GEF-6 PROJECT IDENTIFICATION FORM (PIF)

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

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PART I: PROJECT INFORMATION

Project Title:	Increasing energy access through the promotion of energy efficient appliances in Liberia		
Country(ies):	Liberia	GEF Project ID:[1]	
GEF Agency(ies):	AfDB (select) (select)	GEF Agency Project ID:	
Other Executing Partner(s):	Ministry of Lands, Mines and Energy	Submission Date:	2015-07-27
GEF Focal Area(s):	Climate Change	Project Duration (Months)	36 months
Integrated Approach Pilot	IAP-Cities ☐ IAP-Commodities ☐ IAP-Food Security ☐	Corporate Program: SGP ☐	
Name of parent program:	[if applicable]	Agency Fee ($)	250,774

A. INDICATIVE FOCAL AREA STRATEGY FRAMEWORK AND OTHER PROGRAM STRATEGIES[2]

Objectives/Programs (Focal Areas, Integrated Approach Pilot, Corporate Programs)	Trust Fund	(in $)	
		GEF Project Financing	Co-financing
(select) CCM-1 Program 1 (select)	GEFTF	1,639,726	28,100,000
(select) CCM-1 Program 2 (select)	GEFTF	1,000,000	8,900,000
Total Project Cost		2,639,726	37,000,000

B. INDICATIVE PROJECT DESCRIPTION SUMMARY

Project Objective: To increase access to electricity in rural Liberia while promoting and mainstreaming the use of energy efficiency measures

Project Components	Financing Type[3]	Project Outcomes	Project Outputs	Trust Fund	(in $)	
					GEF Project Financing	Co-financing
Component 1: Institutional support and capacity building to promote energy efficiency	TA	1.1 Policy, planning and regulatory frameworks foster accelerated low GHG development and emissions mitigation through the promotion of energy efficiency measures 1.2 Financial mechanisms to support GHG reductions are demonstrated and operationalized	1.1 Trainings (≠30, ≠20 staffs per session) provided to relevant ministries to plan, enforce and review energy efficiency measures and approach climate change mitigation 1.2 Trainings (≠10), and support provided to the National Climate Change Secretariat (NCCS) for identifying the impacts of energy efficiency on climate change and support for formulating	GEFTF	700,000	6,500,000

[1] Project ID number will be assigned by GEFSEC and to be entered by Agency in subsequent document submissions.
[2] When completing Table A, refer to the excerpts on *GEF 6 Results Frameworks for GETF, LDCF and SCCF*.
[3] Financing type can be either investment or technical assistance.

			comprehensive low carbon development roadmap 1.3 Policy and legislations (≠2) for the gradual phase out of incandescent lamps identified and formulated, regulatory measures identified. 1.4 Incentive mechanisms (≠3 including non-subsidy) to encourage the uptake and mainstreaming of energy efficient appliances in rural areas identified and developed for the creation of a comprehensive Sustainable Rural Eelectrification Framework Plan Plan 1.5 Feasibility reports (≠4) and action plans to expand energy efficiency infrastructure in targeted areas produced			
Component 2: Energy efficient lighting and public outreach pilot program	Inv/TA	Accelerated adoption of innovative technologies and management practices for GHG emission reduction and carbon sequestration Energy efficiency infrastructure put in place in target areas Increased public awareness and acceptance of energy efficiency and climate change	2.1 Technical support for intensification and identification of subsidy schemes which integrate energy efficiency 2.2 Energy efficiency audit (≠1) of LEC rural distribution network conducted 2.3 Action plans (≠3) for EE promotion program in targeted areas formuated	GEFTF	1,664,025	28,300,000

			2.4 Pilot programs demonstrating subsidized energy saving lighting through LEC network in rural areas for household (≠40,000 persons) and public spaces (≠10 public schools and ≠5 health centers) 2.5 Financial mechanisms (≠3) for pilot distribution identified. 2.6 Baseline methodology for collecting GHG emissions data in project areas established 2.7 Public outreach program on energy efficiency and climate change in 3 counties initated 2.8 Needs assessment workshops (≠10) on energy efficient products and appliances conducted in 3 counties 2.9 Recycling program (≠1) for used lighting organized and initiated			
Component 3: Knowledge Management and Monitoring and evaluation	TA	Project results and lessons learned captured and disseminated Knowledge captured and shared with stakeholders to strengthen coordination and national knowledge base	3.1 Coordination with the implementation of the Liberia Energ y Access Project (LEAP) strengthened through knowledge sharing and management 3.2 Detailed M&E documentation produced 3.3 Knowledge on energy efficiency, renewal energy and	GEFTF	150,000	700,000

			climate change disseminated through dedicated online platform 3.4 Monitoring and evaluation workplan formulated and implemented, M&E documentation produced			
				Subtotal	2,514,025	35,500,000
				Project Management Cost (PMC)[4] GEFTF	125,701	1,500,000
				Total Project Cost	2,639,726	37,000,000

For multi-trust fund projects, provide the total amount of PMC in Table B, and indicate the split of PMC among the different trust funds here: ( )

C. INDICATIVE SOURCES OF CO-FINANCING FOR THE PROJECT BY NAME AND BY TYPE, IF AVAILABLE

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Amount ($)
GEF Agency	AfDB	Loans	14,100,000
Donor Agency	European Union Africa Infrastructure Trust Fund	Grants	11,500,000
GEF Agency	Nigerian Trust Fund	Loans	10,000,000
Recipient Government	Government of Liberia	Grants	1,400,000
(select)		(select)	
Total Co-financing			37,000,000

D. INDICATIVE TRUST FUND RESOURCES REQUESTED BY AGENCY(IES), COUNTRY(IES) AND THE PROGRAMMING OF FUNDS [a)]

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	(in $)		
					GEF Project Financing (a)	Agency Fee (b)[b)]	Total (c)=a+b
AfDB	GEFTF	Liberia	Climate Change	(select as applicable)	2,639,726	250,774	2,890,500
Total GEF Resources					2,639,726	250,774	2,890,500

a) Refer to the Fee Policy for GEF Partner Agencies.

E. PROJECT PREPARATION GRANT (PPG)[5]

Is Project Preparation Grant requested? Yes ☒ No ☐ If no, skip item E.

PPG AMOUNT REQUESTED BY AGENCY(IES), TRUST FUND, COUNTRY(IES) AND THE PROGRAMMING OF FUNDS

Project Preparation Grant amount requested: $100,000				PPG Agency Fee: 9,500			
GEF Agency	Trust Fund	Country/ Regional/Global	Focal Area	Programming of Funds	(in $)		
					PPG (a)	Agency	Total c = a + b

[4] For GEF Project Financing up to $2 million, PMC could be up to10% of the subtotal; above $2 million, PMC could be up to 5% of the subtotal. PMC should be charged proportionately to focal areas based on focal area project financing amount in Table D below.

[5] PPG requested amount is determined by the size of the GEF Project Financing (PF) as follows: Up to $50k for PF up to$2m (for MSP); up to $100k for PF up to $3m; $150k for PF up to $6m; $200k for PF up to $10m; and $300k for PF above $10m. On an exceptional basis, PPG amount may differ upon detailed discussion and justification with the GEFSEC.

						Fee[6] (b)	
AfDB	GEF TF	Liberia	Climate Change	(select as applicable)	100,000	9,500	109,500
Total PPG Amount					**100,000**	**9,500**	**109,500**

[6] PPG fee percentage follows the percentage of the Agency fee over the GEF Project Financing amount requested.

F. PROJECT'S TARGET CONTRIBUTIONS TO GLOBAL ENVIRONMENTAL BENEFITS[7]
Provide the expected project targets as appropriate.

Corporate Results	Replenishment Targets	Project Targets
1. Maintain globally significant biodiversity and the ecosystem goods and services that it provides to society	Improved management of landscapes and seascapes covering 300 million hectares	*Hectares*
2. Sustainable land management in production systems (agriculture, rangelands, and forest landscapes)	120 million hectares under sustainable land management	*Hectares*
3. Promotion of collective management of transboundary water systems and implementation of the full range of policy, legal, and institutional reforms and investments contributing to sustainable use and maintenance of ecosystem services	Water-food-ecosystems security and conjunctive management of surface and groundwater in at least 10 freshwater basins;	*Number of freshwater basins*
	20% of globally over-exploited fisheries (by volume) moved to more sustainable levels	*Percent of fisheries, by volume*
4. Support to transformational shifts towards a low-emission and resilient development path	750 million tons of CO_{2e} mitigated (include both direct and indirect)	*218,213 metric tons*
5. Increase in phase-out, disposal and reduction of releases of POPs, ODS, mercury and other chemicals of global concern	Disposal of 80,000 tons of POPs (PCB, obsolete pesticides)	*metric tons*
	Reduction of 1000 tons of Mercury	*metric tons*
	Phase-out of 303.44 tons of ODP (HCFC)	*ODP tons*
6. Enhance capacity of countries to implement MEAs (multilateral environmental agreements) and mainstream into national and sub-national policy, planning financial and legal frameworks	Development and sectoral planning frameworks integrate measurable targets drawn from the MEAs in at least 10 countries	*Number of Countries:*
	Functional environmental information systems are established to support decision-making in at least 10 countries	*Number of Countries:*

PART II: PROJECT JUSTIFICATION

1. *Project Description.* Briefly describe: 1) the global environmental and/or adaptation problems, root causes and barriers that need to be addressed; 2) the baseline scenario or any associated baseline projects, 3) the proposed alternative scenario, GEF focal area[8] strategies, with a brief description of expected outcomes and components of the project, 4) incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing; 5) global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF); and 6) innovation, sustainability and potential for scaling up.

1.1 The Global Environmental problems, root causes and barriers that need to be addressed

The Republic Liberia has currently a population of roughly 4 million people. It is estimated that 76% of the population has an income of less than US$1 a day and 52% less than US$ 0.50 a day. Liberia still suffers from the effects of 14 years of civil war (1989-2003), despite substantial progress achieved since the Peace Accord of 2003. The economy has been recovering steadily since 2009, growing at an estimated average rate of 7 percent per year. Despite the progress achieved, Liberia's recovery remains fragile, and important challenges need to be addressed for the country to embark on a sustainable development path.

[7] Provide those indicator values in this table to the extent applicable to your proposed project. Progress in programming against these targets for the projects per the *Corporate Results Framework* in the *GEF-6 Programming Directions*, will be aggregated and reported during mid-term and at the conclusion of the replenishment period. There is no need to complete this table for climate adaptation projects financed solely through LDCF and/or SCCF.

[8] For biodiversity projects, in addition to explaining the project's consistency with the biodiversity focal area strategy, objectives and programs, please also describe which Aichi Target(s) the project will directly contribute to achieving.

Energy consumption in Liberia is dominated by biomass with a share of more than 80% of the used primary energy sources. Most important is woody biomass being used for domestic cooking and heating. In 2004, it was estimated that over 95% of the population depends on firewood and charcoal for cooking and heating needs and palm oil for lighting. The most recent Census (2008 data) shows that 70% of the urban population use charcoal for cooking and 5% of the rural population; 91% of the rural population use firewood for cooking and 21% of the urban population. In Monrovia, the percentage of households using charcoal is even higher, 85%.

Modern energy services based on electricity and petroleum products are predominantly used for economic production and transportation. In the household sector, the use of modern energy services consists mainly of kerosene, electricity, and liquefied petroleum gas for lighting, cooking, and entertainment. These are used by higher income households in urban areas. The generation mix is composed of hydropower from the plant at Mt. Coffee (to be operational in 2015)—with a supply capacity of 63 MW during the wet season and 5 MW during the dry season (six months)—and 31 percent HFO and 21 percent diesel. The utility, Liberia Electricity Company (LEC) also handled the electricity supply of rural areas outside Monrovia through 10 small isolated power systems with a total installed capacity of 13 MW.

According to government data, roughly 10% of urban residents and less than 2% of rural residents currently have electricity access, largely from self-generation with gasoline or diesel generators using expensive imported fuel. The access rate to public electricity is roughly 2%. In March 2012 LEC served about 5,600 connections in Monrovia (around 2,500 residents from an estimated number of 210,000 households). In August 2012 already 11,000 customers are served by LEC. It is estimated that close to 90,000 households and businesses in Monrovia may be served by small gasoline and diesel generators. The use of small gasoline and diesel generators to supply household/ commercial loads is detrimental to the environment due to the associated noise pollution and the cumulative GHG emis-sion as compared to using a centralised/ modern generator. Moreover the use of incandescent lamps is still predominant in households and commercial applications. With lighting accounting on average for 25% of the energy consumption in households and with and Compact Florescent Lamp (CFL) consuming up to 4 times more energy than the equivalent (in terms of light output), significant energy saving and therefore, GHG reduction can be achieved through the phasing out of incandescent lamps in favour of CFLs, and this is the entry point of this GEF intervention -- to increase the likelihood of energy efficiency measures being adopted by the Liberian public at a large scale through the implementation of a number of measures to address the policy, technological, and financial barriers which have prevented the development of energy efficiency technologies and policies up until this point. The project hopes to introduce energy efficiency as a viable tool available to Liberian policymakers toaddress climate change issues in the future.

While Liberia's total energy consumption and GHG emissions per capita are low, these figures could dramatically increase, driven by post-conflict economic development, and accompanied by rapid urbanization and soaring population growth. Liberia's population was at 3.5 million in 2010, and is projected to increase to 10.3 million by 2058. According to UNHABITAT, Liberia's urban population in 2008 comprised 47% of the total population of 3.5 million with an annual urban population growth rate of 4.7%. Forecasts now suggest that out of a total population of approximately 4 million, more than half of the population (2.1 million) resides in urban areas. In 2010, Liberia had one of the lowest rate of access to public electricity among all world nations. While the average rate of access to electricity in Sub-Saharan Africa is 28.5 percent, Liberia's rate of access to publicly provided electricity is close to zero. The potential benefits of energy efficiency investment in appliances in the country are huge in long run, particularly in densely populated urban spaces.

Barriers to the investment in energy efficiency include: a lack of institutional capacity and weak political will. The National Climate Change Steering Committee (NCCSC) and a Secretariat, the National Climate Change Secretariat (NCCS) was established in September 2010 by members of Cabinet to serve as a high level policy coordination committee responsible for national climate change mitigation strategies in Liberia. Institutional capacity of the NCCSC and the NCCS is weak, mainly due to weak financing and poor political will, and as a result, the Committee and Secretariat have been inactive for a number of years, only made worse by political instability, natural disasters, conflict, and most recently, a major public health crisis triggered by the Ebola virus outbreak. Baseline data is weak and in some cases nonexistent in the country, due to low or nonexistent technical capacity in energy efficiency, renewable energy, and other low carbon development technologies; and there is an absence of standardized monitoring systems for GHG emissions which includes data collection and monitoring. The combination of these issues make any measuring,

reporting, and verification (MRV) activities difficult, and therefore creates problems when attempting to develop climate change projects, including GEF-financed projects. Another key barrier is a poor policy and regulatory environment – the policy framework for legal and regulatory functions of Liberia's energy sector is uncoordinated and weak and the energy sector itself is fragmented with no proper coordinating mechanism. Additional barriers include: Conflicting sectoral mandates, a lack of technological capacity for planning and monitoring, such as GIS tools, a lack of technical expertise in energy efficiency technology and applications as well as potential policy incentives and measures; and weak inter-sectoral and inter-agency coordination between relevant authorities, such as the NCCSC, the NCCS, the Forestry Development Authority; the Environment Protection Agency; the Liberia Electricity Corporation; the Ministry of Land, Mines, and Energy; the Ministry of Gender and Development; the Rural and Renewable Energy Agency (RREA); and the Ministry of Planning and Economic Affairs. Above listed barriers, particularly the lack of policy and regulatory frameworks in the sector have been a key hindrance to critical private sector participation and investment in Liberia, which has prevented the development of relevant technologies and the uptake of energy efficient products and practices. This in itself is an additional barrier.

This GEF project will unlock these barriers and achieve EE benefits by supporting the institutional capacity of relevant ministries by providing the necessary policy, technical, financial support to relevant ministries to promote energy efficient appliances.

1.2- The baseline scenario and any associated baseline projects

According to Liberia's First National Communication, there has been an average 14% annual growth in diesel and gasoline consumption since 2004. Baseline estimates of electricity demand range from 11 to 25 MW, rising at an average of 10.3% annually by 2010 and then decreasing slightly to a 3.4% growth annually until 2020. Demand in the residential, commercial, and institutional subsectors will be within the range of 10–12% by 2015. The trajectory of emissions is expected to be 647 Gg in 2015, increasing to 3,435 Gg in 2038 for the residential, commercial, and institutional (RCI) sector. GHG assessments have been constrained by a lack of reliable and updated information on activity, which has made it difficult to conduct a quantitative assessment of mitigation options. According to its National Communication to the UNFCCC, Liberia has not previously conducted an assessment of GHG mitigation measures due to inadequate human resources, technological constraints, and the lack of data-gathering capability. Liberia has did condcut a mitigation analysis and examination of options for reducing the sources of GHG emissions and/or enhance their sinks for its NC, but there are still significant data gaps.

The objective of the baseline project - the Liberia Energy Access Project (LEAP) is to increase the Liberian population's access to electricity from the current 2% to 6% by 2020 and strengthen the institutional capacity in the electricity sector. More specifically, the project will: (i) expand the transmission and distribution network in Liberia; (ii) improve energy accessibility of the communities in the project's zone of influence and (iii) improve the human and technical capacity of the energy sector by training skilled professionals (engineers, technicians, maintenance and administrative personnel). The project is designed to improve the operational efficiency of the electricity distribution system, increase the population's access to electricity and help transition Liberia to a low-carbon economy through the reduction of greenhouse gas emissions. In fact, improvements in the operational efficiency of the distribution system are likely to reduce GHG emissions. Furthermore, the project is likely to result in the displacement of highly polluting stand-alone diesel generators in the rural areas with the improved reliability of the distribution system.

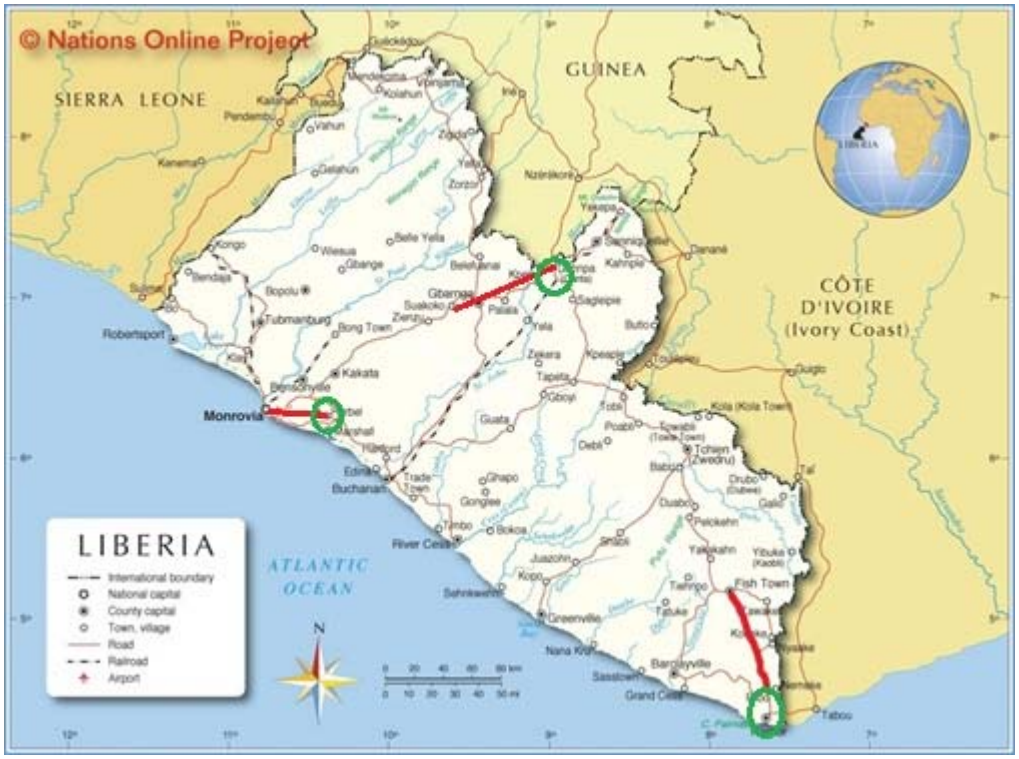
This project is an integral part of a larger multi-donor programme aiming to improve the access to electricity in Liberia and which is currently being developed with the Ministry of Land, Mines and Energy (MLME) of Liberia, Liberia Electricity Corporation (LEC) and the development partners active in the energy sector in Liberia. The project focuses on the RIA (Roberts Internationat Airport) zone and River Gee County and Bong County comprises the following components

Component A - Transmission and Distribution System expansion and Rehabilitation: involves transmission and distribution line and substation works as well as connection services.

Component B - Capacity Building

Involves creating awareness among high school stu-dents on the opportunities in the electrical engineering and other technical branches at higher education level as well organizing training sessions on power generation, transmis-sion and distribution, and developing a training program on electricity distribution for MLME and LEC staff. Capacity Building: involves creating awareness among high school stu-dents on the opportunities in the electrical engineering and other technical branches at higher education level as well organizing training sessions on power generation, transmis-sion and distribution, and developing a training program on electricity distribution for MLME and LEC staff.

Component C- Project Management: involves project implementation support and environmental and social management.
Adequate mitigation measures for adverse impacts have been identified and included in the Environmental and Social Management Plan. These include: (i) compensation for land acquisition and project affected persons; (ii) development of a management plan for waste electrical and electronic equipment; (iii) development of a Project Health and Safety Plan; (iv) inclusion of the necessary environmental clauses in the project tender & construction contract document so as to ensure the implementation of the ESMP; (v) planning for independent environmental supervision during the construction phase.Ensuring that



1.3 Proposed alternative scenario and expected outcomes and components of the project,

The alternative scenario will improve livelihoods of the communities of Monrovia facing challenges related to sustainable access to energy. It will also enhance the capacity of the key stakeholders to meet the targets set in the NEP and to reduce the dependency on fossil fuels (including charcoal and firewood) . Access to electricity is a key component to achieve the MDGs and the support of the GEF will allow greening the initiative through support to strengthen the institutional setup and by providing the necessary technical and financial aid to promote energy efficient appliances in the areas where the AfDB's LEAP project will be financing the baseline investment to increase energy access.

The alternative scenario will improve livelihoods of the communities of 3 counties (RIA zone, Bong County, River Gee County) facing challenges related to sustainable access to energy. It will also enhance the capacity of the key

stakeholders to meet the targets set in the NEP and to reduce the dependency on fossil fuels (including charcoal and firewood). The proposed alternative scenario focuses on climate change mitigation through the promotion of demand side energy efficiency. The project takes a dual approach to promoting the uptake of energy efficiency, by addressing the legal, policy, regulatory, and financial framework which governs the energy sector to create the requisite environment for energy efficient technologies to develop and eventually thrive and by concurrently rolling out a pilot demonstration of exemplary technologies to accompany the baseline infrastructure investment being laid down by the LEAP project.

The project consists of the following components and outcomes:

Component 1: Institutional support and capacity building to promote energy efficiency

This component will develop a number of outputs for the creation of a sustainable rural electrification framework plan (i) appropriate institutional arrangement, policies, planning, and strategies for access intensification, access expansion, and development of energy efficiency in rural areas; (ii) regulatory guidelines and rules for access and energy efficiency development and make recommendations on how to imprive the egulatory framework for rural electrification integrating energy efficiency measures; and (iii) creation of a framework for establishing afund or other as a longer-term financing mechanism for future access, renewable energy, and energy effiency development, including defining funding sources, creating institutional arrangement to administer funds, and other considerations.

The first component essentially a package of complimentary activities that together build a market transformation platform for energy efficiency based collecting market intelligence, business and market development, financing, building institutional and consumer Awareness, and poblic policy work. Policy support will include working with the relevant ministrers to address and remove barriers, identify solutions and work to implement a quality policy package meant to boost the profile energy efficiency as both a development and a climate change mitigation strategy within the Liberian energy policy landscape.

Component 2: Energy efficient lighting and public outreach pilot program
Activities under this component will aim to deliver efficient and reliable energy efficient lighting products at reduced costs to project partipants, with the aim of growing the commercial market providing these products and collecting data to identify the optimum way to scale up the use of energy efficient appliances in rural Liberia by testing distribution methods, maintenance, outreach and collecting baseline GHG emissions results from this pilot area. The aim of the pilot is to inform the eventual inauguration of a similar program at the national level. The exact mechanisms of distribution and concrete supportwill continue to evolve as the project is prepared, but GEF resources will most likely be used to provide market intelligence to the private sector on characteristics of marketable products and the willingness of consumers to pay; and conduct outreach and education campigns and programs to inform, build awareness and public acceptance of quality certified energy efficient products and appliances.

Additionally, in areas with low connection density, intensifying existing grids is a cost-effective way to expand coverage, in comparison to the new grid extension programs. Studies will be conducted on the current status of the density in the existing grids in the area, for the purposed of identifying barriers to intensification and to propose strategies and plans to address these barriers in the project areas in coordination with the energy efficiency work being undertaken including: (i) Recommendations to improve the legal and regulatory framework to facilitate new connection/tariff alternatives; and (ii) Formulation of an effective subsidy schemes for intensification coordinated with the identified energy efficiency incentive mechanisms.

Concurrent to the above described activities, the project will initiate a baseline methodology for collecting emissions data from the project zones -- for activities under both the baseline investment as well as the GEF financed intervention. Data is very sparse in Liberia and it is very important that such data be collected to be fed into the national body of data on climate change, and can also serve as a basis upon which future projects can extrapolate and build upon.

Component 3 Knowledge Management and Monitoring and Evaluation

Knowledge and data generated from this project will help the country more effectively energy access and energy efficiency issues, as well as climate change mitigation in Liberia. This component will aid the learning process by documenting lessons and challenges, and making them available during implementation, as well as through an online portal which can be developed as a platform for climate change mitigation interventions in Liberia, leveraging the regional aspect of the baseline project to communicate and coordinate relevant stakeholders in neighboring countries to develop opportunities to replicate this pilot in other areas. The main outputs will be monitoring and evaluation plan, relevant periodical project reports, and strong coordination and exchange of information with the LEAP project.

1.4 Incremental cost reasoning and expected contributions from the baseline the GEFTF and co-financing

This project will facilitate Liberia in formulating a low-carbon development path which will support the development of the energy efficinecy market in the next decades. New policy development, technology transfer, capacity building, will create an enabling environment to facilitate the proper growth of the energy efficiency market. The proposed alternative scenario focuses on climate change mitigation through the promotion of demand side energy efficiency. The project takes a dual approach to promoting the uptake of energy efficiency, by addressing the legal, policy, regulatory, and financial framework which governs the energy sector to create the requisite environment for energy efficient technologies to develop and eventually thrive -- without this GEF financing, it is unlikely that these EE activities would be undertaken in the short-term.

Component 1: Institutional support and capacity building to promote energy efficiency

Although a backbone for the development of the energy sector is present in the form of the NEP and regulatory framework need to be strengthened to enable the Government of Liberia to meet their long term targets in the energy and sustainable development sector. With the GEFTF funding, the proposed project will establish the current needs of the policy/ regulatory framework with regards to climate change, resources at hand. This will eventually lead to the formulation (via a consultative and a multi-sectoral process) of more adequate institutional structure for energy use and management, prioritizing energy efficient and lower carbon options as principal tools for developing energy access while decoupling this development from environmental degradation and GHG emissions. This component will set a conducive and equitable policy/ institutional environment for promoting access and investment in electricity grid and energy efficiency measures, which complements the classic energy policy for development work being udnertaken as part of the baseline investment.

A number of activities will be performed with the GEFTF resources to develop the capacity of relevant stakeholders (including private sector and NGOs) for grid operation, energy efficiency and renewable energy. The capacity building will cover all the technical, financial and social (gender inclusive) aspects related to the field. This component will enhance the national capacity in sustainable planning, developing, implementing and management of the electrical grid.

Component 2: Energy efficient lighting and public oureach pilot program

The GEFTF resources will allow the NCCS to improve the awareness of the various stakeholders in the rural communities of the project zone of influence on Energy efficiency, rural renewable energy and effects of climate change. Developing countries are still to phase out energy inefficient lighting bulbs (incandescent) and other domestic electrical/ electronic appliances like frost fridges and 1st generation air conditioning units.
Once the financial initiatives are formulated (e.g. provision of energy efficient lamps in exchange of incandescent lamp + a nominal fee) the energy efficient lamps (and other energy efficient appliances as determined during PPG phase) will be rolled out to the communities while ensuring that capacity building and awareness are being performed (via the other components) to ensure and effective deployment. This will allow high adoption rate and increase new energy saving behavior by customers. The GEF financing will ensure that along with the baseline investment of energy sources, populations will be informed of the benefits of less energy intense tools and appliances at their disposal and test the viability of distributing these tools to rural populations. GEF financing will be used exclusively to distribute energy efficient lighting to households, explore options for intensification, and educate and raise awareness on climate change and energy efficient appliances - all of which are completely absent in the basleine investment.

Component 3: Knowledge Management and Monitoring and evaluation

Knowledge and experience of the technology and approaches applied in the project will help the country better cope with similar urbanization challenges. This component will help the learning process by drawing lessons and showcasing results

5 – Global Environmental Benefits

The use of small gasoline and diesel generators to supply household/ commercial loads is detri-mental to the environment due to the associated noise pollution and the cumulative GHG emis-sion as compared to using a centralised/ modern generator. Moreover the use of incandescent lamps is still predominant in households and commercial applications. With lighting accounting on average for 25% of the energy consumption in households and with and Compact Florescent Lamp (CFL) consuming up to 4 times more energy than the equivalent (in terms of light output), significant energy saving and therefore, GHG reduction can be achieved through the phasing out of incandescent lamps in favour of CFLs. The preparation of the foundations for the sustainable use of renewable resources (through appropriate policy work and capacity building) in the energy mix will also allow the GoL to meet the MDGs as well as the set targets in the NEP

Amount of CO2 mitigated is estimated on the basis of 40,000 customers (targeted beneficiaries of the project area) switch from incandescent to LED Lighing. Normal lighting in the project area utilizes 60 watt bulbs, while the energy efficient lighting utilizes 6 watt bulbs to provide the same amount of lighting. Over a time period of 18 hours/day, over which time it is possible to capture the whole spectrum of users over a day, that is a savings of 54 watts per light. If the assumption is that each household will be equipped with 2 of such lights, that is a savings of 972 watts per day for 40,000 consumers. With a grid emisison factor of 0,116 tCO2/kWh for Liberia, the estimated total CO2 mitigated by this project is about 2.7tCO2/kWh, or 19,837Tons CO2 over 20 years of the project impact life.

In addition, the government of Liberia envisages to replicate this project to cover other regions of the country, by with additional 200,000 persons during the second phase of the project, with an estimated avoided CO2 of 198,376tCO2.

Therefore, the total avoided emission (direct and indirect) over the project life is estimated at 218,213.5 tCO2. Detailed calculation is provided in the table below :

Project beneficiaries (households)	40,000
Regular incandescent lighting currently used in Liberia (w/lamp)	60
Energy saving LED lamp (w/lamp)	6,
Lighting time estimation per day	18
Number of product by household	2
Total energy saving per day (w)	972
Grid emission factor for Liberia (Tons CO2/kWh)	0.116
Time estimation of project impacts (years)	20
Total direct CO2 emission per day (Tons CO2/kWh)	2.7
Total direct CO2 emission by GEF project (Tons CO2)	19,837.6
Additional LED lamp distributed by Government (200,000 households)	400,000
Indirect CO2 emission avoided by project	198,375.9
Total direct and indirect CO2 emission by GEF funding (Tons CO2)	218,213.5

6 – Innovativeness, sustainability and potential for replication

Innovativeness

The proposed project is the first GEF project financing the adoption of energy efficiency measures and the provision of relevant technical and institutional support to mainstream energy efficiency practices at the national level. Liberia has little in country experience with energy efficiency and renewable energy technologies and practices, so this project would bring tested international practices to the country. The project would introduce new methods, practices, and products related to energy efficiency to the body of existing energy policy, while also implementing a pilot to rollout equipment and appliances to demonstrate the feasibility of utilizing such equipment in different contexts in Liberia. More efficient energy practices provide a diversified way for Liberia to address energy access issues while providing a path to increasing the supply of available energy with reduced costs to those who need it most.

Energy efficiency is an emerging field not just in Africa but throughout the world. These practices and technologies are gaining footing in developed countries, which have a robust policy and regulatory environment to support their development. The introduction of the proposed GEF project will be a first in its field in Liberia, but will be informed by other projects which have been undertaken in the region, such as the European Union Energy Facility's Supporting Energy Efficiency for Access in West Africa (SEEA-WA), which approaches energy efficiency at the ECOWAS regional level. This will be one part informing any forthcoming climate change mitigation or sustainable development strategies allowing for an integrated approach to tackling the negative impacts of climate change, utilizing the full host of tools and resources available to the Liberian government.

Sustainability
This project will ensure the sustainability of the knowledge and capacities generated within it through the provision of institutional support to relevant ministries to support the formulation of forthcoming legislation, which will be made into national policy. Because this project will be translated into policy work, it will therefore contribute to creating a more conducive policy environment to achieve the objectives of this project, which is to support access to electricity while promoting the use of energy efficient lighting through the establishment of appropriate legal framework and financial mechanisms. Once this is translated into policy, project activities will become part of the Liberian legal and regulatory framework, which will guarantee that energy efficiency strategies, particularly the use of energy efficient lighting, will be utilized in the ways it was conceived as such within the original project objective. Additionally, the project will provide technical and managerial support for planning and management related to the national grid in the form of trainings and workshops to build the institutional capacity for implementing renewable energy efficiency. The project can guarantee that knowledge is transferred, but it is integral that Liberian counterparts are retained to ensure institutional memory.

Potential for Replication
This project will be implemented a the national level, with a pilot implemented in targeted project areas. The policy work undertaken in Component 1 which will inform the evolution of national policy in the energy efficiency field, therefore creating a supportive environment for the widespread replication of the pilot demonstration in this project. Furthermore, countries throughout West Africa suffer from similar barriers as this project, and as such the approach utilized in this project can easily be adjusted to other localities in the region and replicated accoding to the needs of specific localities.

2. Stakeholders. Will project design include the participation of relevant stakeholders from civil society and indigenous people? (yes ☐ /no☐) If yes, identify key stakeholders and briefly describe how they will be engaged in project design/preparation.

- The Ministry of Lands, Mines and Energy (MLME): The key roles and responsibilities of the Ministry especially the Department of Energy (DoE), among others, are to facilitate the provision of energy to the domestic, commercial and industrial users by public enterprises and the private sector, through the development of an efficient regulatory, planning and implementation framework. It also reorientates the approach to rural electrification emphasising informed community choice, sustainability and containment of Government subsidy to achieve greater penetration of electrification into rural areas. Furthermore, to research and promote the development of local energy resources such as Hydro-power, biomass, solar, wave and wind energy; and promote energy conservation measures which improve both technical and economic efficiency in energy use.
- The Rural and Renewable Energy Agency (RREA): The RREA is the agency dedicated to the com-mercial development and supply of modern energy services to rural Liberia with emphasis on utilizing available local

renewable energy resources. The RREA's mandate includes integrating energy into rural development planning; promotion of renewable energy technologies; facilitating delivery of energy products and services through rural energy service companies (RESCOs) and community initiatives; and facilitating the funding of rural energy projects including managing a Rural Energy Fund (REFUND). The REFUND aims to provide for the coordinated and sustainable financing of projects and programs for the delivery of modern energy services for rural development. REFUND is intended to become the channel through which all domestic and international financial resources intended for rural energy delivery in Liberia shall be managed. REFUND's main distinction from other funds is the focus on economic viability, including environmental and social benefits, regardless of financial viability. Prioritization of projects on the basis of economic viability will ensure that the income-generation programs supported by initial investments will be able to contribute financially to subsequent projects.

- The Energy Regulatory Board (ERB): ERB approves the tariffs and prices set by the operators. The general policy is that energy services should be provided on a full cost-recovery basis to those who are able to pay and on a targeted subsidized basis to those who can only afford to pay a portion of the cost.
- The Bureau of Standards: is responsible to establish standards to ensure accuracy of meters and gauges, product safety, security, reliability, consistency, purity, and availability as well as timeliness in responding to stakeholder service requests.
- The Liberia Electricity Company (LEC): The utility is managed by a joint venture between Manito-ba Hydro International and Kenyan Power and Light Corporation based on a 5-year Management Contract (MC) that started on July 1st, 2010. The management is supervised by a Board that is supported by NetGroup (RSA) in its monitoring and supervisory role. The MC incorporates a results based financing component. It includes performance fees and penalties for over and under performance, respectively, on key indicators. In addition, reduction/increases in operational costs will lead to performance/penalty fees.
- NCCS/EPA : Liberia, as signatory to the UN Climate Change Convention has to join efforts with the community of nations to mitigate the causes and effects of climate change. To do this an institutional framework (NCCS) has to be put in place to compliment activities of the UNFCCC focal person for Liberia. The NCCS is headed by a National Coordinator who is the operational head and project liaison with the National Climate Change Steering Committee NCCSC. The scope of work of the National Coordinator will be to:

(i) Coordinate all climate change enabling activities to prevent duplication of efforts and attended wastage;
(ii) Coordinate programs that seek to build technical expertise on climate change adaptation and mitigation;
(iii) Strengthen processes to develop infrastructure for climate monitoring, data collection, analyses and dissemination;
(iv) Support to public awareness of the effects of climate change, including among policy makers;
(v) Lead Government of Liberia efforts to promote multi-sectoral approach to climate change adaptation and mitigation.

3. Gender Considerations. Are gender considerations taken into account? (yes ☒ /no☐). If yes, briefly describe how gender considerations will be mainstreamed into project preparation, taken into account the differences, needs, roles and priorities of men and women.

In spite of the visible progress made in closing gender gaps, considerable disparities still exist. Liberia ranked 143 of 187 countries in the 2012 Human Development Report's gender inequality index. The Government approved a National Gender Policy, an Action Plan to combat gender-based violence, and adopted a National Action Plan on the UN Security Council Resolution 1325 in 2010. The Government also seeks to harmonize customary and statutory law, intending to remove the discrimination of women under customary law such as regarding access to and control over land. Liberia won the 2010 MDG 3 award for outstanding leadership, commitment and progress toward the achievement of the MDG-3. Gender-based violence is a serious problem; sexual gender based violence is the second prevalent crime in the country.

Liberian women are still disproportionately affected by poverty. They comprise 53% of the farming sector and 80% of trade, but they are concentrated in the informal sector which does not offer a sustained path of poverty reduction. They are underrepresented in sectors such as timber, mining, and rubber which are key sources of Liberia's economic growth. Only 16% of women own land compared to 33% of men. The labor force participation rate was 67% for women and 76% for men in 2010. More women are also engaged as own-account workers.

The project will increase access to quality electricity services has positive implications on gender. While it is not expected that the project will reduce women's chores of collecting fuel woods, as wood and charcoal remain the primary source of cooking fuel in electrified areas, it will nevertheless improve women's productivity in executing their household chores as well as free some time for other activities given the extended work day. This in turn will provide more time for leisure or productive activities, such as studying or income-generating activities. The project will also contribute, through public lighting, to improving the security and protection of women and girls against harassment and rape as they return from their daily activities in the communities targeted by the project. The development of SMEs is likely to benefit women, as the proportion of women engaged in trade and manufacturing activities is already larger than men's.

4 Risks. Indicate risks, including climate change, potential social and environmental 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 (table format acceptable).

Risk	Description	Mitigation
Limited power generation	Absence of reliable power generation facilities resulting in excessive use of expensive emergency diesel-based generation is threatening the adequate supply of electricity.	Financing has been secured for: the Mount Coffee hydropower plant rehabilitation project, which will add 80 MW of cheap and renewable power to the grid (Norway, the European Investment Bank (EIB), and KfW financing); three thermal plants running on Heavy Fuel Oil (HFO) that will add a total capacity of 38 MW (World Bank and JICA financing). The implementation of the CLSG transmission line will also make available 86 MW from Cote d'Ivoire to Liberia in 2017.
Inadequate operation and maintenance	Risks related to LEC's capacity to properly operate and maintain the project due to its limited capacity	LEC is currently being operated by Manitoba Hydro International (MHI) under a management contract. The contract foresees the provision of capacity building to LEC. The Bank and many other development partners are providing capacity building to LEC.
Budget cost overrun	Common physical and price variations may occur and affect the project completion, particularly in fragile state /post conflict countries where procurement processes do not always generate the required competition and may result in high prices due to high risk premiums	The project has included adequate price and physical contingencies (10%) commensurate with expected price volatility in the country and region The recent bidding processes have demonstrated a huge level of competition in the transmission and distribution line segment
Weak Governance	Weak governance could limit new investments in the power sector	Adequate internal technical and administrative controls and anti-corruption measures, and satisfactory appeal mechanisms will be put in place

		during implementation to ensure transparency, in particular during the bidding process.
Sanitation	Epidemic of Ebola	The AfdB approved a budget support grant of $61m USD for Liberia to focus on enhancing health systems and human resources. The country has a contained situation of Ebola and is 8 days to be declared Ebola Free country.

5. Coordination. Outline the coordination with other relevant GEF-financed and other initiatives.
https://ww.thegef.org/gef/project_detail?projID=6925

There are currently five GEF-financed climate change projects in Liberia in various phases of implementation, and one project which has been completed (an enabling activities for the preparation of the country's NAPA). Of the five active projects, there are two mitigation projects – Lighting One Million Lives in Liberia (World Bank) and Installation of Multi-Purpose Mini-Hydro Infrastructure for Energy and Irrigation (UNIDO). These two projects are relevant to the current initiative in that they can provide valuable lessons and guidance as the project continues into the PPG phase, particularly the first project, as it deals with lighting and appliances. While the Lighting One Million Lives project focuses on scaling up solar energy to increase access to lighting in Liberia, this project will complement the work being done there by offering yet another solution for lower cost and more sustainable access to energy. The World Bank is the implementing agency of this project, and has a large network and partnership with several existing initatives, including the private sector platform for the Lighting Africa initiative, which is expected to reach 1/3 of the countryside, providing important resources as this project continues to develop. Additionally, the main coordination will be with the baseline LEAP project, as well as the following below inftrastructure projects which are ongoing in the field and with which this GEF project will liaise and consult with:

Name	Project Description	Sub-sector	Units	Capacity	Location	Cost (US$m)	a) Financiers b) implementer
Liberia Electricity System Enhancement project (LESEP)	Expansion of Monrovia's distribution network; Rehabilitation of HFO storage/offloading facilities; Generation overhaul; Capacity building of LEC	Distribution Generation	Urban households	33'000	Monrovia	48	NORAD, GPOBA, IDA
Liberia Electricity System Enhancement project (LESEP)	Establishment of Rural and Renewable Energy Agency. Provision of micro-hydro, solar energy to off-grid users	Rural Electrification	Rural households	9'000	Lofa, Bong	3	AFREA TF

Catalyzing New Renewable Energy in Rural Liberia	Establishing RREA; Pilot microhydro & Lighting Lives in Liberia (LLL)					3.4	WB
Rural Energy Master Plan and SSMP	Development of Liberia's rural energy master plan; Pilot rural SSMP	Rural Electrification	Rural households	4'000	Lofa	2	EU
Monrovia Electricity Grid Rehabilitation	Grid Rehabilitation	Transmission & Distri-bution			Greater Monrovia	25	EU
Renewable Energy for Health Care Facilities	Providing Photovoltaic Power to the 205 public Health Facilities without access to electricity; total number of HC 400	Electrification	Health Facilities	205	All of Liberia	2	a) 75% EU, 25% MoH b) NGO: Merlin in cooperation with Liberian solar company West Coast Services
Cross Border Rural Electrification	Cross Border Rural Communities Electrification project (Côte d'Ivoire - Liberia)	Rural Electrification	Population	130'000 (25'000 households)	Nimba, Grand Ghede and Maryland counties	11.7	WAPP(50%) EU (50%)
Buchanan Renewable Energy	Biomass energy plant using rubber wood chips	Generation	MW	31 - 35	Kakata	170	BR, OPIC, Mr.McBain
The Liberia Energy Sector Support Program (LESSP)	Four pilots to create micro-grids in rural areas based on biomass and hydro sources	Rural Electrification	Rural households		Lofa, Bong, Nimba	6	USAID
Diesel Generators	Additional generators for Monrovia	Generation	MW	3	Bushrod (Monrovia)	2	NORAD
Diesel Generators	Additional generators for Monrovia	Generation	MW	10	Bushrod (Monrovia)	6	USAID

HFO-fired generation plant	Additional generators for Monrovia	Generation	MW	10 - 20	Bushrod (Monrovia)	15-30	JICA
WAPP CLSG	Cote d'Ivoire, Liberia, Sierra Leone, Guinea (CLSG) Weat Africa Power Pool (WAPP) interconnection and sub-stations	Transmission	Kms MW	510 100 Through interconnection	Yekepa Buchanan Mt. Coffee Monrovia-Foya	494	EIB, EU, IDA, KfW;
CLSG		electrification of communities along CLSG line					AfDB
Mt. Coffee HEP	Rehabilitation of pre-war hydro-electric plant of Mount Coffee	Generation	MW	64	St John River	162	Norway, KfW, EIB, (AfDB, WB)
Foya River HEP	New hydro-electric plant	Generation	MW	50	Foya River (border Liberia/ Sierra Leone)	143	
St. Paul River HEP1B and 2	New hydro-electric plants	Generation	MW	198	St Paul River	879	
Energising Development (EnDev)	development of a market for pico PV products; support to installation of a pilot minigrid;	Rural Electrification	Population and Social Institutions	5,500 (people)	Monrovia, Foya, Lofa	0,586	BMZ, DGIS, NORAD, DFID, AUSAID

6. Consistency with National Priorities. Is the project consistent with the National strategies and plans or reports and assessements under relevant conventions? (yes ☐ /no☐). If yes, which ones and how: NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, etc.
Liberia has not yet officially submitted any NAMAs, but it submitted its' first national communication to the United Nations Framework Convention on Climate Change (UNFCCC) in 2013. According to the NC, targets for the energy sector the targets included reduction of GHG emissions by 10%, improvement in energy efficiency by 20%, raising the share of renewable energy to 30% of electricity production and 10% of overall energy consumption by 2030.

The NC aims in improving the energy sector by identifying adaption option and mitigation measures with the appropriate technology
(i) the electricity subsector aims to promote energy efficiency and the use of renewable energy as well as reducing losses in electricity supply system with energy efficient applicances and solar, wind and biomass as well as retrofitting electricity tranmission and distribution lines and equipment.

(ii) Residential, commercial and insitutional (RCI) subsector promotes energy efficiency and switch to lower GHG-emitting energy sourceswith energy efficient compact fluorescence lamps
(iii) the industrial subsector aims to use more energy efficient and clean technology by using energy efficient lighting equipment

This project is in line with the main mitigation options presented in the NC for the electricity and residential, commercial and institutional sectors, which focuses on the promotion of energy efficient appliances, declaration of emissions standards, reduction of losses in the electricity supply system, use of energy efficient appliances, incorporation of energy efficient measures and standards, and audit of energy usage in commercial and institutional buildings.

The project is also consistent with Liberia's 2009 National Energy Policy and is expected support the promotion of sustainable technology, improve access of households to lighting; and lay the foundation for future energy efficient and renewable energy development by strengthening the capacity of key institutions.

7. Knowledge Management. Outline the knowledge management approach for the project, including, if any, plans for the project to learn from other relevant projects and initiatives, to assess and document in a user-friendly form, and share these experiences and expertise with relevant stakeholders.

A component dedicated to sharing best practices and a detailed knowledge management plan will be conceived and developed during the PPG phase. The project will contribute to knowledge management through baseline studies, surveys, and progress reports which will inform stakeholders on how to use the acquired information and skills for better results-oriented achievements in term of energy efficiency in Liberia. Knowledge generated on enhanced promotion of energy efficiency will be instrumental in designing and managing future projects in the climate change foacl area, in partciular energy eficiency or renewable energy in Liberia. Furthermore, the project will facilitate exchange of information and experiences across the counties targeted by the project on innovations and best practices in energy efficiency.

An M&E system will be developed and managed by an M&E Officer which will regularly track, document and report progress and results, facilitate knowledge building, and share data with key stakeholders. The monitoring and reporting plans will be developed based on a log frame that will have gender disaggregated indicators. The project will provide financial resources to facilitate training, proper data gathering, processing and reporting.

The GEF and baseline project will generate a lot of valuable information for application in the design and management of similar projects (AfDB, government, or other development partners) in Liberia. The innovations in using low energy consumption lamp, community participation for promotion of EE, social infrastructure (schools, health centers, etc), value chain linkages, services and livelihood alternatives will provide critical lessons for sustaining the use of these products for better life in the region and mitigating climate change in Liberia.

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

A. RECORD OF ENDORSEMENT[9] 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 SGP OFP endorsement letter).

NAME	POSITION	MINISTRY	DATE *(MM/dd/yyyy)*
Madam Anyaa VOHIRI	Executive Director/ CEO	Environmental Protection Agency of Liberia	**07/16/2015**

[9] For regional and/or global projects in which participating countries are identified, OFP endorsement letters from these countries are required even though there may not be a STAR allocation associated with the project.

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF policies[10] and procedures and meets the GEF criteria for project identification and preparation under GEF-6.

Agency Coordinator, Agency name	Signature	Date *(MM/dd/yyyy)*	Project Contact Person	Telephone	Email
Mahamat Assouyouti African Development Bank (AfDB)		07/27/2015	BAH, THIERNO	+22520266164	t.h.bah@afdb.org

C. ADDITIONAL GEF PROJECT AGENCY CERTIFICATION (APPLICABLE ONLY TO NEWLY ACCREDITED GEF PROJECT AGENCIES)

For newly accredited GEF Project Agencies, please download and fill up the required **GEF Project Agency Certification of Ceiling Information Template** to be attached as an annex to the PIF.

[10] GEF policies encompass all managed trust funds, namely: GEFTF, LDCF, and SCCF