy sources
- Approximately 100,000 families will have access to solar powered electric light

By 2030:

- All households in Timor-Leste will have access to electricity either by the conventional expansion of the electricity system or through the use of renewable energy

Annex 13. Energy and infrastructure activities likely to put pressure on the environment

Table 31. Energy, infrastructure and transport activities that are likely to put pressure on the environment

Executing agency	Activity/programme	Description	Risks	Status
Energy				
Chinese Nuclear Industry Construction Company No. 22 (CNI22).	National Electrical Grid	Chinese company responsible for building the high voltage grid (power and lines). According to SDP, the National Electrical Grid is the first step to achieve electricity for everyone in Timor-Leste by 2015. This reliable national electricity generation, transmission and distribution system is currently under construction. The national		Northern part of the Grid will be completed by November 2011 and the full grid by

		Electricity Grid is the largest ever infrastructure programme in Timor-Leste. It includes a 150 kV transmission line of approximately 715 km forming a ring around Timor-Leste.		mid November 2011.
Puri Akraya Engineering (Indonesian company)	Construction of the Hera and Betano power stations	Indonesian company building the Hera and Betano power station		
CSI	Expansion of the Comoro power station	Chinese company upgrading the Dili power station		
International Oil Companies: ConocoPhillips, Eni, Inpex, Santos, Tokyo Electric, Tokyo Gas, Woodside, Osaka Gas, Shell, Minza, Oilex, Talisman and others		The Italian oil giant Eni has contracts for several offshore areas, both in the Joint Petroleum Development Area (including Kitan and Bayu-Undan ⁶⁶) and in Timor-Leste's exclusive territory.		
Ensul Esphera Engenharia		Type of Activity: Petrol, Diesel, Kerosene and Other Liquid Fuels, Construction Materials, Construction Equipment, Rental, Suppliers and Sale, Construction Services, Generators, Cars Sales and Rentals, Trucks and Other Heavy Vehicles Sales and Rental, Office Equipment (Sales, Repairs, Maintenance, Rental), Office Furniture, Home Furniture, Processed Foods and Canned Goods, Beverages, IT Equipment and Supplies, Land Line and Mobile Services and Equipment, Other Goods, Other Machinery, General Supply / Foodstuffs (Including Cooking Oil), Air Conditioners, Electrical Materials & Services Products/Services Available: Construction services: Buildings, roads and irrigation. Electrical installation, water and sanitation installation. Telecommunication equipment, foodstuffs, beverages, office equipment, construction materials, home and office furniture, fuels and vehicles.		

⁶⁶ Bayu-Undan partners are ConocoPhillips (operator), Tokyo Electric, Tokyo Gas, Inpex and Santos. There are other companies involved in Sunrise and other oil and gas projects: Talisman, Shell, Woodside, Osaka Gas, Minza, Oilex, (see lists at <http://www.laohamutuk.org/Oil/PSCs/10PSCs.htm>). The new TimorGAP national oil company is also likely to create problems for a green economy.

Infrastructure ⁶⁷				
World Bank	Timor-Leste's Road Climate Resilience Project		No Compensation schemes	
Asian Development Bank	Road Network Development Sector Project; Strengthening Road Network Development	The project initiated a 10 year plan for the core road network developed. It will rehabilitate the Dili-Liquisa-Batugede and Dili-Ermera-Maliana routes. The project is also designed to address weaknesses in the capacity of local contractors.		
Asian Development Bank	Our Roads, Our Future	This activity will help communities to participate in the rehabilitation and maintenance of rural feeder roads and basic infrastructure in areas supported by the Network Development Sector Project.		
Asian Development Bank Ministry of Infrastructure	Infrastructure Project Management			
Private Sector (Jape)	Project Timor Plaza 2011			
Private Sector (Sutera)	Hotel Pelican Paradise, 2011	A Malaysian company is going to build a 5 stars Hotel in Tasi Tolu. The project hasn't been implemented yet.		
ILO, Ministry of Infrastructure	Community Rural Road Construction	300 km of road rehabilitated through using labor based methodology.	There is no compensation schemes (such as ecosystem rehabilitation)	
Gertil				
China highway company				
JICA	Rehabilitation & Maintenance of National Road and Bridge	Road rehabilitation, maintenance, and improvement has been a major agenda of Timor-Leste. JICA has conducted several projects for both rehabilitation and capacity development. "The project for Improvement of Roads between Dili and Cassa" (US\$13mil), "Capacity Building of Road Maintenance" (June 2005 to Mar 2008), "Capacity Development by Training and Preparation of Guidelines and Manual for Roads" (Jan 2006 to Mar 2008). "Improvement of Mola Bridge" (US\$9mil), and the technical cooperation project	USD 13 M USD 9 M	2005-2013

⁶⁷ A comprehensive list of infrastructure projects, both public and private, can be found in the list of infrastructure projects and loans in Book 6 of the 2012 state budget.

		“Capacity Development of Road Works (Jul 2010 to Feb 2013)”.		
JICA	Port Rehabilitation & Management	The grant aid project for “Rehabilitation of Dili Port” (US\$8.3mil) has just finished rehabilitation of concrete wharf to maintain stable and effective function. Now, another grant aid project for “Oecusse Port Urgent Rehabilitation Project” is under preparation. Also JICA is cooperating with APORTIL with advisors for Port Management (Sep 2009 to Feb 2010).	USD 8,3 M	2009-2010

Annex 14. Some entry points for ESD

Table 32. Some potential entry points for Education for Sustainable Development

Executing agency	Activity/programme	Description	Entry Point	Status
World Bank	Second Chance Education Programme	The project aims to increase the amount of out-of-school youth and Adults, undertaking activities such as support to development of quality curriculum	Potential entry Point to Integrate Sustainable Development into Curriculum	Ongoing
World Bank	TP-Education Sector Support (ESSP) Add'l Financing	Improve primary school services and learning achievements as well as school management	Potential entry Point to Integrate Sustainable Development into Curriculum	Ongoing
World Bank	Timor Leste – Youth Development Project	The objectives for Youth Development Project (YDP) in the Timor-Leste is to promote youth empowerment and inclusion in development by expanding the capacities of and opportunities for youth groups to initiate and participate in community and local development initiatives.	Potential entry Point to Integrate Sustainable Development in youth empowerment	Ongoing
The Faculty of Engineering, The National University of Timor-Leste, JICA	Capacity Development of Teaching Staff in the Faculty of Engineering, The National University of Timor-Leste	Basic teaching capacity of teaching staff in the Faculty of Engineering, UNTL is improved through practical activities. Overall goal: The quality of education in the Faculty of Engineering, UNTL is improved.		2006-2010
JICA	Training Courses in Japan and Third Countries	JICA has offered group training courses, long-term training courses acquiring Master Degree, country-focused training courses and youth training programs since 2000. In addition, JICA has arranged third country training programs		2009-2010

		(TCTP) in collaboration with ASEAN countries such as Singapore, Malaysia, Thailand and the Philippines as well as Brazil. In JFY2009 (from Apr 2009 to Mar 2010), 75 persons participated in 33 courses, and as of the end of March 2010, ex-training participants come up to 702.		
JICA				

Annex 15. Timor-Leste CTI National Plan of Action

BOX 2 - Timor Leste CTI National Plan of Action

The following are Timor Leste's National Actions in relation to Marine Protected Areas under the *Coral Triangle Initiative (CTI) on Coral Reefs, Fisheries, and Food Security, Regional Plan of Action (2009)*.

Goal 3 – Region-wide Coral Triangle MPA System (CTMPA's) in Place and Fully Functional

Action 1: Advance core foundational activities needed to support MPAs in the future, such as education and public awareness, law enforcement, networking, and broader co-management.

Action 2: Implement capacity-building activities targeting MPA managers and fisheries staff.

Action 3: Strengthen tourism sector's contributions to MPAs and sustainable management of marine and coastal resources.

Action 4: Declaration and zoning development of MPA within Nino Konis Santana National Park.

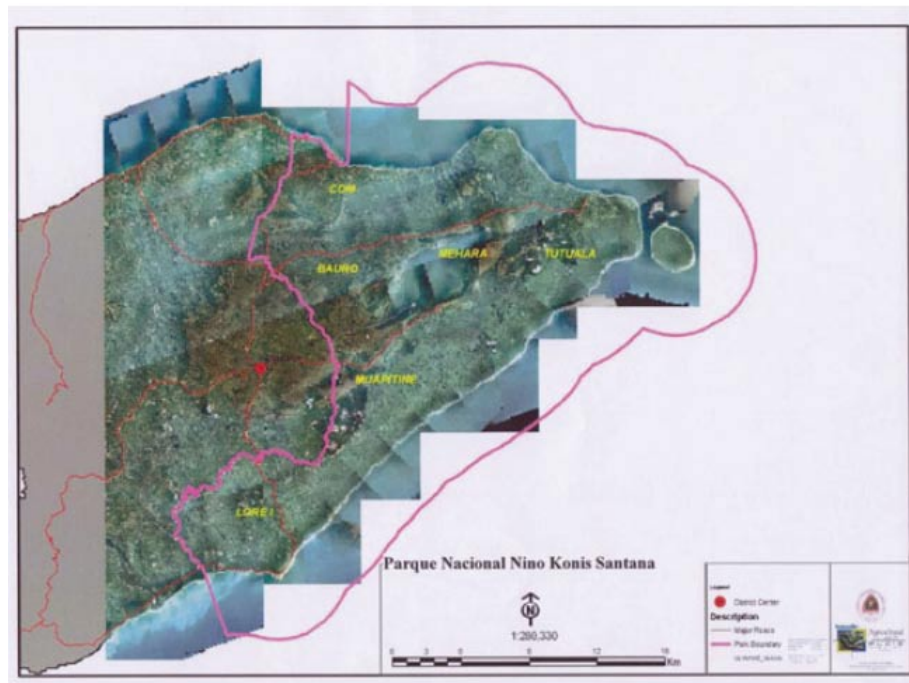
Action 5: Establish Atauro, Batugade, Manututu and Oecuse MPAs.

Action 6: Conduct biological connectivity and socioeconomic studies as a basis for the development of MPA network that provide benefits for fisheries and marine ecotourism.

Action 7: Develop cross-boundary MPA networks.

Annex 16. Nino Konis Santana National Park

Figure 19. Boundaries of Nino Konis Santana Protected Area (National Park and Marine Park)



Annex 17. Used oil tanks in Tibar



Figure 20. Used Oil tanks in Tibar