

Environmental and Social Data Sheet

Overview

Project Name: MOUNT COFFEE HYDRO GEN REHABILITATION

Project Number: 20120342

Country: LIBERIA

Project Description:

The project consists of reconstruction of a 80MW hydro power plant, located on the St. Paul River some 25 km northeast of Monrovia. The hydro power plant was destroyed, dam breached and reservoir emptied during civil war in 1992. The works include two 66 kV, 25 km transmission lines from the plant to Monrovia, and related 66 kV substations.

EIA required: yes

Project included in Carbon Footprint Exercise: yes

Summary of Environmental and Social Assessment, including key issues and overall conclusion and recommendation

For the hydropower plant and reservoir, an Environmental and Social Impact Assessment (ESIA) and a provisional Environmental and Social Management Plan (ESMP) have been prepared to address and mitigate the environmental and social impacts of the construction sites, reservoir and downstream areas. The outline of Resettlement Action Plan (RAP) is provided and will be soon finalised. The request for environmental permit has been submitted to Liberia Environmental Protection Agency (EPA) and is expected to be soon obtained.

Regarding the substations and the transmission lines from Mount coffee to Monrovia, the ESIA and ESMP have been produced and the environmental permit for the transmission lines was awarded by EPA on the 30th July 2012. RAP is under preparation and will be soon finalised.

Procedures and results of ESIA and other studies produced so far include appropriate mitigation, compensation and public consultation measures and are acceptable for the Bank. Disbursement conditions have been introduced in order to have the corresponding licenses on time for the project. The correct implementation of these plans is essential for the success of the project.

The process for elaboration of all the documents indicated above has included public consultation, which is still ongoing, and specific details of this process (stakeholder involvement, meetings, field work...) has been included in the documents produced.

Mt. Coffee hydro power plant is not a new project, but the rehabilitation of a hydropower plant which was operational 20 years ago. Therefore the environmental and social risks related to the project are limited thanks to the fact that the some of the old structures will be reutilised (dam, spillway structures and concrete core of the old powerhouse) and the environmental and social impact of the reservoir area is exclusively related to inhabitants or vegetation appeared during the years in which the plant was not in operation.

Major impacts for this project will be the interruption of St. Paul river continuum and the change from river to lake conditions due to the formation of the reservoir. The reservoir will cover an area of 8.1 km², which will lead to the relocation of six settlements (380 people), and the loss of some areas which are currently used for agricultural purposes, for which compensation measures are foreseen.

Special attention must be taken in order to adopt the most reasonable solution for the residual flow to be released from the spillway and the environmental impact related to the alternative fuel generation necessary to cover the energy not produced due to this residual flow.

The project will allow for estimated emissions savings of 226.000 tons of CO₂ equivalent per year, as this energy would alternatively have to be produced by existing diesel power plants in the country.

The promoter LEC is a recently re-established entity and has limited experience in coordinating, implementing, monitoring, and enforcing the measures as defined in the various plans. This is mitigated through the Project Implementation Unit (PIU) for this project, set up with the support of the ongoing Management Contract to LEC by Manitoba Hydro, which is experienced in managing similar project. In order to reinforce the PIU, an Owner's Engineer will be shortly contracted, who will support on the supervision of environmental and social measures by the contractors.

Additionally, with the objective of reinforcing the environmental and social supervision, an external independent panel of experts will regularly do missions to verify the project's compliance with environmental and social safeguards. This panel of experts will be made of external renowned experts in environmental and social fields, and will report to the owner of the project and the lenders. As recommended by the World Commission on Dams, a dam safety panel would also need to be established this project and will be part of the panel of experts.

The finance contract will include environmental and social conditions as follows:

Disbursement conditions

- Final environmental permit for the hydropower plant should be issued prior to the first disbursement
- The detailed design for the transmission lines in densely populated areas close to Monrovia needs to be resolved. The use of overhead transmission lines or underground cables has been proposed but further studies are required. These studies shall consider resettlement and/or re-routing options, as well as assessing potential health impact of routing the line above existing settlements using higher tower structures. The borrower shall provide the studies to the Bank satisfaction before any disbursement related to power lines component and the start of the line works.

Undertakings

- Final detailed Resettlement Action Plan (RAP) and Environmental and Social Management Plan (ESMP) for the hydropower plant and the transmission lines should be elaborated to the satisfaction of the Bank. In line with the ESMP and the RAP, the resettlements and compensations related to this project need to be implemented to the satisfaction of the Bank 6 months before the impoundment of the reservoir or start of the transmission lines clearance works. The implementation of these measures shall be regularly reported by the promoter to the Bank.
- The promoter establishes a panel of experts with a dam safety specialist and environmental and social specialists for the follow-up of the project safeguards. These experts selected to the satisfaction of the Bank, and need to be in place when the main implementation contracts of the project are signed.
- A solution must be proposed to the satisfaction of the Bank considering the economic and environmental impact of having a residual flow to be released from the spillway and the alternative fuel generation necessary to cover the energy not produced due to this residual flow.

Environmental and Social Assessment

Environmental Assessment

Since 2010, the Promoter, Liberia Electricity Corporation (LEC) through an experienced international consultant, and with support from EIB, KFW and the Government of Norway, has been preparing a comprehensive set of environmental and social studies for the project. These studies were financed through the EU-Africa Infrastructure Trust Fund and were supervised by the West African Power Pool (WAPP).

Terms of reference for these studies were elaborated in line with applicable international guidelines such as the World Bank Operational Policies, the African Development Bank Group's policy on the Environment (Feb. 2004), as well as EIB's Statement of environment and social principle and standards (2009) and environmental and social practices handbook (2010) have been addressed.

National legislation in Liberia, namely the Environmental Protection Agency (EPA) – Act of 2002, requires that an EIA is carried out for all activities and projects likely to have an adverse impact on the environment. The Environmental Impact Assessment Procedural Guideline – EPA 2006 sets out the detailed procedure to be followed for the EIA, which was the one applied for this project.

Studies done include:

- An Environmental and Social Impact Assessment report and a provisional Environmental Management Plan for the Mount Coffee Hydro Power Plant;
- The outline of the Resettlement Action Plan for Mount Coffee Hydro Power Plant, which will soon be finalised.
- An Environmental and Social Impact Assessment, an Environmental Management Plan and a Resettlement Action Plan (soon to be finalised) for the substation in Mount Coffee and the transmission lines from Mount Coffee to Monrovia. These were carried out in the context of the study of the Cote d'Ivoire, Liberia, Sierra Leone, Guinea (CLSG) interconnection. Environmental permit for the transmission lines was awarded by EPA on the 30th July 2012

Additionally, a Cumulative Impact Assessment (CIA) of the hydropower development plan of the St. Paul River basin, where various hydro power plants are foreseen, was also carried out. This CIA analysed the cumulative impacts of planned hydropower cascade, indicating the effects and recommendations and as a final conclusion, it is recommended to prepare in the future an ESIA and ESMP for the entire cascade.

Environmental Impacts

The main environmental impact for this project will be the interruption of the river continuum and the change from river to lake conditions, plus the destruction of terrestrial habitats in the area of the reservoir (8.1 km²) which have developed during the last 20 years in which the power plant has not been operational. It has been estimated that 219 hectares of agricultural fields will be submersed by the project.

The studies have also identified the environmental impacts in agriculture and forestry due to the substation to be built in Mount Coffee, which will occupy an area of 200 m x 200 m, and the transmission lines to Monrovia which will have a corridor of 40 m.

The transmission line routes run in parallel (15 m off the centreline) to existing White Plains Road and Pipeline Road, and along the same routing as the one existing when the plant was operational. For these reasons, the environmental impact for the transmission lines is reduced.

During construction phase, there are potentially some environmental impacts in terms of waste management, water quality, quarry etc. these will have to be monitored through specific plans elaborated by the contractor (construction environmental management plans). These impacts will be smaller than those of dams of an equivalent size, due to being a rehabilitation project where the dam and reservoir will be reutilised.

There is a water intake from St. Paul River to the White Plains Water Treatment Facility. A monitoring program of water quality shall be implemented, and water intake should be stopped at moments when there is too high salt content in the river.

Biodiversity:

The project is not located in any protected area or area of high biodiversity.

Besides the typical direct impacts and risks associated with civil works and new construction (air and noise emissions, wastewater, solid and hazardous waste generation), these construction activities will equally have indirect and induced impacts. These impacts will come from the areas hosting the labour force adding pressure on already insufficient infrastructure and services (i.e. health, education and community safety). The construction works will result in an influx of population which would increase the pressure on natural resources and would lead to an encroachment of the forested areas by agricultural activities.

Submerging 8.1 km² of land, including vegetation, should be compensated through plantation programs in areas near the reservoir. This reforestation would also allow local population to

have access to sources for charcoal (main use of the trees in the reservoir area), as well as improving the habitats for terrestrial fauna.

In order to maintain the aquatic fauna downstream from the dam, residual flow of 8m³/s shall be released from the spillway structure with the objective of maintaining a constant flow during the dry season, and preventing the river from drying up completely. An additional study of river flow conditions should be carried out during first year of operation in order to verify how this flow would be distributed in the river bed.

Fish transfer from downstream of the dam to the reservoir and vice versa is essential for biodiversity and fishery issues up and downstream of the dam. A fish monitoring management plan shall be implemented to review the status of the key fish species. However, fishing activities will be increased thanks to the creation of the reservoir, and will have a positive impact in the economic situation of the inhabitants in the area.

EIB Carbon Footprint Exercise

Minimal GHG emissions (through the release of methane resulting from the decomposition of submerged biomass) are expected to be emitted from the reservoir. This is due to its small (8.1 km²) and shallow (maximum 18m depth) reservoir added to frequent water turnover (almost 200 times per year – leading to retention time below 2 days). The breakdown of biomass in the reservoir area will take place with sufficient amounts of oxygen with very low possibilities of presenting anoxic conditions.

However, in order to minimize these possible GHG emissions, shortly before impounding the reservoir, the contractor shall cut as much vegetation as possible and local population shall use those trees for timber production or these will be burnt, in case there is no economic value for this vegetation. This operation shall also affect positively future fishing and navigating activities in the reservoir, as obstacles and dangers will be reduced.

Regarding relative emissions, estimated emissions savings are 226.000 tons of CO₂ equivalent per year. The baseline which has been selected is the existing diesel power plants in the country.

For the annual accounting purposes of the EIB Carbon Footprint, the project emissions will be prorated according to the EIB lending amount signed in that year, as a proportion of project cost.

Social Assessment, where applicable

A provisional ESMP has been developed for the hydropower plant and transmission lines, detailing the mitigation measures to be implemented in order to reduce the environmental and social impacts. The ESMP includes (i) management of the construction sites; (ii) management of the reservoir and downstream areas; (iii) environmental and social measures.

The area in and around the proposed project has been studied from a socio-economic perspective, using a combination of surveys and direct analysis, as well as a review of existing literature. The total population living in the area of influence of the dam is estimated at about 3,920 people, distributed in 17 communities (not all will need to be resettled, see below). According to the baseline information, key livelihood activities in the area include agriculture, forestry, mining (gold) and fishing.

The project's main impact in the surrounding populations is the destruction of their crops / trees and losing agricultural land. The project shall reallocate the population which will lose their crops and houses, and compensate them prior to taking their land into use.

The major positive social impact will be the possibility of employment for the surrounding population. The project will create a number of both temporary and permanent employment opportunities through the construction and implementation phases. Sourcing of construction workers from the local labour pool, although being encouraged is likely to be limited to unskilled workers due to the technical nature of the work to be undertaken and low population density of the area.

Local infrastructures (road, health, water) will improve for local population. In particular, the road to the dam shall be upgraded in order to be able to use it also during rainy season.

Existing clinics near the dam shall have to be upgraded to health centres to cater for the population which is likely to increase.

This project is intended to have positive impacts for the overall development and growth of the country. In particular it will contribute towards meeting the growing energy demand in the region and assure a greater degree of security of supply.

Involuntary resettlement

Liberia doesn't have an official Resettlement Policy therefore resettlement planning will have to follow EIB social guidelines on involuntary resettlement and World Bank Operational Policy (OP 4.12) on involuntary resettlement, which are internationally accepted.

The presence of 107 households with a total of 380 persons in 6 settlements has been identified in the area of the reservoir. This population will have to be resettled and alternative farm land with comparable productivity found for affected farmers.

There are no villages near the Mount Coffee substation, so it is only along the transmission lines that population will be affected. The transmission lines will go through densely populated areas in Monrovia, such as those near the Paynesville Substation and the Duala market on the Bushrod Island transmission line Right of Way (ROW), with a total of 303 households in currently established in the ROW (equivalent to 1.066 people). However, the proposed design of overhead transmission lines or underground cables is being studied in order to reduce the need of resettlement of population within the ROW.

Adequate resettlement sites for reallocation of PAPs and appropriate compensation policies shall also be established in the final ESMP and RAP. In addition, the provisional ESMP also provides other additional measures to restore livelihoods, including agricultural extension services (training on agricultural techniques, seeds, facilitation of market access, animal husbandry and nutrition), and support to fishermen which shall also be implemented.

Vulnerable groups

Resettlement especially stresses on persons and households that are vulnerable (without adequate income, sufficient family support, highly dependent due to age, poor female-headed-households or elderly poor). Special measures are regarded in the ESMP for selection and targeting assistance to vulnerable groups during the implementation of the project.

Labour Standards

Supply of unskilled and skilled local labour for the construction stage will be maximised to the extent possible through the implementation of a local hiring programme, while at the same time addressing potential induced impacts generated by influx of people looking for jobs at the site.

Specifications for labour will be included in construction contract. These include provisions not to engage in any child or forced labour, grievance redress process for workers and freedom of association, among other relevant issues.

During operations, the Project will require a very limited workforce. Construction work will be undertaken in line with working time regulations of Liberian law.

Health and safety

The detailed design for the transmission lines in densely populated areas close to Monrovia needs to be resolved. The use of overhead transmission lines or underground cables has been proposed. A detailed study shall be carried out and the solution needs to be in line with best practice for the health and safety of the population, and satisfactory to the Bank.

Construction activities in each of the sites (reservoir, the power plant, substations and transmission lines) could potentially have negative impacts in terms of health and safety of the workers, as the construction activities will attract population from outside the region. A screening of new workers arriving, as well as monitoring of hygiene standards will reduce the impact of the potential introduction of new parasites, proliferation of vectors or increased health risk behaviours.

Each contract shall require the contractor to prepare a contractor ESMP before starting works (including a health and safety programme). Management of the construction sites aims to

minimize impacts on the environment, the workers, and on neighbouring populations. A traffic management plan shall be elaborated in order to prevent accidents during construction phase and rehabilitation of the road to the plant. Possible impacts in water quality from the construction phase shall be minimized by strict measures which will prevent pollution of water sources

During exploitation phase, this project should have a positive impact in the area by raising water supply and health coverage thanks to the facilities created during the construction phase. Existing clinics in the area should be upgraded during construction phase and maintained during exploitation phase. Equally, improved water quality and sanitation should be part of the measures taken for the communities near the reservoir and power plant.

A health and safety management plan shall capture all these activities and shall be implemented and monitored during construction and exploitation phases.

Public Consultation and Stakeholder Engagement, where required

Stakeholder engagement has been carried out throughout the ESIA process, through formal and informal public consultation meetings, household surveys, and informal unscheduled discussions.

There were meetings with various agencies (Ministry of Agriculture; Ministry of Lands, Mines and Energy; Forestry Development Authority; EPA...), village authorities and population affected by the project. Mass meetings were carried out in the affected area with the objective of discussing the project. These meetings have been documented in the ESIA and the information used to develop an understanding of the impacts and the mitigation measures.

Public participation process is still on-going, and direct contacts with affected communities are being prepared for the final ESMP, RAP and as part of the official ESIA procedure.

Other Environmental and Social Aspects

Monitoring and Evaluation:

A supervision and monitoring framework to ensure that the environmental and social activities are carried out has been outlined in the documentation of the provisional ESMP.

LEC, as project owner, has established a Project Implementation Unit (PIU) for this project which is supported by an experienced hydro utility (Manitoba Hydro Ltd). This PIU shall be staffed with an environmental manager, a social manager and a community liaison manager. In order to further reinforce the PIU, an Owner's Engineer will be recruited (process under procurement) and will support the PIU on the supervision of the contractor's implementation of the ESMP. Its structure will contemplate environmental and social specialists.

Monitoring by a panel of experts will be done on a regular basis, and it will be composed of a dam safety expert, an environmental and a social expert. These experts will check compliance with environmental and social safeguards and the main elements related to dam safety. Visits to the project shall be carried out at least twice a year, with corresponding reports on observations and recommendations which shall be submitted to LEC and to the lenders.

Liberia's Environmental Protection Agency (EPA) will monitor environmental aspects of the project and carry inspections of its own.

Contractors for the hydropower plant and the transmission lines shall each have an environmental manager, a health, safety and security manager, as well as adequate medical personnel.