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# USAID'S LIBERIA ENERGY SECTOR SUPPORT PROGRAM (LESSP) YEAR ONE ANNUAL TECHNICAL PROGRESS REPORT

OCTOBER 1, 2010 – SEPTEMBER 30, 2011

CONTRACT 669-C-10-00059-00



OCTOBER 27, 2011

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# **USAID'S LIBERIA ENERGY SECTOR SUPPORT PROGRAM (LESSP)**

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**October 1, 2010 – September 30, 2011**

Prepared for: USAID/Liberia  
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### Strategic Objectives:

- SO1: To extend grid electricity throughout Monrovia and its environs;
- SO2: To develop hydro capacity and other renewable energy sources;
- SO3: To expand grid electricity to other urban areas and some rural areas; and
- SO4: To improve legal, institutional and regulatory framework in the energy sector.

The views expressed in the publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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## Abbreviations and Acronyms

CBEP	Cocopa Biomass Electricity Project
CBOs	Community-based Organizations
CESLY	Core Education Skills for Liberian Youth
COP	Chief of Party
COTR	Contacting Officer's Technical Representative
CSET	Center for Sustainable Energy Technology
CSR	Corporate Social Responsibility
DCA	USAID's Development Credit Authority
DCOP	Deputy Chief of Party
DTI	Development Training International
EPA	Environmental Protection Agency
EPC	Engineering, Procurement, and Construction
ERB	Energy Regulatory Board
ESG	Energy and Security Group
ESRS	Energy Sector Reform Specialist
EU/EC	European Union/European Commission
GDA	Global Development Alliance
GOJ	Government of Japan
GOL	Government of Liberia
GON	Government of Norway
GPS	Global Positioning System
Greencons	Green Consultancy Inc.
HQ	Head Quarters
ICT	Information and Communication Technology
KNUST	Kwame Nkurmah University of Science and Technology
LEAP	Liberia Energy Assistance Project
LEC	Liberia Electricity Corporation
LESSP	Liberia Energy Sector Support Program
LIBCO	Liberia Company

LOE	Level of Effort
LTI	Lutheran Training Institute
MC	Management Contractor
MEC	Monitoring, Evaluation, and Communications Specialist
M&E	Monitoring and Evaluation
MHI	Manitoba Hydro International
MLME	Ministry of Lands, Mines and Energy
MOU	Memorandum of Understanding
MRHP	Mein River Hydropower Project
NEP	National Energy Policy (Liberia)
NORAD	Norwegian Agency for Development Cooperation
NVE	Norwegian Water Resources and Energy Directorate
PIDS	L-MEPS Performance Indicators Database System
PMP	Performance Monitoring Plan
PRS	Poverty Reduction Strategy
PPP	Public Private Partnership
PPPS	Private Power Producer Specialist
RE	Renewable Energy
REFUND	Renewable Energy Fund
RET	Renewable Energy Technologies
RoL	Republic of Liberia
RREA	Rural and Renewable Energy Agency
SHOPS	Smallholder Oil Palm Support Project
SME	Small and Medium Enterprises
TDP	LEC Training and Development Program
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organization
USAID	U.S. Agency for International Development
WFMHP	Wayavah Falls Micro Hydro Project
WB	World Bank
WI	Winrock International

## PROJECT DESCRIPTION

The U. S. Agency for International Development's (USAID) Liberia Energy Sector Support Program (LESSP) contract was awarded to Winrock International (WI) on October 4, 2010 under USAID Contract 669-C-00-10-00059-00. The LESSP team, including WI, Energy and Security Group (ESG) and Tetra Tech ES Inc., is implementing USAID's LESSP.

LESSP was developed by USAID in response to the priority set by the Government of Liberia (GOL) of rehabilitating energy infrastructure, which is an integral component of the nation's macroeconomic development strategy as set forth in the Poverty Reduction Strategy (PRS). Specifically, LESSP contributes to the following goals stipulated in the PRS:

- builds the capacity of the Rural and Renewable Energy Agency (RREA) and the restructured Ministry of Lands, Mines and Energy (MLME);
- increases energy access in both Monrovia and the three rural counties;
- launches Liberia's hydropower generation capability and explores additional generation options from other renewable energy sources; and improves legal, institutional, and regulatory frameworks within the energy sector.

The purpose of the LESSP program for USAID is to increase access to affordable, renewable energy services in geographically focused rural and urban areas in order to foster economic, political and social development in Liberia. The program is focusing its work in Bong, Nimba and Lofa counties. The ultimate impact of the program, the change that USAID/Liberia expects to see in targeted areas, will include:

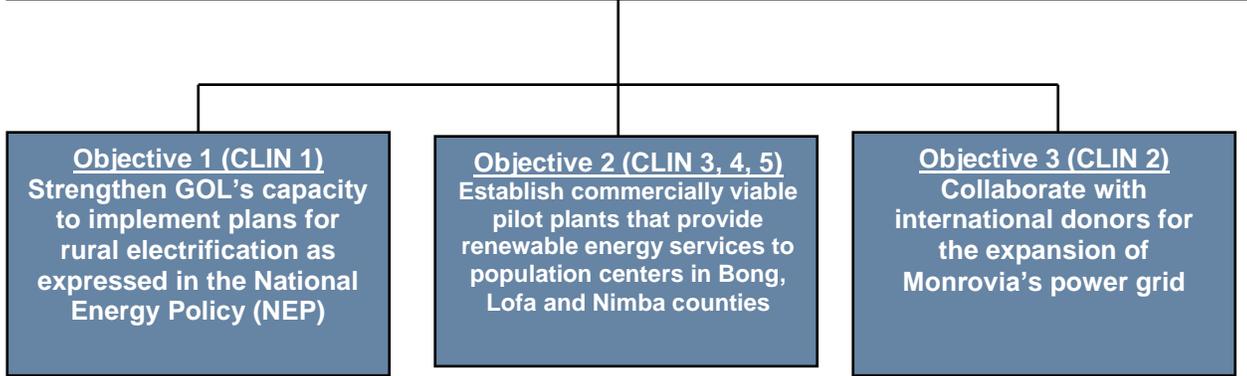
- Increased and sustainable access and affordability of electricity within urban and rural poor communities;
- Improved performance of local governments, civil society and the private sector in monitoring, regulating, and managing the use of renewable energy;
- An increase in the percentage of households and businesses utilizing clean energy and a corresponding increase in economic activity; and
- Policy changes that improve the investment climate for the energy sector.

LESSP's three objectives are broad and diverse, encompassing energy sector regulation and institutional reform, renewable energy (RE) pilot power plant construction and commercialization, strengthening of community-based organizations (CBOs) and capacity of institutions of higher education, public-private partnership development, and capacity building for support of the Liberia Electricity Corporation's (LEC) to hasten electricity connections for lower income customers. A common thread connects the various subcomponents: the focus on RE as a key tool for enabling economic growth, and building an environment conducive to private investment in the energy sector.

The graphic on the next page, titled the **LESSP Activities Map**, shows the project goal, the three objectives and the tasks and sub-tasks associated with the program objectives.

# LESSP ACTIVITIES MAP

**LESSP Goal:**  
 To increase access to affordable, renewable energy services in geographically focused rural and urban areas in order to foster economic, political and social development.



- Tasks/Activities
- 1.1 Conduct HR Skills Assessment of RREA
  - 1.2 Execute a Training Plan for RREA and the Renewable Energy Fund (REFUND)
  - 1.3 Develop an Action Plan for a new Electricity Regulatory Board (ERB)

- Tasks/Activities
- 2.1 Establish 2 hydroelectricity power stations (CLIN 4)
  - 2.2 Establish 2 biomass-powered electricity systems (CLIN 4)
  - 2.3 Produce 2 additional power systems in other renewable energy technologies (CLIN 4)
  - 2.4 Support community-based organizations and businesses to operate LESSP power systems (CLIN 3, 5)

- Tasks/Activities
- 3.1 Strengthen the LEC's human capital by funding a capacity building Training and Development Plan for the LEC, to be implemented by the LEC Management Contractor
- Note: This is a proposed revised task that is currently under discussion with USAID and MHI/LEC

- Objective 2 Sub-Tasks
- 2.1.1 (For hydro) Undertake appropriate feasibility studies & economic analyses for proposed plants
  - 2.1.2 (For hydro) Develop Terms of Reference (TOR) for Engineering, Procurement and Construction (EPC)-type contracting to build the hydro facilities
  - 2.2.1 (For biomass) Undertake appropriate feasibility studies & economic analyses for proposed plants
  - 2.2.2 (For biomass) Develop TOR for EPC-type contracting to build the biomass facilities
  - 2.4.1 Assess & create database of organizations involved with community & cooperative development
  - 2.4.2 Provide support for businesses and cooperatives operating power systems
  - 2.4.3 Strengthen centers of higher education, vocational training for renewable energy disciplines
  - 2.4.4 Secure GDAs with non-traditional resource partners to expand delivery of renewable energy

## ="EXECUTIVE SUMMARY - YEAR I HIGHLIGHTS

This Annual Report covers Year I of LESSP, from October 4, 2010 thru September 30, 2011. This report summarizes activities and results from the year in relation to the Annual Work Plan that was prepared by LESSP and approved by USAID.

### **Project Management and Operations**

The purpose of the LESSP program for USAID is to increase access to affordable, renewable energy services in geographically focused rural and urban areas in order to foster economic, political and social development in Liberia.

LESSP's three objectives are broad and diverse, encompassing energy sector regulation and institutional reform, renewable energy (RE) pilot power plant construction and commercialization, strengthening of community-based organizations (CBOs) and capacity of institutions of higher education, public-private partnership development, and capacity building for support of the Liberia Electricity Corporation (LEC) to hasten electricity connections for lower income customers.

- LESSP project was officially kicked off with USAID in November 2010.
- The main project office in Monrovia and the satellite office compound in Gbarnga were fully equipped and staffed.
- The Year I Work Plan was approved by USAID in December 2010.
- A Cross-Cutting Issues Assessment and Integration Plan was produced and submitted for USAID approval.
- Twelve Monthly Progress Reports and four Quarterly Reports were prepared and delivered to USAID, WI HQ and a number of appropriate stakeholders and counterparts.
- The Performance Monitoring Plan was delivered to, and approved by USAID.
- Thirteen major deliverables were issued to USAID for review, comment and approval and all except one have been approved. Please refer to Appendix I for details.
- Details of the status of LESSP Tasks and Activities addressed and/or completed can be found in Appendix II.

### **Objective I: Strengthen the GoL's capacity to implement plans for rural electrification as expressed in the National Energy Policy (NEP)**

In Year I the Objective I Team provided technical assistance for: (1) capacity building and training of the Rural and Renewable Energy Agency (RREA) directors and the Ministry of Lands, Mines and Energy (MLME) managers; and (2) contributed to the development of an energy law revision and development of an Action Plan to establish an Energy Regulatory Board. Activities and deliverables included:

- Completed a Human Resources Skills Assessment of the Rural and Renewable Energy Agency (RREA) based upon the RREA Staffing Plan;
- Completed a Training Plan for RREA directors, including group and individual training requirements;
- Successfully completed two training courses for the RREA (with participation from the MLME) on Program Planning, Financial Management and Budgeting;
- Reviewed and provided comments and recommendations for revision of the Draft Liberia Energy Law of February 2009;
- Developed a draft Electricity Regulatory Board Action Plan; and
- Conducted stakeholder meetings on the Energy Law and ERB Action Plan.

## **Objective 2: Establish commercially viable pilot plants that provide renewable energy services to population centers in Bong, Nimba and Lofa counties.**

The main thrust of Year I was to identify potential hydropower and biomass pilot power project sites, select the best sites for development, complete feasibility studies for the sites, conduct socio-economic surveys for the sites, and identify local organizations involved in community and cooperative development that might serve as owners and operators of the future power projects. Activities and deliverables included:

- Prepared the feasibility studies for all four pilot power plants and submitted to USAID for approval (three of the four have been approved);
- Prepared the Initial Environmental Examination for the pilot projects and received approval from USAID;
- Completed Environmental Review reports, following USAID guidelines, for the pilot projects;
- Started the environmental assessments of the four pilot power projects, following Environmental Protection Agency (EPA) guidelines (in progress);
- Developed a Database of Community Organizations involved in community and cooperative development in each of the pilot power project areas, which was approved by USAID;
- Began preparation of institutional support plans for strengthening RE curricula in higher education and vocational institutions; UbX
- Reviewed PPP/GDA opportunities, communicated with potential partners and developed a plan to further identify partnership opportunities.

## **Objective 3: Collaborate with international donors for the expansion of Monrovia's power distribution network**

The focus of Year I was to launch support to the LEC (and Management Contractor MHI) through procurement of equipment to help expand electricity distribution in Monrovia to lower income customers. However, the LEC began its procurement strategy before LESSP started, presenting challenges for LESSP in participating and ensuring that all procurement follows USG regulations. A strategy was being developed to overcome these challenges. However, in July 2011, after consultation with USAID, the LEC/MHI sent a counter-proposal to LESSP requesting that USAID LESSP funding to procure equipment to support electricity distribution expansion be redirected to funding a Training and Development Program (TDP) for LEC staff. At this time the decision to support training instead of procurement is pending. Activities included:

- LESSP held multiple meetings and communications with MHI/LEC and USAID throughout the year to firm up plans for delivering the original requirements of Objective 3;
- The last quarter of Year I was spent working with MHI/LEC, USAID and WI HQ to fully and clearly understand and evaluate the TDP proposal; and
- At the end of Year I, LESSP was still awaiting additional information from MHI/LEC on the training plan to present a full proposal to USAID.

## **== "PROJECT MANAGEMENT AND OPERATIONS**

### **Annual Highlights**

- Main project office in Monrovia was leased and equipped by January 2011.
- Major local staff positions were filled by March 2011. Project was fully staffed by May 2011.
- Year I Work Plan was approved by USAID in December 2010.
- Four Quarterly Reports and 12 Monthly Reports were prepared and issued.
- The Performance Monitoring Plan was delivered to USAID and was approved.
- Thirteen major deliverables were issued to USAID for review, comment and approval and all except one have been approved. Please refer to Appendix I for further details.

- Details of the status and progress of LESSP Tasks and Activities addressed and/or completed can be found in Appendix II.
- The LESSP Emergency Response Plan was finalized and submitted to WI HQ and was approved.
- Land grants for three pilot plants, Mein River, Wayavah Falls and Sorlumba, have been authorized by various tribal and clan chiefs, local government officials, citizen's groups and other responsible parties. Please refer to following sections for additional details.
- Over twenty (20) WI HQ staff and STTA consultants were on technical, managerial and administrative assignments in Liberia in accordance with the approved Work Plan.

### Problems/Solutions

- **Rainy Season:** Because of the timing when LESSP started (October 2010), the pilot power plant feasibility studies, socio-economic surveys, environmental assessments and other tasks/activities to be performed in Bong, Nimba and Lofa counties were delayed due to the rainy season. The team did the best they could to work around the rainy season and make up time after the rainy season ended.
- **Local Suppliers:** It is difficult to locate local suppliers and contractors that are reputable, competent, experienced, and affordable, especially outside of Monrovia. We have been actively searching out competent and reputable local contractors where possible, primarily by communicating with other donors and energy/infrastructure projects. We have also been searching other countries experienced in small hydro and biomass projects where the experience is relevant and the services are affordable, i. e., India, China, Nepal and Sri Lanka. We have found that having the ability to hire such TCN persons and firms is very critical to finding the right expertise for the Liberian environment. Bringing in these kinds of experts and firms can also assist with training and capacity building of local Liberian partners.

### Deliverables

- Four Quarterly Progress Reports and 12 Monthly Reports were prepared and issued to all appropriate counterparts and stakeholders.
- Performance Monitoring Plan was approved by L-MEP and USAID in August 2011.
- Branding and Marking Plan was approved by USAID in February 2011.

## ⇒ "OBJECTIVE 1: STRENGTHEN THE GOL'S CAPACITY TO IMPLEMENT PLANS FOR RURAL ELECTRIFICATION AS EXPRESSED IN THE NATIONAL ENERGY POLICY (NEP)



**RREA and MLME managers participate in USAID/LESSP training course on Finance and Budgeting**

### **Annual Highlights**

- Strengthened capabilities of the RREA/MLME to manage and finance renewable energy projects and programs in rural Liberia.
- Supported the development of an energy policy for Liberia as well as a regulatory board for implementation.

### **Activities Completed**

- Built Capacity of the RREA management team on Program Management. Also enhanced RREA and MLME capacity in Finance and Budgeting.
- Organized off-site training for the RREA Manager and Technical Director on RET-SCREEN in Canada.
- Assisted the RREA Technical Director to enroll in an on-line Master of Science Course on Renewable Energy at the Kwame Nkrumah University of Science and Technology (KNUST) in Ghana. (He was accepted into the program.)
- Provided Advisory Support for Energy Policy Development in Liberia. This included reviewing and commenting on the draft Energy Law of 2009 and circulating this information to the MLME and key stakeholders.
- Assisted in the creation of an Electricity Regulatory Board for Liberia via development of a draft ERB action plan.
- Helped to organize a stakeholder meeting with the MLME and key donors to review the draft energy law and ERB action plan.

### **Problems/Solutions**

Working in an environment with developing and changing energy policy, and with many stakeholders, can be challenging. We have been working with the Assistant Minister to keep him apprised of LESSP RREA training and policy activities and will continue to keep communication channels open. We believe that including the MLME in training activities, in addition to the RREA, to the extent possible, is helpful as is keeping key stakeholders engaged in the policy and ERB development process.

## **Success Stories**

A USAID success story was written about the first two group training courses for the RREA Directors in the areas of Program Management and Finance/Budgeting (Appendix 3).

## **Deliverables**

- Human Resources Assessment of Rural and Renewable Energy Agency (RREA).
- Training Plan for RREA directors.
- Successful completion of two training courses for RREA directors: on Program Planning and Financial Management/Budgeting.
- Comments and recommendations on the Draft Liberia Energy Law of February 2009.
- Drafted Electricity Regulatory Board Action Plan.

## **J "OBJECTIVE 2: ESTABLISH COMMERCIALY VIABLE PILOT PLANTS THAT PROVIDE RENEWABLE ENERGY SERVICES TO POPULATION CENTERS IN BONG, NIMBA AND LOFA COUNTIES**

### **Annual Highlights**

- Completed feasibility study of the Mein river small hydropower project. The feasibility study of the Wayavah Falls micro hydropower project is in the final stage.
- Completed feasibility study of the Sorlumba Biomass Electricity Project (SBEP). The feasibility study of the Cocopa Biomass Electricity Project (CBEP) is still being finalized.
- Obtained letter of land grant from the Pulukpeh Farmers' Multipurpose Cooperative for the use of land for the construction of the Mein River Hydropower Project. Also obtained similar land grant letter from the Community of Gbarway and Sucromu for the use of land for the construction of the Wayavah Falls micro hydropower project. The respective communities also provided permission for the use of water for the operation of hydropower project.
- Obtained the written consent of the Sorlumba Community to grant the required land for the construction of the Sorlumba Biomass Electricity Project.
- Initiated environmental assessment studies for Liberian EPA for two hydro power projects and one biomass electricity project. Completed IEE and Environmental Review study for USAID.
- Completed Database of Organizations involved in community and cooperative development.
- Initiated preliminary consultation on preparation of institutional support plan for strengthening centers of higher education in renewable energy.

### **Activities Completed**

#### **Pilot Hydropower Projects**

- An inventory of 10 potential hydropower sites was prepared based on preliminary GPS information and field assessment in December 2010. The Mein River, Wayavah Falls and Wozi Falls sites were identified as most favorable and feasibility studies of the first two sites were carried out. The site selection process also entailed consultation with RREA and MLME and their endorsements were received.
- An Inception Report on Mein River Small Hydropower Project was submitted to USAID and was approved in December 2010. The criterion for selection of hydropower sites for feasibility studies. The

feasibility studies entailed flow measurements each month, hydrological analyses, geotechnical assessments, field investigations by the design team, topographical surveys, preparation of digital maps, load demand assessments and socio-economic studies, engineering design and drawings, cost estimates and financial analyses.



**Wayavah Falls water depth measurements**



**Mein River site investigation and data gathering**



**Greencons team carrying out water quality measurement**



**Gbarway Town, Wayavah Falls Project will supply electricity**

- A comprehensive survey using GPS for each load center for each pilot site were carried out for planning of transmission and distribution line for connecting new customers.
- A series of community consultation meetings were held prior to the commencement of each of the major activities in the respective sites in order to obtain permission from the community leaders and at the same time keep them informed of the activities being carried out. The hierarchy of consultation in the county included Development Superintendent, District Mayor, Paramount Chief, Town Chief, Clan Chief, Youth Leader, Chair Lady and other stakeholders.



**Community Officials informational meeting regarding Mein River Hydropower Project**

- A series of meetings were held with Cuttington University, Phebe Hospital and Pulukpeh Farmers' Multipurpose Cooperative on the issue of ownership and management of the Mein River power plant. A legal counselor was engaged to assess the documents on land grant received from the community. The counselor confirmed the validity of the documents and absence of any conflict in the process. The legal counselor is also working on the process to transfer the land to the proposed Mein River Power Company through the land commissioner's office. The counselor is also working in the formation of a special purpose vehicle called the Mein River Power Company that will own and operate the Mein river power plant.

### **Pilot Biomass Power Projects**

- The Biomass Project's Inception Report, submitted to USAID in January 2011, and approved by them, identified potential biomass sites in the three Counties which included information regarding the proposed biomass project to be located in Lofa, called the Sorlumba Biomass Electricity Project (SBEP) using crude palm oil (CPO) as fuel. The other potential biomass project site was identified in Nimba County, called the Cocopa Biomass Power Project (CBPP), using rubber wood chips as fuel. Both of these biomass materials are widely available in Liberia.
- As part of analyzing the feasibility of establishing the SBEP, LESSP project staff carried out a socio economic survey in Sorlumba and surrounding villages to assess the potential demand for electricity in the project geographic coverage area and the potential consumers' willingness and ability to pay for electricity. The survey also established the availability of CPO and evaluated the CPO supply chain for the proposed project.
- A series of community consultation meetings were held with the District Government Officials, the Town and Clan Chiefs and village leaders to brief them on the proposed Sorlumba project.
- The proposed Sorlumba project is envisioned as a community owned and managed power system. Accordingly, LESSP will help the local community form a community organization, named as the Sorlumba Community Development Association (SCDA) to take over the responsibility of operating, managing and owning the power system.



**Sorlumba Community Meeting in Progress**

- The Feasibility Report for the proposed SBEP with an installed capacity of 35 kW and with potential for providing 206 households/institutions with electricity was prepared and submitted to USAID for approval and it was approved by USAID.
- A second biomass project, called the Cocopa Biomass Electricity Project (CBEP) was identified and will be sited on the Cocopa Rubber Plantation (CRP) owned by the Liberia Company (LIBCO) alongside the Ganta-Saclapae highway in Nimba County using rubber wood chips as fuel. The project is planned to be developed as a Public Private Partnership (PPP) thereby leveraging private sector resources for constructing the plant.
- A local firm, the Center for Sustainable Energy Technology (CSET), was subcontracted to carry out a survey on Willingness to Pay and Ability to Pay for electricity being provided in the Cocopa project areas. The survey also collected baseline data and socio economic data within the geographic areas.
- The Biomass Technical Team carried out a series of assessments at Cocopa including, selection of technology options, plant configurations, fuel/feed stock supply arrangements, conceptual design, electricity distribution systems, project cost estimates etc.
- The proposed biomass power system envisages both power generation and power transmission and distribution (T&D). Considering the high construction cost of T&D assets in Liberia and the availability of funding for the biomass power systems, the installed capacity of the proposed project will be designed to supply 240 kW. The project feasibility study was prepared on the basis that LIBCO would invest in the power generation assets and LESSP would invest in the T&D assets.
- LESSP has requested LIBCO to formally enter into a Memorandum of Understanding delineating the respective responsibilities of LIBCO and LESSP. During Year I the Feasibility Report for the proposed Cocopa project was completed but submission of the report to USAID/Liberia was delayed pending the execution of the MOU with LIBCO.
- As an alternative to the Cocopa Project, LESSP explored other options for a pilot biomass project in Nimba and identified another viable option for such a project. This option would be pursued simultaneously with the Cocopa option.

### **Environmental Status Reports**

The IEE for the pilot projects was submitted to USAID and was approved. Following which Environmental Project Briefs for Mein River, Wayavah Falls and Sorlumba were submitted to the EPA and USAID as the first step to obtain environmental permits needed to start construction. Mein River and Wayavah Falls projects are designed as run-of-the river projects and have minimum environmental impacts. Similarly, Sorlumba is a small

biomass project and any environmental impact should be minimal. There is overwhelming support from the involved communities and from the government of Liberia for the implementation of these projects.

### **Exploring Opportunities for other Renewable Energy Power Systems**

As per the Contract with USAID, this activity is contingent upon availability of funding. The cost estimate for the hydro pilot projects alone is quite high and therefore, the possibility of construction of additional pilot projects appears remote at this stage. This is due in part to the size of one of the hydropower pilot projects being much larger (e.g. 1500 kW full scale Mein river project) than initially envisaged (~700 kW). Secondly, there has been a substantial increase in construction costs during the last few years due to increase in prices of fuel, steel and other construction materials on the international market. However, LESSP will carry out a study of opportunities for other renewable energy power systems in 2012.

### **Building Capacity for Community Based Organizations**

A database of organizations involved in community and cooperative development was developed based on the field surveys in each of the pilot project areas, and the report was approved by USAID. The potential organizations for ownership, operation and maintenance of power plants have been identified. The process of further assessment of these organizations' capacity and preparation plans for their training and capacity building will be carried out in the early period of the second year. LESSP solicited and cultivated collaborative relationships with other INGOs, NGOs, Government of Liberia, local and national stakeholders and community residents for the implementation of LESSP project activities. Youth and women were included in all project activities in the field such as socio-economic surveys, assessments, training sessions and information sharing. Community residents granted land and the right of way for the construction of both hydro and biomass power plants and for the installation of the transmission and distribution lines.

### **Strengthening Centers of Higher Education in Renewable Energy**

Initial consultation meetings were held with number of organizations to identify the most suitable institutions and carry out their preliminary assessment in the process of preparation of an institutional support plan for higher and vocational education in renewable energy. The engineering faculties in the University of Liberia and Stella Maris Polytechnic have been identified as suitable partners for introduction of RE curriculum. Booker Washington Institute (BWI) and Lutheran Training Institute (LTI) have been identified as vocational institutes for introduction of vocational course on RE. These institutions have expressed their interest in RE education. Further assessment and consultation will be made in early 2012 to identify the most relevant RE curriculum and prepare the institutional support plan in introduction of RE curriculum.



**Meeting of stakeholders on Renewable Energy Higher Education curricula**



**Public hearing in Raymond Town, Suakoko, Bong County**

### **Developing Public Private Partnerships**

A series of meetings were held with potential partners' organizations ]bW XYX' Arcellor Mittal, CSR Forum, UNIDO, UNDP, World Bank and International Bank of Liberia. LESSP made a presentation at the Annual General Meeting of the CSR Forum.

The LESSP Team also began to pursue the feasibility of raising local debt financing from Liberian banks under the DCA Guarantee mechanism of USAID for the proposed pilot renewable energy projects. Meetings were held with the USAID/Liberia Private Enterprise officer and the GM of International Bank Liberia Ltd.

### **Problems/Solutions**

**Hydrological Data Unavailable:** Because of the long civil conflict, Liberia has no record of hydrological data for the past 3 decades. Long term hydrological analysis in the feasibility study process was not possible in the absence of such records. LESSP engineers continue to travel to both hydro sites to measure river discharge in the pilot sites on a regular basis.

**Rising Local Costs:** Since the LESSP RFP was released and proposals were submitted, and since the start-up of the project, local costs have risen. The largest concern is rising costs for construction materials such as concrete and steel, equipment and materials for pilot project T&D equipment and materials, machinery for the pilots, salaries for subcontractors, etc. As we move further into project construction, these cost increases will need to be closely monitored and managed. To date we have been able to use our allowable budget flexibility to cover these higher than anticipated costs.

### **Success Stories**

No formal USAID success stories prepared for this year. Success stories are anticipated for Year 2.

### **Deliverables**

- Inception Reports for both hydro projects and one biomass project.
- Initial Environmental Examination Report.
- Feasibility Study of the Mein River Hydropower Project.
- Feasibility Study of Sorlumba Biomass Electricity Project.
- Feasibility Study of Cocopa Biomass Electricity Project.
- Database of Organizations involved in Community and Cooperative Development.

## **J = "OBJECTIVE 3: COLLABORATE WITH INTERNATIONAL DONORS FOR THE EXPANSION OF MONROVIA'S POWER DISTRIBUTION NETWORK**

### **Annual Highlights**

In the original scope of work for Objective 3, LESSP was to manage USAID/Liberia contributions for the procurement of electricity distribution materials (e.g. meters, wires, transformers, etc.) to connect low and middle income customers in Monrovia to the grid.

During LESSP's discussions with the LEC and its Management Contractor Manitoba Hydro International (MHI) it was discovered that LEC had already proceeded with a tendering process for the procurement of equipment/material for connecting low and middle income customers in Monrovia. The tendering process was commenced before LESSP inception began its operation, and therefore, it was then impossible for LESSP to sit on the tender selection committees as required by the USAID Contract.

In July 2011, MHI/LEC approached LESSP and requested that LESSP support a comprehensive Training and Development Program (TDP) for LEC employees instead of procurement of distribution equipment. LEC further informed LESSP that the TDP was more desirable in that it would build the technical, human resource and management capacity of the LEC well into the future and would allow more rapid expansion of the grid than simply supplying equipment would do. In fact, without this manpower development program the LEC will not be able to accelerate electricity connections to low income households in Monrovia.

Thus the revised purpose of Objective 3 (subject to formal approval by the USAID Contracting Officer) is for LESSP to manage USAID/Liberia contributions to this effort through the funding of a comprehensive TDP for LEC employees with a view to enhancing their skills in managing LEC's generation and T&D systems and to accelerating the construction of electricity connections to low and middle income customers.

### **Activities Completed or in Progress**

- LESSP developed an acceptable mechanism for disbursing funds to selected suppliers and subcontractors.
- A draft memorandum to the USAID COTR recommending a due diligence process that would be carried out by LESSP to ensure that a fair and transparent tendering process had taken place and also suggesting three payment options.
- USAID responded with comments and additional requirements and a revised memo was submitted by LESSP that included suggested language for a contract modification.
- At this point, July 2011, all work was stopped on the original Objective 3 due to receipt of MHI/LEC's alternate TDP proposal.
- Since July 2011, LESSP worked closely with MHI/LEC and USAID to define an approach for completing the TDP.

### **Problems/Solutions**

Described in the Annual Highlights section above.

### **Success Stories**

No formal USAID success stories were prepared for Year 1. Success stories are anticipated for Year 2.

## **J ≡"CROSS-CUTTING ISSUES INTEGRATION**

The LESSP program can benefit from integrating women, youth, and ICT, where applicable, with improved uptake of new renewable energy technologies (and reduction of environmentally harmful practices), expansion of the paying customer base (both households and small and medium enterprises) and increased community participation and support for project activities. The program can contribute to cross-cutting concerns important to USAID by improving health, education and economic conditions of disadvantaged groups to reduce conflicts caused by unequal distribution of resources, mitigating the disproportionately negative effects of unsustainable energy use and practice on the poorest and most isolated populations, and contributing to Liberia's economic growth.

In Year 1, the LESSP team produced a *Cross-Cutting Issues Assessment and Integration Plan* to serve as a guide to the LESSP team throughout the development of annual work plans and implementation of the project activities to keep cross-cutting issues at the forefront of planning, design, training, community ownership transfer, as well as the selection of beneficiaries and trainees.

To prepare this report the LESSP team conducted a literature review on the issues of Gender, Youth and ICT in Liberia and held consultations with potential collaborators to identify areas where LESSP could have an impact on development for women, youth and ICT. Consultations included:

- Ministry of Gender and Development, Deputy Minister
- Ministry of Lands, Mines and Energy, Gender Focal Point
- Norwegian Water Resources and Energy Directorate, Senior Advisor
- Women's Campaign International, Executive Director
- Core Education Skills for Liberian Youth project of Educational Development Center, Project Director
- Federation of Liberian Youth, President
- Liberia Opportunities Industrialization Centers (LOIC) Acting National Executive Director
- Ministry of Youth and Sports, Director General for Vocational Education
- Ministry of Post and Communications, Director of ICT

In Year 2 LESSP will seek to pursue the recommendations made in the Cross-Cutting Issues Integration Plan.

## J == "PERFORMANCE MONITORING RESULTS AND IMPACT

The goal of LESSP is a Liberian energy sector with strengthened capacity to promote rapid, sustained and broad-based growth. The realization of this goal is linked to achieving the following objectives/intermediate results:

- Government of Liberia's, specifically, the Rural and Renewable Energy Agency (RREA), capacity for rural energy establishment and management strengthened.
- Commercially viable renewable energy pilot plants established in Bong, Nimba & Lofa counties.
- The Monrovia power grid expanded to low income households through collaboration with international donors.

Other important objectives include:

- To the full extent practicable, provide employment opportunities to Liberians in the implementation of the construction of pilot plants and electricity sector value chain.
- Build capacity of Liberian local governments and communities including women, and youth to manage and maintain electricity infrastructure.
- Special attention will be paid to employing women and youth as enumerators and data gatherers for socio-economic surveys and performance monitoring purposes.
- Increase citizen's participation with local government on the identification and prioritization of community needs for electricity access.
- Support local communities and governments to leverage private resources to provide affordable and accessible electricity services.
- Encourage community participation and empowerment in the planning, design, construction, and maintenance of electricity infrastructure.
- Demonstrate the U.S. commitment to Liberia's reconstruction and poverty alleviation.

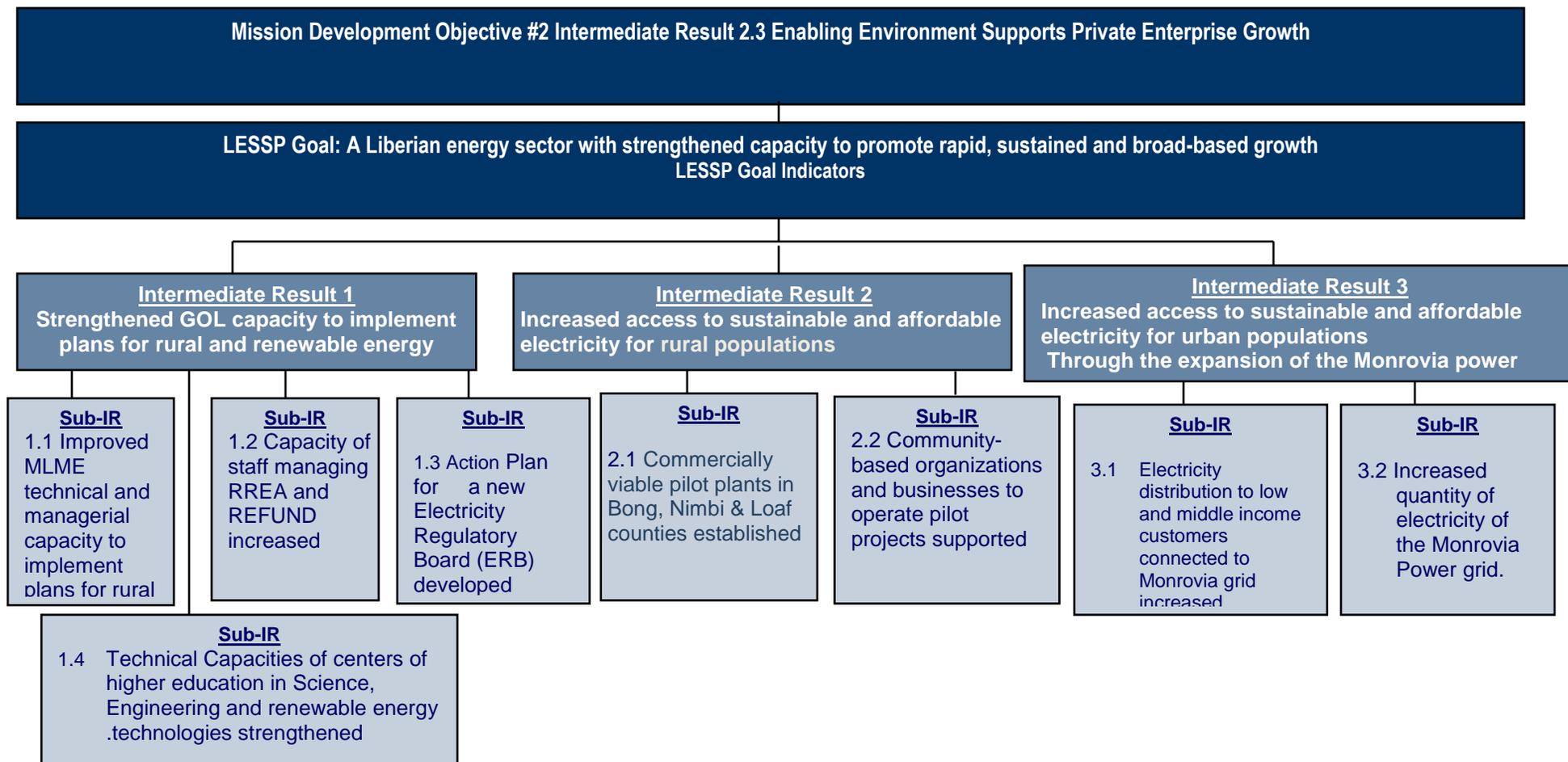


**Data collectors, Bong County going to field early**



**Data collectors in Lofa County at the end of day 1 data collection**

## LESSP Results Framework



### Critical Assumptions

1. The Government of Liberia is fully cooperative towards project implementation
2. National Energy Law passed & enacted.
3. Water level or flow measurement remains favourable.
4. Roads and bridges connecting load centres to power house are maintained.

## Quantitative/Qualitative Results

Collection of performance results and impacts present a synthesis of the results and impact of the entire project yearly tasks, activities and deliverables thereby raising systemic issues and lessons learned that can contribute to further improve performance in the future. This is LESSP's first Annual Report and it is the first time that details of performance indicators are included in any Year 1 reports. Comprehensive data required for each indicator will be reported for the first time in the Quarterly Progress Report for Quarter 1 (October 2011 through December 2012) of Year 2 and all quarters following that.

All requirements of the PMP have been completed except the final data baseline and finalization of DQA's, which will be completed in November 2011. Data that was available at year's end is recorded in the table below.

In terms of results and impact in this light, the following were achieved or are in progress.

- The Performance Monitoring Plan was delivered to and was approved by the Liberia Monitoring and Evaluation Program (LMEP) and USAID
- All performance indicators and targets were finalized in accordance with the PMP.
- Baseline and socio-economic survey questionnaires for both biomass and hydropower pilot projects were created and surveys were conducted in all pilot plant geographical areas.
- Socio-economic survey data was cleansed and analyzed and was entered in the LESSP designed database and appropriate reports were prepared and issued.
- The Baseline report was prepared and implementation of data collection is in progress.
- A document filing system required by the PMP was created for both hard and soft source documents.



MEC Specialist with Data collectors in Foyah, Lofa County departing for data collection



MEC Specialist with recruited data collectors during a training session in Bong County

## ± "Community Outreach

By year's end, the LESSP Outreach and Monitoring and Evaluation teams have been working together to identify and mobilize community residents, community-based organizations, local and national stakeholders and institutions for their involvement, assistance and participation in the pilot projects for such tasks and activities as information sharing, conducting socio-economic surveys, addressing cross cutting issues and training locals to operate, own and manage selected pilot projects.

### Results

Most results have been addressed elsewhere in this report and others include:

- Different institutions and organizations including INGOs, NGOs, local and national governments institutions, and community-based organizations were identified and mobilized.
- Research was conducted and a Database of Community/Cooperative Organizations as required by our contract was developed, delivered to USAID and was approved.
- Concept papers were prepared on the formation, development, governance and management of cooperatives.
- The process of formation of new electric cooperatives commenced and project communities instituted steering committees to facilitate the actual formation of new electric cooperatives.



**Meeting of Sorlumba residents to set up the steering committee for the electric coop.**

**Gbarndway residents meet to discuss the set up of the steering to facilitate the formation of the**

# **'APPENDIX I SUCCESS STORY**



# USAID | LIBERIA

FROM THE AMERICAN PEOPLE

## SUCCESS STORY

### Skill Building for Liberia's Energy Leaders

#### **USAID empowers government leaders to help bring clean, affordable energy to Liberia**



*The new Director in Liberia, was one of 10 senior level managers to participate in a series of courses designed to help the government*

**USAID's Liberia Energy Sector Support Program (LESSP) is developing clean energy power projects and helping the Government of Liberia make energy more accessible. To ensure sustainability, USAID focuses on building and strengthening the capacity of Liberian leaders.**

U.S. Agency for International Development  
[www.usaid.gov](http://www.usaid.gov)

Over 95% of people in Liberia lack access to electricity, relying on unsafe, unhealthy, and unaffordable energy sources, such as candles, kerosene, diesel, firewood, and disposable batteries. Ellen Johnson-Sirleaf, President of Liberia, created the Rural and Renewable Energy Agency (RREA) in 2010 to address this critical issue. In 2011, USAID began training senior government officials from RREA and the Ministry of Lands, Mines, and Energy (MLME) to build capacity to help these leaders design, plan, and manage new national energy initiatives.

In 2011, USAID trained 10 senior Government officials responsible for bringing clean, renewable energy and electricity to Liberia. Two intensive courses were offered in Monrovia, with topics requested by RREA participants in a Skills Assessment conducted earlier in the year. The first course focused on Project Planning and Management, and the second on Financial Planning and Budgeting. Each course took a hands-on approach to capacity building and helped RREA and MLME to move critical projects forward.

In addition to receiving core competency training, specific Government positions require more specialized training. As such, USAID organized a training session on RETSCREEN clean energy project software—an industry tool used by renewable energy professionals in 222 countries—for RREA Executive Director and the RREA Director of Technical Services.

Also with USAID support, the Director of Technical Services was accepted into an online Masters of Science program in Renewable Energy Technologies offered by Kwame Nkrumah University of Science and Technology (KNUST), a premier technical training institution in Ghana. Additional specialized training will be provided for RREA/MLME energy leaders in 2012.

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