



PROJECT IDENTIFICATION FORM (PIF)¹

PROJECT TYPE: FULL SIZED PROJECT

TYPE OF TRUST FUND: GEF TRUST FUND

PART I: PROJECT IDENTIFICATION

Project Title:	Promoting Integrated Biomass and Small Hydro Solutions for Productive Uses in Cameroon.		
Country(ies):	Cameroon	GEF Project ID:	4785
GEF Agency(ies):	UNIDO	GEF Agency Project ID:	XXCMR11X01
Other Executing Partner(s):	Ministry of Energy and Water Resources (MINEE) Cameroon Rural Electrification Authority (AER)	Submission Date:	14 December 2011
		Resubmission Date:	5 April 2012
		Resubmission Date:	11 April 2012
GEF Focal Area (s):	Climate Change	Project Duration (Months)	48
Name of parent program (if applicable): ➤ For SFM/REDD+ <input type="checkbox"/>		Agency Fee (\$):	200,000

A. FOCAL AREA STRATEGY FRAMEWORK²:

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Indicative Grant Amount (\$)	Indicative Co-financing (\$)
CCM-3	Outcome 3.1: Favorable policy and regulatory environment created for renewable energy investments. Indicator 3.1: Extent to which RE policies and regulations are adopted and enforced	Output 3.1: Renewable energy policy and regulation in place	GEFTF	200,000	600,000
CCM-3	Outcome 3.2: Investment in renewable energy technologies increased Indicator 3.2: More investors investing in RE development	Output 3.2.1: Renewable energy capacity installed (3 MW of renewable energy capacity installed) Output 3.2.2: Electricity and heat produced from renewable sources (at least 15,750 MWh of electricity and 3,900 MWh of heat produced per year)	GEFTF	1,620,000	8,900,000
Sub-Total				1, 820,000	9,500,000
Project Management Cost ³			(select)	180,000	500,000
Total Project Cost				2,000,000	10,000,000

¹ It is very important to consult the PIF preparation guidelines when completing this template.

² Refer to the reference attached on the [Focal Area Results Framework](#) when filling up the table in item A.

³ 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.

B. PROJECT FRAMEWORK

Project Objective: To reduce GHG emissions through promotion of investments and a market in the scale up and replication of integrated renewable energy solutions for productive uses and industrial applications						
Project Component	Grant Type	Expected Outcomes	Expected Outputs	Trust Fund	Indicative Grant Amount (\$)	Indicative Co-financing (\$)
1. Strengthening the legal and regulatory framework for renewable energy	TA	1. A renewable energy policy and regulatory framework in place, supporting a vibrant renewable energy sector with enhanced private sector confidence and participation in renewable energy generation	1. 1 Renewable energy policy and regulatory framework enforced 1.2. Special window for renewable energy under CREF established and operational.	GEFTF	200,000	600,000
2. Mechanisms to promote and sustain private sector investments in renewable energy generation	TA	2. Investment mechanism strengthened to support a viable renewable energy generation market 2.2 National institutions and key private sector market players have the financial and technical capacities, tools and support base needed to effectively promote and sustain a renewable energy market	2.1 Guidelines, best practices, investment incentives, standardised PPAs, tariffs, pricing mechanisms, risk management instruments and viable renewable energy generation business models developed 2.2 Training programmes implemented to strengthen the capacity of local banks and institutions in project finance and risk management instruments for renewable energy projects 2.3 Renewable energy investment fora held to sensitise investors and promote investor confidence 2.4 Targeted technical capacity developed for the design, operation and maintenance of integrated renewable energy systems 2.5 An investment	GEFTF	400,000	1,000,000

			guide/toolkit on renewable energy investment potential in Cameroon published to support investors and project developers. 2.6. A special window dealing with renewable energy established within CREF.				
3. Demonstration of the technical and commercial viability of integrated renewable energy mini grids	INV	3.1 Renewable energy mini grids are replicated and become an integral part of Cameroon's electrification programme 3.2 Installed capacity of renewable energy systems increased,	3. 1. Two to three integrated electricity mini grids of a combined capacity of up to 3 MW and optimising local renewable energy resources installed and operated to demonstrate the technical and commercial viability of renewable energy systems 3.2 Project resulting at least 15,750 MWh of electricity, 3,900 MWh of heat, at least 17,400 tons of CO ₂ a year of avoided direct GHG emissions and also existing and new productive uses identified and value chains promoted	GEFTF	1,120,000	7,800,000	
4. Monitoring and evaluation	TA	4. 1 Project deliverables are tracked and achieved 4.2 Best practices learned for future Replication and Scaling up of projects	4. 1 Demonstration projects monitored throughout project cycle and independently evaluated 4.2 Lessons learned are disseminated nationwide to relevant stakeholders to benefit further	GEFTF	100,000	100,000	
Sub-Total						1,820,000	9,500,000
Project Management Cost ⁴					(select)	180,000	500,000
Total Project Costs						2,000,000	10,000,000

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

⁴ Same as footnote #3.

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Amount (\$)
GEF Agency	UNIDO	Grant	60,000
GEF Agency	UNIDO	In- kind	240,000
National Government ⁵	Government of Cameroon	Soft Loan	5,100,000
National Government	Government of Cameroon	In- kind	300,000
Private Sector ⁶	Various private sector investors	Hard Loan	4,300,000
Total Co-financing			10,000,000

D. GEF/LDCF/SCCF/NPIF RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY¹

GEF Agency	Type of Trust Fund	Focal Area	Country Name/Global	Grant Amount (a)	Agency Fee (b) ²	Total c=a+b
UNIDO	GEFTF	(select)	Climate Change	2,000,000	200,000	2,200,000
Total Grant Resources				2,000,000	200,000	2,200,000

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.

⁵ Ministry of Energy and Water Resources (MINEE), Ministry of Environment and Nature Protection (MINEP).

⁶ Earlier indication on co-financing is from Ecological Research as Educational Network (EREN), EED (church from Germany), ADEID, Electricity Development Corporation (EDC), AES SONEL, ECOBANK, EBID, AFDB.

PART II: PROJECT JUSTIFICATION

A. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:

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

The project is fully consistent with the GEF Climate Change Focal Area Strategic Objective CCM-3, namely: "Promote investment in renewable energy technologies", with the consequence of greenhouse gas emissions reductions and promotion of a green development pathway in Cameroon. This is achieved through (i) a comprehensive review of existing energy policies and regulatory framework to identify the key elements constituting the barriers to a favourable environment for investments in renewable energy in the country, and consequently recommending for implementation the appropriate favorable policy and regulatory framework, (ii) design, installation, commissioning and transfer of commercially viable demonstration renewable energy mini grids, (iii) strengthening and/or establishing a special window for mobilizing Investment Fund and financing mechanisms for Renewable Energy and risk management instruments to encourage private sector participation and (iv) institutional strengthening and capacity development and toolkits to promote and sustain renewable energy based electricity mini grids in the country. Indirectly the project contributes to the GEF Biodiversity and Land Degradation programs through reduction of dependence on firewood as a primary energy source by promotion of access to modern energy forms in rural areas. This is particularly the case in existing off-grid agricultural areas where large quantities of wood fuel are being harvested to provide heat for drying and processing commodities such as cocoa, coffee, rice, timber and palm oil, thus increasing GHG emissions, posing a threat to natural habitats and sustainable land use.

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.:

The proposed project is fully consistent and well aligned with Cameroon's national development objectives, priorities, strategies and targets. The project was developed from the outcomes of the Cameroon GEF National Portfolio Formulation Exercise workshops and was validated and endorsed at the final workshop held in Yaounde in August 2011 as indicated in Cameroon's NPDF submitted to the GEF. Furthermore, Cameroon's first Poverty Reduction Strategy Paper (PRSP) in 2003 had weak implementation and impact, resulting in a new Growth and Employment Strategy Paper (GESP) document in 2009 as well as the national long term development goals (Cameroon Vision 2035). The National Energy Action Plan for Poverty Reduction (PANERP) launched in 2005 sets the framework vision and strategy for poverty reduction and achievement of the Millennium Development Goals in the country through access to energy. The PANERP has a number of key strategic areas which include capacity building (of public and private stakeholders in planning, management, operation and maintenance of energy systems), rural energy, better access to productive uses of energy and promotion of private sector investments in rural energy generation and supply. This was followed by the creation in 2009 of the Rural Energy Fund to help promote and increase rural electrification rate. All these key strategies and approaches highlight the importance of access to reliable modern energy forms for the economic development of the country. In this aspect renewable energy sources have a key role to play. Yet Cameroon to date has no renewable policy framework. Some of the country's planning tool documents such as the Rural Electrification Master Plan (PDER), the Electricity Sector Development Plan 2030 and the

Hydroelectric Potential Inventory of Cameroon are now old and need updating. To this effect, the government in January 2011 issued a tender call to update the Rural Electrification Master Plan.

In Cameroon's Initial National Communication (INC) to the UNFCCC promotion of renewable energy sources and energy generation from wastes are identified as some of the key strategic options for GHG emissions reduction. However, there is not yet a national renewable energy policy and framework dedicated to renewable energy generation and promotion. Furthermore, in Cameroon's National Biodiversity Strategy Action Plan, as well as its Fourth Communication to the CBD, fuel wood harvesting for energy is identified as a key threat to biodiversity conservation in the country.

B. PROJECT OVERVIEW:

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

The baseline project (business as usual)

The electricity sector in Cameroon:

Institutional, policy and regulatory framework:

The current government electricity supply target is 5,000MW and 6,000 MW by 2020 and 2035, respectively. In 2010 the demand was approximately 1,200 MW and is projected to exceed 5,400 MW by 2020. Therefore, even with the ambitious energy supply targets the government has set, the energy gap in Cameroon will continue to grow. Most of the existing energy generation capacity and targeted supply is from hydro sources mainly within the River Sanaga Basin which, like other water catchments in the region, is vulnerable to drought conditions, thus placing additional reliability burdens on Cameroon's energy security. The country therefore needs to diversify the national energy mix to ensure energy security and access.

To meet the above energy supply targets and diversification of the national energy mix requires a conducive and enabling environment provided by an appropriate policy and regulatory framework that can attract active private sector participation and substantial investments in energy generation. In this regard, the power sector in Cameroon was reformed by the Electricity Law of 1998 and the subsequent decree in 2000 creating an independent regulatory body (ARSEL) for the power sector and a rural electrification agency (AER). The AER, through the Cameroon Rural Energy Fund (CREF) and other financial sources funds rural electrification projects, while the Ministry of Energy and Water Resources is responsible for national energy policy and projects development.

The power sector reforms led to the privatisation of SONEL (the then state electricity monopoly) in 2001, which was acquired by AES Sirocco Ltd with a 56% majority share and the remaining ownership by mainly the GOC to form a new electricity company AES SONEL. The deal involved a 20-yr concession that granted energy generation, transmission and distribution monopoly to AES SONEL, with a generation capacity cap of 1,000 MW. In order to attract the investments needed to meet the terms of its concession and for the GOC to accelerate energy access and work towards meeting the growing energy demand, the concession was re-negotiated and amended in 2006. This allowed AES SONEL to attract investments to increase power generation capacity through new facilities as well as rehabilitation of existing ones and upgrading of the transmission grid system. The amended concession also allowed for the participation of independent power producers (IPPs) to generate additional power and supply to AES SONEL. A decree in 2006 also created the Cameroon Electricity Development Corporation (EDC), charged with the management of state assets in the power sector and the development of Cameroon's hydro power resources. The key players in the Cameroon power sector, therefore, are AES SONEL (responsible for power generation, transmission and distribution monopoly as well as projects investment), the

Ministry of Energy and Water Resources (in charge of energy policy and projects investment), the EDC (ownership of state power sector assets and development of hydro resources), ARSEL (power sector regulation) and AER (responsible for rural electrification).

Energy demand and supply:

Cameroon's average electrification rate is only 22%, with as low as 3.5% in some areas and up to 50% in urban areas. The current installed grid-connected capacity in the country is only 1,200 MW with the coming online in December 2011 of the four emergency thermal plants (Bamenda, Yaounde, Mbalmayo and Ebolowa) of combined installed capacity of 100 MW. The total installed capacity consists of 721 MW from hydro sources and 398 MW from thermal sources (diesel, heavy fossil fuel and gas). In 2010 the energy generation was only 3.9 TWh (AES SONEL, 2011), the majority of which was consumed by medium and high voltage customers. According to AES SONEL (2011) the transmission network consists of two main systems - the Northern Network and the Southern Grid with 480 km of 225 kV, 337 km of 110 kV, 1,067 km of 90 kV, 11,450 km of 5.5 to 33 kV and 11,158 km of 220 to 380 kV lines. For a country the size of Cameroon the grid length is such that most parts of the country are far off from the grid and have no access to electricity or depend on off-grid or self generation from fossil fuels. Off-grid generation consists of a number of mini grids powered by remote thermal plants with a combined installed capacity of approximately 24MW. According to a research paper published by Tamo, Kemajo and Diboma in 2010 in the journal *Energies*, Volume 3, self generation (from fossil fuels) in Cameroon has increased from 92 MW in 1997 to 160 MW in 2007 at a typical cost of USD0.9 per kWh compared with USD0.16 grid supply tariff. There is therefore an urgent need to promote the diffusion of renewable energy for remote mini grids and self generation.

AES SONEL's current concession is limited to mostly the urban and peri-urban areas with current connections of approximately 730,000 customers (AES SONEL, 2011). Although the company plans to add 60,000 connections each year, this is far short of what is required to address the energy access and poverty reduction agenda - particularly so in rural areas. Because of this energy supply gap and the low purchasing power of the majority of the population, firewood (often from trees and forests) remains the main source of energy for a large proportion of the population (both rural and urban). This is particularly the case in existing off-grid agricultural areas where large quantities of wood fuel are being harvested to provide heat for drying and processing commodities such as cocoa, coffee, rice, timber and palm oil fruits, thus increasing GHG emissions, posing a threat to natural habitats and sustainable land use. The opportunities for IPPs in Cameroon are therefore potentially enormous to fulfil the energy deficit in the country. IPPs are already actively participating in the Cameroon power sector as a result of the energy sector reforms between 1998 and 2006, but so far these actors are very few and limited to mainly affiliates or subsidiaries of AES SONEL and focus mainly of electricity generation from fossil fuels.

Despite the case for renewables and the significant changes arising from the energy sector reforms in Cameroon, there are still no specific reforms and policies relating to renewable energy sources and technologies in the country. Renewable energy sources have a key role to play in addressing the energy demand and generation challenges that Cameroon currently faces, as well as contributing to:

- (i) the energy security of the country through diversification of the national energy mix, since the current power supply is over reliant on fossil fuels (which are vulnerable to volatile oil and gas prices) and hydro sources (concentrated on the River Sanaga system) which are vulnerable to droughts,
- (ii) climate change mitigation through GHG emission reductions arising from displacement of diesel and heavy fossil fuel generators, and
- (iii) protection of ecosystems and reduction of land degradation through provision of

modern energy forms in rural areas where there is traditionally over dependence on firewood for energy.

While IPPs and investments are increasing in the Cameroon power sector in general, very little, if any, investments are into non-hydropower renewable energy sources. This has traditionally been the case in a number of developing countries, particularly in Sub-Saharan Africa, and acutely so in the case of Cameroon. This situation is not only owing to the fact that the country has no specific renewable energy policy, but is also a result of several barriers that must be addressed in order to create the enabling environment and market demonstration that will attract investments into these clean energy forms in the country. These barriers include, inter alia, lack of an enabling environment (policy, regulatory framework, pricing, incentives) to encourage private sector participation; relatively high upfront cost of conventional and some renewable energy technologies; poor infrastructure (grid) readiness to encourage private generation for grid connections; investor risk perceptions and lack of de-risking instruments and generation incentives; limited capacity and awareness at various levels to promote and support a renewable energy market; and financial access and services barriers owing to limited capacity to evaluate and fund renewable energy projects.

Recognising that energy is a critical input for its economic growth and sustainable development, and that the country cannot successfully develop its economy without access to reliable, secure and cost-effective energy supply and services, the Government of Cameroon (GOC) has given high priority to energy access in the country's Growth and Employment Strategy Paper (GESP). In the **baseline project**, as energy demand increases and the energy deficit widens, the GOC is promoting foreign investments in large hydropower systems for the long term, particularly with regards to development of the huge hydropower potential of the River Sanaga system. Such a strategy could be dangerous as it ties the long term energy security of the country to one river system. In the short and medium terms, the GOC's efforts in dealing with the energy deficit issue involve least cost emergency fossil fuel based thermal plants with a combined installed capacity of 100MW. These plants come by the end of 2011 at a total installation cost of approximately 120 million USD. This translates to an average installation cost of 1,200 USD per kW of installed power. Such solutions meet the urgent energy and economic development needs of the country, but are environmentally unsound when compared to renewable energy generation options which are more expensive and lack the institutional, policy, financial and technical support required to generate energy at cost comparable to fossil fuel options. Other relevant ongoing projects are (i) the joint European Union and CEMAC (economic and monetary union of central African states) intensive peri-urban electrification project (2008 -2013) aimed at adding 57,000 social connections to the national grid, (ii) the African Development Bank project (2010-2015) to strengthen and extend the electricity transmission and distribution networks in Cameroon, with the aim of reaching 423 new locations in eight of the ten regions in Cameroon, and (iii) the World Bank project (2008 – 2013) on Cameroon energy sector development. The later project focuses mainly on providing technical assistance for least cost large scale energy solutions for Cameroon (particularly large scale hydropower projects such as the Lom Pangar Hydropower Project - LPHP), water basin management, concession oversight and consumer protection, and development of the Rural Electrification Fund (REF) managed by Cameroon's Rural Electrification Agency. All these ongoing related projects have no specific focus on promoting renewable energy in the national mix. Indeed the World Bank project emphasises least cost solutions and the REF is also based mostly on least cost options for rural electrification.

The GEF alternative

The GEF project aims to provide technical and investment assistance to Cameroon in its efforts to address the energy deficit situation in the country through financing incremental costs associated the promotion of private sector participation in renewable energy generation in the

country. In this context GEF resources will be used to help remove the critical financial, policy, technical and institutional barriers to increasing the share of renewables in the national energy mix of Cameroon, thereby reducing dependence and proliferation of diesel and other fossil fuel electricity generation systems. GEF financing will catalyse investments and the promotion of a market sector in renewable energy in the country, and demonstrate the technical and financial viability of such systems through removal of risks, creation of a favourable policy and regulatory framework, and strengthening of RE financing to help sustain investments in replication and scale up of renewable energy generation in the country. Through GEF financing the incremental costs associated with the capacity building, financial instruments, policy and regulatory framework, technical and commercial required to promote and support private sector participation in the country. The demonstration projects will design, install and commission up to 3 MW capacity of integrated renewable energy based electricity mini grids that optimise a combination of local renewable energy resources and generation technologies to ensure secure energy supply, leading to over 150,000 tons of direct CO₂ emissions being avoided over the investment period of 10 years. These environmental benefits would not have been realised without GEF support. The catalytic effect of the GEF investments will transform the renewable energy sector in Cameroon, leading to the nationwide scale up of renewable energy mini grids with return on investment for the private sector.

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 proposed project with an existing infrastructure in the country and REF⁷ as a support mechanism developed by WB could deliver more with the GEF resources available and significantly benefit to replication of RE in the country. In addition, with GEF financing used for barrier removal, policy strengthening, demonstration and awareness about success, lessons and disseminations, investor confidence, partial financial risk covering for the investor in such demonstration projects will build the confidence among several stakeholders including private investors in the country. Thus there is a very valuable instrumentality of such initiatives supported by GEF funding for the project implementation.

In the baseline project the Government of Cameroon is using a least cost approach to tackle the growing energy demand in the country areas covered by the electricity grid as well as and poor energy access situation in rural areas. This is similarly to the situation with the many private generators in rural areas depending on diesel for electricity generation, while rural populations continue to depend more on wood fuel to meet their energy needs. The GEF project will use **GEF resources to finance incremental costs of demonstrating and promoting private sector investments in renewable energy generation as a financially viable and effective mechanism for tackling the energy deficit in Cameroon**, thereby displacing diesel and other fossil fuel generators, reducing pressure on land degradation arising from fuel wood harvesting and promoting clean energy for productive uses and energy access in Cameroon. The GEF project will complement these projects by, wherever feasible, “bolting on” renewable energy components. In particular, early discussions with the World Bank indicate a good opportunity for donor collaboration where the GEF project enables special financing window, that can certainly be structured and is possible under the set up of accounts of the REF, for a renewable energy projects in Cameroon. The GEF project, working with the REF could aim to target up to 50% of the funding for RE projects in rural areas.

Project screening manual, design booklet, survey and check list, managing guidelines,

⁷ REF should be understood as the running global mechanism to finance rural electrification. It is not a Fund

economics and financing guide and several other tools and mechanisms will be developed to ensure sustainable support for renewable energy development. Moreover, through the policy and regulation the special window for renewable energy activities in the country will be legalized. There will be a fee charged for the technical assistance in terms of renewable energy production and distribution design, operation, implementation and maintenance provided through this special window and this will make the window sustainable even after the GEF project completion.

Where the baseline project strengthens and extends the electricity transmission and distribution networks in Cameroon, the GEF project will aim to promote infrastructure readiness for renewable energy integration and catalyse new generation capacity into the grid. In decentralised areas where the baseline option is typically least cost thermal generation the GEF project will demonstrate and promote viable renewable energy options that build on value chains creation. The GOC currently has no targets and plans to address the key barriers that currently limit public and private sector investments in renewable energy in Cameroon. The GEF project aims to identify and remove these barriers, thereby resulting in a reduction in greenhouse gas emissions.

Proposed project will be developed with GEF funding and co-financing. Major co-financing is expected from GOC and private sector which will be used mainly for project demonstration. Government co-financing will be mostly associated with creating policy and awareness while the investors' responsibilities will concern project's on the ground implementation. Financial institutions will provide the financing in coordination with the Government and private sector on the investment part of the project. Details and confirmations will be explored during project preparation.

Additionally, through the proposed project and activities, NGOs already working in the country will be strengthened in effective use of human resources, local network and community mobilization aspects of RE sector development which will be incremental over their business.

This objectives of the GEF project will be achieved through four components of the project as follows:

Component I: Strengthening the legal and regulatory framework for renewable energy.

Under this component GEF resources (USD 200,000) will be used to provide technical assistance to the Government of Cameroon in developing its policy and regulatory framework for renewable energy. Such a policy will make use of lessons and experiences in the development of policies for renewable energy technologies in the region.

In the business as usual scenario the Government of Cameroon is making significant efforts to tackle the energy deficit and to address the severe problem of rural electrification, particularly with regards to rural areas. To this effect, least cost options based on fossil fuels are often adopted. While renewable energy provides the ideal low carbon solution for decentralised and rural electrification, Cameroon has no specific policy, plan or incentives to increase the renewable energy share of the national energy mix. Yet, Cameroon is well endowed with substantial energy resources ranging from fossil fuels through to renewables in (i) hydro power (second highest potential in Africa, after Democratic Republic of Congo, with raw and exploitable potentials of 294 TWh and 115 TWh, respectively), (ii) solar energy throughout the country (with an average insolation of 4 to 6 kWh per square metre per day), (iii) biomass and biomass residues (particularly in the forestry and agro processing sectors - timber, palm oil, coffee, sugar, cotton and rice processing), (iv) plants for bio fuels (including *Jatropha*), and (v) wind (particularly in the north) and geothermal energy resources (although these have not yet been comprehensively evaluated). These resources are variably distributed across the country, with some regions blessed with all forms of energy potential. Under this component of the GEF project the institutional structure of the electricity sector in the country will be evaluated and proposals made on key institutional issues relating to promotion of renewable energy

generation in the country. A **policy and regulatory framework including set up of the special RE funding window in the CREF and operational rules, the Cameroon Renewable Energy Directive, with quantified targets and timelines (supported by the investment incentives developed in Component II)**, for renewable energy generation in the country will help remove the critical barriers to exploiting the huge renewable energy potential of Cameroon. This will encourage private sector investments, and will raise awareness and reduce investor risk perception, thereby increasing the use of renewables in the electrification of Cameroon, while displacing otherwise fossil fuels based generation systems. The CREF's special window for RE will need long time to be fully operational but even though, the rules of operation of this mechanism defined under this component will be incorporated in the demonstration component to demonstrate their functionality. Thus, both government co-financing as well as GEF funding will be utilized accordingly to the principles of the new special window for RE

The proposed co-financing (to be confirmed with the Government of Cameroon at the PPG phase) will fund most of the activities here, while GEF funding will be used mainly for the incremental element to setting the above baseline renewable energy targets and policies.

This component will also target to ensure that decision-makers build the knowledge and infrastructure needed to promote and support renewable energy in a sustainable way.

Component II: Mechanism to promote and sustain private sector investments in renewable energy generation. Under this component GEF financing (USD 400,000) will be used to provide technical assistance and investment support to the Government of Cameroon to:

- (i) strengthen the capacity of local banks and institutions in project finance and risk management instruments for renewable energy projects;
- (ii) assist key institutions to evaluate the existing financial and investment environment in Cameroon and to develop and implement a package of investment incentives (including targeted capital, connections, output, operation subsidies, fiscal mechanisms), standardised PPAs, appropriate tariffs, pricing mechanisms and risk management instruments (such as loan guarantees), and viable renewable energy generation business models with attractive return on investment potential;
- (iii) provide targeted technical capacity in development of integrated renewable energy systems to help the private sector put in place sustainable business models for rural renewable energy;
- (iv) set up and run a number of renewable energy investment fora to sensitise investors and promote investor confidence; and
- (v) develop an investment guide/toolkit on renewable energy investment potential in Cameroon to support investors and project developers;
- (vi) establish a specific window in CREF dealing with renewable energy.

Under this component, and following initial enquiries with the World Bank, collaboration with the Bank and the Rural Electrification Agency (AER) a special RE funding window in the existing Cameroon Rural Electrification Fund⁸ (CREF) will be created and structured. The project will not allocate funds to CREF but only establish the window in the Fund for grants co-financing private sector investments in rural renewable energy development and thereby speed up the nationwide replication and scale up of investments in renewable energy generation in the country. This component of the project will also include a number of fora for investors and renewable energy project developers to sensitise key sector actors and help mobilise

⁸ CREF (Cameroon Rural Electrification Fund) is an option of the Global REF understood as a mechanism, and in that mechanism, CREF is a Fund. The CREF is in charge to insure sustainably rural energy projects and programs financing. It is a financial mechanism set in place to promote private – public partnership in the goal to attract private operators in the rural energy sector

additional investments. The fora will also inform the design of the proposed investment incentives and financial instruments proposed.

It is envisaged that under this component the GEF funding will fund preparation of the special renewable energy window of the CREF, while co-financing from the GOC and the World Bank (and possibly other bilateral and multilateral donors), to be confirmed at the PPG stage, will fund the financial mechanisms required for enhanced renewable energy targets of the CREF owing to the GEF project.

The final outcome of this component will be a consistent framework for integrated renewable energy systems development. It will be built on a package of investment incentives, specific window in the CREF for grants co-financing private sector investments in rural renewable energy development, and sustainable business models for rural renewable energy. In addition the framework will be supported by strengthened in RE human and institutional capacity in the country. This framework will afterwards serve the development of proposed demonstration activities.

Component III: Demonstration of the technical and financial viability integrated renewable energy systems: In this component GEF resources (USD 1,120,000) will be used to catalyse investments in integrated renewable energy mini grids through investment in two to three demonstration projects of a total installed capacity of 3 MW, resulting in over 150,000 tons of direct CO₂ emissions reduction. These demonstration projects will enhance investor confidence and provide on the job technical capacity development. In the business as usual scenario potential investors in off-grid or own generation would typically go for diesel generators as a least cost option. In the GEF project the incremental cost of promoting investment in renewable energy generation instead of diesel or other fossil fuel based generators is funded from GEF resources. The sites for the demonstration projects will be selected during the PPG but will focus on the cocoa and palm oil producing regions of the South West Province, the coffee producing areas of the Western Province, the timber processing areas of the South and Eastern provinces, and the rice producing areas of the North West Province. Linking the demonstration sites to substantive productive activities such as agroprocessing, accessing energy to SMEs and facilitating services helps in securing private sector interests while promoting sustainable development. Furthermore, such sites illustrate the tremendous value chains that could be realised from the clean energy provided. For example, in the Ndian Division the AES SONEL thermal mini grid for most of the year is not functional as the roads are impassable for tankers to deliver fuel for the generator. Yet there are so many agro processing activities including a substantial palm oil mill with the potential to provide all the electricity needs of the region from energy generation using its biomass residues. At present such residues are reused in the plantations and the excess burned in open air. In the Western Bakossi area where most of Cameroon's cocoa is produced, there is very little access to electricity or heat except from fuel wood. Farmers depend on cutting large quantities of wood (in habitats that should be protected) for drying their cocoa. The smoke from the burning wood reduces the quality of the cocoa. Yet these areas have substantial quantities of biomass residue resources, very high potentials for small hydro and solar energy. Therefore, demonstrating an integrated renewable energy based mini grid that produces both electricity and heat at such sites would reduce GHG emissions, land degradation while increasing the productive capacity and quality of the commodities involved. With many such regions in the country, it follows that successful demonstration of the technical and financial viability of such energy solutions has a very high potential for replication and scaling up nationwide.

All the demonstration projects will consist of integrated solutions that involve different renewable energy resources and technologies. Since the selected sites will normally support productive activities in agro processing, it follows that the projects will all involve combined heat and power generation (producing electricity and heat from combustion or gasification of agro residues), and/or small hydropower electricity generation depending of the renewable

energy resources of the project locality.

As the outputs of Component II aim to remove the financial investment barriers to renewable energy generation by private sector players, and given that the demonstration projects will be commercially viable and supported by appropriate business models, the co-financing for these component will come from private sector investors. A number of SMEs have expressed interest in becoming project developers if appropriate instruments could overcome their equity barriers. GEF resources will fund the incremental cost (or parts thereof) of promoting renewable energy options over baseline least cost options. Furthermore, the GOC (and possibly other bilateral and multilateral donors) could provide co-financing for mini grid infrastructure setup while private sector developer invest their resources directly into renewable energy generation and supply to the mini grid.

Component IV: Monitoring and evaluation . Under this component GEF resources (USD 100,000) will be used to fund the incremental cost of monitoring and independently evaluating the demonstration projects as well as the other project components to ensure that global environmental benefit objectives of the project are met, and that lessons learned are disseminated nationwide to relevant stakeholders to inform replication plans and strategies.

Global environmental benefits will be achieved through sustained reduction of direct and indirect GHG emissions arising from the project and its impacts. The installed demonstration capacity will result in the avoidance of at least 150,000 tons of direct GHG emissions. Further, due to UNIDO intervention to target 50% of REF total allocation (USD 40,000,000) for the development of renewable energy sector, approximately 9 MW of RE total capacity is expected to be installed resulting in over 450,000 tons of indirect CO₂ emission reduction assuming a replication factor of 3 and an investment period of 10 years

Together with the financial mechanism, institutional and capacity strengthening, and the policy regulatory framework arising from the project, the replication potential of the GEF project is very high. Furthermore, the indirect reduction of GHG emissions resulting from avoided deforestation and open burning of biomass residues will also increase the global environmental benefits of the project. Detailed assessments of the emissions reductions and cost effectiveness of the global environmental benefits of the GEF project will be provided at the PPG stage.

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 GEF.](#)":

The rising demand in electricity means that Cameroon suffers from inadequate generation capacity and frequent load shedding, limited electrification, low power consumption, unreliable services and high energy costs. Recurrent power cuts, often unplanned, cause disruptions in economic activity, losses in production and damage to vital machinery and equipment. In most situations, factories and productive activities are forced to resort to expensive and environmentally unsound diesel backup generation. The impact of this chronic energy challenge falls heavily on rural populations and the productive sector which is dominated by SMEs. Yet, this sector is crucial in providing the economic environment necessary for economic growth and poverty reduction. The GEF project will catalyse investments in the productive sector and promote SME awareness of value chains linked to renewable energy generation, particularly with regards to the agro processing sectors, while helping SME and investors to realise the economic opportunities associated with renewable energy generation and energy services in an enabled environment and market sector. At the local level the proposed GEF project will bring a

number of socio-economic benefits such as jobs creation, modern energy forms and services for access and productive uses, thus improving the quality of life for local populations. Women and children who traditionally bear disproportionately the burden of lack of access to energy will especially benefit from the project. Due to access to modern energy services the toxic indoor pollution and fire hazards caused by traditional use of biomass for cooking and lighting will be reduced. Subsequently the women and children will not have to spend their time looking for and fetching firewood. Moreover, the children's studying conditions will improve through sustainable lighting. At the national level the project implementation will give rise to an enabling environment that helps to attract investments to meet the energy supply gap, thus ensuring energy access and security and improvement on the country's productive capacity and GDP output. Globally the project implementation will give rise to a reduction of 150,000 tons of direct and 450,000 tons of indirect GHG emissions (assuming an investment period of 10 years, a replication factor of 3 and an aggregate capacity factor of 65%). Hence, the project will contribute to climate change mitigation. Furthermore, the project will result in the reduction of deforestation owing to clean energy provision displacing wood fuel and diesel for own generation, remote mini grids, and drying and processing in the production of cocoa, coffee, palm oil, rice and timber. Nationally and at the local level the project will demonstrate energy value chains in the agro processing sector and therefore help to promote productivity and competitiveness of enterprises in that sector.

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	Some renewable energy technologies (e.g. gasification) may not be technically/economically viable for electricity generation.	The project focuses on locally relevant and matured technologies with a proven track record in other projects and countries with similar conditions.	Low
Economic and financial risks	Financial/credit constraints and high capital costs that prevent the private sector from investing in renewable energy projects.	The renewable energy project focuses on productive uses where there are real economic benefits and value chains to encourage private sector participation. Selected demonstration projects will be validated at a workshop involving all key stakeholders, including financial service providers in order to ensure buy-in by stakeholders and promotion of a transparent and systematic framework for project development and delivery. This will ensure that pilot projects have investors for replication and scale-up opportunities identified in the early stages of the project.	Medium
Market and financial	Lack of post project market environment to	The project involves working with the government and financial	Medium

sustainability risks	attract growth in renewable energy generation replication and scale up of investments	<p>institutions in the early stages to help promote the development of the enabling policy and regulatory framework to encourage private sector investments in RE.</p> <p>The Cameroon Rural Electrification Fund(CREF) created by WB and managed through Rural Electrification Agency is not specifically targeting development of renewables. Hence within the CREF, a special window could be established with the help of government and partners to accelerate the RE expansion. That would strengthen CREF working for electrification in general with one additional specialised window to support RE sector in the country.</p> <p>This will help to ensure funds available or mechanism to receive benefit and funding beyond the GEF funded project . Also, the project will help to build expertise of project developers in designing and structuring bankable renewable energy projects that together with the impact of the policy and regulatory framework should help to ensure a good degree of post GEF project replication and scale up of renewable energy generation investments.</p>	
Climate change risks	Climate change effects such as droughts and floods could impact the viability and technical operability of the pilot and replication and scale-up projects	Projects will be designed with climate change adaptation in mind. Small hydropower projects are normally designed for low flows whilst the infrastructure is designed to withstand severe storms and flooding; biomass projects are designed to focus on waste residues and, where relevant, sustainable forest management.	Low

Environmental risk	Project implementation could result in environmental impacts such as habitat impact, water basin hydrological as well as land use changes and conflict in demand for natural resources. Where biomass residues from plantation scale agricultural activities is involved there is the long term risk of plantation operators expanding plantation acreage to enhance production, thus possibly competing with land for food and other uses.	The project focuses on using renewable resources and/or waste residues that do not involve negative impacts on the environment or competition with food resources. The use of sustainability criteria will be made an integral part of every biomass based project approval process. Promoting value chains as a component of the project enhances revenue streams for the same or reduced environmental footprint and acts as a catalyst to discourage and prevent unsustainable land use practices. Biomass projects will ensure reduced pollution, and emissions will be monitored accordingly. Where projects are located in protected areas, coordination with the appropriate departments and used of environmental safeguards approach of the GEF will ensure sustainable project development and implementation.	Low
Regulatory and political risk	Proposed regulatory framework is not enacted; changes in government.	Development of transparent tariffs and project implementation involving all stakeholders at the early stages of the project will help to mitigate against this. Elections were held in Cameroon in October 2011 resulting in the re-election of the incumbent government for a term of seven years. Therefore no significant government policy changes are expected over the life time of the project design and implementation.	Low
Over all Sustainability	Sustainability is critical issue for such project, specially when implemented in remote rural communities	To assure sustainability of the project several factors such as capacity, technological factors, market linkage, paying and revolving funds, socio-environmental as well as ecological factors need proper attention.	Medium

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's key stakeholders are the Ministry of Energy and Water Resources (MINEE) for

funding and institutional coordination of demonstration projects, and policy and regulatory framework; Ministry of Environment and Nature Protection (MINEP) for GEF coordination, the Rural Electrification Agency (AER) for administrating funding of rural energy projects; AES SONEL as the main utility company and possible financing; the Electricity Development Corporation (EDC) for funding and infrastructure development; the Cameroon Electricity Sector Regulation Agency (ARSEL) for policy and regulatory framework and possible funding; national, regional and multilateral development banks for funding and operationalisation of the financial mechanism (the Rural Electrification Fund created by the World Bank and the Government of Cameroon in 2009, but yet to be fully operationalised); private sector companies (including members of GICAM, the association of Cameroon industries) for project development and financing; the Ministry of Industries, Mines and Technological Development (MINIMIDT); Ministry of Economy, Planning and Regional Development (MINEPAT) and various other ministries for funding; Civil Society Organisations (such as ADEIDD, , Halleson Dureel Nzene (Global Village Cameroon, Cameroon), Envangelischer Entwicklungsdienst (EED) and CDCV) universities, and research institutions for for community participation, awareness promotion, capacity development and knowledge management. As a recipient or final beneficiary of the project, local and indigeneous people involvement in the project from the beginning is most important. The project will involve them from the conception of the project, different level of study and discussion, decision making, their views on different aspects like equity, risk, adverse effect, settlements and similar others need to be considered seriously and transparently. Also their capacity enhancement interms of project acceptance, participation, sustainably running and managing the system is very important. These issues need clear strategy how the project is conceptualize till handover and even post completion. These will be explored during project preparartion.

The project will be delivered through guidance of High Level Steering and Technical Committees, with participation from various key stakeholders. It is envisaged that the Steering Committee will be chaired by MINEE. However, details of stakeholders and their detailed specific roles and linkages will be established during the PPG stage. UNIDO will be responsible for overall management of the project, particularly through the national office.

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

The project will synergise and build from lessons learned from ongoing related projects such as (i) the joint European Union and CEMAC (economic and monetary union of central African states) intensive peri-urban electrification project (2008 -2013) aimed at adding 57,000 social connections to the national grid, (ii) the African Development Bank project (2010-2015) to strengthen and extend the electricity transmission and distribution networks in Cameroon, with the aim of reaching 423 new locations in eight of the ten regions in Cameroon, and (iii) the World Bank project (2008 – 2013) on Cameroon energy sector development. The later project focuses mainly on providing technical assistance for least cost large scale energy solutions for Cameroon (particularly large scale hydropower projects such as the Lom Pangar Hydropower Project - LPHP), water basin management, concession oversight and consumer protection, and development of the Rural Electrification Fund (REF) to be managed by Cameroon's Rural Electrification Agency. All these ongoing related projects have no specific focus on promoting renewable energy in the national mix. Indeed the World Bank project emphasises least cost solutions and the REF is also based on least cost options for rural electrification, although the REF in its present form aims to target 20% of the funding to renewable energy projects in rural areas. The proposed GEF project will complement and supplement these projects by, wherever feasible, “bolting on” renewable energy components. In particular, early discussions with the World Bank indicate a good opportunity for donor collaboration where the GEF project enables special financing window, for a renewable energy projects in Cameroon.

There are various Reducing Emissions from Deforestation and Degradation (REDD) projects in Cameroon. The proposed project will liaise with these projects in ensuring that protected land issues are addressed and in helping provide alternative renewable energy based solutions where protected land areas are threatened by lack of access to energy. In this context the project will also synergise with upcoming projects such as the UNEP's GEF-4 project on biodiversity and protected areas in the country.

C. DESCRIBE THE GEF AGENCY'S COMPARATIVE ADVANTAGE TO IMPLEMENT THIS PROJECT:

The proposed project is fully consistent with GEF Climate Change Focal Area strategic objective CCM-3, i.e., promotion of investment in renewable energy technologies. The GEF Council document The GEF Council document GEF/C.31/5, Comparative Advantages of the GEF Agencies (2007), recognizes UNIDO's comparative advantage as: *UNIDO's comparative advantage for the GEF is that it can involve the industrial sector in GEF projects in the following areas: industrial energy efficiency, renewable energy services, water management, chemicals management (including POP and ODS), and biotechnology. UNIDO also has extensive knowledge of small and medium enterprises (SME's) in developing and transition economy countries.* The project focuses on promoting the wide scale uptake of renewable energy generation in Cameroon for energy access and productive uses. UNIDO's mandate covers three priority areas, namely: (i) poverty reduction through productive activities, (ii) trade capacity building, and (iii) environment and energy. UNIDO is therefore especially well placed to implement this project, given its extensive experience and expertise in renewable energy projects, a well established cooperation with key stakeholders and its high standards of fiduciary responsibility.

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

Of the total co-financing for the project, UNIDO is proposing to provide USD 300,000 from its own resources as co-financing to the project (USD 60,000 USD in cash and USD 240,000 in kind. This co-finance will be used to support the monitoring and evaluation of the project, project management and technical assistance components

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:

The 2008 – 2012 UNDAF for Cameroon was developed to achieve five development priorities based on the 2004-2007 National Poverty Reduction Strategy. Following the Cameroon Growth and Employment Strategy Paper (GESP) published in 2009, the UNDAF was revised in 2010 and now focus on three priorities, namely: (i) assistance for strong sustainable growth and poverty alleviation, (ii) fostering of employment and social protection, and (iii) administration and the strategic management of the State. The UNDAF is designed to help the country move closer to achieving the MDGs.

The World Bank's CAS (2010 – 2013) for Cameroon is aligned with the GESP focuses on catalysing equitable growth with two strategic themes, namely: (i) increasing Cameroon's competitiveness, and (ii) improving service delivery. In the context of improving competitiveness the CAS focuses on (i) increased infrastructure investment in the energy, transport, and telecommunications sectors; (ii) ensuring the transparent equitable, and sustainable use of natural resources; and (iii) promotion of high potential value chains and improved business climate.

The proposed GEF project fully aligns with, and supports both the UNDAF and CAS for Cameroon through promoting investments in sustainable energy value chains from renewable



resources, while contributing to addressing the energy deficit in Cameroon. UNIDO identifies with the Cameroon UNDAF and CAS priorities and has the experience of designing and implementing renewable energy projects that support low carbon industrial development and promote productive uses of energy. Furthermore, UNIDO is Chair of UN Energy (a mechanism to promote coherence within the United Nations family of organizations in the energy field and to develop increased collective engagement between the United Nations and other key external stakeholders) and Co-Chair of the UN Secretary General's High Level Group on Sustainable Energy for All. Given the underling importance of access to clean and reliable energy, the proposed GEF project in Cameroon will therefore support all the UNDAF and CAS development priorities directly or indirectly. UNIDO has a strong and active office based in Yaounde (and covering the Central Africa Countries) with the capacity and experience to supervise and follow up project implementation in the country.

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)
Mr. Justin Nantchou	GEF Operational Focal Point	MINISTRY OF ENVIRONMENT AND PROTECTION OF NATURE	01/09/2012

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, Programme Development and Technical Cooperation Division, UNIDO, GEF Focal Point		December 15, 2011	Rana Singh, Industrial Development Officer, PTC/ECC 	+43-1-26026-6419	R.P.Singh@unido.org