



**AFRICAN DEVELOPMENT
BANK GROUP**

**PROJECT: LIBERIA ENERGY EFFICIENCY AND ACCESS
PROJECT**

COUNTRY: LIBERIA

**ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN AND ABBREVIATED
RESETTLEMENT ACTION PLAN SUMMARY**

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ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

SUMMARY

Project Title: Liberia Energy Efficiency and Access Project

Project Number: P-LR-F00-004 **Country: Liberia**

Department: ONEC **Division: ONEC.1**

Project Category: Category 2

1. Introduction

The Government of Liberia through the Ministry of Lands, Mines and Energy (MLME) has announced an ambitious plan to expand energy services to 70% of the population of Monrovia and 35% of the population countrywide by 2030. To achieve this plan, the Government of Liberia has requested the African Development Bank to consider providing financing for the Liberia Energy Efficiency and Access Project (LEAP).

The purpose of the LEAP is to increase the Liberian population's access to electricity from the current 2% to 6% by 2020 and strengthen capacity in the electricity sector. More specifically, the project will: (i) expand the transmission and distribution network; (ii) improve energy accessibility and efficiency in the LEAP's zone of intervention and (iii) strengthen technical, managerial and institutional capacity of the energy sector. The LEAP focuses on the Monrovia to Roberts International Airport (RIA) corridor and the Pleebo- Fish Town Corridor in Maryland and River Gee Counties in eastern Liberia. It will improve Liberian population's access to quality and reliable electricity services in the targeted areas.

Currently, in Monrovia and its suburbs, only wealthy people have access to reliable electricity supply through personal generators, which contributes to greenhouse emissions. In rural areas, kerosene lamps are the main source of lighting. Hence, the project will contribute to raising the general standards of living of urban and rural households, with positive impacts on the environment. Further, in the project areas, the LEAP is expected to improve public services such as street lighting (with beneficial effects on women and girls' security), healthcare and education services; enable the use of information and communication technology (ICT); stimulate the development of small and medium enterprises and create opportunities for income-generating activities, including for women.

Three local Liberian environmental consultancies were hired by the AfDB to prepare the ESIA in compliance with the Environmental Protection Authority of Liberia and ESMP in compliance with the African Development Bank's Integrated Safeguards System Policy.

This summary introduces the transmission line projects, the policy, legal and administrative frameworks under which the ESIA, ESMP and ARAP were prepared, the projects description and justification. It also presents the potential beneficial and adverse impacts of the projects on the affected communities, mitigation and enhances measures against the adverse impacts and complementary initiatives. The summary further presents the monitoring programs, public consultations and public disclosure, as well as institutional capacities and strengthening plan. Since more than 64 people will be affected along the Monrovia to RIA Corridor, an Abbreviated Resettlement Action Plan has been prepared and included as an Annex to this ESMP Summary.

2. Brief project description and key components

The proposed project is part of the Government of Liberia's electricity sector development master plan the LCPDP¹. The project 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 Maryland and River Gee Counties. The T-Line routes were finalised by MLME based on walk over and detailed survey to identify constraints and opportunities.

The Monrovia-RIA corridor will involve construction of transmission and distribution lines and substations as well as connections from Paynesville through Schiefflin to the Roberts International Airport, over a distance of approximately 46 kilometers. The Pleebo-Fish Town corridor will involve the construction of transmission and distribution lines and substations from Pleebo (Maryland County) to Fish Town (River Gee County) in southeastern Liberia. This will cover a distance of approximately 100 kilometers across 19 towns. Figure S-1 below shows the locations of the project.



The Transmission Lines for the RIA Corridor will be rehabilitated and reconstructed including replacement of all towers, conductors, and hardware along the existing transmission line right-of-way. The towers will be designed as double circuit lattice structure outside of densely

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

populated areas, and as monopod tubular poles in densely populated areas. The Pleebo – Fish Town Corridor will be constructed along the right of way of the new paved road alignment financed by AfDB. The Pleebo – Fish Town corridor is part of the “cross-border” extension of power lines from neighboring countries referred to as the West African Power Pool (WAPP) project and funded by the African Development Bank (AfDB) and EU.

The project comprises the following two key components: (i) Component A - Transmission and Distribution Infrastructure; involving the construction of transmission lines, substation at RIA and construction of distribution networks including connection services. This component also includes institutional support as well as capacity building. (ii) Component B – Energy Efficiency: involves the deployment of energy efficient lighting products and public outreach in the project area as well as institutional support and capacity building, knowledge management, monitoring and evaluation and project management.

3. Major environmental and social impacts and climate change risk

Positive Impacts:

Employment Opportunities: The direct and indirect job opportunities that will be provided by the project can be considered as a positive aspect. Employment opportunities will be ample in the short term during the construction phase, and the local contractor will give preference to skilled and semi-skilled workers from the local communities. Employment will include opportunities for both men and women. The local people will be directly employed to work at the construction sites. Some individuals may gain skills that can be applied in other transmission line construction projects. A written statement in the CSR Policy will include commitment to adherence to the prohibition of child labor according to Minimum Age Convention, 1973 (No. 138) which sets the general minimum age for admission to employment or work at 15 years (13 for light work) and the minimum age for hazardous work at 18 (16 under certain strict conditions).

Improved local socio-economy: The benefits of the project for domestic supply and use in small-scale businesses and in access to electric power for schools and public services are evident. Potential beneficiary enterprises affected by and contributing to regional socio-economic transformation will be small industries like saw mills and joineries, grain mills and other agricultural processing and storage businesses. Data management with computers is enabled along with communication facilities such as the internet and charging of mobile phones. Electric lighting adds to security at night and enables extended opportunities for work and study. As a consequence the quality of life and extent of economic opportunity will be transformed.

The anticipated positive impacts of the operational phase include: (i) Improved access to power and other ICT facilities within all settlements; (ii) Reduced dependence on traditional sources of biomass which will reduce deforestation and other associated environmental impacts; (iii) Increased frequency of private sector investment and other businesses due to access to power. (iv) Stimulation of the development of other social amenities, such as building of health centers, schools, bore holes and major development agenda; (v) Facilitation of the undertaking of other economic activities in the settlement areas. (vi) Improved delivery of health care and education.

Development of SMEs: The project will stimulate the development of additional income-generation activities via the hiring of subcontractors and a variety of general services (repair and maintenance, security, cleaning, catering). But most importantly, it is expected that an improved and increased access to electricity will stimulate the development of small and medium enterprises in the project area. Improved access to electricity will reduce operational costs significantly and thus boost business expansion. On the gender side, women should benefit from opportunities to work on the project as a result of project gender policy. Such income and opportunities for trading and provision of services to salaried project workers will help women to start small businesses.

Negative Impacts:

Low voltage Transmission and Distribution network systems extension can be expected to have minor direct and indirect impacts on villages/settlements where the proposed lines will pass. The potential for negative direct impacts might be in any social and cultural interaction between the contractor's workers and local populations. There may also be minor effects on agriculture, if there would be a restriction on land use in the right of way to the areas where distribution lines pass, and, in any involuntary resettlement requirement.

Occupational Health and Public Safety Impacts: Risks may arise during the construction and maintenance phases if community's access to work areas is not controlled. People may be injured by construction machinery or by falls into open trenches, and there may be an increase in road traffic accidents due to increased traffic to and from the transmission line corridor, as well as an increased risk of accidents from using machinery during construction operations. When considering safety of the employees, there is a risk of falls from elevated positions during construction and maintenance of the electricity pylons, as well as an increased risk of electrocution should activities not follow operation guidelines and safety measures. Water may accumulate in excavated pits for tower foundations potentially leading to the breeding of insects and other infectious organisms thus increasing the risk of vector borne diseases at operation sites.

Land Take: Power transmission lines characteristically generate impacts such as acquisition and maintenance of the right of way, clearing of vegetation from sites and line corridor; construction of access roads, tower pads, and substations are the most obvious sources of construction-related impacts. Land take, compensation and resettlement will be required for the establishment of the Monrovia-RIA corridor line.

For the Pleebo- Fish Town Corridor, compensation has been done along the corridor for the road construction projects along the same ROW. The government of Liberia has consulted with communities and indicated that there will be no repeat payment of compensation for the transmission line since the transmission line will be constructed in the newly acquired road reserve. In areas where some housing units could still be affected, the ROW was redirected. Hence, there will be no involuntary displacement or resettlement of people, hence no requirement for a Resettlement Action Plan (RAP) for Pleebo-Fish Town Corridor.

Impact on Fauna: The impact of a transmission line on fauna is limited. Except for birds, most animals are not disturbed by the transmission line. The Monrovia-RIA corridor is an existing corridor mainly inhabited by human populations hence very rare to spot animals. The Pleebo-Fish Town Corridor has a cleared RoW that may create a specific biotope in areas with denser

vegetation. This biotope is similar to a natural meadow, although obviously much longer in extent, that acts as an open grazing area for herbivores, and hence as a hunting ground for carnivores.

Birds occasionally collide with the transmission lines, and birds nesting in the towers pose a danger both to themselves and to the safe operation of the power line. This is because large nests eventually fill with droppings that can reach the conductors and cause electric shocks or burns. The effect is more severe for birds with long generation times, and for large birds, such as eagles. Bird strikes and mortality will be of concern in the areas of their high densities and those areas with large birds such as migratory bird species. This is likely to be of concern during the operation stage of the project.

Impact on Flora and Natural Vegetation: To a large extent, the transmission line along the Pleebo-Fish Town Corridor will pass through shrub land and Forest land used mainly for farming and plantations. While the passage through the border line of most of these natural vegetation areas will inevitably take up some land, this will affect similar types of land, and is generally not expected to cause substantial impacts on the flora and fauna. While impact on woody vegetation is going to be permanent, impact on grasses and herbs is mostly transient. For the Monrovia-RIA corridor there is minimal vegetation.

Impact on Biodiversity and Habitats: The consultant reviewed the relevant Forestry and Conservation Acts and noted that the proposed development will not cause significant adverse effects on any Forest or land area that will be affected. The construction activities may cause temporary and limited damage to local flora and fauna. Tree and bush clearance will be limited. The cleared vegetation will be recovered by planting small trees and plants. The overhead transmission line does not interfere with any major bird migration routes. In areas of known bird flight paths, warning spheres will be placed on the transmission line.

Impacts of Waste: The material storage area, construction offices, and construction sites will be sources of scrap metal, oil contaminated waste, household waste, cleared solid waste debris, backfill earthwork and other construction wastes. If the piling and transportation of these waste materials is not managed properly, the waste will block traffic and contaminate the surrounding environment. Long term random piling may also cause deterioration of air quality due to the flying dust and could result in respiratory problems to the people living in nearby areas. Used lubricants, paints, oils and other chemicals may also pose risks if improperly handled and / or disposed of, including soil and groundwater contamination and health and safety hazards.

Impact on Soils: Grading at construction work areas will alter the topographic height, slope, relief intensity, degree of shaping, and exposure of soils. During construction activities, soil erosion may be caused by exposure of soil surfaces to rain and wind during site vegetation clearing, earth moving, and excavation and construction activities. The resulting soil particles may be transported into surface drainage networks thus affecting the quality of natural water systems and ultimately the biological systems using the waters. Accidental spill of oil or lubricant from construction and maintenance activities may infiltrate and contaminate the soil. The soil may also become contaminated with pesticide residue used to maintain vegetation along the transmission line corridor during operations.

Cumulative Impacts

A “cumulative impact” is the impact on the environment which results from the incremental impact of the proposed Project when added to other past, present, and reasonably foreseeable future actions. The process of cumulative environmental change can arise from any of the following types of events: (i) Single large events, i.e. a large project; (ii) Multiple interrelated events, i.e. road projects within a region; and (iii) Catastrophic sudden events, i.e. a major landslide into a river system. These can generate additive, multiplicative or synergetic effects, which can then result in damage to the function of one or several eco-system.

Because of the nature of a transmission and distribution line project the changes will be very localized. The Monrovia-RIA transmission line is designed to traverse the exiting corridor at the edge of the Road Reserve. The line was vandalized during the war and the route still exists. The Pleebo-Fish Town distribution lines are designed to run at the edge of the road reserve that has been created under the Fish Town – Pleebo- Harper Road Project that is on-going under Bank financing. The Resettlement Action Plan for the Road Project is under implementation and it is not anticipated that there will be any cumulative impacts from resettlement or any of the biophysical resources along the road reserve.

The proposed Project will allow electric power to be transmitted from distances far away, and the biggest impacts will come from the change of lifestyle resulting from social development. Considering that surrounding circumstances of the selected line routes is mostly out of the urban areas and is going along the existing roads, adverse cumulative impacts caused by the proposed Project is minimal.

Climate Change:

GHG Emission Reduction: The use of small gasoline and diesel generators to supply electricity to households and businesses 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 200,000 units of CFL as a pilot phase.

Adaptation measures: The proposed project falls under Category III Climate Risk according to the Bank’s Climate Screening Scorecard. For the proposed project, since there is no significant increase in the frequency of ‘hot’ days and decrease in mean annual precipitation from the current projections in Liberia, climate change will not significantly affect the transmission and distribution lines and substations to be constructed. Any increase in temperature should still be within the working limits of the equipment. The proposed line routes and substations are far away from the coastline, so the proposed Project infrastructure can withstand rising sea level and beach erosion.

However, adaptation measures included for the proposed Project, to guard against possible future climate change conditions and to enhance sustainability include; (i) During the levelling of tower foundations and substation base, the highest flood level should be considered to avoid

incidences of flooding. (ii) The tower foundations and substation base should be adequately reinforced (iii) Drainage system of substations should be designed to prevent flood damage. (iv) Determine the tower height and safety clearance around the river, the level and width of river during the rainy season should be considered.

4. Policy, Legal and Administrative Framework

The ESIA's and ESMP's for the various components of the project were prepared in adherence to the national policies, legal and administrative framework and international policies including AfDB Safeguards policies.

The safeguards documents were prepared primarily in consideration of the Liberian Constitution of 1986 which sets the fundamental basis for the protection and management of the environment. The Constitution also encourages public participation in the protection and management of the environment and the natural resources of Liberia which was integral in the development of the ESMP and ARAP.

The National Environmental Policy of Liberia provides the systematic and logical framework by which to address environmental issues. The policy calls for an environmental impact assessment on all major developmental, socio-economic and land use activities in any form which may have adverse effect/impact on the environment to one degree or another. It also sets the benchmark for addressing environmental problems in the medium and long term and the context for financial donor support to particular sector and non-sector projects. The policy demonstrates Liberia's commitment to sustainable management of the environment and natural resources.

The Liberia's National Energy Policy, formulated in February 2007, seeks to ensure universal access to modern energy services across the country, in an affordable, sustainable and environmentally friendly manner in order to foster economic, political and social development in Liberia. The Energy Policy recognizes the fact that energy is essential towards the government's Poverty Reduction Strategy (PRS) and the achievement of the Sustainable Development Goals (SDGs). The principal policy objective is access, quality, cost, and institutional framework such that energy products and services should be available, acceptable, affordable and adequate.

The Act establishing the Environmental Protection Agency of Liberia, the Environment Protection and Management Law, the Act for the Conservation of Forests of Liberia, the Public Health Law, The Natural Resources Law, and Community Rights law in one way or the other, provides for the protection and management of the environment and social fabric of Liberia.

The African Development Bank Integrated Safeguards System Policy, which are the basis of the bank's support to sustainable poverty reduction was reviewed. The objective of the AfDB's policies is to prevent and mitigate undue harm to the local people and their environment in the development process. The policies provide guidelines for the bank's support/funding of projects in the identification, preparation and implementation of programs and projects. Further, the policies provide a platform for the participation of stakeholders in project design, and have been an important instrument for building ownership among local populations for the projects and programs that are implemented by the bank. There are five (5) Operational

Safeguards (Ops) requirements set by the AfDB that the bank's clients are expected to meet when addressing social and environmental impacts and risks and these were applied.

For the implementation of these electricity projects in Liberia, the Ministry of Lands, Mines & Energy and the Liberia Electricity Corporation (implementing agency) are the principle responsible institutions. Other institutions to participate in the implementation or provision of oversight on various issues related to the projects are the Environmental Protection Agency of Liberia, Forestry Development Authority, Ministry of Finance and Development Planning, Lands Commission, the Ministry of Justice, Ministry of Public Works, Ministry of Agriculture, Ministry of Health, Ministry of Commerce and Liberia Water & Sewer Corporation.

5. Enhancement/mitigation measures and complementary initiatives

Mitigation for Occupational Health and Public Safety Impacts: The contractor will be required to develop a comprehensive Health and Safety Plan for the project works. The Contractor shall provide his workers with the relevant protective gears like boots, gloves, protective clothing, dust masks and earmuffs. The ground will also be watered to prevent dust. Warning signs will be expected to be displayed next to excavations and dangerous points and machines so as to restrict the movement of unauthorized personnel on site during construction. All litter and debris will be picked up and disposed in a central disposal site so as to avoid subsequent injuries during and after the construction work is complete. A safety officer will be at the construction site during the construction phase, at all times. The safety officer will make sure a first aid kit is always available and that the workers and the public are aware of the safety rules.

Mitigation for Land Take: An Abbreviated Resettlement Action Plan (ARAP) has been developed for the Monrovia-RIA Corridor. The Summary of the ARAP is provided as an Annex to this ESMP Summary. The ARAP shall be implemented and compensation paid prior to commencement of civil works. No civil works shall commence before the Project Affected Persons are compensated and allowed to relocate from the ROW.

Mitigation for Impacts on Fauna: Bird strikes and collisions with transmission lines can be mitigated by use of refractory conductor wire types which improve visibility for the birds. Other measures proposed include: Mitigation measures that will be implemented to minimize avian and bat collisions include: (i) Aligning transmission corridors to avoid critical habitats (e.g. nesting grounds, heronries, rookeries, bat foraging corridors, and migration corridors). (ii) Maintaining 1.5 meter spacing between energized components and grounded hardware or, where spacing is not feasible, covering energized parts and hardware. (iii) Installing elevated perches. (iv) Insulating jumper loops, placing obstructive perch deterrents (e.g. insulated "V's"), changing the location of conductors, and / or using raptor hoods. (iv) Installing visibility enhancement objects such as marker balls, bird deterrents, or diverters if deemed necessary. (v) Minimizing the vertical distance between shield wire and the highest conductor to the maximum extent.

Mitigation for Impacts on Flora and Natural Vegetation: In order to minimize the environmental impact, it is recommended that clearing is done manually as much as possible with no burning of the cleared vegetation. In order to reduce the impact of firewood used in the worker's camps, it is recommended that wood from the clearings is transported to the camp sites.

Waste Management: As a "good practice", contractors must collect, recycle and dispose of wastes at designated facilities. Sewerage systems are not commonly available in the villages affected by the transmission line, and pit latrines are hence more commonly used in the area. Chemical wastes generated during the construction phase include containers that were used for storage of chemical wastes on site, the chemical residue as well as contaminated material. These materials will be segregated and properly stored and disposed of as hazardous waste. Storage will be placed in a separate area that has an impermeable floor, adequate ventilation and a roof to prevent rainfall from entering. In addition all chemical wastes must be clearly labeled in English, stored in corrosion resistant containers and arranged so that incompatible materials are adequately separated. There will be a prior agreement with the EPA for the disposal of hazardous waste generated.

General refuse generated during the construction phase will be stored in enclosed bins or compaction units separate from construction and chemical wastes. An agreement will be drafted with a solid waste collector certified by the EPA to identify collection sites and schedule the removal to minimize odor, pest infestation and litter build-up. The burning of refuse on the construction site will be strictly prohibited and penalized.

Mitigation for Soil Contamination and Erosion: During the construction phase, accidental discharge of chemicals can adversely affect soil in the area. Mitigation measures include proper storage of chemicals and the installation of natural or synthetic liners beneath chemical storage tanks. Equally important measures include proper surface drainage during both the construction and operation phases, minimization of water and chemical usage (oil, lubricants and fuel), as well as limiting the exposure of the soil to accidental releases of pollutants. Chemicals used on-site should preferably be non-toxic and readily biodegradable. Clearing of vegetation will be limited to where it is strictly needed so as to decrease the risk of soil erosion. Unpaved roads will be graded so that to decrease the risk of erosion during rainstorms.

Other measures include: (i) The contractor will avoid steep terrain during the transportation of construction material by using alternative routes or by the use of light vehicles where appropriate. (ii) Soils excavated for tower foundations will be used for re-filling and will not be left exposed to wind or water for long periods of time. (iii) Heavy machinery will only be used as needed in the clearance of construction work areas in order to minimize soil compaction, which makes the soil susceptible for erosion. (iv) Riverine vegetation will be minimally disturbed during the construction phase to reduce soil erosion and safeguard riverbank protection. (v) Disturbed areas will be replanted with local species common in the area to complement natural vegetation regeneration to improve ground cover. (vi) Gabions, instead of stone walls, will be used. Stonewalls will often increase the erosion risk nearby and may become unstable, whereas gabions will be covered with vegetation in the long run.

Complimentary Initiatives

Gender Mainstreaming: This activity will mitigate and respond to the potential impacts of the project on especially women, children and the vulnerable. It will review the current status and the approach and methodology for addressing gender issues on projects of this sort and monitor the effectiveness of the proposed mitigation measures. The gender monitoring activity will take place during construction and operation, and will recommend new mitigation measures where

those proposed are not effective. Emphasis on collaboration with the Liberia Ministry of Gender Development and local communities will ensure success of the proposed measures.

HIV/AIDS Awareness Campaigns: It is proposed that the activities carried out involve implementation of an HIV/AIDS Awareness/Prevention Campaign. There should be a review of mid-term likely effectiveness of the approach and methods adopted in case new approaches and strategies are deemed appropriate. The activity will thus be re-oriented as necessary to achieve its full potential in lasting benefits to project affected communities by the end of the construction period.

6. Environmental and social monitoring program

Monitoring programs for the various components of the electrification project will be implemented and where necessary and required by regulation, monitoring programs will be initiated to comply with project specific requirements. Against this background, the monitoring programs will continue to evaluate short- and long-term environmental conditions and to facilitate assessment of the effectiveness of mitigation measures.

The monitoring exercises will ensure that the remedial actions recommended in the environmental assessments are incorporated in the project; ensure that remedial measures are maintained throughout the operation of the projects where appropriate; identify additional remedial measures; and identify corrective measures or redesign remedial measures if they are not sufficiently effective.

All major stakeholders in the project components have a monitoring responsibility of some kind. However, the Supervising Agency (The Ministry of Lands, Mines & Energy) and Implementing Agency (The Liberia Electricity Corporation) will have primary roles. The entities to be contracted for the implementation for the project components will also play major roles. Other participating entities will be the Environmental Protection Agency, the Forestry Development Authority, the Liberia National Police, and Local County Officials. Periodic interviews with beneficiaries of the project will also be undertaken to assess their opinions about the effect of the implementation of the project. Table ES-1 below presents a summary of the Monitoring Programs:

Responsible Entity	Parameters to be Monitored	Output
MLME, LEC & EPA	Overall Environmental Performance of the Project (e.g., air, noise, water, water quality, etc.)	• Instruction to Contractor and the Engineer
MLME & LEC	Overall Environmental Performance of the Project / Community relations	• Monthly Environmental Report

Contracting Entities, MLME & LEC Representative	<ul style="list-style-type: none"> • Construction methods and materials • Environmental management of construction sites • Implementation of mitigation measures for air, water, soil, traffic, occupation health and safety, s etc. • Contractor’s waste management. • Rehabilitation of impact areas. • Community relations • Environmental performance of contractor’s equipment • Management of Accidents • Environmental performance of mitigation 	<ul style="list-style-type: none"> • Monthly Performance Report • Incident Reports as and when required: sites rehabilitated, and • Number of materials sites that have achieved restoration to original state, accidents and the like.
The Contractors	<ul style="list-style-type: none"> • Environmental performance of equipment and plants • Implementation of interim and permanent mitigation measures • Base camp management • OHS measures , Air quality, Accidents of any kind 	<ul style="list-style-type: none"> • Maintenance records • Accident Reports • Mitigating actions e.g. traffic signs, safety barriers etc.
Police	<ul style="list-style-type: none"> • Traffic nuisances 	<ul style="list-style-type: none"> • Police reports and instructions to
Community Health Services	<ul style="list-style-type: none"> • Traffic safety measures and accidents • Change of frequency of diseases • Occurrence of new diseases in the area 	<ul style="list-style-type: none"> • Health reports
Local County Officials	<ul style="list-style-type: none"> <input type="checkbox"/> Negative Environmental impacts <input type="checkbox"/> Social disturbance 	<ul style="list-style-type: none"> <input type="checkbox"/> Complaints to Contractor and Supervising Engineer

Table ES-1: Responsible Entities for the Monitoring Programs.

A summary of the monitoring parameters with corresponding location, and frequency is presented in Table-ES-2 and Table-ES-3

Table ES-2 Summary of Monitoring Activities, During Construction Phase

<i>Parameter</i>	<i>Location</i>	<i>Monitoring means</i>	<i>Frequency</i>
Air quality	Construction site and selected receptors	Visual inspection	Continuous
Noise levels	Construction site and selected receptors	Inspection and measurement of noise level (Leq) at selected receptors	Prior to and during construction activities as needed
Water Quality	At nearby surface water body	Visual inspection and routine sampling of surface water body when the Contractor is working in the vicinity of water body	As Needed
Solid Waste Generation and Disposal	Construction site Disposal site	Visual inspection and photographic documentation and audit	Continuous
Surface water		Visual Inspection	As Needed
Soil Quality	At construction site	Visual inspection of soil surfaces and annual sampling of soil at locations where oils, grease and chemicals are stored.	As Needed
Biological Environment	Project site and surrounding areas	Occurrence of key species at start of the project and annual follow-up	Prior to and upon completion of construction activities
Traffic	Construction site and nearby road network	Inspection	Prior to and upon completion of construction activities .Upon complaints.
Health and safety	Project site	Visual inspection ,photographic documentation, review of records	Continuous Daily
Socio-economic	Project site and surrounding areas	Jobs created for local people The effectiveness of acquisition procedure and of compensation disbursement	Continuous

Table ES-3 Summary of Monitoring Activities during Operation

<i>Parameter</i>	<i>Location</i>	<i>Monitoring means</i>	<i>Frequency</i>
Soil Quality	Along the constructed line	Visual inspection for soil erosion	Annually
Noise levels	Along the constructed line	Inspection and measurement of noise level upon complaints	As Needed
Biological Environment	Project site and surrounding areas	Presence of key species, inspection of avian traffic	Annually
Occupational and Community	Project site and surrounding areas	Visual inspection, photographic documentation and review of records	Continuous for employees, Biannually for community.

health and safety			
Socio-economic	Project site and surrounding areas	Jobs created for local people Increased production in sectors and added industries from project implementation Adherence to child labour laws	Continuous

7. Public consultations and disclosure requirements

Adequate public consultations were conducted during the conduct of the ESIA and ESMP studies. For the Paynesville - Schiefflin – RIA component, consultations were held as presented in Table ES-2.

Table ES-2: Public Consultations held for the Paynesville - Schiefflin – RIA component.

Meeting Venues	Location	Dates & Time	Attendances
P.A. Rib House	Airfield, Lakpazee Monrovia	May 8, 2014	Counties Officials, Ministry of Lands, Mines & Energy, Liberia Electricity Corporation, Ministry of Public Works, Environmental Protection Agency, Environmental Consultants
Highway Fellowship of Christian Assemblies	Rehab. Junction, Paynesville	May 17, 2014	Residents of Thinkers Village, Rock Community, Schiefflin, Gbengbar Town, R-2 Community, Duarzon, Joe Bar, Transit Community, Bonjal Community and Margibi County.
Special Project High School	Stephen Tolbert Estate, Gardnersville	May 24, 2014	Residents of 72nd Community, LPRC Community and Gardnersville
St. Edward's Catholic School	Logan Town, Bushrod Island	May 31, 2014	Residents of Bushrod Island

For the Pleebo-FishTown corridor, consultations were also held with the officials of Maryland and River Gee Counties. Consultations were held with residents of various communities along the route. 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 and Ministry of Health.

The concerns raised at all of these consultations were similar. Attendances of the consultations were keen on knowing if they would have access to the electricity or the wiring will only pass over their structures. Residents were also concerned about compensation if their structures would be adversely affected by the project. Residents also requested the time for commencement of the project and the likely environmental impacts they will experience. All of the concerns were adequately addressed by the environmental consultants.

8. Institutional arrangements and capacity building requirements

LEC will ensure implementation of the project ESMP with the support of its environmental staff. Contractors will be held to account for implementation of their responsibilities in the Project Management Matrix. The institutional arrangements for implementation of the ESMP under the project include the following: EPA, LEC, Environmental steering committee, Supervision consultant (Lead environmentalist), Contractor and Project Financiers.

A Project Implementation Unit (PIU) shall be established by LEC, with the primary mandate to oversee the construction contracts. The PIU setup therefore must cover all the functions and be fully in place when field works are about to commence.

To provide the required day-to-day follow-up, coordination and facilitation of the pre-award activities to be performed, the Project Coordinator of the PIU should be recruited and available prior to project commencement.

It is recommended that the PIU be headed by a Project Director who has overall responsibility for the proper implementation of the proposed project components as well as the management and functioning of all the PIU staff and resources. The Director being the head of the PIU is stationed at the LEC head office in Monrovia. The Director is expected to make quarterly visits to the project sites or field offices.

The Environmental & Community Relations Unit (ECRU) shall be set up as a substructure of PIU to deal with environmental and social aspects of the proposed project. An Environmental Coordinator, will be recruited whose primary responsibilities should be the acquisition of Environmental Permits and ensuring of Environmental Compliance by the Project Teams. He/ She is to arrange crop and property enumeration and facilitate the prompt payment of due compensation. He/ She is to ensure adherence to the ESMP and the ARAP and oversee community relation activities.

In order to maintain control over the implementation of the various components of the project and also ensure that commitments made in the ESMP are acted upon in a comprehensive and acceptable manner, an Environmental Management System and Training Program is proposed. This program will help to identify the personnel, responsibilities and training requirements for the projects' Environmental Management Team to be constituted.

9. Estimated costs

The estimated cost of the environmental and social management plan is USD 10,881,275. This includes USD 60,000 for possible compensation for destroyed fields, trees and crops, USD 236,100 for safety from electrocution, USD 40,600 for wild animals and/or birds' safety, [USD 73,000 for Environmental Monitoring during Construction and Operation Phases](#) and USD 9,200,000 for site decommissioning. [Further, for the Monrovia-RIA corridor, USD 44,945 is budgeted for relocation of structures within the Right of Way of the transmission line.](#)

In order to ensure the proper implementation of the proposed environmental plan, it is essential to maintain proper environmental monitoring. Qualified personnel will be designated for this purpose. Table-ES-4 provides a summary of yearly staffing requirements for the implementation of the environmental monitoring plan throughout the project duration. The cost is provided on a per annum basis.

Table-ES-4: Estimated requirements for the implementation of the Environmental Monitoring Plan.

Parameter/Activity	Staff category	Number	Schedule	Cost (USD)
Air quality/Noise/ Quality	Environmental specialist	1	Full-time	20,000
		1	Half time	8,000
Health and safety	Health and safety specialist	1	Full time	20,000
Training	Environmental Scientist/Academician	1	Periodic	15,000
Reporting	Environmental scientist	1	Part-time	10,000
Total annual monitoring cost during the construction and operation phase				73,000

The environmental monitoring plan will be implemented throughout the construction and operation phases.

10. Implementation schedule and reporting

The implementation will be rolled out as required for each project component in line with the construction timetable and frameworks established for surveying and consultation, management and monitoring. LEC will have responsibility for social and environmental aspects of the projects. Supervision will be undertaken monthly by LEC Project Implementation Unit and at least an annual supervision by the Bank. Monthly progress implementation reports will be prepared and these will include reporting on the implementation of the ESMP and ARAP.

11. Conclusion

LEC recognizes that it has a role to play and a responsibility in protecting and enhancing the environment in which the project is to be deployed to meet the needs of the communities without compromising the integrity of the environment and a major disruption of the socioeconomic setup of project affected areas. This Social and Environmental Management Plan has therefore described in detail the processes LEC will follow to maximize its compliance to statutory requirements as well as those of project sponsors and minimize the impacts of the project on the general environment.

The proposed project is of major importance for infrastructure development and the social economic development of Liberia in general. As is expected, such a project will have a few environmental and social impacts in various magnitudes of significances. However, on the

balance, the proposed mitigation measures if adequately implemented will fully mitigate all impacts and also offer some opportunity for enhancing social benefits such as creation of employment for local population and stimulation of the local economy.

Mitigation measures for potential impacts on Air, Water, Land, Soil, Noise, Traffic, Ecology, and Socio-economic have been specified. The mitigation measures and follow up of recommendation on Management actions, will help MLME/LEC in complying with the environmental standards.

References

For the preparation of this summary, the following documentations were reviewed:-

1. Environmental & Social Impact Assessment and Environmental and Social Management Plan for Monrovia Consolidation (66kV/22kV) & RIA Corridor (66kV/33kV) Transmission Line Project Under LEAP 1 Project, April 2015, Prepared by EcoGreen
2. Environmental and Social Impact Assessment and Environmental and Social Management Plan (ESIA and ESMP of the WAPP Project Liberia: Extension of Transmission Lines, Substation Works and Connection Services to the Pleebo – Fish Town Corridor, March 2015, Prepared by TSC Engineering

ABBREVIATED RESETTLEMENT PLAN

Project Title: Liberia Energy Efficiency and Access Project

Project Number: P-LR-F00-004

Country: Liberia

Department: ONEC

Division: ONEC.1

Project Category: Category 2

1. Description of the project, project area and area of influence:

The Government of Liberia through the Ministry of Lands, Mines and Energy (MLME) is undertaking a plan to expand energy services to 70% of the population of Monrovia and 35% of the population countrywide by 2030. To achieve this, Ministry of Lands Mines and Energy has commenced with preparatory work towards the implementation of two double-circuits overhead transmission lines between Roberts International Airport (RIA) and Monrovia as follows:

Monrovia Consolidation 66kV/22kV transmission and distribution lines and substations from Schefflin through Paynesville; Gardnersville; Bushrod to Virginia substation. The 41 km route transverses three Districts (Greater Monrovia, St. Paul River and Mamabah Kabah) with a total number of thirty towns (30). The proposed corridor will consist of 431 towers in total.

RIA Double Circuit 66 kV / 33kV transmission line will run along a 24 km motor road via Marshall to RIA. The route crosses a total number of four major towns within the Mambah Kabah District, and will consist of 136 towers in total.

The Transmission Lines will be rehabilitated and reconstructed and there will be need for replacement of all towers, conductors, and provision of hardware along the existing transmission line right-of-way (ROW). The towers will be designed as double circuit lattice structures outside of densely populated areas, and as monopod tubular poles, in densely populated areas.

2. Potential impacts

The main impacts that will result in displacement of people from either their residences or commercial activities are related to (i) clearance of portion of the ROW leading to the demolition and removal of four (4) structures; and, (ii) use of land for the construction of power stations and towers. The required total width of the ROW for the construction of substations and towers for transmission is 22.86 meters.

Alternatives: Three (3) alternatives to avoid or minimize the economic displacement of members of the communities were considered and not retained: (1) *No Action:* the option would translate into several losses in economic growth; deny local inhabitants the socio-economic benefits from better energy provision; including job opportunities, education, health services, security and use of cleaner energy sources. (2) *Route alternative:* The proposed transmission lines will be reinstalled within existing line routes owned by LEC/GOL and which were functional for transmission and distribution prior to the civil conflict. Utilizing alternative routes for this project would result in greater negative impacts to the biophysical environment, areas and settlements. (3) *Tower location alternative:* As in (2) above, the new towers and those to be rehabilitated are to be located in the same positions along the old transmission lines, and therefore presents a more practical and cost effective option.

3. Socio-economic survey

A total of 64 households were identified on the side of the RoW along the T Line route. However, only 4 structures/households will be directly affected by the project. These structures include two houses that are currently occupied with attached provision shops; a house under construction; and one business center (Auto Spare Parts Shop). Furthermore, a total of 112 business centers are located along the T-Line route. These business centers include shops, gas stations, general community markets, drug stores, and restaurants (locally known as cook shops). Only one, among the business centers will be directly affected by the project.

4. Consultations

Community members including the affected persons were consulted through four (4) formal general meetings held in May 2014. During the meetings Consultants and representatives from the Liberia Electricity Corporation (LEC) presented the Project and its potential impacts on the community, described the alternatives and addressed questions, particularly regarding access to electricity, compensation for demolished structures and; timeframe for commencement of the project. The communities expressed acceptance and welcomed the proposed project.

5. Compensation and resettlement assistance

Four (4) households were identified to be adversely affected by the implementation of the project. Occupants of these households were classified under the following categories: (i) persons who have formal legal rights to land (including fee simple or squatter rights recognized under Liberian law); (ii) those with temporary or leased rights to use land; (iii) persons who do not have formal legal rights to lands or other assets at the time of the survey, but who have claim such legal rights by virtue of occupation or use of those assets and; (iv) persons with businesses within the Project area. Of the three (3) provided compensation options: (1) Cash compensation; (2) Replacement (at full cost); (3) combination of (1 &2). All four identified households prefer cash compensation. For compensation purposes, only the owners of the structures and land are eligible for compensation.

6. Grievance mechanism

A Grievance Redress Committee is proposed, comprising of representatives from Ministry of Lands, Mines & Energy (MLME) as Chair; LEC, EPA, MPW, NGO as Advocate, and members among PAPs. The Committee is to endeavor to mediate disputes likely to arise during the compensation process. The procedure for redress of disputes is outlined as follows: *Stage 1:* Aggrieved person(s) files a complaint with the Ministry of Lands, Mines & Energy (MLME) or Liberia Electricity Corporation (LEC), which will act on it within 7 working days on receipt. The Grievance Committee will hold the meeting with the complainant in attendance. *Stage 2:* If complainant is not satisfied, he/she may make an appeal to Minister of Lands, Mines & Energy which should address the complaint within 5 working days of receipt of complaint; *Stage 3:* Should complainant not receive satisfaction or response from MLME, he/she may resort to legal action in the Court of Law, at own expense. The grievance procedure is otherwise, free of charge.

7. Implementation schedules

The ARAP is to be implemented over a period of 6 months, which is the expected duration for the payment of all compensation packages and resettlement of the PAPs. The plan also takes into account important variables such as resolution of conflicts and grievances and cash flow from Government of Liberia (GOL) to the resettlement process. (MLME) is the main entity in charge of the implementation of the Project, including budget allocation, Monitoring and Evaluation; authentication of titles; and supervision of the ARAP Implementation Committee. LEC will collaborate with MLME as owners of the Project. Environmental Protection Agency (EPA) will ensure environmental and social safeguards compliance with national legislation and regulations. An NGO or a Civil Society Organization will monitor the implementation of ARAP as an independent observer.

8. Costs and budget

A total of Forty Four Thousand Nine Hundred Forty Five US Dollars (US\$44,945.00) is estimated for the implementation of the present ARAP; expected to be financed by the Government of Liberia (GOL) through the Ministry of Lands, Mines & Energy and Liberia Electricity Corporation. The estimated itemized budget is outlined in the table below:

Estimated budget for ARAP: Monrovia Consolidation(66kv/22kv) & RIA Corridor (66kv/33kv) Transmission Line Project.

No.	Item	Unit	Q'ty	Estimated Cost	Source of Funding
Compensation for Affected Structures					
1	Felecia Massaquoi	HH	1	4,000.00	GOL/MLME/LEC
2	Massah Foko	HH	1	9,000.00	GOL/MLME/LEC
3	Amos McClain	HH	1	22,500.00	GOL/MLME/LEC
4	Massa S. S. Crayton	HH	1	4,500.00	GOL/MLME/LEC
Sub-Total (= A)				40,000.00	—
Compensation and Other Assistance					
5	Compensation for Loss of Income (US\$ 200 per HH with commercial structure x 3)	HH	3	600.00	GOL/MLME/LEC
6	Transportation Assistance (US\$ 150 per occupied Residential Structure x 2)	HH	2	300.00	GOL/MLME/LEC
7	Assistance to Vulnerable People	HH	-	-	GOL/MLME/LEC
Sub-Total (= B)				900.00	—
Total (C = A + B)				40,900.00	—
Administration, Implementation, Monitoring and Evaluation					
8	ARAP Implementation Logistics and Administration	L.S.	1	500.00	GOL/MLME/LEC
9	Cost for ARAP Implementation Committee	L.S.	1	1,000.00	GOL/MLME/LEC
10	Internal & External Monitoring	L.S.	1	500.00	GOL/MLME/LEC
Sub-Total (= D)				2,000.00	—
11	Contingency (E = 5% of C)	L.S.	1	2,045.00	GOL/MLME/LEC
Grand Total (F = C + D + E)				44,945.00	

The ARAP Implementation Committee will pay compensation directly to the affected parties. Appropriate mechanism will be put in place to ensure timely flow of funds for the ARAP activities.

9. Monitoring and evaluation

MLME and LEC constitute the internal monitoring team of the defined general and process parameters. The Team shall prepare a Project Implementation Manual detailing the monitoring frequency and content of reports. The results will be submitted to EPA and AfDB as part of

periodical reporting. An NGO or Civil Society in operation in the area will ensure external monitoring of the ARAP.