PROJECT IDENTIFICATION FORM (PIF)[1]

PROJECT TYPE: Full-sized Project
TYPE OF TRUST FUND:GEF Trust Fund

PART I: PROJECT IDENTIFICATION

Project Title:	Promotion of waste-to-energy applications in agro-industries of Tanzania		
Country(ies):	United Republic of Tanzania	GEF Project ID:[2]	4873
GEF Agency(ies):	UNIDO	GEF Agency Project ID:	XXURT12X01
Other Executing Partner(s):	Ministry of Minerals (MEM) and Rural Energy Agency (REA)	Submission Date: Resubmission Date:	12 March 2012 3 September 2012 19 September 2012
GEF Focal Area (s):	Climate Change (CC)	Project Duration(Months)	48
Name of parent program(if applicable):For SFM/REDD+☐		Agency Fee ($):	527,700

A. FOCAL AREA STRATEGY FRAMEWORK[3]:

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Indicative Grant Amount ($)	Indicative Co-financing ($)
CCM-3 Promote investment in renewable energy (RE) technologies	Investments in RE technologies increased	RE capacity installed	GEFTF	5,025,714	25,135,750
		Sub-Total		5,025,714	25,135,750
		Project Management Cost[4]		251,286	1,319,250
		Total Project Cost		5,277,000	26,455,000

B. PROJECT FRAMEWORK

[1]It is very important to consult the PIF preparation guidelines when completing this template.
[2]Project ID number will be assigned by GEFSEC.
[3]Refer to the reference attached on the Focal Area Results Framework when filling up the table in item A.
[4]GEF will finance management cost that is solely linked to GEF financing of the project. PMC should be charged proportionately to focal areas based on focal area project grant amount.

Project Objective: To promote investments in waste-to-energy (WTE) technologies for energy (electricity + thermal energy) generation in agro-industries						
Project Component	**Grant Type**	**Expected Outcomes**	**Expected Outputs**	**Trust Fund**	**Indicative Grant Amount ($)**	**Indicative Co-financing ($)**
1. Capacity development and knowledge management	TA	Improved awareness, knowledge and capacity on waste-to-energy technologies in the country.	1.1. An information and learning centre for WTE established. 1.2. Capacity developed among policy makers 1.3. Capacities developed for relevant RE institutions, agro-industries, project developers and bank/financial institution.	GEFTF	370,000	1,850,000
2. Creation of financing facility	TA	Established financing facility and increased involvement of financing institutions in WTE projects	2.1. Revolving fund mechanism established for WTE technologies under REA 2.2. Revolving fund established and operated	GEFTF	1,297,564	6,425,000
3. Demonstration of WTE technologies	INV	Increased use of WTE technologies for industrial applications	3.1. Detailed plant designs prepared for demonstration projects. 3.2. WTE power plants established for 6.0 MW cumulative capacity. 3.3. WTE technologies transferred for agro-industries.	GEFTF	3,308,150	16,610,750
4. Monitoring and evaluation (M&E)	TA	Effectiveness of the outputs assessed, corrective actions taken and experience documented	4.1. Mid-term M & E report prepared. 4.2. End of project M & E report prepared.	GEFTF	50,000	250,000
			Sub-Total		5,025,714	25,135,750
			Project Management Cost[5]	GEFTF	251,286	1,319,250

[5]Same as footnote #3.

Total Project Costs		5,277,000	26,455,000

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

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Amount ($)
United Republic of Tanzania	Rural Energy Agency (REA)	Grant	8,320,000
United Republic of Tanzania	Rural Energy Agency (REA)	In-kind	2,000,000
United Republic of Tanzania	The National Ranching Company (NARCO)	Grant	3,200,000
Private Sector	Mohammed Enterprise Tanzania Limited (METL)	Grant	1,400,000
Private Sector	Zanzibar Sugar Factory	Grant	8,635,000
Private Sector	Tanga Fresh Dairy Limited	Grant	2,750,000
GEF Agency	UNIDO	Grant	60,000
GEF Agency	UNIDO	In-kind	90,000
Total Co-financing			26,455,000

D. GEF/LDCF/SCCF/NPIF RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY[1]

GEF Agency	Type of Trust Fund	Focal Area	Country Name/Global	Grant Amount (a)	Agency Fee (b)[2]	Total c=a+b
Total Grant Resources						

[1] In case of a single focal area, single country, single GEF Agency project, and single trust fund project, no need to provide information for this table

[2] Please indicate fees related to this project.

PART II: PROJECT JUSTIFICATION

A. DESCRIPTION OF THE CONSISTENCY OF WITH:

A.1.1 The GEF focal area/LDCF/SCCF strategies/NPIF Initiative:

The proposed project activities promote the use of WTE technologies, more specifically application of biomass and biogas technologies, in agro-industries. This area was selected due to their rapid scaling up and greenhouse gas (GHG) emissions reduction potential. These are in line with GEF-5 climate change focal area strategic programme *CCM-3: Promoting the investment in RE technologies*.

The East Africa[6] (a group of 19 countries including Tanzania) Ministerial Consultation meeting, 18-20th January 2011 organized by GEF secretariat, came up with WTE as one of the priority areas to be considered for East African countries. In line with that, the expected outcomes of the project include human and institutional capacity development and the increased investments for WTE technologies.

A.1.2. For projects funded from LDCF/SCCF: the LDCF/SCCF eligibility criteria and priorities:

N/A

A.1.3 For projects funded from NPIF, relevant eligibility criteria and priorities of the Fund:

N/A

A.2. National strategies and plans or reports and assessments under relevant conventions, if applicable, i.e., NAPAS, NAPs, NBSAPs, national communications, TNAs, NIPs, PRSPs, NPFE, etc.:

National Environmental Policy (1997): This supports the utilization of the local resources for the national development along with environmental conservation. This policy promotes the use of clean energy resources in agro-industries. On agriculture, this policy, specifically focuses on facilitating the agro-industries with appropriate energy alternatives, emphasizing the electrification.

Initial National Communication to United Nations Framework Convention on Climate Change (UNFCCC) (2003): Tanzania is a signatory of the UNFCCC since 1996. Tanzania submitted its initial national communication to UNFCCC in March 2003. This identified land use change & forestry and energy & agricultural sectors as the main sources of human induced GHG emissions in Tanzania. The mitigation measures towards reduction of GHG emissions in energy sector are as follows:

- Development of RE sources and use of clean technologies in electricity production and
- Use of efficient devices in households, commercial, and industrial sectors.

National Energy Policy of Tanzania (2003): It emphasized the resource utilization efficiency in the agro-industries, promotion of appropriate energy alternatives including WTE in agro-industries and creation of appropriate environment for stakeholders to implement suitable energy technologies for agricultural operations. This policy also emphasized (i) the market reforms for promoting energy services and establishing adequate institutional framework,

[6] http://millenniumindicators.un.org/unsd/methods/m49/m49regin.htm

which facilitates investments, efficient pricing mechanisms and other financial incentives; and (ii) the need for enhancing the development and utilization of indigenous and RE sources and technologies.

National Strategy for Growth and Poverty Reduction (NSGPR 1 of 2005 and NSGPR 2 of 2010): These insisted on developing and promoting the utilization of indigenous energy resources as well as the diversification of energy sources.

National Adaptation Programme of Action (NAPA) (2006): This facilitated the exploration and investment in alternative energy source supporting programmes for developing feasible and less polluting alternative energy sources.

Tanzania National Development Vision 2025 (2000): It envisioned converting the agricultural sector as a modern, commercial, highly productive and profitable sector by 2025 by utilising natural resources in a sustainable manner.

Small power producer program (SPP) (2009): It was proposed by the Ministry of Energy and Minerals (MEM) in the year 2009, to help Tanzania meet the power demand, improve electricity access and foster domestic private sector investment in small clean power sources. The detailed implementation rules and guidelines were developed by the Energy and Water Utilities Regulation Authority (EWURA) with assistance from the World Bank. These rules and guidelines encouraged the development of renewable electricity through a combination of Standardized Power Purchase Agreements (SPPA) and Standardized Power Purchase Tariff (SPPT) payments and streamlined interconnection and licensing requirements. The regulations provided the legal basis for private businesses and individuals to interconnect RE generators into isolated mini-grids and to export excess electricity (up to 10 MW) to the national utility, Tanzania Electric Supply Company (TANESCO).

The proposed project is consistent with Tanzania's national development priorities. It will increase the use of RE and decrease the consumption of diesel required to power the additional generating capacity in case of grid extension or captive electricity generation.

B. PROJECT OVERVIEW:

B.1. Describe the baseline project and the problem that it seeks to address:

Agriculture is the backbone of Tanzania, contributing substantially to its economy. The agricultural growth rate has increased from 5% in 2002-03 to 7% by 2010[7].

In Tanzania, processing of cashew nuts, cassava, sweet potatoes, paddy, sorghum, wheat, sunflower, groundnuts, sugarcane, tobacco, sisal and cotton are being done on a large scale. At present, most of these agro-industries depend upon either grid electricity or heavy oil fired plants or diesel generators, which are high carbon emitting energy sources. The table below summarizes the energy consumption and corresponding GHG emissions of the selected agricultural products in Tanzania[8].

[7] National Strategy for Growth and Reduction of Poverty (MKUKUTA)

[8] Carbon footprint reduction opportunities for the agro-processing industries of Tanzania, "A Guidebook for use by the Agro-processing industries of Tanzania", UNIDO, 2011

Crop	Energy consumption in agro-industries			GHG emissions from agro- industries[9]		
	MJ/ton[10]	Annual energy consumption (TJ)	Annual energy consumption (%)[11]	GHG émissions/ton (t CO_2e)	Annual emissions (t CO_2e)	Annual emissions (%)
Cashew	9,391	869.6	0.48	0.18	16,253	0.9
Coffee	20,639	1,131.0	0.63	0.27	14,746	0.8
Cotton Lint	2,360	250.2	0.14	0.20	21,677	1.2
Edible Oils	5,006	1,651.7	0.92	0.32	97,594	5.3
Maize	144	513.9	0.28	0.02	71,380	3.9
Milk	423	42.4	0.02	0.05	4,655	0.3
Rice	108	144.9	0.08	0.02	20,128	1.1
Sisal	2,666	71.9	0.04	0.37	46,845	2.5
Sugar	5,875	13,923.8	7.72	0.80	1,890,075	10.2
Tea	44,100	1,380.3	0.76	0.63[12]	19,777	1.1
Tobacco	164,992	8,348.6	4.63	1.69	85,676	4.6
Wheat	288	208.5	0.12	0.04	28,953	1.6
Total	255,992	28,536.8	15.82*	1.73	2,317,759	33.5*

*The rest of the 100% are from coal

During the year 2011, UNIDO undertook a study on "C*arbon foot print reduction in agro industrial sector of Tanzania"* which focused on four agro-industries which included sisal, dairy, tobacco and edible oil. Specifically, the study aimed at identifying the technologies for reducing their carbon footprints.

From the study, it was clear that most of the industries were found using carbon intensive technologies, contributing substantially to GHG emissions[13]. The primary carbon reduction opportunities in these industries were found to be the use of RE for electricity and thermal energy generation. This will also enable electricity supply to the surrounding communities and to the grid. Own generation will increase the reliability of power supply and excess electricity

[9] Energy sources' emissions factors have not been considered.
[10] Calculated using the typical energy consumption of processing facilities and their output - excluding transportation energy consumption
[11] This is only a % of the sum of annual production of the crops analyzed in this table and not a % of Tanzania's overall energy consumption or the entire Tanzanian agro-processing industry's energy consumption.
[12] Due to the fact that sustainable managed biomass is used, it is assumed that these emissions are offset.
[13] Carbon footprint reduction opportunities for the agro-processing industries of Tanzania, "a guidebook for use by the Agro-processing industries of Tanzania"

when exported, will also reduce the gap of unreliability of power supply in the country.

In addition to the above study, UNIDO also conducted another study "*Due-Diligence report: Potential sites to generate energy from waste in the selected agro-processing centres*" during July 2011. The due-diligence study reported on the potential energy generation capacity at these sites.

Carbon footprint in these agro-industries can be reduced considerably by implementing WTE technologies. Below are the selected sites in which the intervention will take place under this proposed project.

Zanzibar Sugar Factory and Ethanol Factory

Zanzibar Sugar Factory located in Mahonda village in Zanzibar Island is one of the oldest sugar factories in the country established in the year 1974. The ownership of the factory has passed several hands and at present the sugar factory is being run by a private sector with a minimum participation from Zanzibar Government. As of now, the sugar factory is facing problems in sugar production due to unreliability in steam production from the existing boilers. As a result, the sugar factory has been shut down. The factory also plans for expansion in sugar cane crushing and ethanol production. For all these activities, the factory needs consistent and quality steam supply. In the absence of reliable steam supply, the company is incurring heavy losses annually.

With this background, the Ministry of Industry and Trade requested UNIDO to study the situation and propose a solution for modern cogeneration plant and a biogas power plant in this plant. During June 2011, UNIDO conducted a feasibility study for a modern cogeneration plant in the sugar factory and a biogas plant in the ethanol factory.

The factory has a small cogeneration unit, which has been designed and implemented to provide steam and electricity requirements of the sugar factory. It was found to be designed at low efficiency for the maximum utilization of bagasse in the boiler. After the initial study, was strongly recommended to implement a modern sugar cogeneration plant for 4 MW capacity to ensure financial benefits to the entire sugar business of the Zanzibar Sugar factory. Also it was concluded that the factory has a potential to establish a 400 kW biogas plant from the wastewater derived from the sugar factory and the ethanol processing plant.

In the absence of GEF intervention, the Zanzibar Sugar Factory and Ethanol Factory will not dare to invest in high efficiency cogeneration plant and biogas plant, as it does not have enough technical competency and not confident of success of the project. The factory would continue investments in its usual inefficient and unprofitable activities.

National Ranching Company (NARCO)

As mentioned earlier, UNIDO also conducted a due-diligence study on selected agro-industries during July 2011. This study reported on the potential energy generation capacity at potential sites.

One among the sites was, National Ranching Company (NARCO),which has eight (8) existing core ranches comprising an area of 230,384 hectares, with nearly 45,000 heads of cattle, 3,025 sheep and 2,000 goats. Although NARCO ranches have the total capacity of 92,500 animals. The study showed that NARCO has a power plant potential of around 800 kW, based on biogas technology.

Without the GEF intervention, NARCO will continue its ranch activities without any significant difference. The ranch wastes would not be put to appropriate use like generation of electricity captive use and grid export, which will be a new revenue generation for the company. The biogas generation from animal wastes and electricity generation from biogas for its own use and then exporting the excess to the grid would be an intangible task for NARCO, as it does not have enough technical knowledge, skill and confidence in the success of the technology. If at all, NARCO would have invested in diesel generator to supplement its shortfall of electricity.

Mohammed Enterprises Tanzania Limited (METL) Sisal Estates

The due-diligence study also included the Mohammed Enterprises Tanzania Limited (METL) Sisal Estates. In general, Sisal processing discards about 96% of biomass as waste materials. These wastes are mostly disposed of by burning or dumping on site. Hence, the factories and farms are posing environmental hazards and contributing to GHG emissions.

The Sisal leaf decortication wastes can be used for methane production and subsequent electricity generation. It was found that, although the biogas production is limited by fibrous nature of waste and high C:N ratio, the biogas yield from decortications waste can be improved by waste pre-treatment by fungi. It was found that with the biogas generate from wastes of various METL Sisal estates, around 570 kW of electricity can be generated and put to use.

Estate name	Raw sisal processed per month (tons)	Waste generated per month (tons)	Power generation capacity (kW)
Mazinde	4,680	4,319	226
Mjesani	2,340	2,174	114
Hassani	2,340	2,174	114
Husseni	2,340	2,174	114
TOTAL	**11,700**	**10,841**	**567**

The electricity load includes factory operations, social services, health facility, schools, staff houses and water pumping near the estates. If electricity is not generated from the proposed biogas, then it would be from the diesel generators that are being used in the site.

If there is no GEF intervention and this project, METL would have invested in the diesel generator for its electricity requirements. The Sisal wastes would continue to be dumped or burnt on-site without any economical usage.

TANGA Fresh

There are around 200 to 400 heads of dairy cattle at the Tanga Fresh Hale farm. Normally, the dairy wastes are not properly utilized and hence, cause odour, waste disposal problems and other related environmental issues. It was estimated that, around 250kW_e electricity can be generated by properly collecting and digesting the dairy animal wastes along with the dairy plant wastewater. In addition to electricity, around 100 kW_{th} of thermal energy can also be supplied to the factory to meet its heat energy requirements.

In the absence of GEF intervention, TANGA Fresh would have invested in the diesel generator for its electricity requirements and would have continued with LPG for thermal energy requirements. The wastes would not be properly disposed of and would have continued to pose environmental problems.

For all the above proposed demonstration plants, GEF support would be required in the form of technical and financial assistance. This initiative is essential to build confidence among the project developers on the technology and success of the project.

At present, WTE technologies are at a very rudimentary level of penetration in Tanzania. Though there are potential to establish such WTE projects in Tanzania, they are not being established due to the following barriers:

- Insufficient public awareness and participation through experience sharing
- Inadequate knowledge, technology and skill available for implementing WTE based energy generation systems
- Inadequate financing / private sector investment in WTE
- Improper planning in providing financial incentives and lack of fund / finance facility
- Inadequate realization and utilization of initiatives and policies from Government Ministries
- Inadequate information on potential WTE plants
- Inadequate technical capacity in data collection
- Lack of quality feasibility studies/project designs in the area of waste to energy for decision making
- Inadequate demonstration projects for technology penetration
- Inadequate local technical capacity for sustainable operation and maintenance

The above barriers can be overcome by proper planning of the project and through GEF intervention. Without GEF intervention, the barriers will continue to exist, where, the present scenario of poor waste management in agro-industries without appropriate usage will continue with little or no significant improvement.

B.2. Incremental /Additional cost reasoning: describe the incremental (GEF Trust Fund/NPIF) or additional (LDCF/SCCF) activities requested for GEF/LDCF/SCCF/NPIF financing and the associated global environmental benefits (GEF Trust Fund/NPIF) or associated adaptation benefits (LDCF/SCCF) to be delivered by the project:

The project

This project aims at promoting WTE application in agro-industries. The proposed intervention will enable agro- industries to utilise the wastes produced in their facilities to generate energy, which will offset the GHG emissions. Biomass and biogas technologies will be considered as per requirement. The proposed project will have the following 4 components:

Project Component 1: Capacity development and knowledge management

Awareness will be created on potential usage of waste-to-energy technologies in agro-industries through trainings. Information dissemination will be a major activity in this component.

Under this component, the project aims at delivering the following outputs:

a) An Information and learning centre for WTE projects will be established at University of Dar es Salaam (UDSM). This centre will have all data base and information required for developing WTE projects. It will also provide necessary trainings to various stakeholders of projects such as project developers, financial institutions, technology developers, suppliers including end users as per their level and requirements. The staff of the UDSM will be engaged for this purpose. Hence there will be no additional expenses for staff employment. Prior to their responsibility under this centre, the staff will be trained on operation and management of the information and learning centre. Necessary training material for different recipients will be prepared. Available guidebooks on biomass and biogas technologies and power plant development will be customised for adapting to the local conditions. This will benefit the potential investors. Any information regarding WTE projects can be obtained from this centre. The above arrangement will ensure the sustainability of the proposed activities in capacity development.

b) Capacity will be developed among policy makers. Even when best initiatives are taken by the industrialists, the projects fail due to non-existence of supportive policies. Hence, it is essential to educate the policy makers as well (at least 15 personnel), because, they the key people who would be able to promote the WTE projects through further improvement of supportive polices and regulatory environment. Without appropriate supporting policy and regulatory environment no technology promotion can be achieved at any point of time.

c) The key decision makers from different RE/technical institutions and interested project developers (at least 60 numbers in total) will be trained and equipped with necessary technical capacity for supporting, developing and implementing such projects. Around 30 personnel from banks, financial institutions and funding agencies will be trained in assessing the WTE projects.

   Only when the industries are educated on the WTE technologies (30 personnel), they will be able to take initiatives in their own industries for such technologies. Specific trainings aimed at agro-industries will also be conducted.

   In addition, trainings for various target groups such as local engineering and O&M companies will be developed and provided (at least 40 personnel) to facilitate sustainable operation of the demonstration and replication projects.

   It has to be noted that all capacity building activities will be carried out at UDSM information/learning centre. Therefore, from this component, local human and institutional capacities in biomass and biogas will be developed. From the outcome of this project component, it is expected that an enabling environment for the implementation and replication of similar commercial WTE projects will be created and the following barriers are removed:

- Insufficient public awareness and participation through experience sharing
- Inadequate knowledge, technology and skill available for implementing WTE based energy generation systems
- Inadequate technical capacity in data collection
- Inadequate local technical capacity for sustainable operation and maintenance

<u>Project Component 2: Creation of financing facility</u>

As of now, the level of investments in WTE projects is very low. One major reason is the lack of specific financing mechanism that encourages investments. Hence, under this project, a financing

mechanism will be initiated and managed by REA.

Under this component, the project aims to deliver the following outputs:

a) A revolving fund will be established at REA for supporting investments in WTE projects. This fund will be used to provide soft loans for WTE projects in agro-industries at preferred interest rates. Commercial banks and financial institutions will be involved in this to facilitate WTE projects. Some of the potential banks that may participate in the establishment and management of the revolving fund include National Bank of Commerce (NBC), CRDB Bank PLC and Tanzania Investment Bank (TIB).

   REA, along with the involvement of suitable financing institution can become competent enough to manage the revolving fund. REA has experience in operating similar revolving fund with the help of World Bank[14]. In the proposed project also, out of the specified financing institutions/banks, appropriate one will be identified and the exact details on the revolving fund, modalities and procedures etc. will be worked out in detail during PPG stage. Based on the all these information, a mechanism will be established under REA. The relationships and the roles of the various partners of the revolving fund will also be finalized during the PPG state. Around 0.3 million of the GEF grant will used to facilitate and create the modalities and facilities of the financing mechanism.

b) After the successful creation of the mechanism, the revolving fund would be in place and would function to support WTE investment.

In addition to the co-financing resource, around 1 million of GEF grant will be allocated to this component and will be used as the capital seeding for the revolving fund and will help in the earlier creation and implementation of the fund. Hence, the GEF grant will be utilised for emission reduction through the replication projects also. Hence, this would provide the maximum benefit of carbon dioxide reduction per USD spent by GEF for this project.

In addition to the co-financing REA is bringing under this component (approximately 7.4 Million USD), it will also replenish the fund with co-financing sources available to them.This will ensure that the funding flow into the mechanism will continue even after this project's completion allowing for future WTE investments.

All efforts will be made to utilise the revolving fund for the demonstration projects. As a result of this component, it is expected that the following barriers will be addressed:

- Inadequate financing / private sector investment in WTE
- Improper planning in providing financial incentives and lack of fund / finance facility
- Inadequate realization and utilization of initiatives and policies from Government Ministries

Project Component 3: Demonstration of viability of WTE technologies

a) Under this component, detailed technical plant design reports will be prepared for the proposed demonstration projects for which detailed feasibility studies have been undertaken during the PPG stage. During the PPG stage, the following information will be established:

- Practical power plant installed capacity;

[14] http://wbcarbonfinance.org/Router.cfm?Page=Projport&ProjID=65756)

- Techno-economic feasibility (viability) of the plants;
- Detailed baseline assessment;
- Global environmental benefits;
- Potential for replication.

b) Demonstration projects for a cumulative capacity of around 6.0 MWe based on biomass and biogas technologies will be established with private sector investments in agro-industries. The list of proposed demonstration sites, their estimated capacity and the technology to be used are given in the following table:

S. No.	Name of the industry (co-financiers)	Technology	Tentative capacity(kW)
1.	NARCO	Biogas	800
2.	METL[15]	Biogas	570
3.	Zanzibar Sugar Factory	Cogeneration	4,000
4.	Zanzibar Ethanol Factory	Biogas	400
5.	Tanga Fresh Dairy	Biogas	250
		Total	**6,020**
6.	Tanga Fresh Dairy	Biogas (thermal)	100[16]

The efficient biogas and gas engine technology are not available in Tanzania. They have to be imported. Similarly for the sugar factory, efficient cogeneration system is not locally available and has to be imported. Hence, as a result of the demonstration projects, there will be technology transfer to Tanzania.

S. No.	Name of the industry	End-user of electricity
1.	NARCO	Own power requirements and the surrounding village communities/ local establishments. Excess power export to grid
2.	METL[17]	Own power requirements and the surrounding village communities/ local establishments
3.	Zanzibar Sugar Factory	Own power use. Excess power export to grid
4.	Zanzibar Ethanol Factory	Own power use. Excess power export to grid
5.	Tanga Fresh Dairy	Own power use, Grid export and replacement of LPG

[15] Combined capacity for group of biogas plants at 4 sisal factories of METL group
[16] In addition to the biogas power plant, biogas will be used to replace LPG in the dairy at a capacity of around 100 kW_{th}
[17] Combined capacity for group of 4 sisal factories

Efforts will be made during the PPG stage to find additional demonstration capacity and investment opportunities for replication. These demonstration plants will meet the electricity needs of the agro-industries apart from supplying electricity to the surrounding communities and to the grid. GEF grant will be used for technical assistance and to provide incentive towards equipment purchase within the limits set by the principles of incremental cost.

Baseline of the demonstration projects

S. No.	Name of the industry	Baseline		
		Waste	**Electricity**	**Thermal**
1.	NARCO (cow dung)	Unused	Grid/Diesel	Not Applicable
2.	METL (sisal waste)	Unused	Grid/Diesel	Not Applicable
3.	Zanzibar Sugar Factory (bagasse)	Used in the existing plant inefficiently	From own cogeneration plant	Not Applicable
4.	Zanzibar Sugar Factory (waste water)	Effluent not managed properly	Not Applicable	Not Applicable
5.	Tanga Fresh Dairy (cow dung)	Unused	Grid/Diesel	LPG

Grid electricity is highly unreliable and most of the time, these industries run on diesel generators.

The expected outputs and outcomes of this component will mitigate the following barriers:

- Inadequate financing / private sector investment in WTE
- Inadequate technical capacity in data collection
- Lack of quality feasibility studies/project designs in the area of waste to energy for decision making
- Inadequate demonstration projects for technology penetration
- Inadequate local technical capacity for sustainable operation and maintenance

Project Component 4: M & E

The project will be subjected to mid-term and final evaluations. A mid-term M & E will be conducted and corrective actions will be taken. An independent final evaluation will be conducted three months prior to the terminal review meeting. The final evaluation will look at the impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefit goals. The final evaluation will also provide recommendations for follow-up activities.

The incrementality of the project:

The following table shows the scenario before and after the project:

Scenario before the project	Scenario after the project
Low human and institutional capacity on biomass and biogas technologies	Improved human and institutional capacity
No information/learning centre for WTE technologies	Information/learning centre on WTE technologies created at University of Dar es Salaam (UDSM)
Low or no use of both solid and liquid wastes generated in agro- industries	Waste will be used to generate energy to the tune of 6.02 MW added capacity
No appropriate management on waste disposal and hence costing the environment	Waste management integrated in the power generation using the agro-waste
Low level of confidence in WTE (biomass and biogas) investments	Improved investor confidence in WTE projects
Usage of diesel for electricity needs	Replace the use of diesel and it is expected that 6.0 MW demonstration project will reduce the diesel usage of approximately 14 million litres/year.
Usage of LPG for thermal energy needs	Approximately 38,000 kg of LPG is replaced by biogas (in Tanga fresh dairy plant)
30 MW of electricity based on fossil fuel	Replication projects for a cumulative capacity of 30 MW through similar WTE projects. It replaces the usage of diesel by approximately 70 million litres/year

The above table clearly shows the incrementality of the project. This incrementality can be practically realized to the fullest extent only with the GEF-UNIDO intervention. In the absence of GEF project, the existing scenario would have improved to the smallest extent which may have included a few WTE projects. But these efforts without any proper planning for sustainability and replicablity would not have a impact similar to that of the proposed GEF project.

During the implementation stage, GEF grant will contribute towards the incremental costs in order to facilitate rapid adoption of WTE technologies. Thus, the proposed demonstration projects are designed not only to demonstrate the viability of WTE technologies, but also to provide a framework for replication in other parts of Tanzania.

Global environmental benefits

The proposed intervention will reduce considerable amount of CO_2 emission, which otherwise would have resulted from the use of diesel stand-alone generators, LPG gas and fossil fuel based grid electricity, as is currently the case in agro-industries of Tanzania. In addition, this project has large replication potential in Tanzania

Direct benefits are from the implementation of demonstration projects for approximately 6.0 MW cumulative installed capacities. Indirect benefits are from the contribution of the project towards the market transformation as well as replication. In addition, the project aid in capacity building,

institutional strengthening, technology adaptation and creating enabling environment for the investments.

Various study reports have concluded that Tanzania has the power capacity for cogeneration of more than 200 MW from sugarcane residues (bagasse) in the four sugar factories of Mtibwa, Kilombero, Kagera and Tanzania Planting Corporation (TPC)[18]. Also it has been reported that there is a potential of implementing biogas plants of up to 1 MW capacity in all the sisal estates in Tanzania where, currently there is scope to build 42 of them[19].

Rice is the second largest food grain product in Tanzania and its processing is a significant agro-industry subsector (1,341,846 tons produced annually). The volume of rice husk in the region is 335,461 tons per year[20]. With this given amount of waste, power plants for a cumulative capacity of 45 MW can be installed[21].

Timber processing is a significant industry in Tanzania, with 22,026,415 tons of timber being processed each year and is widely distributed across the country. Wood processing produces on average of about 25% bio-waste, in the form of bark, sap and sawdust[22].With this given amount of waste, power plants for a cumulative capacity of 50 MW[23] can be established. Other potential includes biogas plants in dairy and abattoirs and biomass power plants in tobacco industries.

Based on the above information, it is conservatively assumed that at least 30 MW of WTE based power plants will be replicated in agro-industries available all over the country over a period of 10 years after the project. This will reduce the CO_2 emissions considerably and improve the energy supply situation in Tanzania.

Baseline for all the demonstration projects:

- For electricity : Diesel generator is taken as the baseline (emission factor of 0.8 t CO_2/MWh is considered)[24]
- For thermal energy in Tanga Fresh Dairy: LPG is taken as the baseline (emission factor of 2.626 t CO_2e/ton LPG burnt is considered)[25]
- Although the cogeneration plant has a lifetime of more than 20 years, conservatively it is taken at 15 years for consistency with the other demonstration projects

[18]An assessment of future emissions growth and low carbon reduction potential, December 2010 for UK Department of International Development

[19]http://www.katanitz.com/Sisal%20Energy.html

20 Carbon footprint reduction opportunities for the agro-processing industries of Tanzania, "A Guidebook for use by the Agro-processing industries of Tanzania", UNIDO, 2011

[21] Assuming a power plant operating hours 8,000 hours

22 Carbon footprint reduction opportunities for the agro-processing industries of Tanzania, "A Guidebook for use by the Agro-processing industries of Tanzania", UNIDO, 2011

[23] Assuming a power plant operating hours 8,000 hours

[24]http://cdm.unfccc.int/filestorage/J/4/K/J4KQUT5LBO0P8YNHMFW7GZS3REVX6D/EB67_repan18_Revision%20of%20AMS-I.A_ver15.0.pdf?t=MDV8bThqMW5mfDCkZgVG_HCqDtFbiujgQDx4

[25]Tanga fresh dairy, "Biogas fuel substitution feasibility study", March 2011 (page no: 30)

S. No.	Name of the industry	Type of plant	Demonstration Capacity	Operating hours	Parasitic load including other losses	Annual electricity generation (MWh/year)	Annual CO_2e reduction[26]
1.	NARCO	Biogas engine	800 kW	7,500	15%	4,080	3,264
2.	METL	Biogas engine	570 kW	7,500	15%	2,907	2,326
3.	Zanzibar Sugar Factory[27]	Cogen plant	4,000 kW	7,920	12%	21,315	17,052
4.	Zanzibar Ethanol Factory	Biogas engine	400 kW	7,520	15%	2,040	1,632
5.	Tango Fresh Dairy	Biogas engine	250 kW	7,500	15%	1,275	1,020
6.	Tanga Fresh Dairy	Biogas	100 kW_{th}	7,500	-	-	100
		Total				**31,617**	**25,394**

WTE based electricity system (6.02 MW) and the thermal system at Tanga fresh dairy will reduce a cumulative of 380,910 t CO_2directly and 1,904,550 t CO_2indirectly throughout the project lifetime of 15 years.These initial estimates will be refined during the PPG phase.Since the project involves revolving fund, it will also lead to direct post-project benefits. These benefits will be studied in detail during the PPG phase.

Incremental cost benefits

The following table shows the incremental cost for each demonstration plants[28].

[26] A plant load factor of 80% is taken for all demonstration projects
[27] Considering milling (240 days) and off-season (90 days) and deducting sugar factory consumption of 1.2 MW
[28] For project activity technology and capacity, please refer the earlier table

S. No.	Name of the industry	Type of the demonstration plant	Capacity of the demonstration plant	Baseline	Baseline capacity	Baseline investment (USD)	Project investment (USD)[29]	Incremental cost (USD)
1.	NARCO	Biogas power plant	800 kW	Diesel	800 kW	1,200,000	4,000,000	2,800,000
2.	METL	Biogas power plant	570 kW	Diesel	570 kW	700,000	2,000,000	1,300,000
3.	Zanzibar Sugar Mill	Modern cogeneration plant	4,000 kW	Old cogeneration plant	1,000 kW	1,250,000	8,912,000	7,032,000
4.	Zanzibar ethanol factory	Biogas power plant	400 kW	Diesel	400 kW	600,000	1,440,000	737,000
5.	Tanga fresh dairy	Biogas power plant	250 kW	Diesel	250 kW	700,000	3,500,000	2,800,000
6.	Tango fresh dairy	LPG replacement in boilers	100 kW_{th}	LPG	100 kW_{th}			
					Total	**4,450,000**	**19,852,000**	**14,669,000**

Out of the above incremental cost, GEF bears a cost of USD 3,308,150 which is only about 22.5 % of the total estimated incremental cost. Also, 1 million will be used in the revolving fund for replication projects. It has to be noted that the proposed demonstration projects include different type of baseline including:

- Diesel generators
- LPG usage for thermal needs
- Old cogeneration plant

The total GEF resources of 5.28 million, used to mitigate CO_2 emission at a cost of USD 13.9/tCO_2directly and around USD 2.78/t CO_2indirectly.

Cost effectiveness

The project activities are complementary to the business-as-usual scenario prevailing in Tanzania. Without GEF funding, there would be very little or no progress in the activities to support RE, creating human and institutional capacity. The major aim of the project is to increase WTE based electricity generation.

Since there is no grid-base power in rural Tanzania, the demonstration projects under the proposed GEF project will utilize the available bio-waste resources. Hence, this would be the most cost

[29]Approximate values. To be confirmed during feasibility studies in PPG stage.

effective solution for generating RE electricity in agro-industries.

The project is a cost effective intervention due to the expected CO_2 emission reduction potential from the enhanced use of RE. For a GEF contribution of around US$ 5.28 million, this project will directly result in approximately 6.0 MW electricity generation from waste directly. Indirectly, it will result in 30 MW electricity generation thus making it a highly effective GEF intervention.

B.3. Describe the socioeconomic 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/NPIF) or adaptation benefits (LDCF/SCCF). As a background information, read Mainstreaming Gender at the "EF.":

The project will provide considerable economic benefits to various beneficiaries both at national and the local level. It will also support in achieving the environmental benefits at the local, national and global level.

Socioeconomic benefits at national level

Through this GEF project, the use of diesel based systems for electricity generation will be considerably reduced. This will ensure the reduction of import of diesel and savings in foreign exchange for the country. Hence, the level of the vulnerability to the fluctuation of the global oil price is also reduced.

Improved electricity supply will improve the productivity and profitability of the industries in addition to social benefits such as increased health services in hospitals, education services in schools, reading conditions for the students during the night at home, reduce health hazards particularly to children and women.

The GEF project scenario will contribute to a cumulative emission reduction of about 380,910 t CO_2e over a lifetime of 15 years.

Socioeconomic benefits at local level

The local benefits of this project includes: (1) access to clean and reliable energy for the industries and population around them; (2) improved waste management leading to better environment for the agro-industries and nearby community; (3) additional income to the agro-industries through sale of electricity and savings from reduced use of diesel.Improved electricity availability will improve the living quality, health and education of the nearby community to the power plant sites.

Local and national environmental benefits

In the absence of the WTE based electricity generation, the industries will continue to pollute its surroundings with the wastes it generates and use diesel generators emitting GHGs. The operation of existing diesel generators results in emission of hazardous smoke which impairs the human health.

Due to increased availability of electricity, the use of kerosene, candles or other polluting fuels are considerably reduced. In the national level, the equivalent amount of GHG is mitigated. Benefits on the global environment due to this project, is already detailed in the section B.2.

Gender Benefits

Improved electricity situation will improve the health services in hospitals, education services in schools, children's study performance, reading conditions for the students during the night at home, reduce health hazards (especially eye problem) particularly to children and women who otherwise will spend many hours in poor quality lighting while doing domestic activities in the night.

Enrolment of girl students in schools will be significantly increased by way of electrification in schools, public streets along with the households as a result of increased electricity availability. Increased economic opportunities for women in the home and the village are perceived to be an outcome of electrification. It will address their labour-saving and human energy needs, such as drinking water pumping, food processing such as grain grinding and transport.

B.4 Indicate risks, including climate change risks that might prevent the project objectives from being achieved, and if possible, propose measures that address these risks to be further developed during the project design:

Component	Risk	Proposed Mitigation Measure	Risk Level
Technical risks	WTE technologies are relatively new in the country and there is lack of technical expertise for development and implementation of such projects.	Detailed techno-economic feasibility studies will be carried out. The technical personnel in the industries will be trained on deployment of RE in industrial settings. Capacity of the government officials and relevant institutions will be built.	Moderate
Market risks	No off-takers for the generated electricity.	The demand supply gap is very high in rural Tanzania.	Low
Financing risks	General perception that investments in WTE technology based plants does not provide enough (high) returns and hence the investors are not willing to invest.	Revolving fund will be established at REA for supporting WTE financing investments. Partnerships will be developed among commercial banks, investors and financial institutions. Increased awareness, knowledge and experiences created by successful operation of the demonstration plants is expected to enhance the stakeholders' participation.	Moderate

Component	Risk	Proposed Mitigation Measure	Risk Level
Sustainability risk	Application of WTE technologies in agro-industries might be halted by the shortage of inputs.	The installations will be done only after a proper resource assessment study is done in order to ensure the supply of wastes from agro-industries.	Low
	Lack of human capacity to operate the demonstration projects.	All the demonstration projects O&M staffs will be trained by the respective suppliers. Moreover, under the project, there will be several trainings on successful operation and maintenance of biomass and biogas projects. In addition to this, an information/learning centre will be established for continuous capacity building activities. All these would sustain the objectives of the proposed project.	Low
Implementation risk	Failure to implement the project.	The project will be implemented in close cooperation with in-country project partners, stakeholders and developers. Agreed and transparent modus operandi will be defined before the start of the project implementation. UNIDO have enough experience to mitigate this risk.	Low
Operation risk	Demonstration plants face operational problem due to lack of training to the operators.	Capacity building at all levels is included in the project which will mitigate this risk.	Low
Co-financing risk	Co-financing not being committed by the co-financiers.	Letter of commitment will be obtained from the co-financiers to ensure their financing for the project.	Moderate

B.5. Identify key stakeholders involved in the project including the private sector, civil society organizations, local and indigenous communities, and their respective roles, as applicable:

The project will involve different stakeholders in the energy sector including the government and private organizations. The roles and responsibilities of each stakeholder is given below:

No.	Stakeholders	Roles and responsibilities
1.	MEM	• Project execution
2.	REA	• Support implementation of WTE technologies in agro-industries

		• Creation and management of revolving fund • Project execution
3.	UDSM	• Establishment and operation of the information/learning centre • Responsible for capacity building activities
4.	NARCO	• Full cooperation in undertaking technical studies and in investments for the demonstrations • Participation as trainee in capacity building and training activities • Participation as trainee in capacity building and training activities
5.	METL	• Full cooperation in undertaking technical studies and in investments for the demonstrations • Participation as trainee in capacity building and training activities • Establishment of the demonstration projects in their facilities.
6.	Zanzibar sugar factory	• Establishment of cogeneration plant and biogas plant • Full cooperation in undertaking technical studies and in investments for the demonstrations • Participation as trainee in capacity building and training activities
7.	Tanga fresh dairy	• Establishment of a demonstration project in their facility. • Full cooperation in undertaking technical studies and in investments for the demonstration • Participation as trainee in capacity building and training activities
8.	Financing institutions which may include National Bank of Commerce (NBC), CRDB Bank PLC and Tanzania Investment Bank (TIB)	• Lending for WTE investments • Operation and management of REA's revolving fund
9.	Local people & village communities where the demo sites will be installed (Dodoma, Tanga, Kilimanjaro, Zanzibar)	• Labour force in the project • Consultation for background biomass/biogas resource information • End user of the electricity

B.6. Outline the coordination with other related initiatives:

The project will supplement the efforts of other projects to achieve the global GHG emission reduction. The proposed project will facilitate the wide uptake of the clean energy in the agricultural sector to help in reduction of GHG emissions in the country as a part of large country efforts in mitigating the anticipated climate change impacts.

The project will also supplement NAPA implemented with UNEP in collaboration with the Vice president's office (VPO), Division of Environment aimed at developing a country-wide

programme of immediate and urgent project based adaptation activities that address the current and anticipated adverse effects of CC, including extreme events.

There are three GEF funded projects that are being implemented by UNIDO, UNDP and WB, respectively, with which the proposed project is complementary and with which the coordination and synergies will be sought. They are: (1) Mini-grids based on small hydropower sources to augment rural electrification in Tanzania (2011-2015) being implemented by UNIDO in cooperation with MEM, REA and TANESCO aims at promoting micro / mini hydropower based mini-grids in Tanzania to augment rural electrification. (2) transformation of the rural photovoltaic (PV) market (2004-2009), being implemented by UNDP in cooperation with the Ministry of Energy and Minerals, aims at reducing Tanzania's energy-related CO_2 emissions by introducing solar PV electricity as a substitute for kerosene used for lighting in off-grid rural areas and at slowing down the rate of additional diesel-based captive generation or grid extension schemes to the non-electrified areas. (3) "Energy Development and Access Expansion in Tanzania", implemented by WB, aims at improving the quality and efficiency of the electricity service provision and at establishing a sustainable basis for access expansion. The UNDP has an on grid component, which supports TANESCO in expanding the grid (T&D, PV Market development and TA to REA). The WB project deals with off-grid investments especially in small power generation from small hydro, biomass and PV.

Discussions with the WB project team confirmed that the proposed UNIDO project will be strategic and will help develop WTE sector in Tanzania, which can then be scaled up by investments envisaged in the TEDAP (WB Project).

On policy/regulatory front, *Transformation of the rural PV market* project aimed at:

- Assisting the Government to design incentive packages for off grid electrification.
- Assisting the Government in finalising a Rural Energy Master Plan

Similarly, *TEDAP* project aimed at:

- Establishment of a functioning institutional and regulatory framework for commercially oriented, sustainable service delivery for rural electrification and renewable energy that can be scaled up

On a regional front, *Cogen for Africa* project aimed at:

- Increase awareness among senior decision makers of the potential benefits of advanced high-pressure cogeneration
- Lobby for explicitly policies that promote cogeneration
- Encourage the reduction of bureaucratic and non-coordinated procedures to obtain permits
- Formulate and lobby for clear, transparent and explicit regulations related to interconnection to the grid and rural electrification
- Support the establishing of dedicated regional and national institutions providing information and services for new and highly efficient cogeneration

In addition to the above GEF projects, the project would synergize its efforts with other UNIDO projects also. Under the main project for "Product and Market Development for Sisal and Henequen", UNIDO has been working with various stakeholders including Common Fund for Commodities (CFC) and Food & Agricultural Organization (FAO) and at Tanzania Sisal Board, Ministry of Agriculture and Food Security, Ministry of Industry, Trade and Marketing and few other private companies.

The project will supplement the efforts of these projects to achieve the global GHG emission reduction.

C. Describe the GEF agency's comparative advantage to implement this project:

The project is a technical assistance/capacity development intervention that fits within the Climate Change focal area strategic objective 3. The GEF Council paper "Comparative Advantages of the GEF Agencies" (GEF/C.31/5rev.1)[30] recognizes a comparative advantage of UNIDO in this strategic programme.

C.1 Indicate the co-financing amount the GEF agency is bringing to the project:

UNIDO: US$ 80,000 (US$ 60,000 grant and US$ 20,00 in-kind)

C.2 How does the project fit into the GEF agency's program (reflected in documents such as UNDAF, CAS, etc.) and staff capacity in the country to follow up project implementation:

UNIDO's activities in Tanzania fall under three thematic priorities :(i) Poverty Reduction through Productive Activities; (ii) Trade Capacity Building and (iii) Energy and Environment.

Tanzania is one of the pilot countries implementing activities jointly with other UN agencies for the period from 2011 to 2015 for programme known as United Nations Development Assistance Programme (UNDAP).

Under UNDAP, the proposed project is reflected under the environment and climate change (CC) unit outcome(1) being that key Ministries, Departments and Agencies (MDAs) and Local Government Authorities (LGAs) integrate CC adaptation and mitigation in their strategies and plans. The output under this outcome is to create the national capacity and institutional framework for managing and addressing CC mitigation and adaptation. UNIDO's central actions include strengthening of national institutions and private sector capacity, as well as promoting the use of clean technologies for RE and energy efficiency(EE).

Outcome (2) foresees the enforcement of laws and regulations supporting the protection of ecosystem biodiversity and sustainable management of natural resources. The anticipated output is that the stakeholders including Vice President Office (VPO), the National Environmental Management Council (NEMC), related line ministries and Local Government Authorities (LGAs) improve their capacities in the enforcement of the protection of the environment and natural resources. UNIDO's key action under this outcome focuses on facilitating the wide-spread use and application of renewable technologies using indigenous resources.

The national development strategy, MKUKUTA, especially cluster I six goals, resonates with the main areas of UNIDO's focus in Integrated Programming, which supports policies with pilot interventions in agro-based industries.

The revised Integrated Programme UNIDO/MITM (2008-2010) prioritizes industry/SME support areas where UNIDO is the partner of choice in line with the MKUKUTA/MKUZA and Millennium Development Goal (MDG) targets and Joint Assistance Strategy for Tanzania (JAST) division of labour. Also, the reformulation team of UNIDO technical experts – Agro/food processing, Energy Efficiency and Quality and Standards, Private Sector

[30] http://www.thegef.org/gef/sites/thegef.org/files/documents/C.31.5%20Comparative%20advantages.pdf

Development – aims at supporting Tanzania line ministries of Industry, Trade, Agriculture and Energy and the private sector chambers and decentralized councils to define specific interventions for UNIDO support for the next cycle and resource requirements in terms of budget and sources of funding[31].

During the last decade, UNIDO, Tanzania has been implementing RE projects in the country for productive uses. Recently it started implementing the GEF-4 project "Mini-Grids Based on Small Hydropower Sources to Augment Rural Electrification".

This project will benefit from the some of the administration structures established for the UNIDO-GEF, other UNIDO projects and the above explained reformulation. As explained, UNIDO has substantial knowledge in project management and has established a good network with relevant stakeholders in the country.

The above explanations show that the project fits well within the GEF agency's programs and also that the UNIDO has enough staff capacity on the ground to follow up the project implementation.

Project implementation and execution structure will be as follows:

- UNIDO will take the responsibility of implementing the project, the delivery of the planned outputs and the achievement of the expected outcomes
- Project Management Unit (PMU) will be established within the REA
- The PMU will consist of a Project Manager (PM) and the Project Administrative Assistant (PAA)
- Project Steering Committee (PSC) will be established with balanced representation from key stakeholders
- The committee will be chaired by the GEF Focal point (Operations)

[31] http://www.unido.org/index.php?id=6454

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 Operational Focal Point endorsement letter(s) with this template. For SGP, use this OFP endorsement letter).

NAME	POSITION	MINISTRY	DATE*(MM/dd/yyyy)*
Dr. Julius Ningu	GEF Operational Focal Point	Vice President's Office P.O. Box 5380 Dar es Salaam	17 August 2012

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF/LDCF/SCCF/NPIF policies and procedures and meets the GEF/LDCF/SCCF/NPIF criteria for project identification and preparation.					
Agency Coordinator, Agency name	**Signature**	**DATE***(MM/dd/yyyy)*	**Project Contact Person**	**Telephone**	**Email Address**
Mr. Dmitri Piskounov, Managing Director, PTC UNIDO GEF Focal Point		19 September 2012	Jossy Thomas, Industrial Dev. Officer, Energy & Climate Change Branch, PTC UNIDO	+43 - 1 - 26026- 3727	j.thomas@unido.org