



**PROJECT IDENTIFICATION FORM (PIF)**

**PROJECT TYPE: FULL-SIZED PROJECT**

**TYPE OF TRUST FUND: GEF TRUST FUND**

**PART I: PROJECT IDENTIFICATION**

Project Title:	Promoting Sustainable Bio-energy Production from Biomass <sup>1</sup>		
Country(ies):	Timor-Leste	GEF Project ID:	4344
GEF Agency(ies):	UNDP	GEF Agency Project ID:	4250
Other Executing Partner(s):	State Secretariat for Energy Policy; Ministry of Agriculture and Fisheries; and, Ministry of Economy and Development.	Submission Date:	01/09/2010
		Re-submission Date:	07/03/2011
		Re-submission Date:	29/11/2011
		Re- Submission Date:	22/12/2011
		Re-submission Date:	05/01/2012
GEF Focal Area (s):	Climate Change	Project Duration:	48 months
Name of parent program (if applicable):		Agency Fee:	US\$ 174,300
➤ For SFM <input type="checkbox"/>			

**A. FOCAL AREA STRATEGY FRAMEWORK<sup>2</sup>:**

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Indicative Financing from Relevant TF	Indicative Co-Financing
			(\$ ) a	(\$ ) b
CCM-3	3.1 Favourable policy and regulatory environment created for RE investments	3.1 Renewable energy policy and regulations in place	485,000	2,105,000
CCM-3	3.2 Investment in RE technologies increased	3.2 Renewable energy capacity installed	858,000	3,102,000
CCM-3	3.3 GHG emissions avoided	3.3 Heat and electricity produced from renewable sources	400,000	1,200,000
	Others			
5. Project management cost <sup>3</sup>			0	613,000
<b>Total Project Costs</b>			<b>1,743,000</b>	<b>7,020,000</b>

**B. PROJECT FRAMEWORK**

**Project Objective:** Removal of barriers to sustainable production and utilization of biomass resources in Timor-Leste and application of biomass energy technologies to support local economic, environmental and social development that leads to GHG mitigation.

Project Component	Type (TA/INV)	Expected Outcomes	Expected Outputs	Indicative Financing from Relevant TF	Indicative Co-Financing
				(\$ ) a	(\$ ) b
1. Policy and Institutional Support for Deployment and Commercialisation	TA	Implementation of strengthened enabling policies, legal and	1.1. Developed and adopted new regulations and technical guidelines for renewable energy technology appraisal and evaluations	215,000	600,000

<sup>1</sup> This Project is a re-submission. It was originally submitted under GEF4, and technically reviewed and recommended by PM on December 23, 2009 but eventually not cleared for WPI.

<sup>2</sup> Refer to the reference attached on the Focal Area Results Framework when filling up the table in item A.

<sup>3</sup> GEF will finance management cost that is solely linked to GEF financing of the project.

of Advanced Bio-energy Technologies		institutional framework for deployment of biomass energy technologies as well as the growth of biomass energy businesses in Timor Leste.	1.2. Developed and implemented national strategy for the promotion of bio-energy production and utilization, using community-based woodlots and non-fuel wood energy resources 1.3. Designed and implemented fiscal incentives for private-sector participation in biomass energy business 1.4. Evaluation reports on the feasibility of local manufacturing and fabrication of low carbon bio-energy technologies components and parts 1.5. Designed and operationalised national biomass energy resource inventory		
2. Bio-energy Investments Promotion  Sustainable Bio-energy Technology Demonstration & Market Development	INV	Increased investments in Bio-energy  Development of a local supply chain and market for BETs  GHG emissions avoided from technology applications and investments	2.1. Implemented and operational BET Full Scale Models on: [a] Energy Efficient Cook stoves Production/ Fabrication Centres (2 sites), [b] Community/HH Biogas Production for Cooking/ Heating/ Lighting (180 projects), and [c] Briquetting for bio-energy fuel production (1 site) 2.2. Implemented and operational locally produced industrial stoves for income generating local enterprises such as coffee roasting, brick making, ceramics making, palm sugar production, and bakery 2.3. Implemented and operational locally produced 15,000 energy efficient cook stoves in households and local enterprise/community-based institutions	958,000	4,072,000
3. Sustainable Bio-energy Technology Demonstration & Investment Development	TA	Improved visibility of proven technologies  Availability of financial support for rural bio-energy production and associated low-carbon technology applications	3.1. Documented and disseminated process and results of all of the above (2.1, 2.2 and 2.3) 3.2. Designed and operational financing mechanisms for banks/ financial institutions to support project development 3.3. Completed promotion of successful technology and financial models/ packages for expansion beyond project sites 3.4. Developed tailor-made financial services, adapted from regional best practice methodologies for financing bio-energy, including loan-products in (micro-) finance institutions 3.5. Established and operationalized new innovative mechanisms for repayments of microfinance loans 3.6. Developed and operationalized equipment standards and technical guidelines in BETs 3.7. A techno-economic resource centre set-up and operationalized to monitor and report on bio-energy production and	100,000	850,000

			utilization, including economic, technical and financial analysis service provision		
4. Capacity Development and Market Transformation	TA	Enhanced capacities of policy makers, financial institutions, entrepreneurs, project developers, communities and end-users on the development of the local BET market	4.1. Established and operational Research and Information dissemination network 4.2. Industry policy planners' and regulators' capable of formulating and enforcing adopted policies, regulations and guidelines to enable low carbon technologies enhanced 4.3. Energy and rural development planners trained on integrated energy planning 4.4. New entrepreneurs trained on bio-energy technology component manufacturing/fabricating, BET project development, consultancy and energy services provision 4.5. Communities and local institutions trained on installation and maintenance of bio-digesters, bio- briquetting, energy efficient furnaces & cook stoves	470,000	885,000
5. Project Management Cost <sup>4</sup>				0	613,000
<b>Total Project Costs</b>				<b>1,743,000</b>	<b>7,020,000</b>

#### C. INDICATIVE CO-FINANCING FOR THE PROJECT BY SOURCE AND BY NAME IF AVAILABLE, (\$)

Sources of Co-financing for baseline project	Name of Co-financier	Type of Co-financing	Amount (\$)
National Government	Government of Timor-Leste	Grant	4,200,000
National Government	Government of Timor-Leste	In-kind	1,310,000
Multilateral Agency	UNDP (core resources)	Grant	350,000
Multilateral Agency	UNDP	In-kind	220,000
NGOs	Mercy Corps, Haburas	Grant	210,000
NGOs	Mercy Corps, Haburas	In-kind	130,000
Private Sector	Public-Private Partnerships, Suppliers, Local artisans, Service providers, local developers	Unknown at this stage	600,000
<b>Total Co-financing</b>			<b>7,020,000*</b>

\* GoTL is in consultations with various bilateral donor partners to secure additional funding resources for its renewable energy program under the Government's Sustainable Development Plan 2011-2030 (SDP). More details will be available during the PPG phase.

#### D. GEF RESOURCES REQUESTED BY AGENCY (IES), FOCAL AREA(S) AND COUNTRY(IES) – N.A.

### PART II: PROJECT JUSTIFICATION

#### A. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:

##### A.1.1. THE GEF FOCAL AREA STRATEGIES:

The project fits Focal Area Objectives CCM-1 and CCM-3, to promote the demonstration, deployment, and transfer of innovative bio-energy low-carbon technologies and investments in renewable energy technologies. It will focus on enabling environment, technical and institutional capacity building as well as

<sup>4</sup> UNDP-TL and GoTL have discussed and agreed that the essential project management costs will be secured only from the co-financing resources.

investment in promoting energy access through the deployment and diffusion of commercially available bio-energy technologies, with the aim to support Timor-Leste towards a low-carbon development pathway.

**A.1.2. FOR PROJECTS FUNDED FROM LDCF/SCCF: THE LDCF/SCCF ELIGIBILITY CRITERIA AND PRIORITIES: NA**

**A.2. NATIONAL STRATEGIES AND PLANS OR REPORTS AND ASSESSMENTS UNDER RELEVANT CONVENTIONS, IF APPLICABLE, I.E. NAPAS, NBSAPS, NATIONAL COMMUNICATIONS, TNAS, NIPS, PRSPs, NPFE, ETC.:**

The Constitution of Timor-Leste states that the provision of energy is a basic need and that all communities should have access to energy. This project is in line with this national priority. In addition, the Rural Energy Policy of Timor-Leste proposes an Integrated Rural Energy Development Program that emphasizes the promotion and use of renewable and alternative energy throughout the country, especially in rural and remote areas as a high priority. Timor-Leste's Rural Development Strategic Framework for 2010-2020, finalized in December 2009, recognizes the importance of maximizing the use of indigenous renewable resources in order to reduce the costs of generation and improving energy security for the people. It identifies constraints preventing the wider adoption of low carbon energy technologies due to a dearth of demonstration projects to foster widespread interest amongst the private sector and inadequate financial assistance.

The Sustainable Development Plan 2011-2030 (SDP) of the GoTL underlines the importance of renewable energy resources. According to the SDP, renewable energy supplies have the potential to make a dramatic contribution to the economic growth and help to reduce poverty levels in remote rural areas. These supplies will also contribute to Timor Leste's climate change adaptation and mitigation efforts and help the country to meet its obligations under the international climate change conventions. The SDP sets a target that by 2020 at least half of Timor Leste's energy needs will be provided by renewable energy sources.

**B. PROJECT OVERVIEW:**

**B.1. DESCRIBE THE BASELINE PROJECT AND THE PROBLEM THAT IT SEEKS TO ADDRESS:**

Timor-Leste imports all of its fossil fuel needs at world-market prices, primarily diesel, gasoline, LPG and kerosene. Timor-Leste's history has left behind a country with a high incidence of poverty (50% living below poverty line), poor infrastructure network, weak institutions, low capacity and a large dependency on its natural resources. About 82% of households in Timor-Leste do not have access to electricity. Twenty-four hour electricity is only available in the capital, Dili, and the second-largest town, Baucau – but, with a high rate of outages. Subsidies from the state budget for electricity supply to these two towns alone reached US\$24 million in 2007. Less than 10% of rural Timor-Leste has local grids with limited 6-hour supply, and not all households in these areas are connected. There are a total of 58 isolated grids on diesel-powered generators. The unserved people depend on batteries, kerosene and candles. Poor market structures and distribution networks of diesel and kerosene in rural and remote areas contribute to high prices paid by the rural poor.

A World Bank scoping study reported that 98.6% of households surveyed use fuel wood as their primary source of energy. Cooking is carried out on traditional cook stove fires, which are highly inefficient. It is estimated that about 60 kg of fuel wood is used per household per month. Whilst in rural Timor-Leste households collect wood, in urban areas it is purchased. It is no longer possible for the increasing numbers of households living in Dili to gather their own fuel wood from the deforested hills surrounding the city. The surroundings of the capital, Dili, already demonstrate its severe effect and impacts with denuded hills that are left vulnerable to the monsoon rains, leading to soil erosion, landslides, siltation of waterways, blockages of the drainage system of the city that spreads the propensity for water and insect borne diseases.

Overall, more than 90% of all primary energy inputs in Timor-Leste are based on biomass. The goal of the project is the reduction of GHG emissions through sustainable production and utilization of biomass energy

in the country, and the promotion of innovative low-carbon biomass energy technologies. It will also aim to reduce the amount of biomass energy utilization through the adoption of efficient processes and biomass energy technologies in both households and local enterprises.

The project will build on the Government's plan to develop a Comprehensive National Sustainable Energy Policy and a Rural Energy Strategy.

State Secretariat for Energy Policy (SEPE), in partnership with a number of development partners, will operate the following projects that are initially identified as constituting the baseline projects that will be subsumed into the proposed TL Bioenergy Project:

- Village small renewable energy access programme (GoTL Budget: \$10 million) – This program is led by SEPE and involves partnerships between villages and NGOs/CBOs in the area of rural energy development and utilization. Under this programme, village chiefs (chefe de suco) in partnership with an NGO/CBO will submit a community project proposal for funds to procure a specific technology (either solar PV or biogas) for their community members. The village chief is responsible for establishing a management committee. In addition to providing funds to procure the equipment, the Government also provides initial training for the use and maintenance of the equipment. The capacity development, technical assistance and investment-related activities of this programme that are on biomass resource development and utilization are subsumed in the proposed GEF project.
- EC funded Energy for All programme (Budget: 1,43 million euros) – This programme aims to facilitate access to alternative sources of energy and renewable sources of fuel in three rural and peri-urban districts of Timor-Leste through sustainable market-driven approaches, targeting 15 villages in three districts, promoting solar PV, fuel efficient stoves and community tree nurseries. It proposes market-driven, sustainable energy solutions and effective business models for energy service delivery. It also aims to build the capacity of SEPE to promote alternative energy solutions to rural communities through the development of district level extension energy services. Those activities that are on the promotion and application of efficient cook stoves, capacity development, and the development of sustainable wood lots are included in the proposed GEF project as baseline activities.
- The Enterprise Challenge Fund, ECF (Budget: AUD575,500) – ECF provides support to private sector entrepreneurs to undertake projects in energy access for the poor. In this project, AusAID supports a local East Timorese company to provide lighting solutions to rural and remote households, replacing traditional kerosene and candle nut oil base lamps, focusing mostly on affordable solar lighting. However, the components of the project that will be subsumed within the proposed GEF project will be the capacity building of local enterprises, the micro-financing solutions that will be developed with the local micro-finance provider, Moris Rasik, green jobs creation for energy service enterprises and the partnership development initiatives between energy service providers, micro-finance institutions and communities.
- Solar PV products provision project (Budget: \$100,000) – This is an ongoing community based volunteer project of a small number of organisations and church groups that provide solar products as grants to a small number of villages, limited to two districts – Ermera and Aileu – in Timor Leste. The focus is on providing energy service solutions to rural health clinics, schools, community centres that will have a range of benefits ranging from improving access and delivery of healthcare to improved educational opportunities. The components of this project that will be subsumed within the proposed GEF project will be the capacity development activities focusing on community mobilization, local employment and skills development, community management and local governance strengthening and, systems for the selection of appropriate technologies and development of local supply chain.
- Energy efficient cook stoves project (Budget: \$50,000) – This is implemented by Haburas, an NGO that sells energy efficient cook stoves at a subsidized price, dependent upon grants it can secure from donors. Its core activities focus on bio-energy technology promotion in rural communities, establishing local supply chains and capacity building of technicians and communities to manage and maintain energy technologies. These will form part of the proposed GEF project.

The proposed project, which will expand the abovementioned baseline activities in Timor-Leste, will focus on overcoming/removing barriers to the demonstration, deployment and commercialisation of low-carbon biomass energy technologies to contribute to the enhancement of socio-economic growth. Some of the main barriers to rural energy development and utilization identified in the just completed Participatory Rural Energy Development Programme (PREDP), funded by UK and UNDP included: [1] Policy: Absence of a coherent and comprehensive enabling policy environment; lack of proper institutional set up and coordination mechanisms of renewable energy and adoption of innovative technologies; and, lack of comprehensive information on renewable energy resources and use in the country; [2] Financial: Lack of funds and access to funds; and, limited private sector involvement; [3] Structural: Lack of market mechanisms for access to energy resources and new low carbon technologies; and, lack of fiscal and other policy incentives for entry of entrepreneurs and diffusion of technologies; [4] Informational: Poor awareness and advocacy programmes, including capacity building; and, lack of knowledge networks.

**B. 2. 1. INCREMENTAL REASONING: DESCRIBE THE INCREMENTAL ACTIVITIES REQUESTED FOR GEF FINANCING AND THE ASSOCIATED GLOBAL ENVIRONMENTAL BENEFITS TO BE DELIVERED BY THE PROJECT:**

The GoTL (SEPE)-led village small renewable energy access programme is built on the earlier UNDP's Participatory Rural Energy Development Programme (PREDP) and it focuses on small household level biogas plants and solar PV home systems. The programme will institutionalize a system for community mobilization with the support of facilitating partners (NGOs/CBOs) and build a local governance structure. However, this programme is limited in scale, dependent upon donor support and does not address the barriers to widespread application of biomass energy technologies, as described in the section above. The EC-funded Energy for All programme will support the improvement and dissemination of improved stove technology, but is limited to 15 villages only, and set up pilot community-based tree nurseries in selected sites. The Enterprise Challenge Fund helps to demonstrate a business model using the MFI on the ground but, again, is limited to a single MFI and a specific solar lamp. The work of Haburas will provide an opportunity to build on the lessons learned on barriers to developing local briquette making enterprises.

The proposed TL Bioenergy project will specifically aim at addressing the gaps of the baseline projects (described above) by targeting the barriers to the promotion of widespread adoption and application of low carbon biomass energy technologies, using local resources that will be sustainably sourced. The baseline activities will be expanded and/or supplemented in order to enhance the realization of potential global environmental benefits from them.

The project will ensure that biomass energy use is sustainable and does not, in any way, contribute to deforestation, reduced soil fertility or increased GHG emissions beyond project boundaries. In this regard, the Ministry of Agriculture and Fisheries which is responsible for forestry, agriculture and livestock, will be a key partner in this project. The Ministry of Economy and Development will also be a key partner to lend support to the work on entrepreneur and market development, including developing public-private sector partnerships.

The following describe the envisioned incremental activities of the proposed project:

**Component 1: Policy and Institutional Support** - This component will address the institutional and policy-related barriers to the development and utilization of bio-energy resources using low-carbon energy technologies for energy services provisions. It will support the development of a national strategy and roadmap for the promotion of sustainable production, conversion and utilization of bio-energy, through community participation and investments in low-carbon energy technologies, within the framework of a national sustainable energy policy. The expected outcome from this project component is the implementation of strengthened enabling policies, legal and institutional framework for the deployment of innovative biomass energy technologies as well as the growth of biomass energy businesses in Timor Leste. The component will also include a review of the Forestry and Land Management policies, focusing on the provision of community forest and land tenure for energy woodlots and biogas production. It will also support the on-going work in

the finalization and implementation of the National Sustainable Energy Policy and the Rural Energy Strategy for Timor-Leste.

This component will include the provision of technical assistance in resource inventory set-up, feasibility assessments of specific low-carbon technologies for the development of targeted financial and fiscal incentives, as well as local manufacturing of some of the technology components and parts. It will also address the institutional and structural barriers that have been identified to promote private sector investment and participation, using a variety of public-private-community partnership mechanisms.

Among the envisioned activities include those related to: (a) Development and implementation of a roadmap to operationalise the National Sustainable Energy Policy and the Rural Energy Strategy, including recommendations for fiscal policy incentives for investments and private sector participation, ensuring the needs of women and vulnerable communities are given priority; (b) Technical assistance in the development and implementation of a legal framework for community participation in designated "production forests", certification standards for biogas production, bio-briquette production, community woodlots and targeted initiatives in community tree-planting, with a focus on promoting women and youth participation; (c) Development and implementation of a national biomass energy resource information system that provides information on areas earmarked for bio-energy production that will benefit new entrepreneurs.

**Component 2: Bio-Energy Investments Promotion** - This component is in line with addressing the technical and market barriers that beset the widespread development/adoption and application of BETs and bioenergy-supported projects in Timor-Leste. It will focus on increasing investments in bio-energy in order to raise investment confidence in this sector. The expected outcomes from this component are: (1) Increased investments in Bio-energy; (2) Development of a local supply chain and market for BETs; and, (3) Avoided GHG emissions from RE technology applications and investments. Under this component, the project will provide financial and technical support for the demonstration, commercialization and investments in bio-digesters, bio-briquetting, and energy-efficient furnaces and cook stoves production for livelihood enhancement and corresponding market development.

Among the envisioned activities are: (a) Local production and distribution of 15,000 improved cook stoves through two nodal production centres, aimed to reach about 10% of the total households in the country, in the project period; (b) Local production of energy efficient local enterprise stoves/furnaces, with the participation of women in the supply chain; (c) Local design and fabrication of biogas digesters for household/community cooking/lightning needs (180 projects); (d) Bio- briquetting demonstration for bioenergy production, aimed at employment creation for unemployed youths and supply to urban centres; and, (e) Site and engineering support for the design of the above BET System Demos. GEF and GoTL funds will be secured and allocated for this component, including private sector and bilateral donor finance that will be secured during the PPG phase.

**Component 3: Sustainable Bio-energy Technology Demonstration & Investment Development** - This component is designed to support Component 2 in order to raise investment confidence and augment bio-energy investments promotion through the appropriate monitoring, evaluation, documentation and widespread dissemination of the full-scale demonstrations, production centres and marketing experiences/lessons learnt of Component 2. The expected outcomes from this component are: (1) Improved visibility of proven technologies; and, (2) the availability of financial support for rural bio-energy resource production and associated low-carbon technology applications. Under this component, the project will provide financial and technical support for the demonstration, commercialization and investments in bio-digesters, bio-briquetting, and energy-efficient furnaces and cook stoves production for livelihood enhancement and corresponding market development.

Among the envisioned activities are: (a) The documentation and dissemination of process, ;lessons learnt and results of all of the above (2.1, 2.2 and 2.3); (b) Design and operationalised financing mechanisms for banks/ financial institutions to support project development; (c) Promotion of successful technology and financial models/packages for expansion beyond project sites; (d) Development of tailor-made financial services,

adapted from regional best practice methodologies for financing bio-energy, including loan-products in (micro-) finance institutions; (e) Operationalising of new innovative mechanisms for repayments of microfinance loans; (f) development of equipment standards and technical guidelines for project developers and implementers interested in venturing in the application and investment in BETs; and, (g) setting-up of a techno-economic resource centre that monitors and reports on bio-energy production and utilization, including economic, technical and financial analyses that will be beneficial for private sector participation.

This project will build on the existing Rural Energy Policy and strategic plans currently in development by the GoTL. This work will be led and coordinated by the SEPE. The project will also enable linkage to other development sectors in the country, so as to integrate the energy sector with industry and private sector. For this, the project will work closely with the Ministry of Economy and Development to build public, private and community partnerships. This process is yet to be made in TL at this stage. At PPG phase, the project will also work with local business development projects being implemented by the International Labour Organisation and with other organisations that are promoting local enterprise. These connections will be developed not only in terms of market/business development, but will also focus on providing the linkages for technical support to be provided through the project and SEPE.

**Component 4: Capacity Development and Market Transformation** - This project component will enhance the level of knowledge, skills and awareness on the benefits and features of BETs and bioenergy-supported livelihood/ productive use projects as part of the Government's renewable energy promotion, development and utilization campaign through nodal centres, led by SEPE. It will specifically address the barriers of low level public awareness, lack of technical knowledge and market information regarding bioenergy technology applications; and, general perception of potential project developers and beneficiaries who currently hold the view that bioenergy projects are risky and investment recovery is difficult. It will also serve to channel detailed information on sectoral energy consumption patterns in the economy, resource inventory and proven BETs available in the market. Enhanced capacities of policy makers, financial institutions, entrepreneurs, project developers, communities and end-users on the development of the local BET market is the main outcome from the interventions that will be carried out under this project component. Capacity building activities will be led and coordinated by the SEPE, hence ensuring linkages with policy making activities at SEPE. In addition, capacity building with SEPE will strengthen the agency's technical abilities in analysis, planning, policy development and delivery of services.

The development of mechanisms that will lead to further replication of the BETs demonstrated or piloted, including building institutional and organisational capacity for technology selection, local technology development, testing and certification in order to ensure the continued production and expansion of the BET applications, will be carried out under this project component. Work will be carried out closely with the Ministry of Economy and Development to promote public and private investments, as well as build using the public-private-community partnerships, MFIs and other appropriate mechanisms. The activities will also be implemented in close partnership with institutions/agencies working on private sector development and the financial sector. The UNDP, UNCDF, AusAID, USAID and the IFC currently work with the Government to help develop the private sector in the non-energy sector in Timor-Leste. AusAID, through the Peace Dividend Trust, focuses on small and medium scale entrepreneurship development as well as connecting buyers and sellers. USAID focuses on strengthening the supply chain, linking rural agriculture producers to markets, working closely with agribusiness enterprises, financial institutions and the government. The IFC focuses specifically on improving the legal and regulatory framework for the development of the private sector. The UNDP and UNCDF, through project "Inclusive Finance for Underserved Economy (INFUSE)", work with the Ministry of Economy and Development and its Institute for Development of Enterprises (IADE) as well as Financial Service Providers, focusing on developing the financial sector, through financial policy development, increasing outreach to the poor and the development of financial business support infrastructure.

Through this project component, more accessible information on modern biomass energy technology applications will be available, stakeholders will become aware of the ecological and economic benefits of bio-



energy, and financing institutions will be favourable towards BET application and investment projects as well as the productive uses of bio-energy. It is expected that, as a result of the advocacy campaigns, policy makers would appreciate the advantages and practicality of a thriving BET market in the country, and will establish and implement suitable supportive policies and regulations.

The envisioned activities include: (a) Targeted capacity building of government agencies on the formulation, adoption and enforcement of policies, regulations and guidelines to enable low carbon technologies; (b) Capacity building for the relevant government agencies on integrated energy planning and implementation; (c) Conduct of biomass energy technology training courses for project developers and entrepreneurs, ensuring women are adequately represented; (d) Capacity building to local community-based organizations, women and youths on installation, maintenance and support services; and, (e) Setting-up of a Research and Information Dissemination Network on BET applications. These would be vital in ensuring the replication of biomass-based energy project demonstrations that will be carried out under the proposed project, through getting market mechanisms to work for the expansion of energy access.

The project, as a whole, will facilitate the widespread application of bio-energy systems for economic and social uses in the country. It targets the realization of a substantial increase in the sustainable extraction and efficient conversion and use of biomass energy resources for the provision of energy services facilitated through the barrier removal activities and other capacity building and technical assistance activities that will be implemented. Approximately 170,120 metric tons of CO<sub>2</sub> emissions are expected to be avoided directly through this project alone (see Annex 1). Through the development of market mechanisms for sustainable biomass energy technologies, this figure is expected to be at least three times more. Investments on sustainable bio-energy energy generation/ utilisation that can be facilitated by this project will also result in overall global GHG emissions reduction.

**B.2.2. FOR PROJECTS FUNDED FROM LDCF/SCCF: ADDITIONAL COST REASONING: DESCRIBE THE ADDITIONAL ACTIVITIES REQUESTED FOR LDCF/SCCF FINANCING AND THE ASSOCIATED ADAPTATION BENEFITS, TO BE DELIVERED BY THE PROJECT: NA**

**B.3. DESCRIBE THE SOCIO-ECONOMIC BENEFITS TO BE DELIVERED BY THE PROJECT AT THE NATIONAL AND LOCAL LEVELS, INCLUDING CONSIDERATION OF GENDER DIMENSIONS, AND HOW THESE WILL SUPPORT THE ACHIEVEMENT OF GLOBAL ENVIRONMENT BENEFITS(GEF TRUST FUND) OR ADAPTATION BENEFITS (LDCF/SCCF). *As a background information, read [Mainstreaming Gender at the GEF.](#)***

Timor-Leste's economic and social development, achieving poverty reduction and improving food, water and energy supplies, are going to depend heavily on the country's renewable natural resources, and how they are exploited with regard to conservation and sustainability. A key issue for Timor-Leste is that, due to geological, topographical and climatic factors, the country's renewable natural resource base is not strong. Agricultural productivity is low, and more than 98% of households depend on wood for cooking and heating fuel further degrading the land and entrenching a cycle of poverty and resource degradation. While aiming to remove barriers for the deployment and expansion of biomass energy technologies and GHG emissions reduction, this project will also contribute towards the Government's effort on attaining the goal of poverty reduction through environmental mainstreaming. National capacity will be strengthened to create and implement the enabling policy environment and mechanisms for the promotion of low carbon biomass energy technologies that will reduce the pressure on the forests and, at the same time, working in harmony with the Government's planned new Integrated Natural Resources Management/Poverty-Environment Initiative, support improved coordination, integrated planning, reporting and decision-making across key government and non-government agencies towards improved governance structures for the direct community engagement in poverty reduction and environment mainstreaming with the creation of Green Jobs and public-private partnerships in the management and conservation of renewable natural resources.

Women's participation, representation and access to resources and benefits will be a key focus of this project that aims to provide access to improved household energy needs through clean cooking stoves, advanced

biomass cook stoves and bio-digesters. The project will contribute towards social, economic governance transformations to empower women through specific activities that: promote participatory and consultative planning for decision-making; improve women's capabilities through their involvement, as consumers and producers in pilots and as role models; and, advance their influence in decision-making as well as control over natural resources. The project will have specific gender goal indicators, which will include the collection of gender-disaggregated data and a strong monitoring and evaluation mechanism to operate and advance gender mainstreaming and social equity.

**B.4 INDICATE RISKS, INCLUDING CLIMATE CHANGE RISKS THAT MIGHT PREVENT THE PROJECT OBJECTIVES FROM BEING ACHIEVED, AND IF POSSIBLE, PROPOSE MITIGATION MEASURES THAT WILL BE FURTHER DEVELOPED DURING THE PROJECT DESIGN:**

Preliminary discussions with the Ministry of Economy and Development, State Secretariat for Natural Resources, the State Secretariat for Energy Policy, the Ministry of Agriculture and Fisheries and key stakeholders indicate the overall project risk will be moderate. However, it was agreed that the risks that must be dealt with are capacity limitations in terms of technical knowledge, capacity to promote the commercialization of innovative low-carbon bio-energy technologies, operate and maintain such technologies, and, the need to create a private sector around bio-energy and bio-energy technologies. In addition to this, the volatility of the political situation in Timor-Leste could cause delays in implementation. There could also be issues with community participation in activities, which was one of the lessons learned in the previous PREDP project, as often they ask for compensation for any kind of labour work that might be expected of them, due to high unemployment incidence among the youths. To address these issues, it will be necessary to involve the local governments from the very beginning as well as the representatives of the local vocational training centres, to promote green jobs and local entrepreneurship. It will also be necessary to ensure that the government counterparts take responsibility for the mobilization of communities and to ensure that skills training are taking place periodically. Cooperation and interest of the financing institutions in supporting BETs in support of micro-enterprise and rural development initiatives are another set of risks that need to be managed.

To address these anticipated risks, the project will be designed to include an effective means to monitor and to the extent possible mitigate these risks. A project monitoring & evaluation plan will be prepared to track not only the project milestones, but also the indicators that will show that the identified risks are, if not eliminated – at least, mitigated. Mitigation measures will include a strong emphasis on hands-on project management and conducting capacity development activities for the project staff; enhanced participation of the stakeholders in the rural communities; continuous dialogue and coordination with the private sector, especially the local businesses and young entrepreneurs; participation of vocational institutions and institutions of higher learning to provide the research and skills development support, particularly for the youth and emerging new entrepreneurs; and, constant dialogue between the projects implementing partner and project stakeholders. Stakeholders will be engaged from the project design stage.

**B.5. IDENTIFY KEY STAKEHOLDERS INVOLVED IN THE PROJECT INCLUDING THE PRIVATE SECTOR, NGOS, CIVIL SOCIETY ORGANIZATIONS, AND THEIR RESPECTIVE ROLES, AS APPLICABLE:**

This proposal will be implemented by a group of stakeholders led by the State Secretariat for Energy Policy (SEPE). SEPE has the mandate to provide communities with sustainable alternative energy sources and has been an active partner in piloting some of these technologies with UNDP in the past. SEPE has also been implementing its own programme, providing access to energy for a number of communities, up-scaling activities initially piloted with UNDP. An important partner in community mobilization will be the Haburas Foundation, a national NGO that has extensive experience working with local communities in the context of environmental initiatives. For the past year and a half, Haburas has been working on piloting fuel wood briquettes with local communities, increasing income for stove producers and setting up a new business modality for youths interested in becoming briquette producers. In addition, they have extensive experience in carrying out community awareness activities on a number of awareness activities and in mobilizing communities effectively. The international NGO, Mercy Corps, has extensive experience working on

alternative sources of energy throughout the world. In Timor-Leste, this NGO has carried out an Energy Assessment and has recently received funding from the EC to carry out an energy access programme, based on alternative sources of energy. Mercy Corps will be an important partner, in bringing together community mobilization experiences in energy access as well as ensuring this project complements its EC partnership programme.

**B.6. OUTLINE THE COORDINATION WITH OTHER RELATED INITIATIVES:**

During the PPG exercise, the project development team will hold specific consultations on project activities to ensure coordination and collaboration among all baseline projects and the proposed GEF project. More specifically, consultations with SEPE will focus on building on the village level governance mechanisms established for local energy services delivery. The team will also focus on establishing improved cook stoves production facilities, building on the experience from PREDP and the baseline EC funded Energy for All project that aims to adopt fuel efficient cook stoves promoted by Stovetec, which is said to be 40% more efficient than open fires. This will be verified during the PPG phase. Collaboration with Haburas will focus on building on its experience in initiating the first briquette manufacturing unit in the country and its distribution network for improved cook stoves. During the PPG phase, the team will also consult and determine collaboration with Moris Rasik microfinance, based on its experience in small energy systems. Coordination between the Ministry of Economy and Development, SEPE and the Ministry of Agriculture and Fisheries (responsible for forestry matters) will be a priority of the project development team to ensure synergies and complementarities between both ongoing and planned projects and activities relevant to the proposed GEF project. The team will also consult biomass projects in other countries like Indonesia, Cambodia and the Philippines. The UNDP-GEF Regional Coordination Unit will provide the necessary support in these consultations as well as in providing the linkages.

This project will also be closely linked to a number of other initiatives –past, ongoing and planned – in Timor-Leste, namely the GoTL-UNDP-UNEP Poverty-Environment Initiative, the Initial National Communication for the UNFCCC, the National Adaptation Programme of Action, the National Biodiversity Strategy and Action Plan, Sustainable Land Management and other initiatives such as the Community Forestry and Rural Development programmes that are currently being developed. The planned support currently being designed by UNDP and FAO in assisting the Government promote agricultural productivity will be harmonized with this project; particularly the promotion of the productive use of renewable energy and technologies in the sector. The ongoing micro-finance institutions support programme will be linked to the micro-entrepreneur development schemes to be initiated in this proposed project. Coordination of the various programmes and initiatives will be provided through the Inter-Ministerial Working Group for Environment and Natural Resources Management and joint/coordinated Project Boards. In addition, the project will also leverage the regional experience of SNV Netherlands Development Organisation, in the promotion and application of biogas technologies, and the United Nations Capital Development Fund (UNCDF) in the provision of financial services, including micro-financing for the development of the public-private partnerships to promote investments in the technologies and their productive use.

**C. DESCRIBE YOUR AGENCY’S COMPARATIVE ADVANTAGE TO IMPLEMENT THIS PROJECT:**

According to the paper on Comparative Advantages of GEF Agencies (GEF Council Paper C.31.5, rev. 1), it is acknowledged that UNDP has a comparative advantage in implementing energy projects, particularly in providing technical assistance and capacity building, leveraging on its country presence and experience in integrated policy development, human resources development, institutional strengthening, and non-governmental and community participation, which are key features of the barrier removal activities of this project. Through its engagement in the both the NAPA and the INC process, UNDP is well placed to support the GoTL in the activities related to climate change adaptation and mitigation.

**C.1. INDICATE THE CO-FINANCING AMOUNT YOUR AGENCY IS BRINGING TO THE PROJECT:**

UNDP will provide a total of US\$ 570,000, inclusive of US\$ 350,000 from its core resources, as this project fits within UNDP's strategic outputs of mainstreaming environment into national development planning to support the Government in its efforts towards sustainable development and providing access to sustainable energy to rural and vulnerable communities, improving their quality of life allowing for the development of new income generating activities.

**C.2. HOW DOES THE PROJECT FIT INTO YOUR OWN AGENCY'S PROGRAM (REFLECTED IN DOCUMENTS SUCH AS UNDAF, CAS, ETC.) AND YOUR STAFF CAPACITY IN THE COUNTRY TO FOLLOW UP PROJECT IMPLEMENTATION:**


The project is in accordance with UNDAF 2009 – 2013 (CP Outcome 2.1: Vulnerable groups, particularly IDPs, disaster-prone communities, women and youth, benefit from opportunities for sustainable livelihoods, and CP Outcome 2.2: Local communities and national and district authorities practice more effective environmental, natural resource and disaster risk management), and the UNDP Country Programme for Timor-Leste 2009 – 2013 (CP Outcome 4: Capacities for community-based natural resource and energy management for sustainable poverty reduction strengthened; and, CP Outcome 6: Improved capacities of government institutions and communities for environmental resource management). These are consistent with UNDP's commitment to support the mainstreaming of environmental issues into poverty reduction and good governance strategies, particularly in climate change. This includes its commitment to work with UN Capital Development Fund (UNCDF) and other UN agencies to promote public-private-community partnerships, community-based infrastructure initiatives to enhance rural employment, and to strengthen microfinance institutions and enhance banking literacy in rural areas to make those institutions more inclusive through the development of pro-poor products and services. The Project will be managed by the UNDP-TL's Poverty Reduction and Environment Unit.

**PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)**

**A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S):** (Please attach the [country endorsement letter\(s\)](#) or [regional endorsement letter\(s\)](#) with this template).

NAME	POSITION	MINISTRY	DATE (Month, day, year)
Mario Ximenes (Mr.)	National Director for International Environmental Affairs and GEF OFP for TL	Ministry of Economy and Development	August 27, 2010

**B. GEF AGENCY(IES) CERTIFICATION**

This request has been prepared in accordance with GEF/LDCF/SCCF policies and procedures and meets the GEF/LDCF/SCCF criteria for project identification and preparation.					
Agency Coordinator, Agency name	Signature	Date (Month, day, year)	Project Contact Person	Telephone	Email Address
Yannick Glemarec UNDP/GEF Executive Coordinator		January 05, 2012	Thiyagarajan Velumail, Regional Technical Advisor (Energy), UNDP- APRC	+662 304 9100 Ext. 2597	<a href="mailto:Rajan.velumail@undp.org">Rajan.velumail@undp.org</a>



**ANNEX1: Calculation of Direct GHG Emission Reduction - Timor-Leste: Promoting Sustainable Bio-energy Production from Biomass (SBePB)**

<b>IMPROVED COOK STOVES</b>													
Parameter	Year												
	1	2	3	4	5	6							
Amount of improved cook stoves disseminated (units)	0	4000	12000	9000									
Total amount of cook stoves in use (units)	0	4000	16000	25000	21000	9000							
Total reduction of CO2 equivalent per cook stove (in Tons)	0	4000	16000	25000	21000	9000							
Lifetime of the improved cook stove (ICS) = 3 years													
CO2 emission reduction of per ICS = 1 metric ton													
Total CO2 emission reduction from the ICSs = 7,500 metric tons													
<b>BIOMASS GASIFIERS</b>													
Parameter	Year												
	1	2	3	4	5	6	7	8	9	10	11	12	
Amount of biomass gasifier demonstrations (units – 1MW capacity each)	0	0	4										
Total amount of biomass gasifier in use (units)	0	0	4	4	4	4	4	4	4	4	4	4	
Total reduction of CO2 equivalent per biomass gasifier (in Tons)	0	0	3680	3680	3680	3680	3680	3680	3680	3680	3680	3680	
Lifetime of the biomass gasifiers = 10 years													
Annual CO2 emission reduction per biomass gasifier = 920 metric tons													
Total CO2 emission reduction from biomass gasifiers = 36,800 metric tons													
<b>BIOGAS DIGESTERS</b>													
Parameter	Year												
	1	2	3	4	5	6	7	8	9	10	11	12	13
Number of biogas digesters demonstrated (units)	0	30	70	130									
Total amount of biogas digester in use (units)	0	30	100	230	230	230	230	230	230	230	230	230	230

Total reduction of CO2 equivalent per biogas digester (in Tons)	0	720	2400	5520	5520	5520	5520	5520	5520	5520	5520	5520	5520
Lifetime of the biomass digesters = 10 – 12 years													
Annual CO2 emission reduction per biogas digester = Average 20 m3 each x 1.2 metric tons per m3													
Total CO emission reduction from the biogas digesters = 58,320 metric tons													
<b>OVERALL RESULTS</b>													
<b>Total Lifetime CO2 Emission Reductions from the Application of 3 Biomass Technologies = 170,120 metric tons CO2eq</b>													

Note: In this project, available but unused biomass will be processed into bio-briquettes. Note that the CO2 emission reductions from the project are mainly from the avoided CH4 that would have been released of the unused biomass were not converted to bio-briquettes for use as energy source. Detailed calculations of the estimated methane avoidance from the conversion of unused biomass (that would be otherwise just left to rot, if not utilized), will be made during the PPG exercise, using the experience of Haburas pilot project.