

AFRICAN DEVELOPMENT BANK GROUP



**PROJECT: LIBERIA ENERGY EFFICIENCY AND ACCESS
PROJECT (LEEAP)**

COUNTRY: LIBERIA

PROJECT APPRAISAL REPORT

ONEC

November 2016

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CURRENCY EQUIVALENTS
(May 2016)

UA 1	USD 1.417
UA 1	EUR 1.24
UA 1	LRD 129.69

FISCAL YEAR
1 January - 31 December

WEIGHTS AND MEASURES

- | | |
|--|--|
| <ul style="list-style-type: none"> • m Metre • cm centimetre = 0.01 metre • mm millimetre = 0.001 metre • km kilometre = 1 000 metres • m² square meter • cm² square centimetre • km² square kilometre = 1 000 000 m² • ha hectare = 10 000 m² | <ul style="list-style-type: none"> • KOE kilogram of oil equivalent • kV kilovolt = 1 000 volts • kVa kilovolt ampere (1 000 Va) • kW kilowatt = 1 000 Watts • GW gigawatt (1000 000 kW or 1000 MW) • MW megawatt (1 000 000 W or 1 000 kW) • kWh kilowatt hour (1 000 Wh) • MWh megawatt hour (1 000 KWh) • GWh gigawatt hour (1 000 000 KWh) |
|--|--|

ACRONYMS AND ABBREVIATIONS

AfDB	African Development Bank
ADF	African Development Fund
AfT	Agenda for Transformation
BWI	Booker Washington Institute
CFL	Compact Fluorescent Lamps
CSP	Country Strategy Paper
DFI	Development Financial Institution
DP	Development Partner
EPA	Environmental Protection Agency
EPC	Engineering, Procurement and Construction
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
EU-AITF	European Union Africa Infrastructure Trust Fund
GEF	Global Environment Facility
GoL	Government of Liberia
JAS	Joint Assistance Strategy
LCPDP	Least Cost Power Development Plan
LEC	Liberia Electricity Corporation
LRD	Liberia Dollar
MCC	Millennium Challenge Corporation
MHI	Manitoba Hydro
MLME	Ministry of Lands, Mines and Energy
NORAD	Norwegian Agency for Development Cooperation
NTF	Nigeria Trust Fund
ONEC	Energy, Environment and Climate Change Department

PCN	Project Concept Note
PIU	Project Implementation Unit
RAP	Resettlement Action Plan
RISP	Regional Integration Strategy Paper
RIA	Roberts International Airport
RREA	Rural and Renewable Electrification Agency
TSF	Transition Support Facility
TYS	Ten Year Strategy
WAPP	West African Power Pool
UA	Units of Account
USA	United States of America
USAID	United States Agency for International Development
USD	United States dollars

PROJECT INFORMATION SHEET

Client Information	
Borrower/Recipient	Liberia
Executing Agency	Ministry of Lands, Mines and Energy (MLME)
Implementing Agencies	Liberia Electricity Corporation (LEC)

Financing Plan			
Sources	Amount (million)	Amount (UA million)	Instrument
African Development Fund (ADF)	UA 9.42	9.42	Loan
Transition Support Facility (TSF)	UA 4.20	4.20	Loan
Nigeria Trust Fund (NTF)	USD 10	7.06	Loan
European Union Africa Infrastructure Trust Fund (EU-AITF)	EUR 10	8.05	Grant
Global Environment Facility (GEF)	USD 2.64	1.86	Grant
Government of Liberia	USD 1.11	0.79	Counterpart
Total Project Cost	n/a	31.38	

Key Information On Bank Group Loans And Grants		
	ADF / TSF Loan	NTF Loan (concessional)
Loan Currency	UA	USD
Interest Type	N/A	N/A
Interest Rate Margin	N/A	N/A
Service Charge	0.75% yearly on the disbursed and outstanding.	0.75% per year on the disbursed portion of the loan outstanding.
Commitment Fee	0.50% yearly on the undisbursed portion of the loan starting 120 days after the signing of the Loan Agreements.	0.5 % on the undisbursed portion of the loan with effect from 120 days after the signing of the Loan Agreement
Tenor	40 years	27 years
Grace Period	10 years	7 years

Key Financial & Economic Outcomes		
	Financial	Economic
Net Present Value	USD 1.062 million	USD 4.200 million
Internal Rate of Return	14%	29%

Timeframe – Main Milestones	
Concept Note Approval	May 2014
Project Approval	November 2016
Effectiveness	May 2017
Closing Date	March 2020
Completion	December 2019
Last Repayment	December 2057

PROJECT SUMMARY

Project Overview: The Liberia Energy Efficiency and Access Project (LEEAP) is part of a larger multi-donor programme aiming to improve the access to electricity in Liberia. The project involves the construction of 46.1 km of transmission line and 280 km of distribution line in the corridors of the Roberts International Airport (RIA) in the greater Monrovia and Pleebo-Fish Town at the River Gee County. It also includes an energy efficiency component as well as a capacity building component. The project, estimated at an overall cost of UA 31.38 million, will be implemented over the 2017- 2019 period.

Project Impact: The direct beneficiaries of the project are communities located along the corridors of RIA and Pleebo-Fish Town, the technicians working in the power sector in Liberia, and graduates in vocational schools. The project will enable the provision of reliable electricity to an estimated population in excess of 200,000 persons living in communities along the project area, including schools, and health centers as well as commercial and industrial businesses. It will contribute to reduce greenhouse emissions while raising the electricity access rate in Liberia from the current 2% to 5% by 2019. The project will also contribute to provide Liberia with a reserve of skilled staff in the power sector who will benefit from the ambitious capacity building component to be financed under the project.

Needs Assessment: The power sector in Liberia suffered from 14 years of socio-political crises that led to the destruction of the public electric power infrastructure and the loss of skilled staff. Owing to the low levels of investment in the sector in recent years, the power infrastructure has become obsolete. That situation makes Liberia one of the countries where the electricity access rate (2%) is among the lowest in the world and where the average cost of electricity is among the highest (\$0.52 per kWh). The unavailability of electric power and its high cost are seriously affecting the economic prosperity and the competitiveness of Liberia. The LEEAP project is a structuring project which will enable the populations of the project area to access quality, reliable, clean and cheap electricity services.

Bank's Added Value: The Bank has a good knowledge and experience in the energy sector in Liberia. With this project, it positions itself among the most active development partners in the energy sector in the country. The Bank played a leading role in the preparation of the larger multi-donor programme's environmental and social impact assessment studies. Thus, it facilitated the mobilization of resources from other donors for the financing of the project.

Knowledge Management: The project includes a strong capacity building component at the national level which targets to enhance the capacity of the key players involved in the power sector, including the national utility LEC, the Ministry of Lands, Mines and Energy (MLME), the Renewable and Rural Electrification Agency (RREA), the Environmental Protection Agency (EPA), and the graduates in vocational schools. The strengthening of the capacity and knowledge of the major sector players will improve the management of the project's assets and its sustainability. The Bank supervision reports as well as the reports from the supervision and management consultant and the project accounts auditors will constitute sources of information on the achievement of the project's objectives.

RESULTS-BASED LOGICAL FRAMEWORK

Country and project name: Liberia Energy Efficiency and Access Project (LEEAP)						
Purpose of the project: Increase the Liberian population's access to electricity while promoting energy efficiency and strengthening the institutional capacity in the electricity sector						
RESULTS CHAIN		PERFORMANCE INDICATORS			MEANS OF VERIFICATION	RISKS/MITIGATION MEASURES
		Indicator (including Core Sector Indicator)	Baseline	Target		
IMPACT	Contribution to socio-economic development through boosting access to electricity	National electricity access rate in % (CSI)	2%	5% in 2019	<ul style="list-style-type: none"> - National statistics - Project supervision reports - LEC quarterly and annual reports - Contractors/Consultant's Progress Reports - ESIA report 	<p>Risk: Weak capacity of LEC: LEC's technical and administrative capacity is limited, therefore negatively impacting its ability to implement large projects → Mitigation: measures to strengthen LEC's capacity (recruitment, training, etc.)</p> <p>Risk: Collection losses / theft : Risk that payments to the utility company LEC are not collected on a timely basis or that electricity is stolen by end users → Mitigation: action plan being implemented by LEC to reduce collection losses; installation of pre-paid meters etc.</p> <p>Risk: Inadequate operation and maintenance Mitigation: provision of capacity building to LEC</p>
	Improved performance of LEC's distribution system	Electricity distribution system losses (technical and commercial)	30%	20% in 2019		
OUTCOMES	Improved electricity supply service	Number of households benefiting from efficient and reliable electricity supply in the project area	0	40,000 households		
	Reduced greenhouse emissions through energy efficiency measures	Amount of CO2 emissions avoided	n/a	3,826 tons of CO2 avoided per year from 2020 to 2040		
OUTPUTS	1. 66KV transmission lines constructed	1. Number of Km of 66 kV line constructed	1. 0	1. 46.1 km of 66 KV transmission line	<ul style="list-style-type: none"> - Progress reports from the implementing agency - Supervision mission reports from AfDB - Disbursement and financial reports from the implementing agency - Project completion report 	<p>Risk: Cost overrun: Cost overrun risk and implementation delays due to physical and price variations and/or limited competition during the procurement process due to high risk premiums, especially in light of the recent Ebola crisis. → Mitigation: simple design for open competition; 15% contingencies to deal with higher than normal bid prices</p> <p>Risk: Unavailability of counterpart funding: The GoL is expected to contribute to the project's financing plan for an amount of UA 0.79 million to finance environmental and social related measures including compensating the project-affected persons. GoL might find it difficult to mobilize such an amount on a timely basis. → Mitigation: relatively small amount of counterpart funding required; project in GoL's pipeline for many year and budgeted accordingly</p>
	2. New substations constructed	2. Number of substations constructed	2. 0	2. Two 66/33 kV substations		
	3. 33KV distribution lines constructed	3. Number of Km of 33 kV line constructed	3. 0	3. 280 km of 33 KV distribution line		
	4. New Customers connected	4. Number of customer connections	4. 0	4. 12,950 new connections		
	5. Efficient lighting equipments provided	5. Number of households benefiting from efficient lighting	5. 0	5. 40,000 households		

KEY ACTIVITIES	COMPONENTS	INPUTS
	<p>Component A: Infrastructures Component B: Capacity building Component C: Project Implementation Support</p>	<p>Total project cost: UA 31.38 million Component A: UA 24.65 million Component B: UA 2.41 million Component C: UA 4.32 million</p> <p>Sources of Funds: ADF Loan: UA 9.42 million; TSF Loan: UA 4.2 million; EU-AITF Grant: UA 8.05 million; NTF: UA 7.06 million; GEF: UA 1.86 million; Government of Liberia: UA 0.79 million.</p>

REPORT AND RECOMMENDATION OF THE MANAGEMENT OF THE ADB GROUP TO THE BOARDS OF DIRECTORS ON PROPOSED LOANS AND GRANTS TO THE REPUBLIC OF LIBERIA FOR THE LIBERIA ENERGY EFFICIENCY AND ACCESS PROJECT (LEEAP)

Management submits the following report and recommendations concerning a proposal for: (a) African Development Fund (ADF) loan amounting to UA 9.42 million, (b) a Transition Support Facility (TSF) loan of UA 4.20 million, (c) a Nigeria Trust Fund (NTF) loan of UA 7.06 million, (d) an European Union – Africa Infrastructure Trust Fund (EU-AITF) grant of Euro 10 million (equivalent to UA 8.05 million), and (e) a Global Environment Facility (GEF) grant of USD 2.64 million (equivalent to UA 1.86 million) to the Government of Liberia (GoL) for the Liberia Energy Efficiency and Access Project (LEEAP).

1 STRATEGIC THRUST AND RATIONALE

1.1 Project Linkages with Country Strategy and Objectives

1.1.1 The proposed project aims to address the developmental challenge of the power sector in Liberia which suffered from 14 years of socio-political crises that led to the destruction of the public electric power infrastructure and the loss of skilled staff. It is in line with Liberia's Agenda for Transformation 2012-2017(AfT) and the Country Strategy Paper 2013-2017 (CSP) as it aims to increase the Liberian population's access to reliable and affordable supply of electricity and strengthen the institutional capacity in the electricity sub-sector. The project is also in line with the country's Least Cost Power Development Plan (LCPDP) developed in 2014. The LCPDP is aimed at guiding the sustainable development of the electricity sector in Liberia for the coming 20 years.

1.1.2 The AfT, a five year development strategy for the 2012-2017 period, sets precise goals and objectives for Liberia to become a prosperous and inclusive society. Under pillar II 'Infrastructure Development', the expansion of access to electricity services from the current 2% to 5% by 2019 and the reduction of the cost of electricity are identified as essential conditions for achieving and sustaining economic transformation. The CSP for Liberia has identified energy services as one of the critical constraints to growth after extensive consultations and analytical work. The CSP is articulated around two strategic pillars: (i) promoting inclusive economic growth through transformative infrastructure investments; and (ii) enhancing governance and the efficient management of resources. This project, which has been included in the CSP's indicative pipeline, will contribute to the achievement of the pillar 1 of the Liberia CSP, as dilapidated energy infrastructure is one of the key constraints to sustainable economic growth in Liberia. The LCPDP proposes the development of the country's transmission network along the planned transmission and sub-transmission lines, in particular the Cote d'Ivoire, Liberia, Sierra Leone and Guinea (CLSG) 225 kV interconnection and the three transmission line corridors towards Kakata, Bomi and Roberts International Airport (RIA). The LCPDP foresees the extension of the transmission line corridors (Kakata to Gbanga and RIA to Buchanan) in the longer run.

1.2 Rationale for Bank Involvement

1.2.1 Liberia has one of the lowest electricity access rates in the world presently, with less than 2% of households having access to electricity services nationwide. The population of Liberia is expected to grow approximately 3.9 million currently to 4.5 million in 2020. According to the LCPDP, the demand for electricity will grow at an average rate of 8% until

2033, with slightly higher growth rates from 2015 to 2020. This is reflecting the increasing urbanization in the country, particularly in the greater Monrovia, as well as the reaction of the consumers to the availability of an increased electricity supply at lower prices, initiated by the commissioning of the Mount Coffee hydropower plant expected in 2017. The growth in electricity demand combined with insufficient investment in the electricity network development and access in the past has led to considerable strain on the electricity network especially in densely populated urban and peri-urban areas of Liberia. In addition, rural energy access is virtually non-existent, increasing the impediments to doing business outside of Monrovia and also increasing sentiments of exclusion, which could contribute to political instability. With its experience in delivering infrastructure projects, its capacity to leverage financing from different trust funds and donors, and its presence on the ground, the Bank is very well positioned to assist the government of Liberia in addressing those issues. The Bank also played a leading role in the preparation of the larger multi-donor programme's environmental and social impact assessment studies. Thus, it facilitated the mobilization of resources from other donors for the financing of the project.

1.2.2 The proposed project fits into the Bank's Ten Year Strategy (TYS) 2013-2022 as well as the High Five priorities of the Bank on top of which is the aim to power and light up Africa. The project will contribute to the country's transition to green growth and inclusive growth in line with the objectives of the Bank 'strategy and priorities by enabling a greater number of Liberians to access to quality, reliable, cleaner and cheaper electricity services. The project will contribute to green and inclusive growth by reducing the use of highly polluting stand-alone diesel generators (currently being used by a majority of the Liberian population) with the provision of reliable power supply to the population and surrounding social facilities such as hospitals and schools. In addition, the project will promote energy efficiency. The project activities will therefore reduce greenhouse emissions and ultimately result in climate resilience while at the same time increasing the energy access rate by reducing the losses in the distribution network. The project is also in line with the energy access pillar of the Bank's energy policy which aims at promoting a sustainable and cleaner energy sector that ensures universal access to modern, affordable and reliable energy services by 2030.

1.2.3 Liberia being one of the Mano River Union member countries, this project will contribute to the objectives of the Mano River Union initiative as well as the objectives of the "Sustainable Energy For All" and "Power Africa" initiatives. SE4All, an initiative launched by the United Nations Secretary-General, aims at reaching: (a) universal access to energy services in particular electricity services and clean cooking solutions; (b) doubling the global rate of improvement in energy efficiency; and (c) doubling the share of renewable energy in the global energy mix by 2030. Power Africa is an initiative launched by the United States' President Barack Obama, which aims to double access to power in Sub-Saharan Africa.

1.3 Aid Coordination

1.3.1 Many development partners (DPs) are active in Liberia, among which the main ones are the World Bank, the European Union (EU), the Norwegian Government, and the Government of the United States of America. The World Bank is financing the Liberia Accelerated Electricity Expansion Project (LACEEP), which involves the construction of the Monrovia – Kakata transmission line corridor, the Monrovia-Bomi-Grand Cape Mount transmission line corridor and the electrification of the Greater Monrovia area as well as the construction of a 10 MW thermal plant. The World Bank is also co-financing the Liberian

portion of the CLSG interconnection project. The EU is financing the Cross Border Electricity Supply to 18 communities in Liberia in the Maryland, Nimba, and Grand Gedeh Counties and providing support to the energy sector players. The Norwegian Government (through NORAD) is financing the management contract of LEC and providing capacity building and training to LEC as well as the rehabilitation of the Mount Coffee hydropower plant. The Government of the United States of America Government (through USAID and MCC) is mainly focused on supporting the extension of the power generation capacity in the country with the rehabilitation of the Mt. Coffee hydropower plant. A list of ongoing and future projects in the energy sector in Liberia is provided in Appendix III.

1.3.2 To ensure mutual accountability and aid effectiveness, the DPs, jointly with the Government of Liberia, have established thematic working groups. In the energy sector, the coordination among DPs is strong and ensured through an energy sector working group which is currently being coordinated by the EU on the DPs side. The design of the project has benefited from various consultations among DPs and its implementation will benefit from the coordination arrangements already in place for the energy sector in Liberia in general.

2 PROJECT DESCRIPTION

This project is part of the Government of Liberia's electricity sector development master plan the LCPDP¹. It focuses on the RIA transmission line corridor as well as the extension of the EU financed cross-border electrification project from Pleebo to Fish Town in the River Gee County. It is part of a larger multi-donor programme aiming to improve the access to electricity in Liberia and involving the Norwegian Government, the World Bank and the European Union among other donors.

The project aims at increasing the Liberian population's access to electricity from the current 2% to 5% by 2019 while promoting energy efficiency and strengthening the institutional capacity in the electricity sector. More specifically, the project will: (i) expand the electricity transmission and distribution network in Liberia; (ii) improve electricity accessibility of the communities in the project's zone of influence; (iii) promote energy efficiency in the country; and (iii) improve the human and technical capacity of the energy sector by training skilled professionals (including engineers, technicians, maintenance and administrative personnel) from LEC, MLME, EPA and RREA.

2.1 Project Components

2.1.1 The ultimate objective of the LEEAP project is to increase the Liberian population's access to electricity and strengthen institutional capacity in the electricity sector. More specifically, the project will: (i) expand the transmission and distribution along the Roberts International Airport (RIA) corridor and from Pleebo to Fish Town; (ii) improve energy accessibility of the communities in the project's zone of influence; (iii) improve the human and technical capacity of the energy sector by training skilled professionals (engineers, technicians, maintenance and administrative personnel, students in vocational schools); and (iv) and contribute to the reduction of GHG emissions through an energy efficiency component.

¹ Government of Liberia Least Cost Power Development Plan, prepared by Fichtner, October 2014

2.1.2 The description of the project components is provided in the Table 2.1. The detailed project description and cost estimate are provided in Annex B.2.

Table 2.1 Description of Project Components

Tableau 2.1			
Component description			
N°	Component	Cost (UA million)	Description
A	Infrastructures	24.65	A.1 Transmission Lines (RIA corridor) : <ul style="list-style-type: none"> - Construction of a 10.1 km transmission line between Paynesville and Schefflin - Construction of a 36 km transmission line between Schefflin and RIA
			A.2 Substations (RIA corridor) <ul style="list-style-type: none"> - Construction of a three (3) 66 kV bays and five (5) 33 kV feeders 10 MVA substation at RIA - Construction of a three (3) 66 kV bays and five (5) 33 kV feeders 10 MVA substation at RIA
			A.3 Distribution Lines and Service Connections (RIA corridor) <ul style="list-style-type: none"> - Distribution network (33kV) and service connections between Paynesville and Schefflin - Distribution network (33kV) and service connections between Schefflin and RIA - Deployment of energy efficient lighting
			A.4 Distribution Lines and Service Connections (River Gee) <ul style="list-style-type: none"> - Distribution network (33kV) and service connections between Pleebo-Kanweakan-Fish Town - Deployment of energy efficient lighting
B	Capacity building	2.41	<ul style="list-style-type: none"> - Training / Capacity Building for LEC/MLME/RREA/EPA - Support to Vocational Schools - Consultancy services for the preparation of a transmission and distribution project
D	Project Implementation Support	4.32	<ul style="list-style-type: none"> - Consultancy services for Design Review, preparation of bidding documents and Tendering - Supervision of Works - Support to the PIU in form of allowances, consumables, fuel, consultancy services. - Implementation of the Environmental and Social Management Plan (ESMP) - Acquisition of two project vehicles and office equipment - Acquisition of transmission and distribution network testing and maintenance equipment - Acquisition of an accounting software - Audit services - Project Management - Knowledge Management, Public Outreach and M&E
Total Project cost		31.38	

2.2 Technical Solutions Adopted and Alternatives Considered

2.2.1 The solution adopted in this project consists in extension of the transmission and distribution infrastructure with the construction of new transmission and distribution lines, construction of new substations as well as installation of new connection systems. Alternative solutions were considered and rejected for the reasons summarized in Table 2.2.

Alternative	Description	Reasons for Rejection
Extension of the distribution infrastructure only	Extension of the distribution network and installation of new connections without extension of the transmission network	<ul style="list-style-type: none"> Existing and new customers will suffer from voltage drop and fluctuation because of very far-off supply points Limited power distribution capacity that would not accommodate the development of new economic and productive activities
Deployment of large scale off-grid systems	Decentralized off-grid solutions such a solar PV systems are used in a large scale, even in areas where the grid is available, instead of extending the existing grid	<ul style="list-style-type: none"> Higher upfront costs which makes it difficult to deploy in a large scale without impacting the viability of the project and the electricity connection costs Inexistent regulatory framework for large scale deployment of decentralized off-grid systems in Liberia

2.3 Project Type

2.3.1 The proposed operation will be implemented as a standalone project. The proposed financing instruments are loans from the ADF, TSF (Pillar 1) and NTF resources as well as grants from the EU-AITF and GEF resources (channeled through the Bank). The Government of Liberia will also provide counterpart financing.

2.4 Project Cost and Financing Arrangements

2.4.1 The total project cost, including a 15% provision for contingencies (10% for price escalation and 5% for physical contingencies), but excluding taxes and customs duties, is estimated at UA 31.38 million, of which 93% is in foreign currency. Table 2.3 presents the foreign and local currency project cost by component. A high level of contingencies have been factored into the project cost in order to be able to face a possible cost increase following the review of the studies and a higher than normal bid prices in a context where contractors are reluctant or would request a high risk premium to work in Liberia due to the recent Ebola crisis.

Component	Foreign currency	Local currency	Total cost	% currency
Infrastructures	20.51	1.08	21.59	95%
Capacity building	2.41	0	2.41	100%
Project Implementation Support	3.30	0.58	3.89	85%
SubTotal	26.22	1.66	27.89	93%
Physical contingencies	2.17	0.16	2.33	93%
Price escalation	1.08	0.08	1.16	93%
Total project cost	29.47	1.91	31.38	93%

2.4.2 The project is financed with the Bank Group's own resources (ADF, TSF, and NTF), trust funds (EU-AITF and GEF) for which the Bank is the implementing agency and the Government of Liberia's counterpart funding. Table 2.4 presents the project's financing plan.

The Bank's Policy on Expenditure Eligible for Bank Group financing stipulates that for ADF, the Government's contribution should be at least 10% of the project cost to respect the principle of cost-sharing between the Bank Group and its regional member countries. The Policy however accommodates a broad-based approach and allows, where justified, financing more than 90% of the total project cost. The Government of Liberia's counterpart funding not exceeding 3% of the total project cost, a justification for the Bank financing a higher proportion (97%) of the total project cost is provided in Appendix IV.

2.4.3 The project is financed with the Bank Group's own resources (ADF, TSF, and NTF), trust funds (EU-AITF and GEF) for which the Bank is the implementing agency and the Government of Liberia's counterpart funding. Table 2.4 presents the project's financing plan. The Bank's Policy on Expenditure Eligible for Bank Group financing stipulates that for ADF, the Government's contribution should be at least 10% of the project cost to respect the principle of cost-sharing between the Bank Group and its regional member countries. The Policy however accommodates a broad-based approach and allows, where justified, financing more than 90% of the total project cost. The Government of Liberia's counterpart funding not exceeding 3% of the total project cost, a justification for the Bank financing a higher proportion (97%) of the total project cost is provided in Appendix IV.

Source	Foreign currency	Local currency	Total	% currency
African Development Fund	7.53	1.89	9.42	80%
Transition Support Facility	3.99	0.21	4.20	95%
Nigeria Trust Fund	6.70	0.36	7.06	95%
EU-Africa Infrastructure Trust Fund	8.05	0	8.05	100%
Global Environment Facility	1.73	0.13	1.86	93%
Government of Liberia	0	0.79	0.79	100%
Total	28.00	3.38	31.38	93%

2.4.4 The project cost by category of expenditure is provided in Table 2.5.

Category	Foreign currency	Local currency	Total	% currency
Works	22.30	1.17	23.47	95%
Goods	1.50	0.08	1.58	95%
Services	5.38	0.60	5.98	90%
Operational costs	0	0.35	0.35	0%
Total	29.18	2.20	31.38	93%

2.4.5 Finally, the disbursement plan is provided in Table 2.6.

Component	2017	2018	2019	Total
Infrastructures	0	12.32	12.32	24.64
Capacity building	0.74	1.67	0	2.41

Project implementation support	1.18	1.97	1.17	4.32
Total	1.92	15.97	13.49	31.38
% of total	6%	51%	43%	100%

2.5 Project’s Target Area and Development Impact

2.5.1 The project will enable employment creation and broadening opportunities for participation across gender, age and geography in the project area. Indeed, it is expected that the project also create at least 100 new jobs during the project implementation, out of which at least 40 jobs are expected to be for women. The project addresses key areas of special emphasis in the Bank’s Ten Year Strategy (TYS) 2013-2022 that focuses on gender equality and breaking the cycle of fragility. The project will have positive impacts on the populations leaving in the Greater Monrovia area as well as Robert International Airport corridor and River Gee County. It is estimated that 200,000 inhabitants (leaving in 40,000 households) will benefit from the availability of reliable electricity supply in their households, schools, health centers and markets. Currently, such services are mainly confined to the Monrovia area. Indeed, about 10% of urban residents and less than 2% of rural residents have currently electricity access largely from self-generation with gasoline or diesel generators using expensive and polluting imported fuel. In the rural areas however, kerosene lamps are the main source of lighting. The 40,000 households targeted by the project will also benefit from reliable electricity supply and energy efficient lighting as a result of this project.

2.5.2 The project includes a capacity building component which aims at addressing the lack of adequate capacity in the power sector in Liberia. In order to strengthen the capacity of the sector, various trainings in various areas of expertise will be financed under the project. The targeted areas of expertise include: (i) policy design, planning and implementation, (ii) management and maintenance of electrical facilities (generation, transmission, and distribution), (iii) training in customer’s relation management. The capacity building targets LEC’s staff, governmental agencies (MLME, RREA, EPA) and electricians at the national level (for example graduates in vocational school) in order to provide the country with a pool of skilled professionals in the power sector.

2.6 Participatory Approach

2.6.1 Public consultations were undertaken during the ESIA studies and the preparation of the ESMPs. Meetings were held with communities in Schefflin, Gbengbar Town, R-2 Community, Duarzon, Joe Bar, Transit Community, Bonjal Community and Margibi County, Officials and community members of Maryland and River Gee Counties. Further consultations were held with the Environmental Protection Agency, the Ministry of Public Works, Forestry Development Authority, Ministry of Lands, Mines & Energy, Liberia Electricity Corporation, Ministry of Gender and Ministry of Health. The concerns raised at all of these consultations were similar. The communities were keen on knowing if they would have access to the electricity; whether compensation would be paid if their structures are adversely affected by the project; residents wished to know the period for commencement of the project and the likely environmental impacts they will experience. All of the concerns were adequately addressed by the consultants and the project design. For electricity access, the distribution lines component is designed to ensure that project beneficiaries within the zone of influence of the lines shall be connected. The project also includes the provision of CFL lamps to households. For compensation, an Abbreviated Resettlement Action Plan has

been prepared and will be implemented. Further consultations are envisaged during project implementation when the contractor shall survey the final route and commence works.

2.7 Bank Group Experience and Lessons Reflected in Project Design

2.7.1 Bank Group Experience: as from December 2015, the AfDB portfolio in Liberia amounts to UA 292 million and includes twenty-one (21) operations. The overall performance of the portfolio is satisfactory. The general disbursement rate is 24%. The first operation in the energy sector is the Rural Electrification Component of the Cote d'Ivoire, Liberia, Sierra Leone and Guinea (CLSG) Electricity Interconnection project approved in November 2013, which has however not yet started disbursing. The delays experienced by the CLSG project are mainly related to the: signing of the on-lending agreement between LEC and the Ministry of Finance and Development Planning; the opening of a special account in fulfilment of the conditions precedent to first disbursement; and the setting-up of the Project Implementation Unit (PIU). Given the stage of readiness of this project (for which the detailed design and bidding documents are already available for the RIA corridor), it is expected that it will disburse in a reasonable time. There are no completed projects in the energy sector in Liberia. However, the project will draw lessons from the ongoing and completed projects in Liberia. Those projects include (i) the Fish Town – Harper road project (phase I) which is making progress on implementation of physical activities despite delays as a result of the Ebola outbreak; (ii) the Labour based public works project which was completed in March 2015. The main challenges the portfolio is facing are: (i) limited project and sector management capacity at national level; (ii) weak regulatory and legal framework; and (iii) weak coordination among different national entities.

2.7.2 Lessons Learnt: The main lessons learnt from the preparation and implementation of projects in Liberia, in particular the CLSG project, include among others: (i) the Liberian market is relatively small and as a result, only a few contractors are willing to work in the country, a situation which has worsened following the Ebola Virus Disease (EVD) outbreak; hence, because of lack of competition as well as other high business costs, project unit cost is relatively high compared to some neighbouring countries in the Mano River Union Region. For this project, the procurement of goods and works will be undertaken using International Competitive Bidding (ICB), which will ensure a wide diffusion of the procurement notice; (ii) the country faces inadequate institutional capacity and skills in all sectors especially in engineering and technical areas; the project will include an institutional support and capacity building component to mitigate that risk; (iii) lengthy loan ratification process by the Legislature delays the effectiveness of projects in Liberia; the Bank's field office in Liberia will ensure a close follow-up and dialogue with the Government to ensure a timely ratification by parliament; and (iv) the long delay to set up the Project Implementation Unit (PIU) in charge of the CLSG Rural Electrification (CLSG RE) Project which was set up three years after the project was approved. In order to enable the LEEAP to start up timely, the PIU in charge of the CLSG has been reinforced to be able to also implement the LEEAP. The PIU is being reinforced with additional staff (procurement expert, engineer, financial management expert).

2.8 Key Performance Indicators

2.8.1 The key outcome indicators are indicated in the results based logical framework. The project will contribute to reduce the distribution system losses (technical and commercial) from 30% to 20% and provide improved electricity supply to 40,000 households living in the

project area. The project will also contribute to green growth with the reduction of 3,826 tons of CO2 emissions per year during a period of 20 years following the deployment of energy efficient lighting solutions.

2.8.2 From an outputs perspective, the project will result in the construction of 46.1 km of 66 kV transmission lines, two 66/33 kV substations, 280 km of 33 kV distribution lines as well as the implementation of 12,950 new connections. The project will also provide efficient lighting solutions to 40,000 households. Finally, a significant number of professional staff from LEC, MLME, RREA, EPA and students / technicians will be trained with the electricity program to be established one of the existing vocational training centres in Liberia. The Project targets to train at least 150 professional staff and students.

2.8.3 The key performance indicators of the project will be integrated in the quarterly and annual reports that the PIU will send. The performances will also be supervised during missions of the Bank to adapt corrective actions if need be.

3 PROJECT FEASIBILITY

3.1 Financial and Economic Performance

3.1.1 *The Project's Performance:* The results of the analysis are summarized in Table 3.1 below.

Table 3.1 Key Financial and Economic Performance Indicators			
Baseline scenario	FIRR:	14%	NPV: USD 1.062 million
	ERR:	29%	ENPV: USD 4.200 million
NB: Detailed assumptions and calculations are presented in Technical Annex B.7			

3.1.2 The financial internal rate of return (FIRR) and the net present value (NPV) were calculated on the basis of the cost-benefit method for the implementation and operation of the project. The financial benefits taken into account consist of revenue from selling power to new customers that LEC will be able to connect to the distribution system through the project. The related costs include mainly the operation and maintenance of the infrastructures. The analysis covers a period of 40 years corresponding to the maturity of the ADF loan. The positive FNPV of USD 1.062 million and a FIRR of 14%, which is higher than the opportunity cost of 10%, show that the project is financially sustainable.

3.1.3 The economic costs used to calculate the economic rate of return (ERR) and the economic net present value (ENPV) are project costs net of taxes. Maintenance costs and other operating expenses are subject to the same process. The economic benefits derived from the project comprise, in addition to the revenue from selling power to newly connected customers, the value generated by the jobs created over the implementation of the project. The economic costs are net of taxes. The result of the analysis (ERR = 29% and ENPV = USD 4.200 million) a positive ERR higher than the opportunity cost of 10%. It also indicates that the project has the potential to use the country's limited resources efficiently.

3.1.4 The project is very sensitive to cost overrun as shown by the sensitivity analysis. Indeed, when the investment costs rise by 5%, the FNVP becomes negative and the FIRR stands below the discount rate of 10%. Proper measures have been put in place to mitigate the

cost overrun risks (see section 4.5). The detailed calculations of the financial and economic analysis are provided in Annex B7.

3.2 Environmental and Social Impact

3.2.1 The proposed project involves the construction of 66 kV transmission lines along two corridors; Roberts International Airport (RIA) corridor - from Paynesville via Schiefflin and Pleebo to Fish Town corridor. According to the Bank's Integrated Safeguards System and the Environmental and Social Assessment Procedures (ESAP), the project is classified as Category 2, which requires the development of an Environmental and Social Management Plan (ESMP). ESMP has been prepared for each corridor, submitted to the relevant Liberian governmental ministries and agencies and the ESMP Summary has been disclosed on the Bank's website on 16th November 2015. The cost of the ESMP is estimated at USD 73,000 for the Paynesville - Schiefflin – RIA corridor and USD 336,700 for the Pleebo-Fish Town corridor.

3.2.2 **Environment:** the most significant negative environmental impacts identified during the construction phase of the projects include; (i) acquisition and maintenance of right-of-way; (ii) clearing of the wayleaves of vegetation and any obstructions for tower sites and line corridors; (iii) dust and fugitive emissions during excavation of tower foundations and transportation of materials; (iv) pollution on ground and surface water from oil, fuels and lubricants; (v) solid waste and hazardous waste generated during construction and from camp sites; (vi) public safety concerns during excavations, and (vi) public health and occupational safety of workers. During operation, the main negative impacts include: (i) visual intrusion; (ii) fire risk and public safety related to electrical installation; (iii) risk of insulation oil leaks from transformers and switchgears; (iv) impacts of noise from transformers and associated equipment; and (v) impacts of waste generated from engineering and maintenance works.

3.2.3 **Climate Change:** The use of small gasoline and diesel generators to supply electricity to households and businesses particularly in the Schiefflin – RIA corridor is detrimental to the environment due to the associated noise pollution and the cumulative GHG emission as compared to using a centralised and modern source of electricity generation. 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 in developing countries and with Compact Florescent Lamp (CFL) consuming up to 4 times less energy than the equivalent incandescent lighting, significant energy savings and therefore GHG reduction can be achieved through the replacement of incandescent lamps with more energy efficient lighting products. In that regard, the second component of this project will be deploying CFLs to 40,000 households as a pilot phase. Additionally, there will be less dependence on traditional sources of biomass which will reduce deforestation and other associated negative health and environmental impacts. With the distribution of CFLs, the project will result in the saving of 3,826 tonnes of CO₂ from years 2020 to 2040.

3.2.4 Particularly in the Pleebo – Fish Town corridor, the use of kerosene and other fossil fuel for lighting and other domestic purposes is high. Emissions from fossil fuels, especially carbon dioxide and sulphur oxides, contribute to global climate change. The implementation of the project to enable the transmission of electricity from hydro plants will work towards reduction of carbon emissions.

3.2.5 The project stands to provide sustainable energy options for mitigating problems related to environmental pollution, greenhouse gas emission, global warming and over dependence on fossil fuels for electricity generation which are core drivers of climate change. At a country policy level, the Environmental Protection Agency of Liberia has been put in place a program to coordinate climate change issues and ensure that the country fulfils its obligation under the United Nations Framework Convention on Climate Change (UNFCCC).

3.2.6 **Gender:** The extent of gender inequalities varies throughout Liberia in regard to status, region, rural/urban areas, and traditional cultures. In general, women in Liberia have less access to energy, education, health care, and property, when compared to men. Hence in 2009, the government formulated the National Gender Policy, which seeks to address gender inequalities and the marginalization of women in Liberia; in addition, it is intended to break away from the cultural and traditional mind set of individuals. The Policy mandates mainstreaming gender in all national development processes; enhances women's and girls' empowerment for sustainable and equitable development; and creates and strengthens gender responsive structures and mechanisms, in which both women and men can participate and benefit from development programs on an equal basis. The Ministry of Gender, Children & Social Protection is the national machinery for promoting gender equality, women's advancement and children's welfare in Liberia. Under the project, students trained will comprise both males and females, with encouragement of more girls to take up the electricity technician course. Collaboration between the Ministry of Gender, Children and Social Protection, and the Ministry of Youth and Sports will ensure that girls and their families are sensitized, and encouraged to enroll in the training programs via radio.

3.2.7 The project has key benefits for both gender, but particularly for women, who are more vulnerable. One of the benefits is the creation of job opportunities during implementation of the projects. During operation, the project will bring better access to electricity; a situation that will promote income generating activities for small businesses in the project area, mainly headed and managed by women. By bringing electricity services to houses, schools, health centers and markets, the project will improve lives of children, adolescents, youths, men and women, in particular. Then, the project will contribute to reduce electricity expenditure for households already using generators, thus enabling them to save money and reallocate the saved resources to other priority needs such as food, health and education. In addition, the project will reduce the time spent in search of energy sources, especially for girls and women who may use the time saved for productive, educational or recreational activities.

3.2.8 **Social:** The construction stage of the project may cause poor reinstatement of construction sites, improper disposal of waste; and reduction in economic activities and income for casual workers. In contrast to the likely negative impacts during the construction period, the operational period will result in social and economic benefits resulting from completion of the project. The power transmission and distribution setup will enable the provision of electricity to an estimated population in excess of 1.1 million people living in communities along the project area. That reliable access is expected to result in the development of economic activities in the area, including new commercial and production ventures, increased frequency of private sector investment, development of social amenities (i.e schools, health centers, communal areas etc.) and provide the anchor for the necessary ICT based development for economic activities.

3.2.9 **Involuntary Resettlement:** The implementation of the project is likely to lead to the involuntary displacement of people along the project routes. For the Pleebo-Fish Town

corridor, where resettlement is unavoidable, the project-affected persons were identified and compensated under the Resettlement Action Plan for the Fish Town Road Project funded by the AfDB. For the Paynesville - Schiefflin – RIA corridor, it is estimated that less than 100 persons will be affected. Hence, an Abbreviated Resettlement Action Plan has been prepared. The total cost for the implementation of the ARAP is estimated at Forty Four Thousand Nine Hundred Forty Five United States Dollars (USD 44, 945).

3.2.10 A detailed environmental and social analysis is provided in Annex B8.

4 PROJECT IMPLEMENTATION

4.1 Implementation Arrangements

4.1.1 The borrower/recipient of the proposed financing will be the Government of Liberia represented by the Ministry of Finance (MoF). The project will be implemented by the LEC. The PIU within LEC, which is already in charge of implementing the Bank financed Rural Electrification Component of the Cote d'Ivoire, Liberia, Sierra Leone, and Guinea (CLSG RE) Electricity Interconnection Project, will implement the project, in coordination with MLME, RREA and EPA regarding the capacity building component. As a result of the assessment of the capacity of the PIU, this will be reinforced with adequate staffing where needed (one engineer, one procurement expert and one financial management specialist will be hired by the project). A Project Steering Committee (SC), chaired by the Minister of Lands, Mines and Energy with members from the Ministry of Finance and Development Planning, EPA, RREA, and LEC will provide strategic direction and ensure the overall high-level coordination of the project. The project coordinator of the existing CLSG RE project within LEC will manage and coordinate the activities and reporting of the project. The implementation arrangements are detailed in Annex B3.

4.1.2 The Government of Liberia confirmed, officially, to the Bank that the LEC PIU in charge of the CLSG will also be in charge of the LEEAP. The LEC PIU is already staffed with 2 engineers, one environment expert, one financial expert, an accountant, one procurement expert. The selection of the PIU staff was based on experience and qualification and The Bank approved the composition of the PIU. Provisions have been made under the project to reinforce the LEC PIU with additional staff (procurement expert, financial management consultant and an engineer) as needed. The additional procurement expert is being recruiting.

4.1.3 The training and capacity building activities will target MLME, LEC, RREA and EPA technicians as well as young graduates in vocational schools. In this regard, and in order to ensure the sustainability of this capacity building component and make it profitable for the whole sector, existing and public vocational training centres having good records of training electricians in Liberia will be contracted to implement the capacity building component.

4.1.4 **Procurement:** The procurement of International Competitive Bidding (ICB) contracts and Consulting Services for the proposed project would be carried out in accordance with the Bank's Rules and Procedures: "Rules and Procedures for Procurement of Goods and Works" and "Rules and Procedures for the Use of Consultants", dated May 2008, as revised in July 2012 and as amended from time to time, using the relevant Bank Standard Bidding Documents, and the provisions stipulated in the Financing Agreement. For the proposed project, in reference to Section B.5.1, procurement of National Competitive Bidding (NCB)

contracts would be carried out in accordance with national procurement rules and procedures, using the Standard Bidding Document of the Bank, and the provisions stipulated in the Financing Agreement.

4.1.5 LEC will be responsible for the procurement of all goods, works and services under this project. The LEC PIU staffing includes a procurement specialist with adequate experience in donor funded projects including projects funded by the Bank and the World Bank. The LEC existing procurement structures and capacity was reviewed and found to be adequate for the implementation of the proposed project. The project procurement staff and other relevant personnel will nevertheless be trained on Bank procurement Rules and Procedures during the project launch.

4.1.6 **Financial Management:** The Liberia Electricity Corporation (LEC) will be responsible for the financial management of the project. The Bank's latest Country Fiduciary Risk Assessment (FRA) of Liberia's Public Financial Management (PFM) systems was conducted in 2013, and rated the overall fiduciary risk as high, with less than adequate cash planning systems, weak payroll management, and poor procurement related controls. However, current PFM reforms, most especially those related to the newly introduced Integrated Financial Management Information System (IFMIS), are already serving to correct the majority of the deficiencies in the short to medium term.

4.1.7 With those ongoing changes in mind, financial management of the proposed project will largely rely on the existing accounting and financial management systems at LEC. The existing FM systems have been satisfactorily used to manage other donor projects, including current ongoing World Bank project. While all central level government accounting is now captured on the IFMIS based at the Ministry of Finance, physically the IFMIS has not yet been fully deployed to a number of the government agencies, including LEC. Consequently, donor accounting at the agencies is still conducted outside of the IFMIS (most usually using Excel spreadsheets). It is therefore be useful for the project to consider the cost and benefit of investing in a low level, low cost, standalone accounting software to facilitate the automation of accounting and reporting for the donor projects, pending the longer term migration of all accounting for the implementing agencies onto the IFMIS or other appropriate long term solution (the ERP in the case of LEC). The short term accounting solution should have the capacity to interface with the IFMIS, to enable the easy capturing or transfer of project data onto the IFMIS or the main LEC reporting software where required.

4.1.8 Due to perceived shortcomings in the human capacity currently available to manage the accounting for the proposed project, it is recommended that both staff numbers and staff quality be enhanced through the recruitment of two accounting officers (recruitment of the two at LEC already ongoing), who would be the point persons for the project within the existing accounting unit. Provisions have also been made under the project to recruit a seasoned financial management consultant to support the PIU as needed (in case the recruitment of the two officers does not materialize for example).

4.1.9 To further enhance the quality of internal control at LEC, management of LEC is encouraged to resolve the apparent conflict in the internal audit functions between the Internal Audit Agency (IAA) staff and those of the Management Internal Controls (MIC) unit. In terms of focus, internal audit LEC should embrace more systems related work, and share their regular reports to management with the financing donors. Quarterly, interim

unaudited financial reports will need to be produced by LEC and separately submitted to the Bank no later than 30 days after the end of the quarter.

4.1.10 **Disbursements:** All disbursements will be made in accordance with the procedures outlined in the Bank’s Disbursement Handbook. Four (4) disbursement methods will be available for the proposed project (i) direct payments method; (ii) reimbursement method; (iii) reimbursement Guarantee method; and (iv) special Account (SA) method. Under the SA method, LEC will open a segregated USD "Special Account" at the Central Bank (CB) of Liberia to receive advances from the Bank.

4.1.11 **Audit:** The General Audit Commission (GAC) has primary responsibility for the external audit of the Government of Liberia (GoL). However, the GAC normally outsources the audit of donor financed projects to acceptable independent audit firms, on terms of reference acceptable to the Bank. Thus the PIU will recruit an external auditor for the project under terms of reference acceptable to the Bank. The auditor will audit the entire project transactions and books of accounts maintained at both the LEC and the PIU. The PIU will ensure that the audited project financial statements, inclusive of the accompanying audit management letter, will be submitted to the Bank annually within 6 months of the end of each year audited.

4.1.12 It is the overall conclusion of the FM capacity assessment that LEC, after incorporating the items listed in the FM Action Plan below, will have adequate capacity to ensure that: (a) the project's funds are used only for the intended purposes in an efficient and economical way; (b) the preparation of accurate, reliable and timely periodic and annual financial reports; (c) all project assets are adequately safeguarded. The assessed FM Risk is rated Substantial (due primarily to the lack of adequate accounting software at LEC and insufficient FM staff in general).

4.2 Project Monitoring and Evaluation

4.2.1 The monitoring and evaluation of the project’s implementation progress and impact will be the overall responsibility of the PIU that will be set-up within LEC for the implementation of the Rural electrification component of the recently approved Cote d’Ivoire, Liberia, Sierra Leone, and Guinea (CLSG) Electricity Interconnection Project. The PIU will include a monitoring and evaluation expert to ensure proper monitoring of project. The project coordinator will be responsible for collecting and analyzing indicators of the results framework, preparing quarterly progress reports, etc.

The Bank will monitor the project during implementation through regular supervision missions (at least twice a year) and review of annual audit reports. The Bank will undertake a midterm review of the project approximately 18 months after it has been approved by the Board of Directors. Within six months of the completion of the project, the Bank will prepare a Project Completion Report (PCR). Monitoring of the project will be through activities summarized in the table below:

Period	Milestones	Monitoring Activities/Feedback Loop
November 2016 to May 2017	Approval and effectiveness	<ul style="list-style-type: none"> - Approval and General Information Note on the project - Notification to the Government - Signing of ADF, TSF, and NTF Loans

		<ul style="list-style-type: none"> - Loan effectiveness - Lifting of conditions precedent to effectiveness and first disbursement of Loans - Project start-up
December 2016 to November 2017	Recruitment of Consultancy services for Design, Tendering, Supervision of works	<ul style="list-style-type: none"> - Publication of expressions of interest - Approval of shortlists and consultation files - Approval of bids evaluation reports - Signing of the contracts
October 2017 to March 2018	Recruitment of contractors for works	<ul style="list-style-type: none"> - Approval of bidding documents - Publication of competitive bidding notices - Approval of bids evaluation reports - Signature of contracts
April 2018 to September 2019	Works control and supervision	<ul style="list-style-type: none"> - Approval of technical documents - Approval of implementation-related design studies - In-factory acceptance of electrical equipment - Supervision of works sites and technical controls - Technical acceptance and commissioning of works - Preparation of periodic progress reports
January 2018 to September 2019	Construction works of electrical infrastructure	<ul style="list-style-type: none"> - ESMP implementation - Supply of electrical equipment and materials - Installation of electricity networks and sub-stations
August 2016 to June 2017	Recruitment of other consultants and service providers for studies, training, financial audits and procurement audits	<ul style="list-style-type: none"> - Publication of expressions of interest - Approval of shortlists and consultation files - Approval of bids evaluation reports - Signing of the contracts - Service provision (institutional support, studies, training, audits)
August 2016 to November 2019	Implementation of Energy Efficiency activities	<ul style="list-style-type: none"> - Publication of expressions of interest - Approval of shortlists and consultation files - Approval of bids evaluation reports - Signing of the contracts - Supply of energy efficiency lightening products - Distribution of energy efficiency lightening products
October 2019 to December 2019	Completion of project	<ul style="list-style-type: none"> - Borrower's project completion report - Bank's project completion report

4.3 Governance

4.3.1 The electricity sector in Liberia is growing despite several challenges, among which the lack of clarity on the sector policy and planning responsibilities which is currently scattered among the various players in the electricity sector (MLME, LEC, RREA). A number of policy reforms / laws / regulation and administrative procedures have recently enforced to enhance the governance in the sector.

4.3.2 The Bank and other donors such as the World Bank, the Norwegian Government and MCC have stressed the importance of sound governance as an essential element of the strategy for the longer term sustainability of LEC. Notably, to ensure proper oversight, a new Board of Directors was appointed. In addition, the recently signed MCC Compact assistance will be provided in a manner that strengthens good governance among others.

4.4 Sustainability

4.4.1 The project is technically, economically, and financially viable. The government has confirmed its full support for this project. MLME's and LEC's management have demonstrated their commitment by their very active participation during the preparation and appraisal. The project has attracted a lot of financing sources, including the NTF, EU-AITF and GEF.

4.4.2 The project is designed to support the sustainability of the results. The following aspects are relevant to the long term sustainability of the project results:

- ***LEC management's clear mandate to provide efficient electricity services to the Liberian population:*** Since July 2010, LEC is currently being operated under a performance-based management contract with Manitoba Hydro International (MHI), from Canada, and according to recent reports from MHI, the company still has a current record of commercial and technical losses reaching approximately 30% of energy produced. LEC compensates those inefficiencies by transferring them to its customers through a flat electricity rate of \$0.52 per kWh – among the highest cost of electricity in the world, and the high cost of electricity is seriously affecting the economic prosperity and the national competitiveness. It is critical to improve financial performance, reduce electricity losses, and position LEC as a long-term, financially viable utility to spur economic growth, employment, and income. In that regard, MHI provided much needed support and expertise to LEC. MHI's Management Service Contract (MSC) for LEC expires at the end of 2016. A new MSC is being prepared with USAID funding and the new contractor is expected to be recruited by April 2017. During the transition period between the end of the MHI contract and the probable start of the new MSC, the management function services of LEC will be executed by a Technical Assistant with the support of the World Bank.
- ***Technical and financial viability of LEC:*** The project has capacity building training for staff of LEC and MLME to strengthen their technical and commercial capabilities. Other development partners such as the World Bank, Norway and the Millennium Challenge Corporation (MCC) are financing hands on training programs for LEC and MLME. This will contribute to improving the operational performance of the utility, and ultimately its financial viability. The initial results in terms of loss reduction have been poor so far, but LEC is continuing its efforts to reduce losses. This will have a positive impact on the financial results of the company. The project also contributes to broadening LEC's customer base by increasing the number of customers in the project zone of influence, which should result in additional revenues.
- ***Maintenance of the transmission and distribution infrastructure:*** LEC will be responsible for the operation and maintenance of the transmission and distribution infrastructure. The capacity building / training programs mentioned above will strengthen LEC's ability to properly maintain the facilities and might also benefit vocational training centers that will have the opportunity to compete for the provision of the training services.

4.5 Risk Management

4.5.1 The major risks involved in this project and proposed mitigation measures are discussed in Table 4.1 below.

Table 4.1 – Risks and Mitigation Measures

Risk	Description	Mitigation
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Legal and regulatory risk	Weak legal and regulatory framework limits the development of the power sector	The energy law, ratified in October 2015, envisages the establishment of an independent regulatory authority and the regulation of the private sector involvement in the power sector. That new law would lead to further improvement of the overall legal and regulatory framework of the power sector.
Limited / weak capacity of LEC	LEC's technical and administrative capacity is limited, therefore negatively impacting its ability to implement large projects	Current interventions from other donors including the World Bank and the Government of Norway have already implemented capacity building measures to reinforce LEC and MLME. In addition, the project will strengthen LEC's capacity in the technical and administrative areas included: (i) recruitment and training of local staff (on generation, transmission, and distribution); (ii) recruitment and training of staff to strengthen financial management and procurement units; and more recently (iii) launching the procurement for the incorporation of Enterprise Resources Planning (ERP) system to manage more efficiently LEC's corporate resources.
Collection losses / theft	Risk that payments to the utility company LEC are not collected on a timely basis or that electricity is stolen by end users	Implementation of an action plan developed by LEC to reduce collection losses. This plan include installation of pre-paid meters for household consumers, and medium voltage connection to residential users
Inadequate operation and maintenance	Risks related to LEC's capacity to properly operate and maintain the project due to its limited capacity.	<ul style="list-style-type: none"> ▪ 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 including the World Bank and the Norwegian Government are providing capacity building to LEC and to MLME.
Cost overrun	Cost overrun risk and implementation delays due to physical and price variations and/or limited competition during the procurement process due to high risk premiums, especially in light of the recent Ebola crisis.	<ul style="list-style-type: none"> ▪ Adopting of a simple design that makes competition as open as possible ▪ Launching of the procurement process for works as soon as possible ▪ Assistance to LEC for the preparation of detailed design and bidding documents and advisory during the bidding process ▪ High level of contingencies factored into the project cost (15%) to be able to face higher than normal bid prices.
Unavailability of counterpart funding	The GoL is expected to contribute to the project's financing plan for an amount of UA 0.79 million to finance environmental and social related measures including compensating the project-affected persons. GoL might find it difficult to mobilize such an amount on a timely basis.	The risk is mitigated by the relatively small size of the countries' counterpart funding, which accounts for less than 10% of the project cost. Furthermore, the project has been in GoL's pipeline since at least three years that enabled the relevant counterparts (Ministries of Finance and Energy) to take appropriate steps for the budgeting of the required resources.

4.6 Knowledge Building

4.6.1 The project includes a capacity building component for LEC, MLME, RREA, EPA and the graduates in vocational schools. This component will contribute to strengthening capacity and knowledge of the major sector players in the management of the electrical

infrastructures. The in-house capacity and knowledge base of those key players in the Liberian energy sector will improve as a result the whole project.

5 LEGAL FRAMEWORK

5.1 Legal Instrument and Authority

5.1.1 The legal instruments for the project are:

- ADF loan agreement with the Republic of Liberia
- TSF loan agreement with the Republic of Liberia
- NTF loan agreement with the Republic of Liberia
- EU-AITF protocol of agreement with the Republic of Liberia
- GEF protocol of agreement with the Republic of Liberia

5.1.2 The ADF, TSF and NTF loans as well as the EU-AITF and GEF grants will be entirely on-lent and on-granted respectively to LEC. Therefore, a Subsidiary Financing Agreement for each financing instruments shall be signed between the GoL and LEC.

5.2 Conditions Associated with the Bank's Intervention

A) Conditions Precedent to Entry into Force

- a) The entry into force of the ADF, TSF and NTF Loan Agreements shall be subject to the fulfillment by the borrower of the provisions of Section 12.01 of the *General Conditions Applicable to the African Development Fund Loan Agreements and Guarantee Agreements*.
- b) The EU-AITF and GEF Protocol of Agreement shall enter into force on the date of its signature by the Fund and the grant recipient.

B) Conditions Precedent to First Disbursement

5.2.1 The obligations of the Bank to make the first disbursement of the loan or grant shall be conditional upon the entry into force of the legal agreement and the fulfillment by the Borrower/Recipient, in form and substance satisfactory to the Bank, of the following conditions:

- i) Signing of an on-lending or on-granting agreement as applicable for the utilization of the resources to the LEC upon terms and conditions acceptable to the Fund, to finance the entire project scope except for the training / capacity building component.

5.2.2 The obligations of the Bank to make the first disbursement of the ADF and TSF loans shall be conditional upon the entry into force of the loan agreements and the fulfillment by the Borrower/Recipient, in form and substance satisfactory to the Bank, of the following conditions:

- i) Evidence of having opened a foreign currency USD denominated special account, by LEC, for the deposit of the proceeds of the Loan in a bank acceptable to the Fund.

C) Undertakings

5.2.3 The borrower/recipient undertakes to:

- i) Prepare a Project Implementation Manual (PIM) to guide the implementation of the project.
- ii) Implement the Environment and Social Management Plan (ESMP) and report annually to the Fund on the implementation of the same.
- iii) Submit to the Fund quarterly progress reports, in a form and substance acceptable to the Fund, on the implementation of the project.

5.3 Compliance with Bank Policies

5.3.1 This project complies with all applicable Bank policies.

6 RECOMMENDATION

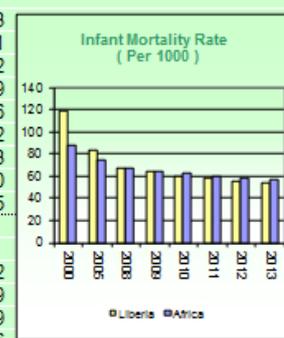
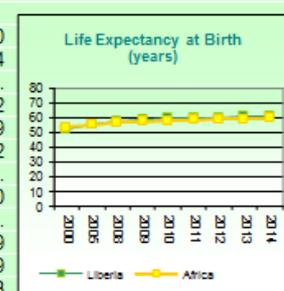
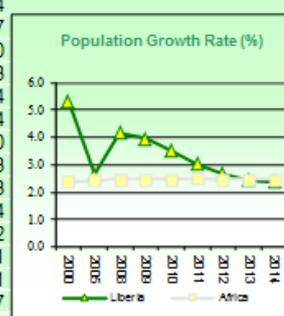
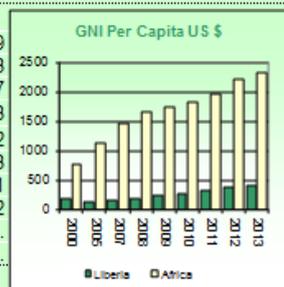
6.1.1 Management recommends that the Boards of Directors approve the: (a) African Development Fund (ADF) loan amounting to UA 9.42 million, (b) a Transition Support Facility (TSF) loan of UA 4.20 million, (c) a Nigeria Trust Fund (NTF) loan of UA 7.06 million, (d) an European Union – Africa Infrastructure Trust Fund (EU-AITF) grant of Euro 10 million (equivalent to UA 8.05 million), and (e) a Global Environment Facility (GEF) grant of USD 2.64 million (equivalent to UA 1.86 million) to the Government of Liberia (GoL) for the Liberia Energy Efficiency and Access Project (LEEAP).

Appendix I: Liberia's Comparative Socio-Economic Indicators

Liberia

COMPARATIVE SOCIO-ECONOMIC INDICATORS

	Year	Liberia	Africa	Developing Countries	Developed Countries
Basic Indicators					
Area ('000 Km ²)	2014	111	30,067	80,386	53,939
Total Population (millions)	2014	4.4	1,136.9	6.0	1.3
Urban Population (% of Total)	2014	49.3	39.9	47.6	78.7
Population Density (per Km ²)	2014	39.5	37.8	73.3	24.3
GNI per Capita (US \$)	2013	410	2 310	4 168	39 812
Labor Force Participation - Total (%)	2014	61.6	66.1	67.7	72.3
Labor Force Participation - Female (%)	2014	47.4	42.8	52.9	65.1
Gender-Related Development Index Value	2007-2013	0.786	0.801	0.506	0.792
Human Develop. Index (Rank among 187 countries)	2013	175
Popul. Living Below \$ 1.25 a Day (% of Population)	2008-2013	83.8	39.6	17.0	...
Demographic Indicators					
Population Growth Rate - Total (%)	2014	2.4	2.5	1.3	0.4
Population Growth Rate - Urban (%)	2014	3.2	3.4	2.5	0.7
Population < 15 years (%)	2014	42.6	40.8	28.2	17.0
Population >= 65 years (%)	2014	3.0	3.5	6.3	16.3
Dependency Ratio (%)	2014	85.0	62.4	54.3	50.4
Sex Ratio (per 100 female)	2014	101.5	100.4	107.7	105.4
Female Population 15-49 years (% of total population)	2014	23.4	24.0	26.0	23.0
Life Expectancy at Birth - Total (years)	2014	60.9	59.6	69.2	79.3
Life Expectancy at Birth - Female (years)	2014	61.9	60.7	71.2	82.3
Crude Birth Rate (per 1,000)	2014	35.0	34.4	20.9	11.4
Crude Death Rate (per 1,000)	2014	8.7	10.2	7.7	9.2
Infant Mortality Rate (per 1,000)	2013	53.6	56.7	36.8	5.1
Child Mortality Rate (per 1,000)	2013	71.1	84.0	50.2	6.1
Total Fertility Rate (per woman)	2014	4.7	4.6	2.6	1.7
Maternal Mortality Rate (per 100,000)	2013	640.0	411.5	230.0	17.0
Women Using Contraception (%)	2014	19.6	34.9	62.0	...
Health & Nutrition Indicators					
Physicians (per 100,000 people)	2004-2012	1.4	46.9	118.1	308.0
Nurses (per 100,000 people)*	2004-2012	27.4	133.4	202.9	857.4
Births attended by Trained Health Personnel (%)	2009-2012	46.3	50.6	67.7	...
Access to Safe Water (% of Population)	2012	74.6	67.2	87.2	99.2
Healthy life expectancy at birth (years)	2012	52.0	51.3	57	69
Access to Sanitation (% of Population)	2012	16.8	38.8	56.9	96.2
Percent. of Adults (aged 15-49) Living with HIV/AIDS	2013	1.1	3.7	1.2	...
Incidence of Tuberculosis (per 100,000)	2013	308.0	246.0	149.0	22.0
Child Immunization Against Tuberculosis (%)	2013	87.0	84.3	90.0	...
Child Immunization Against Measles (%)	2013	74.0	76.0	82.7	93.9
Underweight Children (% of children under 5 years)	2006-2013	20.4	20.9	17.0	0.9
Daily Calorie Supply per Capita	2011	2 251	2 618	2 335	3 503
Public Expenditure on Health (as % of GDP)	2013	3.6	2.7	3.1	7.3
Education Indicators					
Gross Enrolment Ratio (%)					
Primary School - Total	2011-2014	95.6	106.3	109.4	101.3
Primary School - Female	2011-2014	91.6	102.6	107.6	101.1
Secondary School - Total	2011-2014	37.9	54.3	69.0	100.2
Secondary School - Female	2011-2014	33.1	51.4	67.7	99.9
Primary School Female Teaching Staff (% of Total)	2012-2014	14.0	45.1	58.1	81.6
Adult literacy Rate - Total (%)	2006-2012	42.9	61.9	80.4	99.2
Adult literacy Rate - Male (%)	2006-2012	60.8	70.2	85.9	99.3
Adult literacy Rate - Female (%)	2006-2012	27.0	53.5	75.2	99.0
Percentage of GDP Spent on Education	2009-2012	2.8	5.3	4.3	5.5
Environmental Indicators					
Land Use (Arable Land as % of Total Land Area)	2012	5.2	8.8	11.8	9.2
Agricultural Land (as % of land area)	2012	0.3	43.4	43.4	28.9
Forest (As % of Land Area)	2012	44.3	22.1	28.3	34.9
Per Capita CO2 Emissions (metric tons)	2012	0.1	1.1	3.0	11.6



Sources : AfDB Statistics Department Databases; World Bank: World Development Indicators;

last update : October 2015

UNAIDS; UNSD; WHO; UNICEF; UNDP; Country Reports.

Note : n.a. : Not Applicable ; ... : Data Not Available.

Appendix II: Bank's Portfolio in Liberia

#	Division	Long name	Approval	1st Disb.	Apprv. - Disb. (mos)	Completion	Amount (UA M)	Disb.Ratio	Window	Sector Name
1	OSAN2	AGRICULTURE SECTOR REHABILITATION PROJECT	4/29/2009	3/30/2010	11	6/30/2016	6	70.8	ADF	Agriculture
	OSAN2	AGRICULTURE SECTOR REHABILITATION PROJECT	3/24/2010	8/28/2010	5	6/30/2016	6	75.1	ADF	Agriculture
	OSAN2	AGRICULTURE SECTOR REHABILITATION PROJECT	4/29/2009	3/30/2010	11	6/30/2016	0	100.0	ADF	Agriculture
2	OSAN2	SMALLHOLDER AGRICULTURAL PRODUCTIVITY ENHANCEMENT AND COMMERCIALIZATION	5/2/2012	9/13/2013	16	6/30/2018	4	4.2	ADF	Agriculture
3	OSAN2	SMALLHOLDER AGRICULTURAL PRODUCTIVITY ENHANCEMENT AND COMMERCIALIZATION	5/2/2012	10/10/2013	17	6/30/2018	33	8.5	GAFSP	Agriculture
4	OPSD2	MARYLAND OIL PALM PLANTATION	2/12/2014			12/31/2018	14	-	ADB	Agriculture
5	OITC1	PAVING FISH TOWN-HARPER ROAD PHASE I	9/4/2013	2/17/2014	5	12/31/2017	22	11.7	ADF	Transport
6	OITC1	PAVING FISH TOWN-HARPER ROAD PHASE I	9/4/2013	2/17/2014	5	12/31/2017	7	12.4	NTF	Transport
7	OITC1	PAVING FISH TOWN-HARPER ROAD PHASE I	9/4/2013	2/17/2014	5	12/31/2017	13	10.7	ADF	Transport
8	OWAS1	URBAN WATER SUPPLY AND SANITATION PROJECT	5/19/2010	1/26/2012	20	5/31/2017	25	19.8	ADF	Water Sup/Sanit
	OWAS1	URBAN WATER SUPPLY AND SANITATION PROJECT	5/19/2010	1/26/2012	20	5/31/2017	1	23.2	ADF	Water Sup/Sanit
	OWAS1	URBAN WATER SUPPLY AND SANITATION PROJECT	5/18/2010	1/26/2012	20	5/31/2017	1	20.0	ADF	Water Sup/Sanit
9	AWTF	FOSTERING INNOVATIVE SANITATION AND HYGIENE IN MONROVIA	1/11/2013	4/9/2013	3	12/31/2016	1	79.8	AWF	Water Sup/Sanit
10	OSHD1	SUPPLEMENTARY LABOUR BASED PUBLIC WORKS	6/29/2011	1/23/2012	7	6/30/2015	5	69.2	ADF	Social
11	OSGE1	INSTITUTIONAL SUPPORT FOR THE INTEGRATED PUBLIC FINANCIAL MANAGEMENT	9/10/2012	2/12/2013	5	12/31/2016	3	69.6	ADF	Multi-Sector
12	ORTS1	INSTITUTIONAL DEVELOPMENT AND	1/18/2013	5/23/2013	4	9/30/2015		97.8	ADF	Multi-

		CAPACITY BUILDING FOR THE GOVERNANCE COMMISSION					0			Sector
13	OSGE1	TECHNICAL ASSISTANCE & CAPACITY BUILDING TO LEITI- PHASE II	7/8/2013	4/9/2014	9	12/30/2015	0	100.0	ADF	Multi-Sector
14	ESTA2	TECHNICAL ASSISTANCE AND CAPACITY BUILDING TO LIBERIA INSTITUTE OF STATISTICS	11/11/2013	2/4/2015	15	6/30/2017	1	97.0	ADF	Multi-Sector
15	OITC1	PROGRAMME D'AMÉNAGEMENT DE ROUTES ET DE FACILITATION DU COMMERCE	12/18/2014			6/30/2020	26	-	ADF	Transport
16	ONEC1	CLSG INTERCONNEXION LIBERIA	11/6/2013			12/31/2018	8	-	ADF	Power
	ONEC1	CLSG-RURAL ELECTRIFICATION - LIBERIA	11/6/2013			12/31/2018	17	-	ADF	Power
	ONEC1	CLSG-RURAL ELECTRIFICATION - LIBERIA	11/6/2013			12/31/2018	1	-	ADF	Power
17	OSHD3	CRISIS RESPONSE : TECHNICAL ASSIST. TO SUPPORT COUNTRIES AFFCETED BY EBOLA	10/1/2014	11/26/2014	2	12/31/2015	2	91.9	ADF	Multi-Sector
18	OSHD3	EBOLA SECTOR BUDGET SUPPORT-FIGHT BACK PROGRAMME (EFBP) -	10/1/2014	12/8/2014	2	12/31/2016	35	50.0	ADF	Multi-Sector
	OSHD3	EBOLA SECTOR BUDGET SUPPORT-FIGHT BACK PROGRAMME (EFBP)	10/1/2014	12/8/2014	2	12/31/2016	5	50.0	ADF	Multi-Sector
19	OITC1	PROGRAMME D'AMÉNAGEMENT DE ROUTES ET DE FACILITATION DU COMMERCE	12/18/2014			6/30/2020	26	-	ADF	Transport
20	OFSD2	THE SUPPLEMENTARY WAMZ PAYMENT SYSTEM DEVELOPMENT PROJECT TH	11/9/2010	2/2/2011	3	12/31/2015	5	80.7	ADF	Finance
21	OSHD3	MULTINATIONAL ASSISTANCE EBOLA (WHO) PROJECT TO STRENGTHEN WEST AFRICA HEALTH SYSTEM	8/18/2014	8/26/2014	0	3/30/2017	25	61.7	ADF	Social
		TOTAL / AVERAGE			10		292	24%		

Appendix III: Map of Project Area



Appendix IV: Justification for the Financing of More than 90% of the Project Cost

In view of Government of Liberia's constrained Budget as a Fragile State, its slowdown in economic activity following the Ebola Virus Disease (EVD) crisis and the drop in international commodity prices, and a subsequently weak fiscal position, it is proposed that the AfDB provides 97% of the financing cost for the Liberia Energy Efficiency and Access Program (LEEAP).

In accordance with the guiding principles outlined in the revised Bank Policy on Expenditures Eligible for Bank Group Financing (ADF/BD/WP/2007/72/Rev.1) and the ORPC Information Note on Counterpart Funding of 30th September 2010, ORVP requests a waiver for the Bank to finance more than 90% of the project cost based on the country's fulfilment of the following criteria:

1. Country Commitment to Implement Its Overall Development Program

The Government completed its first post-war Poverty Reduction Strategy (PRS) in December 2011, which reached about two-thirds of its objectives, and it launched its second PRS in December 2012, the *Agenda for Transformation (AfT)* for 2012 to 2017. The AfT was developed based on lessons learnt from implementing the first PRS and a broad range of analyses of political, security, and socio-economic conditions in the country, including diagnostic studies with an explicit emphasis on inclusive growth. During the Ebola Virus Disease (EVD) outbreak, the Government prepared the Economic Stabilization and Recovery Program (ESRP) which articulated the actions needed to respond to the EVD epidemic, to stabilize the economy, and get Liberia on a path to inclusive growth.

2. Financing Allocated by the Country to Sectors Targeted By Bank Assistance

The Government faces enormous challenges to rebuild the infrastructure and skills base of the country after its destructive fourteen year conflict, which is now exacerbated by the EVD outbreak. In doing so, it has prioritized expenditure on infrastructure projects, education, and health, in line with the AfT and ESRP, although this is constrained by an expanding wage bill. Investment in infrastructure and basic services amounted to 11% of budgeted total expenditure in FY2014/15, and is budgeted to increase to 12% in FY2015/16.

	FY 2014/15 Budget	FY 2015/16 Budget
Financing allocated to infrastructure & basic services	USD 71.5 million	USD 77.1 million
Share of infrastructure & basic services in the budget	11%	12%

Source: Ministry of Finance and Development Planning

3. Country Budget Situation and Debt Level

The budget situation and debt levels are summarized in Tables 2 and 3 below. The share of foreign loans and grants was high at 32.7% in FY2014/15 due to a reduction in revenues during the EVD outbreak. This reduction in donor support in FY2015/16 will reduce the budget from \$635.2 million to \$622.7 million. This highlights the limited resources of the Government in contrast to its vast needs, which justifies reducing the counterpart funding for this project.

Table 3 indicates Liberia's debt level improved following debt relief of more than USD 4.6 billion in 2010. The country is implementing a debt management strategy, which limits total

debt stock to 60% of GDP and newly accrued debt is being applied towards prioritized infrastructure projects. The current risk of debt distress is assessed as low, but this is expected to increase to moderate due to lower growth over the medium term and a rapid accumulation of debt. Public sector external debt for 2015 is projected at 32% of GDP.

TABLE 2: CURRENT BUDGET SITUATION		
	2014/15 Budget	2015/16 Budget
Total Expenditure	USD 635.2 million	USD 622.7 million
Domestic Revenues as % of GDP	21.0%	21.7%
Share of Foreign Loans and Grants in total Budget	32.7%	20.7%
Foreign Loans and Grants as % of GDP	10.2%	5.8%

Sources: Ministry of Finance and Development Planning and IMF

TABLE 3: DEBT LEVEL	
Public Debt (domestic and external) as a % GDP (2015)	46%
External Debt as % of GDP (2015)	32%

Appendix V: Project Fragility Analysis

The table below provides detailed analysis of the fragility drivers in Liberia and the remedies that must be instituted for the success of the project and attainment of its development objectives. The table considered the following factor of fragility as identified in the CSP for Liberia (2013-2017): (i) Exclusion and marginalization; (ii) Weak capacity of Government to protect public infrastructure in crisis specifically taking into account elections in 2017; (iii) Extremely high rate of unemployment among youth population; (iv) Limited provision of electricity in the City of Monrovia and environs with the rural areas completely isolated; and (v) Extremely weak public health system with the ability of derailing peace and security as evident by the Ebola epidemic. A full Fragility Analysis can be found in the Technical Annex C.1.

Factors of fragility	Situations of fragility	Procedures of Remedy	Activities planned in the project
Exclusion and marginalization	Over 90 percent of the population is indigenous and faces exclusion. Rural Liberia is cutoff due to bad roads particularly in the rainy season and services are centralized in Monrovia	It is important that the Government of Liberia embark on massive roads and electrification projects that will provide power to rural Liberia through ongoing projects like WAPP, CLSG, LESEP and RREA	The Project will benefit over 1 million people living in the Greater Monrovia area as well as Robert International Airport corridor and River Gee County in Southeast Liberia.
Weak capacity of Government to protect public infrastructure during crisis specifically taking into account elections in 2017	Public and private properties like the Mount Coffee Hydro a USD 24.3 million power plant with the capacity of producing 64 MW of power to Monrovia and Environ were exposed to disgruntle citizens who destroyed them during the civil crisis	There should be law enacted that will protect public infrastructure from the hands of disgruntle citizens and sensitize them on the importance of public infrastructure ownership	The Project will work all stakeholders to implement new energy law ratified in September 2015 that envisaged the establishment of an independent regulatory authority to protect private sector involvement in the energy sector. This would lead to a further improvement of the overall legal and regulatory framework that will protect infrastructure of the energy sector.
Extremely high rate of unemployment among youth population	Majority of youth that missed out on the opportunity of education are poor and are not engaged in any form of gainful employment. This has led to increased crime in the energy sector specifically power theft and illegal connection at night	Develop a comprehensive vocational training programs in collaboration with TVET Institutions to train youth people with minimum electricity skills who are involved in illegal connection with gainful employment	The project will enable employment creation and broadening opportunities for participation across gender, age and geography in the project area. Indeed, it is expected that LEEAP will also create at least 100 new jobs in the energy sector during the project implementation, out of which at least 40 jobs are expected to be for women through community driven projects and social mobilization. Lack of low-cost energy access is a constraint to inclusive growth, especially in the south east. The project will also train youth in technical skills.
Limited provision of electricity in the City of Monrovia and environs with the rural areas completely isolated	The access rate to public electricity in Liberia is roughly 1% and the rate of power theft might affect the implementation and success of the project.	The Government of Liberia in collaboration with the Liberia Electricity Corporation must invest more in the energy sector to increase the supply of electricity in Monrovia and the entire country	The project will carry out the followings: <ul style="list-style-type: none"> • Reduce the distribution system losses (technical and commercial) from 30% to 20% • Provide improved

			<p>electricity supply to 40,000 households living in the project areas.</p> <ul style="list-style-type: none"> • Construction of 46.1 km of 66 kV transmission lines, two 66/33 kV substations, 280 km of 33 kV distribution lines as well as the implementation of 12,950 new connections.
<p>Extremely weak public health system with the ability of derailing peace and security as evident by the Ebola epidemic</p>	<p>In Liberia, Ebola epidemic killed over 4,808 people, left over 10,672 survivors with little or no hope of integration into society. The EVD took a drastic toll on the already fragile health sector and almost ruined the ten years and peace and security</p>	<p>The Government needs to strength the health sector through implementing projects that will support the County Health Team, CHT to enable respond to public health threats mainly in the rural areas</p>	<p>The project will address the outages of power in health facilities particularly Hospitals as cases of death are reported due to lack of power to perform surgery.</p>