PROJECT IDENTIFICATION FORM (PIF) [1]

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

PART I: PROJECT IDENTIFICATION

Project Title:	Scale Up of Access to Clean Energy for Rural Productive and Domestic Uses		
Country(ies):	India	GEF Project ID:[2]	4900
GEF Agency(ies):	UNDP	GEF Agency Project ID:	4605
Other Executing Partner(s):	Ministry of New and Renewable Energy (MNRE)	Submission Date: Re-submission: Re-submission: Re-submission:	March 20, 2012 June 26, 2012 August 6, 2012 16 January 2013
GEF Focal Area (s):	Climate Change	Project Duration (Months)	60
Name of parent program (if applicable): • For SFM/REDD+ ☐		Agency Fee ($):	380,651

A. FOCAL AREA STRATEGY FRAMEWORK[3]:

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Indicative Grant Amount ($)	Indicative Co-financing ($)
CCM-3	Outcome 3.1: Favorable policy and regulatory environment created for renewable energy investments	Output 3.1: Renewable energy policy and regulation in place	GEFTF	1,822,849	11,390,000
	Outcome 3.2: Investment in renewable energy technologies increased	Output 3.2: Renewable energy capacity installed Output 3.3: Electricity and heat produced from renewable sources	GEFTF	2,004,000	20,280,000
		Sub-Total		3,826,849	31,670,000
		Project Management Cost[4]	GEFTF	180,000	830,000
		Total Project Cost		4,006,849	32,500,000

B. PROJECT FRAMEWORK

Project Objective: Enabling of access to modern and affordable energy services in un-served[5] and underserved[6] regions and communities for meeting their lighting, thermal (specifically cooking), and mechanical (such as irrigation) energy needs

Project Component	Grant Type	Expected Outcomes	Expected Outputs	Trust Fund	Indicative Grant Amount ($)	Indicative Co-financing ($)
1. Investment financing for rural energy technology	TA	1.1. Improved enabling environment that spur and enhance	1.1.1. Developed and approved State Action Plan for Access to Clean Energy (SAPACE) in a maximum of five states 1.1.2. Approved and implemented access to	GEFTF	400,000	3,000,000

[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. PMC should be charged proportionately to focal areas based on focal area project grant amount.
[5] Un-served: Villages/hamlets/areas without grid electricity are termed as un-served areas.
[6] Under-served: Areas that are connected with electricity but do not get continuous and adequate supply.

enterprises, and for end-users that promote productive applications		interest among technology developers, investors and service enterprises in investing on energy access initiatives 1.2. Availability of financing options for enterprises that provides access to clean energy and promote productive applications	clean and modern energy[7] plans in at least three districts, and 4 villages per state 1.1.3. Prepared business proposals by appropriate rural energy technology suppliers and service enterprises 1.1.4. Completed financial viability assessments of the prepared proposals 1.1.5. Established enterprises that produce rural energy technologies and provide energy services as per the local energy needs 1.2 1. Designed financial schemes that are output based for enterprises that provide access to clean energy and promote productive applications 1.2.2. Established agreements with financing institutions (lead banks, IREDA, SIDBI, NABARD, etc.), micro financing institutions to invest in access to clean and modern energy			
	Inv	1.3. Improved financial support for community and household productive use projects 1.4. Increased access to finance for rural enterprise development	1.3.1. Completed financial viability assessments of the developed applicable technology packages[8] 1.3.2. Identified financing institutions that can provide financing for the end-users such as (a) loans, (b) micro-finance/micro-credit etc. 1.3.3. Funded productive use of energy initiatives at community level and household level through financing such as (a) retailer financing, and, (b) smart subsidies (production based incentives) 1.4.1. Prepared business proposals by selected rural enterprises 1.4.2. Completed financial viability assessments of the prepared rural enterprise proposals for productive applications of energy 1.4.3. Installed energy systems in established rural enterprises that make use of the energy services	GEFTF	1,200,000	9,000,000
2. Policy and	TA	2.1. Energy	2.1.1. Established collaboration with	GEFTF	350,000	3,564,000

[7] Energy access involves the provision and utilization of any one or a combination of energy forms such as: (a) electricity; (b) modern fuels [Liquid fuels including LPG, natural gas, kerosene, ethanol and biofuels. Source: UNDP (2009). The energy access situation in developing countries: A review focusing on least developed countries and sub-Saharan Africa. UNDP and World Health Organization, New York. Available at http://content.undp.org/go/cms-service/stream/asset/?asset_id=2205620]; and (c) mechanical energy. Although LPG is defined as part of the modern fuels, the project will not consider any fossil-fuel related interventions and/or energy services. These modern energy forms (compared with traditional biomass such as firewood, charcoal, dung, crop residues and coal) are typically used in rural communities in India for various applications such as lighting, cooking, and other productive, non-industrial applications i.e. water pumping and small-scale agro-processing (e.g., grinding, milling) [Reference: UNDP (2009). The energy access situation in developing countries: A review focusing on least developed countries and sub-Saharan Africa. UNDP and World Health Organization, New York. Available at http://content.undp.org/go/cms-service/stream/asset/?asset_id=2205620]. In the proposed project, the term "clean" is used in the context of cooking energy (facilities such as improved cookstoves, advanced biomass cookstoves and clean cooking fuels such as biogas), mechanical energy (improved water mills), and lighting energy (energy from renewable sources). Since all these are considered as integral part of the project, the term "clean and modern energy" is considered appropriate. As this project is aimed to meet all the basic energy needs of a selected village using available resources, it is possible to measure and verify the tangible results that are achieved within a village.

[8] The domestic and commercial energy demand/needs of a village will be met through various technology options using available energy source. A set of technology options will be implemented in a village to provide energy services. These interventions together at a village level are considered as "technology package" that meet various energy demands such as lighting, cooking etc.

institutional support for the promotion of access to modern and clean energy services		access efforts are coordinated at the national/central level 2.2. Energy access projects are implemented in line with the institutionalized Rural Electrification Policy 2.3. Wider availability of quality modern and clean energy technologies and services for rural communities	Integrated Rural Energy Programme (IREP) training centers, other institutions (IISc, IITs, Technical Back Up units (TBUs), ITIs), private sector and NGOs through GEAC which function as one-stop-service provider. 2.2.1. Institutionalized and enforced implementation of Decentralized Distributed Generation (DDG) scheme and Remote Village Electrification (RVE) programme through GEAC 2.2.2. Developed plans by the district-level committees involving local communities / vulnerable groups at sub-national / district level 2.3.1. Improved and expanded standards for the modern and clean energy technologies 2.3.2. Established testing facilities to test the performance of modern and clean energy technologies in at least 5 locations; 2.3.3. Established certification process and certified enterprises that provide quality modern and clean energy technologies and services in rural communities.			
3. Scale up and replicate access to clean and modern energy services in un-served and underserved regions	Inv	3.1. Increased flow of investments in energy access projects through increased number of rural energy technology enterprises and service providers	3.1.1. Implemented clean and modern energy access plans involving energy technology enterprises serving un-served and underserved regions and individual households 3.1.2. Clustered dispersed markets for energy service delivery by energy technology enterprises and service providers 3.1.3. Implemented technology packages in 30 un-served villages and 30 underserved villages at the individual household, and community levels that linked modern and clean energy services with productive applications	GEFTF	804,000	11,280,000
	TA	3.2. Increased number of energy access service providers	3.2.1. 500 trained entrepreneurs under entrepreneurship development programs 3.2.2 RESCOs (25 nos.) and ESDEs (35 nos.) that were assisted to provide access to clean and modern energy solutions	GEFTF	396,000	2,820,000
4. Awareness and institutional capacity development	TA	4.1. Strengthened institutional capacities at various levels on the implementation of energy access projects 4.2. Improved accessibility of information and enhanced understanding and knowledge about clean and	4.1.1. Established and operational district-level committees under local administration for implementing energy access projects (gender balanced as well as equal role for vulnerable groups) in pilot districts of five states 4.1.2. Trained members of district-level committees capable of involving local communities in the planning and designing energy access projects 4.1.3. Trained member of district-level committees on the evaluation and selection of appropriate modern and clean energy technologies and services 4.2.1. Developed and published knowledge	GEFTF	676,849	2,006,000

		modern energy services and technologies in the rural communities.	products (guidance manual, toolkit etc.) for specific target groups to design and implement energy access projects 4.2.2. Disseminated knowledge products informing about local availability of modern energy services, technologies and available financing options			
Sub-Total					3,826,849	31,670,000
Project Management Cost[9]				GEFTF	180,000	830,000
Total Project Costs					4,006,849	32,500,000

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 ($)
National Government	Ministry of New and Renewable Energy (MNRE)	Grant	10,000,000
Private Sector	Energy access project developers	Equity and bank loans	11,175,000
Others	Financial Institutions	Loan	11,175,000
GEF Agency	UNDP	In-kind	150,000
Total Co-financing			32,500,000

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

The project objective is the enabling of access to modern and affordable energy services in un-served and underserved regions and communities for meeting their domestic and commercial energy needs. The expected outcomes from the various components of the project that will contribute to the realization of this objective are in line with the GEF-5 climate change mitigation focal area strategic objective CCM-3. The realization of Outcome 3.1: favorable policy and regulatory environment created for renewable energy investments can be gauged by monitoring the extent to which energy access policies and regulations are adopted and enforced (assessed over a score of 1 to 5). The achievement of Outcome 3.2: Investment in renewable energy technologies increased can be determined by tracking the volume of investments mobilized in clean and modern energy technologies and services. The investments can be from users / beneficiaries, self-help-groups, financing and micro-finance organizations, community based organizations, donor organizations, local self-governments, district administration, state governments and MNRE.

The proposed project focuses the removal of barriers to enable the creation of favorable investment conditions for energy access projects in un-served and underserved regions and rural communities through scale up and replication

[9] The same as footnote #3. The GEF contribution for project management is indeed 5% (USD 199,500) when compared to the overall GEF grant (USD 3,990,000) requested. This is clearly justified and in line with the GEF guidance regarding PMC (i.e., 5% of the total requested GEF fund for projects with GEF funding more than US$ 2 million). The project proponents are expecting to mobilize a co-financing amount that is about eight times of the total requested GEF grant. The co-financing amount consists mostly of non-grant funds that are to be provided as investments in the form of loans and equity. Therefore, the GEF grant contribution to the project management can't be weighed on the same basis as the co-financing, and it does not make sense to allocate a big chunk of the mobilized co-financing just to match the ratio of the GEF PMC to the total requested GEF grant. The proposed co-financing for the PMC is based on the estimated cost of associated with the management of the baseline activities. The proposed combination of the GEF PMC and co-financing PMC is considered sufficient to carry out the overall project management activities. Hence, no further adjustment of the PMC share from co-financing is required.

of investment financing for rural energy technology enterprises, and end-users with productive applications.

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.:

India has two major challenges concerning enabling access to modern and affordable energy services in un-served and underserved regions of the country. On one hand challenge of reaching out to people who do not have access to energy and on the other to take actions to address climate change. While addressing these two challenges, specifically energy access[10], list of actions were taken through policy interventions emerged as a result of Electricity Act 2003, Rural Electrification Policy 2006, and Integrated Energy Policy 2006. Government of India (GoI) commitment to energy access was elaborated in Electricity Act 2003. Electricity Act 2003 was identified for the first time as law dealing with rural electrification. The Act mandates government shall provide electricity to all areas including villages and hamlets. The project is consistent with and will contribute to Government of India's strategy to reduce emissions intensity of India's GDP by 20-25% by year 2020 on a 2005 reference level, through proactive policies. India's 12th FYP, to be launched in 2012 will have low-carbon growth strategy as one of the key pillars. Eleventh Five Year Plan outlines achieving 100% electrification and achieving 20% of renewable energy share in meeting electricity requirements. Therefore, it can be stated that the proposed project is consistent with GoI priorities. The first and second national communications provide inventory of GHG emissions and documented response strategies to mitigate and adapt to climate change. India submitted its Second National Communication Report to UNFCCC on 4th May 2012 (http://unfccc.int/resource/docs/natc/indnc2.pdf). This report emphasizes that over 40% of the country's population currently do not have energy access despite of government's effort to provide energy access through off-grid and distributed energy solutions. Most of the national programs target providing energy access to large rural populations including those in inaccessible areas and meeting unmet demands in many un-served and underserved villages. GoI has also showcased its commitment to address climate change by unveiling National Action Plan on Climate Change (NAPCC) in June 2008. NAPCC emphasizes the importance of access to energy apart from large-scale investments in infrastructure and technology while addressing climate change. It also acknowledges access to energy is a persistent challenge in reaching to those who do not have access to energy while addressing climate change. This project proposal was also discussed during GEF 5 programming consultations happened during the year 2010-11 and included this as one of the projects in National Portfolio Formulation Document (NPFD), an output document of those consultations.

Further, Rural Electrification policy strengthens the Electricity Act 2003 with following aims (i) provision of access to electricity to all households by year 2009; (ii) quality and reliable power supply at reasonable rates; (iii) minimum lifeline consumption of one unit (kWh) per household per day as a merit good by year 2012. These targets are far from reach.

Integrated Energy Policy 2006[11], outlines huge energy requirements (increase primary energy supply by 3 to 4 time and its generation capacity/supply by 5 to 6 times of their 2003-04 levels) to sustain an 8 to 10% economic growth rate over next 25 years (if it is to eradicate poverty and meet its human development goals).While providing various options to meet energy requirements, it also focuses of energy efficiency and demand side management to lower energy intensity of GDP growth through higher energy efficiency. There is an important amendment (in 73rd) of the Constitution where Schedule XI laid focus on passing on powers to the three tiers of Panchayat Raj system at the district, intermediate and village level. Grama Panchayats are now mandated to share the responsibility in energy conservation and promotion of non-conventional energy i.e. (a) Item no. X of the 1st schedule: Rural electrification including distribution of electricity – providing for and maintenance of lighting of public streets and other places, and (b) Item no. XI of the 1st schedule: Non-conventional energy source: (i) promotion and development of non-

[10] Access to 'modern energy services' such as (a) electricity; (b) modern fuels to meet cooking needs (electricity, liquid fuels including LPG, natural gas, kerosene, ethanol and biofuels, but excluding traditional biomass such as firewood, charcoal, dung, crop residues and coal); and (c) mechanical power for productive, non-industrial applications such as water pumping and small-scale agro-processing (http://www.snap-undp.org/eLibrary/Publications/EnergyPlusReport.pdf).

[11] Integrated Energy Policy – Report of the Expert Committee, August 2006. Government of India, Planning Commission, New Delhi.

conventional energy schemes, and (ii) maintenance of community non-conventional energy devices, including bio-gas plants.

When it comes to the energy access, there is a huge potential for the promotion of modern and clean energy services and technologies. Certainly, there are pockets of successful case studies, but these needs to be scaled up and replicated. This involves promotion of investments in energy service delivery and deployment of modern and clean energy technologies.

This project will work towards mainstreaming access to energy in areas which are presently lack of power supply, energy services and those face highly power deficit. This means, the proposed project goes beyond mere demonstration; addresses barriers and promote market transformation of clean and modern energy technologies and services apart from capacity building. The project aims to provide global and local environmental benefits.

B. PROJECT OVERVIEW:

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

Background information[12]:
In 2005, it was identified that 364 million lacked access to electricity and 726 million to modern cooking fuels out of a rural population of 809 million. Further, energy deprivation is highest among poorest households with 93% depending on biomass for cooking and 62% lacking access to electricity in rural India[13]. According to a Central Electricity Authority (CEA) report[14], out of a total of 593,732 villages, 488,439 villages are electrified, which is about 82%. However, the quality of power supplied to the households in the electrified villages is erratic and often very limited supply. Energy needs in un-served and underserved villages are met through fossil fuels (diesel generators, kerosene lamps) for lighting and cooking and biomass for cooking and heating applications. The annual growth rates in the expansion of energy access are gradually declining from double digit experienced 10 years back to just around 4% in recent years. It is estimated that 149 million kerosene-based lighting devices such as hurricane lanterns and wick lamps are being used in India. National Sample Survey Organization (NSSO) also estimates that 60% of 7,326 million liters (2000/01) of kerosene was used in rural areas for lighting.

GoI has programs to expand grid electricity and thermal energy predominately cooking energy needs to un-served and underserved areas. At least 18,000 villages have been identified as technically not feasible villages to be connected by grid electricity and are potential candidates for providing energy access through clean and modern energy services where MNRE is expected to play a major role. In addition, MNRE has undertaken several initiatives to provide modern cooking devices (improved cookstoves, solar cookers, and biogas stoves connected to biogas plants). GoI and states through other initiatives attempted to provide LPG to rural India. There have been mixed results of these initiatives. Results and lessons from some of these programs are summarized below. These clearly points out the barriers for scale up, replication and mobilizing investments for access to clean and modern energy services.

Energy access programs

In India, during 1990s, the focus of rural energy has shifted to rural electrification. Over the past decade, most of these policies and programs formulated are either discontinued in the middle or merged/transformed into other programs. This clearly demonstrates that there is a lack of policies continuity and long term goals in the recent years. Despite of these efforts, still 364 million people lack energy access, and over 700 million do not have access to modern cooking fuels and still depend on solid fuel such as fire wood for cooking. A number of barriers are preventing the improvement of energy access and ensuring energy security for those people in areas that are

[12] Most of the information is synthesized from various sources including http://www.mahadiscom.in/emagazine/mar06/Rural%20electrification.pdf and http://me.columbia.edu/fac-bios/modi/resources/RuralEnergy_India.pdf . Some of the programs mentioned here may not constitute to baseline project activity, but listed here to understand the situation in the past and how the focus has shifted recently. This is known to be important given the context of recent focus.
[13] P. Balachandra (2011). Dynamics of rural energy access in India: An assessment. Energy Journal Issue 36 (2011) 5556-5567.
[14] Central Electricity Authority, Ministry of Power as on 31.3.2008

currently don't have access to energy or underserved with energy services. The emphasis is on providing electricity that has potential to accelerate economic growth and standard of living. It must also be noted that thermal energy needs such as fuel to meet cooking energy are vital for survival apart from mechanical energy needs. Energy access has an important role to play in several aspects of development, including literacy, health, livelihoods, etc. The following illustrate the persistent challenges for access to clean and modern energy in India[15]:

- Over 85% (in 2007-08) of households in rural India continue to depend on traditional fuels (firewood and chips, dung cake and coal/ charcoal) for cooking, with only 9% using LPG. In urban India on the other hand, 62% of households use LPG as the major fuel for cooking and 24% of the households use traditional cooking fuels.
- 90% or more households in urban India use electricity for lighting in all major states except Bihar, Assam, Uttar Pradesh and Odisha. In rural areas on the other hand, about 60% of households in rural India use electricity for lighting and 39% use kerosene.
- The percentage of households in rural areas using traditional cooking fuels remained at 85%, while for urban households, this has declined from 28% to 23% between the periods 2001-02 and 2007-08. During these periods, the percentage of urban households using LPG as the primary fuel increased about 10% (from 50 to 61%). A similar growth trend was not seen in rural areas.
- Specific policy provisions are always needed for stand-alone energy systems in Indian rural areas.

Baseline Project(s):

The following sections describe the initiatives that the GOI is currently doing and has planned and budgeted to do over the next 5 years to improve energy access in rural areas and enhance energy services provision in underserved areas. The main baseline projects are: (1) Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY); (2) Decentralised Distributed Generation (DDG); (3) Remote Village Electrification Programme (RVE); (4) National Biomass Cookstoves Initiative (NBCI); and, (5) National Biogas and Manure Management Programme (NBMMP).

Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY):
RGGVY is a national program where Rural Electrification Corporation (REC) is a nodal agency. RGGVY focuses of establishing infrastructure and improving access to electricity in rural and remote locations. This was launched in 2005, and aims to provide free electricity connections to 23.4 million below poverty line (BPL) households by 2010. As on April 2010, the program connected 79,135 out of 118,499 targeted villages to the national grid, and 10.5 million BPL households (or around 60 million rural poor) are supplied with grid electricity[16]. RGGVY also demonstrated decentralized management and operations through franchisees. So far, the progress relating to franchisee development was limited. States were expected to provide minimum daily supply of 6 to 8 hours in the RGGVY network and ensure quality of supply. The total cost of RGGVY is INR 287 billion (USD 5.8 billion)[17] and this program is expected to end by 2012. It is highly likely that RGGVY will continue beyond 2012 through Decentralized Distributed Generation (DDG) scheme.

Decentralised Distributed Generation (DDG):
DDG is expected to support supply of electricity and indirectly facilitate power requirement of agriculture and other activities including irrigation pump sets, small and medium industries, *khadi* and village industries, cold storage, healthcare, education and information technology (IT) etc. DDG projects are taken up under RGGVY in remote villages where grid connection is neither feasible nor cost effective. The RGGVY in XI plan has financial outlay of INR 5,400 million for implementation of DDG projects. A total of 25,000 villages are eligible under DDG scheme which are not covered under MNRE's Remote Village Electrification (RVE) programme. As of now 15 projects have been sanctioned with committed allocation of about INR 77 million. Fourteen of these projects are being implemented by National Thermal Power Corporation (NTPC) and one by West Bengal Renewable Energy Development Agency (WBREDA). These installations are expected to achieve 2 to 5 MW. The issues that were identified earlier with DDG / mini-grid projects are (a) lack of access to competent, effective, responsive and affordable technical back-up support that ensures continuous and trouble free operation of installed energy systems; (b) inadequacies or imperfections in the community management systems pertaining to operation and maintenance of the decentralized power plant through collective cost sharing; and (c) uncertainty on the modalities pertaining to

[15] P Balachandra (2011). Dynamics of rural energy access in India: An assessment. Energy Journal Issue 36 (2011) 5556-5567.
[16] http://www.snap-undp.org/eLibrary/Publications/Case12-RGGVY.pdf
[17] INR 1 = USD 0.02026, as of 23 September 2011 (www.xe.com).

arrangement of funding support for equipment replacement at the end of its lifecycle and other similar long term sustainability issues.

Under the proposed project, the power source can be diversified to secure energy from renewable energy resources as mini grids are fed through fossil fuels under RGGVY. The National Environmental Benefits (NEBs) are mostly socio-economic benefits associated with increase in productivity. The availability of energy (through mini grids or extending national grid) in the project targeted areas will certainly stimulate to the creation of livelihood related activities which would contribute to socio-economic benefits. Specific activities like this in the RGGVY will be subsumed into the proposed GEF project to, among others, enhance the opportunity of improving the energy access and energy services provision to rural areas by also realizing global environmental benefits. The possible improvements include increasing the reliability of energy service through the utilization of renewable energy sources, and expanding the project coverage to include remote villages through the installation of stand-alone, improved, clean and reliable energy access solutions. Some of the activities proposed under the project are: (a) Establishment of government funded and community administered technical back-up support units at the district level in all project districts that could be staffed with trained technicians and facilities to interact with all concerned equipment suppliers; and (b) Finalization of workable and effective community management systems by involving relevant systems and management experts. The end-user specific needs are targeted through the promotion of individual systems for end-users in the proposed project. To date, the enhanced, effective and productive involvement of local institutions such as Panchayat Raj Institutions, community organisations, and NGOs, in rural electrification through DDG systems remain much to be desired. Considering this as a baseline project, its components will be enhanced under this project to contribute to the realization of specific outcomes, particularly Outcomes 1.1, 1.2, 1.4, 3.1 and 3.2.

Remote Village Electrification (RVE) program:
RVE aims at electrification through renewable energy sources of those 18,000 unelectrified remote villages and hamlets where grid connectivity is either not feasible or not cost effective. Projects should aim to cover all households, and aim to provide a minimum of 1 kWh/household/day or at least the basic lighting facilities. For the implementation of projects under RVE, central financial assistance is up to 90% and the balance to be financed by state plans, beneficiaries, or other sources. It is reported that 8,033 villages and hamlets have been covered under the RVE program which is being headed by MNRE. One of the salient features of this program when compared to other programs and schemes is its focus on remote villages that cannot be electrified by conventional grid extension, and should be electrified by renewable energy means. The issues that were identified with this baseline project are lack of focus on clean and modern energy application for thermal energy needs such as improved cookstoves, and mechanical energy applications apart from drawback such as lack of competent, effective, responsive and affordable technical back-up support. Under the proposed project, the applications and related energy systems are diversified to cover thermal and mechanical energy applications. Also establish government funded and community administered technical back-up support at the district level in all project districts as mentioned earlier. Considering this as a baseline project its components will be supplemented to contribute to the realization of specific outcomes, particularly Outcomes 1.3 and 3.3.

Global Energy Access Centre (GEAC)
The MNRE is planning to set up a Global Energy Access Centre (GEAC) to provide an impetus to improve access to energy situation in the country with assistance from the UNDP. The proposed project considers this as a baseline activity, and various ministries function as its stakeholders as it will establish collaboration with various institutions through involving private sector, and NGOs. This centre will be operational by the end of this year and under the proposed GEF project it will operate to address the various technical, policy and institutional barriers to the promotion and facilitation of energy access to the areas that will be focused in the project. The GEAC activities will be enhanced to contribute to the achievement of specific outcomes particularly Outcomes 2.1, 2.2, and 2.3.[18]

National Biomass Cook Stove Initiative (NBCI)
The NBCI was initiated in 2009 and is still ongoing. Its main target is the enhancement of technical capacity in the R&D, testing, certification of improved cook stoves. Its major activities will be enhanced under the proposed GEF

[18] The proposed project will address the gaps in inclusive planning, and coordination with other initiatives. The implementation of DDG, RVE, NBCI and NBMMP, needs strong support of NGOs, IREP training centers, State Nodal Agencies and other institutions including consultants.

project to contribute to the achievement of Outcomes 1.3, 1.4, and 3.1.

National Biogas and Manure Management Programme (NBMMP)
The financial support provided to this programme is INR 5.62 billion. This programme targets implementation of 647,000 family type biogas plants and supports (a) biogas based distributed/grid power generation; (b) demonstration of integrated technology-package in entrepreneurial mode for medium size (200 to 100 m^3 per day) biogas plants for generation, purification/enrichment, bottling and piped distribution of biogas; and (c) setting up plants having capacity of 1,000 m^3. Its major activities specifically on the diversification of energy access to clean and improved technologies in thermal applications (such as cooking as well as mechanical energy and power applications) through the use of biogas are subsumed into the proposed GEF project to contribute to the realization of Outcomes 1.3, 1.4, 3.1 and 3.2.

One of the main reasons for merging or transforming some of these rural energy programs is due to the Electricity Act 2003, wherein rural energy was mentioned as part of law and mandated formulation of a national policy. RGGVY is then emerged as a national program for developing rural electricity infrastructure and expanding household electrification.

The other policies are National Electricity Policy and Rural Electrification Policy. The National Electricity Policy states that electricity is a basic human need and supply of electricity must be made available at reasonable tariffs to rural areas. One of the targets of this policy is to meet the power demand of all households by 2012. Rural Electrification Policy further elaborates on the issues mentioned in the national electricity policy, and makes specific recommendations for effective implementation of a rural electrification program. The notable recommendations are (a) establish the role of different institutions in the implementation of the policy until institutions responsible for ensuring involvement of local communities, (b) set up of district-level committees under local administrations with representatives from concerned district-level agencies, consumer associations and other important stakeholders; since women suffer most from limited energy access, their participation in particular should be ensured, (c) to ensure financial sustainability, least-cost options must be exercised (after taking into account the full life-cycle costs, and the explicit and implicit subsidies), and efforts should be made to enhance demand for electricity by promoting economic activities with active involvement of consumers.

For most of the above mentioned policies and programs, the sources of funding are through national or state budgets (in the case of RGGVY (in the context of DDG), it is managed through REC), loans from commercial banks and grants from private and public institutions. These are the results and lessons learnt[19] from baseline projects as well as energy access programs in general in India.

Alternative:

The rationale for this project is twofold. The first one is that energy access projects used to focus of the energy service delivery. Although the rural communities are provided with energy service delivery, their affordability to pay for the services remains a question. This needs a thought through approach to increase affordability to pay for the service through clustering the dispersed markets. The second one is that the role of mainstreaming energy access goals into the national developmental strategy and rollout of innovative financing shall not be ignored as well.

The increased access to energy or modern energy services will stimulate economic growth through scaling up their

[19] To highlight some of the key lessons learnt and anticipated outcomes in the proposed project:
(1) Over the past decade, most of these policies and programs formulated are either discontinued in the middle or merged/transformed into other programs. This lack of consistency is primarily due to lack of single governing institution/entity. It is now essential that GEAC is established and strengthened its capacity to provide an impetus to improving access to energy situation in the country.
(2) There are several examples of success in demonstrating approaches and techniques on energy access. Such case examples need to be scaled up and replicated through mobilizing investments.
(3) The success of energy access projects implementation is with sustained energy service delivery, combined with productive applications of energy and cluster dispersed markets.
Apart from the above mentioned main elements, involvement of local communities is important to achieve sustained operation of energy service delivery.

deployment. This may also trigger a transformation of energy services in rural areas and expand market with the involvement of various stakeholders.

Having recognized the persistent problem of access to energy, the barriers and challenges pertaining to providing energy access exist at the national and community levels. Addressing the barriers at both levels is important particularly with regard to policies that are formulated at the national level. In the implementation of such policies, the facilitation of the establishment of supply chain activities for energy service delivery, decentralized/community level will play a key role. Therefore, the proposed project will focus on addressing the barriers at these two levels, all of which have contributed in hindering the provision of energy service delivery to those who do not have energy access or are underserved with energy services.

At the national level, there is a lack of continuity and long term goals for policies. In recent years, the focus of national efforts has heavily shifted to electrification leaving other energy needs. This has created a confounded environment in the policy(ies) implementation specifically rural energy and energy access as most of the rural areas that are still un-electrified and grid may not reach in the future due to difficult terrain. Even if it reaches, the penetration of technologies that can use electricity for thermal energy needs such as cooking and heating is highly questionable considering the affordability of rural communities and households. In such circumstances, the type of energy service, its delivery model and selection of appropriate technologies will play a key role.

At the community level, households will have their own sources of energy, primarily solid biomass fuel, to meet basic thermal energy demand mainly for cooking and heating. Currently these are limited and are not sufficient enough and in some cases the supply chain or service delivery is unsustainable. Even if electricity is provided to such communities, at a highly subsidised connection, electricity may not be used to meet cooking and heating needs. Primarily due to their affordability to pay for such service or change of usual practices is considered to be a challenge. Therefore, accessibility and affordability will remains to be a challenge in the energy service delivery for un-served and underserved regions and communities. However clustering the dispersed markets would alleviate these issues to an extent.

The major barriers for promoting access to modern energy services for underserved regions and communities are categorised as follows:

(i) Policy and institutional barriers - There are policies targeted for energy access but over a period the focus has shifted towards supply of electricity as one of the important aspect. But these policies must recognize energy access is not only supply of electricity, but it needs to cover thermal, mechanical and transportation energy needs of un-served and underserved regions including rural communities. Policies must look at fuels to meet these energy needs, specifically cooking energy more comprehensively, as over 20% of primary energy is on account of energy used for cooking. The policies must also provide enabling environment for the involvement of individuals at community level and private sector in energy access projects. The practice of providing subsidies to meet targeted capacity should be discontinued; rather the policies should focus performance based subsidies. Most programs, especially in energy sector, were government driven emphasizing little on market transformation. Policies must be planned for a long term with focused targets. The current situation in India is, many policies exist, but some are discontinued or transformed into others and created a confounded environment among the stakeholders and lacks long term vision. Defined role in implementing such policies by detailing the institutional structure doesn't exist.

(a) Lack of long term policy to nurture and expand access to modern energy services: although there are programs for rural energy, such as RGGVY, specifically focuses electricity alone. Whereas for un-served and underserved regions and communities, energy is required for thermal, mechanical and transportation needs.
(b) Lack of level playing field for modern energy services compared to conventional energy: higher subsidies for fossil fuels, investment support and tariff policy for conventional energy makes it difficult for modern and clean energy service providers to recover their capital and operating costs. Policies shall also focus on promotion of investments in modern and clean energy services.
(c) Lack of targeted policies to encourage service providers to un-served and underserved regions, communities and rural areas: low priority or no focus is given by the service providers as it is not attractive for them to scale up and replicate proven energy service delivery models.

The reason for the above is mainly the way energy policies are implemented in the country, which often employs a supply driven approach or top-down approach. The provision of energy technologies (such as SHS, solar PV panels etc.) and services (rural electrification under RGGVY) involve the provision of certain hardware that are highly subsidized to meet the policy goals/targets. The involvement of local communities and end-users in such initiatives are very limited, and the target beneficiaries often have limited choices in the selection of hardware/products. Such approach is, and has been shown in many cases as unsustainable due to the unavailability of established suppliers within reach as well as unavailability of post-sale maintenance of such hardware/products. When it comes to energy service delivery under RGGVY, the quality of service i.e. continued supply of power is very poor and basic supply hours aren't even met. In order to address the problem of energy access, there needs effective coordination and cooperation between various institutions starting at the ministries level. When it comes to grid electricity, Ministry of Power and state utilities coordinate the related programmes. Solutions focusing new and renewable energies, including modern and clean energy solutions, MNRE is responsible entity. At state level, these efforts are coordinated by State Nodal Agencies and/or Department of Rural Development and Panchayat Raj. Ministry of Petroleum is responsible for policies, subsidies and distribution of LPG.

(a) Lack coherence among institutions, grassroots institutional support among departments working on renewable energy and energy access
(b) Lack of apex institute to take the agenda of energy access in a comprehensive manner

These 2 barriers are mainly due to the lack of effective coordination between the institutions, which in turn is due to: (a) weaknesses in reporting structures or lines of authority; (b) multiplicity, duplicity and overlap of roles and responsibilities amongst various institutions, compounded by lack of clear understanding of the ultimate goals; (c) lack of requisite competence amongst individuals, particularly in the lower tiers of the hierarchy to understand and appreciate repercussions of new technology; (d) excessively elaborate safeguards built into the procedures (particularly financial procedures) to prevent misuse of public funds by vested interest. It is expected that a centralised coordinating institution will address these issues by clearly defining the roles of different institutions and capacity development. An enhanced Global Energy Access Centre (GEAC) can function as one-stop-service/apex institution for energy access, provide support to investors especially private sector and ensure close coordination within ministries and departments (MNRE, MoP, BEE, MSME, etc.).

(ii) Financial barriers - Financial institutions lack knowledge on proven modern energy products and services serving the rural communities. Often such products and services are considered as high risk investments if involved and are reluctant to provide loans. This has an influence on the investors' interest in terms of low returns, long lead times and high risk of operational failures.

From the end user perspective, rural communities have low capacities to make initial investments and huge capital costs for modern energy services. End users normally find it difficult to access government subsidies along with conditional and restrictive procedures hindering the use of appropriate technology implementation in a region. Apart from this, for those who are willing to set up production units or open up energy service enterprises at rural locations must be encouraged through financial support or enable them to access to rural locations. It is essential that the energy access projects must be initiated at the rural locations where such services are most needed.

(a) Lack of investor interest, especially in the underserved off grid regions and communities: this is mainly due to higher transaction costs involved in the energy service delivery.
(b) Lack of sufficient available capital for financing institutions to operate and finance modern energy services in such locations.
(c) Lack of capacity of un-served and underserved regions and communities to absorb modern and clean energy technologies and services
(d) Lack of affordability of end users to pay for the services and higher risk in the business operation of financial institutions.
(e) Although there are proven business models for rural enterprises both in terms of energy service delivery and/or productive applications, there is a lack of scaling up and its replication due to the above mentioned risks.

The root cause for this is investors/financial institutions often find it as risky area to enter as the target group is unaffordable to pay for the services. Focusing of increasing the end-users affordability to pay for the service is

completely ignored in the design of energy access projects.

(iii) Technical barriers - Almost all the technologies that are targeted under the access to modern energy services for un-served and underserved regions and rural communities are proven, and are need to be scaled up and replicated. There may be barriers pertain to the availability of technologies and modern energy service providers at the remote rural locations. This is mainly due to the commercial nature of such business service/enterprises which prohibits them to serve the poor rural communities. Lack of supply and access to energy services in underserved and rural communities apart from affordability are considered to be barriers.

Selection of appropriate location for energy service enterprises and choice of right technology suitable to location is an important step. The promotion of technologies and/or energy services must be based on the needs assessment of those selected locations, availability of resources (commercial and non-commercial energy sources) and options must be provided to the choice of households/end-user and communities.

(a) Limited experience in linking modern and clean energy services with productive uses and applications which needs to be scaled up and replicated.
(b) Lack of scaling up proven technology service delivery models along with financing options due to (i) the unavailability of infrastructure and service providers in rural and underserved locations, (ii) proven service delivery models could be site / area / situation specific, (iii) 'handholding' requirements might be quite intensive, (iv) technology supply may not be able to keep up with rising demand through scale up, and (v) financiers may tend to be wary of financing new technology.
(c) Lack of turnkey agents to install, commission, provide guarantee & warrantee and post installation services as it costs higher and end-user often unaffordable to pay for such high quality services
(d) Lack of credible suppliers for modern and clean energy services delivery – especially lack of quality and standards in products and services combined with delay in the delivery of products. Most of the existing suppliers prefer to go through the bulk supply route via government procurement channels than directly approaching potential end-users. Quality standards do exist, but it cost higher when purchased individually. The price is decided by the quality and credibility of energy service delivery. The end-users may not often recognise the quality of product and service and purchases the low cost product.
(e) Lack of capacity in the management of installed energy products and services and its continued monitoring and maintenance, mainly due to: (i) inadequate experience of the end-users in sharing and management of any kind of community infrastructure; and, (ii) weaknesses in the current local self-government management structures.
(f) Lack of identified sites/villages (lack of local resource assessment, lack of assessment of energy requirement) as it requires substantial expertise, time and finance. The pace at which such an exercise is done depends on the availability of the required budget and experts.
(g) Lack of scale up and replication of low-carbon proven technologies and business models:
    i. Electricity; wind energy for mechanical applications, improved cookstoves, hybrid village power systems etc.
    ii. Proven business models for such technologies that can be implemented in a competitive market

(iv) Awareness and capacity building related barriers - Lack of awareness about modern energy services and their benefits among the end-users targeted, and lack of information pertain to the suppliers of energy services are observed among awareness barriers.

Different institutions that are part of governance and policy implementation may not be aware of their role in terms of what they shall be doing in providing modern energy services. Lack of clarification of their role and ineffective coordination between these institutions may lead to an uncertain situation for policy implementation. The staff may not have the required capacities either in terms of technical and managerial skills to perform their duties while providing modern energy services to the underserved and rural communities. When it comes to effective implementation of a policy, staff of responsible institutions must be trained and strengthened to implement and enforce policy at sub-national and local level. The same institutional structure shall be made responsible for the implementation of rural energy policy. In this regard, guidelines may have to be developed in order to enact mandatory implementation of rural energy policy. Also, in the institutional framework of a policy implementation, ensure that the communities and end users are involved in the development of project plans and programs.

(a) Lack of knowledge on
    i. fair assessment of local resource availability and its mapping
    ii. demand for modern energy and its seasonal and spatial distribution
    iii. inadequate capacities to select appropriate technologies, and service providers
    iv. revenue generation models among stakeholders
(b) Lack of capacity and awareness in terms of:
    i. involvement of local stakeholders in the planning, design and implementation of energy access projects
    ii. identification of stakeholders and their capacity

The root cause for the abovementioned barriers is the undefined role for different institutions in policy implementation. Moreover, local communities are often ignored in the assessment of their needs as energy service delivery is often considered as a supply driven approach which is due to inadequate capacities.

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

The project aims to scale up and replicate modern and clean energy services and technologies in the un-served and underserved regions and rural communities. The objective is enabling of access to modern and affordable energy services for meeting domestic and commercial energy needs in un-served and underserved regions and communities. The proposed project is intended to address the above mentioned barriers through its four components[20]: (1) Investment financing for rural energy technology enterprises, and for end-users that promote productive applications, (2) Policy and institutional support for the promotion of access to modern and clean energy services, (3) Scale up and replicate access to clean and modern energy services in un-served and underserved regions and rural communities[21], and (4) Awareness and institutional capacity development.

Component 1: Investment financing for rural energy technology enterprises and for end-users that promote productive applications - Involvement of private sector is quite important to scale up and replicate energy access projects for modern and clean energy services. Private sector can play an important role in the energy technologies supply and energy service delivery including mobilizing investments to finance projects. GEF funds will be used to: (i) provide gap funding (through generation based incentive) to demonstrate the business viability of RE-based energy services provision; (ii) prepare methodology and guidelines for selecting technology packages under various situations; (iii) prepare business plans; (iv) create awareness and sensitize financial institutions; (v) strengthen supply chain (entrepreneurs, suppliers) and energy service delivery; and, (vi) prepare enhanced monitoring and evaluation protocol for proposed pilots as well as energy service delivery projects in general and cover additional costs involved in the implementation of monitoring protocol. During the PPG phase, these activities will be elaborated further with the intervention details. The pilot projects will be implemented through investments (as part of co-financing) in the form of equity from end user, loans procured by investors from banks and financial institutions and subsidy from MNRE. Apart from performance based subsidies, offer a choice of appropriate financing options for the end-users, which is needed and left to their choice. The possible financing options are, but not limited to, (a) user contribution (pay for service/fee for service), (b) loans[22], (c) micro-

[20] Project Management Unit (PMU) will be located within MNRE, which will be responsible for project implementation. Key NGOs/institutions will be chosen at the regional level to coordinate implementation, awareness, training and capacity building. PMU will coordinate with GEAC for the development of guidelines and policy; also function as a responsible entity for overall coordination. Project Steering Committee (chaired by Secretary, MNRE), Executive Committee (chaired by JS, MNRE) and Advisory Committee (chaired by Secretary) will be appropriately represented by stakeholders in order to provide appropriate oversight for project implementation. The project organizational structure along with management arrangements will be detailed during PPG phase.

[21] Pilot interventions are proposed in about 10 representative districts chosen from five agro-climatic zones. During the project duration itself, the replications will be carried out in 30 more districts.

[22] GEF funds will not be used for loans under the project. Rather some of these will be used to carry out the activities that will facilitate improvement of access to finance energy services for community and household productive application projects, as well as rural enterprise development that focus of energy service delivery. The access to finance and rural enterprise development will be achieved through financial viability assessments of the developed applicable technology packages and identifying financial institutions such as IREDA (main lending agency for loans renewable energy) and other leading banks in India that can provide

finance/micro-credit, (d) retailer financing, (e) smart subsidies (production based incentives). The pilot projects may include the following services or needs and technologies.

Table 1: Possible service or needs along with different technologies

Service/Need	Technology Application*	Citation/reference	Baseline project
Lighting	• Centralised PV charging station with lantern rental model • SPV power packs, including solar lantern, are 10 nos. each for underserved villages and un-served villages • Solar home lighting system	• Sunlabob in Lao PDR (click here to download) • Integrated Energy Centres concept of selcolabs (click here to download) • Case Study 25 of "emPOWERING rural India the RE way" publication, Solar-based village electrification (pg 113), Case study 17 Power to people (pg 81)	Remote Village Electrification (RVE) program
Irrigation (mechanical)	• Solar PV pumps		Decentralised Distributed Generation (DDG)
Productive uses by enterprise	• Biomass gasifier for thermal • Biomass gasifier for electricity	• Case study 6 of "emPOWERING rural India the RE way" publication, Steel rerolling mills (pg 31) • Case study 5 of "emPOWERING rural India the RE way" publication, A dream comes true in Saran village, Bihar (pg 24)	Remote Village Electrification (RVE) program
Cooking	• Improved Cookstove	• Case study 11 of "emPOWERING rural India the RE way" publication, Environment friendly stove (pg 53)	National Biomass Cook Stove Initiative (NBCI)

* since the needs assessment will be conducted during PPG phase, based on the available sources of energy, the possibility for other renewable energy technologies, such as hydro, can't be ruled out.

In order to make it more attractive for private sector, the return on investments needs to be promising. This can be achieved only through developing viable business models for service enterprises, promote enterprises that focus productive applications of energy use, cluster approach in case of dispersed markets, increase the capacity of the end-users to pay for the services etc. Throughout this process, promote appropriate financial mechanisms where needed. The Ministry of New and Renewable Energy (MNRE) will be the entity responsible to execute component 1 with the involvement of private sector, financial institutions and leading banks such as IREDA, NABARD, and MFIs. Project Management Unit (PMU) will be located within MNRE, which will be responsible for overall project implementation. The selection of 30 un-served villages and 30 underserved villages as pilots under the proposed project will be based on a methodology which will be developed during the PPG stage and at the same time project areas will also be identified in consultation with the project stakeholders and the project executing partner MNRE. The project will establish startup and working capital loans from lead banks and financial institutions such as IREDA, NABARD, MFI, etc. to energy access projects that promote clean and modern energy services to un-served and underserved regions and rural communities. It is advantageous to have certain guidelines and/or toolkit for the stakeholders to develop energy plans.

This project component is expected to result in the following outcomes: (1.1). Improved enabling environment that spur and enhance interest among technology developers, investors and service enterprises in investing on energy access initiatives, (1.2). Availability of financing options for enterprises that provides access to clean energy and promote productive applications, (1.3). Improved financial support for community and household productive use projects, and (1.4). Increased access to finance for rural enterprise development.

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financing in the form of: (a) loans; (b) micro-finance/micro-credit for the end-users; (c) retailer financing; and, (d) smart subsidies (production based incentives) for community and household initiatives that use energy for productive applications. The resources needed for this are already included as part of the co-financing for the proposed project. The GEF grant will be used to prepare plans, Detailed Project Proposals (DPP), train investors in accessing finance, and sensitize bankers to finance such interventions.

The outputs under this project component include: (a) Developed and approved SAPACE in a maximum of five states, (b) approved and implemented access to clean and modern energy plans in at least three districts, and four villages per state, (c) Prepared business proposals by appropriate rural energy technology suppliers and service enterprises, (d) Completed financial viability assessments of the prepared proposals, (e) Established enterprises that produce rural energy technologies and provide energy services as per the local energy needs, (f) Designed financial schemes that are output based for enterprises that provide access to clean energy and promote productive applications, (g) Established agreements with financing institutions (lead banks, IREDA, SIDBI, NABARD, etc.), micro financing institutions to invest in access to clean and modern energy, (h) Completed financial viability assessments of the developed applicable technology packages, (i) Identified financing institutions that can provide financing for the end-users, (j) Funded productive use of energy initiatives at community level and household level through financing, (k) Prepared business proposals by selected rural enterprises, (l) Completed financial viability assessments of the developed applicable technology package at village level, (m) identified financing institutions that can provide funding for end-user and productive use of energy at community level, (n) prepared rural enterprise proposals for productive applications of energy, and (m) Installed energy systems in established rural enterprises that make use of the energy services. The installation of energy systems in established rural enterprises is part of technology package. In a technology package, there could be various technologies that can be considered for implementation as described under Output 3.1.5 (e.g., solar lantern, solar power packs, solar home lighting system, solar PV pumping, improved cook stoves, gasifiers) depending on the energy needs of a village.

Component 2: Policy and institutional support for the promotion of access to modern and clean energy services - This component is intended to support the GoI in institutionalizing policy framework for effective implementation of energy access projects. As mentioned, there are policies for rural energy and energy access but some of these are discontinued over a period and few others are transformed into ongoing programs such as RGGVY. GEAC of MNRE will function as one-stop-service for energy access and provide support to investors. GEAC is expected to establish a close coordination within relevant ministries, and departments (MNRE, MoP, BEE, MSME, etc.). The capacities of GEAC need to be strengthened to perform the role of one-stop-service. GEAC is also expected to establish close collaboration with Integrated Rural Energy Programme (IREP) training centers, other institutions (IISc, IITs, TBUs, ITIs), NGOs[23] (such as TIDE for entrepreneurship development, TERI for energy solutions, Husk Power for business model of biomass gasifier based village energy solutions, Village Governance-Kuttumbakkam for panchayat collaboration, Gram Vikas/Suma khadi Gramodyog/Aarti for cooking energy solutions, IDE for water/irrigation solutions, SELCO-India for solar energy solutions, Rural Technology Institute /ICPCI for support in training and standardization, and RARE for international NGO linking energy and conservation), and private sector. GEAC is expected to establish collaborative agreement with banks and financial institutions to mobilize investments for energy access and with agencies for semi market and market mode dissemination of energy interventions. Few such agencies are S^3IDF, ORB Energy. This will help to institutionalize the energy access policy implementation structure to promote modern and clean energy services than creating or suggesting new policies and implementation architecture for the promotion of energy access. Also, as part of this, it is advised that standards for modern and clean energy technologies are set in along with a list of certified enterprises. This will help to ensure that credible suppliers are recognised and available to promote modern and clean energy services delivery. Based on the local resource availability, applicable technologies need to be decided in consultation with local communities. The approach shall be technology and resource neutral. It is expected to establish at least two new testing facilities and capacities of at least three existing test facilities will be further strengthened.

[23] Under outcome 2.1, the GEAC will establish close collaboration with NGOs in order to coordinate the efforts at national/central level. One of the baseline activities, DDG scheme implementation, already involves local institutions such as *Panchayat Raj* Institutions (PRI), community organizations, and NGOs. Stakeholder involvement will be enhanced further in the proposed project through NGOs that work at the grass roots level in providing the knowledge support (technical knowhow), mobilizing the community and conducting awareness programs for the rural masses. The public participation is represented by PRI through their lowest level institution at village level i.e. *grama panchayat.* Identifying pilot interventions at group and community levels will be done in close consultation with PRIs. Under Component 4, it is planned to conduct awareness workshops to self-help groups (SHGs) in order to leverage their support. The exact role of public participation, CSO, indigenous people will be detailed out during PPG phase as specific site will be identified at that time.

This project component is expected to result in the following outcomes[24]: (2.1). Energy access efforts are coordinated at the national/central level (2.2). Energy access projects are implemented in line with the Institutionalized rural electrification policy, (2.3). Wider availability of quality modern and clean energy technologies and services for rural communities.

The outputs under this project component include: (a) established collaboration with IREP training centers, other institutions (IISc, IITs, Technical Back Up units (TBUs), ITIs), private sector and NGOs through GEAC which function as one-stop-service provider, (b) Institutionalized and enforced implementation of DDG scheme and RVE programme through GEAC, (c) developed plans by the district-level committees involving local communities / vulnerable groups at sub-national / district level, (d) improved and expanded standards for the modern and clean energy technologies, (e) established testing facilities[25] to test the performance of modern and clean energy technologies in at least 5 locations; and (f) established certification process and certified enterprises that provide quality modern and clean energy technologies and services in rural communities.

Component 3: Scale up and replicate access to clean and modern energy services in un-served and underserved regions[26] - There are pockets of successful energy access models exist in India in terms of energy service delivery and financing. Such needs to be scaled up and replicated. This can be done through selecting demonstration projects. In this component, it is important to ensure that - project sites are identified; involved communities in the selection of technologies that fulfill the needs; and ensure such energy technologies and services are tested with local communities; developed a methodology to arrive at an optimal system design and configuration; ensure such technologies meet certain minimum technical standards.

This project component is expected to result in the following outcomes: (3.1). Increased flow of investments in energy access projects through increased number of rural energy technology enterprises and service providers, and (3.2). Increased number of energy access service providers.

The expected outputs under this component are (a) implemented developed clean and modern energy access plans involving energy technology enterprises serving un-served and underserved regions and individual households, (b) clustered dispersed markets for energy service delivery by energy technology enterprises and service providers, (c)

[24] The outcomes and outputs of Component 2 "Policy and institutional support for the promotion of access to modern and clean energy services" are intrinsically relevant to the other project components. Under Component 1, policy support for capital loans and generation based incentives will help to mobilize investments and enhance the participation of banks and financial institutions. Under Component 3, the institutional support that will be created and facilitated under Component 2 will establish credible recognised suppliers to promote modern and clean energy services delivery, implement pilot demonstrations and maintain standards for modern and clean energy technologies. Under Component 4, the institutional support developed under Component 2 will support training institutions to implement and sustain the interventions through training different stakeholders, provide capacity building for entrepreneurs, etc. apart from implementation of project in different regions; these interventions shall be sustained and replicated.

[25] The project will develop improved and expanded existing standards for the modern and clean energy technologies. There are already existing test facilities in India. Of those, the technical capacities of at least three facilities will be further strengthened. Also, the proposed project will establish at least two new testing facilities if required in the regions where there are no facilities available. The GEF contribution is limited to technical assistance such as capacity building, and in the establishment of operational system for the utilization of test facilities services and certification process. Depending on the nature of institutions identified, based on the existing governing structure, a test facility operational structure will be decided. The identification of test facilities will be finalized during the PPG phase, including which entity would operate the newly identified two test facilities under the project.

[26] NGOs/institutions with proven track records will be selected in implementing the renewable energy interventions. Such NGOs/institutions shall liaise closely with energy service companies, energy service delivery enterprises, IREP training centers, technical institutions, *Panchayat Raj* institutions (at district, *taluk*, village level), and entrepreneurs. In its ongoing portfolio, MNRE has been working successfully with NGOs and institutions in the implementation of projects such as monitoring project progress, and channeling funds apart from delegation of project implementation. MNRE for example has supported NGOs who have installed a large number of biogas plants, and some of them have installed more than 50,000 family size biogas plants. These are, Gram Vikas, a NGO located in eastern part of India, Myrada and Suma Khadi Gramodyog, a NGO in south of India for promoting improved cook stoves, TIDE, a NGO in south of India. Similarly MNRE has been working with Panchayat Raj Institutions namely Zilla Panchayat (district level) in Integrated Rural Energy Programme (IREP) in different states; with educational institutions such as Indian Institute of Science as Gasifier testing centre, Pune University as solar products testing centre, are a few to mention. Historically, as per institutional structure of the MNRE, they have been working with State Level Nodal Agencies, which are extended arm of energy departments or rural development departments, in each State of India. Thus MNRE has good track record, well established guidelines and structure in working with NGOs and institutions apart from their own State Nodal Agencies.

implemented technology packages in 30 un-served villages and 30 underserved villages[27] at the individual household, and community levels that linked modern and clean energy services with productive applications, (d) 500 trained entrepreneurs under entrepreneurship development programs, and (e) RESCOs (25 nos.) and ESDEs (35 nos.) that were assisted[28] to provide access to clean and modern energy solutions.

Component 4: Awareness and institutional capacity development[29] - Often, the institutions that are responsible for policy implementation at the sub-national and regional level may not be aware of what they should be doing to implement a prescribed policy. Here in this case, there are too many policies where rural energy is part of policies from Ministry of Power, Ministry of Rural Development and MNRE. Since the nodal agencies for these ministries are different at the sub-national and regional level, it gets complicated while implementing these policies. Once there is a clarity between the institutions, defined their roles, staff of responsible institutions must be trained and strengthened to implement and enforce policy at sub-national and local level. This must be complemented by the knowledge products developed for certain target groups especially needs assessment, resource identification and selection of the appropriate technologies and energy service needed through involving local communities. In addition to these, the project is expected to design and conduct promotional campaigns for all stakeholders (individual, group, and community end users) in targeted villages covered under the project. Awareness campaigns are expected to be conducted at the institutional level specifically, in the technical institutions, schools in those districts approximately 50 institutions per district apart from conducting awareness workshops to about 500 self-help groups (SHGs).

This project component is expected to result in the following outcomes: (4.1). Strengthened institutional capacities at various levels on the implementation of energy access projects, (4.2). Improved accessibility of information and enhanced understanding and knowledge about clean and modern energy services and technologies in the rural communities.

The Outputs under this component include: (a) established and operational district-level committees under local administration for implementing energy access projects (gender balanced as well as equal role for all vulnerable groups) in pilot districts of five states, (b) trained members of district-level committees capable of involving local communities in the planning and designing energy access projects, (c) trained member of district-level committees on the evaluation and selection of appropriate modern and clean energy technologies and services, (d) developed and published knowledge products (guidance manual, toolkit etc.) for specific target groups to design and implement energy access projects, and (e) disseminated knowledge products informing about local availability of modern energy services, technologies and available financing options.

Incremental reasoning: GEF resources are sought to support the barrier removal activities that are incremental in order to scale up and replicate existing pockets of success. GEF support will definitely supplement the ongoing GoI efforts through co-financing from its programs as listed in section B.1. It is highly likely that the project will attract funds from other donors who are interested in energy access projects and may expand the outreach of demonstration projects through scale up and replication.

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[27] Here in this case, GEF funds will be used to: (a) provide incremental costs involved in the implementation of technology packages in 30 un-served villages and 30 underserved villages; (ii) development of clean and modern energy access plans involving energy technology enterprises serving un-served and underserved villages and individual households; (iii) cluster of dispersed markets for energy service delivery; and, (iv) implement improved standards for energy technologies. During the PPG phase, these activities will be elaborated further with more details. A program like Village Energy Security Programme (VESP) has allocated about USD 80,000 per village for energy access related interventions where it intended to provide power only for domestic (non-productive) uses. The proposed project will meet the commercial energy demand of villages through the development of rural enterprises that make use of the energy services for productive applications in addition to meeting domestic energy demand. Therefore, the additional allocated amount of US$ 120,000 is completely justified. Nevertheless a detailed budget estimate and allocation will be done based on the selected sites during the PPG exercise.

[28] The government provided capital loans will be extended to energy technology enterprises as well as energy service providers. Energy technology enterprises and service providers are enabled to prepare viable business models under the project. This activity involves, detailed costing of operations and assessment of revenues through these operations. It will be ensured that the payback period of such operations is attractive enough and comparable with any other business operation. Such business models will be evaluated based on a certain criteria. This criterion will be elaborated further during PPG phase.

[29] GEAC in association with the PMU at MNRE will be the responsible entity for overall coordination. The same institutions responsible for implementation of Component 3, will oversee the awareness campaigns that will be conducted at the institutional level apart from conducting awareness workshops to self-help groups (SHGs).

The anticipated **global environmental benefit** through the implementation of this project is avoided GHG emissions apart from sustainable energy service delivery. It is expected that the project would supply thermal, electrical and mechanical energy needs of 30 underserved and 30 un-served villages focusing interventions in the areas of domestic, irrigation, cooking and other economic activities. The emission reductions have been calculated on the basis of each type of RET applications and the estimated number of RET applications during the project implementation period[30]. Tentatively, the plan is to implement the application of solar home systems, solar lantern, and SPV power packs (for lighting)[31], electrical (assumed 30 sets of 1 HP capacity in one village) and diesel motors (assumed 20 sets of 5 HP capacity in one village) replaced with PV pumping (irrigation), improved cookstoves that use biomass fuel (for cooking applications), and biomass gasifiers (for power (20 kW) and thermal applications (100 kW_{th}))[32]. These applications will be implemented (as demonstrations) in 30 underserved villages and 30 un-served villages. The number of interventions in a village will largely depend on the energy demand/needs and availability of resources. Based on experience in similar projects, the emission reductions achieved through the use of an improved cookstove is 1.5 tCO_2e/y (120 cook stoves per village). The annual emission reductions achieved through the replacement of a kerosene lamp with solar lantern is 102 $kgCO_2/y$. The replacement of irrigation diesel pump set with PV pumping would reduce 3 tCO_2 per 1,000 liter diesel fuel. The emission reductions achieved through the replaced grid electricity use is equivalent to a grid emission factor of 0.852 tCO_2/MWh. Some of these interventions are used for rural enterprise development and other economic related activities. Depending on the availability at the selected sites, there is a possibility for the development of micro hydropower under the project. Overall, the project is expected to achieve cumulative direct CO_2 emission reductions of 575,929 tCO_2 during economic lifetime of the demonstrations that will be carried out under the project. It is expected to implement these interventions during project implementation period of 5 years. Considering the US$ 3.99 million contribution of the GEF for this project, the unit abatement cost is about US$ 6.93/tonne CO_2.

These are rough estimates based on assumed modern energy technologies at the time of writing of this PIF. However, the process of technology selection is entirely depends on the selected site, context of applicable technologies which would be analysed during CEO endorsement based on the investments mobilised. It is envisioned that the successful implementation of the project will promote energy access through clean and modern energy technologies and energy service delivery.

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 project is expected to be launched in about 30 un-served and 30 underserved villages. It will provide reliable and economical domestic power to every household thus directly impacting literacy, security, health and livelihoods. It will further improve productivity of about 4,000 farmers through reliable irrigation and lead to provision of some means of livelihoods to about 3,000 individuals. Overall, the project is expected to benefit more than about 350,000 individuals in many ways. Access to modern and clean energy services will certainly free women and men time formerly devoted to fuel wood collection. Improved cookstoves will help reduced exposure to smoke from burning of biomass fuels in kitchens and may significantly improve women's health. Access to electricity is going to increase

[30] The income-generating activities and enterprise promotion are co-benefits associated with energy access projects. These are implemented using co-financing contribution not GEF grant.

[31] Assumed connected load per household in case electrified by diesel is 200 W (total number of households connected in underserved and un-served villages are 12,000 and 8,000 respectively). SPV power packs are 10 nos. each for underserved villages and un-served villages.

[32] The energy services that are intended to be covered under the proposed project are lighting, cooking, irrigation, and other possible economic activities that would be identified in underserved and un-served villages. Also, when the project targets a village and aim to meet its domestic and commercial energy demand, it is expected to cover all the energy needs of a village, and expected to achieve tangible results within a village boundary. Lighting and cooking are most basic energy services needed and expected to be invariably demanded by villages targeted under the project. Energy services designed for economic activities will largely depend on the possibility for the development of economic activities and location of a village, but the villages have not yet been identified or selected. The selection of villages and mapping of energy demand will be done during PPG phase.

women's access to information through television and other media. As development of energy access projects needs considerable involvement of local communities and end-users, it is expected to bring new training opportunities for women and men and their skills improvement. Access to energy in rural and remote locations is expected to increase better health facilities in rural and remote locations through better refrigeration of vaccines and lighting for clinical services. This project will also contribute to global environmental benefits by reducing GHG emissions as well as conserving water through the use of drip irrigation technology.

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:

The following table summarizes the anticipated risks that might prevent the successful implementation of the project and achieving the project objectives, including the proposed mitigation measures:

Risks	Level of risk/ Risk Rating	Mitigation Measure
Inaccessibility and difficult accessibility of some project areas may lead to project cost escalation because of high transportation and transaction costs	M	For individual systems, this can be managed by setting up a robust supply chain and transporting systems in bulk. For larger (group and community) systems, cost could be managed by combining orders so that some of the transaction costs could be avoided.
Unavailability of local co-financing	M	Involvement of Local Self Government (LSG) functionaries or local elected legislators would be helpful in arranging for local co-financing
Unavailability of sufficient manpower	L	The project requires manpower with certain specific skills that may not be available. It is imperative that motivated personnel are hired and trained right at the beginning of the project.
Extension of grid to project areas	M	Keep the local electricity board (such as SEBs) or distribution authority informed of the plans where project is going to be implemented. In case if the SEBs or local authorities have any plans to expand the energy service delivery (even expansion of national grid) may help the project to plan its activities in a more sustained and useful manner.
Unavailability of RE products in sufficient quantity	M	Involve several manufacturers and suppliers at the initial stages of the project itself and give them sufficient lead time to plan production and supply of the products and services.
Inaccessibility of MNRE subsidy due to bottlenecks or changes in MNRE's internal compliance requirements	M	Since the executing partner of the proposed project is MNRE, close coordination will be maintained with the concerned personnel involved in this activity at MNRE from project preparation stage onwards. This is to ensure that the demo projects under the proposed project will conform to MNRE subsidy policy
Lack of successful involvement of private sector	L	• Facilitating the availability of financing for investments in energy access as well as availability of capital loans and generation based incentives to project developers • GEAC will function as one-stop-service provider, and establish close coordination with various stakeholders including private sector • Institutional framework in place for the implementation of energy access projects • Ensuring the availability of standards for the modern and clean energy technologies so that returns are guaranteed

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:

Stakeholder	Role
Ministry of New & Renewable Energy (MNRE) and its state nodal agencies	MNRE is the implementing partner of this project playing a central role in the market transformation of renewable energy, modern energy services and technologies in India. It is the agency that is responsible for the implementation of the project. MNRE's current programmes in promoting various RETs, provides the mechanisms in taking the implementation process to the end-users in the rural areas. This project intends to further strengthen the existing policy implementation and energy service delivery. It is also responsible for the coordination between various stakeholders due to their close association with rural development such as Ministry of Rural Development (MRD), Ministry of Power (MOP) etc. MNRE's current programs in promoting various renewable and modern energy technologies provide a mechanism to carry out the energy service delivery to the end-users in the underserved regions and rural areas.
United Nations Development Programme (UNDP)	UNDP will serve as the GEF implementing agency for the proposed project. UNDP is already supporting MNRE for the promotion of energy access through its on-going core funded programmes. The inter-linkages between the proposed project and ongoing activities will be well coordinated and sequenced in order to achieve the project objective and contribute to the national goals. UNDP serves as the GEF implementing agency in carrying out the Monitoring & Evaluation of the project, facilitating the budgetary provisions and support in implementing the project activities.
Rural Electrification Corporation (REC)	REC has a mandate for electrification of rural areas. REC will be involved in the project steering committee (PSC) meetings and other project related activities to ensure there is a close coordination in the proposed activities.
Ministry of Rural Development (MRD) in India: Department of rural development	MRD is involved in uplifting the socio-economic status of rural areas of India and can provide support to several activities of this project specifically involving local communities at the rural level.
Ministry of Power (MOP)	MOP closely works with REC in meeting its targets under the RGGVY. MOP will be a member of the PSC and can facilitate close coordination and avoid duplication of efforts when it comes to rural electrification.
State Electricity Board (SEB)	The SEBs are local nodal agencies for MOP and the proposed project will closely coordinate with SEBs through MOP to achieve coordination at state level.
State Electricity Regulatory Commission (SERC)	It is expected that tariff structure for off grid electricity generation will be affected. The SERCs will look into the guidelines for off-grid as well as small scale on-grid solutions.
National Bank for Agriculture and Rural Development (NABARD)	This bank supports several aspects including livelihoods, agriculture and irrigation projects. Depending on the level of handholding needed at the decentralized level, the proposed project involves NABARD.
Market based entities	Entrepreneurs with the business model to provide energy services in rural areas; Rural Energy Service Companies (RESCOs) to install, operate and maintain energy provisions; RET manufacturers and supply-chain vendors
Petroleum Conservation Research Association (PCRA)	PCRA worked extensively in the provision of diesel pump set retrofit and can be a useful partner for that in component 3 in the proposed project.
Financial institutions	Grameen/Regional Rural banks (RRBs), micro finance institutions that function locally and Indian Renewable Development Agency (IREDA) - the financial arm of MNRE, are expected to provide soft loans and loans at low interest rates to promote modern energy technologies and services as well as enterprises with a focus of productive use of energy.
Civil Society	Organizations inclusive of Non-government organizations (NGOs) that will work at

Organizations	the grass roots level in providing the knowledge support (technical knowhow), mobilizing the community and conducting awareness programs for the rural masses.
Training institutions	IREP training centers, ITI training and administrative colleges to train and develop skill sets both technical and at policy level for the sustained use of RETs
Academic Institutions	Reputed science & engineering institutions such as Indian Institute of Science (IISc), Indian Institute of Technology (IITs) and National Engineering Colleges to provide scientific support, operate testing labs, establish standards to ensure quality of the RETs
End-users	Beneficiaries of the project outcomes, using RETs for domestic & livelihood purposes, rural institutions such as schools & hospitals where RETs will be utilized

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

This proposed project is indeed different from those previous projects.

- The past and on-going projects provide energy for domestic uses from renewable sources and targeted towards specific energy technology or energy service. This has led to fragmented efforts in providing energy access and are transforming as underserved villages. The effort of providing energy access, while fulfilling the energy demand of a village was never done in a holistic manner. This has resulted in diluted efforts for energy access and inadequate technical back up support from cost effectiveness considerations. Whereas the proposed project will consider a village as boundary and addresses the issue of energy needs in a holistic manner to provide integrated energy solution of access to energy.
- In the previous projects, income generation and enterprise promotion activities are not included as part of the project. It was found out that many users are unable to pay for their energy use or service as they do not have adequate source of livelihood. Under the NBMMP, entrepreneurial mode for medium size (200 to 100 m^3 per day) biogas plants for biogas generation, purification/enrichment, bottling and piped distribution of biogas has limited success due to the lack of embedded enterprise promotional activities in the project. Therefore, enhancing the ability of end-user to pay for the energy services through combining productive applications of energy is certainly lacking in these projects. Linking, use of energy to productive uses is expected to bridge this gap by way of enhancing income of the beneficiaries and making them capable of paying for the energy they consume. Also, this will contribute to promote sustainable development and economic benefits in the rural villages.

The proposed project will bridge this gap by integrating sustained energy service delivery with productive use of energy thereby contribute to economic empowerment of the rural communities. This project also contributes to the goals of UN Secretary General initiative of Sustainable Energy For All (SEFA).

Such an integrated energy approach was piloted under Urjagram (Concept of Energy Village), IREP (Integrated Rural Energy Programme) in the past, and VESP (Village Energy Security Programme) in recent past. However, one of the lessons is that dispersed nature of selection of villages which diluted the efforts and could not get adequate technical back up support. The proposed programme plans to focus with more number of villages to ensure sustainable scale of operation.

The proposed project complements the ongoing initiatives in the country which are already explained as part of baseline analysis with reference to RGGVY, DDG, RVE, NBCI, and NBMMP. These baseline projects are not GEF funded projects, but are national initiatives. As mentioned earlier, PMU will coordinate with GEAC for the development of guidelines and policy and also function as a responsible entity for overall coordination. The three baseline projects namely RVE, NBCI and NBMMP are being headed by MNRE and provide financial incentives to put up renewable energy devices and do not include elements such as income generating activities, technical back up support and enterprise promotion. The proposed project will influence the provisions available under these programmes to include and demonstrate these elements. It can be stated that the proposed project has already been sufficiently redesigned taking into account the results, experiences and lessons learnt from the past projects and the features and elements of on-going projects. The proposed GEF project aims to provide energy access to underserved and un-served villages through clean energy sources which is one of the mandates of National Action Plan on Climate Change (NAPCC).

When it comes to the relevant ongoing GEF projects: there are two ongoing GEF projects i.e. (a) Biomass Energy

for Rural India (BERI) and (b) Removal of Barriers for Biomass Power (also called biomass power project) are relevant to this proposed project.

The BERI project has for the first time in India showcased biomass energy plantation approach for biomass power generation, and technical feasibility of managing the biomass power at tail end of grid. This project has also provided useful lessons on the importance of differential tariff support for small scale power generation. The project is now focusing to train *Panchayat Raj* Institutions (PRI) such as *grama panchayat* at village level to do the operation and maintenance of the energy technologies once these are handed over to respective *grama panchayat*.

The Biomass power project has identified the necessity of establishing biomass supply linkages to ensure good PLF and supported such fuel linkage mechanism. There are some interesting ongoing initiatives under this project to combine energy systems with productive applications of energy, and mini-grid support for domestic applications through biomass power.

Furthermore, UNDP TRAC funding is being used to develop rural market promotion of renewable energy; and few energy interventions on gap funding mode.

Following are some initiatives on similar themes that are in the process of being launched in near future:

DFID-TERI Partnership for Clean Energy Access and Improved Policies for Sustainable Development
DFID's support will help to increase the number of poor households in India and Africa to benefit from new or sustained access to modern, clean energy either for cooking or lighting needs. DFID is contributing up to £11m through The Energy and Resources Institute (TERI) over 5 years, from 2011/12 – 15/16: £10 million from the DFID India country programme; and £1 million from the Global Development Partnership Programme (GDPP) for activities in Africa.

This program currently focuses of improved cookstoves dissemination and being implemented since 2011. With the launch of UN Secretary General initiative of Sustainable Energy For All (SEFA), more focused discussions have happened to expand the scope of this initiative, which at the moment is not clear. Therefore, it is not placed as baseline activity at the moment. But certainly during PPG phase, more focused discussions will be initiated to establish close coordination with this program and may become a baseline project.

Smart Power for Environmentally Sound Economic Development (SPEED) – A project by Development Alternatives
This project is mooted by Development Alternatives with a focus on providing electrical power to rural areas through Energy Service Companies (ESCOs). The business model is built around a central assured load in each village in the form of a cell-phone tower to be served by the ESCO. Subsequently, the ESCO is free to expand its distribution network to serve domestic and commercial consumers in the village for a fee or tariffs.

The World Bank initiative on decentralized off-grid energy access
Recently, it was learnt that the World Bank is planning to launch a project focusing on decentralized off-grid energy solutions in the states of Uttar Pradesh and Bihar. During the project preparation stage of this proposed GEF project, close coordination with the World Bank on such initiative will be done to ensure complementarity of interventions and avoid duplication of efforts.

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

UNDP has been partnering with MNRE on projects aimed at promoting renewable energy to meet energy requirements. Some of them are: (a) Removal of barriers to Biomass power, an ongoing GEF funded project; (b) Rural Energy for Rural Livelihood a UNDP core funded project that was piloted with three different technologies in three different locations. Micro hydro was piloted in the state of Uttarakhand and helped IIT Roorkie to set up a micro-hydro simulator – a training facility, which has now become self-sustaining intervention. Solar enterprises were supported through Social Work and Research Centre - Tilonia also supported barefoot women solar entrepreneurs and solar based Reverse Osmosis for water purification. Village enterprises were supported through small gasifier based systems with support from corporate houses – through their social wing; c) An ongoing

project on Access to Clean Energy – UNDP-MNRE project aims to support a few projects that can become business models if some gaps are supported. These projects have provided immense lessons and poised to logically link the present proposal.

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

UNDP will provide US$ 150,000 as co-financing in-kind towards the personnel cost in monitoring and supervising the project. UNDP has extensive experience in renewable energy and energy access projects aimed at technology identification, piloting decentralized generation and distribution, and designing revenue models. Through its core funding of over USD 2 million (including till end of December 2012), UNDP is currently supporting MNRE for the promotion of access to clean energy (ACE). This project already documented a range of successful energy access projects focusing energy service delivery using different renewable and modern energy sources for various end use applications. This project directly contributes to the realization of goals under current Country Program Action Plan (CPAP) for the period 2008-2012. Several initiatives under this project will provide inputs to the proposed project. The core funding allocation for the next CPAP is currently under discussion. The final amount of UNDP co-financing will be determined during the PPG phase. Apart from these projects and programs, UNDP has a large livelihoods portfolio which is engaged in increasing productivity and incomes for poor communities in many regions especially UNDAF states in India. The proposed project would also benefit from its portfolio of nearly 250 SGP projects and a network of 200 plus NGOs.

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 aligned with the current Country Programme Action Plan (2008-2012) which supports the Government of India in meeting its commitments under the different multilateral environmental agreements. This support will also continue in the following CPAP (2013-2017), which is being finalized and currently consultations are under progress with various stakeholders. Once this document is finalized, TRAC resources will be allocated to the identified priorities. That being said, there is a possibility to increase UNDP financing, but this will be determined during the PPG phase.

The Energy and Environment Unit of the UNDP CO has seven programme officers that support implementation of projects related to the different GEF focal areas, including biodiversity, climate change, land degradation and chemical management. Backed up also with technical expertise available in the UNDP Asia-Pacific Resource Centre (APRC) based in Bangkok, Thailand. The India country office has sufficient staff complement that can effectively supervise the implementation of this project. A professional staff from the Country Office (EEU) will be responsible for oversight, project assurance and will represent UNDP in the NSC. Expertise of other professional staff in EEU in climate change, renewable energy, natural resources management and land degradation issues shall also be utilized, when necessary, to support implementation of the 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):

NAME	POSITION	MINISTRY	DATE
Hem Pande	GEF Operational Focal Point	Ministry of Environment and forests, Government of India	03/20/2012

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**
Adriana Dinu UNDP/ GEF Officer-in-Charge		01/16/2013	Butchaiah Gadde, Regional Technical Specialist	+66 2304 9100 ext 5048	butchaiah.gadde @undp.org