



PROJECT IDENTIFICATION FORM (PIF)¹

PROJECT TYPE: Full-sized Project

TYPE OF TRUST FUND: GEF Trust Fund

PART I: PROJECT IDENTIFICATION

Project Title:	Renewable Energy for Rural Livelihood (RERL)		
Country(ies):	Nepal	GEF Project ID: ²	4345
GEF Agency(ies):	UNDP (select) (select)	GEF Agency Project ID:	4522
Other Executing Partner(s):	Alternative Energy Promotion Centre (AEPC), Nepal	Submission Date:	2010-08-30
		Re-submission Date:	2011-09-09
		2 nd Re-submission Date:	28 November 2011
		3 rd Resubmission Date:	08 December 2011
GEF Focal Area (s):	Climate Change	Project Duration (Months)	60
Name of parent program (if applicable):	N/A	Agency Fee (\$):	300,000
<ul style="list-style-type: none"> For SFM/REDD+ <input type="checkbox"/> 			

A. FOCAL AREA STRATEGY FRAMEWORK³:

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Indicative Grant Amount (\$)	Indicative Co-financing (\$)
CCM-3	-Favorable policy and regulatory environment created for renewable energy investments	-Renewable energy investment policy and regulation in place	GEFTF	500,000	1,000,000
CCM-3	-Investment in renewable energy technologies increased	-Renewable energy capacity installed	GEFTF	2,360,000	12,986,000
Sub-Total				2,860,000	13,986,000
Project Management Cost ⁴			GEFTF	140,000	600,000
Total Project Cost				3,000,000	14,586,000

B. PROJECT FRAMEWORK

Project Objective: Removal of barriers to increased utilization of renewable energy resources in rural Nepal in order to support economic, environmental and social development of people in the rural areas and to reduce GHG emissions						
Project Component	Grant Type	Expected Outcomes	Expected Outputs	Trust Fund	Indicative Grant Amount (\$)	Indicative Co-financing (\$)
1. Enhancement of RE investment environment	TA	Strengthened legal, institutional and policy environment to support RE and other low-carbon technology development & utilization	-Prepared, approved and enforced institutional and legal frameworks for the promotion of investments in RE and other low-carbon technologies, reflecting changes in the governing structure of Nepal (which is going towards a federal structure); -Prepared and approved integrated district RE development plans; -Completed RE resource assessments (serving as inputs to the integrated district renewable energy development plans);	GEFTF	400,000	900,000

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.

			-Documented and disseminated technical assessments of available RE systems (including costs and benefit) and best practice examples;			
2. RE investments	Inv	Increased investments in RE	<p>-Additional total installed capacity of 2 MW off-grid micro-hydro power plants and a total installed capacity of 0.5 MW solar power systems per year (over 5 year period – total 12.5 MW);</p> <p>-Completed demonstrations of RE systems using PPP models to facilitate cooperation between the private and public sector as well as local organizations (2 selected micro-hydro projects, in total 1 MW);</p> <p>-Completed demonstration to establish a mini-grid connecting various micro-hydro systems from the same stream (total 100 kW)</p>	GEFTF	960,000	6,900,000 + 786,000 = 7,686,000
3A. RE technology and project financing enhancement	Inv	Improved availability of financial investment support for rural RE and other low-carbon technology applications	<p>-Established capital fund in one of the financing institutions;</p> <p>-Established RE guarantee fund or seed capital provision;</p> <p>-Developed tailor-made financial services based on CleanStart methodology for financing clean energy access, including loan-products in (micro-) finance institutions for several RE applications (micro-hydro, solar, improved watermills and other low-carbon technologies.);</p> <p>-Established RE loan portfolio in local (micro-) finance institutions;</p>	GEFTF	950,000	4,200,000
3B. RE technology and project financing enhancement	TA	Improved design and packaging of investment support mechanisms for rural RE and other low-carbon technology applications	<p>-Completed study on the most suitable design of a capital fund to provide soft loans to manufacturers of micro-hydro, solar PV and other low-carbon technology systems;</p> <p>-Completed study on the most suitable design of a guarantee fund/seed capital provision in one of the central financing institutions to enhance accessibility to loans for RE and low-carbon technology systems;</p> <p>-Completed study on alternative collaterals (e.g. micro hydro/solar/ equipment or the project itself);</p> <p>-Established and operationalized new innovative mechanisms for repayments</p>	GEFTF	250,000	700,000

			<p>of microfinance loans, e.g. mobile banking, satellite office, etc. (Outreach expansion);</p> <p>-Established network between energy companies/RE system distributors and finance institutions;</p> <p>-Prepared and approved framework and enforced implementation guidelines for PPP models including possible revenues sharing schemes;</p>			
4. Human Capacity Development	TA	Enhanced capacities and skills of various stakeholders involved in the RE sector	<p>-Completed training courses for relevant government agencies and stakeholders at central, district and village level on emerging (rural) RE policies and in the areas of integrated energy planning, energy cost comparisons, energy surveys and energy reporting and monitoring;</p> <p>-Completed trainings for enhancing capacities of manufacturers and installers to design, manufacture and install micro-hydro systems between 100 kW and 1 MW; and, solar PV systems up to 10 kW;</p> <p>-Completed training for survey and installation teams within companies to improve quality of installed micro-hydro plants;</p> <p>-Completed training courses on the operation and maintenance of RE based energy systems to the users;</p> <p>-Completed training courses for micro-finance institutions and commercial banks on financing RE and low-carbon applications;</p> <p>-Completed training courses to RE developers on financing opportunities and incentive schemes for RE projects;</p> <p>-Completed training courses for energy companies/distributors of RE applications on after sales services;</p>		300,000	500,000
			Sub-Total		2,860,000	13,986,000
			Project Management Cost ⁵	(select)	140,000	600,000
			Total Project Costs		3,000,000	14,586,000

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 (\$)
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⁵ This is the same as footnote #3.

National Government	National Government	Grant	786,000
National Government	AEPC (World Bank) **	Grant	8,000,000
GEF Agency	UNDP	Grant	3,000,000
National Government	AEPC	In-kind	500,000
Other Multilateral Agency (ies)	UNCDF/CleanStart and EAFS (micro-finance project)	In-kind	300,000
Private Sector	Local Organisations, private sector and NGOs*	Unknown at this stage	1,000,000
Others	Donors, bilateral development organisations, international and local financial institutions (e.g. DFID, SNV Netherlands Development Organisation, EU, etc.)	Unknown at this stage	1,000,000
Total Co-financing			14,586,000***

*The planned micro-hydro power systems and solar systems will be financed from different sources, including village development funds, district development funds, private sector contributions, NGO contributions, etc. Each system will receive funding from different sources as well. Based on expressions of interest by most of the potential co-financers, it is expected that at CEO endorsement co-financing letters for around US 1 million would have been secured. Further leveraged financing will be forthcoming during implementation of the project. Such leveraged financing will be monitored and reported in the annual APR/PIR reports.

** World Bank has provided AEPC with financial resources to be used as subsidies for micro-hydro systems under its village electrification programme.

*** GoN is currently in consultations with multilateral and bilateral partners to initiate the “Scaling-up of Renewable Energy Programme (SREP) targeting \$20 million and the “Rural and Renewable Energy Programme” (RREP) targeting \$150 million, respectively. Details will be available during PPG.

D. GEF/LDCF/SCCF RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY¹: N.A.

PART II: PROJECT JUSTIFICATION

A. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:

A.1.1 the [GEF focal area/LDCF/SCCF](#) strategies:

The project fits the objectives of the GEF’s strategic program on the “Promotion of investments in renewable energy technologies” (Strategic Objective 3), and will contribute to the reduction of GHG emissions through the application of renewable energy technologies, such as micro-hydro plants and solar systems.

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

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 project is in line with the national goal of the Government of Nepal regarding the development and utilization of the country’s renewable energy resources, which aims for at least 10% of the total energy consumption in the country is from renewable energy within 20 years. In addition, the target is for 30% of the population to be electrified through renewable energy applications by installing at least one renewable energy-based energy system in every household.

Likewise, the next three years-plan (2010 – 2013) focuses on electrification using renewable energy resources for an additional 7% of the population, by systems such as micro-hydro plants, solar home systems, solar pumps for drinking and irrigation, improved watermills, etc. The Government of Nepal (GoN) has estimated that around USD98 million will be required for alternative energy for its three-year plan. Out of this, 19% will be contributed from the GoN and 81% is expected to come from donors and development partners.

The proposed project is expected to make a significant contribution to the facilitation of the above mentioned objectives. In that regard, the proposed project is expected to contribute to the national priority on the promotion of investments on the use of renewable energy resources of the country, thereby contributing to reduction in GHG emissions. The proposed project itself will encourage and

enable the private sector investors to venture into the application of renewable energy technologies in Nepal.

B. PROJECT OVERVIEW:

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

Around 90 percent of the total energy consumption in Nepal is met by traditional energy sources like fuel wood, dung cakes and agricultural residues and the remaining 10% by commercial energy sources such as imported petroleum fuels and hydropower. Deforestation is a serious problem in the mountainous and hilly areas. Only 29% of the country remains currently forested, compared to 37% in 1990. The import of fossil fuels is sharply increasing over the years.

Situation Regarding Electricity Supply

After the installation of the first hydropower plant in Nepal in the 1920s, the development of new hydropower plants had progressed very slowly. Since the opening up of the market for foreign independent power producers in 1990, a total of 292 MW was installed. Currently, the total installed capacity of hydropower plants in Nepal is 563 MW. These hydropower plants are mainly catering to the electricity needs of the urban or semi-urban areas. In 2006, the armed conflict ended, but the political situation is still unstable. Some hydropower project developers decided to start their activities again, but the construction and commissioning of hydropower plants are very uncertain and subject to various delays due to the political situation. Many projects are either in their study phase, or the developers are in a wait-and-see mode.

With regards to non-grid micro hydro power plants, about 14 MW of community managed micro/mini hydropower plants have been installed for rural electrification. In addition, about 5 MW from solar home systems have also been installed, until the end of 2008. The government of Nepal is encouraging the installation of a considerably higher number of micro-hydropower plants in the coming years, but is facing several challenges, such as political instability, funding gap for installation of the plants and low capacities for private sector investments. Hence, delays are anticipated.

Although the armed conflict is over, political unrest and regular strikes are paralyzing large (energy) infrastructure developments. Various groups use investment project as political bargaining tools. Regular strikes delay the developments and sometimes groups completely block the developments. One of the underlying reasons for the opposition against large projects, for instance large hydropower plants, is that local citizens are often not involved in the planning and development of the projects and are not benefitting from them either. The large hydropower sector is not being targeted under this GEF supported project, as improved political stability is a prerequisite for progress.

Off Grid Electricity

The situation regarding systems providing off-grid electricity offers more opportunities for successful interventions which aim to increase the supply of clean energies in Nepal. In the remote areas of the country, where there is no grid connection, hydro-power and solar energy systems are considered as the most feasible solutions to provide electricity. The rural energy sector is less politicized and offers good opportunities for involvement of local communities and alleviating poverty.

The Government of Nepal has recognized micro-hydro development as a priority and is aiming to dramatically scale up the activities in expanding the micro-hydro capacity. The GoN recently announced plans to provide electricity access to every village in Nepal: “one micro-hydro plant (or renewable energy plant) in each village”. To achieve this ambitious target, various barriers need to be overcome, ranging from inadequate capacities within the private sector to manufacture and supply the required equipment to lack of access to finance, and inadequate policies and regulations to facilitate this. The government is strongly encouraging the private sector to facilitate the realization of this target. The Government of Nepal approved a Rural Energy Policy in November 2006 and is committed to implement this policy. Currently several interventions in the RE sector with assistance from donors are taking place. The AEPC plays a central role in this regard as it coordinates the interventions and several projects/programmes are under its management. These programmes are:

Energy Sector Assistance Programme (ESAP): Funded by Danida, Norwegian Embassy and Government of Nepal, this programme focuses on the promotion of more efficient biomass energy technologies for cooking and heating, solar home systems and mini and micro hydro power installations. The ESAP project is scheduled to end in early 2012.

Improved Watermill Programme (IWM): Funded by Netherlands Development Organization (SNV) and the Government of Nepal and implemented by the Centre for Rural Technology Nepal (CRT/N), it focuses on the improvement of the sustainability of the improved water mill sector through institutional and local capacity development. The project ended in 2010.

Renewable Energy Project (REP): A joint effort of the European Union and the Government of Nepal that focuses on institutional solar energy systems for public services (schools, hospitals, etc.), for pumping water (both for drinking and irrigation purposes) as well as for income generating activities. The project is scheduled to end in August 2011.

Rural Energy Development Programme (REDP): Supported by UNDP and World Bank, it focuses on local level capacity building to increase access to clean energy through community mobilization models. It works on community- managed mini and micro hydro, biogas, improved cook stoves and solar home systems. The project ended in early 2011.

Biogas Support Programme (BSP): Presently known as Biogas Sector Partnership – Nepal. It is supported by KfW, SNV and the Government of Nepal. It aims at the development of a sustainable domestic biogas sector in Nepal. Phase IV ended in mid-2010. Currently, BSP is looking for further support for expansion.

Specific Small Programmes: Besides the above large programmes, there are special smaller programmes of the Government, such as the Ujalo Nepal Programme (provision of RE in Rukum and other districts) and the Biofuel Project within AEPC.

Over the years all these programmes have tried out several concepts and achieved various successes such as: establishing technical quality standards for certain RE systems, setting up of a quality monitoring system and a system of pre-qualifying of manufacturing and installation companies. AEPC also has established a reward and punishment system for companies. In cases of serious defects of RE systems, companies could be disqualified and taken off the register.

The long term vision of the GoN, as stated in the current Three Year Plan of the Alternative Energy Sector (2010—2013), is that “by the next 20 years, the share of renewable energy in total energy supply of the country will reach 10 percent and almost 30 percent of the people in the country will have access to electricity from alternative energy sources”. To achieve this, there are many challenges including up scaling the current activities, replicating successful models and reaching more households. Most of the above projects/programmes are scheduled to end in 2011 or 2012 and rely heavily on donor support. For the future, AEPC would like to build on the successes achieved from these previous and ongoing initiatives, to promote the development of a more sustainable RE sector which is less dependent on donor support, with increasing private sector participation. Further harmonization of the various projects/programmes is envisaged.

In the current Three Year Plan of the Alternative Energy Sector (2010 – 2013), the GoN is aiming for an additional 7 percent of the total rural population to be provided access to electricity produced from alternative energy sources. This will have to be achieved via, amongst others, the installation of 15 MW of off-grid micro hydropower, 1 MW of wind power, and 90,000 household biogas plants, 4,500 improved watermills and more than 125,000 units of Solar PV home systems in the Hill districts of Nepal. The total budget required to realize all targets set in the 3-year plan is 7,107.7 million Rs (around \$US 98 million), 19% of the required budget (around US\$19 million) will come from the GoN, the remaining 81% (US\$79 million) will have to come from development partners.

Several barriers need to be addressed before the envisioned enhancement of energy access for the rural population can take place. The following are the main challenges and barriers that have been identified in the off-grid micro hydro and solar sector:

(1) Policy and regulatory barriers: Incomplete legal framework for government to promote investments in the renewable energy sector. In addition, Nepal is moving towards a federal structure in which district and village development committees and district and village environmental units will play a crucial role and where cooperation between Ministries is essential. However, this is not yet reflected in laws and regulations. These include: Incomplete regulations regarding RE (e.g. lack of implementation modalities, by-laws and guidelines related to the Rural Energy Policy and Smart Subsidy Policy; weak enforcement and knowledge of national RE policies and the Rural Energy Policy, in particular, at district and village level; lack of a government endorsed framework for PPP models in the RE sector (including revenue sharing models).

(2) Institutional (capacity) barriers: These include: Lack of experience with comprehensive

integrated energy planning processes at district and village level; inadequate capacity within district and local governments to promote, develop, implement and monitor RE projects; lack of a network between energy companies/distributors of RE systems and (micro-) finance institutions; limited sharing of best practices in RE amongst different stakeholders and projects/programmes; lack of harmonization/cooperation between different RE projects/programmes in Nepal.

(3) Financial barriers: High costs of RE systems; high dependency on donor funds; lack of knowledge of available financing/incentive schemes to finance RE technologies; lack of knowledge within (micro-) finance institutions on market opportunities in the RE sector and how to develop loan-products for the RE sector; risk aversion of financial institutions; insufficient capital within micro-finance institutions to finance RE applications; lack of knowledge on how to set up a framework for future carbon finance activities to create a sustainable financial environment; and limited availability of credit to user groups.

(4) Technical barriers: Lack of detailed information on the potential sites and feasibility of RE systems; limited experience with the technical, economic and environmental aspects of RE; lack of knowledge on the installation, management, operation and maintenance of RE systems; insufficient capacities of hydropower system manufacturers, installers and maintenance technicians regarding hydropower plants between 100 kW and 1 MW.

(5) Information and awareness barriers: Low level of awareness and lack of information on the costs and benefits of various RE systems; inadequate capacities to compare different RE options and to select the most feasible option for the local situation.

Baseline Project (Baseline Scenario)

Government has a goal of increasing the share of renewables from less than 1% to 10% of the total energy supply, and to increase the access to electricity from alternative energy sources from 10% to 30% within the next 20 years. Complementing these goals, the government envisages investments worth USD 1,076 million in renewable energy by 2020, which will include support for hydropower, solar PV and biogas technologies. GoN is aiming to realize 15 MW of off-grid micro hydropower and more than 125,000 solar home systems, beginning with the current three year plan for the Alternative Energy Sector (2010 – 2013). However, this can only be realized through support provided by both the GoN and development partners. In this regard, GoN is committed to contribute a 10% subsidy for all distributed microhydro and solar power systems and a 30% subsidy for household biogas systems. GoN will be drafting an AEPC Act in order to strengthen the Alternative Energy Promotion Centre (AEPC) and provide greater autonomy and resources in order to take the lead in the sector. With the approval of the AEPC Act, it is the plan of the GoN to converge all existing and future rural and renewable energy programmes and projects under AEPC which will be transformed into the Alternative Energy Promotion Board, responsible for all RE projects of up to 10MW in capacity.

In addition, the GoN is currently in consultations with the WB, ADB, Norway and the Netherlands for a “Scaling-up of Renewable Energy Programme (SREP), targeting \$20 million for micro-hydro, solar power and biogas systems, and a Rural and Renewable Energy Programme (RREP), targeting \$150 million from a number of bilateral partners (DANIDA, NORAD, DFID and KfW).

SREP will focus on leveraging complementary credit, grant and private sector equity co-financing for the scaling up of renewable energy technologies (RETs) in order to mainstream commercial lending through financial institutions for small hydropower development and other renewable energy projects. In addition, it will also focus on sustainable operations through technical assistance and capacity building.

RREP will focus on providing access to renewable energy services for people living in the rural areas and supporting income generating activities through the productive end uses of energy, targeting the promotion of business and livelihood development opportunities. RREP will have a special focus on gender and social inclusion (GSI) by mainstreaming GSI into all levels of the rural sector, stepping up implementation of proven energy technologies using biomass, solar and hydro. It is proposed that RREP will aim at full site potential exploitation for micro-hydro systems, based on careful analysis of the hydrology and possible design head. In addition to the social approach of community electrification, a business approach to use power profitably is being proposed. When feasible, grid connection and

partnerships with existing and prospective entrepreneurs are be encouraged.

Details for both SREP and RREP will become available during the PPG phase.

Alternative Scenario

The alternative scenario will build upon the baseline project activities, but focusing on demonstrations and private sector participation to provide the appropriate opportunity for the growth of RE and other low-carbon technology investments in Nepal. The activities aimed at strengthening the policy framework and guidelines will focus on creating an enabling environment for RE/low carbon technology investments by involving all relevant stakeholders and creating a sustainable framework for implementation and enforcement. Activities such as the preparation of district energy plans will be expanded and carried out in more districts to generate more opportunities (and, the necessary critical mass) for the growth of public-private partnership models in RE service delivery. Furthermore, in the alternative scenario, a more coordinated approach to bring together financial resources from various sources into a single sector wide facility (for both energy projects and consumers) will be developed and implemented. In addition to support from development partners, this will include increased involvement of local banks in providing loans to smaller off-grid hydro power systems (under the business as usual scenario, loans from Clean Energy Development Bank [CEDB] and other banks are only provided to large hydropower plants and not to smaller RE plants), generating income from carbon finance and increasing access to micro-credits for RE systems (building upon the ongoing EAFS/UNCDF project aimed at expanding access to micro-credits in rural areas, which is however not targeting RE systems in the baseline). In this way, the sector will become enabled to increasingly becoming less dependent on donor support. In addition, persistent barriers for larger micro-hydro systems between 100 kW and 1 MW will be addressed and PPP models will be realized. As part of the learning curve, about 30% of the investments required will be provided by subsidies, of which US\$ 8 million has already been secured via the World Bank and an additional 10% costs for each project, pledged by GoN. Other sources of finance will include the local government (village and district development committees), in-kind contributions from villagers, loans, grants from NGOs and investments from the private sector. For solar systems, sources of finance will include payments by users, contributions from NGOs, loans/micro-credits and subsidies.

The GoN proposed SREP and RREP programming is projected to be designed complementary to each other and build on the support of the GEF RERL project. Since these two programmes are still in preliminary stages, the PPG phase will provide the opportunity to define linkages, synergies and lines of complementary and implementation arrangements.

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

While there are large size hydroelectric power generation plants in Nepal, RE-based electricity generation have not yet widely been applied to serve rural areas in Nepal. About 73% of the people living in these areas currently have no access to electricity. Reasons for the low level of utilization of RETs are, amongst other, lack of awareness of renewable energy applications, lack of renewable energy investment policies and incentive schemes, lack of access to finance, incomplete policy frameworks and insufficient capacities to manufacture, install and maintain renewable energy systems. The GoN is initiating various activities to address these issues, as described in section B.1, (baseline project activities of the GoN). However, the barriers to creating RE/low carbon investment environment will be persistent. In order to enhance and expand the GoN efforts and with the GEF's interventions, this project will facilitate and promote the use of renewable energy and low-carbon technology options in rural Nepal. This support is sought to further enhance the baseline efforts of the GoN in promoting RE-based power generation, improving energy access through the provision of RE-based electricity in rural areas; and in removing the barriers to the widespread use of renewable energy technologies (RETs) for electricity generation. Without the GEF support, the potential significant global environmental benefits from the application of RET systems will not be realized. If left alone to its limited resources and capacity, the GoN would not be able to substantially remove the current barriers that hinder the growth of RETs. The

current practices of burning fuel wood and fossil fuels to meet energy needs will continue, resulting in GHG emissions and deforestation. The promotion of renewable energies in rural areas as an effective policy and institutional instrument for achieving the country's energy and poverty objectives would also be of limited success if the current barriers remain in place. In order to realize the GoN's objective of promoting RE-based power generation, improving energy access through the use of RE resources in rural areas, and to remove the barriers to RET applications, the proposed project will consist of the following components and activities:

Component 1: Enhancement of RE investment environment – This component will aim to strengthen legal, institutional and policy environment to support RE development & utilization in Nepal, including other low-carbon technologies. It will support and enhance the GoN's planned efforts in the baseline project as described in section B.1. The expected outputs will include the operationalization of adequate institutional and legal frameworks for the promotion of RE/low carbon investments that also reflect the ongoing changes in the governing structure of Nepal which is transitioning towards a federal structure. The integrated district RE development plans will emphasize PPP models and provide the necessary space for private sector participation. For this, continuous capacity assessment/development of relevant government agencies and stakeholders at central, district and village level will be emphasized in the areas of integrated energy policy development, planning, energy cost comparisons, private sector development, community participation as well as reporting, monitoring and evaluation.

Component 2: RE investments promotion – This component will focus on increasing investments in RE for rural livelihoods to achieve additional total installed capacity of 2 MW off-grid micro-hydro power plants and a total installed capacity of 0.5 MW solar power systems per year (over 5 year period – total 12.5 MW). The primary aim in this component is to raise private sector investment confidence in developing rural RE projects in Nepal. A major element of this component will be to demonstrate successful models of public-private partnerships in designing, development and managing micro-hydro projects as well as the connectivity of a number of micro-hydro systems to operationalize a mini-grid. The expected outputs will include demonstrations of RE systems using PPP models at two sites and the demonstration of a mini-grid connecting various micro-hydro systems from the same stream. In order to achieve the demonstration targets, this component will support PPP enterprise development through: identification and preparation of private sector partners; technical assistance in the preparation of business model, design and construction, O&M as well as reporting of performance for dissemination. GEF, UNDP and WB funds will be allocated for this component, including private sector and donor money that will be secured during the PPG phase.

Component 3A: RE project financing enhancement – This component is designed to augment RE investments promotion through improved availability of financing for rural RE applications. It will aim to establish and operationalize – a capital fund to provide loans to manufacturers of micro-hydro systems, solar systems and other low carbon technologies; a guarantee fund in a central financing institution to enhance accessibility to loans for the development of RE/low-carbon systems; and, tailor-made financial services (loan products and alternative collaterals) for RE/low-carbon technology applications. A primary aim of this component will also be to target focused subsidies and credits to support and complement investments in renewable energy technologies, ensuring gender and social inclusion, while seeking to reduce subsidy levels over time, through linkages with productive end use of energy. The activities in this component will also include the setting up of a functional RE loan portfolio in local (micro-) finance institutions. This component will also be built on CleanStart, a UNDP and UNCDF joint programme. GEF, WB and UNDP funds will be allocated for this component, including other donor funds to be secured during the PPG phase.

Component 3B: RE project financing enhancement – This component is designed to facilitate Component 3A, through the improved design and packaging of investment support mechanisms for rural RE applications. It will provide technical assistance in the design, including the preparation of guidelines and manuals to operationalize – a capital fund to provide loans to manufacturers of micro-hydro systems, solar systems and other low carbon technologies, as well as a guarantee fund in a central financing institution to enhance accessibility to loans for the development of RE/low-carbon systems. It will also provide an analysis of alternative collaterals and provide design options for tailor-made financial services (loan products and alternative collaterals) for RE/low-carbon technology applications, as well as loan repayment mechanisms, adapted based on good practices in the country and elsewhere.

Strengthening the capacity of financial institutions to develop products and distribution methods which include innovative mechanisms for repayment will be prioritized. In addition, a network that will connect RE project developers, energy service companies, RE/low-carbon system suppliers and distributors and financing institutions will be established. Capacity development for micro-finance institutions and commercial banks on RE financing will also be a key activity under this component. This component will result in the design of an operational framework for public-private partnership models and revenue sharing schemes for the implementation of rural RE projects. GEF and UNDP funds will be allocated for this component, including other donor funds to be secured during the PPG phase.

Component 4: Human Capacity Development – This component is intended to address the barriers related to human capacities to plan, manage, operate, finance RE-based energy systems. Enhanced capacities and skills of various stakeholders involved in the RE sector are the expected outcome from this component. The expected outputs for this component can be found in table B Project Framework. The envisioned activities that will be carried out under this component which will deliver outputs that will contribute to the realization of these outcomes are to develop and conduct training courses, including training of trainers: (1) for relevant government agencies at the central, district and village level on emerging (rural) RE policies and in the areas of integrated energy planning, energy cost comparisons, energy surveys and energy reporting and monitoring; (2) for manufacturers and installers to design, manufacture and install micro-hydro systems between 100 kW and 1 MW, and solar PV systems up to 10 kW; (3) for survey and installation teams within companies to improve quality of installed micro-hydro plants; (4) for users on the operation and maintenance of RE based energy systems; (5) for micro-finance institutions and commercial banks on financing RE and low-carbon applications; (6) for RE developers on financing opportunities and incentive schemes for RE projects; and, (7) for energy companies/distributors of RE applications on after sales services.

With the GEF support for the incremental cost needed to: create the much needed policy and regulatory regimes that will support the uptake of RET applications for power generation in rural areas; capacity building to improve local skills amongst others in manufacturing, operating and maintaining RET systems; increased access to financing; and, improved institutional cooperation to effectively plan the realization of renewable energy systems, the necessary enabling environment will be created for continued RE investments in Nepal and thereby GHG emission reductions continuously achieved. The GEF support will definitely supplement the GoN's efforts to promote RET-based power generation, contributing to enhancing energy access in rural areas through the use of RE resources, and in removing the barriers to RET-based power generation, as discussed in Section B.1. In the past, the development of the RE sector in the rural areas was very dependent on donor support. In the proposed GEF project, mechanisms will be established and barriers removed to make the sector less dependent on donor support. Also in the past, the programmes were mainly focusing on the smaller hydropower systems (less than 100 kW). In this project, the focus will be on the development and deployment of larger hydropower systems (100 kW to 1 MW) which will be of greater appeal for investment promotion. Without the GEF intervention this would not happen at the level and timing that the GoN has envisaged to achieve.

Global Environmental Benefits/Emission Reductions

With the various interventions that will be carried out under this proposed project and the expected outputs, it is estimated that by the end of the project 2 MW x 5 years = 10 MW of additional micro-hydro power plants would have been installed and 0.5 MW x 5 years = 2.5 MW of additional solar power installations would have been realized, resulting in about 411,282 tCO₂e direct emission reductions over a period of 15 years*. In addition the project will demonstrate the realization and operation of micro hydro power installations using the PPP model (in total 1 MW) and the realization of a mini-grid connecting various micro-hydro systems from the same stream (total 100 kW). This will result in direct emission reductions of 40,471 tCO₂e over its lifetime of 15 years**. The total direct emission reductions are estimated at 411,282 + 40,471 = 451,753 tCO₂e***. Moreover, the project is expected to influence the implementation of future RE systems and these systems will bring about CO₂ emission reductions that can be indirectly attributed to this project. Assuming a replication factor of 3, the indirect emission reductions over an influence period of 10 years will be 1,355 ktCO₂e ((411,282 + 40,471 tCO₂e) * 3) based on a bottom-up approach.

Methodology:

*2 MW of additional off-grid micro hydropower capacity per year during 5 years of the project leads to a direct emission reduction of: $10 \text{ MW} * 15 \text{ years (lifetime)} * 8760 \text{ h per year} * 0.35 \text{ (conservative load factor)} * 0.8 \text{ tCO}_2\text{e/MWh}$ (conservative emission factor for diesel powered mini-grid as per type I small scale CDM methodologies, in particular AMS I.D and AMS I.A) = 367,920 tCO₂e. A diesel/fossil fuel powered mini-grid or gen set is the most likely alternative scenario for the provision of electricity in these rural areas, where there is no (planned) grid connection.

*0.5 MW of additional solar power capacity per year during 5 years of the project leads to a direct emission reduction of: $2.5 \text{ MW} * 15 \text{ years (lifetime)} * 8760 \text{ h per year} * 0.17 \text{ (average load factor)} * 0.8 \text{ tCO}_2\text{e/MWh}$ (conservative emission factor for diesel powered mini-grid as per type I small scale CDM methodologies, in particular AMS I.D and AMS I.A) = 43,362 tCO₂e. A diesel/fossil fuel powered mini-grid or gen set is the most likely alternative scenario for the provision of electricity in these rural areas, where there is no (planned) grid connection.

**The demonstration projects, which involve the installation of a total 1.1 MW capacity of hydro power systems will lead to direct emission reductions of: $1.1 \text{ MW} * 15 \text{ years (lifetime)} * 8760 \text{ h per year} * 0.35 \text{ (conservative load factor)} * 0.8 \text{ tCO}_2\text{e/MWh}$ (emission factor) as per type I small scale CDM methodologies in particular AMS I.D and AMS I.A = 40,471 tCO₂e.

***With the various interventions that will be carried out under this proposed project direct post project emission reductions are being expected. A capital fund/risk guarantee fund will be established (component 3) and a fund for soft loans to manufacturing industries will be created (component 3). The amount of direct post project emission reductions to be achieved is not known yet and depends largely on the design of the mechanisms created. Therefore the anticipated direct post project emission reductions are not yet estimated. During the PPG stage the financial mechanisms will be further developed and an estimation of the direct post project emission reductions will be provided.

- 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) or adaptation benefits (LDCF/SCCF). As a background information, read [Mainstreaming Gender at the GEF.](#):

The project aims to remove barriers to increased utilization of renewable energy resources in rural Nepal in order to support the economic, environmental and social development of people in the rural areas. People in rural areas of Nepal will therefore benefit from e.g., increased job opportunities and access to energy. In particular, the RE systems that will be designed and developed will combine with the facilitation of productive use and livelihood enhancement. Studies, based on REDP, show that the provision of renewable energy in rural Nepal has significant positive effects on rural livelihood improvement, poverty reduction, and gender equity. The reports indicate there has been increased participation of men in household chores, like agro-processing and cooking; reflecting changes in gender relations within households, increased participation of men and women in community level activities, including increased number of women chairpersons and managers in some community managed hydropower schemes and increased involvement of women in small and cottage enterprises. Access to electricity will also bring benefits like lighting, allowing children and women to study in the evening hours.

The project will be designed to ensure data collection will be sex disaggregated so that gender is mainstreamed, equal opportunities are provided to both men and women, gender issues addressed, and the different needs of men and women are sufficiently factored in energy access and livelihood improvement activities.

- 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:

While all possible efforts will be made to ensure the successful implementation of the proposed project, there are certain risks that are anticipated, which the project will also endeavor to mitigate as it is designed and implemented. The following table summarizes the potential risks that might prevent the project objective(s) from being achieved, the level of risk and the proposed mitigating actions for each risk:

	Risk	Level of Risk	Mitigating Action
1	Stakeholder coordination - Too many stakeholders may prevent efficient decision-making	L	Identification of the appropriate lead agency and appropriate representation for the National Steering Committee and the Technical Advisory Committee during the project design stage
2	Co-financing for demonstration - Disbursements of funds for demonstration projects not meeting the scheduled dates	L	Securing firm commitments of responsible agencies during the project design stage. Leveraging new funds will be designed within the project since investment promotion is key for the replication of the demonstrations
3	Selection of demonstration sites not properly done	L	Identification of targeted renewable energy power plants, setting-up of a realistic schedule and cost-sharing arrangements among responsible agencies during the project design stage
4	Lack of financial infrastructure for end-users	M	Partnership with UNCDF Enhancing Access to Financial Services (EAFS) project that is partnering with 18 MFIs in Nepal who are collectively reaching out to approximately 80% of the current microfinance market and the RE technologies can be cross-sold to this market at relatively low transaction costs. UNCDF is also partnering with the Nepal Rastra Bank responsible for regulating banks and financial institutions, and the close relationship with the Central Bank will be important. The technical capacity of the CleanStart project to strengthen financing for energy access will also help mitigate the risk.
5	Lack of commitment and low participation from the private sector and other stakeholders	M	Involvement of the private sector from the project designing stage, dissemination of the latest information through right channels and identification of their needs and demand through continuous dialogue.
6	Political instability (the local safety and political situation can affect the implementation of renewable energy projects)	M	Involvement of all relevant interest groups. The project will follow a bottom-up approach, which also involves the inclusion of marginalized groups, in the realization of renewable energy plants. Demonstration sites will be carefully selected to ensure they are sited at villages that have strong local governance structures and are minimally affect by the political situation. Similar considerations will apply when inviting private sector participation in other project sites.
7	Changes in water flow in rivers, influencing the load factor of hydropower plants.	L	Careful planning and design of micro-hydro power plants.

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 activities will be implemented in cooperation with various organizations and agencies,

examples are listed below:

Name of Stakeholder	Indicative Role in RERL*
AEPC (Alternative Energy Promotion Centre Nepal)	Executing partner
Donor and development agencies (DFID, SNV, EU, WB, etc.)	Financial support and assistance in implementation of various activities
UNDP country office and UNDP Asia-Pacific Regional Centre in Bangkok (UNDP APRC)	GEF agency, financial support and supervision of project design and implementation
Nepali Banks and microfinance institutions	Provision of financial services, promotion of RE/low carbon technologies
UNCDF (CleanStart and EAFS)	Capacity building support on financial services
Central government and local government institutions, such as village development committees, district development committees, Ministry of Energy and Ministry of Local Development	Policy support, promotion of RE systems, funding of systems**
Private sector, village development committees, district development committees, local NGOs	Promotion of RE systems, financial support to RE systems, installation and management of RE systems, maintenance of RE systems

*Most of the mentioned stakeholders are working on a variety of renewable energy systems, including many other low carbon/energy efficiency measures. The policy framework established, the enhanced capacities and incentive structures set up will support the uptake of these low carbon technologies. The relevant stakeholders for these technologies will be involved in the project.

** In 1996, AEPC was established under the Ministry of Environment. AEPC's mandate relates to small renewable energy systems up to 1 MW, while the Ministry of Energy focuses on systems above 1 MW. The Ministry of Local Development is important for institutionalizing the community managed systems within the framework of local government and providing required co-funding to install the system at local level. Its role will also be important in promoting end-use activities for community and rural development.

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

Given AEPC is the lead agency for the promotion and coordination of all alternative energy technology applications and projects in the country, as the key executing partner of the proposed GEF project, coordination with all other related projects and programmes will remain its primary consideration. Coordination with all the stakeholders mentioned in Section B5 will also be prioritized. The project will further establish coordination with other national initiatives related to renewable energies within the country, and particularly, with all projects and activities within the country's Three Year Plans for the Alternative Energy Sector. In addition, activities of the proposed project will take guidance from the good practices and lessons learnt from current and past projects of AEPC, as discussed in Section B.1. During the project design, the project proponents will closely coordinate with the key stakeholders, government organizations, financing institutions, donor agencies, private sector and other institutions that are engaged in policy making, research and applications of renewable energy technologies. Furthermore, the project will also be developed in close cooperation with the UNDP-GEF Regional Coordination Unit for Asia-Pacific in Bangkok (UNDP-GEF Asia-Pacific RCU). The UNDP country office in Nepal will be fully involved in the project development through its participation in the various stakeholder and co-financing consultation meetings and technical workshops during the project development phase, and in the multipartite review meetings. Consultations will also be done with UNDP-GEF, New York during the project development phase.

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

The proposed project is aligned with UNDP's comparative advantage, as articulated in the GEF Council Paper C.31.5 "Comparative Advantage of GEF agencies", in the area of capacity building, providing technical and policy support as well as expertise in project design and implementation. UNDP's comparative advantage for the proposed project lies in its continuous in-country presence and experience working with the Government of Nepal on various climate change and environment projects.

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

As per table C, UNDP will provide an indicative co-financing of US \$ 3,000,000.

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 project is in accordance with the UNDAF for Nepal (in particular Outcome C.3 "Environment and energy mainstreamed into national and local development planning with a focus on gender, social inclusion, and post conflict environmental rehabilitation") and UNDP Nepal Country Programme Document (in particular Programme Output 4.1.1 "Equitable access to environment and energy services expanded for the poor, women and socially excluded groups") and the 3-year work plan on the thematic area of climate change mitigation. The area of Climate Change is a focus of the UNDP country office. UNDP-Nepal has sufficient staff complement that can effectively supervise the implementation of this project. Being one of the leading UN agency in Nepal supporting the GoN in addressing climate change issues in the country; its staff members' substantial experience in the successful implementation of GEF-funded projects in the country; and its overall substantial experience and expertise in working in partnership at the decentralized level with local communities, private sector, policy makers and civil society, justify its capacity and qualification to implement this proposed project. Moreover, there will be adequate technical backstopping to be provided by the UNDP-Asia Pacific Regional Centre (Bangkok) to UNDP-Nepal in the design, development, implementation, management, monitoring and evaluation of this proposed project.

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. L.S. Ghimire	Joint Secretary and GEF OFP for Nepal	MINISTRY OF FINANCE, GOVERNMENT OF NEPAL	03/23/2011

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF/LDCF/SCCF policies and procedures and meets the GEF/LDCF/SCCF criteria for project identification and preparation.					
Agency Coordinator, Agency name	Signature	DATE (MM/dd/yyyy)	Project Contact Person	Telephone	Email Address
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