REQUEST FOR CEO ENDORSEMENT
PROJECT TYPE: MEDIUM-SIZED PROJECT
TYPE OF TRUST FUND: THE GEF TRUST FUND

PART I: PROJECT INFORMATION

Project Title: Promoting sustainable electricity generation in Malian rural areas through hybrid technologies.			
Country:	Republic of Mali	GEF Project ID:	5819
GEF Agency:	UNDP	GEF Agency Project ID:	4903
Other Executing Partner(s):	Ministry of Energy and Water, AER-Mali, AMADER, MFP Programme	Submission Date: Resubmission Date:	20 November 2015 29 January 2016
GEF Focal Area(s)	Climate Change	Project Duration (Months)	48
Name of Parent Program (if applicable):	n/a	Project Agency Fee ($):	110,081

A. FOCAL AREA STATEGY FRAMEWORK

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Grant Amount ($)	Cofinancing ($)
CCM-3	Promote Investment in Renewable Energy Technologies.	Renewable energy capacity developed and installed.	GEF TF	1,158,744	24,012,393
		Total Project Cost		1,158,744	24,012,393

B. PROJECT FRAMEWORK

Project Objective: To optimize the electricity generated from MFPs (multifunctional platforms) for productive energy use by increasing the share of Renewable Energy (RE) and developing an appropriate business model for the sustainability of the system.

Project Component	Grant Type [1]	Expected Outcomes	Expected Outputs	Trust Fund	Indicative Grant Amount ($)[2]	Indicative Co-financing ($)
1. Policy, regulatory, legislative and financial instruments for hybrid based mini-grids combined with MFPs.	TA	Enabling policy and institutional framework for hybrid MFP/PV mini-grids for rural electrification.	1.1 Policy and legislative package for MFP/PV hybrid-based mini-grid rural electrification adopted. 1.2 Cornerstone policy instrument defined, adopted and enforced, e.g. reduction of upfront investment costs and subsidies, harmonized rural electricity code, licensing rules, PPAs and PPPs for MFP/PV hybrid-based mini-grids.	GEFTF	158,744	2,000,000
	INV	Financial viability of hybrid mini-grid ensured	1.3 Performance-Based Incentive Scheme, long-term concessions and determination of appropriate tariffs for hybrid-mini grid designed and set-up for long-term viability.	GEFTF	250,000	5,000,000

[1] TA includes capacity building, and research and development.
[2] 1 $ = 500 FCFA

2. Capacity Development for hybrid mini-grid system management combined with MFPs.	TA	Capacity for delivering turnkey solutions and quality Operation, Maintenance & Management (OMM) services for hybrid MFP/PV systems.	2.1 Published Guidebook on development of hybrid MFP/PV-based mini grids. 2.2 Business and technical advisory services to potential MFP/PV-based hybrid mini-grid developers. 2.3 Tailored capacity building programme delivered to relevant stakeholders and hybrid system manufacturers on system design, equipment selection, construction and OMM.	GEFTF	150,000	2,000,000
3. Showcasing a viable business model for hybrid mini-grids combined with MFPs in 15 villages.	INV	A functioning business model is demonstrated for the technical and financial viability of MFP/PV hybrid mini-grids.	3.1 Pilot sites for MFP/PV hybrid mini-grids identified and assessed, and institutional/investment model defined. 3.2 Partnerships are established for the construction and operation of MFP/PV hybrid mini-grids. 3.3 15 villages develop sustainable MFP/PV hybrid mini-grids, resulting in cumulative 147 kW of PV installed capacity.	GEFTF	400,000	13,012,393
4. Outreach programme and dissemination of project activities/results.	TA	Outreach programme and dissemination of project experience/best practices/lessons learned for replication throughout the region.	4.1 National Plan to implement outreach/promotional activities targeting both domestic and international investors. 4.2 Capacity development of concerned Ministries/Institutions to monitor and document project experience. 4.3 Published materials (including video) and informational meetings with stakeholders on project experience/best practices and lessons learned.	GEFTF	100,000	1,000,000
			Subtotal		1,058,744	23,012,393
			Project Management Cost (PMC)[3] including DPC	GEFTF	100,000	1,000,000
			Total Project Cost		**1,158,744**	**24,012,393**

3 To be calculated as percent of subtotal.

C. SOURCES OF CONFIRMED CO-FINANCING FOR THE PROJECT BY SOURCE AND BY NAME ($)

Please include letters confirming co-financing for the project with this form.

Sources of Cofinancing	Name of Cofinancier	Type of Cofinancing	Amount ($)
National Government	AER (Agency for Renewable Energy)	In-kind	500,000
National Government	AER (Agency for Renewable Energy)	Cash	12,512,393
GEF Agency	UNDP	Cash	500,000
GEF Agency	UNDP (through UNCDF)	Cash	8,500,000
GEF Agency	UNDP	In kind	2,000,000
Total Co-financing			24,012,393

D. TRUST FUND RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY
Not applicable.

E. DOES THE PROJECT INCLUDE A "NON-GRANT" INSTRUMENT? No.

PART II: PROJECT JUSTIFICATION:

A: DESCRIBE ANY CHANGES IN ALIGNMENT WITH THE PROJECT DESIGN OF THE ORIGINAL PIF

1. The PIF earmarked 25 villages that would develop sustainable MFP/PV hybrid mini-grids, resulting in cumulative 2.5 MW of PV installed capacity, therefore, averaging 100 kW of PV capacity per MFP or village. At the present time, MFPs with a standard 7.5 kW engine operating on diesel and/or biofuel do meet the "mechanical" needs of the targeted villages with populations between 600 and 2,000 inhabitants. As an average of 100 kW of PV per village will generate some 600 to 700 kWh/day, it may be difficult for new businesses utilising electricity to initially consume this large amount of energy. Consequently, the project will adopt a phased approach, based on a feasibility study and business plan, to determine the optimum size of the hybrid PV system to be installed. And given the modular nature of PV, additional capacity can be added as an increase in the electrical load gradually warrants it.

   In addition, during implementation of the PPG, it was felt that it would take a good part of Year 1 of project activities to have the policy and legislative framework in place before any MFP gets hybridised with PV. Under this assumption, it may be unrealistic to complete hybridisation in 25 villages during the remaining project timeframe of 3 years. Accordingly, the Inception Workshop held at the start of project activities endorsed the proposal to limit the number of targeted villages to only 15. Upon successful completion of hybridisation of these 15 villages, the lessons learned will prove useful in scaling up this business modality targeting a large number of the 5,000 MFPs that the Government plans to install over the next 5 years.

2. The PIF envisaged the setting up of an OBA (Output-based Aid) scheme as a financial incentive to service providers in situations when the application of financially viable tariffs was not feasible. The OBA scheme has been renamed a "Performance-Based Incentive (PBI) fund" that will be based on actual energy production of the renewable energy system installed. The PBI is designed to not only enable the developer to keep the tariff low and affordable to consumers, but it will also be effective in motivating developers/system owners to focus on proper design, installation, maintenance and performance of their renewable systems. This will also provide policy makers and regulators with assurance that incentives being provided are being effectively managed and not wasted on a system with poor performance. The PBI is one of the two components of the Financial Support Scheme, while the second component will assist in jumpstarting the market by supporting the preparation of feasibility studies/business plans and partial investment for renewable energy component of the MFP/renewable energy hybrid system.

3. The PIF did not include an outcome related to outreach and dissemination of project experience/lessons learned for replication within Mali and throughout the region where similar Multifunctional Platforms (MFPs) have been or are being introduced. Hence, Outcome No. 4: Outreach programme and dissemination of project experience/best practices/lessons learned for replication throughout the country/region has been added. This outcome is especially relevant as it will make information on best practices/lessons learned available to a large number of countries, both within the region (several West African countries are already installing MFPs) and outside, e.g. in East African countries that have very good potential to develop hybridised MFPs to provide their rural population with access to modern energy services.

A.1 National strategies and plans:

1. Situation Analysis

The Republic of Mali is a land-locked country located in West Africa, with Bamako as its capital. Two major rivers (River Senegal, 1,700-km long, half of which flows through Mali and River Niger, 4,200-km long, with 1,700 km flowing through Mali) cross the country of 14.5 million inhabitants (2009 Census – estimated at 16.9 million in 2013), consisting of 65% rural and 35% urban, living in an area that covers 1.2 million km^2. The country shares a 7,200 km border with seven countries (Fig. 1): Algeria to the North, Niger in the East, Burkina Faso to the South-East, Côte d'Ivoire and Guinea to the South, and with Mauritania and Senegal to the West. The population density varies from 90 inhabitants/km^2 in the central Niger delta to 0.5 inhabitant/km^2 in the northern Sahara region, with more than 90% of the population living in the southern part of the country.

The country is characterised by 4 distinct agro-climatic zones: i) The pre-Guinean of sub-humid zone (75 000 km^2, 6% of the total area) to the South that consists of woodlands and forests and where annual rainfall exceeds 1,200 mm; ii) The Sudan zone (215 000 km^2, 17% of the total area) in the Centre with more or less dense vegetation cover and where annual rainfall is 600 to 1,200 mm; iii) The Sudanese zone (320 000 km^2, 26% of the total area) in the North, where annual rainfall is 200 to 600 mm; and iv) The Sahara desert zone (632,000 $km^{2)}$ covering 51% of the country further North where the annual rainfall is less than 200 mm.

The dry season lasts from March through June, followed by the rainy season from June through September. October through February witnesses dry winds (Harmattan) blowing from the Sahara desert. Temperatures vary between 24°C in January to 35°C in May.

Fig. 1: Map of Mali

With a per capita GDP of $ 715 (National Institute of Statistics, 2013), Mali is considered a low income country; in 2010, 43.6% of the population lived in poverty. It is heavily dependent on resources from the MFIs, via its Extended Credit Facility, and other donors, to help reduce macroeconomic imbalances. In 2012, despite the international crisis, economic activity remained strong, supported by higher investments in agriculture and the mining sector. Real GDP grew by 3.9% in 2011 to reach 4.8% in 2012, compared with 1.9% in 2010 and inflation is presently 11.9% compared to 12.8% in 2012.

The country is largely dependent on agriculture and mineral production, with gold (the main export), uranium, phosphates, kaolinite, salt and limestone being most widely exploited - Mali is estimated to have in excess of 17,400 tonnes of uranium. Most of the population (more than 80%) works in the agriculture and livestock sector; cotton, for example, is the country's major foreign currency earner. Malian agriculture is extensive, dominated by a traditional farming system and highly dependent on rainfall for 90% of the area under crops; the area of irrigated land is approx. 1,000,000 hectares, targeting mainly rice cultivation in the Niger Delta. Agriculture (millet, rice, corn, sorghum, etc.) accounts for about 45% of GDP, 21% of exports, and over 80% of the active labour force. However, as is the case in most African countries, agriculture is essential for the attainment of the goals of poverty reduction and food security.

For a more detailed description of the "Situation Analysis", including "Stakeholder Analysis and Institutional Framework" and "National Strategies and Plans", please refer to the UNDP Prodoc, pages 6 -17.

A.2 GEF focal area and/or fund(s) strategies, eligibility criteria and priorities:
This project is consistent with GEF-5, Climate Change Objective 3: "Promote Investment in Renewable Energy Technologies".

The project's goal is to reduce GHG emissions by creating a favourable legal, regulatory and market environment and building institutional, administrative and technical capacities to promote rural electrification through hybrid MFP/renewable energy mini-grids.

For a detailed description, please refer to the UNDP Prodoc, Section 2 "Project rationale and policy conformity", page 24 and "Country ownership: country eligibility and country drivenness", page 27.

A.3 THE GEF AGENCY'S COMPARATIVE ADVANTAGE:

UNDP has implemented over 230 GEF clean energy projects in close to 100 developing countries, and has acquired a unique base of institutional knowledge on transforming renewable energy markets in developing countries. One of UNDP-GEF's three signature climate mitigation programs – Clean Energy – specifically promotes access to clean and affordable energy supply.

For a detailed description, please refer to "Section B.3: The GEF Agency's comparative advantage for implementing this project" of the PIF, page 17.

A.4 The baseline project and the problem that it seeks to address:

The Government of Mali realizes that lack of energy access in rural areas is a major detrimental factor for the country's economic development, social and environmental sustainability. To address the problem, the government established a Rural Electrification Agency (AMADER) and a Rural Electrification Fund aimed at providing partial start-up capital for private operators of mini-grids. The project fostered local private sector participation. As of early 2012, prior to the political problems in the country, 43,311 off-grid connections for households and public lighting provided electricity to about 650,000 people. In addition, about 803 public institutions, including 172 schools and 139 health centres, received off-grid access to electricity services. With the installation of multifunctional platforms by local operators in several communities, resulting in over 8,000 connections as of mid-2012, numerous business opportunities were created. The electrification program also fostered the use of renewable energy: more than 7,926 households and 500 institutions were connected to individual solar PV systems.

There is no experience in Mali with hybrid MFP/PV mini-grids. While some MFPs do generate limited amounts of electricity, utilising diesel/jatropha oil, as the case may be, during the evening hours to meet the needs of the rural population within the MFP "catchment area", there is no electricity generated during the day that could enable its use for productive/income-generating activities such as juice and ice making, refrigeration of cold drinks, operation of small machinery, etc. This is mainly due to the high cost of diesel fuel and the small demand for electricity during the day. However, through hybridising an MFP with PV, for example, it is possible to generate electricity during daylight hours and utilise the existing distribution system (or build a new one if none exists) to provide an electricity service to consumers for commercial uses.

For a detailed description of the baseline project and the problem that it seeks to address, please refer to the UNDP Prodoc, Section 1.4 "Baseline Situation and Problem to be addressed", pages 16 – 17 and Section 1.5 "Barriers to implementing hybrid MFP/PV mini-grids in Mali", pages 21 – 24.

MFP Technology for Rural Energy Services

The small size and dispersed locations of villages in Mali make off-grid decentralized diesel-based mechanical and electric energy supply through the utilisation of MFPs as a very viable option; in addition, they can be adapted to the specific needs of every single village. The MFP is a stand-alone power unit that provides decentralised energy services to rural populations. It consists of a low-speed diesel engine (normally 10-hp or 7.5 kW) mounted on a chassis (Photo 1) and can be utilized for a multitude of functions, including water pumping for crop irrigation and household use, but to which can be coupled various other equipment, such as a generator for electricity supply, electric water pumps, grinding mills, battery chargers, oil presses, welding equipment, carpentry tools and other machines used in cabinetry/furniture-making.

Given the fact that diesel engines installed in MFPs are robust enough to bear additional charges, AMADER and Women Management Committees (CFGs) have signed partnership agreements under which 110 diesel-fuelled MFPs

are already utilised in an equal number of villages for a few hours in the evening to generate electricity mainly for lighting. However, these MFPs can be hybridised with PV, for example, to generate electricity during daylight hours for productive/income-generating activities such as juice and ice making, refrigeration of cold drinks, operation of small machinery, etc., as indicated above. In all these cases and as per present regulations, all low-voltage distributions systems are constructed and owned by AMADER and in view of the short distances over which the power is distributed and the small generation capacities involved, no transmission lines are required.

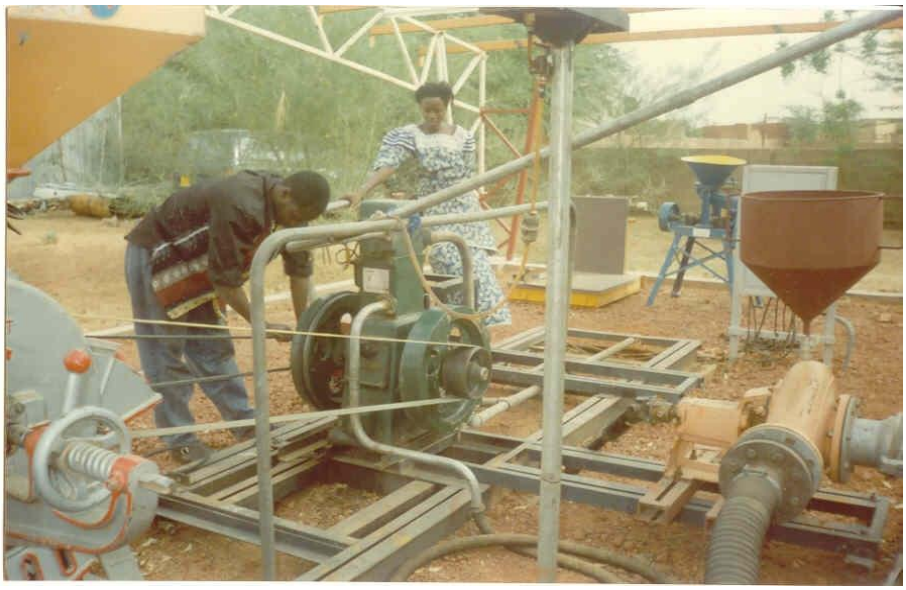


Photo 1: Multi-Functional Platform (courtesy AER-Mali)

For additional information, please refer to the UNDP Prodoc Section "MFP Technology for Rural Energy Services", pages 18 – 20.

Financial Support Scheme to project developers

Investment in renewable energy projects often requires to be supported with financial incentives, at least initially, because such projects are not only typically more investment-intensive in terms of upfront costs, but that they are also, in some cases, considered to be riskier investments due to technology or resource uncertainties. The degree to which cost and risk factors apply varies according to technology and geographical location and project developers expect some form of financial support/risk-sharing to compensate them for taking on additional financial risks due to, as in the case of Mali, the absence of a working business model that can be emulated.

In Mali, the upfront cost of a PV, complete with Balance of System and Inverter, is approx $ 5,000/kW installed, at present-day prices, and have an average daily output of 6 kWh/kW installed/day. Coupled with the absence of a financially viable tariff, it makes it difficult for private sector investors to venture into this new territory, when generation costs can amount up to around $ 1.60/kWh without the 80% investment subsidy from AMADER, while the tariff charged to consumers is $ 0.47/kWh. (Source: AMADER). However, as per AMADER, this cost is expected to go down with volume when the market for PV installations pick up within the next 7 – 10 years.

For a more detailed description of the "Financial Support Scheme", please refer to UNDP Prodoc, Section 2 "Strategy", pages 25 - 27.

Project Components

The present project specifically addresses issues related to promoting the implementation of small-scale renewable energy/PV-based mini-grids in a hybrid system with MFPs and targets small villages of between 500 and 2,000 inhabitants. It proposes to put in place an enabling environment for the development of these hybrid systems and

develop a suitable business model and financial instruments for their viability and replication. It will also showcase a new business model that combines confidence with sustainability and replication. However, it does not venture into large-scale (MW-size) hybrid PV/diesel isolated grids that AMADER plans to implement with the support of the World Bank and other donors to target bigger rural cities (see para. A.7 below). Notwithstanding this, the close partnership that the project will have with AMADER will assist it in benefitting from lessons learned by the former in implementing rural electrification and provide coordination in order to avoid the same village (s) being targeted for rural electrification through hybrid MFP-PV/renewable energy systems.

There are 11,489 villages in Mali with approx. less than 2,000 inhabitants, with some 9,000 of these villages still being without electricity. This constitutes a huge potential for replication and scaling up utilising a sound business model to be defined and adopted under this project for hybrid mini-grid systems revolving around MFPs. The objectives of the project are proposed to be achieved through the participation of the private sector working hand in hand with MFPs. Thus, this programme will not only benefit rural households, small farmers and commercial institutions, but will also connect the private sector, financial institutions, technical training and local organisations to promote the establishment of distribution channels to develop the hybrid MFP/renewable energy market for the provision of electricity services.

For a more detailed description of "Project Components", please refer to UNDP Prodoc Section "Project objective, outcomes and outputs/activities", pages 29 – 35.

A.5 Incremental/Additional cost reasoning

GEF intervention is needed to remove the legal, regulatory and market barriers which hamper realisation of the Government plans to harness the abundant availability of solar (renewable) energy in a hybrid combination with MFPs for electricity generation in the rural areas. This is expected to create a conducive environment for a novel approach to drive a community-cum-private sector partnership for electricity access for income-generating activities, thus improving the quality of life in the rural areas through the availability of additional monetary resources. The crucial role of the Government will be to create the appropriate environment for this community-cum-private sector-driven modality to successfully move forward.

By completion of the 4-year project period, 364 tonnes of CO_2 would have been avoided as a direct result of renewable energy-based electricity generation. Furthermore, 214 tonnes of CO_2/year would continue to be avoided annually over the remaining almost 18 years of useful life of the equipment. Thus, the total direct emission reduction, without replication, over a 20-year projected equipment life will be 4,216 tCO_2 (364 tonnes + 18 x 214 tonnes = 4,216 tCO_2).

In addition, it is highly likely that the momentum generated by the project will result in some 5 MW of PV being installed under such PV/MFP mini-grids over a post-project period of 10 years, resulting in an indirect post-project emission reduction of 116,462 tonnes of CO_2.

Project GHG emission reduction impacts

Time-frame	Direct project without replication (20-year PV projected life).	Indirect post-project (bottom-up)	Indirect post-project (top-down)
Total CO_2 emissions reduced (tons)	4,216	8,560	116,462
Unit abatement cost	$275	$135	$10

For a detailed description of the Incremental/Additional cost reasoning, please refer to the UNDP Prodoc Section 1.4 on "Barriers to implementing hybrid MFP/PV mini-grids in Mali", pages 21 - 24 and Section on "GHG Calculation", page 39.

A.6 Risks (including climate change, potential social and environmental risks that might prevent the project objectives from being achieved and measures that address these risks).

The project presents some risks which are discussed in the Table below:

Risk	Rating (Probability of occurrence)	Impact/Mitigation Approach
Political risk: Insecurity and political unrest resulting in considerable delays and postponement of project implementation. The country just came out from war and military coup. Any sudden or unexpected change might cause insecurity and cause delays in project implementation. In addition, Mali is located in the very unstable part of the unsecured Sahara.	Moderate	The current political situation in the country is stable. However, the risk of sporadic unrest exist in the North and this may delay implementation of project activities in this part of the country. To mitigate this risk, the project will privilege sites in the Centre and South of the country where the situation is quiet. The project will also build a wide coalition of partners and stakeholders, including civil society, the business community, NGOs and international development agencies, whose interest in MFPs and hybrid mini-grid promotion will likely sustain, even in the event of a regime change.
Policy risk: The success of this project will be determined to a large degree by adoption and effective enforcement of the proposed polices. Lack of policy support may jeopardize the achievement of immediate results and over-all impact.	Moderate	There exists the possibility that the Government may not act on a policy framework that will encourage the private sector to invest in MFP/PV mini-grids. If this risk were to materialise, project implementation will get seriously hampered. However, the donor community will work with the Government to have the right policy in place, in line with the Government's mandate and policy objectives on key national initiatives.
Technology risk: The crack of solar panels is quite common and could result in systems breaking down. Sub-standard quality of locally produced equipment leading to early breakdown of the systems and dwindling consumer confidence in the technology.	Moderate	The project intends to utilise proven, feasible and affordable technologies and replicate solutions that have been successfully introduced in several countries in the region. In this connection, the Government will put in place strict controls on the standards of equipment that can be imported and installed in the country. In addition, the Government will ensure that all installations and maintenance should be undertaken only by licensed and certified technicians as per established electricity codes, building along the way partnerships with equipment producers operating in the country.
Financial risk: Widespread poverty and lack of sustainable source of income resulting in low ability to pay once per month for energy supply services, if appropriate billing system is not in place. There is also a lack of ability to finance projects for SMEs.	Moderate	The project will be mainly implemented in those villages where MFPs are already operational, with some already having existing distribution lines for limited electricity supply from MFPs. In these villages, there is already the capacity and willingness to pay from end-users. On the other hand, the combination of the community business model and private sector business model through partnerships will reduce the financial risk from both sides (community side and private sector side).

Risk	Rating (Probability of occurrence)	Impact/Mitigation Approach
Market risk: In Mali, hybrid systems will have to compete with subsidized and locally available diesel alternatives. Without additional incentives, hybrid plants will likely remain uncompetitive.	High	Introduction of financial viable tariff for hybrid diesel/RE-based mini-grids will be a cornerstone instrument of the proposed policy package and business model, aimed specifically at addressing this market risk by levelling the playing field for RE against other available alternatives. Financial commitments will be secured to sustain the policy package and business model operation beyond the GEF proposed project duration from the Government and other donors.
Climate risk: Climate change is predicted to cause changes and increase variability of Mali solar and wind patterns. Higher temperatures may cause overheat of solar panels and reduce the efficiency of these panels. And stronger winds may cause destruction and breaking of panels. In addition, MFPs may successfully switch their energy source from diesel to biofuel.	Moderate	In the case of extreme climate change, regular maintenance and inspection will help to cool the solar panels and prevent them from overheating or destruction. Some actions will be adopted in that case, such as attaching a substrate on the glass layer of the solar panels using thermal conductive cement/back sheets, or elevating the solar panels a few inches from the roof to allow cool air to circulate in between. Both of these actions are important to protect them from overheating. Both the number of MFPs and plantation coverage area of Jatropha are increasing, but the Jatropha oil production is not sufficient to feed even a small percentage of the existing MFPs.
Overall Risk Rating	Moderate	

A.7 Coordination with other relevant GEF-financed initiatives.

- "*Promotion of the production and use of Jatropha oil as a sustainable biofuel in Mali*": The implementation of this project started 2 years ago, with a total funding of $ 6.7 million (GEF funding: $ 0.95 million) and is aimed at developing and promoting a sustainable model for the production and use of Jatropha oil. The project is contributing to reducing the use of diesel and therefore help to reduce greenhouse gas emissions from the transport and energy production sectors. It aims at significantly contributing to rural development through the shift from diesel to biofuels for multifunctional platforms.

For a detailed description under this Section, please refer to UNDP Prodoc Section "Coordination with other relevant GEF-financed initiatives", pages 40 – 44.

B. ADDITIONAL INFORMATION NOT ADDRESSED AT PIF STAGE:

B.1 Describe how the stakeholders will be engaged in project implementation.

The project will be implemented through the NIM execution modality by the Ministry of Energy and Water (MEE, in French). The Ministry will appoint a National Project Director who will assume overall responsibility for project implementation, ensure the delivery of project outputs and the judicious use of project resources. The National Project Director will be assisted by a Project Management Unit headed by a Project Manager (PM) to be recruited through a competitive process. The PM will be responsible for overall project coordination and implementation, consolidation of work plans and project papers, preparation of quarterly progress reports, reporting to the project supervisory bodies, and supervising the work of the project experts and other project staff. The PM will also closely coordinate project activities with relevant Government and other institutions and hold regular consultations with project stakeholders. An international part-time Chief Technical Adviser (15 weeks/year) will be recruited to support the PM on technical issues, while a full-time Project Assistant (PA) will support him/her on administrative and financial matters.

For additional information on "Stakeholder Participation", please refer to UNDP Prodoc, Section "Management Arrangements", pages 53 - 54.

B.2 Describe the socio-economic benefits to be delivered by the Project at the national and local levels, including consideration of gender dimensions, and how these will support the achievement of global benefits.

The project will bring about benefits at both local and national/global levels through reduced environmental and human health threats due to less burning of diesel, thus reducing negative environmental impacts. Some of the benefits on the long term are listed below:

- A substantial reduction in imported diesel consumption for electricity generation for rural electrification as a result of utilising a renewable energy source for such purpose.
- A rural development dynamism through support to villagers who will be encouraged at the local level to embark on income-generating activities such as juice and ice making, refrigeration of cold drinks, operation of small machinery, etc. This is expected to generate 500 jobs during the project period.
- Opportunities for the private sector in job creation for construction, operation and maintenance of renewable energy-based off-grid electricity generating systems. If required , the project will support local training institutions (e.g. Centres de formation professionelle et technique) to develop technical capacity required by project developers – a total of 75 jobs expected to be generated in this sector.
- The project will seek to achieve gender equality through the empowerment of women to fully participate in all project activities and specifically those related to capacity development under the various project components.
- An MFP can free up time by mechanizing intensive tasks that disproportionately fall on women and girls. Hence, such access to energy services is particularly important for empowering women and increasing girls' opportunities for education.
- Paricipation of civil society, through the involvement of NGOs, including women NGOs already mentioned above**,** and stakeholder consultations, in the decision-making process related to electricity services for the rural areas and for information and awareness raising activities.

B.3 Explain how cost-effectiveness is reflected in the project design.

As indicated in the Prodoc under para. 1 "Situation Analysis", electricity in the diesel-operated isolated AMADER mini-grids is generated at an average cost of 47 US Cents/kWh normally for only 5-7 hours per day. While tariffs in the rural areas are not directly subsidised, they are established by AMADER to make the services affordable to the consumers; this is achieved through providing the private grid operators with an upfront investment subsidy of 80%. This keeps maintaining the tariff established by AMADER for the lowest consumer category (0 – 50 kWh/month) to 12 US Cents/kWh, with progressive tariff increases for higher consumer categories.

Only 15% of the rural population (65% of the Mali population is rural) has access to electricity services. This implies that the bulk of the rural population have no other option than to meet their needs for "modern" energy services through very expensive means. In this connection, it is reported that rural households spend an average $ 18 per month to purchase kerosene, candles and disposable batteries. As per the IMF (2013), these sources of energy result in $ 1.5/kWh, when aggregated.

There is no experience in Mali with hybrid MFP/PV mini-grids. While some MFPs do generate limited amounts of electricity, utilising diesel/jatropha oil, as the case may be, during the evening hours to meet the needs of the rural population within the MFP "catchment area", there is no electricity generated during the day that could enable its use for productive/income-generating activities such as juice and ice making, refrigeration of cold drinks, operation of small machinery, etc. This is mainly due to the high cost of diesel fuel and the small demand for electricity during the day.

This need for electricity during the day can be met at a lower cost through PV. As per AER (formerly CNESOLER) estimates, the cost of electricity generation from small PV installations is in the range of 25 – 30 US Cents/kWh. This

generation cost is comparable to what is often quoted in other African countries that have experience with PV- based mini-grids, e.g. Kenya, Uganda, Tanzania, etc. and will get confirmed when the project is under way.

C. DESCRIBE THE BUDGETED M & E PLAN:

The Monitoring and Evaluation (M&E) Work Plan and Estimated Associated Budget are presented in the Table below:

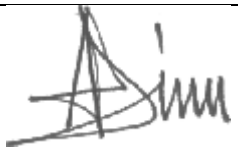
Type of M&E activity	Responsible Parties	Budget US$ *Excluding project team staff time*	Time frame
Inception Workshop and Report	▪ Project Manager ▪ UNDP CO, UNDP GEF	Indicative cost: 14,000	Within first two months of project start up.
Measurement of Means of Verification of project results.	▪ UNDP GEF RTA/Project Manager will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members.	To be finalized in Inception Phase and Workshop.	Start, mid and end of project (during evaluation cycle) and annually when required.
Measurement of Means of Verification for Project Progress on output and implementation.	▪ Oversight by Project Manager ▪ Project team	To be determined as part of the Annual Work Plan's preparation.	Annually prior to ARR/PIR and to the definition of annual work plans
ARR/PIR	▪ Project manager and team ▪ UNDP CO ▪ UNDP RTA ▪ UNDP EEG	None	Annually
Periodic status/ progress reports.	▪ Project manager and team	None	Quarterly
Terminal Evaluation	▪ Project manager and team. ▪ UNDP CO ▪ UNDP RSC ▪ External Consultants (i.e. evaluation team).	Indicative cost : 55,000	At least three months before the end of project implementation.
Audit	▪ UNDP CO ▪ Project manager and team	Indicative cost per year: 7,500 (Total: 30,000)	Yearly
Visits to field sites	▪ UNDP CO ▪ UNDP RSC (as appropriate) ▪ Government representatives	For GEF supported projects, paid from IA fees and operational budget.	Yearly
TOTAL indicative COST Excluding project team staff time and UNDP staff and travel expenses.		US$ 99,000	

PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT AND GEF AGENCY

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT ON BEHALF OF THE GOVERNMENT

NAME	**POSITION**	**MINISTRY**	**DATE (**mm/dd/yyyy**)**
Sékou KONE	GEF Operational Focal Point / Head of division for partnerships and resource mobilizations	Ministry of Environment and Sustainable Development	**05/22/2014**

B. GEF AGENCY (IES) CERTIFICATION

This request has been prepared in accordance with GEF policies and procedures and meets the GEF criteria for CEO Endorsement.					
Agency Coordinator, Agency name	Signature	Date *(Month, day, year)*	Project Contact Person	Telephone	Email Address
Adriana Dinu UNDP/GEF Executive Coordinator		January 29, 2016	**Saliou Touré** Regional Technical Advisor, EITT	+251 912 503 320	saliou.toure@undp.org

ANNEX A: PROJECT RESULTS FRAMEWORK

An abridged version of the logframe is provided below. However, a complete version can be found in the GEF-UNDP project document.

Objective/ Outcome	Indicator	End of Project Targets	Sources of Verification
Objective - To optimize the electricity generated from Multifunctional Platforms (MFP) for productive energy use by increasing the share of Renewable Energy (RE) and developing an appropriate business model for the sustainability of a hybrid MFP/PV system.	Emission reduction. MWh produced. Number of jobs created. Number of beneficiaries.	PV-based hybrid electricity generation of 244 MWh/year at project completion. Direct reduction of 4,216 tonnes of CO_2 over the 20-year lifetime of the PV systems. Estimated cumulative indirect GHG emission reduction of 116,462 tonnes of CO_2 by 2025 on the basis of a conservative policy scenario and a GEF causality factor of 80%. Total of 575 jobs created over 4-year project duration. A total of 3,728 households, each having an average of 8 persons, to benefit from electricity services (almost 30,000 persons).	Project's annual reports, GHG monitoring and verification reports. Project mid-term review and final evaluation reports.
Outcome 1 – Enabling policy and institutional framework for hybrid MFP/PV mini-grids for rural electrification.	Existence of adequate policy and regulatory framework.	To be completed within 18 months of project initiation.	Published documents. Government decrees/laws.
Outcome 2 - Capacity for delivering turnkey solutions and quality Operation, Maintenance & Management (OMM) services for hybrid MFP/PV systems.	Existence of capacity for installation and maintenance services.	To be completed within 18 months of project initiation and applied by Government thereafter.	Project documentation.
Outcome 3 - A functioning business model is demonstrated for the technical and financial viability of MFP/PV hybrid mini-grids.	Existence of business model.	To be completed within 24 months of project start.	Project documentation.
Outcome 4 - Outreach programme and dissemination of project experience/best practices/lessons learned for replication throughout the country/region.	Existence of outreach programme.	Increased awareness among stakeholders in place to promote and develop the market for MFP/PV hybrid mini-grid electricity generation.	Project final report and website.

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF)
N/A

ANNEX C: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS

A. PROVIDE DETAILED FUNDING AMOUNT OF THE PPG FINANCING STATUS IN THE TABLE BELOW:

Project Preparation Activities Implemented	*Implementation Status*	*GEF Amount ($)*			*Co-financing ($)*
		Budgeted Amount	*Amount Spent to date*	*Amount Committed*	
Collection and analysis of baseline data including comparative review of other countries under similar conditions and circumstances	Completed	25,000	25,000		20,000
Review of experiences in Mali and other countries of the following: - Application of hybrid mini-grids in rural areas - Business model for operating these mini-grids - Area/community-based energy needs assessment and planning	Completed	15,000	15,000		20,000
Conduct a Logical Framework Analysis (LFA) to define project goal, objectives, outcomes, outputs and activities, including success indicators as well as delineation of responsibilities and coordination mechanisms	Completed	5,000	5,000		10,000
Stakeholder engagement, capacity needs assessment of key local implementing partners and co-financing	Completed	10,000	10,000		10,000
Detailed design of project implementation plan	Completed	10,000	10,000		5,000
Preparation and finalization of the full-sized Project Document	Completed	0	0		5,000
Total		**65,000**	**65,000**		**70,000**

*Any uncommitted amounts should be returned to the GEF Trust Fund. This is not a physical transfer of money, but achieved through reporting and netting out from disbursement request to Trustee. Please indicate expected date of refund transaction to Trustee. N/A

ANNEX D: CALENDAR OF EXPECTED REFLOWS (if non grant instrument is used)

Provide a calendar of expected reflows to the GEF Trust Fund or to your Agency (and/or revolving fund that will be set up).
N/A