PROJECT INFORMATION DOCUMENT (PID)
APPRAISAL STAGE

Report No.: PIDA34290

Project Name	Liberia Renewable Energy Access Project (P149683)
Region	AFRICA
Country	Liberia
Sector(s)	Hydropower (70%), Other Renewable Energy (10%), Transmission and Distribution of Electricity (20%)
Theme(s)	Infrastructure services for private sector development (40%), City-wide Infrastructure and Service Delivery (50%), Rural services an d infrastructure (10%)
Lending Instrument	Investment Project Financing
Project ID	P149683
Borrower(s)	Ministry of Mines, Lands, and Energy
Implementing Agency	Rural and Renewable Energy Agency
Environmental Category	B-Partial Assessment
Date PID Prepared/Updated	17-Nov-2015
Date PID Approved/Disclosed	17-Nov-2015
Estimated Date of Appraisal Completion	17-Nov-2015
Estimated Date of Board Approval	28-Jan-2016
Appraisal Review Decision (from Decision Note)	The chair of the Decision Meeting authorized the team to proceed with appraisal subject to the disclosure of the updated Environmental and Social Management Framework (ESMF) and Resettlement Policy Framework (RPF) in Liberia and in the World Bank's Infoshop. The Chair agreed with the team's proposal to upgrade the pre-appraisal mission to appraisal once the appraisal conditions are met.

I. Project Context

Country Context

Liberia is a low-income country with a population of 4.4 million and a Gross Domestic Product (GDP) estimated at US$2 billion in 2014. Since 2006 when President Ellen Johnson Sirleaf took office for the first time, Liberia has made substantial progress in recovering from the 15-year civil war. Between 2009 and 2013, the economy grew steadily at an average rate of 7.3 percent per year. This performance showed the country's potential for sustainable economic growth and development. Liberia made notable progress in the reduction of poverty between 2007 and 2010 but poverty remains high . In 2014, Liberia ranked 175th out of 187 countries on the Human Development Index (HDI) and 145th out of 152 countries on the Gender Inequality Index (GII),

highlighting the immense poverty and social development needs of the country. Liberia still faces many challenges in laying the foundation to transition from post-conflict recovery to long-term development. The economy remains vulnerable to external shocks given its dependence on primary commodities, imported foods and fuel, its limited diversification, and the volatility of commodity prices. Inequality remains high and is exacerbated by the dearth of infrastructure and social services nationwide and by the asymmetry of the reconstruction efforts, mainly focused on Monrovia where a quarter of the population lives.

The Ebola crisis that struck Liberia, Sierra Leone, and Guinea in mid-2014 increased these vulnerabilities. It caused substantial loss of lives and dampened economic activity. The announcement on May 9, 2015 by the World Health Organization that Liberia is Ebola free means that the Government's attention has gradually returned to its development agenda.

The Government's economic and social development programs aim to benefit both urban and rural populations, reducing disparities in services. About 58 percent of Liberia's population lives outside of Monrovia and its main economic corridors, in small towns and rural areas. The majority of households in the towns are engaged in agriculture and trade with Monrovia and other locations, related services (such as machinery supply and repair, carpentry, metal-working, etc.) and local commercial activities. Households in surrounding rural areas are mainly subsistence farmers and/or petty traders, with little or no cash income. Lack of basic infrastructure services such as electricity and transport imposes a significant constraint on local economies and hinders the development of income-generating activities. Women are still amongst the poorest in rural communities.

Sectoral and institutional Context

Improved electricity services are urgently needed to support the country's economic transformation and to improve the lives of the population. Liberia has one of the world's lowest rates of electrification, at less than two percent. It also has one of the highestelectricity tariffs, at US$0.52/ kWh. Expanding access to reliable and affordable electricity supply is a high priority of Liberia's Agenda for Transformation 2012-2017. The Agenda includes a US$3.3 billion infrastructure investment program to overcome the constraints imposed by the lack of access to basic services. Expansion of the electricity sector, a key driver of transformation, is a major component of this program.

LEC's customer base has increased more than tenfold in five years from 2,469 customers in July 2010 to 30,485 customers in January 2015.After the end of the Liberian civil war, the Liberia Electricity Corporation (LEC) resumed operations in 2010, focusing initially on re-establishing service in Monrovia. Donors, including the World Bank, financed a number of electricity sector investments including installation of 22.6 MW of diesel-based generation plants, and reconstruction of a basic distribution network and connections for low-income customers. These investments were accompanied by a five-year management contract signed in 2010 between LEC, the Ministry of Lands, Mines, and Energy (MLME), and Manitoba Hydro International (MHI), aiming to improve LEC's performance and to expand the customer base in the capital.

In 2012, the Government of Liberia (GoL) adopted an ambitious strategy aiming to increase electricity coverage to 70 percent of the population in Monrovia and 35 percent nationwide by 2030. To achieve the electricity service targets, the GoL is following a two-pronged strategy: (i) expansion of LEC's grid connected service in Monrovia and priority economic corridors outside of

the capital; and (ii) development of decentralized electricity service for towns and rural areas that are not expected to be connected to the national grid in the medium term.

Liberia is beginning to exploit its renewable energy potential. Hydropower potential on some major rivers is seasonal. The generally flat topography requires extensive civil works, which increases the costs of the hydropower plants. Liberia has good prospects for solar photovoltaic (PV) systems with global horizontal irradiation similar to Spain. While traditional biomass meets the energy needs for cooking and heating of 90 percent of the population, its use for electricity generation has been limited. Logistical challenges in gathering and transporting biomass fuel, pricing, and competing uses create difficulties in using biomass for power generation. Finally, global and regional wind maps indicate that wind resources are likely to be poor.

GoL, with the support of donors, has started to develop electricity and lighting services in rural areas and small towns. In 2010, GoL established the Rural and Renewable Energy Agency (RREA) to promote electrification and use of renewable energy in such areas. The Law on Rural and Renewable Energy, establishing RREA as a permanent public institution and providing the legal framework for developing renewable energy and expanding electricity services to areas outside of Monrovia and its economic corridors, was signed into Law by the President on July 6, 2015.

RREA aims to facilitate the economic transformation of towns and rural areas by accelerating the commercial deployment of modern and renewable energy services. RREA's primary function is the planning, development, and promotion of projects together with public, private, and community developers. RREA has carried out pilot activities to provide decentralized electricity, including: (i) the rehabilitation and expansion of a mini-grid supplied by a micro-hydropower plant of 60 kW in Yandohun (Lofa County) funded by the World Bank; (ii) micro-hydro and biomass-powered mini-grid pilots under implementation with support from the United States Agency for International Development (USAID); and (iii) the Lighting Lives in Liberia (LLL) Program to foster the development of a national market for solar lanterns supported by the World Bank.

The LLL Program, which started in 2012, is developing the local market for stand-alone solar systems (hereafter solar systems), including pico-PV products and solar home systems, in areas that are not expected to be served by any grid. Solar systems use efficient lights (mostly light emitting diodes, LEDs), sophisticated charge controllers, efficient batteries, and PV panels of only a few watts to provide services such as lighting, mobile phone charging, and powering a radio or other small appliances. Such products target low-income people who rely on kerosene lamps, candles, and battery-powered lights. The LLL Program focuses on the establishment of a local retail network and stimulation of consumer demand through lower retail prices. RREA procures and imports products in bulk on behalf of local retailers, covering the cost of shipment and importation. It has established a revolving fund using payments from retail partners to import additional solar products. The Program has also provided business development support, technical training, market intelligence, and consumer education, thereby reducing the costs and hurdles for retailers.

LLL's long term goal is to kick start a larger, sustainable, private-sector led, commercial market for solar products. To date, about 20,000 products have been sold, demonstrating the demand for solar products. However, the market it is still in a nascent and fragile stage. The Ebola outbreak in mid-2014 slowed new sales and made it more difficult to recover payments. Other factors constrain market growth, such as the lack of access to finance for importers, retailers, and consumers; the lack of national quality standards for PV products and the resulting competition from low quality

products; high in-country transportation costs; and lack of accessibility to rural markets during the rainy season.

In 2014, RREA prepared the Liberia Investment Plan for Renewable Energy (IPRE) under the guidance of MLME and with the support of the World Bank and the African Development Bank (AfDB). The IPRE provides a roadmap for scaling-up renewable energy to increase access, reduce over-reliance on imported fossil fuels, and strike a balance between electricity provision to urban and rural areas. The investment plan defines two priority choices for expanding use of renewable energy: (i) mini-grid systems based on small hydro and biomass, backed up by PV to compensate for seasonal variation; and (ii) stand-alone solar systems, which include solar lanterns, other pico-PV products, and solar home systems (SHS). GoL received a commitment of US$50 million in financing from the Scaling Up Renewable Energy Program in Low Income Countries (SREP) to start implementing the IPRE. This will be done with the help of the World Bank and AfDB, with the World Bank supporting the preparation of a project in the North-West (i.e., the proposed Project) and AfDB providing support for a project in the South-East of the country. The possibility of tapping into additional carbon finance resources to support further deployment of renewable energy resources in Liberia will also be explored.

II. Proposed Development Objectives

The Project Development Objective (PDO) is to increase access to electricity and to foster the use of renewable energy sources.

III. Project Description

Component Name

Decentralized electrification in Lofa County (estimated cost US$22 million, of which SREP US$20 million and IDA US$2 million equivalent).

Comments (optional)

This component would support expansion of access to affordable, reliable, year-round electricity services to at about 9,000 new users in North Lofa County, an economic and agricultural hub in North-West Liberia close to the border with Guinea and Sierra Leone. The county was one of the hardest hit during the Ebola outbreak. It is more than 200 km from the national grid, and there are no prospects in the medium term to provide service from the national grid. The component would focus on the towns of Vonjaima, Foya, Kolahun and Massambolahun/Bolahun and surrounding areas. The component will support service provision to households, business and public institutions. Financing would be provided for installation of facilities, and technical assistance to define the most suitable arrangeme

Component Name

Technical assistance to strengthen rural electrification institutions and regulations (estimated cost US$2 million-SREP Financing).

Comments (optional)

This component would provide technical assistance to support the implementation of the GoL’s program to expand decentralized electrification and foster the use of renewable energy. It would support the development of regulations and standards for isolated mini-grids in complement to the September 2015 Law for the Electricity Sector and the Rural and Renewable Energy Act. It would also finance capacity building of RREA, document the lessons learned in establishing decentralized hybrid renewable energy mini-grids, support Project implementation, and finance the preparation of safeguards instruments, other preparation studies, and the project audits.

Component Name

Market development of stand-alone solar systems (estimated cost US$3 million-SREP financing)

Comments (optional)

This component would finance the development of a national market for solar systems. It would help provide access to modern energy services to over 100,000 people. The component aims to support the development of the market by increasing the sustainability of thesupply chain and by addressing demand-side constraints. The sustainability of the supply chain would be increased through strengthening of the retail network and facilitating the transfer of procurement and import responsibilities from RREA to the private sector. The component would be based on the experience and achievements of the ongoing LLL Program.

IV. Financing *(in USD Million)*

Total Project Cost:	27.00	Total Bank Financing:	2.00
Financing Gap:	0.00		

For Loans/Credits/Others	**Amount**
BORROWER/RECIPIENT	0.00
International Development Association (IDA)	2.00
Strategic Climate Fund Grant	25.00
Total	27.00

V. Implementation

RREA would be the sole implementing agency of the Project. It would liaise with MLME to ensure consistency between the activities financed under this Project and the sector policies for decentralized electrification. RREA is a permanent and autonomous agency entered into effect in July 2015. RREA operates under the guidance of MLME, with RREA's Executive Director appointed by and reporting to the Minister of MLME. This arrangement will continue until RREA's Board of Directors, in charge of providing strategic guidance and general oversight, is appointed. Board members will include representatives of MLME, LEC, the Ministry of Justice, the Executive Director of RREA, three persons selected to ensure equitable geographic, demographic, and gender representation of the country, three persons selected on the basis of their qualifications and experience, and one representative of civil society. As part of its functions, the Board would facilitate inter-ministerial cooperation. The appointment of the Board is a dated covenant under the Project.

A dedicated Project Management Team (PMT) in RREA would be responsible for the implementation of the Project. RREA would contract a Project Coordinator who would report to the Executive Director of RREA and work with RREA's Technical Director and other technical and fiduciary staff already in place to implement the Project. A pico-PV specialist would be hired to support the implementation of component 3. Fiduciary staff (financial management and procurement) would be dedicated to the Project, but report to the respective directors of RREA.

Project implementation arrangements, including fiduciary responsibilities, are described in Annex 3. A Project Implementation Manual (PIM) would be prepared and adopted by RREA prior to effectiveness.

VI. Safeguard Policies (including public consultation)

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment OP/BP 4.01	×	
Natural Habitats OP/BP 4.04		×
Forests OP/BP 4.36		×
Pest Management OP 4.09		×
Physical Cultural Resources OP/BP 4.11	×	
Indigenous Peoples OP/BP 4.10		×
Involuntary Resettlement OP/BP 4.12	×	
Safety of Dams OP/BP 4.37		×
Projects on International Waterways OP/BP 7.50	×	
Projects in Disputed Areas OP/BP 7.60		×

Comments (optional)

VII. Contact point

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