



**PROJECT IDENTIFICATION FORM (PIF) <sup>1</sup>**

**PROJECT TYPE: Full-sized Project**

**TYPE OF TRUST FUND: GEF Trust Fund**

**PART I: PROJECT IDENTIFICATION**

Project Title:	Lighting One Million Lives in Liberia		
Country(ies):	Liberia	GEF Project ID: <sup>2</sup>	4336
GEF Agency(ies):	WB	GEF Agency Project ID:	P124014
Other Executing Partner(s):	Liberia Rural and Renewable Energy Agency (RREA)	Submission Date:	September 14, 2011
GEF Focal Area (s):	Climate Change	Project Duration(Months)	48
Name of parent program (if applicable): ➤ For SFM/REDD+ <input type="checkbox"/>	N/A	Agency Fee :	145,454

**A. FOCAL AREA STRATEGY FRAMEWORK<sup>3</sup>:**

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Indicative Financing from relevant TF (GEF/LDCF/SCCF) (\$)	Indicative Cofinancing (\$)
CCM-3	Investment in renewable energy technologies increased	Electricity and heat produced from renewable sources	1,124,540	3,300,000
CCM-3	Favorable policy and regulatory environment created for renewable energy investments	Renewable energy policy and regulation in place. Renewable energy capacity installed.	200,000	500,000
Project management cost <sup>4</sup>			130,000	250,000
<b>Total project costs</b>			<b>1,454,540</b>	<b>4,050,000</b>

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

<sup>2</sup> Project ID number will be assigned by GEFSEC.

<sup>3</sup> Refer to the reference attached on the Focal Area Results Framework when filling up the table in item A.

<sup>4</sup> GEF will finance management cost that is solely linked to GEF financing of the project.

## B. PROJECT FRAMEWORK

<b>Project Objective: To support the development of sustainable energy supplies and services in Liberia.</b>					
<b>Project Component</b>	<b>Grant Type (TA/INV )</b>	<b>Expected Outcomes</b>	<b>Expected Outputs</b>	<b>Indicative Financing from relevant TF (GEF) (\$)</b>	<b>Indicative Cofinancing (\$)</b>
Support to Capacity strengthening and, Policy & Regulations for market facilitation and RE standards,	TA	<p>Technical assistance to rapidly increase capacity of RREA and the private sector to implement proposed program:</p> <p>Increased product quality assurance and market intelligence; enhanced consumer awareness; improved affordability of high quality solar products; supply chain facilitation.</p> <p>Improved policy and regulatory environment in place to support program objectives.</p>	<p>a. Capacity of RREA and private sector built</p> <p>b. Access to sustainable energy rapidly increased</p> <p>c. Access to improved lighting services offered</p> <p>d. Policies and regulations adopted to support market facilitation and quality standards.</p>	200,000	500,000
Lighting Liberia: Business Development for Use of solar energy for rapid scale-up of access to modern lighting	Inv	<p>a. Ability of private sector to access trade finance for quality solar lights improved.</p> <p>b. Increased affordability of quality solar lights by consumers.</p> <p>c. Increased investment in high quality solar products.</p> <p>d. GHG emissions from kerosene lanterns reduced.</p>	<p>a. Quality solar lanterns demonstrated and promoted in Liberia</p> <p>b. Conditions for commercial market expansion for modern high quality solar lights created</p> <p>c. Dissemination of at least 100,000 high-quality solar lanterns</p> <p>d. Reduced GHG emissions from kerosene of about 15% from the current baseline and direct offset of about 34,000 tons of CO<sub>2</sub> emissions</p>	1,124,540	3,300,000
Project management Cost <sup>5</sup>				130,000	250,000
<b>Total project costs</b>				<b>1,454,540</b>	<b>4,050,000</b>

<sup>5</sup> Same as footnote #3.

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

Sources of Cofinancing for baseline project	Name of Cofinancier	Type of Cofinancing	Amount (\$)
GEF Agency	World Bank (AFREA trust fund)	Grant	2,000,000
National Government	Govt. of Liberia	In-kind	50,000
Other Multilateral Agency (ies)			0
Private Sector	Private Sector Counterpart Financing	User payments, business equity, other	2,000,000
<b>Total Co-financing</b>			<b>4,050,000</b>

**D. GEF/LDCF/SCCF RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY<sup>1</sup>**

GEF Agency	Type of Trust Fund	Focal area	Country name/Global	Project amount (a)	Agency Fee (b) <sup>2</sup>	Total c=a+b
<b>Total Grant Resources</b>				0	0	0

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

<sup>2</sup> Please indicate fees related to this project.

**PART II: PROJECT JUSTIFICATION**

**A. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:**

**A.1.1. GEF FOCAL AREA STRATEGIES:**

This proposal is consistent with GEF Climate Change Strategic Priority #3, Promoting Investment in Renewable Energy Technologies. As such, it will promote/catalyze private businesses to market and sell, on a large scale, solar lanterns using advanced LED and efficient CFL technologies to displace kerosene and other fuel-based lighting in line with Strategic Objective 3. It will also improve the capacity of the country's newly established Rural and Renewable Energy Agency (RREA), the first agency of its kind in the history of Liberia, and the private sector to mainstream this capacity to ultimately reach a goal of serving 200,000 households or benefitting one million Liberian lives.

**A.1.2. FOR PROJECTS FUNDED FROM LDCF/SCCF: THE LDCF/SCCF ELIGIBILITY CRITERIA AND PRIORITIES: N/A**

**A.2. NATIONAL STRATEGIES AND PLANS OR REPORTS AND ASSESSMENTS UNDER RELEVANT CONVENTIONS, IF APPLICABLE, I.E. NAPAS, NAPS, NBSAPS, NATIONAL COMMUNICATIONS, TNAS, NIPS, PRSPs, NPFE, ETC.:**

The project is entirely consistent with Liberia's 2009 National Energy Policy and is expected to extend the effectiveness and reach of that policy with respect to renewable energy. It will support the promotion of sustainable technology, improve access of households to modern lighting; and lay the foundation for future renewable energy development by strengthening the capacity of key institutions.

Liberia's first national communication is under final preparation; support in the amount of \$420,000 was approved in August 2005, with the following results to date: (a) GHG Inventory completed, report published in 2007; (b) V&A analysis: more than 50% completed; (c) Mitigation Analysis: 25% completed; (d) National Circumstances: completed.

## **B. PROJECT OVERVIEW:**

### **B.1. DESCRIBE THE BASELINE PROJECT AND THE PROBLEM THAT IT SEEKS TO ADDRESS:**

Liberia continues to face numerous development challenges. Currently less than 1% of Monrovia's residents have access to the electrical grid, and the few with access pay one of the highest tariffs in the world due to its reliance on costly diesel fuel. The rest of the country depends on inferior sources of lighting from kerosene, candles, and battery-powered LED lights, or electricity from small gasoline or diesel generators. An estimated 95% of the population relies on charcoal and firewood for cooking. These traditional sources of fuel are costly and emit pollutants that degrade air quality as well as human health.

Liberia's National Energy Policy, adopted in June 2009, calls for universal access to energy that is affordable, sustainable, and environmentally friendly. It states as its policy goals—in line with the Millennium Development Goals as adopted by the Economic Community of West African States (ECOWAS)—to achieve by 2015: (a) 40% of Liberian citizens living in rural and peri-urban areas and using traditional biomass for cooking shall have access to improved stoves and kerosene or efficient-gas cookers in order to reduce indoor pollution; (b) 30% of the urban and peri-urban population shall have access to reliable modern energy services enabling them to meet their basic needs (lighting, cooking, communication, and small production related activities); and (c) 15% of the rural population and 25% of the schools, clinics, and community centers in rural areas shall have access to modern energy services to meet the same basic needs. Beyond 2015, the NEP states its long-term strategy is to make Liberia a carbon neutral country within a specified target period.

Translating Liberia's energy access goals into number of households gave the following results: (a) Number of households with access to improved cookstoves: 225,000; (b) Number of urban and peri-urban households with access to modern energy services: 120,000; (c) Number of rural households with access: 63,000; (d) Number of rural schools, clinics, and community centers with access to modern energy services: 2,500. Currently the Monrovia grid connects about 3,000 customers and under the new Management Contract with LEC aims to connect 33,000 customers by 2015. Currently there are no national plans under implementation to connect large numbers of rural consumers. Similarly, there are no national plans targeting improved cookstoves or means to offset the use of fuel-based lighting that 700,000 Liberian households and businesses depend. Consequently, the goals of the NEP appear quite out of reach.

In January 2010 President Ellen Johnson Sirleaf signed Executive Order No. 23 establishing the Rural and Renewable Energy Agency (RREA) of Liberia, an agency under but independent from the Ministry of Lands, Mines and Energy (MLME), whose long-term goal is to facilitate the economic transformation of rural Liberia by accelerating the commercial deployment of modern and renewable energy services in rural areas. The RREA's principal functions include the planning and financing of projects to be implemented by public, private, and community developers. Facilitating the financing of projects includes managing a Rural Energy Fund that will provide grants to overcome first cost barriers in increasing modern energy access by the poor. Secondary functions of the RREA include educating the general public about renewable energy as well as rural energy options and opportunities.

The establishment and capacity building of the RREA has been supported by a small World Bank program since July 2009. Under this program, Catalyzing New Renewable Energy in Rural Liberia (CNREERL), the Agency now has a small core staff, which have begun implementation of two rural electrification pilot projects utilizing renewable energy; one is based on the Sustainable Solar Market Package (SSMP) approach, and the other will rehabilitate a pre-war micro-hydropower station and mini-grid in a remote location. Both pilot projects are part of the World Bank CNREERL program. The pilot projects are intended to demonstrate the opportunities afforded by the RREA's programs to rural communities and the private sector, while at the same time building the Agency's capacity. RREA is also seeking to launch the World Bank/IFC-led Lighting Africa Program which has been underway since 2008. However, at present the RREA lacks the financial backing to undertake a large-scale program to scale up rural energy access. Therefore the proposed project has been designed

to further assist the Government of Liberia in meeting its energy development goals, as expressed in the NEP. It will do so through two components.

Component 1, Support to Capacity strengthening and Policy & Regulations for Market Facilitation and RE Standards, will build upon the efforts already underway through the World Bank CNRERL program and further strengthen the new Agency's ability to effectively carry out investment programs. It will concomitantly support private sector strengthening and market conditioning, specifically to support the Lighting Liberia project goals. The WB/IFC Lighting Africa program is essentially a package of complimentary activities that together build a market transformation platform for modern off-grid lighting based on the following five pillars (or program components): Quality Assurance, Market Intelligence, Business Development and Financing, Consumer Awareness, and Policy and Public Sector Operations. Policy support will include working with the Government of Liberia to address tax and duty barriers to the importation of approved solar products, and work to implement a quality assurance program through the Bureau of Standards based on the technology standards established under the Lighting Africa program. These activities will be pursued during the first 12 months of the program. Policy development is one of the objectives of the RREA spelled out in the Rural and Renewable Energy Agency Act of 2011, to be put before Parliament in mid-March 2011. Government support for such policy work has been indicated. The results will translate on the ground as rapidly increased access to modern lighting and electricity services.

So far the WB/IFC Lighting Africa program has certified seven products ranging from simple LED desk lights with cell phone charging capabilities to micro-solar home systems that will power fans, radios, and lights. Currently there are more than 50 products in line for testing and certification over the coming six months, so the list of approved products is expected to expand significantly. The benefits associated with making such products available to the private market include; i) the displacement of 75 percent of current energy expenditures on kerosene, candles, and battery-powered lights; and ii) the benefits associated with a relatively higher lighting efficiency through the use of a solar system. The household savings from in-home cell phone charging include displacing current expenditures of approximately \$5-15 per month on charging at diesel-powered booths, which charge approximately \$0.60 per phone per charge.

Component 2, Lighting Liberia: Business Development for Use of solar energy for rapid scale-up of access to modern lighting will promote the use of solar energy technologies to provide rural dwellers with access to modern lighting, which they would otherwise lack for years to come. Liberia's rate of electrification is below 1% even in Liberia's capital city. The technologies to be deployed for this proposed GEF activity are micro-solar products such as those CFL and LED lanterns that have been qualified under the Lighting Africa program and micro-solar systems that offer small charging capabilities such as for mobile phones and radios.

The Lighting Liberia activities will catalyze the private sector to jump-start the market and deliver efficient and reliable solar lighting products at reduced costs. These lanterns will be disseminated through a number of means, initially through an incentivized solar for kerosene lamp exchange program implemented by private sector market vendors. The intent is to grow the commercial market providing these products. The GEF support would be used to seed the off-grid lighting market through support to a lantern exchange program with an initial dissemination of 100,000 lanterns and an eventual target of 200,000 households or one million lives (given the average national household size of five persons). Put differently, 100,000 kerosene lanterns would be replaced with 100,000 solar lanterns. This sub-component will utilize the framework and tools of the Lighting Africa program (which emphasizes quality assurance, market intelligence, business development, consumer awareness, finance facilitation and policy improvement) and supplement it by catalyzing the private sector to deliver qualified products on a large scale. Through the proposed Liberia GEF program, Liberia will in 2011 join the current Lighting Africa Program as an "expansion" country. In order to facilitate expansion of the Lighting Africa program to an additional set of countries who have shown interest in joining the initiative, the World Bank is now proposing to continue the earlier lighting initiative under the 'GEF-5 Lighting Africa Program Expansion'. Since the GEF-5 program is still under development, this proposed project in Liberia is going forward and will be integrated into the

program at a later stage. The exact mechanism of support will be designed as the project continues its preparation and is likely to utilize GEF resources to , among others (a) provide market intelligence to the private sector on characteristics of products demanded by consumers and their willingness to pay; (b) facilitate consumer outreach and education to inform consumers and build confidence, through media and roadshows about quality certified products; (c) facilitate partnerships between international suppliers and domestic private sector on accessing qualified products; (d) provide financing mechanisms to overcome lack of access to trade finance, seed the market (such as an output-based coupon program) to overcome consumer resistance to adopting new products, and/or work with corporates (cell phone companies, industries such as mining, timber, agricultural with extensive operations in rural areas), and NGOs to serve aggregate markets efficiently. A coupon program, for example, would offer a discount to the importer/distributor for qualified CFL/LED lantern products sold to consumers (for example, offering a limited time, discount coupon valued at about 30% of product price could offset higher cost of small volume purchases, duties and taxes, and cost associated with clearing goods in port. This will help these products compete with disposable battery-powered, low quality, low cost products that are flooding the market. At the early market entry stages such a program (similar to store coupon programs for introduction of new products), could be effective in overcoming early resistance of buyers. A guarantee program would help overcome the severe shortage of trade finance which limits the ability of importers to obtain better terms from suppliers. Lack of trade finance also forces the importers to import the lowest cost products, even if quality of such products is compromised.

An approximate program breakdown of this component is presented below. This breakdown is subject to confirmation during project preparation. It includes co-financing from both donor financing (including AFREA trust fund) and private sector counterpart financing. The per-lantern estimate is based on the median price of the range of current Lighting Africa-approved lantern prices of \$15–75 per lantern.

<b>Lighting One Million Lives in Liberia: Cost Break-Down</b>	<b>GEF Grant</b>	<b>Co-Financing</b>
Lanterns/Systems Cost	\$1,122,000	\$3,300,000
Capacity Building	\$200,000	\$500,000
Program Management	\$150,000	\$250,000
<b>Total Budget</b>	<b>\$1,472,000</b>	<b>\$4,050,000</b>
Estimated Lantern/System Cost (average among various types)		\$4,000,000
Number		100,000
Cost per Lantern		\$40
GEF Grant per Lantern		\$11
Net Cost/Lantern		\$29

The GEF project will have global environmental benefits in helping reduce present and future GHG emissions from the Liberian energy sector. In particular, the program will eliminate directly the CO<sub>2</sub> emissions from at minimum 100,000 lanterns whose sales are incentivized by the GEF project. This subcomponent is expected to directly offset the emission of about 34,000 tons of CO<sub>2</sub> at a cost of US\$33/ton of CO<sub>2</sub> offset (considering only the direct grants for 100,000 lanterns of approximately \$1.1 million). The analysis is conservative as it assumes that the lantern has only a 3-year life. Including the multiplier effects of market conditioning activities and capacity strengthening work done under this project, significantly greater emissions reductions will occur as an indirect effect. Achieving dissemination of 200,000 lanterns overall would offset about 68,000 tons of CO<sub>2</sub> at a total GEF grant cost of \$22/ton CO<sub>2</sub> avoided. This means the indirect effects will serve to double the direct carbon emissions reductions effected by the project.

Carbon Emissions Reductions		
Number of lanterns	100,000	
Kerosene used/lantern *	44	liters per year
Total Kerosene	13,140,000	liters in 3 years
Carbon emissions avoided #	33,838	Tons CO <sub>2</sub>
GEF grant for lanterns	1,122,000	
GEF grant cost of direct emissions avoided	33	\$/Tons CO <sub>2</sub>
Total GEF grant cost per ton CO <sub>2</sub> avoided by catalyzing 200,000 lanterns	22	\$/Tons CO <sub>2</sub>
* 0.03 liters/hr, 4 hours per day (Lumina Project reports range from 0.005 to 0.042 liters/hour, <a href="http://eetd.lbl.gov/emills/pubs/pdf/offgrid-lighting.pdf">http://eetd.lbl.gov/emills/pubs/pdf/offgrid-lighting.pdf</a> )		
# 2.58 kg CO <sub>2</sub> per liter		

**B. 2. INCREMENTAL /ADDITIONAL COST REASONING: DESCRIBE THE INCREMENTAL (GEF TRUST FUND) OR ADDITIONAL (LDCF/SCCF) ACTIVITIES REQUESTED FOR GEF/LDCF/SCCF FINANCING AND THE ASSOCIATED GLOBAL ENVIRONMENTAL BENEFITS (GEF TRUST FUND) OR ASSOCIATED ADAPTATION BENEFITS (LDCF/SCCF) TO BE DELIVERED BY THE PROJECT:**

Without GEF support, the country will continue to pursue its energy policy, build the capacity of RREA, and try to find ways to stimulate renewable energy production and use while improving the sustainability of the traditional energy sector. However, while the NEP expresses favorable sentiments toward renewable energy, the financing available for its implementation is a far cry from what is needed to live up to its objectives. It would remain reality on paper only for some time to come unless financing for scale-up can be found. In reality, therefore, people will continue to use kerosene, battery-powered lights, and candles for lighting, and gasoline/diesel systems for wider energy services. All of these are not only expensive to use on a daily basis but also impose safety and health hazards on the people who use them. Moreover, they emit CO<sub>2</sub> or other pollutants and thereby contribute to climate change.

The GEF support presents a unique opportunity to increase the flow of resources to supporting the adoption and acceleration of solar technologies in Liberia so that Liberia can begin making real progress toward its sustainable energy goals. By this support, Liberia can be assisted in changing its trajectory of potentially increasing GHG emissions, by preempting the building of a more carbon intensive energy sector. Tentative incremental costing is presented in section B1 above.

**B.3. DESCRIBE THE SOCIOECONOMIC BENEFITS TO BE DELIVERED BY THE PROJECT AT THE NATIONAL AND LOCAL LEVELS, INCLUDING CONSIDERATION OF GENDER DIMENSIONS, AND HOW THESE WILL SUPPORT THE ACHIEVEMENT OF GLOBAL ENVIRONMENT BENEFITS(GEF TRUST FUND) OR ADAPTATION BENEFITS (LDCF/SCCF). AS BACKGROUND INFORMATION, READ MAINSTREAMING GENDER AT THE GEF:**

A key objective is to provide solar energy for basic lighting in rural areas. Lighting will benefit school children who need to study at night and suffer currently from reading under inferior sources of light such as candles. Lighting and basic electricity also benefit shop owners and other productive activities, by extending the working hours of the day.

As pertains to gender, decentralized access to modern energy services will be essential to reduce women's drudgery and expand economic opportunities in rural areas. These energy sources such as solar lanterns are advantageous to women yet they are presently not available to them. With this form of energy, women can save time and get involved in small income generating activities thereby empowering them and promoting gender equity.

**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:**

There are several risks to the project's success. The first is, of course, the risk of renewed conflict and instability in Liberia. Given recent history and progress, this is not expected to pose significant challenges to the project. However, the country situation will continue to be monitored closely by the Bank through its Monrovia office. A second risk is that the private sector may not be strong enough to pick up the challenges in the efficient solar lantern arena, particularly the trade financing issue that may prevent them from importing in cost-effective quantities (e.g., by the container-load). The proponents and the Bank are aware of this risk and are prepared to utilize GEF funding under Component 3 to facilitate this movement to scale by the industry through market conditioning and improving access to trade finance and reducing initial consumer hesitancy in purchasing new products. A third risk is the risk of market spoilage due to the entry of poor quality lighting products into the marketplace that will hurt the reputation of solar lights. The RREA will adopt Lighting Africa quality standards and ensure products supported under the program meets these standards. Information campaigns will also be launched to educate potential customers on how to recognize quality products. Finally, the RREA will work with Customs authorities to make them aware of the quality issues and enlist their help in stopping poor quality products from entering the market.

**B.5. IDENTIFY KEY STAKEHOLDERS INVOLVED IN THE PROJECT INCLUDING THE PRIVATE SECTOR, CIVIL SOCIETY ORGANIZATIONS, LOCAL AND INDIGENOUS COMMUNITIES, AND THEIR RESPECTIVE ROLES, AS APPLICABLE:**

The key stakeholder is the Rural and Renewable Energy Agency of Liberia, which will be the implementing agency, under the policy direction of the Ministry of Lands, Mines and Energy; furthermore, the RREA will be the direct implementer of the investment activities under the proposed project. The RREA will also benefit from technical assistance to build its capacity. In this way, the RREA stands to benefit from the project as much as it will depend on the project to carry out its institutional mandate to expand energy access to a large swath of Liberia's geography outside of Monrovia.

In addition, the private sector will be a key stakeholder, as the Lighting Liberia program will work with the toolkits and products from the current Lighting Africa program and adapt them to Liberian requirements and conditions to increase market intelligence, consumer awareness, and improved affordability of high-quality solar products. Consumers are the ultimate beneficiaries of the investment activities of the proposed project, as the project will support the introduction of low-cost, sustainable, and quality assured products to a market that currently pays exorbitant prices for low-tech and low efficiency products that are damaging to the environment and especially to the health of women and children (e.g. candles, kerosene breathed indoors).

**B.6. OUTLINE THE COORDINATION WITH OTHER RELATED INITIATIVES:**

This project will be prepared as part of the ongoing World Bank implemented and AFREA-trust-funded program entitled "Catalyzing New Renewable Energy in Rural Liberia" (CNRERL), which has helped establish Liberia's Rural and Renewable Energy Agency as a functioning agency that is able to mobilize new renewable energy services and investment for rural areas to meet demand in a technically reliable and affordable manner. In CNRERL, which is currently underway, focus is on the creation of an enabling environment. Activities include training of new RREA staff, legislative development, and outfitting of the RREA for full functionality. Activities also include demonstrating the RREA's capacity through two pilot projects in village electrification. The first comprises the rehabilitation of the pre-war micro-hydropower plant and mini-grid in Yandohun, Lofa County,



which will be operated and managed by the community. The second comprises the Sustainable Solar Market Packages (SSMP) approach, which will open bidding in specific concession areas of Bong and/or Lofa Counties for supplying solar electricity to public institutions and selling solar into surrounding communities. By fostering institutional capacity, political will, and a sustainable energy services delivery model, the CNRERL program expects to catalyze a sustainable renewable energy market in rural Liberia with the full support and commitment of the Government of Liberia.

The partnership between the CNRERL program and the proposed GEF project will ensure that implementation will be carefully coordinated through the appropriate institution and with no delays in start-up. This project's activities will complement the AFREA activities that are already being funded and will increase their effectiveness and reach. Specifically, components of the Lighting Africa program are being employed in the SSMP pilot, including facilitating a supply chain for Lighting Africa approved solar products and launching an information campaign, both of which will provide a good foundation for the launch of the lantern exchange program with GEF funding. For this reason the entire grant amount of the AFREA program which was signed with the Government of Liberia (\$2 million) on March 15, 2011 is considered as co-financing for the proposed effort.

Nonetheless, the SSMP effort is focused on only one county, where the concession area will include one large town (approximate population 33,000) and about six small towns. It is estimated that the pilot will benefit some 50 public facilities with solar power systems and jump-start a private market for solar lanterns and micro-home systems in the pilot area, with a target of sales to at least 1,500 households (7,500 people) on a partial performance grant basis to stimulate sales. Overall, the SSMP contract, which includes bulk procurement to create economies of scale, is estimated at about \$800,000, including the performance grant. The area of Gbarnga and surrounding towns/villages in Bong County was chosen for the SSMP pilot based on consultations with Government stakeholders that identified off-grid areas demonstrating both need and economic feasibility. A market study was carried out in Bong and Lofa counties and while the communities surveyed in both exhibited a willingness to pay for lanterns and solar home systems, Bong County was chosen based on strong local support and the existence of supportive factors such as the availability of micro-finance. Since the SSMP pilot under the CNRERL program is intended as a pilot, the expectation is that the program can be scaled up to other county capitals and their surrounding communities once the supply chain is established. Toward this end, the RREA has already secured funding from the European Commission's Energy Facility for a concurrent pilot in Lofa County focusing on Zorzor. It bears reminding the reader that no grid services exist in Liberia beyond the small Monrovia system, which serves only 0.6% of Monrovia households.

The SSMP effort will focus on facilitating the training and entrepreneurial skills of local vendors that currently sell and repair generators and small appliances, as well as vendors of cell phones and scratch cards, and cell phone charging booths that currently depend on small diesel generator sets. No negative job impacts are expected from disrupting traditional supply chains. The trend in some rural areas of Liberia has already indicated market saturation with low-quality, LED lights that in some cases have drastically reduced the use of kerosene. Making solar products available on the same market will help the consumer to make wiser spending choices.

That being said, the CNRERL program lacks resources for a large-scale solar dissemination program that could benefit many counties at once. Lighting One Million Lives in Liberia (200,000 households), based on the private sector platform of Lighting Africa, could reach one-third of the countryside in a short amount of time, resulting in a highly visible, quick impact delivery of improved lighting and micro-systems to households, including in the country's most neglected counties. Facilitation of the supply chain to remote areas will not exclude improvements in access in urban areas, so many more than one million lives will benefit by default from the program, especially in the capital Monrovia where grid unreliability for the 1% and lack of access for the 99% of households is still prohibitive. Lighting Liberia will extend the benefits of SSMP to willing consumers all over Liberia. Market studies carried out by the World Bank under both SSMP and a separate GPOBA

program have established that unelectrified households exhibit an ability and willingness to pay for improved lighting products and small home systems.

Finally, Liberia has been selected for support in the second round of SREP should resources become available. If the GEF support can help demonstrate the strategic relevance of these activities, it will serve as a springboard to greater achievements when such additional funding becomes available.

At present, neither the UNEP/GEF en.lighten initiative nor the IFC Solar and LED Energy Access Program (SLED) are active in Liberia. Therefore expanding the Lighting Africa program in Liberia through this proposed GEF-5 project could provide the basis for introducing these programs.

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

The World Bank has a comparative advantage in areas relating to investment and related technical assistance. This project will make use of the Bank's considerable depth and expertise in delivering TA and investments in the energy sector of a post-conflict country. In addition given that the WB has already been implementing the WB-IFC lighting Africa program, the ground work has been laid for further expansion.

**C.1 INDICATE THE CO-FINANCING AMOUNT THE GEF AGENCY IS BRINGING TO THE PROJECT:**

Of the total cofinancing, the World Bank contribution to the project will be US\$2,000,000.

**C.2 HOW DOES THE PROJECT FIT INTO THE GEF AGENCY'S PROGRAM (REFLECTED IN DOCUMENTS SUCH AS UNDAF, CAS, ETC.) AND STAFF CAPACITY IN THE COUNTRY TO FOLLOW UP PROJECT IMPLEMENTATION:**

The World Bank's engagement in the energy sector, as reflected in its Country Assistance Strategy (CAS 2009), is targeting (i) rural energy, through the Catalyzing New Renewable Energy in Rural Liberia program; (ii) urban energy, through the Liberia Energy Sector Enhancement Project, which targets expansion of the distribution network, in particular pro-poor connections; and (iii) regional interconnections through the West African Power Pool. In addition, the World Bank has prepared an Economic Sector Work (ESW), which serves as the strategic basis for the World Bank's overall engagement with the Government of Liberia. The proposed project is fully in line with the Bank's existing rural energy program, as it seeks to both build upon and expand the objectives of that program by working through the RREA to build an enabling environment for rapidly expanded access to energy on a sustainable, cost-effective basis. The Bank has a full-time staff person on the ground in Monrovia, who has since early 2010 been managing the rural energy program as well as the Bank's IDA credit for expansion of the Monrovia grid network and two other programs in support of energy sector development. The proposed project would fit easily into this staff member's portfolio.

### **Response to comments in Review Sheet of September 29, 2010**

*Comment 1: Although there is a summary of existing efforts and the baseline project, the elements of the baseline project and the proposed incremental project are not clearly delineated. Please clarify if the micro-hydropower station and mini-grid are part of the baseline project.*

**Response:**

See B1, page 4 and also pgs 8-9 for more detail. Both pilot projects are part of the World Bank CNRERL program.

*Comment 2: The estimates provided are very helpful, but have not been delineated between the baseline project and the proposed GEF project. Please clarify the baseline project.*

**Response:** These clarifications have been made. See pages 8 to 9.

*Comment 3: please clarify if all the reductions are credited to the GEF investments or if some are attributed to the baseline project Please clarify.*

**Response:** All are attributed to the GEF project (see pg 6).

### **Response to comments in Review Sheet of April 1, 2011**

*Comment: Please clarify - is this endorsement letter for the stand-alone PIF or for the Lighting Africa PFD?*

**Response:** The endorsement letter is valid for the stand alone PIF as well since the project is clearly linked to the Lighting Africa and will be integrated into the program as it goes forward.

*Comment : Please follow the published GEF guidance and use the allowed wording for the CCM-3 Objectives*

**Response:** The text has been aligned with the prescribed GEF language.

*Comment : The description of the Liberia project in the PIF and the "same" Liberia project under the program framework differ in wording. Please clarify if these are one and the same project and make any needed changes to the component description in the PIF. Please also clarify the coordination with Lighting Africa of the Liberia PIF if it proceeds as a stand-alone project.*

**Response:** The PIF and the project summary in the PFD have been made consistent since they are the same. As envisaged, the Liberia project which is ready to go forward towards implementation now, is expected to be fully integrated under the GEF-5 Lighting Africa Program Expansion, when it is approved and operational. As designed the project components align with the overall program and the project will ensure coordination with the other initiatives under the program for information, exchange, knowledge sharing and M&E purposes.

*Comment : Component 3 is now missing. Please clarify how coordination with other Lighting Africa initiatives will be conducted.*

**Response:** It may be clarified that this comment perhaps comes as a follow on comment to the earlier submission made on Liberia where the expected amount for the project was higher. However based on negotiations with the government and the final amount endorsed the activities under earlier component 3 are now presented as Component 2 ( while earlier components 1 &2 are merged into one).

In terms of coordination, since the project is expected to be fully integrated under the over GEF-5 program, that will allow for information exchange and knowledge sharing with other initiatives.

*Comment : Specifically, we need to understand how if this PIF is ready for the work program even as it is being considered under the Lighting Africa program framework.*

**Response:** See response above.

### **Response to Review sheet September 14, 2011.**

*Comment:* DER, Sep. 14, 2011. Please note the guidelines for project management have changed since the prior submission. The GEF project management cost is capped at 5% of GEF funding, not included fees, unless there is strong justification for a larger level. If the IBRD will be conducting project management in-house, then project management costs should be zero. Please clarify.


**Response:** We understand that during this transitional period where the management costs are being reviewed and restated, the project management costs will have to be justified if they exceed 5%. The current project management costs have been reduced to below 10% of project activities (\$130,000 from \$150,000), but because this is a new project in a very difficult, post-conflict country, it is the view of the project team that the costs for the executing agency cannot be reduced further without putting at risk both project implementation and national ownership. It is the team's view that the project management budget is quite small and the project management itself must meet minimum fixed costs. A dedicated project management unit will be created at the Rural and Renewable Energy Agency (RREA), and this unit will require at least 2 staff for the project duration (1 project officer and one accountant) in addition to operating and supervision costs.

**PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)**

**A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S):** (Please attach the [Operational Focal Point endorsement letter\(s\)](#) with this template. For SGP, use this [OFP endorsement letter](#)).

NAME	POSITION	MINISTRY	DATE (MM/dd/yyyy)
Honorable Anyaa Vohiri	Executive Director	Environmental Protection Agency of Liberia	03/11/2011

**B. GEF AGENCY(IES) CERTIFICATION**

<b>This request has been prepared in accordance with GEF/LDCF/SCCF policies and procedures and meets the GEF/LDCF/SCCF criteria for project identification and preparation.</b>					
Agency Coordinator, Agency name	Signature	DATE (MM/dd/yy yy)	Project Contact Person	Telephone	Email Address
Karin Shepardson GEF Agency Executive Coordinator		09/15/2011	Paola Agostini	(202) 473-7620	pagostini@worldbank.org