

THE REPUBLIC OF RWANDA



MINISTRY OF INFRASTRUCTURE

P.O.BOX 24 KIGALI

RWANDA ENERGY GROUP (REG)

RWANDA UNIVERSAL ENERGY ACCESS PROGRAM (RUEAP)

Rwanda Transmission System Reinforcement and Last Mile Connectivity Project

FINAL REPORT

ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK (ESMF)

Kigali, June 2020

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LIST OF ACRONYMS

| | |
|-----------|---|
| EA | : Environmental assessment |
| AFD | : Agence Francaise de Développement |
| AfDB | : African development Bank |
| CFL | : Compact Fluorescent Lamp |
| DP | : Development Partner |
| EAQIP | : Energy Access and Quality Improvement Project |
| EARP | : Electricity Access Roll out Program |
| EARP | : Electricity Access Rollout Program |
| EASSDP | : Electricity Access Scale-Up and Sector Wide Approach Development Program |
| EDCL | : Energy Development Corporation Limited |
| EHSP | : Environmental Health and Safety Plan |
| EIB | : European Investment Bank |
| EICV | : Integrated Household Living Conditions Survey |
| ESF | : Environmental and Social Framework |
| ESIA | : Environmental Impact Assessment |
| ESIA | : Environmental and Social Impact Assessment |
| ESMF | : Environmental and Social Management Framework |
| ESMP | : Environmental and Social Management Plan |
| ESSs | : Environmental and Social Standards |
| EU | : European Union |
| GIIP | : Good International Industry Practice |
| GoR | : Government of Rwanda |
| GRMC | : Grievance redress mechanism committee |
| IDA | : International Development Association |
| LV | : Low Voltage |
| MINECOFIN | : Ministry of Finance and Economic Planning |
| MININFRA | : Ministry of Infrastructure |
| MoE | : Ministry of Environment |
| MV | : Medium Voltage |
| NST1 | : National Strategy for Transformation one |
| OFID | : OPEC Fund for International Development |
| PAP | : Project Affected People |

| | |
|-------|--|
| PCB | : Polychlorinated Biphenyls |
| PIU | : Project Implementation Unit |
| PIU | : Project Implementation Unit |
| PPE | : Personal Protective Equipment |
| RUEAP | : Rwanda Universal Energy Access Program |
| RAP | : Resettlement Action Plan |
| RAPEP | : Rwanda Association of Professional environmental Practitioners |
| REMA | : Rwanda Environmental Management Authority |
| RoW | : Right of Way |
| RPF | : Resettlement Policy Framework |
| RURA | : Rwanda Utility Regulatory Authority |
| Rwf | : Rwandan Franc |
| SMART | : Specific, measurable, achievable, realistic and timebound |
| ToR | : Terms of Reference |
| WB | : World Bank |

EXECUTIVE SUMMARY

Program context

The Government of Rwanda (GoR) through the Ministry of Infrastructure (MININFRA), with the funding from the World Bank/International Development Association (IDA) and other Development Partners (DP) namely African Development Bank (AfDB), European Investment Bank (EIB), OPEC Fund for International Development (OFID) and Saudi Fund for Development, Korean Economic Development Cooperation Fund (EDCF) and Agence Française de Développement (AFD), is developing a program titled “Rwanda Universal Energy Access Program which comprises two projects namely Rwanda Energy Access and Quality Improvement Project (EAQIP)” financed by World Bank and is expected to be co-financed by AFD (joint co-financing), the OFID (parallel co-financing), SFD (parallel), and the Korean Fund for International Development (parallel); Rwanda Transmission System Reinforcement and Last Mile Connectivity to be financed by AfDB and which will be financed by EIB under parallel financing. This multi-donor energy sector investment financing program will support the Government of Rwanda’s energy access objectives during this period of the National Strategy for Transformation (NST1; 2017-2024). The multi-donor program would have a total volume of an estimated US\$ 472,297,098 and EUR 182 million. The total IDA investment would be US\$155 million and US\$ 4-6 million in carbon finance from the Carbon initiative for Development Trust Fund and AfDB investment would be US\$ 276 million, spread across four components of grid electrification, improving grid reliability and efficiency, advancing off-grid energy and clean cooking, and providing technical assistance, capacity building and implementation support. The program will also receive the funds from other development partners where EIB investment financing would be EUR 100 million, AFD loan of EUR 80 million and The OPEC Fund for International Development and the Saudi Fund for Development with US\$ 40 million investment financing.

The Program Development Objective is to improve access to energy and efficiency of energy service delivery to households, businesses and public institutions in Rwanda.

The program has four main components:

Component 1: **Increasing access to grid electricity** which will increase access to Households within 27 administrative districts composing four provinces of Rwanda namely Eastern, Western, Southern and Northern Province.

Component 2: **Improving grid reliability and operational** efficiency which will include the following subcomponents: 1) Rehabilitation of the Ntaruka Hydro Power Plant; 2) Installation of

automatic voltage regulators on 220kV, Installation of power system stabilizers and governing systems on main generators;3)Building of GiS system; 4) Completing installation of smart metering for all distribution transformers and medium/large customers; 5) Substation upgrades, connections of feeders to substations, and rehabilitation (Nyamata, Rutongo, Gikomero and Kanombe, Shango); 6) Upgrade of Karisimbi 6.6kV line to 30kV; 7) Upgrade and extension of different MV lines for improved supply; 8) Improving Quality Of Power Supply In Distribution System; 9) Upgrade of single to three phase lines countrywide; 10) Demand stimulation; 11) Transmission lines and associated substations; 12) Upgrade of substations; 13) Transformer upgrades and 14) Kigali Distribution Rehabilitation.

Component 3 of **Catalyzing private investment in off-grid electricity access and clean cooking** with the following subcomponents: 1) Results-based financing for off-grid solar solutions and clean cooking solutions; 2) RETF grant from Clean Cooking Fund; 3) Carbon Financing; and 4) Results-based financing and potential credit facility for clean cooking

Component 4 of **Technical assistance, institutional capacity building, and implementation support which includes as subcomponents:** 1) Technical Assistance.; 2) Capacity building.; 3) Implementation Support; 4) Project Operations and Consultancy Services and 5) Technical Assistance: Implementation support to PIU for the components under EIB financing.

Rationale for ESMF and other Program safeguards documents that supplement it.

The ESMF sets out clear procedures and mechanisms as well as practical approaches to ensure the compliance of the subprojects/project activities with National laws and requirements of the Development Partners. This project entails a greater range of investments; hence the ESMF was prepared as a framework compatible with World Bank Environmental and Social framework and AfDB Integrated Safeguards System. The ESMF is also in line with requirements of the Environmental Law (No. 48/2018 of 13/08/2018) determining the modalities for protecting, conserving and promoting the environment in Rwanda, and the Ministerial Order No 001/ 2019 of 15/04/2019 establishing the list of projects that must undergo environmental impact assessment, instructions, requirements and procedures to conduct environmental impact assessment. The WB Environmental and Social Standards (ESSs) triggered by the project are mainly ESS1 (Assessment and Management of Environmental and Social Risks and Impacts), ESS2 (Labour and Working Conditions), ESS3 (Resource Efficiency and Pollution Prevention and Management), ESS4 (Community Health and Safety) and ESS 5 (Land Acquisition, Restrictions on Land Use and Involuntary Resettlement), ESS6 (Biodiversity Conservation and Sustainable Management of Living Natural Resources), ESS8 (Cultural Heritage)and ESS10 (Stakeholder Engagement and

Information Disclosure). **Other Program safeguards documents that supplement this ESMF** include WB ESS, WB EHSG (World Bank Environmental Health and Safety Guidelines), AfDB Operational Safeguards, RPF, projects ESIA, RAP, ESMP, and EHSP (Environmental Health and Safety Plan).

Framework Environmental and Social Management Plan (ESMP): Framework ESMP provides guidance on procedures to be followed and standards to be met in implementing the RUEAP which should agree with national and Development Partners safeguard provisions. Institutional arrangements with clearly defined roles and responsibilities as well as monitoring protocols to be followed are presented to ensure that the required provisions are adhered to. The ESMP in this ESMF was prepared considering the activities of the proposed subprojects and activities and their impact mitigation measures were subdivided into four phases including activities in Planning Phase, Construction Phase, Operation Phase and decommissioning phase. The details about the format and the content of ESMP are found in the table 14 and Annex 4 of this ESMF.

Potential Environmental and Social Impacts and Mitigation Measures

According to the WB ESF (Environmental and Social Framework), the program's environmental and social risk rating is substantial considering the anticipated risks and impacts associated with construction of (medium-voltage) power distributions lines (component 1), Improving grid reliability and enhancing operational efficiency (component 2), distribution of solar system and clean cooking solutions (component 3). It also considers technical assistance that involves sector performance improvements and forward-looking options for sector development; capacity building in planning, skills development, audit and compliance; and policy and regulatory improvement and entrepreneurship development, including targeted training for women entrepreneurs under clean cooking solutions (part of component 4), among others. According to the law regulating Environmental Impacts Assessment in Rwanda the project involving the construction of HV (High Voltage) lines, MV (Medium Voltage) lines and Hydro dams is subject to full Environmental Impact Assessment. The project activities will involve construction of MV and LV lines within 27 administrative districts distributed in four provinces of Rwanda (East, West, North, West) under component 1 and Kigali Distribution Rehabilitation with focus on Upgrade & Extension of Medium Voltage lines with transformers and renovation of existing MV/LV cabins & New MV/LV Cabins (electrical installation & civil works) which will be covered by EIB under component 2. Further the program will involve the rehabilitation of NTARUKA HPP and construction of Transmission lines, upgrades of substations/transformers and upgrade from single phase to three phases countrywide.

It is anticipated that the construction of MV and LV lines will imply 24,530 connections within trade centers as first priority and 121,470 connections as second priority throughout 27 districts

with 3,920km of MV lines, 9,265km of LV lines and 3,066 transformers in 4 provinces of Rwanda namely East, West, South and North, and this will be subject to Environmental and Social Impact Assessment according to Ministerial Order No 001/2019 of 15/04/2019 establishing the list of projects that must undergo environmental impact assessment, instructions, requirements and procedures to conduct environmental impact assessment which stipulates that all projects involving the construction of MV and HV lines must undergo a full Environmental and Social Impacts Assessment. For each of these project components, the assessment should be done to analyze the project impacts on natural environment (air, water, soil, fauna, flora) and socioeconomic and cultural environment. Especially for component 2, ESIA and RAP is being prepared for transmission lines and Environmental audit is being prepared for NTARUKA HPP for their particular adverse environmental and social impacts. For all project components the mitigation measures will be developed in Environmental and Social Management Plan (ESMP) in compliance with World Bank Environmental and Social Standard 1 (ESS1): Assessment and Management of Environmental, Social Risks and Impacts and AfDB Operational Safeguard (OS) 1 of Environmental and social assessment and National Environmental law 48/2018 of 13/08/2018.

Positive Impacts

In the construction phase there will be temporary employment opportunities for local contractors and those who will be employed or supply services and provisions for workers and to contractors. Within the respective project areas there will be opportunities for petty trading and small business service provision along the construction of power electrical line in component 1, NTARUKA HPP rehabilitation, Substation upgrades, connections of feeders to substations, and rehabilitation (Nyamata, Rutongo, Gikomero and Kanombe, Shango); Upgrade of Karisimbi 6.6kV line to 30kV; Upgrade and extension of different MV lines for improved supply, Improving quality of power supply in distribution system; upgrade of single to three phase lines countrywide and demand stimulation, transmission lines and associated substations, upgrade of Bugesera industrial park substation (3*30 MVA); Transformer upgrades and Kigali Distribution Rehabilitation in component 2, .Furthermore the component three of Catalysing private investment in off-grid energy and clean cooking will create many employment opportunities for private sector companies, local people who will be hired and especially targeted women entrepreneurs who will receive the capacity building to be motivated to take part in the business of clean cooking solutions. It is proposed that the off-grid and clean cooking subcomponents could also benefit from World Bank Carbon Initiative for Development (Ci-Dev), which is a result-based financing (RBF) instrument that makes payment against certified emission reductions (CER) resulting from the sustainable dissemination of off-grid solar home systems and improved and clean cookstoves envisaged under Component 3.

Some of social benefits includes the enhancement of electricity supply services in the trading centres and small industries like sawmills and joineries, grain mills and other agricultural processing businesses which need electricity for efficient production. The long-term direct positive impact is therefore the access to reliable electricity supplies, which will lead to better provision and easier management of goods and services and enable new facilities for processing and storage.

Social and environmental costs, not least in noise and air pollution, associated with existing generator usage and kerosene lamp will be reduced and there will be a more limited requirement for firewood cutting and collection which will reduce indoor air pollution and contribute to the long-term environmental pollution control through the reduction of CO₂ emissions and fossil fuel use.

Adverse impact

The program is expected to have some adverse environmental impacts, but all of them will be mitigated to the extent possible to avoid any harm that this may cause to the environment. The component 1 is expected to have different environmental impacts on vegetation resulting on bush clearing, soil and water contamination resulting on the use of machinery fuel and lubricants, contamination due to the unsafe waste disposal, landscape deformation and land degradation due to different excavation works, noise pollution due to the use of heavy vehicles and machines and air pollution due to the burning of fossil fuel among others. The component 2 of Improving grid stability and operational efficiency which will involve NTARUKA HPP and its associated facilities which are transmission, substations/transformers will have negative environmental impacts such as noise pollution Reservoir sedimentation, changes to hydrological flow, generation of hazardous and non-hazardous wastes, its subcomponent of transmission will also have many adverse impacts including bush clearing, disturbance on biodiversity, change on landscape, land use restriction, permanent land acquisition for tower location and possible physical displacement. This subcomponent will be funded buy AfDB and the program is preparing the ESIA for that specific subcomponent due to its enormous adverse impacts associated with it while Environmental Audit is being prepared for impacts related to NTARUKA HPP. The component 3 and 4 will have environmental impacts related to waste generation from used solar panel, batteries and accessories, TA which will develop policy and regulatory including the review of tax tariff may have impacts related to the increase of CO₂ emissions due to the promoted fuel type, increasing the pressure on the forest through increasing population depending on the firewood due to the increased and unaffordable prices, loss of employment for people who were working previously in the charcoal sector due to the increment in taxation on the charcoal, unemployment caused by taxation increase on charcoal and decrease on the clean cooking stove due to the promotion of environmental protection through energy efficiency. All of these will be mitigated efficiently.

The program is also expected to have social and cultural impacts resulting from the temporary loss of access to land or property due to the construction works within the right of way, crop destruction in the Right of Way, aesthetics and visual related impacts, damage and loss of physical cultural properties, workers health and safety related impacts due to potential construction, operations and maintenance and camp installation. The impacts are limited to the specific project areas, minimal and minor in scale and in terms of magnitude and should be adequately mitigated through the preparation of appropriate ESMPs, EHSPs and RAPs whenever required. The ESIA and RAP is being prepared for the subcomponent of transmission which may present adverse social impacts and need to be discussed and approved before the launch of that specific component.

The following laws, policies and frameworks were reviewed and discussed in the details for their relevancy to the program:

- Ordinary Law N° 43/2013 of 16/06/2013 Governing Land in Rwanda, Repealing Organic Law N° 08/2005 of 14/07/2005 Determining the Use and Management of Land in Rwanda;
- National Strategy for Transformation one (2017-2024) _NST1;
- Law N° 66/2018 du 30/08/2018 Regulating Labour in Rwanda;
- The Law (No. 48/2018 of 13/08/2018) on Environment determining the modalities for protecting, conserving and promoting the environment;
- Ministerial Order N° 001/ 2019 of 15/04/2019 establishing the list of projects that must undergo environmental impact assessment, instructions, requirements and procedures to conduct environmental impact assessment.
- Law No 32/2015 of the 11/06/2015 relating to Expropriation in the public interest
- World Bank Environmental and Social Framework and associated Standards (ESSs);
- AfDB Integrated Safeguards System and associated Operational Safeguards (OS);
- The constitution of the Republic of Rwanda of 2003 revised in 2015;
- Law no 32/2015 of 11/06/2015 relating to expropriation in the public interests;
- Ministerial order No2 of 17/05/2012 determining conditions for occupational and health safety;
- Regulations No 002 of 26/04/2018 governing e-waste management in Rwanda;
- Guidelines on the management of waste disposal site/dumpsites (landfill) ;

- National wetland conservation program;
- RURA Guidelines for Right of Way in Rwanda;
- MININFRA, Biomass energy Strategy, A sustainable path to clean cooking solution 2019-2030

Program Coordination, Implementation Arrangement and Budget

The REG is responsible, inter alia, for monitoring the status of the projects activities and take action needed for safe implementation. REG has established Project Implementation Unit (PIU) in its subsidiary of EDCL within its Investment Projects to monitor and control the implementation of the Projects. The PIU is responsible for ESMF development and approval and control over its implementation and advise to REG and Contractor on compliance with all DPs Safeguards policies, WB Environmental and Social Standards, African Development Bank Group's Integrated Safeguards System and national laws in the field of environmental and social protection during all project activities. The PIU will carefully analyze the program scope, their availability to the project activities and their capacity for the successful implementation of the program and its ESMF. If need be, they can suggest additional supporting staff for the program and ESMF implementation. The component three will be managed by both BRD and EDCL where EDCL will be the technical counterpart, while BRD will administer and disburse the RBF funds.

The total budget for the implementation of this ESMF is estimated at 400,000 USD. The key indicative aspects include (1) Training and capacity building for the project PIU; (2) Training and capacity building for District Environment Officers and project liaison officers, contractor staff and supervisor staff training, including the supporting staff; (3) Meetings and consultation with PAPs and local communities; (4) Personal protective equipment; (5) Preparation of ESIA's for grid extension; (6) Preparation of site specific ESMPs; and (7) Implementation of Environmental and Social Management Plan (ESMPs), Monitoring and evaluation of ESMPs, and grievance redress mechanism. More about the budget may be found in the table 21 of this ESMF.

Monitoring and Evaluation Framework

The arrangements for monitoring the ESMF and site specific ESIA's/ESMPs will fall under the overall responsibility of the REG-EDCL PIU and Districts. Monthly monitoring and annual evaluations will be conducted to determine whether the monitoring and mitigation measures proposed in the ESIA's/ESMPs for the subproject components will be implemented effectively by the project implementing agencies.

Capacity Building and Training

Effective implementation of the ESMF will require capacity building of the dedicated E&S Specialists at EARP and hiring Energy Project liaison Officers at the district REG branches. EARP currently has an Environmental and a Social Specialist dedicated to World Bank projects. They have yet to receive the ESF training, however. While they are expected to be able to handle the workload of Bank projects in terms of supervision, they will need to be supported by Energy Project liaison Officers in the field. The hiring of Energy Project liaison Officers in each of the REG district branches will provide daily support and supervision of Supervising Engineers and Contractor E&S compliance. The newly recruited Energy Project liaison Officers should receive training on the ESF as well as on Occupational Health and Safety (OHS) so that they are familiar with Bank policies and requirements.

At present, EDCL has one OHS Specialist that looks at OHS compliance for all EDCL implemented projects in Rwanda. A dedicated OHS Specialist should be hired at EDCL/EARP for RUEAP who would be responsible to ensure OHS compliance and follow up with Supervising Engineers and Contractors, supported by the district Energy Project liaison Officers. This person would be responsible for ensuring that the commitments in the Labor Management Plan (LMP) and the OHS Plans are upheld.

One key bottleneck involves the processing of compensation files by EDCL Expropriation Clerks. Compensation files are prepared by the Contractors' independent valuers, in collaboration with district valuers, who verify compensation amounts. The files are then transferred to EDCL (under REG), which further verifies and clears the files and sends them to MINECOFIN for payment directly to the project affected persons (PAPs). EDCL currently has 15 Expropriation Clerks who review all files received for all EDCL-implemented projects in Rwanda. While EDCL Expropriation Clerks have strong experience with compensation, the large workload envisaged under this project could result in compensation delays based on current implementing project, at this point, the EDCL shall dedicate Expropriation Clerks assigned to only World Bank-financed projects to facilitate the process and avoid the aforementioned delay.

The RUEAP will fund the training of EARP safeguards staffs and the main objective of the training is to support the EARP and contractors staffs especially their safeguards to develop capacity and in the medium term to have in-house capacity to mainstream safeguard activities with specific skills in integrating environmental and social considerations early in the design concepts such as the design of distribution and transmission lines and transformers and during surveys and program supervision.

For effective implementation of the programme, district/local level environmental officers will be trained and called for their full involvement in project implementation whereby supervision and

monitoring of environmental safeguards requirements in subproject construction and operations are among the duties.

It is also expected that environmental and social considerations will be taken into account in the contracts between RUEAP and contractors. The contract should include a clause on training requirements and other necessary support services to implement the mitigation measures.

ESMF Preparation, Approach and Methodology

The safeguard team has reviewed the relevant guidelines, policy, regulatory and institutional framework related to ESMF in the context of the Rwanda Universal Energy Access Program (RUEAP). These include guideline and environmental safeguard from the World Bank, international goals, treaties and conventions on environment, AfDB ISS and national regulatory and institutional framework that can influence or be influenced by the implementation of RUEAP. This helps to elucidate problems that will need special attention during the implementation of this program.

This ESMF establishes procedures and forms for individual subprojects at the stage of their implementation. Whereas REG will play the overall coordination of implementation of this ESMF, Contractors, Subcontractors, Stakeholders in different sectors will play a big role in its implementation. The stakeholder engagement plan was done and part of it is incorporated in this ESMF to show the results of Public consultation done and what they have committed to help the program.

Disclosure and Public Consultation of ESMF and ESIA/ESMPs

Before the implementation of the subprojects/project activities, the ESIA/ESMP for each subproject shall be prepared to guide the subproject design, construction and operation. As required by WB ESSs under ESS 5 and 10, the ESMF, ESIA and ESMP are to be disclosed to public stakeholders. If new information arises out of public hearings (may occur in parallel) for the ESMP to be updated, such update shall be made for contracted companies on a mandatory basis. The ESMP may be adjusted/updated by the successful contractor with due account of the contractor's equipment, technology, status of the facility, baseline conditions, etc. These updates shall be communicated to the PIU and be subject to approval from the PIU and the Bank prior to the implementation. The PIU/the Bank would decide whether these updates are substantial enough to trigger additional public hearings. The draft Environmental and Social Management Framework will be disseminated to different key stakeholders (Ministries, Districts and surrounding communities) for the purpose of disclosure and holding of public hearings. The public consultation

for this ESMF was carried out in 27 administrative districts within the four provinces of Rwanda and different relevant institutions from 20th January 2020 to 26 February 2020 and the result of public consultation showed that this program is urgently needed by the population but also some issues were raised concerning the delay in compensation payment. All stakeholders consulted promised to support the program as indicated in the Annex 7 of Public consultation outcomes.

I. INTRODUCTION

1.1 Background

Energy is the backbone of the development. Energy sector plays a pivotal role in supporting socio-economic transformation and has an inherently systemic link to the growth of other sectors of the economy and contribute to the abatement of environmental pollution through the reduction of firewood, generator fossil fuel and kerosene lamp usage. Energy sector act as a boost to the development of other sectors. To this effect, one of the objectives of the First National Transformation Strategy (NST1) is to scale up electricity generation and improve quality, affordability and reliability. Generation plans will be informed by medium and long-term projections and analysis of supply and demand. Long-term generation plans will include identification of least cost sources of energy generation with the objective of ensuring a cost-reflective and competitive tariff. A pro-active strategy will be developed to attract industries for economic growth and to ensure that they are supplied with available, reliable and affordable electricity. Key sectors of focus to increase demand include mining, manufacturing, ICT and commercial premises. Quality of electricity will be improved by continuing investments in network upgrading and strengthening as well as investing in loss reduction projects. Priority will be given to productive use connections such as trading centres, industrial zones, and other socio-economic facilities such as schools and health facilities.

The aim of establishing the ESMF is to set up a mechanism in the determination and assessment future potential environmental and social impacts of the RUEAP, and thus set out mitigation, monitoring and institutional measures to be taken during implementation and operations of the proposed investments/activities and to eliminate their adverse environmental and social impacts, offset them, or reduce them to acceptable levels.

The GoR is also further required to disclose the ESMF in-country as a separate and standalone document so that it is accessible by the general public, local communities, potential project affected people, local Joint Action Development Forum (JADF) and other stakeholders. The document must also be available on the World Bank external website and the date for disclosure must precede the date for appraisal of the Project under this program.

Rwanda Development Board is responsible for the screening, review and clearance of planned investment subprojects prior to implementation. The use of this ESMF by REG will be the instrument through which the subprojects environmental and social impacts are identified, assessed, evaluated and have appropriate mitigation, management and monitoring measures,

designed and incorporated within the subprojects. The World Bank assesses if the latter have been complied with its Environmental and Social Standards (ESSs) requirements.

Over the period of 2012 to 2018, the electricity generation increased by 72% and the access to electricity has improved but it is still substantially lower than target, the rural households with access to electricity increased from 5% to 27% over the same period.

In view of above, the Government of Rwanda is designing the Universal Energy Access Program to enhance the electricity supply, improving grid reliability and operational efficiency, advancing off-grid energy and clean cooking solutions, among others.

To address environmental and social issues of RUEAP, this ESMF has been prepared based on the GoR's policy and legal frameworks, WB ESF and ESSs applicable to the program and AfDB ISS. In addition, social instruments (such as Resettlement Policy Framework (RPF) have been prepared to address key social issues of the program.

1.2 Study objectives

The main objective of this assignment is to develop an environmental and social management framework (ESMF), including the collection of all required data, information and materials. This shall provide clear, comprehensive and practical guidance to REG through its subsidiary of EDCL to integrate environmental and social considerations into the program.

The specific objectives of the study are to:

- (i) Identify all relevant potential environmental risks and social concerns that may arise as a result of the project and the subprojects that it will support;
- (ii) Specify appropriate roles and responsibilities of involved stakeholders in the implementation of the ESMF;
- (iii) Develop subproject review procedures as well forms, guidance and checklists to apply technical input for the subprojects;
- (iv) Develop a screening procedure to identify the environmental and social issues associated with the subprojects;
- (v) Prepare generic ESMP that can be applied to manage the identified environmental and social risks and set out the monitoring plan that will be undertaken to confirm correct ESMP delivery;
- (vi) Develop the Term of Reference (ToR) for appropriate safeguards instruments (such as ESIA) as appropriate and required;

- (vii) Review and make an assessment of the capacity of the national project implementation entities, to screen subprojects and monitor the implementation of the project ESMP; and make proposals for capacity enhancement as appropriate;
- (viii) Provide estimates for the budget required for project ESMP implementation;
- (ix) Develop a public consultation and stakeholder engagement strategy;
- (x) Define appropriate environmental and social standards performance indicators; and
- (xi) Provide practical information resources for implementing the ESMF

1.3 Scope of work

Task 1: Preparation of an ESMF for Rwanda Universal Energy Access Program(RUEAP) that ensures that enough guidance is provided to MININFRA, REG through EDCL and contractors in the selection, preparation and implementation of programme activities in order to avoid or minimize environmental and social risks and negative impacts and enhance the environmental and social performance.

This will be accomplished through the development and application of proper selection criteria for specific investment projects, planning that takes into account environmental and social criteria, sound, implementation and monitoring, disclosure, consultation and feedback. To achieve this objective, the safeguards will carry out the following tasks through research, interviews and fieldwork:

- (i) Based on a detailed description of the project, its components and the design of specific activities as set-out in approved project documentation, assess the likely environmental and social risks associated with each component and potential subproject;
- (ii) Conduct field visits to different districts and commercial centres to assess social and environmental site conditions, practices (including level of compliance with existing social and environmental safeguards legislation and regulations) and verify potential risks and impacts;
- (iii) Develop and provide guidance on environmental and social criteria to be used during the identification and selection of sites or any other area of project operations where social and/or environmental risks are apparent. Also develop a negative list of activities and potential subprojects not recommendable for support, due to their poor environmental or social performance;
- (iv) Compile a summary of key domestic legislative, regulatory and administrative regimes, within which the project will operate, with a focus on requirements that will apply to the planning,

approval and implementation of subprojects. Provide an overview of the above legislation in relation to the World Bank environmental and social standards, and make recommendations to address the gaps with respect to the project;

- (v) Establish a clear understanding of the institutional requirements, roles and responsibilities for adopting and implementing the ESMF. Importantly, this should include a thorough review of the authority and capacity of implementation entities to manage and monitor ESMF implementation. The ESMF should also consider relevant implications for management procedures, training, staffing and budgeting;
- (vi) Develop a screening and assessment methodology for potential subprojects, that will include environmental and social performance criteria, allow an environmental/social risk classification and the identification of appropriate safeguards instruments;
- (vii) Develop a stakeholders' consultation and engagement strategy that ensures the involvement of all identified stakeholders and potentially affected persons. The process should put in place mechanisms and plans for information dissemination and disclosure of program related information, as required by the World Bank, such as program environmental and social standards instruments prior and during program implementation;
- (viii) Develop an Environmental and Social Management Plan (ESMP) for the program as a whole, to be differentiated from the subproject specific plans that may be required during program implementation. Also identify all relevant potential environmental risks and social concerns that may arise as a result of the proposed project and specific subprojects. The ESMP should recommend mitigation measures for the potential negative impacts and give associated costs; and clearly indicate the institutional responsibilities for implementation and monitoring of the mitigation measures;
- (ix) Identify and describe the required instruments and procedures for managing and monitoring environmental risks and social concerns related to the priority subprojects, such as assessments (e.g. ESIA), management plans (e.g. ESMP, RAPs) and respective monitoring instruments. Also identify indicators (by subproject type) to measure safeguard implementation that can be used in the overall assessment of the project;
- (x) Outline a training and capacity building programme for the institutions responsible for implementing the ESMF.
- (xi) Propose realistic and effective arrangements for REG-EDCL PIU and other project implementation entities to develop the capacity to manage environmental and social due diligence processes and activities in the project portfolio. Propose reporting lines, review and

approval functions; identify the required resources and technical assistance to maintain the Client's capacity for the Project duration and beyond; and

- (xii) Estimate a realistic budget to be allocated for timely implementation of the ESMF in the Program execution phase.

Task 2: Development of specific guidelines for REG-EDCL PIU and other project implementation entities to support implementation of the ESMF. This to include:

- (i) Generic terms of reference for safeguarding instruments to be applied during project implementation (as set-out in the ESMF). Potential environmental and social due diligence instruments required include: ESIA (including ESMP).
- (ii) Simple user manual and training materials for ESMP and GRM to support implementation of the ESMF, the prepared ToRs for ESIA, ESMP are annexed to this ESMF.

1.4 Methodology and Approach

1.4.1 Review of ESMF World Bank and AfDB ISS Requirements, National and international Policy institutional and Regulatory Framework

The safeguard team has reviewed the relevant guidelines, policy, regulatory and institutional framework related to ESMF in the context of the Rwanda Universal Energy Access Program (RUEAP). These include guideline and environmental safeguard from the World Bank, international goals, treaties and conventions on environment, and national regulatory and institutional framework that can influence or be influenced by the implementation of RUEAP. This helps to elucidate problems that will need special attention during the implementation of this program.

1.4.1.1. Review of National Policy institutional and Regulatory Framework related to ESMF

At the national level, the safeguard team has reviewed relevant existing laws, policies, regulations frameworks and guidelines about environmental and social risk management, and policy, programs and projects associated with the Energy sector. This helped to prepare a summary of domestic legislative and regulatory and administrative regimes within which the program will be implemented. Following documents were reviewed:

- National Strategy for Transformation one (2017-2024) _NST1;
- Ordinary Law N° 43/2013 of 16/06/2013 Governing Land in Rwanda, Repealing Organic Law N° 08/2005 of 14/07/2005 Determining the Use and Management of Land in Rwanda;

- Law N° 66/2018 du 30/08/2018 Regulating Labour in Rwanda;
- The Law (No. 48/2018 of 13/08/2018) on Environment determining the modalities for protecting, conserving and promoting the environment;
- Ministerial Order N° 001/ 2019 of 15/04/2019 establishing the list of projects that must undergo environmental impact assessment, instructions, requirements and procedures to conduct environmental impact assessment.
- Law No 32/2015 of the 11/06/2015 relating to Expropriation in the public interest

1.4.1.2. Review of World Bank Environmental and Social Standards (ESSs)

The safeguard team has reviewed the World Bank Environmental and Social Standards (ESSs) applicable to ESMF and demonstrated how these standards will be complied with considering the local context. Ten (10) ESSs on Access to Information represent the framework of safeguard mechanisms applied by the WB for the sake of interests of beneficiaries, clients, stakeholders and that of the Bank. Applying these standards allows avoiding adverse impacts on the environment and people's lives, minimizing and mitigating potential unfavorable environmental and social risks and impacts. These WB standards are:

- Environmental and Social Standard 1: Assessment and Management of Environmental and Social Risks and Impacts;
- Environmental and Social Standard 2: Labour and Working Condition
- Environmental and Social Standard 3: Resource Efficiency and Pollution Prevention and Management
- Environmental and Social Standard 4: Community Health and Safety
- Environmental and Social Standard 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement
- Environmental and Social Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources;
- Environmental and Social Standard 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities;
- Environmental and Social Standard 8: Cultural Heritage
- Environmental and Social Standard 9: Financial Intermediaries
- Environmental and Social Standard 10: Stakeholder Engagement and Information Disclosure.

There are 8 ESS that apply to the project ESS1, ESS2, ESS3, ESS4, ESS5, ESS6, ESS8, and ESS10

1.4.2 Field surveys

The safeguard team conducted field visits (from 20th January to 27th February, 2020) to 27 administrative Districts, NTARUKA Hydro Power Plant, relevant government and non-government institutions including 3 companies for Solar Home Systems and 8 commercial centres selected in consultation with the District One Stop centre office and based on the proposed districts which will be covered by this program, while the centres which were selected and visited were those ones without access to the electricity and are on the list to be covered by the program. The lists of those districts and sites visited are shown in Annex 8.

1.4.2.1 Approach to field data collection

The safeguard team visited above said sites with target to collect information on location, status of infrastructure, and views and concerns of local people, respectively. Special attention was paid to key stakeholders (administrative district officials) and local people that may be involved or affected by the program. This exercise through established interview guide helped identifying criteria that will need special attention in the implementation of this program. The exercise also helped in identifying the capacity gaps and needs for the implementation of, and ensuring compliance with, environmental and social aspects of the program.

1.4.2.2 Content of consultations

Consultations were conducted with stakeholders who were directly or indirectly related to the program to better understand the environmental and social systems in the country and the environmental and social concerns of stakeholders from 20th January to 27th February 2020. During consultation, stakeholders were asked their views and concerns about the program. This helped to identify salient issues and concerns that affect different stakeholders and reach agreement on the understanding of these issues and grievances. The safeguards team ensured a favourable environment free of coercion and intimidation, gender inclusive and inclusive to vulnerable and disadvantaged groups.

At local level consultations were held with district officials (Mayor or Vice-Mayor in charge of Economic development, Director of one stop centre or Land administration/valuation officer, District Environmental Officer, District Electricity Maintenance Engineer, Executive secretaries of the sectors, sector land managers and local people). The consultations at Central level conducted with the public, academic or researchers and private institutions. The consultation outcome highlighted trade-offs, impacts/risks and social issues and bottlenecks associated with the implementation of this program, as well as the proposed mitigation measures. Moreover, the study

outcomes will be disclosed after approval of the competent officials at Nation and World Bank level.

1.4.3 Link between the World Bank ESF and National Regulation on Environmental and Social Management Guidelines and data collected during field visit

This program is in line within the framework of Rwanda's National Strategy for Transformation one that aims to achieve universal electrification, among others. The study analyses the World Bank Environmental and Social Standards and National Regulation on Environmental and Social Management Guidelines to have idea on which the environmental and social assessment is needed to categorise program related environmental and social risks and impacts (high, substantial, moderate or low).

1.4.4 Methodological compatibility matrix according specific objectives

Table 1: Compatibility matrix according to specific objectives

| Objective | Methods and Techniques | Expected results |
|--|--|--|
| Identify all relevant potential environmental risks and social concerns that may arise as a result of the project and the subprojects that it will support | Field visits, observation, mapping, pictures, interviews with key stakeholders, review of World Bank and National Environmental and Social Standards documents, ESMF reports and World Bank Group Environmental, Health, and Safety Guidelines (EHSGs) | <ul style="list-style-type: none"> - Potential environmental impacts identified - Potential social impacts identified - Compatibility and Conflicts of the project and social and natural environment identified. - When GoR’s regulations differ from the levels and measures presented in the WB EHS Guidelines, the project/RUEAP will be required to achieve whichever is more stringent. - |
| Specify appropriate roles and responsibilities of involved stakeholders in the implementation of the ESMF | Review of relevant national documents on policy, law, institutional and regulatory framework governing ESMF/ESIA; Interviews with key stakeholders | Identification and analysis of Role and responsibilities of government organisations in the implementation of ESMF Identification and analysis of PIU capacity, Administrative Districts, and organisation arrangement to implement ESMF |
| Develop subproject review procedures as well forms, guidance and checklists to apply technical input for the subprojects | Develop a guidance document for procedures, forms, checklists to apply technical input for the subprojects | Guidance document for procedures, forms, checklists for subprojects. |

| Objective | Methods and Techniques | Expected results |
|--|--|--|
| Develop a screening procedure to identify the environmental and social issues associated with the subprojects | Review of World bank and national guidelines and procedures for screening the projects to not/undergo Environment assessment. | Screening criteria for environmental and social impacts of subprojects. Screening criteria include trading centres without electricity connections, environmental baseline conditions of these commercial centres and other populated areas without power supply and the social economic environment within these administrative districts. Subprojects are classified in high, substantial, moderate or low risk. |
| Prepare an ESMP that can be applied to manage the identified environmental and social risks and set out the monitoring plan that will be undertaken to confirm correct ESMP delivery | Prepare the ESMP in compliance or conformity with World Bank and Rwanda social and environment ESMP requirements. | ESMP with potential social and environmental positive and negative impacts and their enhancement measures |
| Develop the ToR for appropriate safeguards instruments (such as ESIAAs) as appropriate and required | Prepare the ToR, with consideration of World Bank ESF and Rwanda social and environment safeguard instruments | ToR for appropriate safeguards instruments |
| Review and make an assessment of the capacity of the national project implementation entities, to screen subprojects and monitor the | Review and assessment of capacity, gaps and capacity need for the national project implementation entities (REG EDCL PIU and identified Administrative Districts) to | Organizational and institutional framework for implementing ESMP Role and responsibility of organisations Key staff to implement ESMP |

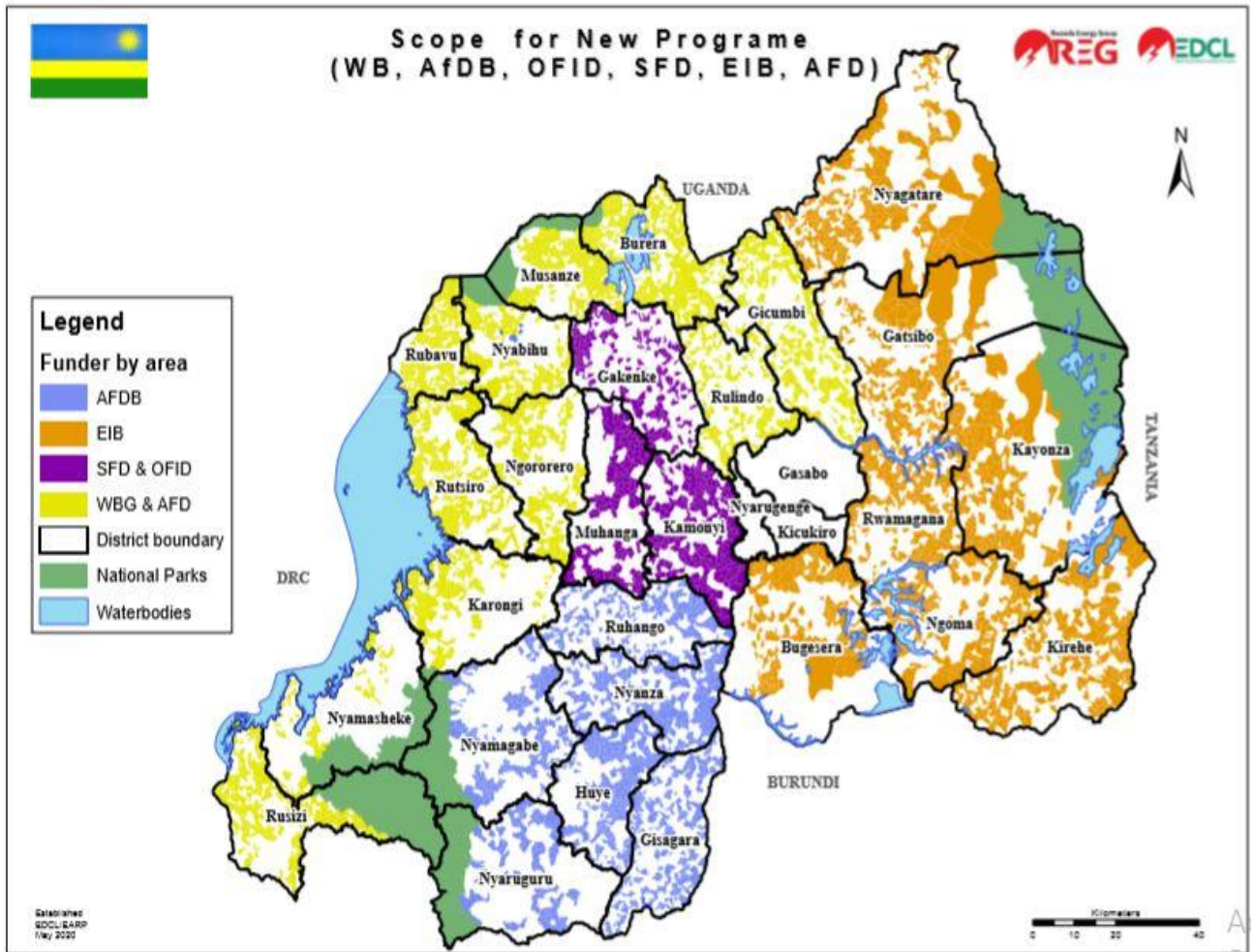
| Objective | Methods and Techniques | Expected results |
|--|--|---|
| implementation of the project ESMP; and make proposals for capacity enhancement as appropriate | screen subprojects and monitor the implementation of the project ESMP. The assessment will be done through consultation with key staff in those entities | Gaps and capacity needs |
| Provide estimates for the budget required for project ESMP implementation | Costing of activities required for the implementation of ESMP. The costing will cover cost associated with rehabilitation of environmental and social damages and staff allowance to monitor the ESMP implementation | Estimation of ESMP budget |
| Define appropriate environmental and social standards performance indicators | Propose a set of indicators to monitor the environmental and social standards performance. Those indicators should be SMART (specific, measurable, achievable, realistic and time bound). | A set of SMART Indicators to monitor the environmental and social standards performance |
| Provide practical information resources for implementing the ESMF | Provide practical information resources for implementing the ESMF | Guidelines for training and capacity building Guideline for preparing site specific environmental Management and rapid Environmental assessment checklists |

II. PROGRAM DESCRIPTION

The proposed Rwanda Universal Energy Access Program (RUEAP) is a large, multi-donor energy sector investment financing program to support the Government of Rwanda's energy access objectives during the period of the National Strategy for Transformation (NST1; 2017-2024). The multi-donor program will have a total volume of an estimated US\$ 550 m. The total IDA investment would have US\$150 million, spread across four components of grid electrification, improving grid reliability and efficiency, advancing off-grid energy and clean cooking, providing technical assistance, capacity building and implementation support. The estimation of the assets of the program is estimated to construct Medium Voltage lengths 3,920 of Km and Low Voltage lengths of 9,265 Km. The grid-related and technical assistance components will be implemented by the Electricity Access Rollout Program (EARP) Project Implementation Unit (PIU) in Energy Development Corporation Limited (EDCL), which has demonstrated its effectiveness under the Electricity Access Scale-up and Sector Wide Approach (SWAp) Development Project (EASSDP) project (IDA16). The off-grid and clean cooking components will be implemented by the Renewable Energy Fund (REF) a PIU in the Development Bank of Rwanda (BRD).

WBG & AFD (proposed under joint co-financing) will fund in Gicumbi, Musanze, Rulindo, Burera of Northern province and Ngororero, Nyabihu, Rubavu, Karongi, Rusizi, Rutsiro, Nyamasheke districts of Western province. SFD and OFID (proposed under parallel co-financing) will fund in Gakenke (District of Northern Province) Muhanga and Kamonyi Districts of Southern province. AfDB investment will be in Gisagara, Huye, Nyamagabe, Nyanza, Nyaruguru, Ruhango Districts of Southern province whereas EIB will intervene in Eastern Province in the Districts of Bugesera, Gatsibo, Kayonza, Kirehe, Ngoma, Nyagatare, Rwamagana. All 27 composing the four provinces of of Rwanda namely East, South, North and Western provinces will be covered by this program to meet the NST1 targets by 2024.

Figure 1: Proposed map indicating the allocation of every Development Partner (DP)



2.1. Program components

The following are the key components of the program proposed to be financed by multi donors. However, the IDA19 and AfDB is spread within the all four components while other potential supporting development partners include EIB, OFID, SFD, AFD.

Component 1: Increasing access to grid electricity

Rationale: To achieve a grid access rate of 52% by 2024, the ESSP projects a financing need of US\$ 567 million (households and productive use connections) between 2019/20 and 2023/24.

Against this background, REG has targeted an annual connection rate of 200,000 between 2020 and 2024 (including households and productive users). It is estimated that the average unit connection cost, including backbone infrastructure, is around US\$603-US\$758, projecting an annual financing need ranging between US\$120 million – US\$150 million. With availability of funds, REG has demonstrated implementation capacity to deliver this number of connections annually.

Scope: REG has identified the total number of connections, including households, commercial, industrial and public users, required per district to meet the target. This component of the program aims to continue ongoing donor engagement in grid expansion, and bring additional donor support, to finance the grid expansion and densification drive of REG. Supporting Development Partners: WB, AfDB, AFD, EIB, OFID, and SFD.

Component 2: Improving grid stability and enhancing operational efficiency

Rationale: With a SAIDI of 37.9 hours and a SAIFI of 222.8 in 2019, the quality and reliability of power supply in Rwanda is sub-optimal. Poor quality of electricity services hinders economic growth as well as undermines consumer confidence in the utility, making cost-recovery difficult and, in effect, harming financial sustainability of the power sector. Further, at 19%, the transmission and distribution losses of the power sector in Rwanda illustrate poor operational efficiency and are also a direct source of lost revenues through unbilled electricity. Improving the quality and reliability of electricity services and reducing transmission and distribution losses are imperative to help RUEAP the benefits of expanding electricity connections.

Scope: REG has identified a set of target investments across the electricity supply chain in order to improve grid reliability and operational efficiency. These include: (i) rehabilitation of old domestic hydropower plants to ensure security of generation, (ii) installation of automatic voltage regulators on 220 kV lines to reduce voltage rises due to low loading on the lines, installation of power system stabilizers and governing systems on main generators to improve network responses to fluctuations and load loss, and facilitate EAPP regional interconnection, (iii) building power system GiS to improve monitoring and restoration of faults, and (iv) complete installation of smart meters for all distribution transformers and medium/large consumers to identify and curb the sources of commercial/technical losses and phase imbalances.

A total of US\$30 million is allocated to this project component by IDA19. As this component of the program has a subcomponent of Transmission which will be funded by AfDB, the program is preparing the ESIA and RAP for that particular subcomponent to address all environmental and social impacts related to the project. This ESMF will not discuss the impacts from the transmission lines Environmental and Social impacts as they will be covered by the ESIA and RAP being prepared by EDCL. Supporting Development Partners: WB, AfDB, and EIB.

Component 3: Catalysing private investment in off-grid electricity access and clean cooking (financing commitment: US\$39 million + potential carbon financing)

Off-grid electrification:

Rationale: The current off-grid electricity access rate is 14% against the target of 48% for 2024. About two dozen private companies are active in Rwanda, however, as the areas identified for off-grid areas are remote and poor, affordability constraints have slowed down the off-grid solar market from over 100,000 connections in 2017 to 86,000 in 2018 and 83,000 in 2019. Further, on clean cooking, the key target of the newly adopted Biomass Energy Strategy is to reduce the share of households using firewood for cooking from 79.9% (in 2017) to 42% in 2024. The GoR is currently scoping out what kind of business models and financing modalities could help it achieve its objectives in the sector.

Scope: The off-grid electrification sub-component would aim to scale up the market for solar home systems that conform to the Ministerial Guidelines to provide the 250,000 or so new connections per year needed to achieve the NST1 target. To that end, the off-grid subcomponent will include a results-based financing (RBF) mechanism for private sector companies, in line with the Cabinet-approved concept note, to provide partial grants to Ubudehe 1-3 households to increase the affordability of SHS. EDCL will be the technical counterpart, while BRD will administer and disburse the RBF funds. Multiple development partners are already engaged in supporting off-grid electrification efforts in Rwanda under the Pro-Poor RBF, and this subcomponent is expected to consolidate the donor efforts in providing targeted support to the Government in revitalizing the off-grid electricity market. RBF financing for mini grids could be considered in a next phase.

- a) The clean cooking subcomponent aims to provide RBF incentives for verified output, outcome, or impact results and innovation grants to promote innovations.

IDA financing for the clean cooking subcomponent, including matching grants from the World Bank's Clean Cooking Fund, is proposed at a tentative US\$10m. The subcomponent is proposed to take the form of (i) upstream RBF incentives to support clean cooking business development; (ii) RBF incentives to verified outcome such as continued use of clean cooking solutions; and (iii) RBF incentives to verified impact level climate, health, and gender co-benefits following the established methodologies and monitoring and verification. Discussions were held with Rwanda Standard Board (RSB) on their role in testing and evaluating technical eligibility of cooking technologies for the RBF incentives. RSB and MININFRA will provide written comments to the WB team on the proposed design and implementation plan for clean cooking.

The AfDB proposes to provide up to US\$14 million for a combination of results-based financing and credit facilities for clean cooking with the precise allocation/structure to be confirmed in consultation with partners as the design for the subcomponent is refined. The AfDB aims to conduct more market scoping in order to assess the supply side of the clean cooking market and inform the design of the credit facility. It is considered that the credit facility will leverage the AfDB's partial credit guarantee program with the African Guarantee Fund supporting women-empowering enterprises (which will be separate from the financing allocated under this program).

Carbon financing: It is proposed that the off-grid and clean cooking subcomponents could also benefit from World Bank Carbon Initiative for Development (Ci-Dev), which is a result-based financing (RBF) instrument that makes payment against certified emission reductions (CER) resulting from the sustainable dissemination of off-grid solar home systems and improved and clean cookstoves envisaged under Component 3. In accordance with the procedures established under Ci-Dev, an Emission Reduction Purchase Agreement will be separately negotiated and signed between BRD and Ci-Dev.

The Ci-Dev support will entail result-based payments for Off-Grid solar (US\$ 1-2 million) and Clean Cooking (US\$3-4 million). The GHG emission reductions associated with the nationwide uptake of cleaner technologies for lighting, cooking and other domestic energy needs including

off-grid solar home systems and improved and clean cookstoves, will be purchased by Ci-Dev upon certification by the Standardized Crediting Framework (SCF). Ci-Dev will purchase an approximate amount of 680,000 tCO₂e carbon credits from component 3 for the period 2021-2024. Meanwhile, Ci-Dev will also provide grant resources (amounts TBD) that may be made available to support capacity building for ER payment disbursements, carbon finance technical support, and expansion of the SCF, a new ER crediting approach being piloted by the Rwanda Environmental Management Authority (REMA) and supported by Ci-Dev. Supporting Development Partners: WB, AfDB.

Component 4: Institutional capacity building (US\$10 million)

Rationale: In order to ensure that investments are implemented and utilized efficiently, capacity building across the responsible government agencies will be necessary. MININFRA and REG have identified priority areas for capacity building support.

Scope: This component of the program would involve technical assistance, capacity building, and implementation support to implement the program and strengthen the capacity of stakeholder Government organizations. Extensive technical assistance is expected to be provided on the clean cooking component of the program as well, particularly on policy and regulatory improvement and entrepreneurship development, including targeted training for women entrepreneurs. Multiple development partners are engaged in different capacities in providing technical support and these efforts will be strengthened under the program. Supporting Development Partners: WB, AfDB, EIB (project implementation support).

Table 2: Details of Components and Donor Requirements

| Area/Investment Need | Details | Financing Commitment | Development Partner |
|---|---|------------------------------------|---------------------|
| 1. Increasing Access to Electricity | | | |
| Grid access – WBG & AFD (proposed under joint co-financing) | Districts: Gicumbi, Musanze, Rulindo, Burera, Ngororero, Nyabihu, Rubavu, Karongi, Rusizi, Rutsiro, Nyamasheke | US\$ 95,000,000 and EUR 80,000,000 | World Bank & AFD |
| Grid-access – SFD and OFID (proposed under parallel co-financing) | Districts: Gakenke, Muhanga, Kamonyi | US\$ 40,000,000 | SFD & OFID |
| Grid access - AfDB | Districts: Gisagara, Huye, Nyamagabe, Nyanza, Nyaruguru, Ruhango | US\$ 50,701,845 | AfDB |
| Grid-access – EIB | Districts covered: Bugusera, Gatsibo, Kayonza, Kirehe, Ngoma, Nyagatare, Rwamagana | EUR 80,000,000 | EIB |

| Area/Investment Need | Details | Financing Commitment | Development Partner |
|--|---|---|---------------------|
| Component-Subtotal | | US\$ 185,701,845 and EUR 160,000,000 | |
| 2. Improving grid reliability and operational efficiency | | | |
| Rehabilitation of the Ntaruka Hydro Power Plant. | Rehabilitation of the Ntaruka Hydro Power Plant to ensure security of generation in Rwanda. | US\$ 11,000,000 | World Bank |
| Installation of automatic voltage regulators on 220kV, Installation of power system stabilizers and governing systems on main generators | To reduce voltage rises due to low loading on 220kV; Improve network responses to fluctuations and load loss; prepare EAPP regional interconnection | US\$ 8,500,000 | |
| Building of GiS system. | Building of Rwanda's power system GiS | US\$ 6,000,000 | |
| Completing installation of smart metering for all distribution | Identify and curb sources of commercial/technical losses and phase imbalances. | US\$ 4,500,000 | |

| Area/Investment Need | Details | Financing Commitment | Development Partner |
|---|---|------------------------|---------------------|
| transformers and medium/large customers. | | | |
| Subtotal – World Bank | | US\$ 30,000,000 | |
| Substation upgrades, connections of feeders to substations, and rehabilitation (Nyamata, Rutongo, Gikomero and Kanombe, Shango) | <ul style="list-style-type: none"> - 30/30kV Switching substation in Nyamata for efficient supply; - Connect Rutongo, Gikomero and Kanombe Feeders to Shango Substation; - | US\$ 2,867,715 | AfDB |
| Upgrade of Karisimbi 6.6kV line to 30Kv | Upgrade 8km, 6.6km of Medium voltage network in Karisimbi to 30kV to improve flexibility in interventions and network standardisation (underground line | US\$ 2,000,000 | |

| Area/Investment Need | Details | Financing Commitment | Development Partner |
|--|---|----------------------|---------------------|
| | with associated transformers and switching elements) | | |
| Upgrade and extension of different MV lines for improved supply. | Electrification of new areas. | US\$35,411,340 | |
| Improving quality of Power Supply In Distribution System | Construction of modern cabins equipped with current technologies for efficient supply | US\$29,968,693.76 | |
| Upgrade of single to three phase lines countrywide | Upgrade all existing single-phase network to three phase networks | US\$ 22,050,208 | |
| Demand Stimulation | provide construct 600m and provide transformer for all customers regardless of their distances from the grid, expedite connections for customers that qualify under the free connection policy Demand Stimulation | US\$ 6,436,897 | |

| Area/Investment Need | Details | Financing Commitment | Development Partner |
|---|---|---------------------------|---------------------|
| Subtotal – AfDB (Distribution) | | US\$ 98,734,853.76 | |
| Transmission lines and associated substations | <ul style="list-style-type: none"> - 110kV transmission line Rwinkwavu-Kirehe and associated substations; - 110kV transmission line Rukarara-Huye-Gisagara and associated substations; - 110kV transmission line from Bugesera industrial park to Bugesera international airport substation (2) with associated substation; - 110kV transmission line Gabiro - Nyagatare and associated substations; | US\$ 81,460,000 | AfDB |

| Area/Investment Need | Details | Financing Commitment | Development Partner |
|------------------------|---|----------------------|---------------------|
| | - 110kV D/C Rulindo – Gicumbi TL (cut in -cut out) and associated substations; | | |
| Upgrade of substations | Bugesera Industrial park substation (3*30 MVA); | 14,400,000 | |
| Transformer upgrades | <p>- Replacement of 10MVA Karongi Transformer and replacement of Gikondo transformers with 2x30MVA 110/15kV;</p> <p>- Upgrade of Gahanga and Nzove substations with second transformer on each substation</p> | 13,000,000 | AfDB |

| Area/Investment Need | Details | Financing Commitment | Development Partner |
|--|---|---|---------------------|
| | <ul style="list-style-type: none"> - Replacement of old 6MVA Kibogora Transformer; - Standby transformers | | |
| Subtotal – AfDB (Transmission) | | US\$ 108,860,400 | |
| Kigali Distribution Rehabilitation | <ul style="list-style-type: none"> 1. Upgrade & Extension of Medium Voltage lines with transformers 2. Renovation of existing MV/LV cabins & New MV/LV Cabins (electrical installation & civil works) | EUR 20,000,000 | EIB |
| Component-Subtotal | | US\$ 237,595,253.76+EUR 20,000,000 | |
| 3. Catalysing private investment in off-grid electricity access and clean cooking | | | |

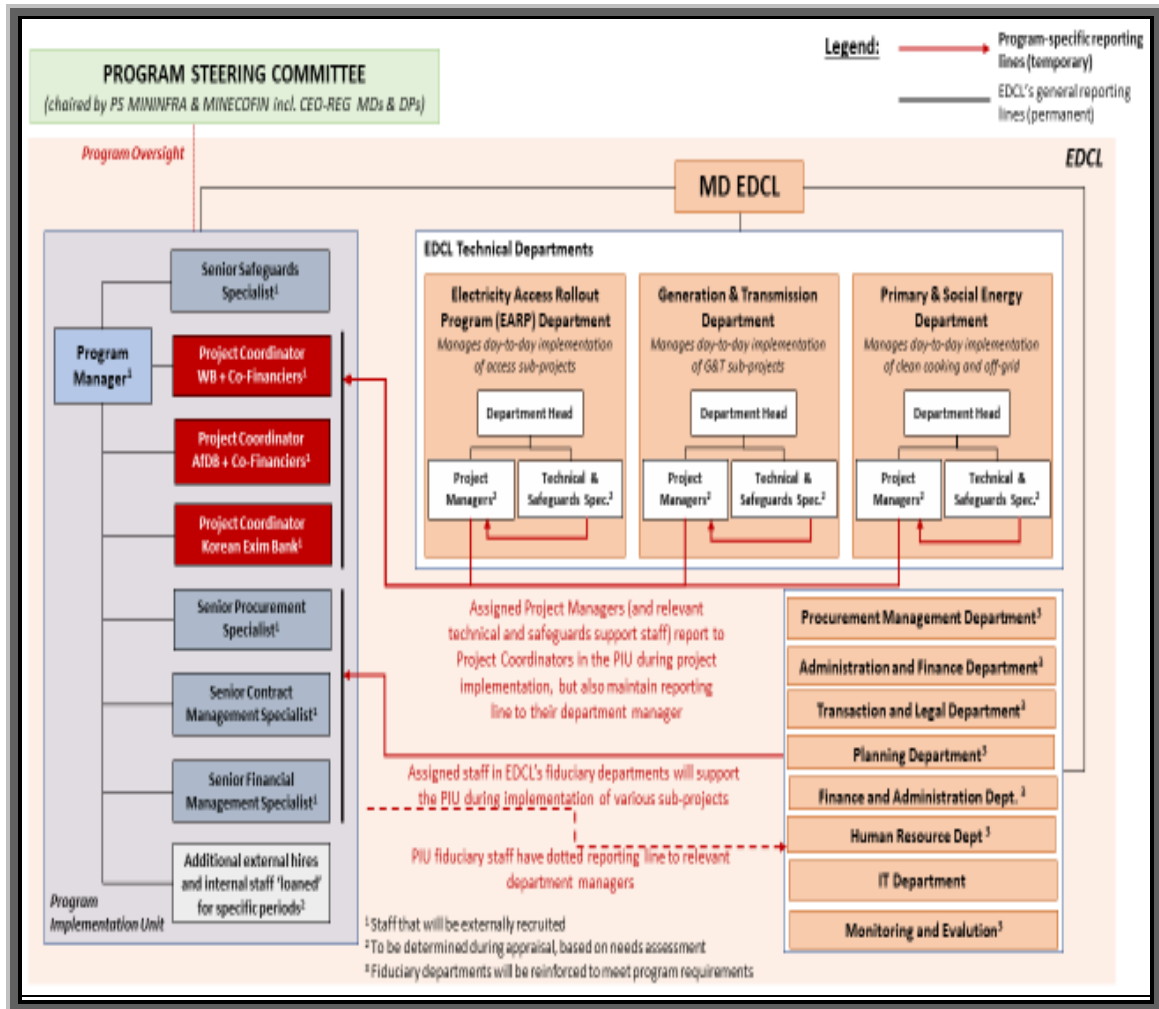
| Area/Investment Need | Details | Financing Commitment | Development Partner |
|---|--|--|-------------------------|
| Results-based financing for off-grid solar solutions and clean cooking solutions. | Results-based financing for off-grid solar connections and clean cooking solutions to reach poorer households and more remote areas. | US\$ 20,000,000 (US\$15,000,000 for off-grid and US\$5,000,000 for clean cooking) | World Bank |
| RETF grant from Clean Cooking Fund | Matching grant for RBF and TA for clean cooking | US\$ 5,000,000 | World Bank-administered |
| Carbon Financing | Ci-Dev Trust Fund financing to purchase carbon emission reduction credits that could be generated by the program | Estimated US\$ 4,000,000-6,000,000 | World Bank-administered |
| Results-based financing and potential credit facility for clean cooking | Results-based financing and potential credit facility for clean cooking enterprises | Up to US\$ 14,000,000 | AfDB |
| Component-Subtotal | | US\$ 39,000,000 + potential carbon financing | |

| Area/Investment Need | Details | Financing Commitment | Development Partner |
|---|--|----------------------|---------------------|
| 4. Technical assistance, institutional capacity building, and implementation support | | | |
| Technical Assistance. | Address sector performance improvements; forward-looking options for sector development. | US\$ 2,000,000 | World Bank |
| Capacity building. | Planning, Skills development, Audit and Compliance (+ others to be identified). | US\$ 1,000,000 | |
| Implementation Support. | Support PIU functions (staff); Support the SWG secretariat staff. | US\$ 2,000,000 | |
| Project Operations and Consultancy Services | | US\$ 5,000,000 | AfDB |
| Technical Assistance: Implementation support to PIU for the components under EIB financing. | Scope to be determined | EUR 2,000,000 | EIB |

| Area/Investment Need | Details | Financing Commitment | Development Partner |
|-----------------------------|----------------|--|----------------------------|
| Component-Subtotal | | US\$ 10,000,000 and EUR 2,000,000 | |
| General Total | | US\$ 472,297,099+ EUR 182,000,000 | |

The program structure: the program is likely to have 2 constituting project: (i) led by the WB, The WB led Rwanda Energy Access and quality Improvement Project, this is expected to be co-financed by AFD (joint co-financing) and OFID (parallel co-financing), SFD (parallel), and the Korean Fund for International Development (parallel). The GoR showed preference that the WB and AFD would finance separate lots instead of jointly co-financing each lot in their respective scope to avoid complicated disbursement arrangements. (ii) led by the African Development Bank and potentially co-financed by EIB under parallel financing. The Program aims to combine these parallel projects and streamline the schedule and implementation arrangements to prevent duplication of efforts for the Government.

Figure 2: Program Structure and Implementation Arrangements



III. ENVIRONMENT AND SOCIAL BASELINE OF THE PROGRAM

This section describes the overall baseline conditions of Rwanda in terms of social and biophysical environment because the program will be implemented in the whole country in its 30 districts where in 27 administrative districts composing four provinces of Rwanda namely East, West, North and East the focus will be on construction of distribution network while in Kigali city with its 3 administrative districts the focus will be the rehabilitation of distribution network. There is also the activity of upgrade from single phase to three phases country wide and upgrades of transformers/cabins.

3.1. Location and Size

Rwanda is a small mountainous landlocked country, located in Central Africa, at latitude 2. 00 S and longitude 30. 00 E, bordered to its South by Burundi, Tanzania to its East, Uganda to its North and the Democratic Republic of Congo (DRC) to its West. Rwanda has a total surface area of 26, 338 km² of which the total land area is 24, 948 km² and 1, 390 sq. km is surface water.

Rwanda is often referred to as the country of a “thousand hills” (mille collines), because of its numerous highly dissected hills, often with flat peaks and convex slopes mainly in Northern and Western part, separated by relatively narrow valleys, with the lowest altitude of around 900 m at Bugarama and the highest altitude at Mount Karisimbi 4,507 m. The average altitude is 1,250m above sea level.

Rwanda can be divided into six topographical regions which are:

- From North-West to South -West are the narrow Congo Nile Ridge, which slopes sharply to Lake Kivu.
- The Volcanic Virunga Mountains, whose highest peak, Mount Karisimbi, towers over the high North-Western lava plains.
- The steep North-South rise of the Congo – Nile Basins divide, whose width averages 25 km.
- The ridge of the Congo – Nile Basins divide, with an average elevation of 2750 m above sea level.

- The central plateau East of the mountains, which are covered by rolling hills.
- The savannas and swamps of the Eastern and South Eastern border areas which cover one tenth of the nation's land area and include the Akagera National Park.
- Most of Rwanda is at least 900m above sea level; the central plains have an average elevation of 1932m, while South-Eastern Rwanda has a desert like terrain.

3.2. Physical Environment

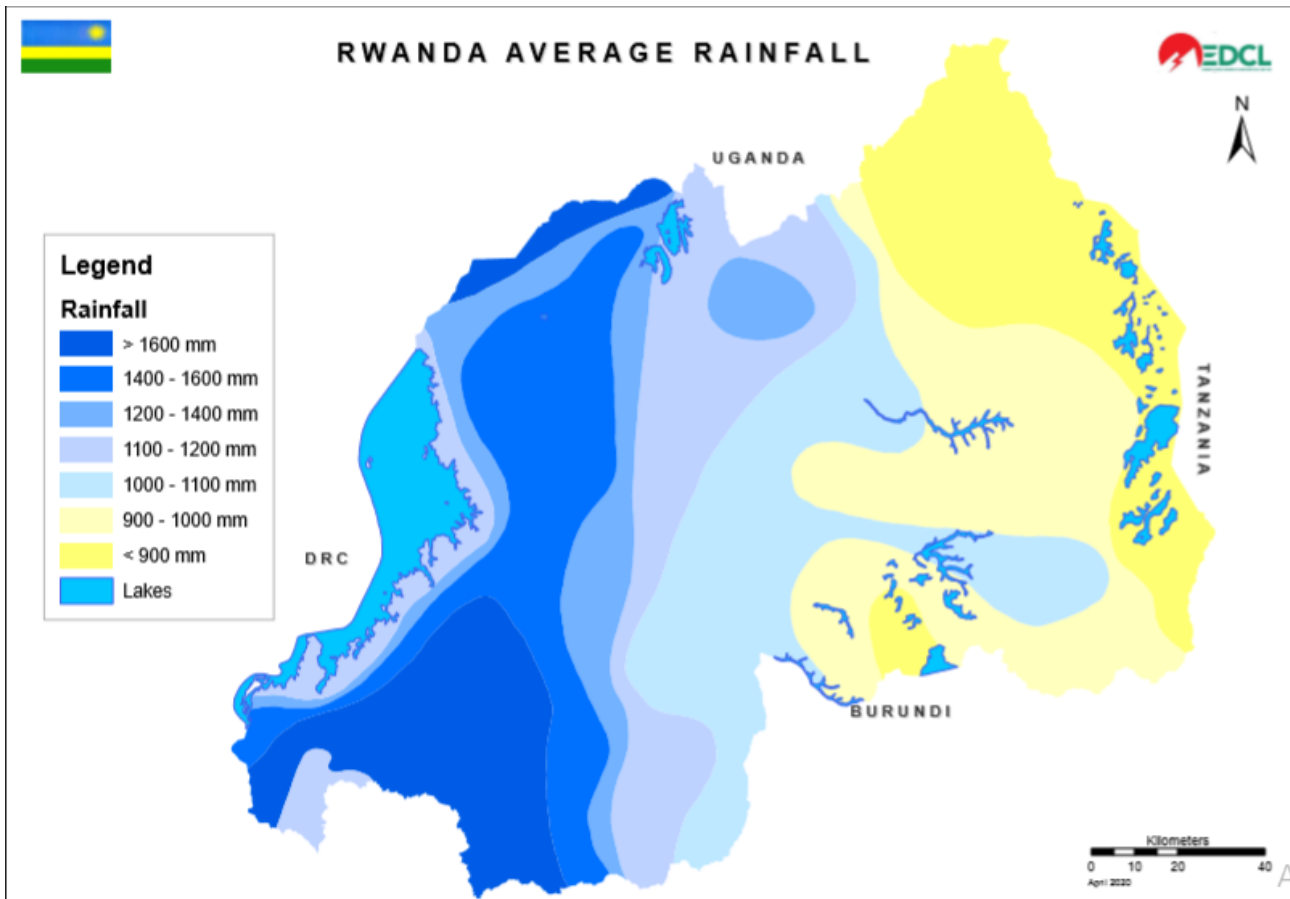
3.2.1. Climate

Rwanda enjoys a tropical temperate climate due to its high altitude. The average annual temperature ranges between 16°C and 20°C, without significant variations. Rainfall is abundant although it has some irregularities. Winds are generally around 1-3 m/s. In the high regions of the Congo-Nile ridge, average temperatures range between 15 and 17°C and the rainfall is abundant. The volcanic region has much lower temperatures that can go below 0°C in some places. In areas with intermediary altitude, average temperatures vary between 19 and 21°C and the average rainfall is around 1000 mm /year. Rainfall is less irregular, and sometimes causes periods of drought. In the lowlands (East and Southeast), temperatures are higher, and the extreme can go beyond 30°C in February and July-August. The absolute temperature of 32.8°C was recorded in the Southeast by Karama-Plateau station on the 4th of September 1980. Thermic constraints are more considerable there than in the remaining part of the country. Rainfall is less abundant in that region (700 to 970 mm/year). Weather in Rwandan is determined by the rainfall patterns. Thus, the climate of the country is characterized by an alternation of four seasons of which two are wet and the other two are dry. However, one can notice that rainfall is generally well distributed throughout the year, despite some irregularities. Eastern and South-Eastern regions (Umutara, Kibungo, Bugesera, Mayaga) are more affected by prolonged droughts while the northern and western regions (Musanze, Rubavu, Nyamagabe and Gicumbi) experience abundant rainfall that usually causes erosion, flooding, and landslides.

The quantity of total annual rainfall varies between 800mm in the North-East of Rwanda (Eastern Umutara) and 1600 mm in the natural forest of Nyungwe and in the high lands of the North-West (Kinigi). The decrease in rainfall is observed in the region of Bugesera (900 mm) and in the Western part of Rubavu district (1200 mm). The increase of rainfall is observed in some regions like Kibungo

(Gahororo, 1200 mm); in the South-West (Mibirizi, 1450 mm) and in the natural forest of Gishwati (1350 mm). The region that is characterized by the highest rainfalls (over the average isohyets of 1200 mm) is in the western half of the country, from Byumba to Kibeho and from Kinigi to Mibirizi including the region bordering Lake Kivu.

Figure 3 Annual average rainfall distribution



3.2.2. Relief

The Rwandan relief is hilly and mountainous with an altitude varying between 900 m and 4507 m. The components of that relief are:

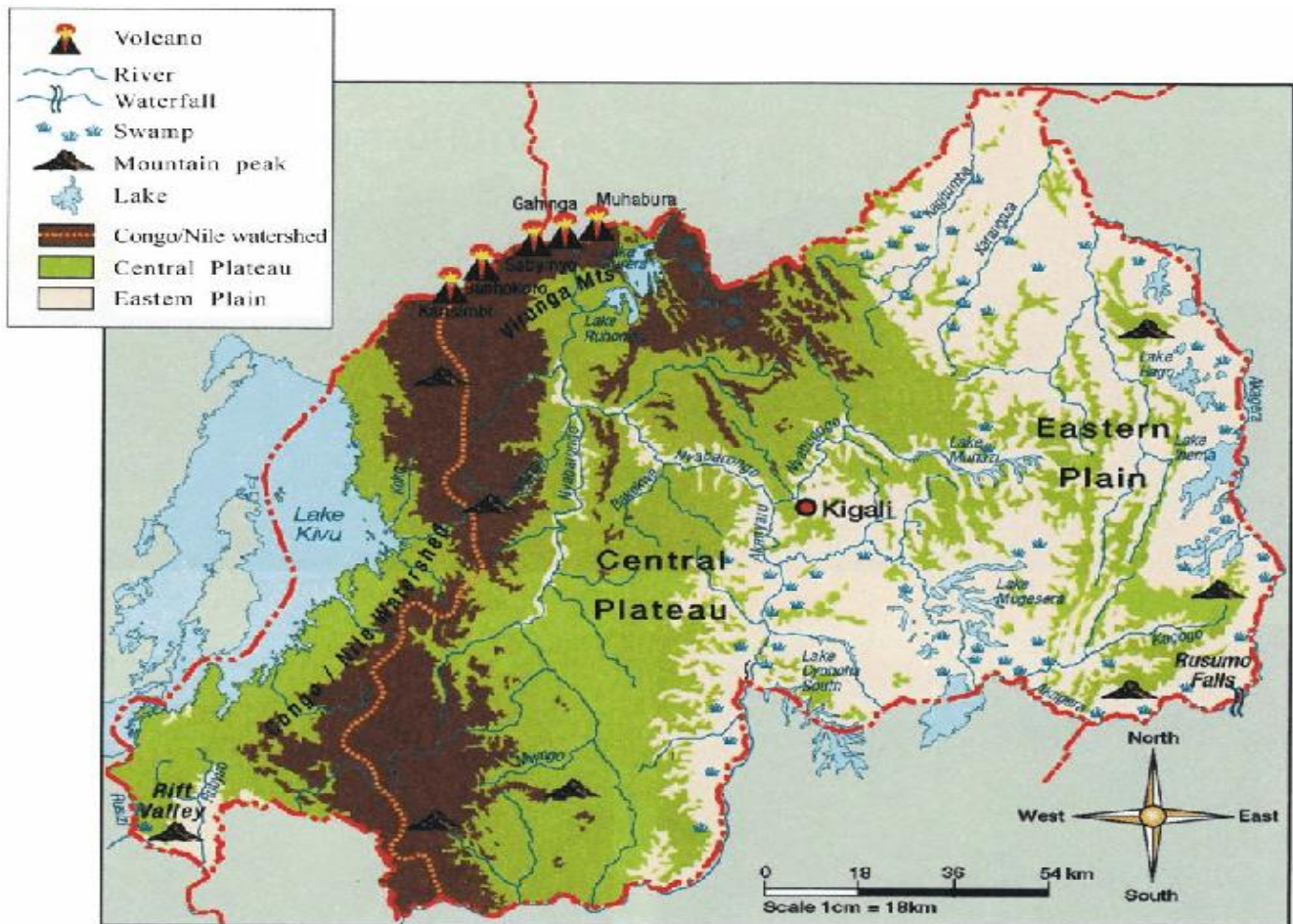
Congo-Nil Ridge over laying Lake Kivu with an altitude between 2500 m and 3000 m. It is dominated in the North-West by the volcanic ranges consisting of five volcanic massifs of which the highest is Karisimbi with 4507 m. The central plateau presents a relief of hills with an altitude ranging between 1500 m and 2000 m. The lowlands of the East are dominated by a depression characterized by hills

with more or less round top and 1000 to 1500 m in altitude. The lowlands of the South-West in Bugarama plain with an altitude of 900 m are part of the tectonic depression of the African Rift Valley.

3.2.3 Catchment and Hydrology

Rwanda has a relatively big quantity of water: rivers, lakes and marshes and occupy a surface area of 211000 ha or about 8% of the national territory (lakes: 128000 ha, rivers: 7260 ha and marshes: 77000 ha).

Figure 4: Rwanda Relief and climate



3.2.4 Surface water

Rwanda has a dense hydrographical network of $\pm 2 \text{ km/km}^2$ (length of the superficial flow network by km^2 of surface). The country is divided into two hydrographical basins with a separating line called

Congo-Nile Ridge, moving from the North to the South and \pm perpendicular to the volcanic chain, making natural obstacles exchange between the catchment's basins of the Northern Kivu and the Southwest of Uganda and those of Rwanda.

In the West of that line there is the Congolese basin (33% of the surface of the national territory) that drains 10% of water resources of the country. It comprises rivers Sebeya, Koko, Rusizi, Rubyiro, as affluent of Lake Kivu (around 1000 Km² on the Rwandan side, 490 m of maximum depth), Ruhwa and many other small rivers (around 127 rivers).

In the East of the Congo Nile Ridge there is the Nile basin which covers 67% of the National territory and drains 90% of Rwandan waters by two main rivers namely Nyabarongo and Akagera. The latter is the main affluent of Lake Victoria with an average outflow of 256 m³ /s at Rusumo station and thus considered as the source of the Nile. The basin of the Nile in Rwanda comprises a lot of small lakes (Burera, Ruhondo, Cyohoha South, Mugesera, Muhazi, Rwampanga, Mihindi, Mirayi and many others). Those lakes are not very deep (5 to 7 m of depth) except for Lake Burera and Ruhondo which are 65 to 173 m deep.

3.2.5 Groundwater

The outflow of the ground renewable water resource is estimated at 66 m³/s. Out of this, the 22,000 known sources contribute an output of 9 m³/s. In general, little information is available on ground water resources.

3.2.6 Lakes

Rwanda has some 28 lakes of significant size. Six among the largest are entirely within the national territory: Ruhondo, Muhazi, Mugesera, Ihema, Rwanyakizinga and Burera. Three others, Rweru, Cyohoha and Kivu, are shared with neighboring countries. The largest and most spectacular is Lake Kivu, so large as to seem almost like a sea to the landlocked inhabitants.

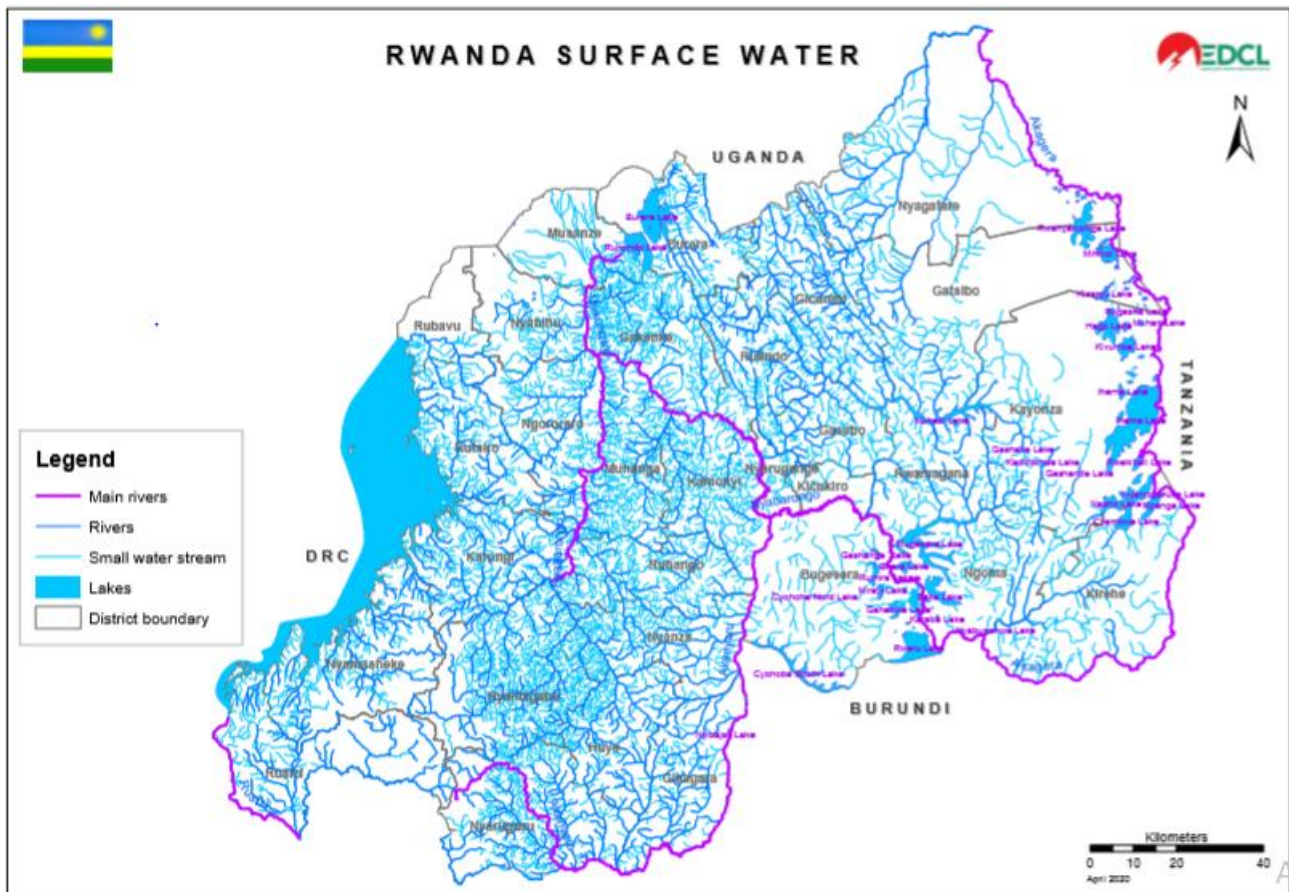
Lake Kivu lies at 1,460m above sea level and is 90 km long (north-south) and 49 km wide (eastwest). From an average depth of 240 m, it plunges to a maximum depth of 490 m. Lake Kivu has a rough, jagged coast and contains numerous islands, including Nkombo and Iwawa. Lake Kivu lies on the border with Congo in Western Rwanda at the foot of the Virunga Volcanoes. Kivu's shores are densely populated and the principal town on the Rwandan side is Rubavu. Although it is supplied

with fish, the lake is poor in fauna but rich in volcanic substance. Great volumes of dissolved methane gases ((~60 km³ STP) that may be developed as energy sources exist in its deep waters. Lake Kivu drains to the south into Lake Tanganyika by the swiftly descending Ruzizi River.

3.2.7 Quality of water

In Rwanda the quality of water is generally good with a pH ranging between 6 and 7.5. Surface water often carries sediments and in mining and volcanic regions, the water can contain arsenic, lead, mercury, fluoride, iodide and other toxic metalloids and heavy metals. The physio-chemical pollution of water is not frequent due to the small level of industrialization and use of agricultural chemical inputs. The microbiological pollution is often observed, and it comes from various domestic wastes and debris carried by rainwater towards the natural environment. The pollution of water courses and lakes by the water hyacinth and other harmful aquatic plants is a phenomenon that is very recent and alarming in Rwanda.

Figure 5: Surface water



3.2.8 Wetlands

Wetlands cover a total area of 164,000 ha or about 6% of the territory. The wetlands include a variety of ecosystems, ranging from large, permanently flooded swampy peatlands to smaller, seasonally flooded wetlands with a more mineral soil. The main swamps are Akanyaru (30,000 ha) on the border with Burundi, Mugesera Rugwero in the southeast, Kagera swamps along the Tanzania border in the east, Nyabarongo (10,000 ha) and the Rugezi wetlands (5,000 ha) in the north.

The wetlands serve as troughs for sediment particles and play an important role in the national water balances by acting as a buffer, thus reducing the maximal flow rates during the rainy season and maintaining a relatively high flow rate during the dry season.

Currently, an estimated 94,000 ha have been brought under agriculture, the large majority of this being spontaneous agriculture with maize, sweet potatoes and beans. In addition, the wetlands are used for a variety of traditional activities including the collection of leaves to make handicrafts, extensive grazing and making of bricks. Wetlands also provide a spawning habitat for fish and are of great significance for biodiversity conservation. The wetlands are composed of marshes, lakes, rivers and brooks representing around 14.9% of the national territory of which 6.3% consist of marshes and 8.6% of lakes, water courses and pools of permanent or seasonal fresh water.

In the highlands of the North-West, there are: lakes Burera and Ruhondo as well as the marshes of Rugezi. In the Central and the East of the country, wide marshes are those of Nyabarongo, Akanyaru and Akagera rivers. Many cuvette lakes connect with rivers and most of them are located in the Akagera National Park. From the Southeast to the North-West, there are lakes like Cyohoha in the South, Mugesera, Rweru, Sake, Cyambwe, Ihema, Milindi, Rwanyakizinga, Kivumba, etc.

Given the importance that the Government of Rwanda attaches to wetlands, in 2003 Rwanda ratified the Ramsar Convention or convention on wetlands and has already registered on the Ramsar list the site of Rugezi and identified other potential sites that will be registered in the future, like the complex of Mugesera-Rweru, Kamiranzuvu marshes and the wet zones of the Akagera National Park. In addition, an action plan for the implementation of the Ramsar Convention was developed in June 2004. The wetlands ensure several functions and provide numerous services to people. For instance, they ensure control of floods and the recharge of underground waters. They play the role of alleviating

the erosive force of water and thus facilitate the deposit of sediments in suspension that could block water courses downstream.

3.3 Geology and soils

3.3.1 Soils

According to the Geological Map of Rwanda, the regional geology consists of pelitic rocks and Quartz Phyllites (Cyurugeyu Superformation), Granites to Granite-Gneisses, Quarzites and Mica-Schists, Amphibolites and Mylonites (Huye Complex) as well as Quartz-Phyllites and Meta-Volcanics (Nyungwe Formation). The greater part of the geological structure is occupied by such lithological varieties of Rocks. Rwanda shows well developed drainage pattern that belongs to dendritic and trellis types. Metamorphic rocks form the major part of the rock mass and some magmatic rocks are also present. Major rock types observed in the area are granitic gneiss, quartzite, schists and amphibolites. The dominant soils are the result of alteration of the granite and the gneiss. Disruption of drainage due to tectonic movements of the Pleistocene caused the formation of alluvial valleys. They consist of alluvium and colluvium in the basin as result of the erosion. They have generally colluvial and alluvial in the valleys around the rivers. The soils of the top of the mountains are products of granite and gneiss and have resisted erosion.

Soils derived from schistose, sandstone and quartzite formations found in the Congo-Nile Ridge and Soils derived from old volcanic materials found in the plateau of the south west of the country. Over the RUEAP subproject area, most of the valley slopes extending from riverbanks to the top of the ridges are cleared for cultivation of various crops of a seasonal nature. As a result, soil cover is well exposed for potential erosion. A few patches of new forest plantations of eucalyptus and pines can also be seen on the valley slopes.

3.3.2 Use of soils

The exploitation of land employs around 70% of the active population. Land resources are thus limited and coveted resulting in overexploitation and inappropriate use of lands with disastrous consequences on land resources and on environment in general. In mountainous area, steep slope lands are deforested and used for staple crops under high rainfall precipitation, with often accelerated land degradation through water erosion, poorer soil fertility, increased floods and landslides, and

overall, food insecurity and poverty. Appropriate land uses combined with soil and water conservation measures then become a must; in some sites, active erosion mainly caused landslide hazards which increase sediments in rivers. Other than that, erosion has also formed gully bodies through the slopes of mountainous area.

Land use activities including infrastructure development may increase the potential of occurrence of landslides and erosion in various ways, which include destabilization of rock masses by cuts in slopes, improper stockpiling of materials, destruction of vegetative cover during site clearing and uncontrolled surface run-off during storms may increase the erosion rate. Riverbanks are composed of alluvial and proluvial loose-fragmental soils. Thus, the activities may increase erosion and landslides rates at various points along the banks of rivers and in some lateral ravines.

Intensive cultivation occurs along the steep slopes predominant in the area without proper soil conservation techniques hence accelerating soil erosion. However, it is worth mentioning that terracing as a measure for soil erosion control is practiced in some parts of the project area. Extensive deforestation to meet energy demands has further reduced the soils 'ability to withstand the scouring effects of rain in the upland watersheds has had serious downstream implications. When viewed against that background, therefore, it is easy to appreciate that the program would have negligible incremental impact on the rates and overall patterns of erosion. Nevertheless, erosion is of relevance to slope stability, which is in turn relevant to the design of the program and the conduct of operations such as excavation and borrowing. The specific measures will be taken to address these considerations.

3.3.3 Highland soils

The highland soils are particularly prone to erosion and landslides especially regions of the Congo-Nile ridge, valleys and lowlands (peat lands) as well as highland meadows. Soils of foothills of the Congo-Nile Ridge and of other transition regions between the central plateau and highlands are fertile but, due to deforestation and inappropriate agricultural practices, they are vulnerable to erosion.

3.3.4 Soils of the central plateau

The central plateau covers the regions of South and South-East. The soil types are hill Ferro soils and valley histosols. The slopes of hills are exposed to erosion notably in the case of clay-sandy or gravelly soils.

3.3.5 Soils of the lowlands

They cover the Eastern and South-eastern regions and are Ferro soils with savannah vegetation. Similar to the region of Bugesera, the river-lake complex along Nyabarongo and Akanyaru rivers underwent serious leaching. In addition, the geological structure of soils in those regions allows rain waters to infiltrate deeply into soils, and that can partly explain the lack of runoff waters and shallow brooks.

3.3.6 Soils of valleys

These are soils of histosol and peat soil types that constitute potential agricultural and energy wealth (case of intermountain basins of Kamiranzovu and Rugezi). In the wide water surfaces of eastern regions like Umutara and Bugesera, as well as the Rusizi region (Bugarama), the valleys are of vertisol and alluvial types are fertile. The slope slight as they may be, are threatened by erosion due to the weak permeability of soils. The exploitation of peat for fuel production purposes would require a preliminary development plan for swampy areas. In fact, any extraction of peat is associated with drainage and exudation, two factors likely to impact negatively on the crucial role of wet ecosystems and swamps in regulating the hydrology. Moreover, the exploitation of mines and quarries spoils the landscape and more often constitutes a source of soil erosion, water pollution and pose a danger to human health. A good number of queries are not rehabilitated and always left open.

3.3.7 Biological Environment

Rwanda is covered with diverse ecosystems that include mountains, ombrophile forests, gallery forests, savannahs, wet and aquatic zones, wood and agro ecosystems. All these ecosystems have a rich flora and fauna.

3.3.8 Protected areas

The fauna and the flora can be better preserved and protected thanks to the establishment of a system made of protected areas like national parks and forest reserves to which the best management is

applied. However, through time and due to human activities, these conservation areas have been reduced considerably.

3.4. Forests

Rwanda's remaining natural forests, the Nyungwe Forest, the Gishwati Forest and the Mukara Forest, are highland forests around the volcanoes, have a high degree of biological diversity and rare animal species, such as mountain gorillas, Ruwenzori colobus monkeys and golden chimpanzees. It is estimated that there are 2150 plant species to be found in Rwanda, with around 700 species of these acknowledged to have medicinal value. Towards the east of the country lies the Akagera National Park, the Mutara game reserve forests galleries and wooded savannahs. Population pressures have already drastically reduced the land area of the natural forests of Rwanda from about 30% to presently fewer than 10% in less than a century. The deforestation of Rwanda's remaining forests is also the result of high fuel wood consumption. Heavily populated and cultivated areas adjacent to the natural forest, as well as the recent wars, have resulted in massive deforestation and loss of genetic diversity within Rwanda's natural forest.

Clearance for farming and pastureland has also contributed to the reduction in forest cover, as well as harvesting for fuel wood and timber for housing and small scale mining. Production of export crops is also a factor in forest destruction: half the forests around the volcanoes in the North were cleared for pyrethrum plantations in the 1960's, and areas around the Nyungwe in southern and western province were cleared for tea plantations. Preliminary estimates indicate that the protected areas and forest reserves were seriously damaged as a result of recent wars. From an estimated pre-1994 total surface area of 417,000 ha, it is thought that they have been reduced to approximately 226,000 ha. Specifically, the Akagera National Park was reduced to less than one-third of its original size when the Umutara prefecture was created in 1996 for the resettlement of returning refugees. The Gishwati Forest has all but disappeared (from a pre-war estimate of 37,000 ha, only about 2,000 ha now remain.

3.4.1. National Parks/Forest Reserves at a Glance

Rwanda has four national parks. They are all protected wildlife reserves and ecosystems and include the Akagera National Park, Nyungwe National Park, Gishwati-Mukura National Park and the Volcanoes National Park. Gishwati-Mukura was created in 2015 and is hence the youngest national park created. The Rwanda Development Board (RDB) is responsible for the overall management of

all the national parks, related infrastructure and promoting tourism. The RDB is assisted by other government agencies and ministries. In some cases, like that of the Akagera and Gishwati-Mukura National Park, the government entered into long term agreements with private partners to help run some park activities

These areas are exclusively reserved for the protection of flora and fauna, eco-tourism, biodiversity conservation, and for geological formations of scientific and aesthetic value. The geographical distribution of those parks on the national territory is a guarantee of the conservation of biological diversity representative of the fauna and flora of the country.

3.4.2. Volcanoes National Park

Spanning on a 160 Km² area in the Northern part of Rwanda, Volcanoes national park is the oldest national park in Africa, created in 1925. It was initially a small area around Karisimbi, Mikeno and Visoke volcanoes which was gazetted to protect the Mountain gorillas which were facing the threat of extinction as a result of poaching. In 1929, the park was extended into Rwanda and the then Belgian Congo and was named Albert national park managed and run by the Belgian Colonial Authorities. During early 1960s, the park was divided as Rwanda and Congo gained their independence and by the end of that decade, the park was almost half of its original size (340 Km² to 160 Km²). Volcanoes National Park is home to Mountain Gorilla (*Gorilla beringei beringei*); golden monkeys (*Cercopithecus mitis kandti*), Spotted Hyena (*Crocuta crocuta*), buffaloes (*Syncerus caffer*), elephants, black-fronted duiker (*Cephalophus niger*), and bushbuck (*Tragelaphus scriptus*). The park also harbors 178 bird species including at least 29 endemics to Rwenzori mountains and the Virungas. The Volcano National Park -VNP also host 245 species of plants of which 17 are predominant, including 13 orchid internationally protected, 115 species of mammals, 27 species of reptiles and amphibians and 33 species of arthropods. Some of these species are endemic while others are internationally protected.

Nyungwe National Park Located in the South West corner of Rwanda, Nyungwe National Park is an untouched natural rainforest that is filled with exciting biodiversity. Nyungwe National Park was established in 2004 and covers an area of approximately 1000 km² of rainforest, bamboo, grassland, swamps, and bogs. The nearest town is Rusizi, 54 km to the west. Mount Bigugu is located within the park borders. Nyungwe is surely one of the world's most beautiful and pristine mountain

rainforests. It's believed to be one of Africa's oldest forests, staying green even through the Ice Age, which explains its diversity. The Nyungwe forest has a wide diversity of animal species, making it a priority for conservation in Africa. The forest is situated in a region in which several large-scale biogeographical zones meet and the variety of terrestrial biomes provides a great span of microhabitats for many different species of plants and animals. The park contains 13 different primate species (25% of Africa's total) with habituated chimpanzees and 12 other primates species (including a 400-strong troop of habituated Ruwenzori Black & White Colobus), 85 mammal species, 275 species of birds of which 26 are endemic in the Albertin Rift and 3 are on the red list of the IUCN (*Bradypterus graueri*, *Crypto spiza shelleyi* and *Apdis argentea*), 32 amphibian and 38 reptile species and 1068 plant species of which 140 species of orchids, 260 species of ligneous and herbaceous plants, 24 species of trees. Many of these animals are restricted-range species that are only found in the Albertine Rift montane forests ecoregion in Africa. In fact, the number of endemic species found here is greater than in any other forest in the Albertine Rift Mountains that has been surveyed. The forest, which reaches its maximum altitude of 3000 metres above sea level, is of particular interest for the presence of colonies of chimpanzees (*Pantroglydytes* - Blumenbach, 1775) and Angola colobus (*Colobus angolensis* - Sclater 1860).

3.4.3. Akagera National Park

The savannah in the North Eastern Rwanda is used as the Akagera National Park; it covers 900km² situated between 1300-1825 m of altitude. This park was created in 1934 to protect animals in three ecoregions: savannah, mountain and swamp. Conserving biodiversity in this ecosystem has been challenging due to increasing pressures, potential loss of habitat and species or lack of up-to-date data, etc.

This park has a set of compounds that define its high importance, the Akagera major components are: Forest fringed lakes, papyrus swamps, savannah plains and rolling highlands. Akagera has exceptional levels of biodiversity, partly due to its position at the confluence of different vegetation zones. The extensive systems of freshwater lakes and associated papyrus swamps form the largest protected wetland in central Africa. Its biodiversity has a double origin; both native and introduced species make the Akagera fauna and flora diversity. The wildlife in the Akagera National Park comprises 90 species of mammals of which 47 species of big mammals, 530 bird species, 35 fish species, 9 species of amphibians and 23 species of reptiles. Four animal species are protected by the

CITES (Convention on International Trade of Endangered Species) namely *Loxodonta Africana*, *Sincerus caffer*, *Panthera leo* and *Tragelaphus oryx*. The flora of the Akagera National Park is diverse and 6 species of orchids are recorded. The ANP is dominated by the grass savannah and different species of acacia trees; the most found in the forest savannah.

Introduced 'Masai' giraffe, black rhino, elephant, buffalo, zebra and duikers are major herbivorous of the Akagera National Park. Whereas for the large predators only leopard (*Panthera pardus*) and hyaena (*Crocuta crocuta*) can still be found in the park. Although lion once occurred throughout Akagera, the population has been wiped out mostly through poisonings by cattle herders seeking to protect their livestock. A reduction in the prey-base due to heavy poaching would also have contributed to their demise. Smaller predators are still well represented with healthy populations of several mongoose species, viverrid species, serval (*Leptailurus serval*) and side-striped jackal (*Canis adustus*).

3.4.4. Gishwati-Mukura National Park

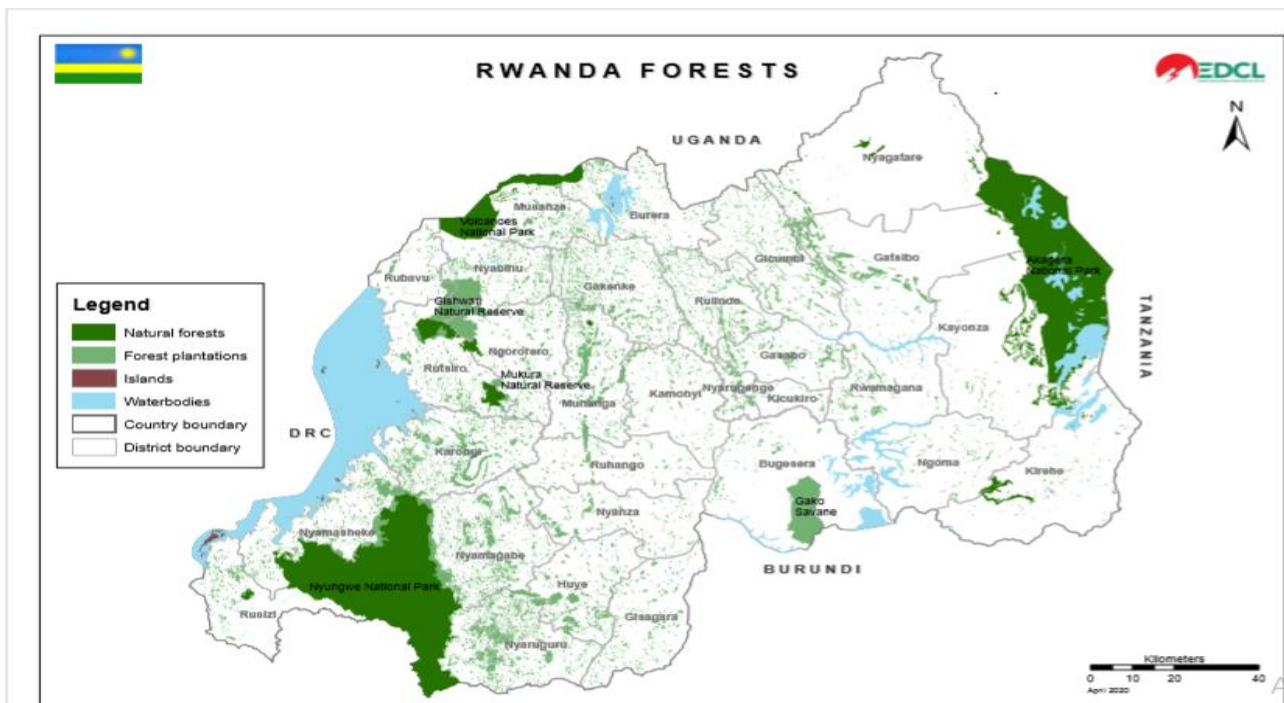
Presently, Gishwati-Mukura forest reserve is known for a wide range of fauna, including four species of primates: the eastern chimpanzee, the golden monkey, the blue monkey, and the l'hoest's monkey (also known as mountain monkey); more than a dozen species of East African chimpanzees; mammals such as red river hog, the black-fronted duiker, the southern tree hyrax, among others. Conservationists have also reported seeing the black and white colobus, another species of primates. The forest reserve also boasts about 60 species of trees, including indigenous hardwoods and bamboo. Gishwati and Mukura natural forests were originally earmarked as forest conservation zones in 1933. According to the draft law of October 15, 2014, the Gishwati-Mukura National Park will cover a total surface area of 3,427.46 hectares with Gishwati forest (1,439.72 hectares) and Mukura forest (1,987.74 hectares). The government has also dedicated an area covering 992.48 hectares to a subsequent buffer zone to deter human encroachment. Over the past decades, the Gishwati-Mukura area was nearly depleted largely due to resettlement, livestock farming and smallholder farms in the aftermath of the 1994 Genocide against the Tutsi.

Relic forests and gallery forests The Gishwati forest that covered 21,000 ha before 1981, consisted of only 600 ha in 2002. The natural forest of Mukura that stretches on 3,000 ha in 1960 covered only 800 ha in 2002. Regarding tree species and altitude, it is similar to that of Gishwati (2000~3000 m).

Relict forests and savannahs in the East are located around the Akagera Park and have a variety of endemic and rare species whose majority is used in traditional medicine. Gallery forests accommodate an important biodiversity with endemic and rare species. That is for instance the case of the *Blighia unijugata*, *Grewia forbesi*, *Rhus vulgaris*, *Pterygota mildbraedii* and *Ficus* sp.

In general, for a period of about 40 years, the surface area of the natural forests of Rwanda underwent a decrease of about 65% between 1960 and 2002. The search for arable lands, extensive farming, illegal felling of forests for firewood, production of wood for charcoal and poles for building in urban areas, as well as a land mismanagement have drastically contributed to the reduction of the surface area of forests.

Figure 6: Forests in the program area



3.5. Biodiversity of wetlands

The ecosystems of the Rwandan wetlands inhabit a rich biological diversity in terms of vegetation and animal species (more than 104 plant species have been identified), except for Lake Kivu, Bulera and Ruhondo that have some limnologic problems. The Lake Kivu contains a very poor aquatic flora and the density of the phytoplankton is relatively low due to the lack of mixture of layers with a biozone limited at 60 m to 70 m (the nutrients are found at the bottom of the lake). The ichthyologic

fauna is also poor with 31 fish species due the volcanic origin of the lake. Most lakes of the Akagera National Park are very rich in biodiversity with phytoplankton, fish species and ornithological fauna. The flora is dominated by the Cyperus, Phragmites, Phinix, etc. The Water Hyacinth (*Eichornia crassipes*) is present and has started spreading covering more important surfaces of the lakes, thus posing a threat to their biological diversity. Some lakes like Cyambwe, Rwampanga and Rweru are particularly rich in hippopotamuses and crocodiles. One can also find many other lakes such as Nasho, lakes of Gisaka and Bugesera that contains phytoplankton that is very rich in biodiversity and flora that is mainly dominated by papyrus with *Cyperus papyrus* mixed with *Miscandium violaceum* and *Nymphaea nouchallii*. All these lakes are associated with gallery forests onshore or on small islands. Concerning the Northern lakes (Bulera and Ruhondo), the aquatic flora and fauna are poor due to the physico-chemical situation unfavourable to their development and the isolation of the two lakes. The concentration of the plankton is less important in Lake Bulera than in Ruhondo. They have 48 species grouped in 4 families (chlorophyceous, Cyanophyceous, pyrophytes and bacillariophyceous). Lake Muhazi is land locked, isolated, and its ichthyologic fauna is very limited. One can find three endemic species and other nine introduced from outside. The lake is very rich in phytoplankton.

The macroflora of the marshes is mostly composed of wide spaces of papyrus with some zones of *Miscanthidium*. The low layer is covered with *Cyclosorus stratus*. The fauna of big rivers and associated marshes comprises ungulates, carnivores, primates, rodents, lagomorphous, insectivorous and birds.

3.5.1 Biodiversity in agricultural systems

Demographic pressure and intensive agricultural practices in combination with diversified agropastoral practices; deforestation, bush fires and urbanization have disrupted the ecosystem functions. These changes caused secondary formation consisting essentially of graminaceous plants, numerous seasonal or perennial species alternating with crops. Agricultural arable land presently covers around 52% of the total surface area of the country and is permanently cultivated (RNRA 2012). The time between two growing seasons is the only period of respite. These areas have various crops that play an essential role in the national economy. These crops are usually grouped in two categories: subsistence and cash crops. Some of the food crops include; sorghum, beans (*Phaseolus vulgaris*), eleusine (*Eleusine corocana*), Colocases (*Colocasia antignorum*), maize (*Zea mays*), rice

(*Oryza sativa*), wheat (*Triticum* sp), barley (*Hordeum vulgare*), peas (*Pisumsativum*), soja bean (*Soja hispada*), peanut (*Arachis hypogea*), sweet potato (*Ipomea durcis*), potato, cassava (*manihot esculanta*) and banana (*Musa*). The importance of each crop varies according to regions. Some crops, like bananas, potatoes, different varieties of wheat, sorghums and beans are subject to high commercial trade. Potatoes, beans, cassava and bananas are present everywhere for the daily diet of the people. The cash crops are very few. They are limited to coffee, tea and pyrethrum.

3.6. Pastoral zones

In Rwanda, the essential part of animal husbandry is limited to the family and a small number of animals per household. As agriculture occupies the biggest portion of land, the cows graze in paddock, some parts of marginal lands and limited pasturelands mainly Gishwati national reserve and Umutara. This obliges farmers to adopt the semi-permanent farming and grow fodder crops such as *Tripsacum laxum*, *Setaria* spp, *Desmodeum* spp, *Pennisetum purpureum*, *Mucuna pruriensis*, *Cajanus cajan*, *Calliandra calothyrsis*, *Leucaena diverifolia*, *Sesbania sesban*, etc. However, we can notice the development of ranching in Umutara and Gishwati. Other pastoral land is very limited and distributed all over the country. These areas are prone to bush fires, trampling and sometimes overgrazing. The latter is the main cause of reduction of the biological diversity as it exterminates the most precious species along with pyrophyte species with small bromatologic value such as *Eragrostis* spp, *Sporobolus* spp and *Digitaria* spp.

3.7. Woodlands

Tree planting in Rwanda was limited to some plants around households such as *Ficus thoningii*, *Euphorbia tirucalli*, *Erythrina abyssinica*, *Vernonia amygdalena*, *Dracaena afromontana*, etc., but the cultivation of woody perennials for timber, energy generation or other services was not part of the customs. That resulted in a massive exploitation that quickly proved its limits. The first forest plantations were created in 1920 and 1948 and only consisted of *Eucalyptus*. Later on, other species were introduced. These were namely *Pinus* spp, *Callistris* spp, *Grevillea robusta*, *Cedrella* spp, *Cupressus*. The Arboretum of Ruhande (RAB Station) has 206 species among which 146 feuillus, 56 resinous and a species of bamboo. Those species proved to be dangerous for the biological patrimony because they used to drain and acidify places that are already acid, what caused the reduction or even the extermination of the undergrowth. Thus, planting those species would lead to erosion. The

covered surface area was estimated at 256,300 hectares in 1998. Despite efforts of diversifying tree species, we estimate that 99% of trees consisted of Eucalyptus spp.

3.8. Socio-economic and environment

3.8.1. Population and demographic characteristics

3.8.1.1. Gender distribution of the population per administrative District

In a bid to promote a sustainable and equitable development as a subsequent impact of any development projects, gender needs to be mainstreamed into the day to day development initiatives. This is important for the design and implementation of projects that are responsive to the practical needs of women, households, and to those of communities in general.

Table 3: Gender thematic distribution in 27 administrative Districts of East, West, North and Southern Provinces of Rwanda

| # | Administrative District | Number of females per 100 males | Sex of the Household-heads: Male-Headed | Sex of the Household-heads: Female-Headed | Sex of the Household-heads: De facto Female-Headed |
|----|-------------------------|---------------------------------|---|---|--|
| 1 | Nyanza | 108 | 67 | 28.1 | 4.9 |
| 2 | Gisagara | 114 | 60.1 | 33.5 | 6.4 |
| 3 | Nyaruguru | 116 | 68.3 | 25.3 | 6.4 |
| 4 | Huye | 110 | 59.7 | 31.6 | 8.8 |
| 5 | Nyamagabe | 104 | 69.5 | 25.3 | 5.2 |
| 6 | Ruhango | 108 | 63.9 | 28.2 | 8 |
| 7 | Muhanga | 110 | 65.9 | 26.9 | 7.2 |
| 8 | Kamonyi | 105 | 68.7 | 24.6 | 6.6 |
| 9 | Karongi | 104 | 68.4 | 23.7 | 7.9 |
| 10 | Rutsiro | 109 | 75.5 | 20.7 | 3.8 |
| 11 | Rubavu | 108 | 70.1 | 23.1 | 6.8 |
| 12 | Nyabihu | 109 | 66.5 | 26.7 | 6.8 |
| 13 | Ngororero | 120 | 60.7 | 27.5 | 11.9 |

| # | Administrative District | Number of females per 100 males | Sex of the Household-heads: Male-Headed | Sex of the Household-heads: Female-Headed | Sex of the Household-heads: De facto Female-Headed |
|----|-------------------------|---------------------------------|---|---|--|
| 14 | Rusizi | 102 | 72.1 | 22.7 | 5.1 |
| 15 | Nyamasheke | 115 | 67 | 28.7 | 4.3 |
| 16 | Rulindo | 105 | 68.1 | 27.6 | 4.3 |
| 17 | Gakenke | 107 | 67.7 | 23.9 | 8.3 |
| 18 | Musanze | 120 | 70 | 20.5 | 9.4 |
| 19 | Burera | 114 | 61.8 | 26.3 | 11.9 |
| 20 | Gicumbi | 111 | 73.9 | 22.5 | 3.6 |
| 21 | Rwamagana | 103 | 66.4 | 27.4 | 6.2 |
| 22 | Nyagatare | 110 | 71.1 | 24.1 | 4.9 |
| 23 | Gatsibo | 106 | 71.6 | 25.1 | 3.3 |
| 24 | Kayonza | 110 | 62.6 | 26.2 | 11.2 |
| 25 | Kirehe | 110 | 68.5 | 25.3 | 6.2 |
| 26 | Ngoma | 116 | 66.2 | 27.8 | 6 |
| 27 | Bugesera | 112 | 70.6 | 23.7 | 5.7 |

Source: EICV5

The table above shows that in all administrative districts, the female population in all thematic is greater than the male population which shows that female will have to play the big role in this program implementation and therefore contribute to the development and increment of household income which increase also the role of the woman in the society. As one of the gender mainstreaming strategies, the program has prepared the gender action plan (GAP) which should be implemented to make sure that the woman is not left behind by the program but ensures their full involvement in the project activities as shown that they represent a big number in the population.

3.8.1.2. Education

It has been observed almost everywhere that education can help lift someone out of poverty when well educated. It is also the case that children from poor households tend to get less education than their more-affluent peers. Both effects appear to hold true in Rwanda (EICV5).

While 13% of household heads have a secondary education or higher, the figure is 18% for the non-poor and just 2% for the poor; and while 57% of the non-poor have no school diploma or certificate, the figure is 79% for the heads of poor households. Between 2014 and 2017 the proportion of those with a High school certificate, or bachelor's degree or higher, rose from 6% to 8%, while the fraction of those without a certificate fell by just over two percentage points.

Table 4. Education of the population in the program area by gender and age

| Administrative District | population aged 6 and above who have ever attended school | Percentage of the population aged between 6 and 30 who have attended school | Net Attendance Rate (NAR) at primary school | Net Attendance Rate (NAR) at primary school Female | Net Attendance Rates (NARs) in secondary school Male | Net Attendance Rates (NARs) in secondary school Female | Literacy rate of the population aged between 15 and 24 | Literacy rate of the population aged above 15 and 24 | Computer literacy rate of the population aged between 15 and 24 | Computer literacy rate of the population aged between 15 and above | Population aged between 16 and 30 who attended tertiary education |
|-------------------------|---|---|---|--|--|--|--|--|---|--|---|
| Nyanza | 86.8 | 64.2 | 88.6 | 88.4 | 20.5 | 25.1 | 91.6 | 72.1 | 8.8 | 5.7 | 2.1 |
| Gisagara | 83.5 | 51.8 | 79.5 | 86.8 | 7.5 | 16.3 | 79.7 | 64.5 | 6.7 | 5.0 | 1.8 |
| Nyaruguru | 82.3 | 63.5 | 86.0 | 86.9 | 15.4 | 23.2 | 82.0 | 63.5 | 6.6 | 5.8 | 3.1 |
| Huye | 86.9 | 56.7 | 83.7 | 84.6 | 17.0 | 23.5 | 85.1 | 68.0 | 4.9 | 5.3 | 2.4 |
| Nyamagabe | 85.3 | 62.6 | 90.8 | 91.3 | 17.1 | 19.6 | 86.1 | 70.4 | 4.3 | 3.9 | 1.0 |
| Ruhango | 89.7 | 65.8 | 89.2 | 94.7 | 20.8 | 21.1 | 81.3 | 70.5 | 15.4 | 7.5 | 3.5 |
| Muhanga | 88.4 | 58.6 | 89.8 | 95.4 | 19.6 | 24.8 | 79.5 | 72.5 | 11.1 | 9.4 | 4.1 |
| Kamonyi | 90.5 | 61.6 | 88.1 | 90.5 | 20.6 | 25.0 | 92.3 | 76.7 | 5.6 | 5.2 | 2.1 |
| Karongi | 86.3 | 64.9 | 90.5 | 92.2 | 18.8 | 23.4 | 90.0 | 71.5 | 9.2 | 6.8 | 2.6 |
| Rutsiro | 81.4 | 58.7 | 85.5 | 86.9 | 22.0 | 21.5 | 88.2 | 64.0 | 3.6 | 2.7 | 0.7 |
| Rubavu | 84.1 | 57.8 | 88.0 | 84.2 | 26.2 | 25.5 | 84.7 | 70.9 | 13.2 | 13.1 | 4.8 |

| Administrative District | population aged 6 and above who have ever attended school | Percentage of the population aged between 6 and 30 who have attended school | Net Attendance Rate (NAR) at primary school | Net Attendance Rate (NAR) at primary school Female | Net Attendance Rates (NARs) in secondary school Male | Net Attendance Rates (NARs) in secondary school Female | Literacy rate of the population aged between 15 and 24 | Literacy rate of the population aged 15 and above | Computer literacy rate of the population aged between 15 and 24 | Computer literacy rate of the population aged 15 and above | Population aged between 16 and 30 who attended tertiary education |
|-------------------------|---|---|---|--|--|--|--|---|---|--|---|
| Nyabihu | 86.5 | 59.8 | 87.2 | 84.8 | 21.8 | 24.1 | 84.6 | 67.2 | 7.5 | 5.1 | 1.9 |
| Ngororero | 84.0 | 58.6 | 88.7 | 89.4 | 10.9 | 12.5 | 87.3 | 66.2 | 3.8 | 2.8 | 0.4 |
| Rusizi | 88.5 | 59.9 | 87.6 | 89.2 | 21.6 | 24.6 | 81.3 | 67.4 | 7.1 | 4.9 | 0.7 |
| Nyamasheke | 87.4 | 65.7 | 89.9 | 91.3 | 19.8 | 28.0 | 92.0 | 74.7 | 10.6 | 6.4 | 1.8 |
| Rulindo | 87.5 | 57.2 | 92.1 | 86.3 | 20.9 | 33.6 | 89.4 | 74.4 | 6.9 | 6.5 | 2.8 |
| Gakenke | 87.2 | 60.9 | 90.4 | 89.4 | 19.3 | 24.8 | 85.2 | 70.1 | 9.5 | 6.2 | 1.5 |
| Musanze | 88.6 | 59.6 | 90.5 | 93.6 | 24.2 | 36.9 | 87.3 | 74.2 | 13.2 | 11.5 | 3.6 |
| Burera | 84.4 | 58.2 | 93.3 | 94.2 | 20.8 | 21.1 | 89.2 | 68.5 | 8.3 | 6.4 | 1.1 |
| Gicumbi | 85.6 | 59.6 | 90.1 | 91.0 | 20.6 | 24.9 | 90.3 | 72.5 | 6.4 | 5.4 | 2.3 |
| Rwamagana | 88.2 | 55.8 | 84.9 | 91.3 | 22.7 | 26.4 | 91.3 | 78.1 | 10.3 | 8.1 | 1.5 |
| Nyagatare | 84.9 | 55.5 | 76.9 | 79.7 | 15.9 | 22.6 | 84.4 | 71.4 | 6.1 | 4.2 | 1.5 |

| Administrative District | Population aged 6 and above who have ever attended school | Percentage of the population aged between 6 and 30 who have attended school | Net Attendance Rate (NAR) at primary school | Net Attendance Rate (NAR) at primary school Female | Net Attendance Rates (NARs) in secondary school Male | Net Attendance Rates (NARs) in secondary school Female | Literacy rate of the population aged between 15 and 24 | Literacy rate of the population aged 15 and above | Computer literacy rate of the population aged between 15 and 24 | Computer literacy rate of the population aged 15 and above | Population aged between 16 and 30 who attended tertiary education |
|-------------------------|---|---|---|--|--|--|--|---|---|--|---|
| Gatsibo | 84.9 | 59.6 | 86.4 | 86.7 | 11.0 | 20.8 | 84.7 | 67.0 | 5.4 | 4.2 | 1.8 |
| Kayonza | 85.8 | 58.6 | 79.2 | 81.6 | 14.0 | 22.9 | 82.4 | 70.4 | 7.0 | 5.4 | 0.4 |
| Kirehe | 87.5 | 60.9 | 82.9 | 87.9 | 17.3 | 18.9 | 82.3 | 70.2 | 3.9 | 2.7 | 0.9 |
| Ngoma | 85.9 | 60.4 | 87.1 | 88.5 | 21.2 | 24.1 | 85.5 | 71.5 | 11.7 | 7.7 | 4.1 |
| Bugesera | 84.8 | 57.0 | 85.9 | 82.0 | 16.2 | 16.9 | 85.7 | 72.4 | 8.0 | 6.7 | 2.1 |

Source: EICV5

As the table above shows, the literacy rates decrease as the ages increases, which shows the efforts of the Government of Rwanda among the population and all children benefiting the free education and fighting children drop out. However the computer literacy is still low and even very low in very rural areas like Rutsiro and Kirehe administrative districts whereas in urban like districts like Rubavu, Musanze and Muhanga administrative districts the rate is a bit high exception done by Ruhango with

higher rate though rural administrative district and Huye with low rate though it is the urban administrative district. This exception may be coming from chances in the samples.

3.8.2. Poverty distribution per administrative District

According to EICV5 report, the main poverty line is set at RWF 159,375 per adult equivalent per year in the prices of January 2014. This is the same poverty line that was used to measure poverty in 2014 using the EICV4 data, and a detailed discussion of how the line was chosen may be found in the EICV4 poverty profile report. Extreme poverty is measured using a poverty line of RWF 105,064 per adult equivalent per year, again in the prices of January 2014. This is the cost of buying enough food to provide an adequate number of calories, with a diet that reflects the observed behavior of poor households, but it does not make any allowance for non-food spending. The key finding from the EICV5 survey is that the headcount poverty rate – which measures the percentage of people who are poor – was 38.2% in 2017. This is slightly lower than the poverty rate of 39.1% observed in 2014, however, the difference between the poverty rates of 2014 and 2017 is statistically insignificant.

The table below shows the poverty and extreme poverty distribution in the project area

Table 5: Poverty and extreme poverty distribution in 27 Administrative Districts of East, West, North and Southern Provinces of Rwanda

| # | Administrative District | EICV5 Poverty | EICV5 Extreme Poverty |
|----|-------------------------|---------------|-----------------------|
| 1 | Nyanza | 46.5 | 16.0 |
| 2 | Gisagara | 55.6 | 25.6 |
| 3 | Nyaruguru | 52.4 | 28.1 |
| 4 | Huye | 40.2 | 12.9 |
| 5 | Nyamagabe | 48.6 | 17.7 |
| 6 | Ruhango | 38.0 | 15.0 |
| 7 | Muhanga | 32.6 | 13.8 |
| 8 | Kamonyi | 22.3 | 8.7 |
| 9 | Karongi | 52.7 | 21.3 |
| 10 | Rutsiro | 49.5 | 24.4 |
| 11 | Rubavu | 35.7 | 14.6 |

| # | Administrative District | EICV5 Poverty | EICV5 Extreme Poverty |
|----|-------------------------|---------------|-----------------------|
| 12 | Nyabihu | 46.8 | 18.0 |
| 13 | Ngororero | 47.7 | 20.8 |
| 14 | Rusizi | 33.5 | 12.8 |
| 15 | Nyamasheke | 69.3 | 41.5 |
| 16 | Rulindo | 54.2 | 23.2 |
| 17 | Gakenke | 34.2 | 13.1 |
| 18 | Musanze | 40.7 | 18.1 |
| 19 | Burera | 49.8 | 19.9 |
| 20 | Gicumbi | 34.7 | 13.4 |
| 21 | Rwamagana | 18.9 | 4.8 |
| 22 | Nyagatare | 44.8 | 20.1 |
| 23 | Gatsibo | 42.1 | 18.8 |
| 24 | Kayonza | 26.7 | 8.5 |
| 25 | Kirehe | 44.6 | 18.5 |
| 26 | Ngoma | 37.8 | 14.0 |
| 27 | Bugesera | 40.3 | 17.8 |

Source: EICV5

The low poverty rates in the city of Rwamagana district are evident, as are the relatively high poverty rates in Nyamasheke administrative district of Western Province and Nyaruguru as well as in Gisagara administrative districts of Southern Province respectively.

According to EICV 5 Poverty rates and the distribution of the poor are very important for targeting purposes. A government intervention that helps the rural population would help 93% of the poor; on the other hand, 57% of the benefits would go to the non-poor, since the rural poverty rate is 43%. The national poverty rate of 38.2%, just 2.8 percentage points are attributable to urban poverty, while the remaining 35.4 percentage points are due to rural poverty, which strengthen the need of Rural Electrification as a way to alleviate poverty among the population.

3.8.3. Energy sources of Households

Energy is the essential in the community lives and is taken as a measure of environmentally friendly the community is becoming through the use of energy sources with less CO2 emissions and environmental degradation. The table below summarizes the source of fuel in project area and give a clear picture of which effort is needed for climate resiliency and poverty alleviation in the Rwandan community.

Table 6: Energy sources distribution in 27 administrative Districts of East, West, North and Southern Provinces of Rwanda

| Administrative District | Primary fuel used for lighting: Electricity distributor | Primary fuel used for lighting: Oil Lamp | Primary fuel used for lighting: Fire wood | Primary fuel used for lighting: Candle | Primary fuel used for lighting: Lantern | Primary fuel used for lighting: Solar panel | Primary fuel used for lighting: Batteries | Others | Primary fuel for cooking: Firewood | Primary fuel for cooking: Charcoal | Primary fuel for cooking: Crop waste | Others |
|-------------------------|---|--|---|--|---|---|---|--------|------------------------------------|------------------------------------|--------------------------------------|--------|
| Nyanza | 14 | 0 | 2 | 2 | 5 | 63 | 14 | 0 | 94 | 6 | 0 | 1 |
| Gisagara | 10 | 0 | 12 | 3 | 2 | 65 | 7 | 1 | 96 | 3 | 0 | 1 |
| Nyaruguru | 9 | 0 | 13 | 5 | 1 | 63 | 7 | 1 | 96 | 4 | 0 | 1 |
| Huye | 14 | 2 | 6 | 7 | 5 | 54 | 12 | 1 | 88 | 11 | 0 | 0 |
| Nyamagabe | 9 | 1 | 10 | 5 | 0 | 66 | 10 | 0 | 96 | 3 | 0 | 0 |
| Ruhango | 20 | 2 | 2 | 3 | 5 | 65 | 3 | 0 | 95 | 3 | 1 | 1 |
| Muhanga | 20 | 2 | 3 | 4 | 4 | 61 | 7 | 0 | 89 | 10 | 0 | 0 |
| Kamonyi | 18 | 4 | 1 | 8 | 5 | 58 | 6 | 1 | 89 | 10 | 1 | 0 |
| Karongi | 14 | 1 | 5 | 2 | 1 | 56 | 21 | 0 | 92 | 7 | 0 | 0 |
| Rutsiro | 11 | 2 | 8 | 5 | 0 | 59 | 14 | 1 | 97 | 3 | 0 | 0 |
| Rubavu | 41 | 2 | 7 | 14 | 3 | 32 | 0 | 1 | 59 | 40 | 0 | 1 |

| Administrative District | Primary fuel used for lighting: Electricity distributor | Primary fuel used for lighting: Oil Lamp | Primary fuel used for lighting: Firewood | Primary fuel used for lighting: Candle | Primary fuel used for lighting: Lantern | Primary fuel used for lighting: Solar panel | Primary fuel used for lighting: Batteries | Others | Primary fuel for cooking: Firewood | Primary fuel for cooking: Charcoal | Primary fuel for cooking: Crop waste | Others |
|-------------------------|---|--|--|--|---|---|---|--------|------------------------------------|------------------------------------|--------------------------------------|--------|
| Nyabihu | 17 | 1 | 7 | 9 | 3 | 60 | 2 | 2 | 88 | 12 | 0 | 0 |
| Ngororero | 7 | 1 | 13 | 2 | 2 | 67 | 8 | 1 | 97 | 3 | 0 | 0 |
| Rusizi | 32 | 3 | 4 | 5 | 1 | 43 | 11 | 1 | 86 | 12 | 0 | 1 |
| Nyamasheke | 22 | 4 | 6 | 5 | 2 | 46 | 15 | 1 | 98 | 2 | 0 | 0 |
| Rulindo | 15 | 1 | 2 | 7 | 0 | 61 | 10 | 4 | 94 | 6 | 0 | 1 |
| Gakenke | 12 | 1 | 3 | 1 | 2 | 75 | 5 | 1 | 97 | 2 | 0 | 1 |
| Musanze | 32 | 1 | 8 | 13 | 1 | 43 | 2 | 0 | 81 | 19 | 0 | 0 |
| Burera | 18 | 1 | 4 | 3 | 3 | 66 | 6 | 0 | 92 | 6 | 2 | 0 |
| Gicumbi | 12 | 1 | 2 | 10 | 1 | 71 | 2 | 1 | 96 | 3 | 0 | 0 |
| Rwamagana | 28 | 3 | 0 | 8 | 4 | 46 | 9 | 1 | 77 | 18 | 4 | 1 |
| Nyagatare | 15 | 0 | 0 | 5 | 1 | 67 | 11 | 0 | 90 | 6 | 2 | 2 |
| Gatsibo | 14 | 1 | 1 | 4 | 1 | 62 | 17 | 0 | 92 | 5 | 3 | 0 |
| Kayonza | 19 | 4 | 1 | 5 | 12 | 48 | 11 | 1 | 92 | 8 | 0 | 0 |
| Kirehe | 16 | 1 | 1 | 1 | 17 | 57 | 6 | 0 | 95 | 4 | 0 | 1 |
| Ngoma | 18 | 3 | 2 | 2 | 27 | 39 | 8 | 2 | 86 | 8 | 5 | 1 |
| Bugesera | 19 | 0 | 1 | 5 | 0 | 70 | 4 | 0 | 91 | 8 | 0 | 1 |

Source: EICV5

According to the table above, it is clear that the project area community still relies on the forest felling to cook and this is an indicator of what happens inside their homes. The much depending on firewood

increases the risk of indoor air pollution which is source of many respiratory diseases in the community without forgetting the CO₂ emissions from this burning. The charcoal is also used by many populations in urban like districts mostly secondary cities like Rubavu, Musanze, Huye, Muhanga and Kamonyi with a high rate use of charcoal with Rwamagana also among the big users of charcoal. All these energy sources/fuels are the main cause of deforestation and emit a great deal of CO₂ emissions, hence the need to promote the fuel which is environmentally friendly and make it affordable to the community members. Against this need the clean cooking solutions and LPG constitutes a response to this environmental issue.

3.8.4. Human settlements

The Rwandan settlement pattern has been scattered since time immemorial. It has for long been characterized by the traditional use of land associated with the ancestral lifestyle, but which does not correspond any more to the present environmental and economic constraints. It is in that perspective that the present policy of the Government of Rwanda regarding settlement consists of encouraging a clustered habitat commonly known as «IMIDUGUDU».

In most urban areas, Rwanda has not yet developed city master plans. There are only plans of different towns of which some have expired and need updating. Urban centers developed spontaneously without taking environmental aspects into consideration. Sanitary facilities are insufficient and sometimes inadequate in city centers. In suburban zones known as spontaneous quarters, solid wastes are piled in disorder, drinking water is rare, and rainwater draining gutters are insufficient. Thus, diseases are frequent in those areas, the degradation of environment is more pronounced and living conditions are poor.

City development should normally be based on urban planning documents like the “Urban management master plan (SDAU)”. Presently, only two centers have got that kind of document and the SDAU of Kigali and Rwamagana are under development. The policy of city development which is under finalization is aimed at supporting districts in their efforts to quickly get urban planning documents integrating environmental aspects.

3.8.5. Cultural Heritage

As per ESS8, the objective of the Cultural Heritage is to protect it from the adverse impacts of project activities and support its preservation, to address cultural heritage as an integral aspect of sustainable development, to promote meaningful consultation with stakeholders regarding cultural heritage and finally promote the equitable sharing of benefits from the use of cultural heritage. The cultural heritage encompasses tangible and intangible heritage, which may be recognized and valued at a local, regional, national or global level, as follows: Tangible cultural heritage, which includes movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. Tangible cultural heritage may be located in urban or rural settings, and may be above or below land or under the water; Intangible cultural heritage, which includes practices, representations, expressions, knowledge, skills as well as the instruments, objects, artifacts and cultural spaces associated therewith that communities and groups recognize as part of their cultural heritage, as transmitted from generation to generation and constantly recreated by them in response to their environment, their interaction with nature and their history.

Rwanda's cultural heritage, seen from a general perspective, is rich and diversified. But it has, for long, been regarded as being a sector of minor importance, and, because of such consideration, failed to play its basic role of developing the nation.

However, there is no doubt cultural heritage is one of the main pillars for sustainable development. Rwanda's cultural heritage is rich and diversified; it contains Sacred hills, forests and trees with legendary history, traditional huts and royal palace countrywide, churches and other colonial buildings and structures, caves and rocks with bas-reliefs marking the legendary or historical events that have occurred on the site, thermal springs and wells used for ritual purposes, genocide against Tutsi memorial sites and designated burial sites which are located in different administrative districts where the project activities will be implemented.

The environmental and social assessment also takes into consideration the significance of intangible cultural heritage that may be materially affected or put at risk as a result of the program. For example, project activities may require cutting of trees or the movement of boulders that are used for cultural or religious practices and are considered sacred. If potential risks and impacts are identified, measures

and actions to avoid, mitigate, and/or manage them are put into place. For example, it may be possible to arrange for protection in place, or for scheduled visitations, or community-sanctioned movement of such sacred items. Protection and preservation of national cultural heritage consolidate national unity, social cohesion, cultural freedom and recognition of community identity.

Therefore, Government of Rwanda and its partners have the obligation to preserve and perpetuate this cultural heritage for present and future generations because, on the one hand, it brings in a lot of money as do agriculture, industry, gold or oil and, on the other, it maintains harmony and social balance between peoples. A chance finds procedure is a project-specific procedure which will be followed if previously unknown cultural heritage is encountered during project activities. It will be included in all contracts relating to construction of the project, including excavations, demolition, movement of earth, flooding or other changes in the physical environment. The chance finds procedure will set out how chance finds associated with the program will be managed. The procedure will include a requirement to notify relevant authorities of found objects or sites by cultural heritage experts; to fence-off the area of finds or sites to avoid further disturbance; to conduct an assessment of found objects or sites by cultural heritage experts; to identify and implement actions consistent with the requirements of this ESS and national law; and to train project personnel and project workers on chance find procedures, this have been detailed in Environmental and Social Commitment Plan (ESCP) developed under this RUEAP, a sample of the chance find procedure is attached to this ESMF.

3.8.6. Agriculture

The agriculture production system in all 27 district and is based on small family exploitations whose production is consumed by the owners at more than 80 %. The systems of crops are complex, based on the diversification of productions and the association of crops. Seven main crops, namely banana, bean, sweet potato, cassava, sorghum and potatoes, of which the first five are present in 90 % of production units and constitute the common basis for all the regions of Rwanda.

Great investments in modern agriculture and research-based agriculture using fertilizers and improved seeds on consolidated lands, pumping irrigation on hillsides, etc., have allowed great productions of maize, soya beans, voluble beans, wheat, Irish potatoes and rice. This achievement results in Ministry of Agriculture (MINAGRI)'s decision of putting in place specialized centers for

policy implementation and research under Rwanda Agriculture and Animal Resources Development Board (RAB). The recent survey has proved that the agriculture is the most important sector of the Rwandan economy and contributes considerably to poverty reduction. For instance, from 2011 to 2013 the total production of vegetables increased by 9% and their exports while fruits production increased by 18%. Their exports counted an increase from 15.4 ('000 Tons) in 2012 which generated 5,013,260 USD to 31.9 ('000 Tons) which generated 9,494,442 USD (Rwanda Statistical Yearbook, 2014).

However, the extensive agriculture practiced by the majority of Rwandan population contributes to the degradation of environment. Moreover, the agricultural intensification at the level of projects was often realized without taking into account environmental drawbacks accrued from inputs like (mineral fertilizers, pesticides, herbicides and used techniques).

3.8.7. Animal husbandry

The pastures consisted mainly of family fallows and marginal lands considered as inappropriate to agriculture such as the undergrowth. The limited subsisting pastoral areas were badly used because farmers did not master the management of pastures. That was showed by the overgrazing and overexploitation caused by trampling, degradation and disappearance of vegetation cover. The MINAGRI policy of keeping cattle in shed known as “zero grazing” program has significantly limited environmental degradation and crops damage, which was also a source conflicts between neighbors but this program also helps the people to have sufficient fertilizer household-based and many of the farmers are mobilized to make and use organic compost from their cows and other natural vegetation.

Moreover, the demographic pressure has progressively led to the semi intensification or intensification of fodder resources used to feed animals. Hence, animal husbandry, essentially made of cattle, was progressively transformed. This resulted in considerable increase of milk production from 257,450 in 2008 to 628,266 tons in 2013 and beef meat production increased from 24,889 to 29,807 tons in 2013 (Rwanda Statistical Yearbook, 2014).

Animal husbandry has also contributed to poverty reduction through a RAB-MINAGRI program called “One Cow per Every Poor household in Rwanda”. This program has decreased the number of malnourished children countrywide and has considerably contributed to poor household food security

and assisted the poor household to increase the agriculture production due to the availability of the organic manure.

Table 7: Economic activities of the population in 27 Administrative Districts of East, West, North and Southern Provinces of Rwanda

| District | Total number of jobs carried out and job status: Wage farm | Total number of jobs carried out and job status: Wage non-farm | Total number of jobs carried out and job status: Independent farmers | Total number of jobs carried out and job status: Independent Non-farm | Total number of jobs carried out and job status: Unpaid non-farm and other | Distribution of workers and broad economic activity: Agriculture | Distribution of workers and broad economic activity: Industry | Distribution of workers and broad economic activity: Services |
|-----------------|---|---|---|--|---|---|--|--|
| Nyanza | 63 | 56 | 146 | 28 | 3 | 213 | 32 | 51 |
| Gisagara | 86 | 47 | 157 | 27 | 4 | 244 | 23 | 54 |
| Nyaruguru | 60 | 44 | 131 | 30 | 4 | 192 | 26 | 51 |
| Huye | 73 | 65 | 141 | 32 | 1 | 216 | 29 | 66 |
| Nyamagabe | 88 | 68 | 167 | 48 | 8 | 259 | 40 | 79 |
| Ruhango | 57 | 43 | 130 | 23 | 1 | 190 | 28 | 36 |
| Muhanga | 53 | 65 | 146 | 29 | 4 | 204 | 30 | 62 |
| Kamonyi | 72 | 69 | 168 | 26 | 4 | 243 | 42 | 54 |

| District | Total number of jobs carried out and job status: Wage farm | Total number of jobs carried out and job status: Wage non-farm | Total number of jobs carried out and job status: Independent farmers | Total number of jobs carried out and job status: Independent Non-farm | Total number of jobs carried out and job status: Unpaid non-farm and other | Distribution of workers and broad economic activity: Agriculture | Distribution of workers and broad economic activity: Industry | Distribution of workers and broad economic activity: Services |
|-----------------|---|---|---|--|---|---|--|--|
| Karongi | 75 | 62 | 149 | 34 | 4 | 228 | 39 | 59 |
| Rutsiro | 72 | 37 | 154 | 25 | 2 | 229 | 23 | 37 |
| Rubavu | 73 | 78 | 108 | 64 | 8 | 185 | 36 | 110 |
| Nyabihu | 81 | 39 | 121 | 26 | 3 | 205 | 23 | 41 |
| Ngororero | 77 | 68 | 176 | 40 | 8 | 260 | 45 | 65 |
| Rusizi | 92 | 95 | 199 | 55 | 11 | 297 | 56 | 100 |
| Nyamasheke | 66 | 69 | 168 | 29 | 3 | 243 | 38 | 52 |
| Rulindo | 68 | 60 | 153 | 27 | 3 | 221 | 41 | 49 |
| Gakenke | 92 | 66 | 183 | 38 | 2 | 280 | 49 | 51 |
| Musanze | 75 | 71 | 140 | 38 | 4 | 218 | 37 | 73 |

| District | Total number of jobs carried out and job status: Wage farm | Total number of jobs carried out and job status: Wage non-farm | Total number of jobs carried out and job status: Independent farmers | Total number of jobs carried out and job status: Independent Non-farm | Total number of jobs carried out and job status: Unpaid non-farm and other | Distribution of workers and broad economic activity: Agriculture | Distribution of workers and broad economic activity: Industry | Distribution of workers and broad economic activity: Services |
|-----------------|---|---|---|--|---|---|--|--|
| Burera | 80 | 48 | 153 | 43 | 4 | 236 | 26 | 66 |
| Gicumbi | 74 | 41 | 185 | 25 | 3 | 264 | 19 | 46 |
| Rwamagana | 66 | 85 | 163 | 43 | 9 | 235 | 45 | 85 |
| Nyagatare | 159 | 86 | 258 | 59 | 12 | 423 | 41 | 110 |
| Gatsibo | 110 | 63 | 207 | 44 | 5 | 320 | 38 | 72 |
| Kayonza | 77 | 52 | 156 | 37 | 4 | 235 | 23 | 68 |
| Kirehe | 99 | 42 | 169 | 33 | 4 | 269 | 32 | 46 |
| Ngoma | 72 | 37 | 151 | 27 | 4 | 228 | 18 | 47 |
| Bugesera | 88 | 68 | 169 | 41 | 4 | 260 | 48 | 62 |

Source: EICV5

From the above table we clearly see that the main activity in the project area is predominantly agriculture which means that most of the rural population in Rwanda depend on farming and the findings from the table above show that the industry sector is still under exploited. People need to shift from agriculture to industry and get more income from non-farm services. Th electricity access is anticipated to boost the development where many households are ready to use it to develop the other off farming activities including using mills, hair cutting saloon, welding, carpentry with machine among many other services. NST1 recognizes access to electricity as one of the main factors which will help in its achievement.

IV. REVIEW OF NATIONAL, INSTITUTIONAL POLICIES AND REGULATORY FRAMEWORK

4.1. Legal Framework

Rwanda is just revising and enacting new institutional, policy and legislative framework in all its sectors and sub sectors after operating with colonial framework until after 1994. Most of the government ministries have already developed the 36 respective sector policies and strategic plans most of which are based on poverty reduction strategy and national strategy for transformation one.

4.1.1. The constitution of the Republic of Rwanda of 2003 revised in 2015

Article 21 all Rwandans have the right to good health. Article 22 specifies that everyone has the right to live in a clean and healthy environment, while Article 53 specifies that everyone has the duty to protect, safeguard and promote the environment. The constitution gives ways to many laws, policies and strategies for protecting, safeguarding and promoting the environment and social wellbeing.

Article 34 determines the rights to private properties and stipulates that every person has right to hold a private property whether individually or collectively owned. The private property, individual or collective is inviolable. The right to private property shall not be encroached upon except in public interest and in accordance with the provisions of law.

Article 35 specifies the right to private ownership of land and other rights that are related to land are granted by the State. A law determines the modalities of concession transfer and use of land. All

PAPs will be compensated for the asset to be damaged and will still have the right to cultivate the land after the construction works with some restrictions.

4.1.2. Environmental Law No 48/2018 of 13/08/2018

The most relevant legislation for this study is the Environmental law. This is the law that regulates the protection of environment in Rwanda. The law sets out the general legal framework for environment protection and management in Rwanda. It also constitutes environment as a one of the priority concerns of the Government of Rwanda. The fundamental principle on national environmental protection policy develops national strategies, plans and programs, aiming at ensuring the conservation and use of sustainable environmental resources.

The law gives right to every natural or legal person in Rwanda to live in a healthy and balanced environment. They also have the obligation to contribute individually or collectively to safeguard country's natural, historical and socio-cultural heritage. The framework of the law on the protection and management of natural resources centres on avoiding and reducing the disastrous consequences on environment. It measures result from an environmental evaluation of policies, programs and projects, aimed at preventing the consequences of such activities. The principle of sustainability of environment and equity among generation emphasizes human beings at the core of sustainable development. Therefore, they have a right to a healthy and productive life in harmony with nature. They must so as to equitably meet the needs of the present and future generation. The protection and management of environment is currently registered in the environmental law that has been published in the official Rwanda Gazette in September 2018. Ministry of Environment (MoE) which is the ministry responsible for the environment under the article 65 puts in place Rwanda Environment Management Authority (REMA) which is the institution now charged with the responsibility of ensuring environmental protection by demanding for ESIA studies to be undertaken before projects are executed. The present organic law has the following objectives.

- To protect human and natural environment.
- To establish fundamental principles of management and protection of environment against all forms of degradation so as to develop natural resources and to fight all kinds of pollutions and nuisances;

- To improve the living conditions of the population while preserving ecosystems and available resources;
- To ensure sustainable environment and resources as well as rational and sustainable use of resources, taking into account the equality between the present and future generations;
- To guarantee to all Rwandans an economically viable, ecologically rational and socially acceptable development;
- To establish the precaution principle in order to reduce the negative effects on Environment and ensure the rehabilitation of degraded areas.

In chapter 5 of Environmental law, Article 30 clearly calls for the need to subject projects to mandatory Environmental Impact Assessment. Article 3: States that every person has the duty to protect safeguard and promote environment. The State shall protect, conserve and manage the environment.

Article 33 states that the review and approval of environmental impact assessments, environmental audit, and strategic environmental assessment must be approved by the Authority or another state organ authorised in writing to do so by the Authority. If the approval is done by an authorised, such organ does so on behalf of the Authority which also responsible for its audit. With regards to the costs of conducting Environmental Assessments, Article 34 stipulates that consultancy cost for environmental audit and environmental Assessment are borne by the program initiator. This program will trigger this law because it will involve negative impacts to the environment through tree felling and bush clearance for right of way, air pollution, noise pollution and soil degradation among others. However, all of these will be mitigated to minimize to the extent possible their effect on the environment.

4.1.3. Environmental Impact Assessment regulations

REMA has now developed the ESIA regulations which provide a guideline and requirements for ESIA in Rwanda. Projects with identified adverse impacts on environment call for a full ESIA process for mitigation measures and thus the Ministerial Order No 001/ 2019 of 15/04/2019 establishing the list of projects that must undergo environmental impact assessment, instructions, requirements and procedures to conduct environmental impact assessment. The order specifies the works, activities and projects that have to undertake an environmental impact assessment. The list of works, activities and

projects that must undergo a full environmental impact assessment before being granted authorisation for their implementation is found in Annex I of the Order. The No 12 of this Annex 1 put the construction of hydro-dams, hydropower plants and electrical lines of high and medium voltage in the projects that must undergo full environmental Impact Assessment;

The list of works, activities and projects that must undergo a partial environmental impact assessment before being granted authorisation for their implementation is found in Annex II of the Order. The construction of micro hydroelectric power plants is in the project works, activities and projects that have to undertake a partial environmental impact assessment. The detailed list of these is found on the annex 2 of this order.

Projects, works and activities which are not listed on the Annex I and II to the Order are not subject to the environmental impact assessment. However, when it is evident that work, activity or project not listed on the Annex I and II to this Order has a negative and irreversible impact on the environment and is similar in nature to the work, activity or project listed in Annex I and II of this Order, the Authority or authorized organ may request the developer to conduct an environmental impact assessment.

The project activities will involve construction of new MV lines, rehabilitation of existing NTARUKA Hydro Power Plant, Solar Home Systems provision and provision of materials for clean cooking solutions. The construction of MV lines will be subject to full Environmental Impacts Assessment while the components of clean cooking solutions and the part of solar home system, the focus will be much on waste management from end users after they are used and become waste.

4.1.3.1. Program Brief Submission and Registration

As a first step in the ESIA process, a developer proposing to start a project shall notify Rwanda Development Board (RDB) in writing by submission of a Project Brief. The purpose of a Project Brief, which should be prepared as prescribed in this regulation, is to provide information on the proposed activity so as to enable RDB and Lead Agencies establish whether or not the activity is likely to have significant impact on the environment, and thus determine the level of ESIA necessary. The project brief submitted to RDB by a developer will be registered as the formal application for an ESIA.

4.1.3.2. Screening

Screening refers to the process a decision making on whether or not and at which level an ESIA is required. This is based on the Ministerial Order N° 001/ 2019 of 15/04/2019 discussed in the previous section. It is through screening a project is classified as either of impact level (IL) 1, 2 or 3. The responsibility for scoping shall be that of the developers (or their ESIA experts) in consultation with Lead Agencies and all relevant stakeholders. Scoping is intended to establish important issues to be addressed in the environmental impact and eliminate the irrelevant ones. After scoping, RDB approves the terms of reference that would be used for carrying out the environmental impact study.

4.1.3.3. Baseline data collection and Analysis of Initial State

Baseline data describes status of existing environment at a location before intervention of the proposed project. Site-specific primary data on and around a proposed site should be collected by experts conducting the environmental impact study to form a basis for future environmental monitoring.

4.1.3.4. Impact prediction and analysis of alternatives

Impact prediction is a way of forecasting the environmental consequences of a project and its alternatives. This action is principally a responsibility of an ESIA expert. For every project, possible alternatives should be identified, and environmental attributes compared. Alternatives should cover both project location and process technologies. Alternatives should then be ranked for selection of the most optimum environmental and socio-economic benefits to the community. Once alternatives have been analysed, a mitigation plan should be drawn up for the selected option and is supplemented with an Environmental Management Plan (EMP) to guide the developer in environmental conservation.

4.1.3.5. ESIA Report

An environmental impact study culminates into preparation of a report by the ESIA experts. An ESIA report should provide clear information to the decision-maker on the different environmental scenarios without the project, with the project and with project alternatives. The developer is also

required to produce an environment and social management plan (ESMP). Any modifications made by a developer to the ESIA report should be presented in form of an Environmental and Social Impact Report Addendum. All these three documents should then be submitted to REMA by the developer.

4.1.3.6. Public hearing

After completion of ESIA report the Environmental Law requires that the public must be informed and consulted on a proposed development. REMA may, if it deems necessary, conduct a public hearing before ESIA reports are appraised by its Technical Committee. Any stakeholders likely to be affected by the proposed project are entitled to have access to unclassified sections of the ESIA report and make oral or written comments to RDB. Rwanda Development Board shall consider public views when deciding whether or not to approve a proposed project.

4.1.3.7. Decision-making

During the decision-making and authorization phase, ESIA documents submitted to the Authority shall be reviewed by two decision-making committees: a Technical Committee and an Executive Committee constituted by RDB. If the project is approved, the developer will be issued with an ESIA Certificate of Authorization, which permits implementation of the project in accordance with the mitigation measures in the ESIA Report and any additional approval conditions.

4.1.3.8. Environmental Monitoring

Monitoring should be done during both construction and operation phases of a project. It is done not just to ensure that approval conditions are complied with but also to observe whether the predictions made in the ESIA reports are correct or not. Where impacts exceed levels predicted in the environmental impact study, corrective action should be taken. Monitoring also enables RDB to review validity of predictions and conditions of implementation of the Environmental and Social Management Plan (ESMP). During implementation and operation of a project, monitoring is a responsibility of the developer and RDB.

4.1.4. Law No 43/ 2013 of 16/06/2013 governing the land in Rwanda

This law determines the terms of use and management of land in Rwanda. It also fixes the principles to be applied to the recognized rights on the whole lands located along the national territory together with anything connected to it and which is incorporated to it, either naturally or artificially. The Article 3, precise that the land is involved (included) within the common inheritance of all the Rwandan people; the ancestors, the presents and future generations. Notwithstanding the rights recognized to people, only the government (state) holds the distinguished related to the land's management along the national territory that it uses in the general interest of all in order to assure the rational economic and social development in a way defined by the law. Related to this issue, only the government has power to grant the rights of occupation and use of the land, it also has the right to order the expropriation due to a public cause of public necessity, housing conditions and development (fixing up) of the national territory in the way defined by law against a fair and previous compensation. The Article 4 mentions that any kind of discrimination, in particular the one focused on gender and to the use of land's rights shall be prohibited. The man and woman have the same rights related to the land's property.

4.1.5. Law no 32/2015 of 11/06/2015 relating to expropriation in the public interests

The Expropriation Law provides for public dissemination on the importance of the project to be established and the need for expropriation. Article 11 of the Expropriation Law stipulates that the relevant organ, after receiving the request for expropriation, shall examine the basis of that project proposal. In case it approves the basis of the project proposal, the relevant Land Committee shall request, in writing, the District Council concerned to convene a consultative meeting of the population where the land is located, at least within a period of thirty (30) days after receipt of the application for expropriation, and indicating the date, time and the venue where the meeting is to be held. The relevant competent authority shall take a decision within a period of at least fifteen (15) days after the consultative meeting with the population.

Article 9 stipulates that it is only the Government that shall order expropriation in the public interest and must be done with prior and fair compensation. The law also bars anybody from interfering of stopping expropriation "on pretext of self-centred interests". Accordingly, Article 3 provides for any underground or surface activity carried out with in public interest on any land but with due and fair compensation to the land owner. Article 4 requires that any project, at any level, which intends to

carry out acts of expropriation in the public interest, must budget and provide funding for valuation of the property of the person to be expropriated and for fair compensation.

It is important that the expropriation of properties and lands be based on the WB Environmental and Social Standard 5 (Land Acquisition, Restrictions on Land Use and Involuntary Resettlement), and AfDB operational safeguard 2 – Involuntary resettlement: land acquisition, population displacement and compensation, National expropriation procedures. In case of mismatch between the national law and Development Partners (DPs) environmental and Social safeguards standards, the DPs environmental and Social safeguards standards will prevail. All assets that will be damaged will be compensated in compliance with this law.

4.1.6. Ministerial order N°2 of 17/05/2012 determining conditions for occupational and health safety

This order aims to improve health, safety, and general wellbeing of workers and workplaces by promoting occupational health and safe practices in order to eliminate occupational accidents and diseases, hence achieve better productivity in the workplaces. In addition, it provides for the protection of persons other than those at work against hazards to health and safety arising out of or in connection with activities of persons at work. Environmental and health risks, article 29 which related to the control of air pollution, noise and vibration stipulates that when there is any dust, fume or other impurity which are harmful to persons employed, protected measure shall be taken to protect employee against inhalation of dusts or fume or its accumulation on the work place. For noise and vibration, the article indicates that all practicable protective measures shall be taken by the employer to protect the safety of workers and against the noise by reducing elimination or control of such sound or protecting them against the vibration. All project workers will be safeguarded and occupational health and safety of the employees will be kept at high standard; all workers will be trained regarding the concept of hazard avoidance, accident investigation/risk assessment and prevention, worker man compensation law, PPE usage and first Aid, the detail are available in Labor Management Procedure prepared under this Project.

4.1.7. Regulations No 002 of 26/04/2018 governing e-waste management in Rwanda

The project is expected to have an environmental impact related to waste management in all its three components (1,2,3). The management of waste will follow the regulations in Rwanda to make sure the produced waste does not cause harm to the environment and human health. Referring to the regulations on E-waste in Rwanda in its Article 10: Any person who wishes to recycle e-waste shall: Have an Environmental Impact Assessment (EIA) undertaken before establishing e-waste facility; An environmental Audit (AU) for existing facilities; Have the state of the art facility complying with all the environmental standards in terms of emissions, effluents, noise e-waste treatment and disposal. Article 20: any collector and transporter of e-waste shall ensure that e-waste collected is stored in proper and secured manner till is sent to the licensed dismantler or recycler; Ensure that no damage is caused to the environment and human health, during storage and transportation of e-waste Article 22: Any recycler shall; Ensure that the facility and recycling processes are in accordance with the standards published by the national standard body; Ensure that the recycling processes do not have any adverse effect on human health and environment; Ensure that the residues generated thereof are disposed off in a hazardous waste treatment storage facility for disposal. Article 24: any producer shall be responsible to: provide information to the regulatory authority on the subsequent year's projected imports of any electrical and electronic equipment products; Provide information to recyclers on how to dismantle their product at the end of life and the location of any hazardous substances or items within the product. Article 25: The consumer of electrical and electronic equipment shall: Ensure that e-waste is segregated from other forms of waste and is taken to licensed refurbishes, collection centres, dismantler or recyclers; Ensure that e-waste is not resold or auctioned or exchanged; maintain records of e-waste generated and make such records available for scrutiny by the Regulatory Authority. As this program is expected to produce e-waste especially in its component 3 concerning the off-grid part, stakeholders should bear in mind their harmfulness and the way to eliminate them from environment. The existing Enviro Serve functioning in Bugesera industrial park will be the platform of all electronic waste from used panel and batteries whereas districts, Solar home companies and other relevant stakeholders should make sure that this waste is removed and transported safely from households to this official recycling facility.

4.1.8. Guidelines on the management of waste disposal site/dumpsites (landfill)

Waste disposed of on the Site must be compacted and covered on a monthly basis with a minimum of 150 millimetres of soil. Burning of waste on the Site will only be allowed under the permission of

the Regulatory Agency confirming that it does not have a detrimental impact on the environment and operation of the Site. Disposal of dead animals, rejected carcasses, parts of dead animals, contaminated food, food rests or any edible material must be immediately carried out when brought onto the Site by burying it in trench and covered with at least 500 millimetres soil. The registered person must take steps to ensure that the Site is operated in a manner that will prevent the creation of nuisance conditions or health hazards. The registered person must apply sufficient dust control measures to prevent windblown dust from causing nuisance conditions or health hazards. Wind-blown litter leaving the Site must be collected on a daily basis. The waste which will be produced by the project activities except electronic waste produced by solar panels and batteries and other hazardous waste which should be managed in a special way, all remaining concerning municipal solid waste will be taken to the district dumpsites. The districts dumpsites were installed and complied to these guidelines. The electronic waste will be managed by respecting the regulations on e-waste as discussed above.

4.2. Policy Framework

4.2.1. The Rwanda National Strategy for Transformation (NST1)

The National Strategy for Transformation (NST1) which is also the Seven Year Government Programme (7YGP) comes at a unique moment in the country's development trajectory which will see the crossover from Vision2020 towards Vision 2050. This strategy is expected to lay the foundation for decades of sustained growth and transformation that will accelerate the move towards achieving high standards of living for all Rwandans.

The NST1 aims to lay the foundation for achieving upper-middle-income country status by 2035 and high-income status by 2050. It is guided by the Sustainable Development Goals (SDGs), the Africa Union Agenda 2063 and its First 10-Year Implementation Plan 2014–2023, and the East African Community (EAC) Vision 2050. The strategy lays out targets under the three pillars of economic transformation, social transformation, and transformational governance, and several cross-cutting areas. Under the social transformation pillar, NST1 aims to achieve universal electricity access by the end of the seven-year period (2017-2024).

The Rwanda national strategy for transformation (NST1) considers environment and climate change as key strategic areas. With regard to environmental management, the focus is on improving cross

sectoral coordination to ensure smooth implementation of environmental policies and regulations. In this regard, critical sectors identified for strengthening include agriculture, urbanization, infrastructure and land use management. Additional emphasis will be put on strengthening monitoring and evaluation. High impact areas selected include implementation of: Environmental and social Impact Assessments, biodiversity and ecosystem management, pollution and waste management.

4.2.2. National wetland conservation program

Though not a policy as such, the wetland convention implementation office in Rwanda has formulated a National Wetland Conservation Program for 2002-2030 jointly working with the National Commission for Development and Reform, the Ministries of Finance, Education Scientific Research and Technology, Environment, Lands, Water and Natural Resources and Agriculture. The program aims at engaging the various government ministries in wetland conservation and ensure a holistic approach to wetland management. All authorities concerned will have proper coordination of activities concerning wetland management, a factor which leads to efficiency implementation of policies. To avoid further exploitation of the resources, Rwandan Government has established rules governing wetlands in the country. This is done by subjecting any acts concerned with water and its resources like watering plants, the use of swamps to prior environmental impact assessment which is submitted for approved to REMA or any person given a written authorization by REMA. During the project site selection, the proponent will make sure that no project should be located in the wetland.

4.2.3. RURA Guidelines for Right of Way in Rwanda

The construction of medium voltage lines requires a Right of Way (RoW) for both construction and operational phases. During the construction, the right of way is cleared for visibility and construction activities while during operational Phase the RoW is used under restriction conditions. Due to the impacts associated with the acquisition of rights-of-way, the projects will follow procedures in conformance with the Rwanda Utilities Regulatory Agency (RURA) guidelines No 01/GL/EL-EWS/RURA/2015 on the right-of way for Power Lines in Rwanda. In accordance to the guidelines No 01/GL/EL-EWS/RURA/2015 on the right-of way for Power Lines in Rwanda the information given below will govern the use of the right of Way.

- **General requirements on the use of the Right of Way/ Restrictions:**

- It is forbidden for any person to construct any building or structure or carry out cultivation, farming or any other activity within the Right-of-Way prior to the consent of the Licensee;
- to drill, mine or excavate or carry on any similar operation within the Right-of-Way;
- to place any combustible material inside the Right-of-Way;
- to cause any fire to burn within Sixty (60) meters of the transmission line Right-of-Way;
- to climb on to, attach to or hang any object on or from any tower/pole or transmission/distribution line;
- to cause anything to come into contact with the power line;
- to place, drive, tow, pull or carry any crane, jig, or any object, under, over or near the transmission line except with the prior consent of the Licensee obtained in writing and subject to any condition that the Utility may impose in relation to such consent;
- to carry out any form of blasting within hundred (100) meters of any power line; and
- Permanent buildings, including foundations and overhangs, pools, septic tanks, dumps, junkyards, wells, fuelling or fuel storage facilities, garbage, recycling receptacles and other non-compatible uses shall not be permitted on the Right-of-Way.

- **General derogations on the use of the Right of Way**

As long as minimum clearances from poles and conductors are maintained and with a prior written consent of the Licensee, the Right-of-Way can be used for certain activities such as yards, gardens, pastures and farming, recreational fields, streets, roads, driveways, parking lots, lakes, fences, drainage ditches, grading or any other activity that may not interfere with the line operation. Temporary buildings or structures that are small and easily movable may be acceptable in the Right-of-Way with prior approval of the Licensee, provided that:

- they are located away from the Licensee' works and access roads and not directly beneath overhead conductors;
- they are not habitable;
- they are not used for the purpose of storing flammable, explosive or toxic materials that could create a fire hazard;
- they do not have electrical or water service;
- they are of non-metallic construction or are grounded to the utilities' satisfaction.

- they do not adversely affect safety of customers, utility personnel and the general public.
- **General Licensee's Obligations**

In constructing and maintaining power lines on the property covered by the easement, the Licensee shall:

- Maintain the Right-of-Way as it requires, both within the Wire Zone and the Border Zone;
- Remove vegetation that could pose danger to a power line or pole inside the Right-of-Way and outside the Right-of-Way if it could come too close to power lines or poles;
- If excavation is necessary, ensure that the topsoil is stripped, piled and replaced upon completion of the operation;
- Restore to its original condition any strip of land which has been disturbed by the construction or maintenance;
- Clear all debris and remove all stones and rocks resulting from construction activity upon completion of construction;
- Pay for any damage caused by such construction or maintenance or satisfactorily repair any damage caused by such construction or maintenance to its original condition;
- Control vegetation and weeds around its power lines and facilities, and decide the appropriate method to adopt to ensure that the clearance space remains free of vegetation that could pose danger to a power line taking account of the potential risk to the public, conservation and other values;
- Ensure that the pruning or clearing is done responsibly; and determine the regrowth space, hazard space and the pruning and clearing cycle;
- Notify the landowner before carrying out any pruning and clearing. In emergency situations, the Licensee may remove vegetation which poses an immediate risk without notification, but the Licensee should notify the owner or occupiers as soon as practicable after the removal of the vegetation;
- Ensure that pruning or clearing activities near power lines are undertaken safely. This may require the Licensee to de-energize the power lines or install necessary grounding to landowner's fence or equipment to enable the clearance of vegetation safely; and
- Ensure that any of his employees undertaking operations in the vicinity of his power lines, and any contractors he engages to carry out such works are appropriately trained and competent for that task, especially on safe working practices near power lines.

It's worth to note that in addition to the compensation of crops and tree affected during right of way clearing, the implementing agency will pay 5% of disturbance allowances to cover impacts caused by restriction use of land in the RoW as a requirement stated in the nation expropriation law.

- Right of Way Dimensions

As per the above said RURA guidelines the horizontal right of way for then 15KV-30KV is 12 meters, for 1120KV is 25m, for 220 KV the right of way is 30m while for 400KV the right of way width becomes 50m.

4.2.4. Clean cooking solution under RUEAP

The component 3 of the program relates to catalyzing private investment in off-grid electricity access and clean cooking, the clean cooking crisis is particularly acute in sub-Sahara Africa where approximately 86% of the population lives without clean fuels and better cooking technologies thus many people die each year of smoke-related diseases.

Increasing use of clean cooking technologies for households in Africa offers huge promise to advance Sustainable Development Goals (SDGs) on good health and well-being (SDG3), gender equality (SDG5) and affordable and clean energy (SDG7). Rwanda has already set a goal to reduce the number of households using wood and other biomass fuels from 79.9 percent to 42 percent by 2024. It hopes to achieve universal clean cooking access by 2030, in line with sustainable universal energy access goals under the Sustainable Development Goal 7.

The energy use is a key indicator to measure people's standard of living globally, the choice of which cooking fuel is suitable for a household has a direct bearing on the welfare of the respective families especially women and children because they are more concerned to collect firewood.

The firewood collection and charcoal production are worldwide significant factors to forest degradation and to deforestation respectively. Moreover, the carbon emission from the wood fires is responsible for an estimated 18% of the global warming process, moreover agriculture residues used as cooking fuel are not anymore going back to soil for fertility, leading to soil degradation with difficult to reverse. Households in Rwanda spend up to 6 hours per day collecting firewood and up to a third of their income for their energy needs, exacerbating the cycle of poverty. Nationwide, about 79.9% of households use firewood as their primary cooking fuel, and most of them likely to collect

it for free, hence spending one hour acquiring and preparing fuel collection and preparation. Affordable, reliable and clean energy for cooking is essential not only for reducing health and environmental impacts but also helping women to work productively and develop the rural economy as demonstrated in biomass energy strategy, a sustainable path to clean cooking solution developed by MININFRA to be used in a period from 2019-2030.

The traditional cookstoves lead to household air pollution and cause the death from different diseases due to the carbon monoxide and particulates from the fires and generate significant disease such as severe respiratory (upper or lower) diseases, perinatal mortality, low weight birth, cancer, eyes illness, cardiovascular diseases, etc.

Against the above statements, the ESMF of Rwanda Universal Energy access program proposes the summary of potential positive Environmental and social impacts (Table 13), and Environmental and Social Management Plan (table 14) where negative impacts have been identified and mitigated based on the different activities which will be undertaken under the same component.

4.3 Institutional framework for environmental management

The responsibility for formulation and implementation of environmental matters fall under the Ministry of Environment (MoE) as the key institutions with this mandate. The other aspects of environmental management related to different projects are dealt with several other institutions, among which the most prominent are the Rwanda Environment Management Authority (REMA); Rwanda Development Board (RDB); Rwanda Land Use and Management Authority (RLUMA), Rwanda Water and Forest Authority (RWFA) Rwanda Natural Resources Authority) among others. In case of any technically or circumstantially perceived environmental risk or threat, the proprietor is obliged to request from REMA the opinion of the need and, if necessary, the conditions for undertaking ESIA. Depending upon the assessment of potential significance of environmental impacts, REMA can decide if there is a need to apply partial or full ESIA procedure for the relevant projects.

4.3.1. The Ministry of Environment (MoE)

The MoE has the responsibility for developing land utilization policies (including surveying, land classification, land laws and land tenure); the development of environmental policies and procedures

(including impact assessments), protection of natural resources (water, land, flora, and fauna), environmental legislation, biodiversity, and other environmental aspects informed by the Environment Law among others. Chapter IV of the Organic Law Article 65 clearly calls for the need to subject projects to mandatory Environmental Impact Assessment.

Article 65: Further specifies that every project shall be subjected to environmental impact assessment prior to its commencement. It shall be the same for programs, plans and policies likely to affect the environment. Specific details of projects referred to in this Article shall be spelt out by the order of the Minister in charge of environment. Article 66 states that Environmental Impact Assessment (ESIA) shall include at least the following:

- A brief description of the project and its variants.
- Analysis of direct and indirect foreseeable consequences on the environment.
- Analysis of the initial state of the environment.
- Measures envisaged reducing, preventing or compensating for the Consequence
- Reasons for the choice.

A summary of requisitions from clause 1 to 5 of this article;

- A definition of the evaluation and monitoring methods used regularly and environmental indicators before (initial state), during and after implementation of the project or, as the case may be, at the final evaluation stage of the project;
- A financial evaluation of measures recommended preventing, reducing or compensating for the negative effects of the project on the environment and measures for regular monitoring and control of relevant environmental indicators.

4.3.2. Rwanda Environmental Management Authority

The overall responsibility of the management of the bio-physical environment lies with the Rwanda Environment Management Authority as stipulated by its establishing law of 2003, promulgated by the Government of Rwanda. The functions of REMA include:

- To advise the Government on legislative and other measures for the management of the environment or the implementation of relevant international conventions, treaties and agreements in the field of environment, as the case may deem necessary;

- To take stock and conduct comprehensive environmental audits and investigations, to prepare and publish biannual reports on the state of natural resources in Rwanda;
- To undertake research, investigations, surveys and such other relevant studies in the field of environment and disseminate the findings;
- To ensure monitoring and evaluation of development programs in order to control observance of proper safeguards in the planning and execution of all development projects, including those already in existence, that have or are likely to have significant impact on the environment;
- To participate in the setup of procedures and safeguards for the prevention of accidents and phenomena which may cause environmental degradation and propose remedial measures where accidents and those phenomena occur;
- To render advice and technical support, where possible, to entities engaged in natural resource management and environmental protection;
- To provide awards and grants aimed at facilitating research and capacity building in matters of environmental protection.

4.3.3. Rwanda Development Board (RDB)

This is a one stop institution bringing together several government bodies in Rwanda focussed on promoting investment in Rwanda. RDB has a department responsible for ESIA processes including reviewing all projects ESIA reports before approval of the implementation of the projects, a duty that was previously undertaken by REMA.

4.4. World Bank Environmental and Social Framework (ESF)

The Environmental and Social Framework (ESF) sets out the World Bank's commitment to sustainable development, through a Bank Policy and a set of Environmental and Social Standards (ESSs) that are designed to support Borrowers' projects, with the aim of ending extreme poverty and promoting shared prosperity. The ESSs set out the requirements for Borrowers relating to the identification and assessment of environmental and social risks and impacts associated with projects supported by the Bank through Investment Project Financing. Therefore, this ESMF has been prepared to ensure compliance with the World Bank ESF and ESSs. All the project components will have direct and/or indirect environmental and social risks and impacts. Thus, the project has triggered

the World Bank ESSs except ESS7 (Indigenous Peoples/ Sub-Saharan African Historically Underserved Traditional Local Communities) because there are no local communities that meet the requirements of this standard in the project proposed areas. Overall, this ESMF demonstrates how the project will comply with these Bank standards triggered by the project. Those standards are:

- Environmental and Social Standard 1: Assessment and Management of Environmental and Social Risks and Impacts;
- Environmental and Social Standard 2: Labour and Working Conditions
- Environmental and Social Standard 3: Resource Efficiency and Pollution Prevention and Management
- Environmental and Social Standard 4: Community Health and Safety
- Environmental and Social Standard 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement
- Environmental and Social Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources
- Environmental and Social Standard 8: Cultural Heritage
- Environmental and Social Standard 10: Stakeholder Engagement and Information Disclosure.

4.4.1. Environmental and Social Standard 1: Assessment and Management of Environmental and Social Risks and Impacts

The activities of component one (Increasing access to grid electricity) will involve compensation for affected trees, crops and minimum restrictions on land under distribution lines and hence the need to prepare appropriate environment and social risk management tool as part of the design. The activities of Component two (Improving grid stability and enhancing operational efficiency) pose significant OHS issues such as management of oils and lubricants for turbines, transformers and support infrastructures, management of lead/acid batteries and materials; and hence the need to have proportionate risk mitigation measures integrated in the project design. Environmental and social audit of Ntaruka HPP being considered for rehabilitation is being carried out to identify legacy risks

that this project is taking on, along with remedial actions for implementation. The associated facilities to Ntaruka HPP include transmission lines and substation while the associated facilities for component 1 are substations/transformers. Environmental impacts of transmission lines are changes in the landscape, restrictions on land use, and impacts on nature and biodiversity, permanent land acquisition for tower location and can imply physical and economic displacement, hence resettlement. Energy losses during electricity transmission have a climatic effect. Buildings and structures are not allowed in transmission line areas, and activities taking place in these areas may not endanger electrical safety. A transmission line project has an indirect impact on the location and direction of expansion of land use. The project is preparing the ESIA and the RAP for the transmission subcomponent to cover all environmental and social impacts that are specific because are mean to be enormous so that they should be mitigated. The substations involve permanent land acquisition, possible relocation when the substations are to be placed in the residential place, changes in land scape, land use restriction and the electromagnetic effect. The program will upgrade the existing substations, and these will not require the land acquisition as they are built on the existing REG land. The third component of the project is related to catalyzing private sector investment in off-grid energy and clean cooking. There are positive environmental contributions of the project activities under this component, for instance, by supporting electrification through solar off-grid solutions the program will help reduce greenhouse gas emissions if equivalent electricity were sourced from fossil fuel-based utility-scale power plants or emergency diesel power plants. Despite these beneficial impacts, the solar system will have waste management issues, including disposal of used batteries containing hazardous waste. The clean cooking solutions will be very helpful for reducing deforestation and forest degradation, and thus contribute to climate change goals of the country. Component four will involve technical assistance such as sector performance improvements and forward-looking options for sector development; capacity building in planning, skills development, audit and compliance; and policy and regulatory improvement and entrepreneurship development, including targeted training for women entrepreneurs (under clean cooking solutions). The policy and regulatory development/improvement part will comprise improving fuel/stove regulations, quality standards, testing capacity, and tax/tariff policies to support clean cooking market development.

During the program implementation, site specific environmental and social standards instruments such as environmental and social impact assessments, environmental and social management plans, and/or resettlement action plans will be prepared as required.

Table 8: Project Classification according to levels of impacts

| Category | Definition |
|------------------|---|
| High Risk | Projects encompassing sub-project or activities with potential significant adverse environmental or social risks/ impacts that are diverse, irreversible or unprecedented. Examples of these activities includes project affecting highly sensitive ecosystems services, project with large resettlements components, projects with serious occupational and health risks, projects which poses serious socio-economic concerns |
| Substantial Risk | The Project may not be as complex as High-Risk Projects, its environmental and social scale and impact may be smaller (large to medium) and the location may not be in such a highly sensitive area, and some risks and impacts may be significant. Potential risks and impacts are likely to be mostly temporary, predictable and/or reversible. Adverse social impacts of the Project, and the associated mitigation measures, may give rise to a limited degree of social conflict, harm or risks to human security. Mitigatory and/or compensatory measures may be designed more readily and be more reliable than those of High-Risk Projects. There is medium to low probability of serious adverse effects to human health and/or the environment (e.g., due to accidents, toxic waste disposal, etc.), and there are known and reliable mechanisms available to prevent or minimize such incidents. |
| Moderate risk | The potential adverse risks and impacts on human populations and/or the environment are not likely to be significant. This is because the Project is not complex and/or large, does not involve activities that have a high potential for harming people or the environment, and is located away from environmentally or socially sensitive areas. Potential risks and impacts and issues are predictable and expected to be temporary and/or reversible; low in magnitude; site specific, without likelihood of impacts beyond the actual footprint of the Project; low probability of serious adverse effects to human health and/or the environment ; and reversible and readily addressed through mitigation measures. Examples of these projects include small scale agricultural initiative, school’s construction, forest management activities, low emission energy project. |

| Category | Definition |
|-----------|--|
| Low risks | Projects with activities with minimal/negligible or no adverse environmental and social risks and or/ impacts. Example of these projects or activities include education and training, public broad casting, health and family planning, monitoring programmes, and advisory services projects. These Projects, with few or no adverse risks and impacts and issues, do not require further ES assessment following the initial screening. |

Based on the above classification, the environmental risk rating of this program is substantial considering the anticipated risks and impacts associated with construction of (medium-voltage) power distributions lines (component 1), rehabilitation of the old Ntaruka HPP (part of component 2), and distribution of solar system (part of component 3). It also considers technical assistance that involves sector performance improvements and forward-looking options for sector development; capacity building in planning, skills development, audit and compliance; and policy and regulatory improvement and entrepreneurship development, including targeted training for women entrepreneurs under clean cooking solutions (part of component 4), among others. Distribution of solar system will have potential environmental and social risks and impacts related to the storage and final disposal of used batteries containing hazardous waste; and disposal/recycling of solar panels. In addition to disposal and recycling issues, solar batteries may cause environmental, social and safety risks during transportation, installation, and operation (e.g. fire and explosion risks). Overall, the program will also have potential occupational health and safety risks and impacts. During this preparation stage this ESMF is being prepared in order to anticipate all environmental and social impacts of the whole program in order to set up proper mitigation measures prior to the program implementation. However, during the project implementation site specific plan will be prepared prior to construction stages to make sure that all site related risks are specifically addressed. Safeguards instruments like ESMP, EHSP will be mandatory to contractors who will work on component 1 and 2 while the companies which will be hired on the component 3 (catalysing private sector investment in off-grid energy and clean cooking) will have to submit the waste management plan to ensure that the plan to offset all hazardous waste related to solar home system will be removed safely from the environment after the end of use life.

Social Risk Rating: The social risk rating at this stage is moderate due to the risks related to the investments proposed in component one of the projects. The investment in grid connections for households, commercial and industrial consumers, and public institutions is likely to involve compensation requirements for affected assets such as crops and trees. All crops and trees to be affected will be compensated in compliance with the National Expropriation law No 32/2015 of 11/06/2015 in public interest and WB ESS5 (land acquisition, restrictions on land use and involuntary resettlement). The program design will have to integrate proportionate social risk management measures to avoid similar occurrences under this new operation.

4.4.2. Environmental and Social Standard 2: Labor and Working Conditions

The ESF and its ESS2 covers different compliance aspects related fair treatment of workers and provision of safe and healthy working condition. The first aspect aims at improving working conditions and management of workers relationships by providing workers with information and documentation that is clear and understandable on terms and conditions of employment on aspects related to rights under national labour and employment law with regard to rights related to working hours, compensation, wage and benefits. The second aspect is related to protecting the workforce by avoiding the child labour by setting up the minimum age and setting conditions that they employability of people below or above minimum working age is not hazardous and interfere with children education or is not harmful to the child health, mental or physical social development. It also prohibits forced labour. The third aspect is related to the creation of grievance mechanism for the employee in order to promptly address workers concerns but without impeding their access to judicial or administrative remedies that are provided by the law to address workers grievances. The fourth aspect aims to set up and apply occupational health and safety measures to the working place.

Anticipated key labor risks and impacts are mainly associated with the planned construction works, and investments related to improving grid stability and operation efficiency, including Ntaruka HPP rehabilitation. There may be risks of child labor associated with the use of local labor. The program must provide appropriate measures for the protection of vulnerable project workers such as women and people with disabilities and care will be given to both categories to ensure inclusion. Among skilled workers, the majority of those involved will be existing government civil servants. As such, these employees will remain subject to the terms and conditions of their existing public-sector employment. Majority of the unskilled workers will be sourced from the community members in the

project site and a few required skilled workers from outside of the project area. Due to the discrete nature of these activities labor camps and influx are not anticipated. These individuals will however be subject to the requirement of ESS2 in relation to labor and working conditions including occupational health and safety and worker specific grievance redress mechanisms. Likewise, any technical consultants contracted by the program will also need to adhere to such standards. To ensure health and safety of workers during the construction, improving grid stability and operation efficiency, and operational phases of the program, a Health, Safety and Environmental (HSE) plan in line with Good International Industry Practice (GIIP) and EHS Guideline for Electric Power Transmission and Distribution will be prepared as part of the CESMPs, with general guidance provided as part of ESMF. The plan will include procedures on incident investigation and reporting, recording and reporting of non-conformity, emergency preparedness and response procedures and continuous training and awareness to workers. In addition, the program has developed written labor management procedures (LMP) that has set out the way in which project workers will be managed including a code of conduct to mitigate GBV related risks which will be used during the project implementation.

4.4.3. Environmental and Social Standard 3: Resource Efficiency and Pollution Prevention and Management

This standard aims at efficient use of resources, pollution preventions and greenhouse gases emission avoidance and adoption of mitigation technologies and practices which are achievable. In this regard, the program, through its four components, is expected to improve access to energy and efficiency of energy services delivery in the country, largely in the rural areas. The program's proposed investments, including off-grid solar power and clean cooking, will also contribute to Rwanda's priority mitigation actions under its National Determined Contributions (NDC). The off-grid solar power and clean cooking solutions will also contribute to the reduction of deforestation and forest degradation and indoor air pollution. Thus, in addition to improving resource/energy-efficient practices, the program will have positive environmental contribution through reducing greenhouse gas emissions¹. However, the program will have risks and impacts of pollution in relation to management of oils and lubricants for turbines, transformers and support infrastructures; solar

¹ The GHG emission reductions associated with the nationwide uptake of cleaner technologies for lighting, cooking and other domestic energy needs including off-grid solar home systems and improved and clean cookstoves, will be purchased by Ci-Dev upon certification by the Standardized Crediting Framework (SCF) (<https://www.ci-dev.org/SCF-Rwanda>). In particular, Ci-Dev will purchase an approximate amount of 680,000 tCO₂e carbon credits from component 3 for the period 2021-2024.

batteries and panels; and construction/rehabilitation activities, among others. The program may also have environmental damage due to improper management of construction/ rehabilitation material (such as extraction of excess sands and gravels), waste, and domestic waste which may cause expansion of program 's environmental footprint. The TA part of the program, including the policy and regulatory development/improvement activity may have impact on resource efficiency and pollution management. The management of impacts/risks of the above issues are addressed in the program design and in this ESMF (including solar batteries and panels management guidelines, and application of WBG EHS Guidelines for Electric Power Transmission and Distribution) and other ESS instruments, and further detailed in site specific ESIA/ESMPs for subprojects during the project implementation stage. Moreover, in relation to components one and two, the contractor shall develop C-ESMP (comprising EHSP, waste management plan, and restoration plan for borrow and quarry sites as required in the site specific ESMP/ESIA, and ensure their implementation accordingly

4.4.4. Environmental and Social Standard 4: Community Health and Safety

Majority of the unskilled workers will be sourced from the community members in the project site and a few required skilled workers from outside of the project area. The program is not anticipated to contribute to significant labor influx in the project sites. However, potential community health and safety risks in the project sites are related to increase in crime, prostitution, gender-based violence (GBV) and other related social risks. Also, the program could contribute to potential structural safety risks such as electric shocks during connections, increase in road accidents due to increased number of vehicles during construction phase especially in formal settlement where we have a large number of people in a project site. The other potential community health risk relates to the potential for spread of communicable diseases due to the influx of people in search of work in the project sites. The project does not anticipate any use of security personnel. Also, there will be potential risks and impacts to community health and safety related to generation of wastes, noise, and dust; transportation of construction and HPP (Ntaruka) rehabilitation materials, and possibility of unauthorized entrance to construction and rehabilitation sites; and restoration of borrow and quarry sites. There will be risks related to transportation, installation, and operation of solar batteries (e.g. fire and explosion risks); and collection, storage and disposal of used solar batteries containing hazardous waste as well. Regarding Ntaruka (being considered for HHP rehabilitation), there will be potential community health and safety risks depending on dam size and type of rehabilitation. Environmental and social

audit of Ntaruka HPP is being carried out to identify legacy risks along with remedial actions for implementation. The TA component of the project, including the policy and regulatory development/improvement may have impact on community health and safety. All these potential community health and safety risks, along with mitigation measures, are addressed in this ESMF (comprising generic ESMPs, guidelines for management of solar batteries and panels, and application of WBG EHS Guidelines for Electric Power, Transmission and Distribution, and electromagnetic interference and electrocution, among others) and other relevant ESSs instruments, including E&S audit of the Ntaruka, and further detailed in the site specific ESIA/ ESMPs for subprojects during the project implementation stage as required. Except the above risks and impacts (which will be managed through preparing and implementing site specific ESIA/ESMPs for subprojects, and Ntaruka's environmental and social audit), the project is generally expected to result in positive community health impacts specifically for those households who will benefit from grid connection, off-grid solar connection and clean cooking solutions.

4.4.5. Environmental and Social Standard 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement

The program will involve civil works in on-grid connection for a portion of the currently unelectrified households across different parts of the Country. These activities will involve expropriation, temporally restriction on land use and expropriation. Resettlement impacts are mainly expected to be temporary and largely economical. No voluntary land donation anticipated under this program. The program has prepared a Resettlement Policy Framework (RPF) that will give guidance to the implementing agencies during project implementation on how to deal with resettlement and expropriation issues in compliance with National Expropriation law and the Bank requirements, this will help also to prepare a RAP based on prepared RPF. In addition to RPF, the client prepared SEP and ESCP (comprising specific gendered social assessment) through a consultative process. Ntaruka's environmental and social audit is under preparation to identify legacy risks and propose feasible remedial actions for implementation.

4.4.6. Environmental and Social Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources

The aim of standard is to support the protection and conservation of biodiversity and habitats. In this regard, mitigation hierarchy and precautionary approach will be applied in the design and implementation of project that could have risks and impacts on biodiversity.

Rwanda is known for its biodiversity and living natural resources and is a party to the Convention on Biological Diversity. Ntaruka being considered for old HPP rehabilitation will have potential impacts on aquatic biodiversity/living natural resources and ecological flows. Ntaruka HPP was built on the Mukungwa River, one of the tributaries of the Nyabarongo River which drains to the Akagera River that, in turn, leads to Lake Victoria. Ntaruka's environmental and social audit is being prepared to identify its legacy risks prior to program appraisal. Also, the clean cooking solutions may have impacts on forest and other resources if biomass sources and other supply chains (including local production of improved and clean cook stoves) are not properly identified and managed in a sustainable manner as per GoR's laws and WB ESSs. In this regard, there is a need to address sustainable management of primary production and harvesting of living natural resources using relevant mitigation measures.

The program will comply with this environmental and Social Standard requirement by avoiding constructing or passing through critical habitat such as national parks or wetland of international importance. The activity of bush clearing will respect the right of way (RoW) stipulated in the RURA guidelines (GUIDELINES N°01/GL/EL-EWS/RURA/2015 ON RIGHT-OF-WAY FOR POWER LINES) and whenever possible the project team will avoid the bush clearance where construction works allow. Also, impacts and risks of other project activities (such clean cooking solutions, Ntaruka HPP rehabilitation, and TA related to policy and regulatory improvement and entrepreneurship development, and forward-looking options for sector development) on biodiversity and living natural resources will be managed as per the GoR's policies and legal frameworks and WB ESSs requirements. All these have been reflected in this ESMF, including the environmental and social screening process for managing risks and impacts to biodiversity and natural resources. Consistent with the Project's ESMF, ESS6 and site specific ESSs instruments (ESMPs/ESIAs), REG will require civil works contractor(s) to prepare C-ESMP(s) (satisfactory to the GoR and the WB) and implement

it accordingly during construction/rehabilitation, and TA consultants to comply with the ESMF and other instruments.

4.4.7. Environmental and Social Standard 7: Indigenous Peoples/ Sub-Saharan African Historically Undeserved Traditional Community

This standard aims to avoid or minimize impact on indigenous peoples/ Sub-Saharan African Historically Undeserved Traditional Community who are defined as marginalized people with distinct characteristics such as self-identification, collective attachment to geographically distinct habitats or territory, customary, economic, social, or political institutions that are separate from those of the mainstream society or culture; or distinct language or dialect. This social standard is not applicable to this program as Rwanda does not have indigenous people, or historically underserved traditional community in the project proposed implementation areas.

4.4.8. Environmental and Social Standard 8: Cultural heritage

This standard seeks to protect cultural heritage from adverse impact of the project activities and support its preservation, address cultural heritage as integral aspect of sustainable development, promote meaningful consultation with stakeholders regarding cultural heritage and promote specifically the equitable sharing of benefits from the use of cultural heritage. To comply with this performance requirement, the safeguard team has tried to identify whether the increasing access to grid electricity component and rehabilitation of Ntaruka hydropower plant will have significant impacts that affect cultural heritage such as archaeological sites, unique natural features that signifies natural values like sacred rocks, sacred trees or waterfalls, and cemetery. The team also consulted the affected communities and relevant government agencies in order to identify cultural heritage of importance. Mitigation measures shall be developed and duly reflected in site specific ESIA/ESMPs for subprojects to protect cultural heritage from being relocated by construction or rehabilitation activities. Also, “chance finds procedure” (see Annex 11) has been incorporated in this ESMF if previously unknown cultural heritage is encountered during project implementation; and will be also included in the site specific ESIA/ESMPs and in all contracts relating to construction or rehabilitation of subprojects.

4.4.9. Environmental and Social Standard 9: Financial Intermediary

This ESS applies to Financial Intermediaries (FIs) that receive financial support from the Bank FIs include public and private financial services providers, including national and regional development banks, which channel financial resources to a range of economic activities across industry sectors. Financial intermediation also includes provision of financing or guarantees by FIs to other FIs. For the purposes of this ESS, the term “FI subproject” refers to projects financed by FIs with support from the Bank Where the program involves on-lending by the FI to another FI.

4.4.10. Environmental and Social Standard 10: Stakeholder Engagement and information disclosure

The objective of this ESS is to engage stakeholder effectively in order to improve environmental and social sustainability of the program, enhance acceptance, and make significant contribution to successful project design and implementation. For this purpose , the project supported by the Bank must identify stakeholders and construct and build good working relationships with them in order to avoid conflicts that may arise, assess the level of stakeholder interests, support and concerns, take stakeholders views, concerns into account during project implementation. In this identification, stakeholders included Project Affected People (PAPs), these are individuals or organisation whose properties (land, houses, infrastructures, business, cultural features) and other aspects that will be affected by the project and other who are related or may be interested in the project implementation. In addition, this ESS, will aim at promoting and providing means for stakeholders’ engagement in the whole project cycle, and inform stakeholders on the project objectives, environmental and social risks in appropriate manners.

The program has complied with this ESS through the development of the ESMF and the stakeholder engagement plan (SEP) and both of them will be disclosed prior to program appraisal. Major stakeholders such as director of one stop centres, Vice mayor in charge of economic development, District environmental officers, Executive secretary of the sectors, sector land managers different ministries and public agencies, local people from not connected centres, and institutions as shown in the Annex 7 have been consulted and their inputs were considered during ESMF and SEP preparation. During the preparation of site-specific RAPs, PAPs will be identified and consulted on different resettlement modalities as stipulated by the Law N° 32/2015 of 11/06/2015 relating to expropriation

in the public interests. In addition, the ESMF and RPF have recommended the establishment of grievance redress Committees from project site level and their composition to the district and implementing entity levels.

Table 9: World Bank Environmental and Social Standard Triggered by RUEAP

| Standard triggered by the program | Yes | No |
|---|------------|-----------|
| ESS 1: Assessment and Management of Environmental and Social Risks and Impacts | X | |
| ESS2: Labour and Working Conditions | X | |
| ESS3: Resource Efficiency and Pollution Prevention and Management | X | |
| ESS4: Community Health and Safety | X | |
| ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement | X | |
| ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources | X | |
| ESS 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Community. | | X |
| ESS 8: Cultural heritage | X | |
| ESS9: Financial Intermediary | | X |
| ESS10: Stakeholder Engagement and information disclosure | X | |

4.5. AfDB Operational Safeguards

The African Development Bank Group (AfDB) subscribes to the concept of sustainable development as its benchmark for environmental policy. The concept assuming that the ecological capacity of regeneration and assimilation of natural ecosystems will be kept is defined as (AfDB, 2004): “the acquisition, transformation, distribution, and disposal of resources in a manner capable of sustaining human activities without any reduction in the aggregate natural resource stocks”. Based on the definition provided, the environmental policy framework must consider the need to establish a strong connection between the increase of natural capital (resources), poverty reduction strategies (a strong

sustainability perspective) and issues related to the populations, a pressure factor in the carrying capacity in natural ecosystems (AfDB, 2004). The Bank's environmental policy has the following general and specific objectives.

General objectives:

- The general improvement in the quality of life of the people of Africa through the support of an environmentally sustainable development; and
- The preservation and increase of ecological capital and life support systems across the continent of Africa.

Specific objectives:

- Increase the carrying capacity of the regional member countries (RMC) through the introduction of innovative technologies, recognized natural and management techniques of reduction of threats to ecosystems;
- Substantially improve the access of disadvantaged/poor environmental resources;
- Help the Projects to acquire capacity to carry out institutional changes in order to achieve sustainable development; and
- Strengthen the partnership with international agencies and network with international, regional and sub-regional organizations for co-ordinate assistance related to the development environmentally sustainable and to promote exchange of information and sharing of the best practices.

The environmental and social safeguards issued by AfDB are the bases of the Bank's support for inclusive economic growth and environmental sustainability. The AfDB has developed an Integrated Safeguard System (ISS) in order to better articulate its safeguard policies while improving their clarity, coherence and consistency (AfDB, 2013; AfDB, 2015). The AfDB ISS sets out the basic tenets that guide the approach to environmental safeguards and five Operational Safeguards (OS) were adopted. The Operational Safeguard (OS) 1 sets out the Bank's overarching requirements for borrowers or clients to identify, assess, and manage the potential environmental and social risks and impacts of the program, including climate change issues. OS 1 requires the preparation of an Environment and Social Management Framework (ESMF), which establishes a mechanism to determine and assess potential environmental and social impacts of any Project. OS from 2 to 5 support the implementation of OS 1 and set out specific requirements relating to different

environmental and social issues, including gender and vulnerability issues that are triggered if the assessment process reveals that the program may present certain risks.

The operational safeguards highlighted in the ISS were considered in this Program ESMF, considering the program potential to trigger some of these safeguards. This ESMF is Category 2 though the Bank has categorized the Program as Category 1 due to enormous impacts posed by Transmission lines, This ESMF does not cover the transmission component of the RUEAP. This implies that the program has limited adverse environmental and social impacts and may trigger the following safeguard policies presented below. For Category 2 public and private sector projects, a summary of the ESMF should be made available to the public in Rwanda (as the borrowing country), on the Bank’s website and through other appropriate channels of disclosure.

| S/N | AfDB Operational Safeguard Policy | Summary of core requirements | Triggered under proposed project | Remarks or recommendation for proposed project |
|-----|--|--|----------------------------------|--|
| 1 | OS1– Environmental and social assessment | Borrowers or clients are responsible for conducting the environmental and social assessment (Strategic Environmental and Social Assessment, or SESA, or Environmental and Social Impact Assessment, or ESIA) and for developing, as an integral part of project documentation, an appropriate plan for managing possible impacts. It categorises proposed projects into categories 1, 2, 3, 4 and 9 based on the extent of adverse impacts anticipated from the program. | Triggered | OS1 is triggered because RUEAP may have different environmental and Social impacts on the environment and the society. Activities of power line construction/Upgrades, HPP Rehabilitation, Regulatory on environmental services and changes in taxation of fuel/energy sources may pose significant environmental and social risks. RUEAP risks will be managed throughout the implementation of mitigation measures prescribed in the site specific ESMPs. The projects will prepare the ESIA to fully mitigate all environmental and social impacts. |

| S/N | AfDB Operational Safeguard Policy | Summary of core requirements | Triggered under proposed project | Remarks or recommendation for proposed project |
|-----|---|--|----------------------------------|---|
| 2 | OS2– Involuntary resettlement: land acquisition, population displacement and compensation | It relates to Bank-financed projects that cause the involuntary resettlement of people. It seeks to ensure that when people must be displaced they are treated fairly, equitably, and in a socially and culturally sensitive manner; that they receive compensation and resettlement assistance so that their standards of living, income-earning capacity, production levels and overall means of livelihood are improved; and that they share in the benefits of the project that involves their resettlement. | Triggered | This policy requires that both physical and economic displacement are compensated. The program will fully compensate all assets to be damaged in the right of way or located to the project lot. Physical relocation will be avoided to the extent possible. |
| 3 | OS3- Biodiversity, renewable resources and ecosystem services | This Operational Safeguard (OS) outlines the requirements for borrowers or clients to (i) identify and implement opportunities to conserve and sustainably use biodiversity and natural habitats, and (ii) observe, implement, and respond to requirements for the conservation and sustainable management of priority ecosystem services | Triggered | OS3 is triggered since the proposed interventions will involve extraction of natural resources including use of water, land in the Right of Way (RoW) or substations locations. Some significant flora and faunal species as well as their habitat may be impacted during clearing of vegetation, downstream sedimentation from NTARUKA HPP which may cause serious effect on the biodiversity. |
| 4 | OS 4– Pollution prevention | This OS outlines the main pollution prevention and control requirements for borrowers or clients to achieve high | Triggered | OS4 is triggered because potential environment and social impact due to emissions of pollutants and waste is |

| S/N | AfDB Operational Safeguard Policy | Summary of core requirements | Triggered under proposed project | Remarks or recommendation for proposed project |
|-----|--|--|----------------------------------|---|
| | and control, hazardous materials and resource efficiency | quality environmental performance, and efficient and sustainable use of natural resources, over the life of a project. It draws on and aligns Bank operations with existing international conventions and standards related to pollution, hazardous materials and waste, and related issues | | anticipated during the construction phase where Asbestos Containing Materials (ACM) will be produced in NTARUKA HPP and this different project components are expected to produce hazardous waste including waste from solar panel batteries at end of their life. Kerosene painted poles also if not managed well constitute the source of soil pollution among others. All activities will be implemented with high consideration of environmental and social safeguards and by respecting the mitigation plan. |
| 5 | OS5– Labour conditions, health and safety | This OS outlines the main requirements for borrowers or clients to protect the rights of workers and provide for their basic needs. When the borrower or client intends to employ a workforce for a project, it develops and implements a human resources policy and procedures appropriate to the nature and size of the project, with the scale of the workforce in alignment with this OS and with applicable national laws. The OS requires the protection of the workforce through the institution of appropriate | Triggered | The Contractor shall comply with the national Labour laws and Best Practice Occupational Health and Safety requirements. Each Contractor will prepare the Labor Management Procedure (LMP) based on the WB requirements and which is specific to the company and Environmental Health and Safety Plan to make sure that he complies with this operational Safeguards. Furthermore, the program is preparing the LMP which will be used as reference to all contractor who will be used to implement the program. |

| S/N | AfDB Operational Safeguard Policy | Summary of core requirements | Triggered under proposed project | Remarks or recommendation for proposed project |
|-----|-----------------------------------|--|----------------------------------|--|
| | | health and safety measures considering risks inherent in the particular sector and specific classes of hazards in the borrower’s work and does not support the use of child labour and forced labour | | |

4.6. World Bank Group Environmental, Health and Safety Guidelines

4.6.1. Environmental, Health, and Safety General Guidelines

The Environmental, Health, and Safety (EHS) Guidelines² are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP) that WB funded project should apply. These General EHS Guidelines are designed to be used together with the relevant Industry Sector EHS Guidelines which provide guidance to users on EHS issues in specific industry sectors. The RUEAP will apply EHS Guidelines for Electric Power Transmission and Distribution. The applicability of the EHS Guidelines should be tailored to the hazards and risks established for each project on the basis of the results of an environmental assessment in which site-specific variables, such as host country context, assimilative capacity of the environment, and other project factors, are taken into account. When host country regulations differ from the levels and measures presented in the EHS Guidelines, projects are expected to achieve whichever is more stringent. If less stringent levels or measures than those provided in these EHS Guidelines are appropriate, in view of specific project circumstances, a full and detailed justification for any proposed alternatives is needed as part of the site-specific environmental assessment. This

² http://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/ifc+sustainability/our+approach/risk+management/ehsguidelines

justification should demonstrate that the choice for any alternate performance levels is protective of human health and the environment.

General Approach to the Management of EHS Issues at the Facility or Project Level: Effective management of environmental, health, and safety (EHS) issues entails the inclusion of EHS considerations into corporate-and facility-level business processes in an organized, hierarchical approach that includes the following steps:

- Identifying EHS project hazards and associated risks as early as possible in the facility development or project cycle, including the incorporation of EHS considerations into the site selection process, product design process, engineering planning process for capital requests, engineering work orders, facility modification authorizations, or layout and process change plans.
- Involving EHS professionals, who have the experience, competence, and training necessary to assess and manage EHS impacts and risks and carry out specialized environmental management functions including the preparation of project or activity-specific plans and procedures that incorporate the technical recommendations that are relevant to the project.
- Understanding the likelihood and magnitude of EHS risks, based on: The nature of the project activities, such as whether the project will generate significant quantities of emissions or effluents, or involve hazardous materials or processes; The potential consequences to workers, communities, or the environment if hazards are not adequately managed, which may depend on the proximity of project activities to people or to the environmental resources on which they depend.
- Prioritizing risk management strategies with the objective of achieving an overall reduction of risk to human health and the environment, focusing on the prevention of irreversible and/or significant impacts.
- Favouring strategies that eliminate the cause of the hazard at its source, for example, by selecting less hazardous materials or processes that avoid the need for EHS controls.
- When impact avoidance is not feasible, incorporating engineering and management controls to reduce or minimize the possibility and magnitude of undesired consequences, for example, with the application of pollution controls to reduce the levels of emitted contaminants to workers or environments.

- Preparing workers and nearby communities to respond to accidents, including providing technical and financial resources to effectively and safely control such events, and restoring workplace and community environments to a safe and healthy condition.
- Improving EHS performance through a combination of ongoing monitoring of facility performance and effective accountability.

Table 10: Environmental Health and Safety Guidelines:

| Effect | Description | Management |
|-------------------------|--|---|
| Environment | | |
| Greenhouse Gases (GHGs) | <p>Energy is one of the sectors that can have potential significant emissions of greenhouse gases.</p> <p>GHGs may be generated from direct emissions. Green House gases are gases responsible for Global Warming and include carbon dioxide (CO₂); methane (CH₄); nitrous oxide (N₂O); hydrofluorocarbons (HFCs); perfluorocarbons (PFCs); and sulfur hexafluoride (SF₆).</p> | <p>Promote, develop and increase use of renewable forms of energy which include hydroelectric power and solar energy which means that the impact of RUEAP is positive to the environment as it contributes to GHGs emissions reduction.</p> |
| Hazardous Materials | <p>Hazmats can be classified according to the hazard as explosives; compressed gases, including toxic or flammable gases; flammable liquids; flammable solids; oxidizing substances; toxic materials; radioactive material; and corrosive substances.</p> | <ul style="list-style-type: none"> - The overall objective of hazardous materials management is to avoid or, when avoidance is not feasible, minimize uncontrolled releases of hazardous materials or accidents (including explosion and fire) during their production, handling, storage and use. - Where practicable, avoiding or minimizing the use of hazardous materials. For example, non-hazardous materials have been found to substitute asbestos in building materials, PCBs in electrical equipment, persistent organic pollutants (POPs) in pesticides formulations, and ozone depleting substances in refrigeration systems; |

| Effect | Description | Management |
|--------|--|--|
| | | <ul style="list-style-type: none"> - Preventing uncontrolled releases of hazardous materials to the environment or uncontrolled reactions that might result in fire or explosion; - Using engineering controls (containment, automatic alarms, and shut-off systems) commensurate with the nature of hazard; - Implementing management controls (procedures, inspections, communications, training, and drills) to address residual risks that have not been prevented or controlled through engineering measures. - Job safety analysis to identify specific potential occupational hazards and industrial hygiene surveys, as appropriate, to monitor and verify chemical exposure levels, and compare with applicable occupational exposure standards; - Hazard communication and training programs to prepare workers to recognize and respond to workplace chemical hazards. |
| | <p>Reactive, flammable, and explosive materials should also be managed to avoid uncontrolled reactions or conditions resulting in fire or explosion.</p> | <ul style="list-style-type: none"> - Storage of incompatible materials (acids, bases, flammables, oxidizers, reactive chemicals) in separate areas, and with containment facilities separating material storage areas; - Provision of material-specific storage for extremely hazardous or reactive materials; - Use of flame arresting devices on vents from flammable storage containers; - Provision of grounding and lightning protection for tank farms, transfer stations, and other equipment that handles flammable materials; |

| Effect | Description | Management |
|---|--|---|
| | | <ul style="list-style-type: none"> - Selection of materials of construction compatible with products stored for all parts of storage and delivery systems, and avoiding reuse of tanks for different products without checking material compatibility; |
| Waste | <p>Any solid, liquid, or contained gaseous material that is being discarded by disposal, recycling, burning or incineration. It can be by-product of a manufacturing process or an obsolete commercial product that can no longer be used for intended purpose and requires disposal.</p> | <ul style="list-style-type: none"> - Establishing waste management priorities at the outset of activities based on an understanding of potential Environmental, Health, and Safety (EHS) risks and impacts and considering waste generation and its consequences - Establishing a waste management hierarchy that considers prevention, reduction, reuse, recovery, recycling, removal and finally disposal of wastes. - Avoiding or minimizing the generation waste materials, as far as practicable - Where waste generation cannot be avoided but has been minimized, recovering and reusing waste; - Where waste cannot be recovered or reused, treating, destroying, and disposing of it in an environmentally sound manner |
| Occupational Health and Safety (OHS) | | |
| Approach | <p>Employers and supervisors are obliged to implement all reasonable precautions to protect the health and safety of workers. Companies should hire contractors that have the technical capability to manage the occupational health and safety issues of their employees, extending the</p> | <ul style="list-style-type: none"> - Eliminating the hazard by removing the activity from the work process. Examples include substitution with less hazardous chemicals, using different manufacturing processes, etc. - Controlling the hazard at its source through use of engineering controls. Examples include local exhaust ventilation, isolation rooms, machine guarding, acoustic insulating, etc. |

| Effect | Description | Management |
|-------------------------------|---|---|
| | <p>application of the hazard management activities through formal procurement agreements.</p> | <ul style="list-style-type: none"> - Minimizing the hazard through design of safe work systems and administrative or institutional control measures. Examples include job rotation, training safe work procedures, lock-out and tag-out, workplace monitoring, limiting exposure or work duration, etc. - Providing appropriate personal protective equipment (PPE) in conjunction with training, use, and maintenance of the PPE. - The application of prevention and control measures to occupational hazards should be based on comprehensive job safety or job hazard analyses. The results of these analyses should be prioritized as part of an action plan based on the likelihood and severity of the consequence of exposure to the identified hazards. |
| <p>The workplace and Exit</p> | | <ul style="list-style-type: none"> - The space provided for each worker, and in total, should be adequate for safe execution of all activities, including transport and interim storage of materials and products. - Passages to emergency exits should be unobstructed at all times. Exits should be clearly marked to be visible in total darkness. The number and capacity of emergency exits should be sufficient for safe and orderly evacuation of the greatest number of people present at any time, and there should be a minimum two exits from any work area. - The workplace should be designed to prevent the start of fires through the implementation of fire codes applicable to industrial settings. |

| Effect | Description | Management |
|---------------------|---|--|
| | | <ul style="list-style-type: none"> - The employer should ensure that qualified first-aid can be provided at all times. Appropriately equipped first-aid stations should be easily accessible throughout the place of work. - Training about OHS should be provided to all workers and should consist of basic hazard awareness, site-specific hazards, safe work practices, and emergency procedures for fire, evacuation, and natural disaster, as appropriate. Any site-specific hazard or colour coding in use should be thoroughly reviewed as part of orientation training. - Vibration exposure levels should be checked based on daily exposure time and data provided by equipment manufacturers. |
| Fire and Explosions | Fires and or explosions resulting from ignition of flammable materials or gases can lead to loss of property as well as possible injury or fatalities to project workers. | <ul style="list-style-type: none"> - Storing flammables away from ignition sources and oxidizing materials. - Providing bonding and grounding of, and between, containers and additional mechanical floor level ventilation if materials are being, or could be, dispensed in the storage area - Where the flammable material is mainly comprised of dust, providing electrical grounding, spark detection, and, if needed, quenching systems - Defining and labelling fire hazards areas to warn of special rules (e.g. prohibition in use of smoking materials, cellular phones, or other potential spark generating equipment) |

| Effect | Description | Management |
|-------------------------------|--|---|
| | | <ul style="list-style-type: none"> - Providing specific worker training in handling of flammable materials, and in fire prevention or suppression |
| Electrical | <p>Exposed or faulty electrical devices, such as circuit breakers, panels, cables, cords and hand tools, can pose a serious risk to workers. Overhead wires can be struck by metal devices, such as poles or ladders, and by vehicles with metal booms. Vehicles or grounded metal objects brought into proximity with overhead wires can result in arcing between the wires and the object, without actual contact.</p> | <ul style="list-style-type: none"> - Marking all energized electrical devices and lines with warning signs; - Locking out (de-charging and leaving open with a controlled locking device) and tagging-out (warning sign placed on the lock) devices during service or maintenance; - Checking all electrical cords, cables, and hand power tools for frayed or exposed cords and following manufacturer recommendations for maximum permitted operating voltage of the portable hand tools; - Protecting power cords and extension cords against damage from traffic by shielding or suspending above traffic areas - Appropriate labelling of service rooms housing high voltage equipment (‘electrical hazard’) and where entry is controlled or prohibited; - Establishing “No Approach” zones around or under high voltage power lines; - Conducting detailed identification and marking of all buried electrical wiring prior to any excavation work. |
| Personal Protective Equipment | <p>PPE is considered to be a last resort that is above and beyond the other facility controls and provides the worker with an extra level of personal protection.</p> | <ul style="list-style-type: none"> - Active use of PPE if alternative technologies, work plans or procedures cannot eliminate, or sufficiently reduce, a hazard or exposure; - Identification and provision of appropriate PPE that offers adequate protection to the worker, co-workers, and occasional visitors, without incurring unnecessary inconvenience to the individual; |

| Effect | Description | Management |
|--|-------------|---|
| | | <ul style="list-style-type: none"> - Proper maintenance of PPE, including cleaning when dirty and replacement when damaged or worn out. Proper use of PPE should be part of the recurrent training programs for employees; - Selection of PPE should be based on the hazard and risk ranking and selected according to criteria on performance and testing established by recognized organizations |
| <p>Accidents and Diseases monitoring</p> | | <ul style="list-style-type: none"> - The employer should establish procedures and systems for reporting and recording: Occupational accidents and diseases; Dangerous occurrences and incidents These systems should enable workers to report immediately to their immediate supervisor any situation they believe presents a serious danger to life or health. - The systems and the employer should further enable and encourage workers to report to management all: Occupational injuries and near misses; Suspected cases of occupational disease; Dangerous occurrences and incidents - All reported occupational incident and diseases should be investigated with the assistance of a person knowledgeable/competent in occupational safety. The investigation should: Establish what happened; Determine the cause of what happened; Identify measures necessary to prevent a recurrence; |

| Effect | Description | Management |
|---|--|---|
| Community Health and Safety | | |
| <p>Communicable and Vector borne Diseases</p> | <p>Health hazards typically associated with large development projects are those relating to poor sanitation and living conditions, sexual transmission and vector-borne infections. Communicable diseases of most concern during the construction phase due to labor mobility are sexually transmitted diseases (STDs), such as HIV/AIDS.</p> | <ul style="list-style-type: none"> - Providing surveillance and active screening and treatment of workers; - Preventing illness among workers in local communities by: Undertaking health awareness and education initiatives, for example, by implementing an information strategy to reinforce person-to-person counselling addressing systemic factors that can influence individual behavior as well as promoting individual protection, and protecting others from infection, by encouraging condom use. <p>Vector borne diseases should be addressed by:</p> <ul style="list-style-type: none"> - Prevention of larval and adult propagation through sanitary improvements and elimination of breeding habitats close to human settlements; - Elimination of unusable impounded water; - Promoting use of repellents, clothing, netting, and other barriers to prevent insect bites - Use of chemoprophylaxis drugs by non-immune workers and collaborating with public health officials to help eradicate disease reservoirs; - Monitoring and treatment of circulating and migrating populations to prevent disease reservoir spread; - Collaboration and exchange of in-kind services with other control programs in the project area to maximize beneficial effects; - Educating project personnel and area residents on risks, prevention, and available treatment. |

4.6.2. Environmental, Health, and Safety Guidelines for Electric Power Transmission and Distribution

The EHS Guidelines for Electric Power Transmission and Distribution include information relevant to power transmission between a generation facility and a substation located within an electricity grid, in addition to power distribution from a substation to consumers located in residential, commercial, and industrial areas.

4.6.2.1. Specific Impacts and management

The following section provides a summary of EHS issues associated with electric power transmission and distribution that occur during the construction and operation phases of a facility, along with recommendations for their management

Table 11: Summary of EHS Guidelines for Electric Power Transmission and Distribution

| Effect | Description | Management |
|---|--|--|
| Environmental Impacts: Terrestrial habitat alteration; Aquatic habitat alteration; Electric and magnetic fields and hazardous materials. | | |
| Terrestrial habitat alteration Right-of-way | construction activities may transform habitats , depending on the characteristics of existing vegetation, topographic features, and installed height of the transmission lines. | RoW (Right of Way) construction <ul style="list-style-type: none"> - Site transmission and distribution rights-of-way, access roads, lines, towers, and substations to avoid critical habitat through use of existing utility and transport corridors for transmission and distribution, and existing roads and tracks for access roads, whenever possible; - Installation of transmission lines above existing vegetation to avoid land clearing; - Avoidance of construction activities during the breeding season and other sensitive seasons or times of day; - Revegetation of disturbed areas with native plant species; |

| Effect | Description | Management |
|---------------------|--|---|
| | | <ul style="list-style-type: none"> - Removal of invasive plant species during routine vegetation maintenance (see right-of-way maintenance section below). <p>Right of way maintenance:</p> <ul style="list-style-type: none"> - Unchecked growth of tall trees and accumulation of vegetation within rights-of-way may result in a number of impacts, including power outages through contact of branches and trees with transmission lines and towers; ignition of forest and brush fires; corrosion of steel equipment; blocking of equipment access; and interference with critical grounding equipment. - Implement an integrated vegetation management approach (IVM). The selective removal of tall-growing tree species and the encouragement of low-growing grasses and shrubs. Observing manufacturer machinery and equipment guidelines, procedures with regard to noise, and oil spill prevention and emergency response; - Avoiding clearing in riparian areas; Avoiding use of machinery in the vicinity of watercourses. |
| Forest Fires | <p>If underlying growth is left unchecked, or slash from routine maintenance is left to accumulate within right-of-way boundaries, enough fuel can accumulate that may promote forest fires.</p> | <ul style="list-style-type: none"> - Monitoring right-of-way vegetation according to fire risk; - Removing blowdown and other high-hazard fuel accumulations; - Time thinning, slashing, and other maintenance activities to avoid forest fire seasons; - Planting and managing fire resistant species (e.g. hardwoods) within, and adjacent to, rights-of-way; - Establishing a network of fuel breaks of less flammable materials or cleared land to slow progress of fires and allow firefighting access. |

| Effect | Description | Management |
|--|--|--|
| Avian and Bat Collisions and Electrocutions | Avian collisions with power lines can occur in large numbers if located within daily flyways or migration corridors, or if groups are traveling at night or during low light conditions (e.g. dense fog). In addition, bird and bat collisions with power lines may result in power outages and fires. | <ul style="list-style-type: none"> - Aligning transmission corridors to avoid critical habitats; - Maintaining 1.5 meter (60-inch) spacing between energized components and grounded hardware or, where spacing is not feasible, covering energized parts and hardware; - Considering the installation of underground transmission and distribution lines in sensitive areas (e.g. critical natural habitats). - Considering the installation of underground transmission and distribution lines in sensitive areas (e.g. critical natural habitats); - Installing visibility enhancement objects such as marker balls, bird deterrents, or diverters |
| Aquatic Habitat Alteration | Power transmission and distribution lines, and associated access roads and facilities, may require construction of corridors crossing aquatic habitats that may disrupt watercourses and wetlands, and require the removal of riparian vegetation. | <ul style="list-style-type: none"> - To prevent and control impacts to aquatic habitats include: Site power transmission towers and substations to avoid critical aquatic habitat (e.g. watercourses, wetlands, and riparian areas); - Minimizing clearing and disruption to riparian vegetation. |
| Electric and Magnetic Fields | Although there is public and scientific concern over the potential health effects associated with exposure to EMF (Electro Magnetic Field) (not only high-voltage power lines and | <ul style="list-style-type: none"> - Evaluating potential exposure to the public against the reference levels developed by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). Average and peak exposure levels should remain below the ICNIRP recommendation for General Public Exposure; - Considering siting new facilities so as to avoid or minimize exposure to the public. Installation of transmission lines or other high voltage equipment above or adjacent to residential properties or |

| Effect | Description | Management |
|-----------------------------------|--|---|
| | <p>substations, but also from everyday household uses of electricity), there is no empirical data demonstrating adverse health effects from exposure to typical EMF levels from power transmissions lines and equipment. However, while the evidence of adverse health risks is weak, it is still sufficient to warrant limited concern.</p> | <p>other locations intended for highly frequent human occupancy, (e.g. schools or offices), should be avoided;</p> <ul style="list-style-type: none"> - If EMF levels are confirmed or expected to be above the recommended exposure limits, application of engineering techniques should be considered to reduce the EMF produced by power lines, substations, or transformers. Examples of these techniques include: Shielding with specific metal alloys; Burying transmission lines; Increasing height of transmission towers; Modifications to size, spacing, and configuration of conductors |
| <p>Hazardous Materials</p> | <p>They include insulating oils / gases (e.g. Polychlorinated Biphenyls [PCB] and sulfur hexafluoride [SF6]), and fuels, in addition to chemicals or products for wood preservation for poles and associated wood construction material. The use of SF6 should be avoided due to its potential GHGs potential effect.</p> | <ul style="list-style-type: none"> - Replacing existing transformers and other electrical equipment containing PCB, and ensuring appropriate storage, decontamination, and disposal of contaminated units; - Prior to final disposal, retired transformers and equipment containing PCB should be stored on a concrete pad with curbs sufficient to contain the liquid contents of these containers should they be spilled or leaked. - The storage area should also have a roof to prevent precipitation from collecting in the storage area. - Disposal should involve facilities capable of safely transporting and disposing of hazardous waste containing PCB. |

| Effect | Description | Management |
|---|--|--|
| Wood Preservatives | The majority of wooden utility poles are treated with pesticide preservatives to protect against insects, bacteria, and fungi, and to prevent rot. The preservatives most commonly used for power poles are oil-based pesticides such as creosote, pentachlorophenol (PCP), and chromated copper arsenate (CCA). | <ul style="list-style-type: none"> - Poles should be pre-treated at an appropriate facility to ensure chemical fixation and prevent leaching, and to impede the formation of surface residues at the right-of-way. - Evaluating the cost and benefit of using alternative pole materials (e.g. steel, concrete, and fiberglass); - Consider use of alternative preservatives (e.g. copper azote); - Undertake appropriate disposal of used poles. Landfill facilities should be capable of handling wastes that may have chemical leaching properties. |
| Projects Located in Degraded Airsheds or Ecologically Sensitive Areas | Eg: National Parks, Protected wetlands and any protected area | <ul style="list-style-type: none"> - Ensure that any increase in pollution levels is as small as feasible and amounts to a fraction of the applicable short-term and annual average air quality guidelines or standards as established in the project-specific environmental assessment. - Relocation of significant sources of emissions outside the airshed in question, use of cleaner fuels or technologies, application of comprehensive pollution control measures, offset activities at installations controlled by the project sponsor or other facilities within the same airshed, and buy-down of emissions within the same airshed. |
| Occupational Health and Safety: Mainly discussed in the general guidelines | | |
| Live Power lines | Workers may be exposed to occupational hazards from contact with | <ul style="list-style-type: none"> - Only allowing trained and certified workers to install, maintain, or repair electrical equipment; - Deactivating and properly grounding live power distribution lines before work is performed on, or in close proximity, to the lines; |

| Effect | Description | Management |
|--|--|--|
| | live power lines during construction, maintenance, and operation activities. | <ul style="list-style-type: none"> - Ensuring that live-wire work is conducted by trained workers with strict adherence to specific safety and insulation standards; - Workers should not approach an exposed energized or conductive part even if properly trained unless: The worker is properly insulated from the energized part with gloves or other approved insulation or the energized part is properly insulated from the worker and any other conductive object or the worker is properly isolated and insulated from any other conductive object (live-line work); - Where maintenance and operation are required within minimum setback distances, specific training, safety measures, personal safety devices, and other precautions should be defined in a health and safety plan; - Workers not directly associated with power transmission and distribution activities who are operating around power lines or power substations should adhere to local legislation, standards, and guidelines relating to minimum approach distances for excavations, tools, vehicles, pruning, and other activities; - Minimum hot stick distances may only be reduced provided that the distance remaining is greater than the distance between the energized part and a grounded surface. |
| Working at height on poles and structures | Workers may be exposed to occupational hazards when working at elevation during construction, maintenance, and operation activities. | <ul style="list-style-type: none"> - Testing structures for integrity prior to undertaking work; - Implementation of a fall protection program that includes training in climbing techniques and use of fall protection measures, inspection, maintenance, and replacement of fall protection equipment and rescue of fall-arrested workers, among others; |

| Effect | Description | Management |
|--|---|--|
| | | <ul style="list-style-type: none"> - Establishment of criteria for use of 100 percent fall protection (typically when working over 2 meters above the working surface, but sometimes extended to 7meters, depending on the activity). The fall protection system should be appropriate for the tower structure and necessary movements, including ascent, descent, and moving from point to point; Installation of fixtures on tower components to facilitate the use of fall protection systems; - Provision of an adequate work-positioning device system for workers; Connectors on positioning systems should be compatible with the tower components to which they are attached; Hoisting equipment should be properly rated and maintained and hoist operators properly trained; - Safety belts should be of not less than 16millimeters (mm)(5/8 inch) two-in-one nylon or material of equivalent strength. Rope safety belts should be replaced before signs of aging or fraying of fibers become evident; When operating power tools at height, workers should use a second (backup) safety strap; - Signs and other obstructions should be removed from poles or structures prior to undertaking work; - An approved tool bag should be used for raising or lowering tools or materials to workers on structures. |
| <p>Electric and magnetic fields Electric and</p> | <p>Electric utility workers typically have a higher exposure to EMF than the general public due to working in proximity to electric power lines</p> | <ul style="list-style-type: none"> - Identification of potential exposure levels in the workplace, including surveys of exposure levels in new projects and the use of personal monitors during working activities; - Training of workers in the identification of occupational EMF levels and hazards; |

| Effect | Description | Management |
|------------------------------------|---|--|
| magnetic fields (EMF) | | <ul style="list-style-type: none"> - Establishment and identification of safety zones to differentiate between work areas with expected elevated EMF levels compared to those acceptable for public exposure, limiting access to properly trained workers; - Implementation of action plans to address potential or confirmed exposure levels that exceed reference occupational exposure levels developed by international organizations such as the (ICNIRP), and the Institute of Electrical and Electronics Engineers (IEEE). Action plans to address occupational exposure may include limiting exposure time through work rotation, increasing the distance between the source and the worker, when feasible, or the use of shielding materials. |
| Exposure to chemicals | They include handling of pesticides (herbicides) used for right-of-way maintenance, and exposure to PCB in transformers and other electrical components | <ul style="list-style-type: none"> - Train personnel to apply pesticides and ensure that personnel have received the necessary certifications, or equivalent training where such certifications are not required; - Respect post-treatment intervals to avoid operator exposure during reentry to crops with residues of pesticides; - Ensure hygiene practices are followed to avoid exposure of family members to pesticides residues. |
| Community Health and Safety | | |
| Electrocution | Hazards resulting from direct contact with high-voltage electricity or from contact with tools/device in contact high voltage electricity. | <ul style="list-style-type: none"> - Use of signs, barriers (e.g. locks on doors, use of gates, use of steel posts surrounding transmission towers, particularly in urban areas), and education / public outreach to prevent public contact with potentially dangerous equipment; - Grounding conducting objects (e.g. fences or other metallic structures) installed near power lines, to prevent shock. |

| Effect | Description | Management |
|-------------------------------|--|---|
| <p>Noise and Ozone</p> | <p>Noise in the form of buzzing or humming can often be heard around transformers or high voltage power lines producing corona. Ozone, a colorless gas with a pungent odor, may also be produced. Neither the noise nor ozone produced by power distribution lines and transformer carries any known health effect</p> | <ul style="list-style-type: none"> - The management include to mitigate this impact during project planning stages to locate rights-of-way away from human receptors, to the extent possible and use of noise barriers or noise cancelling acoustic devices should be considered as necessary. |

4.6.2.2. Performance Indicators and Monitoring

Environment: Environmental monitoring activities should be based on direct or indirect indicators of emissions, effluents, and resource use applicable to the project. Monitoring frequency should be enough to provide representative data for the parameter being monitored. Monitoring data should be analysed and reviewed at regular intervals and compared with the operating standards so that any necessary corrective actions can be taken.

Occupational Health and Safety: Projects should try to reduce the number of accidents among project workers (whether directly employed or subcontracted) to a rate of zero, especially accidents that could result in lost work time, different levels of disability, or even fatalities. Facility rates may be benchmarked against the performance of facilities in this sector in developed countries through consultation with published sources. Facilities should also maintain a record of occupational accidents and diseases and dangerous occurrences and accidents.

V. PROGRAM ENVIRONMENTAL AND SOCIAL RISKS AND MITIGATION MEASURES

5.1. Beneficial social and environmental impacts

Rwanda Universal Energy Access Program implementation will have both positive and negative impacts. The ultimate program beneficiaries will be households, businesses, and public institutions in Rwanda through the following channels: (a) a portion of the currently unelectrified households will get electricity connections (on-grid or off-grid); (b) the quality and reliability of electricity services will improve, enabling households and businesses to make better and productive use of electricity; (c) households using biomass for cooking are expected to get health and economic benefits by switching to cleaner cooking options and in particular women entrepreneurship will receive training from the component 4 on capacity building; and (d) a portion of currently unelectrified public institutions in Rwanda, including schools and health centres (all hospitals in Rwanda are electrified), will get electrified. Furthermore, by supporting electrification through solar off-grid solutions the program will help reduce greenhouse gas emissions if equivalent electricity were sourced from fossil fuel-based utility-scale power plants or emergency diesel power plants. REG will be a direct beneficiary of the program as it is expected to benefit from higher cost-recovery through improved operational efficiency (lower technical and commercial losses), and potentially higher revenues through increased electrification rate and improved quality of service. Finally, the GoR will benefit as improved cost-recovery for REG will ease the burden of fiscal transfers to REG, helping GoR to target other priority sectors, and a higher electrification rate and improved electricity services will help achieve the NST1 targets and consequently aid in economic growth. Only the component 4 as part of the Technical Assistance, extensive support will also be provided on the clean cooking component of the program, particularly on policy and regulatory improvement and entrepreneurship development, including targeted training for women entrepreneurs. The significance of these impacts would vary depending on the individual subproject, its size and location.

Table 12: Summary of potential positive environmental and social impacts

| Component | Environmental Impacts | Social Impacts |
|---|--|---|
| <p>Component 1 (Increasing access to grid electricity)</p> <p>Component 2 (Improving grid stability and enhancing operational efficiency)</p> <p>And component 3 (Catalysing private investment in off-grid energy and clean cooking)</p> | <ul style="list-style-type: none"> - The program will increase access to electricity, promote energy efficiency, and substitute fossil fuels, and offset carbon emissions; hence ensuring a sustainable development. Therefore, the implementation of the program will reduce pressure on biomass use and reduce the emission of greenhouse gases, which would have otherwise been generated for power generation of similar capacity. - Furthermore, the program will lower the cost of economic infrastructure such as communication, transportation and distribution networks, financial institutions and markets and thus boosting development processes. The quality of life of the beneficiaries in the project area will be improved hence reducing the exploitation of natural resources. - The program is also expected to reduce the cost of fuel and the pressure on forests as energy source. | <p>The RUEAP will bring various social benefits. Employment opportunities will be offered to skilled and non-skilled workers during construction and operation phases and other employment opportunities benefiting from electricity connection. Income generating activities are expected to be created hence contributing to poverty reduction and increasing revenues and sustaining social and economic development with women at the centers. In the long term, the successful implementation of this program will improve the quality of life including education, health and security.</p> <p>With transmission and distribution lines, there will be increased capacity and reliability of power supply. This additional capacity will have a positive impact by being able to meet the ever-rising power demand across the entire country.</p> |

| | |
|---|--|
| <p>Component 4 (Institutional capacity building)/Technical Assistance</p> | <ul style="list-style-type: none"> - Sector performance improvements and forward-looking options for sector development; capacity building in planning, skills development, audit and compliance; and policy and regulatory improvement and entrepreneurship development, including targeted training for women entrepreneurs (under clean cooking solutions). - The policy and regulatory development/improvement part will comprise improving fuel/stove regulations, quality standards, testing capacity, and tax/tariff policies to support clean cooking market development. - Employment creation through promotion of clean cooking stove use by reducing taxes to make them affordable to the community; - CO2 emissions reduction through the taxation increment on charcoal used by mass community and shift to the LPG and clean cooking stove with lower emissions compared to charcoal. - Reduction of population who depend on the firewood thereby reducing the pressure to the national forest use. |
|---|--|

Table 13: Summary of potential negative environmental and social impacts

| Component | Activities | Potential impacts |
|---|---|--|
| Impacts during design and planning phase | | |
| <p>Component 1 (Increasing access to grid electricity)</p> <p>Component 2 (Improving grid stability and enhancing operational efficiency)</p> | <p>site selection, land acquisition, planning for civil, mechanical, engineering and electrical specifications, equipment and machineries to be procured, material storage and waste disposal measures.</p> | <ul style="list-style-type: none"> - Dispute and possible conflict over the land identified can arise owing to loss of crops, trees, absence of compensation and lack of dialogue with the Project Affected People (PAP). - Poor selection of project site for the transmission or distribution lines and associated substations/transformers can cause conflict over environmental degradation including the destruction of sensitive ecosystems or protected areas and physical displacement due to poor selection of tower location and substations associated to transmission lines. - Inadequate and poor designs and plans including storage of equipment and machinery and waste disposal can possibly cause environmental degradation. Unsafe storage of creosote treated poles is source of obnoxious odors for workers and general public. Polychlorobiphenils (PCBs) from transformers and capacitors at substations can cause soil and water pollution if used. |

| Component | Activities | Potential impacts |
|--|---|--|
| Component 4: Institutional capacity building | Technical assistance such as sector performance improvements and forward-looking options for sector development; capacity building in planning, skills development, audit and compliance; and policy and regulatory improvement and entrepreneurship development, including targeted training for women entrepreneurs (under clean cooking solutions), which will complement Component 3. | <p>The policy and regulatory development/improvement part will comprise improving fuel/stove regulations, quality standards, testing capacity, and tax/tariff policies to support clean cooking market development. The adverse environmental and social impact foreseen:</p> <ul style="list-style-type: none"> - Increasing CO2 emissions due to the promoted fuel type. - Increasing the pressure on the forest through increasing population depending on the firewood due to the increased and unaffordable prices. - Loss of employment for people who were working previously in the charcoal sector due to the increment in taxation on the charcoal. |
| Adverse Impacts during construction phase | | |
| Component 1 (Increasing | Rehabilitation of Hydropower plant and construction activities for poles, towers, transformers include site | <ul style="list-style-type: none"> - Pose public health related issues such as HIV/AIDS, communicable and other sexually transmitted diseases (STDs) due to labor influx. |

| Component | Activities | Potential impacts |
|--|--|--|
| <p>access to grid electricity</p> <p>Component 2 (Improving grid stability and enhancing operational efficiency)</p> | <p>earthworks which involve site preparation, clearing, stripping, grading, soil removal, backfilling, compacting, use of construction material sourcing areas (quarry and borrow pits), disposal of surplus, landscaping, shoring as required and final site cleanup.</p> | <ul style="list-style-type: none"> - Noise pollution from construction machines and vehicles, accidents and hazards for both workers and general public from erection of steel poles, manual transportation of the wooden poles at long distance, cutting and concrete work. Injuries can result from trips and falls and other physical and mechanical hazards. - Particulate matter pollution during site clearance, excavation and spreading of topsoil during construction and exposure to diseases from construction materials can affect site workers and general public. - The excavation and construction activities may also affect physical cultural properties by displacement, damage or loss of structure from RoW location site. - Generation of solid waste such as packaging materials, plastics, scrap metal, timber remain demolition waste from Ntaruka HPP Rehabilitation and dumping around the site and in construction camps can pose threat to environment and public health. - Pollution of soil and water can also be generated from machinery fuel and lubricants contamination from accidental spills or unsound disposal or handling. In particular, transformers can experience a leak arising from a fault, poor handling and vandalism. These leaks may result in potential contamination of surface and groundwater as well as soil. - Clearing of indigenous vegetation and disturbance to biodiversity and disruption of ecosystem functions. |

| Component | Activities | Potential impacts |
|-----------|------------|--|
| | | <ul style="list-style-type: none"> - Excavation works for site preparation, access roads, and poles installation are likely to cause loss of soil cover. - Construction materials sourcing areas that include quarry and borrow pits sites are also likely to cause soil disturbance and soil erosion. - Traffic disruption due to the constructions site location when it is in the proximity of the main road, for the entry and exist of material supplying trucks. - Additional demand for water in addition to the existing demand due to different demanding activities. - Erosion due to the removal of vegetation cover for site preparation before cropping - labour camps may be a source of wastes including human ones posing the potential risk of poor sanitation - If not properly managed and disposed of, these types of wastes can create inconveniences; become breeding sites for water disease and their leachate pollute surface and ground water sources. - During construction activities, mainly on the component 2, subcomponent 1 of rehabilitating NTARUKA HPP will generate dust. |

| Component | Activities | Potential impacts |
|-----------|------------|--|
| | | <ul style="list-style-type: none"> - Transportation of materials to site will also generate dust. Decommissioning of existing structures can also create dust that is potentially hazardous. <p>Increase in soil water erosion and water contamination</p> <ul style="list-style-type: none"> - Sedimentation caused by Gravel/soil brought for any filling purposes and soil removed during site preparation which can be washed off to nearby streams, wetlands, rivers and low-lying areas. - Soil erosion may lead to sedimentation in rivers and wetland located downstream. Waste water generated during construction and from labour camps can also contaminate drinking water sources. <p>health risks and safety of workers and residents</p> <ul style="list-style-type: none"> - Accidental collisions with moving vehicles, strains from repeated movements or from lifting and heaving of heavy objects, slips and falls. - Accidental cuts from tools and machines are also safety risks. - Wet cement as an electronic material is corrosive on contact to with human skin. - Poor maintenance and hygiene in toilet may be sources of fly infestation and other pathogens that may cause water borne diseases such as diarrhoea, dysentery and typhoid fever. |

| Component | Activities | Potential impacts |
|---|---|---|
| Component 3 (Catalysing private investment in off-grid energy and clean cooking) | Off-grid solar connections to reach poorer more remote areas and clean cooking solutions | <ul style="list-style-type: none"> - Potential environmental, social and safety risks during transportation, installation, and operation (e.g. fire and explosion risks). - Deforestation due to the biomass used in clean cooking systems |
| Impacts during operation phase | | |
| All components | During operation phase, activities include maintenance of infrastructure such as transmission, distribution lines, solar home system and HPP. | <ul style="list-style-type: none"> - Bush/Vegetation clearance due to the maintenance of right of way. - Potential social adverse impacts include of electrocution, bite by snake or other insects, injury for workers and general public and risk of accidents to life property. - Water and soil pollution and risk on biodiversity due to the disposal of used creosote treated wooden poles. - Potential environmental and social risks from the distribution, storage and final disposal of used batteries containing hazardous waste; and disposal/recycling of solar panels. |

| Component | Activities | Potential impacts |
|-----------|------------|--|
| | | <ul style="list-style-type: none"> - Health and safety risks related to the maintenance of infrastructure from EMF, fire hazards, electrocution, falling from height, being cuts from sharp objects among others. - Leachates from transformers contain PCBs that are harmful to the environment. - Environmental and social impacts of Clean cooking solutions may results from resource use inefficiency related to local production and use of clean cookstove solutions and new regulations on taxes as part of TA and these include: Increasing CO2 emissions due to the promoted fuel type; Increasing the pressure on the forest through increasing population depending on the firewood due to the increased and unaffordable prices; Loss of employment for people who were working previously in the charcoal sector due to the increment in taxation on the charcoal; Unemployment due to the taxation increase on charcoal and decrease on the clean cooking stove due the promotion of environmental protection through energy efficiency. - Ntaruka HPP may have potential impacts and risks on aquatic biodiversity conservation and management of living natural resources, surrounding and downstream communities and ecological flow. It can also produce hazardous and non-hazardous wastes, and reservoir sedimentation. |

| Component | Activities | Potential impacts |
|------------------------------|--|---|
| Decommissioning phase | | |
| Component 1, 2 and 3 | Activities include dismantling of infrastructure of transmission lines, removal of storage facilities. | <ul style="list-style-type: none"> - Contamination of ground and surface water resources through unsound disposal of used CFLs which are hazardous to the soil and ground resources especially if disposed indiscriminately. - Dismantling of transformers is likely to cause noise and generate dust impacts and waste debris from equipment including oil spills and different hazardous materials. |

5.2. Environmental and Social Management Plan (ESMP)

For the purposes of this Environmental and Social Management Plan (ESMP), the activities in the RUEAP that are likely to have adverse impacts are mainly expected to arise from the RUEAP components activities.

Mitigation measures involve avoiding of impact altogether, minimizing the impact, rectifying the impact and gradual elimination of impact over time. Depending on the nature, these measures will be implemented by all stakeholders and REG will oversee the overall coordination of its implementation

Mitigation measures are twofold: biophysical and socio-economic. Bio-physical measures relate to issues of project siting, re-vegetation and preventive measures like bush clearing, erosion, sedimentation and pollution control and good construction practices, proper waste management, Setting regulatory that promotes environmental preservation for component four which will involve new regulations and taxation policy, and application of Environmental Guidelines for Contractors. Socio-economic measures will include education and awareness, hygiene and sanitation training, rules and regulations and institutional support (including skills training and knowledge transfer) and avoiding to the extent possible the physical relocation of the Project affected People (PAPs), where not possible, PAPs should be fully compensated in compliance with World Bank ESS5. AfDB OS2 on Involuntary resettlement: land acquisition, population displacement and compensation and National Expropriation Law 32/2015 of 11/6/2015 concerning the expropriation in public interest. The following table provides the generic Environmental and Social Management Plan (ESMP) and gives a link between the impacts of project activities and the mitigation measures put in place to minimize the adverse impacts and enhance the positive impacts during different project phases.

Table 14: Environmental and Social Management Plan

5.2.1. Planning and design phase

| Program components/ Activities | Negative Impacts | Mitigation Measures | Responsibility | Cost Estimates (USD) |
|--|--|--|--|--------------------------|
| Temporally Land Acquisition/ Permanent land acquisition, physical displacement and assets loss | Dispute and possible conflict over the land identified can arise owing absence of compensation and dialogue with the PAPs. | <p>Ensure that the land identified for the program is acquired as per the requirements of the Government of Rwanda and World Bank guidelines in relation to land acquisition, resettlement and compensation</p> <p>Involve and meaningfully engage the PAPs, general public including administration, and local/traditional leaders in the transparent acquisition of the land.</p> <p>PAPs should be compensated prior to construction work and be given enough time to relocate where physical displacement is involved and this should be done in compliance with ESS5 of WB on Involuntary resettlement and OS2 of AfDB on Involuntary resettlement: land acquisition, population displacement and compensation</p> <p>Utilize the RPF document available and develop RAP to be used in temporary acquisition of the land and outline how the assets loss will be compensated.</p> | EDCL EARP-PIU, Contractors | Included in the contract |
| Site Selection | Poor selection of project site for the substation sites, RoW transmission and distribution lines and be an | <p>Avoid construction sites in or near sensitive ecosystems where Possible.</p> <p>Any activity that is located within the sensitive ecosystem or protected area, should ensure that any increase in pollution levels is as small as feasible, and amounts to a fraction of the applicable short-term and</p> | EDCL EARP-PIU, BRD | Included in the contract |

| Program components/ Activities | Negative Impacts | Mitigation Measures | Responsibility | Cost Estimates (USD) |
|--|--|--|----------------|----------------------|
| | environmental degradation threat that include the destruction of sensitive ecosystems such as wetlands or protected areas | annual average air quality guidelines or standards as established in the project-specific environmental assessment. Do not select land that contravenes the regulations of the Government of Rwanda in relation to natural resources and sensitive ecosystems Where there is no alternative for ROW in wetland ecosystems, ensure that existing water flow regimes and irrigation channels is maintained and/or re-established where they are disrupted due to works being carried out. | | |
| Procurement (tendering, bidding and selection) | Poor recruitment of contractors without environmental and social consideration affect the implementation. | Solar companies should submit certificates of good working relationship with Enviro serve company which oversees e-waste management including recycling options in Rwanda. They should submit the waste management Plan for spent solar panels and batteries before being awarded contracts by the PIU. | | |
| Plan Designs | Poor designs of plans, inadequate equipment and machinery specification Inadequate and poor designs and plans including equipment and machinery | Ensure during planning and design to incorporate environmental sound design concepts as appropriate All designs, equipment and machineries including solar systems to be procured should include instructions on their environmental specifications and requirements All instructions or planning for civil, mechanical, engineering and electrical specifications including technical specifications must have | | |

| Program components/ Activities | Negative Impacts | Mitigation Measures | Responsibility | Cost Estimates (USD) |
|-----------------------------------|---|---|--------------------|---|
| | can possibly cause environmental degradation and occupational hazards | <p>stringent environmental obligations in accordance with the World Bank Group guidelines (such as WBG EHS guidelines), international or local guidelines whichever emerges as stringent in terms of environmental and social requirements.</p> <p>Documentation of availability of specific personal protective equipment and training needed to respond to an emergency.</p> <p>Job safety analysis to identify specific potential occupational hazards and industrial hygiene surveys, as appropriate, to monitor and verify chemical exposure levels, and compare with applicable occupational exposure standards.</p> <p>Design should be done by considering the line routes and project locations where the environmental and social impact is the lowest.</p> | | |
| | Poor planning of worksite waste management posing threat to environment and public health | Preliminary environmental and social assessment studies that include environmental impact assessment, planned mitigation measures, compensation measures as well as monitoring and follow up Programs | Contractors | Included in the contract |
| Technical assistance, policy | Poor planning and setting the regulations without considering environmental | - Reviewing taxes of cook stoves equipment by putting in this sector the intensive that will make the cook stove affordable to the community. | REG RURA RSB | Included in Technical Assistance budget |

| Program components/ Activities | Negative Impacts | Mitigation Measures | Responsibility | Cost Estimates (USD) |
|-----------------------------------|--|---|----------------|----------------------|
| and regulatory improvement | <p>and social impact of the regulations.</p> <p>Unemployment due to the taxation increase on charcoal and decrease on the clean cooking stove due the promotion of environmental protection through energy efficiency.</p> | <ul style="list-style-type: none"> - The energy source/fuel to be used in the cook stove should be tested for the emissions and the biomass with lower emissions shall be used. - Reducing the tax of LPG (<i>Liquefied Petroleum Gas</i>) which will reduce the buying price to the community, which will help to reduce the pressure on the forest. - Increasing the tax on charcoal which is massively used by the community to reduce by the half the population who depends on firewood. - People who previously should be given the alternative and priority in the promoted fuel eg: Clean cooking stove | MoE REMA | |

5.2.2. Construction phase

| Program components/ Activities | Negative Impacts | Mitigation Measures | Responsible | Cost Estimates (USD) |
|---|--|---|---|-----------------------------|
| Construction of new access roads to or from existing road for transportation of the poles, transformers and other accessories | <p>Loss of vegetation and potential soil erosion, siltation</p> <p>Fugitive dust may be emitted from construction works and stockpiles of materials including machinery as well as from truck traffic. This could cause health related impacts to the communities around and workers in the project site</p> <p>Stockpile and construction waste, increased water use, generation of wastewater Noise pollution from construction machines and</p> | <ul style="list-style-type: none"> - Environmental guidelines as stipulated in the contract specifically: Implement soil erosion control measures such as protecting stockpiles through the use of silt fencing. Reduced slope angles should be used to minimize soil erosion during construction or to avoid surface run off and preventing siltation - Additional plantation and embankment using removed topsoil is recommended near sensitive locations - Conversion of access roads to new routes and roads - The dirt roads and exposed construction areas should be moisturized during the dry season to prevent or minimize the fugitive dust emissions. - Storage areas should be located outside of the habitation area Environmental and compliance monitoring by environmental officers Workers in | <p>EDCL</p> <p>Construction Contractors, EARP-PIU</p> | <p>Included in contract</p> |

| Program components/ Activities | Negative Impacts | Mitigation Measures | Responsible | Cost Estimates (USD) |
|-----------------------------------|---|---|-------------|-------------------------|
| | vehicles, | the project site must be equipped with the necessary and required Personal Protective Equipment (PPE) prescribed by the construction industry | | |
| | <p>Accidents and hazards for both workers and general public from erection of steel poles concrete work. Injuries can result from trips and falls and other physical and mechanical hazards.</p> <p>Loss of livelihoods such as crop, trees</p> | <ul style="list-style-type: none"> - Ensure safe design of the network structures - Provide provision to keep people away from the working site - Establish a Health and Safety construction plan covering all activities in compliance with the best Health and Safety Working practices/conditions. - Provide insurance to workers. - Provide adequate PPE for all workers and spare items for visitors. | | |

| Program components/ Activities | Negative Impacts | Mitigation Measures | Responsible | Cost Estimates (USD) |
|-----------------------------------|--|---|--|---------------------------------|
| | | <ul style="list-style-type: none"> - Provide FIRST AID kits and have among the personnel persons having competencies in first aid assistance. - compensation of assets to be damaged including crops and trees. | | |
| Noise | <p>Noise and Vibrations from Equipment Operation</p> <p>Noise from construction activity may be significant.</p> | <ul style="list-style-type: none"> - Transmission lines construction works will be carried out during daylight hours. If power outages are required, it may be necessary to carry out some works at night or weekends. In such cases, the local population will be informed sufficiently in advance through local media - All workers in the project site must be equipped with the necessary and required Personal Protective Equipment (PPE) prescribed by the construction industry but not limited to facilities to protect against noise impacts, safety helmets, boots, dust masks, gloves, overall, goggles etc. | <p>EDCL</p> <p>Construction Contractors,</p> | <p>Included in the contract</p> |

| Program components/ Activities | Negative Impacts | Mitigation Measures | Responsible | Cost Estimates (USD) |
|-----------------------------------|------------------|--|-------------|----------------------|
| | | <ul style="list-style-type: none"> - Reduce vehicle speeds (stick to recommended speeds) in populated areas - For workers noise levels shall be kept below 80 dB (A), wherever possible. In case of exceeding this value, hearing protections must be provided to workers and warning signs must be installed - Notify nearby residents and businesses at least 24 hours in advance if particularly noisy activities are anticipated. | | |

| Program components/ Activities | Negative Impacts | Mitigation Measures | Responsible | Cost Estimates (USD) |
|-----------------------------------|---|--|--|--------------------------------|
| Health and safety | Accidents at workplace during construction from operating of machineries and equipment by workers | <ul style="list-style-type: none"> - Development of an EHSP for the construction phase, in advance of construction activities - Development of EHSP for the construction phase (shall include Waste Management Plan), in advance of construction activities - Implementation of health and safety workshops for construction workers - Hire only experienced workers for specific jobs, such as working at heights, handling large equipment and machinery, handling hazardous material, which required highly specialized training. Train workers accordingly in regard to working at heights, electrical safety, vehicular safety, handling of hazardous materials, PPE, use of first aid and rescue techniques, emergency response, poisonous snakes etc. | EDCL, EUCL Construction Contractor | Included in construction costs |

| Program components/ Activities | Negative Impacts | Mitigation Measures | Responsible | Cost Estimates (USD) |
|-----------------------------------|-----------------------------|--|-------------|-------------------------|
| | | <p>Provide first aid kits and fire extinguishers at all Project sites Forbid alcohol and other drugs at construction sites</p> <p>Limit occupational exposure to EMF (Electro Magnetic Field) by use of shielding materials, and train workers accordingly.</p> <p>The employer should ensure that qualified first-aid can be provided at all times. Appropriately equipped first-aid stations should be easily accessible throughout the place of work.</p> <p>All workers entering the construction site must be equipped with PPE including goggle, factory boots, overalls, gloves, dust masks, among others. The PPE should be those that meeting the international standards of PPE.</p> | | |
| | Community Health and Safety | - Ensure that traffic is not interfered by construction | | |

| Program components/ Activities | Negative Impacts | Mitigation Measures | Responsible | Cost Estimates (USD) |
|-----------------------------------|---|---|----------------------------------|--------------------------|
| | | <p>through proper traffic management</p> <ul style="list-style-type: none"> - Notification of the public on upcoming construction, in advance of construction period - Public education and outreach efforts to provide information about hazard awareness, upcoming construction activities, safety measures, reporting unsafe conditions and environmental impacts, in advance of construction period - Inform population along public roads in advance in case of transporting heavy equipment - Provide adequate security measures to prevent accidents and injury (e.g. keeping speed limits on public roads, grounding objects) - Provide adequate security to prevent public access to the substations, work sites, hazardous materials and waste | | |
| Traffic. | Risks from Traffic Disruption, Congestion and/or Road | <ul style="list-style-type: none"> - Collaborate with local communities about traffic and pedestrian safety, in advance of construction | Construction Contractors, RUEAP, | Included in the contract |

Environmental and Social Management Framework (ESMF) For Rwanda Universal Energy Access Program (RUEAP)

| Program components/ Activities | Negative Impacts | Mitigation Measures | Responsible | Cost Estimates (USD) |
|-----------------------------------|--|--|-----------------------------------|-------------------------|
| | Accidents | period. | Coordination Unit. | |
| Dust and Air Emission | Air Emissions and Ambient Air Quality) | <ul style="list-style-type: none"> - Reduction of speed and limited movement of vehicles - Use dust-suppressing water on unpaved roads, e.g. spraying of water with watering trucks in advance of transportation activities - Cover truck beds with tarps during material transport - Use dust-suppressing water spray during civil works, where necessary Store and handle material appropriately to limit dust (e.g. protect cement with tarpaulins) - Use equipment with dust suction devices in enclosed spaces during civil works, where necessary | EDCL Construction Contractors, | |
| Cultural heritage demolition, | Establishment of distribution lines can lead to unearthing | - Consultation should be undertaken with local authorities and communities to ensure that potential | EDCL should make contacts | |

| Program components/ Activities | Negative Impacts | Mitigation Measures | Responsible | Cost Estimates (USD) |
|--|--|--|--|-------------------------------|
| cemeteries | genocide sites hence cause cultural strife. | <p>genocide memorial sites are avoided.</p> <ul style="list-style-type: none"> - Accidental unearthing of such sites should be culturally handled in accordance with the cultural sites and requirements. - Avoid sitting infrastructure where people will be disturbed and where resettlement could be an issue. - Chance find procedures attached to this document on annex 11 will be followed in any archeological or culture heritage property is found. | with local authorities and engage good collaborations. | |
| Excavation and construction may cause the damage and loss of culture properties. | Destruction of physical cultural property such as graves, found Archaeological Property among others | <ul style="list-style-type: none"> - All necessary and adequate care shall be taken to minimize impact on cultural properties which includes cultural sites and remains, places of worship including temples, mosques, churches and shrines, etc., graveyards, monuments and any other important structures as identified during design and all properties / sites / remains notified. No work shall spillover to these properties, premises and precincts. | EDCL should make contacts with local authorities and engage good collaborations. | Included in the project cost. |

| Program components/ Activities | Negative Impacts | Mitigation Measures | Responsible | Cost Estimates (USD) |
|-----------------------------------|------------------|--|-------------|----------------------|
| | | <ul style="list-style-type: none"> - The Contractor will be responsible for familiarizing themselves with the “Chance Finds Procedures” in case culturally valuable materials are uncovered during excavation or any project activities, including: - Stop work immediately following the discovery of any materials with possible archeological, historical, paleontological, or other cultural value, announce findings to project manager and notify relevant authorities; - Protect artifacts as well as possible using plastic covers, and implement measures to stabilize the area, if necessary, to properly protect artifacts; - Prevent and penalize any unauthorized access to the artifacts; and - Restart construction works only upon the authorization of the relevant authorities. - The Chance Finds Procedures have been prepared | | |

| Program components/ Activities | Negative Impacts | Mitigation Measures | Responsible | Cost Estimates (USD) |
|---|---|---|-----------------|--------------------------|
| | | to remedy such issues; | | |
| Destruction of existing infrastructures | Impact on existing infrastructures (water pipelines, existing power lines, telecommunications lines, fiber optic) | <ul style="list-style-type: none"> - Destruction of the existing infrastructures should be avoided - In case of transmission line or other infrastructures is damaged, the project will repair the damages and remove it in other appropriate site | EDCL Contractor | Included in the contract |
| Soil and Water pollution | Harmful and dangerous/Hazardous material | <ul style="list-style-type: none"> - Regular maintenance of all vehicles and machines at regular service stations, if possible - Maintenance and re-fueling of the construction equipment only on sealed and enclosed areas - Store all liquid materials (e.g. fuel, engine oil, etc.) and lubricants in locked tanks and on sealed and roofed areas - Store construction material as bags of cement etc. in containers in order to avoid rinsing out - Provide proper sanitation facilities - Design bunds around and oil collecting system beneath transformers to prevent contamination of | EDCL Contractor | Included in contract |

| Program components/ Activities | Negative Impacts | Mitigation Measures | Responsible | Cost Estimates (USD) |
|-----------------------------------|------------------|--|-------------|-------------------------|
| | | <p>soil and groundwater</p> <ul style="list-style-type: none"> - Remove contaminated soil if spills occur and handle as hazardous waste - Collect contaminated spill materials and manage as hazardous waste - Prior to final disposal, retired transformers and equipment containing PCB should be stored on a concrete pad with curbs sufficient to contain the liquid contents of these containers should they be spilled or leaked. The storage area should also have a roof to prevent precipitation from collecting in the storage area. Disposal should involve facilities capable of safely transporting and disposing of hazardous waste containing PCB. - The NTARUKA HPP has Asbestos Containing Materials (ACM) and should be handled safely by: Training of staff who can potentially meet the material to avoid damage and prevent exposure. | | |

| Program components/ Activities | Negative Impacts | Mitigation Measures | Responsible | Cost Estimates (USD) |
|-----------------------------------|--|--|------------------|--------------------------|
| | | <ul style="list-style-type: none"> - The asbestos removal should comply with the Prime Minister's Instructions determining procedure for eradication of asbestos materials 52N° 002/03 of 05/05/2015. | | |
| Risks from Waste | <p>Non-hazardous waste generated at construction and decommissioning sites includes excess fill materials from grading and excavation activities, scrap wood and metals, and small concrete spills. Other non-hazardous solid wastes include office wastes. Hazardous waste includes contaminated soils, which could potentially be encountered on-site due to</p> | <ul style="list-style-type: none"> - Construction contractor will have to clarify with local authorities, where different kind of wastes may be disposed of - Development of Waste Management Plan within the contractor's ESMP - Train workers in handling and disposal of recyclable, sanitary, solid, liquid and hazardous waste Segregate hazardous waste and store in suitable drums or containers in secure facilities (fitted with roofs, concreting, bunds etc.), and clearly identify hazardous waste - Dispose of oil-contaminated soil in adequate storage facilities | EDCL Contractor. | Included in the contract |

| Program components/ Activities | Negative Impacts | Mitigation Measures | Responsible | Cost Estimates (USD) |
|-----------------------------------|---|---|-------------|-------------------------|
| | <p>previous land use activities, or small amounts of machinery maintenance materials, such as oily rags, used oil filters, and used oil, as well as spill cleanup materials from oil and fuel spills.</p> | <ul style="list-style-type: none"> - Store scrap metal (iron, steel, copper, etc.) onsite for later recycling including material already stored onsite. - Establishing waste management priorities at the outset of activities based on an understanding of potential Environmental, Health, and Safety (EHS) risks and impacts and considering waste generation and its consequences - Establishing a waste management hierarchy that considers prevention, reduction, reuse, recovery, recycling, removal and finally disposal of wastes. - Avoiding or minimizing the generation waste materials, as far as practicable - Where waste generation cannot be avoided but has been minimized, recovering and reusing waste; - Where waste cannot be recovered or reused, treating, destroying, and disposing of it in an environmentally sound manner | | |

Environmental and Social Management Framework (ESMF) For Rwanda Universal Energy Access Program (RUEAP)

| Program components/ Activities | Negative Impacts | Mitigation Measures | Responsible | Cost Estimates (USD) |
|-----------------------------------|---|--|---------------------------------|-------------------------|
| Social Impacts | | <ul style="list-style-type: none"> - Prioritize employment of local people for construction works (skilled and unskilled workers) - Improve recruitment of women for construction works - Health awareness workshops for workers by a health expert. Develop and implement a Grievance Redress Mechanism | EDCL Contractor. | Included in contract |
| | GBV (Gender based Violence) /SEA (Sexual Exploitation Abuse)/SH (Sexual Harassment)/VAC (violence against children) | <ul style="list-style-type: none"> - The contractor should attend and actively partake in training courses related to OHS, HIV/AIDS, GBV and VAC as requested by my employer. - Adhere to a zero-alcohol policy during work activities, and refrain from the use of illegal substances at all times. - Consent to a police background check. - Treat women, children (persons under the age of 18), and men with respect regardless of race, color, language, religion, political or other | EDCL Contractor; GBV Task force | Included in the contact |

| Program components/ Activities | Negative Impacts | Mitigation Measures | Responsible | Cost Estimates (USD) |
|-----------------------------------|------------------|---|-------------|-------------------------|
| | | <p>opinion, national, ethnic or social origin, property, disability, birth or other status.</p> <ul style="list-style-type: none"> - Not use language or behavior towards women, children or men that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate. - Not participate in sexual contact or activity with children—including grooming or contact through digital media. - Mistaken belief regarding the age of a child is not a defense. - Consent from the child is also not a defense or excuse. - Not engage in sexual harassment—for instance, making unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct, of a sexual nature, including subtle acts of such behavior. | | |

| Program components/ Activities | Negative Impacts | Mitigation Measures | Responsible | Cost Estimates (USD) |
|-----------------------------------|------------------|---|-------------|-------------------------|
| | | <ul style="list-style-type: none"> - Consider reporting through the GRM (Grievance Redress Mechanism) or to my manager any suspected or actual GBV or VAC by a fellow worker, whether employed by my employer or not, or any breaches of this Code of Conduct. | | |

5.2.3. Operation phase

| Components/ Activities | Negative Impacts | Mitigation Measures | Responsible Inst | Cost Estimate s (USD) |
|---------------------------|--|---|---------------------|-----------------------------|
| Operation of maintenance | Employee and Public Health are at risk of fire | <ul style="list-style-type: none"> - Develop Environmental Health and Safety Plan (EHSP) and implement it conveniently. - Erect fire walls between or at new transformers foreseen in switchyard of s/s YTPC to prevent spreading of fire in case of an accident. - Storing flammables away from ignition sources and oxidizing materials. - Providing bonding and grounding of, and between, containers and additional mechanical floor level ventilation if materials are being, or could be, dispensed in the storage area - Where the flammable material is mainly comprised of dust, providing electrical grounding, spark detection, and, if needed, quenching systems | EUCL | Maintenance cost |

| Components/ Activities | Negative Impacts | Mitigation Measures | Responsible Inst | Cost Estimate s (USD) |
|------------------------------|------------------------------|---|---------------------|-----------------------------|
| | | <ul style="list-style-type: none"> - Defining and labelling fire hazards areas to warn of special rules (e.g. prohibition in use of smoking materials, cellular phones, or other potential spark generating equipment) - Providing specific worker training in handling of flammable materials, and in fire prevention or suppression | | |
| Electric and magnetic fields | Electric and magnetic fields | <ul style="list-style-type: none"> - Shifts will be used to avoid long exposure to electromagnetic field during line and substations maintenance. - Evaluating potential exposure to the public against the reference levels developed by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). Average and peak exposure levels should remain below the ICNIRP recommendation for General Public Exposure; - Considering siting new facilities so as to avoid or minimize exposure to the public. Installation of transmission lines or other high voltage equipment above or adjacent to residential properties or other locations intended for highly frequent human occupancy, (e.g. schools or offices), should be avoided; - If EMF levels are confirmed or expected to be above the recommended exposure limits, application of engineering techniques should be considered to reduce the EMF produced by power lines and substations. Examples of these techniques include: Shielding with specific metal alloys; Burying transmission lines; Increasing height of transmission | EUCL | Maintenance cost |

| Components/ Activities | Negative Impacts | Mitigation Measures | Responsible Inst | Cost Estimate s (USD) |
|---------------------------|--|---|---------------------|-----------------------------|
| | | towers; Modifications to size, spacing, and configuration of conductors | | |
| Solid waste | Little if any solid waste will be generated which includes conductor and tree cuttings | <ul style="list-style-type: none"> - All left over conductor cuttings to be disposed appropriately or be returned to the store for proper disposal. - Proper budgeting of materials to reduce wastage practice 3 Rs of waste management: reduce, reuse, recycle of materials - Properly Manage storage, transfer, and disposal of transformer oils according to industry standards | EUCL | Maintenance cost |

| Components/ Activities | Negative Impacts | Mitigation Measures | Responsible Inst | Cost Estimate s (USD) |
|---------------------------|---|--|----------------------------|-----------------------------|
| Ntaruka HPP operation. | Reservoir sedimentation; Changes to hydrological flow, Downstream community may be affected, sedimentation may affect biodiversity and production of Hazardous and non-hazardous wastes | <ul style="list-style-type: none"> - Carry out watershed management in the reservoir area to minimize erosion and sedimentation in the Ntaruka reservoir; and Maximize useful life of the reservoir through continuous monitoring and use of sedimentation model for calculation of reservoir sedimentation; - Maintain downstream flow through allowing the minimum ecological flow rate and following approved reservoir operation procedures. - Ensure proper waste management and use RURA licensed companies for waste collection and transportation to specific dumpsites on a regular basis. | EDCL Contractor EUCL | Maintenance cost |

5.2.4. Decommissioning

| Components/ Activities | Negative Impacts | Mitigation Measures | Responsible Inst | Cost Estimates (USD) |
|---|---|---|---------------------|--|
| Transformers, cables | Waste Debris from Equipment and Machines | <ul style="list-style-type: none"> - Ensure all the machines and equipment are disposed in the right places, Explore available recycling opportunities | EDCL | Included in decommiss ioning cost |
| CFLs Poor disposal of used CFLs | <p>Likely to lead to ground and surface water contamination. CFLs contain mercury a hazardous heavy metal (substance) that is harmful to aquatic resources, soil resources and human population. Soil contamination is a likely adverse impact if the CFLs are dumped in an open dumping site without mitigation measures and controls. Soil contamination could impact on agriculture.</p> | <ul style="list-style-type: none"> - Develop a waste disposal plan for the disposal of the CFL lamps. - Replacing existing transformers and other electrical equipment containing PCB, and ensuring appropriate storage, decontamination, and disposal of contaminated units; - Prior to final disposal, retired transformers and equipment containing PCB should be stored on a concrete pad with curbs sufficient to contain the liquid contents of these containers should they be spilled or leaked. - The storage area should also have a roof to prevent precipitation from collecting in the storage area. - Disposal should involve facilities capable of safely transporting and disposing of hazardous waste containing PCB. | EDCL | Included in decommiss ioning cost |

| Components/ Activities | Negative Impacts | Mitigation Measures | Responsible Inst | Cost Estimates (USD) |
|---------------------------|---|--|---------------------|----------------------------------|
| Health and safety | Accidents during decommissioning including oil spills | - Apply the accidents reduction /mitigation impacts specified in the construction phase of the project | EDCL | Included in decommissioning cost |

5.3. Grievance redress mechanisms

5.3.1. Introduction

A grievance mechanism has been developed for potential use by all interested stakeholders. The aim of the grievance mechanism is to achieve mutually agreed resolution of grievances raised by such stakeholders. This grievance mechanism ensures that complaints and grievances are addressed in good faith and through a transparent and impartial process, but one which is culturally acceptable.

Grievances raised by stakeholders need to be managed through a transparent process, readily acceptable to all segments of affected communities and other stakeholders, at no cost and without retribution. The grievance mechanism should be appropriate to the scale of impacts and risks presented by a project and beneficial for both a proponent/operator and stakeholders, especially PAPs.

The types of grievances stakeholders may raise include, but are not limited to:

- i. Negative impacts on communities, which may include, but not be limited to financial loss, physical harm and nuisance from construction or operational activities;
- ii. Health and safety risks;
- iii. Negative impacts on the environment such as pollution of water ways, soil, and air;
- iv. Relocation of utilities, and
- v. Unacceptable behavior by staff or employees.

It is critical that stakeholders understand that all grievances lodged, regardless of the project phase or activity being implemented, will follow one single mechanism. The mechanism must not impede access to other judicial or administrative remedies.

5.3.2. Objectives of Grievance Redress Mechanism (GRM)

The GRM works within existing legal and cultural frameworks, providing an additional opportunity to resolve grievances at the local, project level. The key objectives of the GRM are:

- i. Record, categorize and prioritize the grievances;
- ii. Settle the grievances via consultation with all stakeholders (and inform those stakeholders of the solutions);
- iii. Forward any unresolved cases to the relevant authority.

It is vital that appropriate signage is erected at the sites of all works providing the public with updated project information and summarising the GRM process, including contact details of the relevant Project Contact Person within the project implementation unit. Anyone shall be able to

lodge a complaint and the methods (forms, in person, telephone, forms written in Kinyarwanda) should not inhibit the lodgement of any complaint.

5.3.3. Grievance Redress process

5.3.3.1. Project Level Grievance Redress Mechanism: Grievance Redress Committee (GRC)

As the GRM works within existing legal and cultural frameworks, it is organized in such a way that the Grievance Redress Committee (GRC) will comprise of local community representative, PAs representative, local authority representative at village and cell levels, Contractor and Supervising firm representative. Members of GRC are presented below with their roles and responsibilities.

Many project related grievances are site-specific. Often, they are related to impacts generated during construction such as noise, dust, vibration, contamination, workers dispute etc. Most of the time, they can be resolved easily on site with the contractor commitment to implement the ESMP and proper supervision by the implementing agencies and administrative District officials. Other grievances are more sensitive especially when they are about land boundaries, or misunderstandings between affected households and the Contractor regarding access arrangements, properties accidentally damaged by construction activities, accidents on sites among others. All these grievances and claims must be resolved as soon as they are received.

The grievance procedure at project level will be simple and administered at the extent possible at the local levels to facilitate access, flexibility and ensure transparency. All the grievances will be channelled via the Grievance Resolution Committees specifically established for the project at Cell, Sector and District level. Stakeholders will be allowed to use any means easily accessible to them to voice their concerns and complaints such as filling a grievance form, sending an email, using phone etc. Complaints will be filled in a Grievance Register that will be distributed to GRC free of charge, this register will be available to the hierarchical level for verification of the complaint and an investigation will be carried out by the hierarchical committee members to verify its authenticity. Thereafter a resolution approach will be selected based on the findings. The decisions of the action to be taken will be communicated to all involved parties mainly in written form.

All measures will be undertaken to ensure that the grievance is solved amicably between the concerned parties. If the grievance is not solved at Cell level, Sector or District level, the courts of law will be the last resort. Efficiency in solving of the grievances will be of paramount

importance. The selection of members for the sub-project grievance committee will be at the discretion of the PAPs to decide basing on information provided by the PIUs.

In practice, some complaints are expected to appear. This is on the assumption that all proposed works are within the public land where the farmer have many types of crops and trees, this will be specifically on the component one of Increasing access to grid electricity during grid connections for households, commercial and industrial consumers, and public institutions.

However, some complaints are likely to be associated with construction of medium voltage lines impacts. Most are received directly on site by the Contractor's Site Manager/Engineer who will mandatory be responsible to resolve these issues on site. The Contractor will inform and Grievance Committee (GRC) of these complaints and their outcomes, and of others not satisfactorily resolved that the Grievance Committee should take over. The GC will log these in the Complaints Register and inform the Project Implementation Unit.

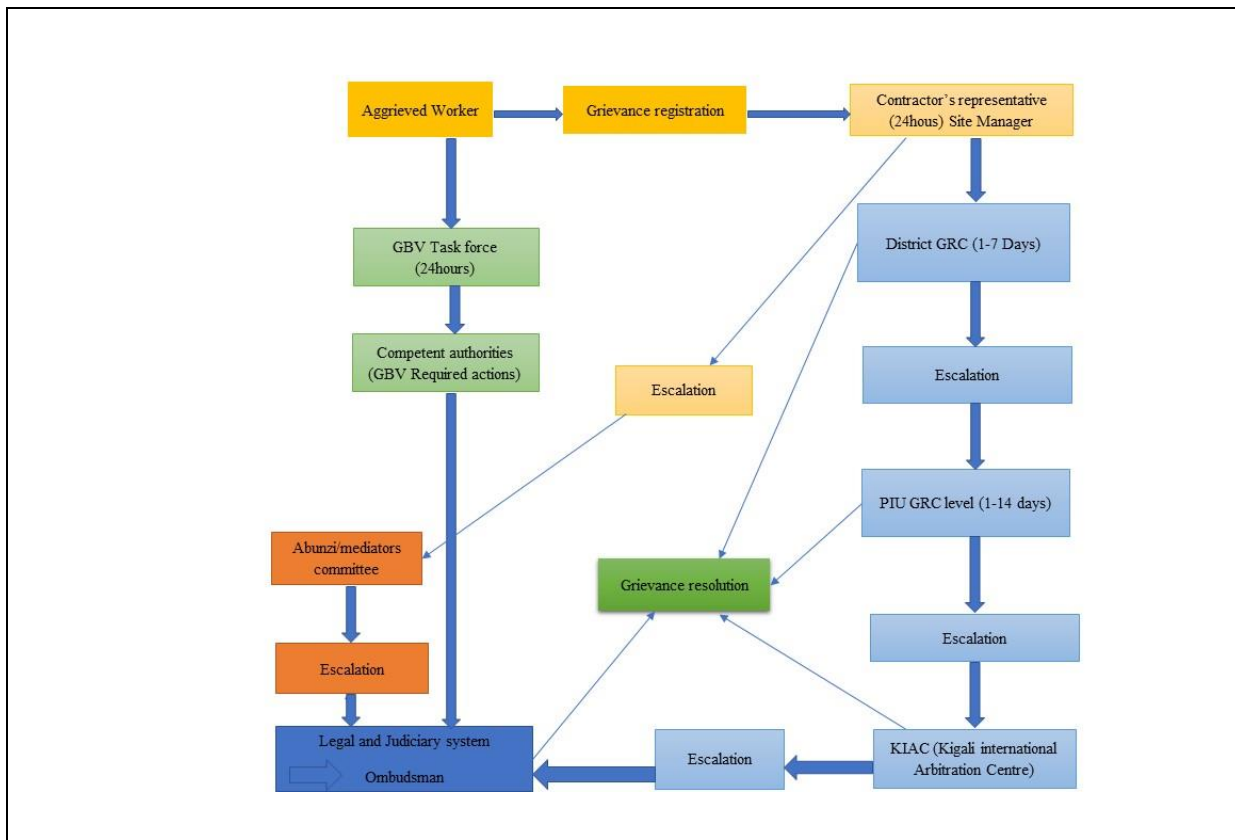
At each level of the project GRC, complaints will be solved within a period of 24-48 hours or otherwise handed to the next level. Once at judiciary level, due process as mandated by the law will be followed depending on what the courts will require.

Through citizen engagement meetings the PAPs will be informed of the different grievance mechanisms in place for them to lodge their complaints and dissatisfactions.

5.3.3.2. Workers Grievance Redress mechanism

Provisions in law N° 66/2018 of 30/08/2018 regulating labor in Rwanda will be applied for Grievance Redress Mechanism for workers. Grievance redress mechanism shall be established under REG-PIU to address complaints arising during the program implementation. Program direct workers will be informed about the grievance redress mechanism during meetings at the time of the induction and where training will be provided where required, this will follow the same procedure as described in the approved REG manual of procedure for grievance management. Contracted workers will be informed about grievance redress mechanism through meetings at workplaces as well as notices to be made available at the workplace. The Grievance Redress Committees (GRCs) to be established as mentioned earlier will also handle the arising grievances. The process pertaining to how to go about grievances handling are documented for further reference. The worker's GRCs will be established based on below structure and will be followed by all contractors throughout the project implementation

Figure 7: Structure of the Workers Grievance Redress Mechanism



The workers GRC shall be composed at Site level by the contractor representative, the supervising firm representative, and the workers representative at site level while the GRM at District level shall be composed of Labor inspector at District level as advisor, Project Liaison Officer, Workers representative, contractor representative, the supervising firm representative, and at PIU Level, the committee will be composed of the Social and Environmental safeguards Specialists, Project Coordinator, Human Resource Specialist under PIU, and contractor representative, the supervising firm representative and workers representative. REG-PIU will require contractors to develop and implement a grievance mechanism for their workforce including sub-contractors, prior to the start of design stage. The construction contractors will prepare their labor management procedure before the start of civil works, which will also include detailed description of the workers grievance mechanism.

The workers grievance mechanism will include:

- A procedure to receive grievances such as comment/complaint form, suggestion boxes, email, a telephone hotline;
- stipulated timeframes to respond to grievances;
- A register to record and track the timely resolution of grievances;
- A responsible department to receive, record and track resolution of grievances.

The Supervision firm's safeguards staff will monitor the contractors' recording and resolution of grievances, and report these to REG-PIU in their monthly progress reports. The process will be monitored by the GRM Focal Point, the safeguards specialists will be responsible for the project GRM. The direct workers grievance mechanism will be described in staff induction trainings, which will be provided to the new recruited project workers. The mechanism will be based on the following principles:

- The process will be transparent and allow workers to express their concerns and file grievances;
- There will be no discrimination against those who express grievances and any grievances will be treated confidentially;
- Anonymous grievances will be treated equally as other grievances, whose origin is known;
- Management will treat grievances seriously and take timely and appropriate action in response.

Information about the existence of the grievance mechanism will be readily available to all program workers (direct and contracted) through notice displaying boards, the presence of "suggestion boxes", and other means of communication as required.

5.3.3.3. Grievance channel for Gender-Based Violence

As Gender -Based Violence, Sexual Exploitation and Abuse or Sexual Harassment requires timely access to quality, multi-sectoral services and involves confidentiality and informed consent of the GBV victim. To this end, MININFRA will develop a GBV Action plan that will include an Accountability and Response Framework, and this will form part of project C-ESMP. The GBV Action Plan will identify service providers in the project areas with minimum package of services (health, psychosocial, legal/security, safe house/shelter, and livelihood). The GBV Action Plan will also provide enough details to allow for the development of a localized referral pathways, will establish procedures of handling cases as part of the service providers mapping. The bidding documents will clearly define GBV requirements. During implementation phase, separate facilities for women and men will be recommended to all contractors with indication signage.

5.3.3.4. Primary supply workers

Where a significant risk of child labor or serious safety issues in relation to primary suppliers has been identified, the procedure for monitoring and reporting on primary supply workers will involve various measures that have been put in place to prevent and control them such as

establishment of child labour prevention committees from District to Cell level. In the event of identification of child labour cases, it will be reported to concerned authorities (The labour law also provides for penal and administrative penalties in case of non-compliance with labour law provisions. In instances where local suppliers would be engaged, contractors shall be required to carry out due diligence procedure to identify if there are significant risks that the suppliers are exploiting child or forced labor or exposing worker to serious safety issues. In other hand where foreign suppliers would be contracted, contractors will be required to inquire during their procurement process whether the supplier has been accused or sanctioned for any of these issues and their corporate requirements related to child labor, forced labor, and safety. If there are any risks related to child and forced labor, and safety identified, in case of occurrence, the sanctions stipulated by Rwanda labour law will be applied.

5.3.3.5. Contractors management

REG-PIU will use the Bank's 2018 Standard Procurement Documents for solicitations and contracts, and these include labor and occupational, health and safety requirements.

As part of the process to select design and build contractors who will engage contracted workers, REG-PIU and/or the supervision consultant may review the following information:

- Information in public records, for example, corporate registers and public documents relating to violations of applicable labor law, including reports from labor inspectorates and other enforcement bodies in the Districts where the project will be being implemented;
- Business licenses, registrations, permits, and approvals;
- Documents relating to a labor management system, including OHS issues, for example, labor the prepared management procedures;
- Identification of labor management, safety, and health personnel, their qualifications, and certifications;
- Workers' certifications/permits/training to perform contracted work;
- Records of safety and health violations, and responses;
- Accident and fatality records and notifications to hierarchical authorities;
- Records of legally required worker benefits and proof of workers' enrolment in the related programs;
- Worker payroll records, including hours worked and pay received;
- Identification of safety committee members and records of meetings; and
- Copies of previous contracts with contractors and suppliers, showing inclusion of provisions and terms reflecting ESS2.

The contracts with selected contractors will include provisions related to labor and occupational health and safety, as provided in the World Bank Standards Procurement Documents 2018 and law N°62/2018 of 25/08/2018 governing Public Procurement in Rwanda and AfDB OS5–Labour conditions, health and safety. The Supervision Consultant will manage and monitor the performance of Contractors in relation to contracted workers, focusing on compliance by contractors with their contractual agreements

(obligations, representations, and warranties). This may include periodic audits, inspections, and/or spot checks of project locations or work sites and/or of labor management records and reports compiled by contractors. Contractors' labor management records and reports may include: (a) a representative sample of employment contracts or arrangements between third parties and contracted workers; (b) records relating to grievances received and their resolution; (c) reports relating to safety inspections, including fatalities and incidents and implementation of corrective actions; (d) records relating to incidents of noncompliance with national law; and (e) records of training provided for contracted workers to explain labor and working conditions and OHS for the project.

5.3.4. Grievance channel for Gender-Based Violence

As Gender -Based Violence, Sexual Exploitation and Abuse or Sexual Harassment requires timely access to quality, multi-sectoral services and involves confidentiality and informed consent of the GBV victim. To this end, MININFRA will develop a GBV Action plan that will include an Accountability and Response Framework, and this will form part of project C-ESMP. The GBV Action Plan will identify service providers in the project areas with minimum package of services (health, psychosocial, legal/security, safe house/shelter, and livelihood). The GBV Action Plan will also provide enough details to allow for the development of a localized referral pathways, will establish procedures of handling cases as part of the service providers mapping. The bidding documents will clearly define GBV requirements. During implementation phase, separate facilities for women and men will be recommended to all contractors with indication signage.

5.3.5. Judiciary Level Grievance Redress Mechanism

The project level process will not impede PAPs access to the legal system. Local communities have existing traditional and cultural grievance redress mechanisms (Abunzi committees) established and regulated by law no 37/2016 of 08/09/2016 determining organization, jurisdiction, and competence and functioning of Abunzi committee. These are established at cell and Sector level to solve community-based conflicts and grievances their regulatory body being the Ministry of Justice. This mechanism cannot be overlooked by the project. The population can choose to use this channel instead of the project GRC. The escalation at this level leads to

the court process. At any time, the complainant may take the matter to the appropriate legal or judicial authority as per Rwanda National Legal procedure.

Figure 8: Grievance Redress Process for the implementation of RUEAP

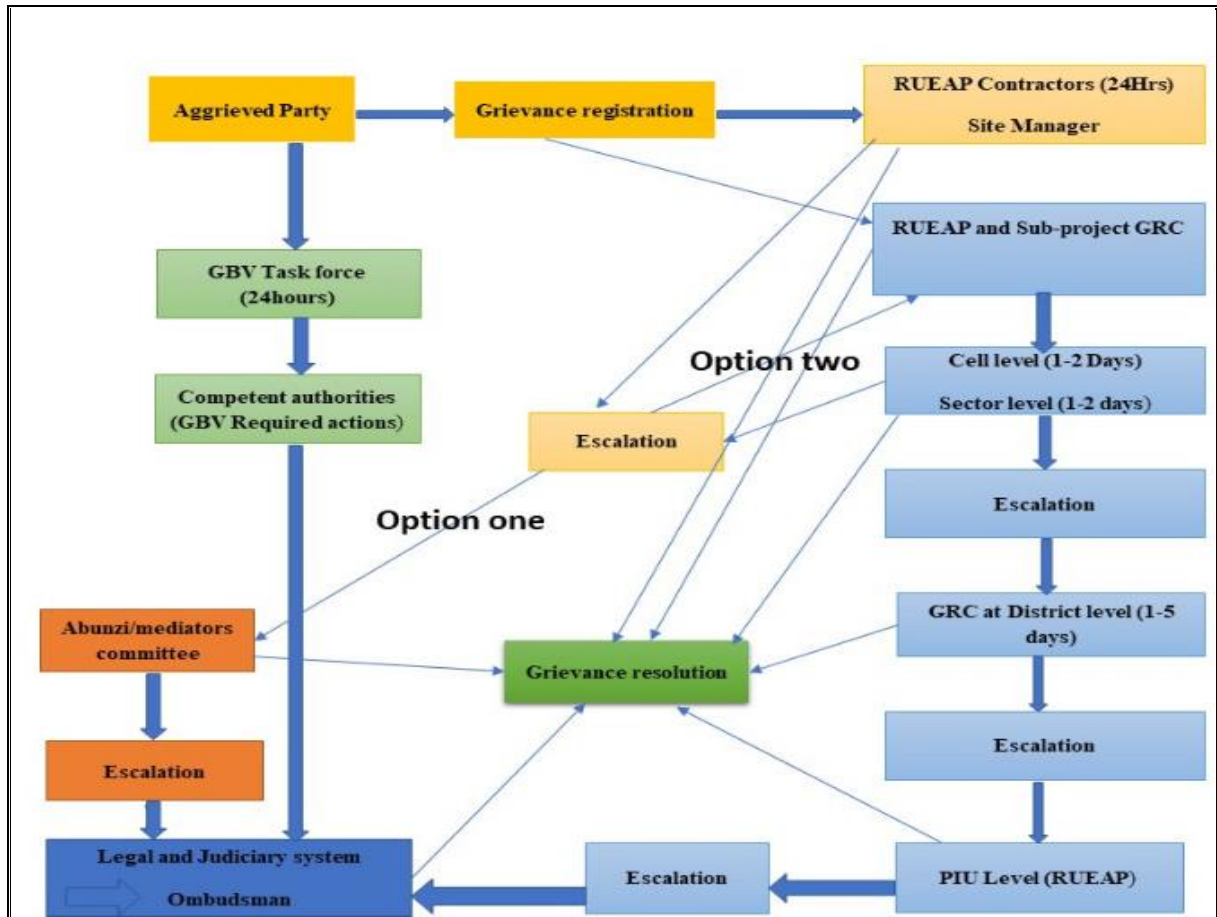


Table 15: Process, stage and timeframe for grievance resolution

| Stage | Process | Duration |
|-------|--|----------|
| 1a | Since most of complaints during the execution of works involves directly the contractor, at first the Aggrieved Party (AP) will take his/her grievance to the contractor representative or site Manager of the relevant subproject who will endeavour to resolve it immediately. The contractor representative or site Manager will inform the District Electricity and Maintenance officer or the appointed focal project at the district level. Where AP is not satisfied, the complaint will be transferred to the Sub-project Grievance Committee (GC) at cell level. For complaints that were satisfactorily resolved by the Contractor, he/she will inform the GC and the GC will log the grievance and the actions that were taken. | 24hours |

| Stage | Process | Duration |
|-------|--|---|
| | There is also a possibility that the AP directly takes his/her complainants directly to the GRC without going to the Contractor or Site Manager first. In this case, the GRC will solve it working with the Contractor or Site Manager. | |
| 1b | The AP may choose to escalate the grievance to the Abunzi Mediation Committee ³ especially if she/he is not directly linked to the sub-project. | Not fixed |
| 2 | On receipt of the complaint, the GRC at cell level will endeavour to resolve it immediately. In case the GRC at cell level fail to solve the complaint, it will be escalated to the GRC at Sector level. If unsuccessful, the GRC or the complainant then notifies District Officials. | 1-2 days at Cell level 1-2days at Sector level |
| 3 | The District Officials where the project activities are being implemented, he/she will endeavour to address and resolve the complaint and inform the aggrieved party. The District Authority will refer the complaint to the Project Implementation Unit (RUEAP) with other unresolved grievances for their consideration. | 1 – 5 days |
| 4 | If it remains unresolved or the complainant is dissatisfied with the outcome proposed by the PIU, he/she is free to refer the matter to the court of law. | 1 – 7 days |
| 5 | If the issue remains unresolved through the courts, then the ultimate step will be for the ombudsman. The decisions at this level are final. | Not fixed |
| 6 | The dimension represented in purple is strictly for GBV related matters. The AP will approach directly the GBV task force to ensure her/his anonymity and safety. However, in case the complaint was addressed first to the contractor's Site Manager, the latter is required to immediately refer it to the task force. The GBV task force will | Not fixed |

³ The word Abunzi can be translated as 'those who reconcile' or 'those who bring together' (from verb kunga). In the traditional Rwanda, Abunzi were men known within their communities for personal integrity and were asked to intervene in the event of conflict. Each conflicting party would choose a person considered trustworthy, known as a problem-solver, and who was unlikely to alienate either party, the result is a set of Home-Grown Solutions - culturally owned practices translated into sustainable development programs.

| Stage | Process | Duration |
|-------|---|----------|
| | work with competent authorities to ensure the proposed official structure for GBV has respected to guarantee the victim the real justice and required medical care. | |

Table 16: Proposed Members of GRC and their roles under RUEAP.

| No | Member of GRC | Roles and responsibilities |
|----|---------------------------------|--|
| 1 | President (PAPs representative) | <ul style="list-style-type: none"> - Chairing meetings; - Give direction on how received grievances will be processed; - Assign organizational responsibility for proposing a response; - Referring cases to next level; - Speaks on behalf of GRC and s/he is the one to report to the cell or the sector administration level; - Represents the interests of aggrieved parties. - Give feedback on the efficiency of GRM. |
| 3 | Village leader | <ul style="list-style-type: none"> - Represents local government at village level; - Resolves and lead community level grievance redress - Sends out notices for meetings; - Records all grievance received and report them to next local level |
| 4 | Cell executive secretary | <ul style="list-style-type: none"> - Proposes responses to grievances and lead in resolving community grievance unsolved from village level; - Records and reports all grievances received from village leaders; - Chairs sensitization meeting at the cell level during public consultations meetings; - Assists and guides in identifying vulnerable and disadvantaged groups within the cell. - Signs the valuations sheets for compensation facilitate a proper Resettlement Plan |
| 5 | Women and youth representatives | <ul style="list-style-type: none"> - Represent the interests of women and youth; - Advocate for equity and equal opportunities; - Help in prevention of sexual harassment and promote wellbeing of the women and youth |

| No | Member of GRC | Roles and responsibilities |
|----|---------------------------------|--|
| | | <ul style="list-style-type: none"> - Take part in resolution of any grievance related to sexual harassment and any gender domestic violence that may arise; - Mobilize women and youth to be active in income generating activities specifically for opportunities in the project's intervention areas. |
| 6 | Contractor representative | <ul style="list-style-type: none"> - Receive and log complaints/grievances, note date and time, contact details, nature of complaint and inform complainant of when to expect response; - Handle complaints revolved around nuisance resulted from construction and endeavor to handle them satisfactory; - Inform engineer (supervisor) and GRC of received complaints/grievances and outcomes and forward unresolved complaints/grievance to GRC - Attend community meetings, respond and react to PAPs complaints raised concerning the contractor. |
| 7 | Supervising firm representative | <ul style="list-style-type: none"> - Represent client (EDCL); - Ensure that all grievances raised have been responded to, and that the contractor responds to the complaints raised concerning them, - Attend community meetings and respond to all concerns related to RUEAP from community - Report on monthly basis the progress of GRM process. |

Table 17: Proposed members of the GBV taskforce under RUEAP.

| Institution | Staff position |
|---------------------------------|---|
| PIU National level (EARP-RUEAP) | Environmental and Social Safeguard Specialists |
| PIU (District level) | Gender Monitoring Officer, Environmental and Social Safeguards Specialist |
| Contractor | Human Resources Officer, Social Safeguards Specialist |
| Supervising firm | Social Safeguards Specialist |
| NGO in GBV prevention | Designated representative |

As mandated by the law on gender equality, women representation will make up at least 30% of the GRC. All PAPs representatives will be directly elected by their peers and the number of members may vary depending on the context and particularities of each sub-project site characteristics.

The program will plan to facilitate any other person external to the project to communicate with the project, to provide or request for information or file a complaint. These arrangements are provided in the table below.

Table 18: Other methods of communication with the stakeholders

To communicate with the project stakeholders by sending their recommendations, claims, and observations are summarized in the following table.

| Methods | Description |
|--|--|
| Project webpage | The ESF documents will be disclosed in the implementing agencies of the project – a specific webpage will be prepared for RUEAP containing project description, implementing arrangements and ESF documents including to communicate with the team, and the email, phone of contact of the concerned PIU Environmental Specialist or Social Safeguards Specialist. |
| Community project Displaying board | In a community selection point or the Administrative District, a Displaying board with project information, timeline, and information of the works, contractor, announcements will be placed and box for comments/suggestions will be placed with a lock so only the environmental or social safeguards can open and respond to any messages. Any complaint from a third party can be filed using this method. |
| E-mail, Telephone, instant message or other media | All contacts of the environmental and social safeguards of PIU at National or District Energy Project liaison officer will be made public to be used by any stakeholder or third party willing to ask for information, provide suggestion or file a complaint. |

5.3.6. Grievance Logbook

The GRM Committee will ensure that each complaint has an individual reference number and is appropriately tracked, and recorded actions are completed.

The log will contain record of the person responsible for an individual complaint, and records dates for the following events:

- i. Date the complaint was reported;
- ii. Date the Grievance Log was added onto the project database;
- iii. Date information on proposed corrective action sent to complainant (if appropriate);
- iv. The date the complaint was closed out; and
- v. Date response was sent to complainant.

5.4. Monitoring of Complaints

The monitoring of complaints will be done by administrative districts and PIU at REG on regular basis. The monitoring team will be responsible for:

- i. Providing the sub-project Resettlement and Compensation Committee with a Monthly report detailing the number and status of complaints;
- ii. Any outstanding issues to be addressed; and
- iii. Quarterly reports, including analysis of the type of complaints, levels of complaints, actions to reduce complaints and initiator of such action.

5.5. Resettlement Action Plans

Due to the fact that the Environmental and Social Standard 5 (Land Acquisition, Restrictions on Land Use and Involuntary Resettlement) has been triggered, an abbreviated or Resettlement Action Plan will be prepared in parallel with ESIA/ESMP, which the project will follow in order to restore livelihood and ensure full compensation for loss of asset and livelihood through a consultative and mutually agreeable process where applicable.

5.6 Environmental and Social Monitoring Plan-ESMP

This section sets out requirements for the monitoring of the environmental and social impacts of the RUEAP subprojects. Monitoring of environmental and social indicators will be mainstreamed into the overall monitoring and evaluation system for the project. In addition, monitoring of the implementation of this ESMF will be carried out by REMA and PIU Environmental and Social Safeguards Specialists.

The objective of monitoring is twofold;

1. To alert project authorities (i.e. EDCL primarily) by providing timely information about the success or otherwise of the environmental management process outlined in this ESMF in such a manner that changes can be made as required to ensure continuous improvement to RUEAP environmental management process (even beyond the project's life).
2. To make a final evaluation in order to determine whether the mitigation measures incorporated in the technical designs and the ESMP have been successful in such a way that the pre-project environmental and social condition has been restored, improved upon or is worse than before and to determine what further mitigation measures may be required.

5.6.1. Monitoring of environmental and social indicators

The goals of monitoring are to measure the success rate of the project, determine whether interventions have resulted in dealing with negative impacts, whether further interventions are needed, or monitoring is to be extended in some areas. Monitoring indicators will be very much dependent on specific project contexts.

5.6.1.1. Monitoring of participation process

The following are indicators for monitoring of the participation process involved in the project activities.

Number and percentage of affected households consulted during the planning stage;

- Levels of decision-making of affected people;
- Level of understanding of project impacts and mitigation;
- Effectiveness of local authorities to make decisions;
- Frequency and quality of public meetings;
- Degree of involvement of women or disadvantaged groups in discussions.

Monitoring of implementation of mitigation plans lists the recommended indicators for monitoring the implementation of mitigation plans.

5.6.2 Evaluation of Results

The evaluation of results of environmental and social mitigation can be carried out by comparing baseline data collected in the planning phases with targets and post-project situations.

A number of indicators would be used in order to determine the status of affected people and their environment (land being used compared to before, how many clean water sources than before, etc). In order to assess whether these goals are met, the EDCL EARP-PIU Environmental and Social safeguard Specialists with technical support of the two environmental and social to be hired by EDCL will indicate in the EMP, parameters to be monitored, institute monitoring milestones and provide resources necessary to carry out the monitoring activities.

The following are some pertinent parameters and verifiable indicators/questions to be used to measure the ESMF process, mitigation plans and performance;

- Does the project have the environmental and social safeguards specialist?
- Does the project have the ESIA cleared by the RDB?
- Have the Civil Works from Contractors got considerable legal right to enforce the ESMP?
- At what rate are the civil works been monitored by EDCL and by the REMA?
- How many violations of the contractors/transporters have been recorded and at what rate are they occurring?
- How many RAPs have been fully executed before civil works?
- How many outstanding complaints and level where they are pending?
- How many recorded grievance cases have been settled within one year?

5.6.3. Monitoring of ESMF implementation

In addition to the Project Reports and ESIA studies required under the Organic Law, an Annual Audit on ESMF Implementation will be prepared by the EDCL. In addition, each large project that has been subject to an ESIA study (or RAP etc.) will also be required to produce a social and environmental audit report.

Table 19: Environmental and Social Monitoring Plan for all project phase

5.6.3.1. Monitoring during design and planning phase

| Activity / Impact | What (Is the parameter to be monitored?) | Where (Is the parameter to be monitored?) | How (Is the parameter to be monitored?) | | When (Define the frequency / or continuous?) | Who (Is responsible for monitoring?) |
|----------------------------------|--|--|---|---|--|--|
| | | | Method | Indicator | | |
| Land acquisition and assets loss | Utilize the RPF/ESMF document available and develop RAP (Resettlement Action Plan), ESIA/ESMP Implementation of RAP/ESIA/ESMP | Location of Project, RoW for distribution lines and access roads | Inspection of implementation of RAP/ESIA/ESMP Compensation of all PAPs | All compensation processes implemented and all PAPs with damaged assets paid. | Before construction begin and throughout construction activities | EDCL social and environmental safeguard specialists EARP-PIU social safeguard specialists Concerned district authorities |
| Site selection | Avoid whenever possible to select sites that contravenes the regulations of the Government of Rwanda in relation to natural | Location of Project distribution lines | Inspection of selected sites and possible | ESIA, ESMP approval | During selection of | EDCL design and planning |

| Activity / Impact | What (Is the parameter to be monitored?) | Where (Is the parameter to be monitored?) | How (Is the parameter to be monitored?) | | When (Define the frequency / or continuous?) | Who (Is responsible for monitoring?) |
|---|--|--|---|---|---|--|
| | | | Method | Indicator | | |
| | resources and sensitive Ecosystems Undertake detailed ESIA study or Environmental Management Plan on selected site | and NTARUKA HPP | alternatives | certificate | construction sites and transmission line routes | directorate Environmental and Social safeguard specialists Design consultant |
| Designs of plans, equipment and machinery | Ensure during planning and design to incorporate environmental sound design concepts as Appropriate and in compliance with WB EHS Guidelines. All designs, equipment and machineries to be procured should include instructions on their environmental specifications and requirements. | Designs plans and machinery, equipment specification | Checking the design and plans and electrical equipment to be used | Designs plans and electrical equipment which include environmental and social safeguards specifications | Before Construct ion works begin | design and planning directorate EDCL social and environmental safeguard specialists. Procurement Specialist |

| Activity / Impact | What (Is the parameter to be monitored?) | Where (Is the parameter to be monitored?) | How (Is the parameter to be monitored?) | | When (Define the frequency / or continuous?) | Who (Is responsible for monitoring?) |
|-------------------|--|--|--|-----------|---|---|
| | | | Method | Indicator | | |
| Specification | All instructions or planning for civil, mechanical, engineering and electrical specifications including technical specifications must have stringent environmental obligations in accordance with the World Bank EHS guidelines, international or local guidelines whichever emerges as stringent in terms of environmental and social requirements. | | | | Before Tender is Advertised and Tender Documents dispatched to selected bidders | design and planning directorate EARP – PIU Environmental Safeguards Specialists |

5.6.3.2. Monitoring during construction phase

| Activity / Impact | What (Is the parameter to be monitored?) | Where (Is the parameter to be monitored?) | How (Is the parameter to be monitored?) | | When (Define the frequency/or continuous?) | Who (Is responsible for monitoring?) |
|--|--|--|--|---|---|--|
| | | | Method | Indicator | | |
| Soil and Water Pollution (Part 1) | Regular maintenance of all vehicles and machines at regular service stations, if possible, maintenance and re-fueling of the construction equipment only on sealed and enclosed areas. | Construction sites at Project distribution lines and NTARUKA HPP | Inspection of maintenance records; | All vehicles and machines adequately Maintained, No unsuitable areas used for maintenance and re- fueling, | Regularly during construction and operation | EDCL social and environmental safeguard specialists EARP-PIU Environmental and Social safeguards specialists Supervision consultant |
| | Store all liquid materials (e.g. fuel, engine oil, etc.) and lubricants in locked tanks and on sealed and roofed areas. Store construction material as bags of cement etc. in containers in order to avoid rinsing out. | | Visual inspection of maintenance and re-fueling areas; | All materials adequately stored Adequate number of sanitation facilities separately for men and women; and in proper condition | | |

| Activity / Impact | What (Is the parameter to be monitored?) | Where (Is the parameter to be monitored?) | How (Is the parameter to be monitored?) | | When (Define the frequency/or continuous?) | Who (Is responsible for monitoring?) |
|--|--|---|---|---|--|--|
| | | | Method | Indicator | | |
| | <p>Train workers in appropriate sanitation practices</p> <p>Train transporters and workers in spill prevention and control especially in handling of oil / fuel.</p> <p>Design bunds around oil collecting system beneath transformers to prevent contamination of soil and groundwater;</p> | | <p>Inspection of training reports;</p> <p>Visual inspection of records;</p> <p>Transformers fitted with bunds and oil collecting system</p> | <p>All workers trained accordingly</p> <p>All transformers fitted with bunds and oil collecting System.</p> | | |
| Soil and Water Pollution (Part 2) | <p>Provide proper equipment (as drip pans) and implement procedures to handle transformer oil</p> <p>Provide spill-control materials to drivers and workers, in order to clean up spills, if Necessary</p> | <p>Construction sites at Project distribution lines</p> | <p>Inspection of equipment</p> | <p>Equipment provided</p> | <p>Regularly during construction and operation</p> | <p>EDCL social and environmental safeguard specialists</p> |

| Activity / Impact | What (Is the parameter to be monitored?) | Where (Is the parameter to be monitored?) | How (Is the parameter to be monitored?) | | When (Define the frequency/or continuous?)) | Who (Is responsible for monitoring?) |
|----------------------------------|--|--|---|--|--|--|
| | | | Method | Indicator | | |
| | Report and respond to spills promptly and train workers in how to report | and NTARUKA HPP | Inspection of spill reports, and training records | Number of spill reports All workers trained accordingly | | EARP-PIU Environmental safeguards specialists Supervision consultant |
| | Remove contaminated soil if spills occur and handle as hazardous waste Collect contaminated spill materials and manage as hazardous waste | | Inspection of spill reports and storage areas | All contaminated materials adequately stored | | |
| Waste Management (Part 1) | Construction Contractor will have to clarify with local authorities, where different kind of wastes may be disposed of | Construction sites at Project distribution lines | Control of written agreement | Written agreement provided | In advance of construction works | EDCL Environmental and social safeguards specialists |
| | Development of Waste Management Plan within the ESMP | and NTARUKA HPP, and off | Control of Waste Management Plan | Waste Management Plan developed | | |
| | Implementation of a Waste Management System | grid part | Control of Waste Management System | Waste Management System implemented | Regularly during | |

| Activity / Impact | What (Is the parameter to be monitored?) | Where (Is the parameter to be monitored?) | How (Is the parameter to be monitored?) | | When (Define the frequency/or continuous?) | Who (Is responsible for monitoring?) |
|---------------------------|--|--|---|---|---|--|
| | | | Method | Indicator | | |
| | Train workers in handling and disposal of recyclable, sanitary, solid, liquid and hazardous waste | | Inspection of training records | All workers trained accordingly | construction and operation and decommissioning. | Supervision consultant |
| Waste Management (Part 2) | Segregate hazardous waste and store in suitable drums or containers in secure facilities (fitted with roofs, concreting, bunds etc.), and clearly identify hazardous waste | Construction sites at Project distribution lines and NTARUKA HPP | Visual control of storage areas at substation | All hazardous materials and scrap metal stored in appropriate storage areas | Regularly during construction | EDCL social safeguard specialists EARP-PIU environmental safeguard specialists External expert |
| | Store used oil in suitable tanks and at proper areas at substation site including storage of already existing oil onsite | | | | | |
| | Store scrap metal (iron, steel, copper, etc.) onsite for later recycling including material already stored onsite | | | | | |

| Activity / Impact | What (Is the parameter to be monitored?) | Where (Is the parameter to be monitored?) | How (Is the parameter to be monitored?) | | When (Define the frequency/or continuous?) | Who (Is responsible for monitoring?) |
|--|--|--|--|------------------------------------|---|--|
| | | | Method | Indicator | | |
| Employee Health and Safety (Part 1) | Development of an HSE (Health Safety and Environment) Policy for the construction phase, in advance of construction activities | Construction sites at Project distribution lines and NTARUKA HPP | Inspection of relevant documents | HSE Policy developed | In advance of construction works. | EDCL social and environmental and Social Safeguard specialists, EARP-PIU environmental safeguard specialists |
| | Development of an EHSP for the construction in advance of construction activities | | | EHSP developed | | |
| | Installation of an HSE Management System (HSEMS) during the construction phase | | | HSE Management System implemented; | | |
| | Make sure that all workers have a health Insurance; | | Inspection of workers' health documents; | All workers have health insurance; | | |
| | Provide proper sanitation facilities in adequate number; | | Visual inspection; | | Adequate number of sanitation facilities and in proper condition; | |
| | Provision of HIV /AIDS protection equipment for workers; | | | | | |

| Activity / Impact | What (Is the parameter to be monitored?) | Where (Is the parameter to be monitored?) | How (Is the parameter to be monitored?) | | When (Define the frequency/or continuous?) | Who (Is responsible for monitoring?) |
|-------------------|---|--|---|---|---|---|
| | | | Method | Indicator | | |
| | Implementation of health and safety, workshops for construction workers; | | Interviews and records | Workshops Implemented | | |
| | Installation of warning signs “Danger of Electrocutation” at towers, substations etc. | | Inspection of workshop | warning signs available on sites and Protection equipment provided; | | |
| | Provide workers with appropriate protective equipment (PPE) (dust, noise, thick gloves against snake bites etc.); | | Visual inspection; | All workers provided with PPE; | | |
| | Provide first aid kits and fire extinguishers at all Project sites and in all vehicles | | Inspection of accident records, Interviews Visual inspection | First aid kits and fire extinguishers provided; | | |
| Employee | Train workers in regard to working at heights, electrical safety, vehicular safety, handling of | | Inspection of | All workers trained | | EDCL social and |

| Activity / Impact | What (Is the parameter to be monitored?) | Where (Is the parameter to be monitored?) | How (Is the parameter to be monitored?) | | When (Define the frequency/or continuous?) | Who (Is responsible for monitoring?) |
|-----------------------------------|--|---|--|--|---|--|
| | | | Method | Indicator | | |
| Health and Safety (Part 2) | hazardous materials, PPE, use of first aid and rescue techniques, emergency response, poisonous snakes etc. | Construction sites at Project substation, transmission and distribution lines | training records | accordingly | Regularly during construction | environmental safeguard specialists EARP-PIU environmental and social safeguard specialists |
| | Forbid alcohol and other drugs at construction sites | | Inspection of incident records | No workers found under influence of alcohol or other drugs | | |
| | Assure transfer of injured workers to hospitals in the case of serious accidents | | Inspection of accident records | Workers transferred to hospital in case of serious accidents | | |
| | Identify area emergency responders, hospitals, and clinics, and provide advance notice of Project activities | Area emergency responders | Interviews | Area emergency responders informed about Project activities | In advance of construction works | Supervision consultant |

| Activity / Impact | What (Is the parameter to be monitored?) | Where (Is the parameter to be monitored?) | How (Is the parameter to be monitored?) | | When (Define the frequency/or continuous?) | Who (Is responsible for monitoring?) |
|--|---|---|--|---|---|--|
| | | | Method | Indicator | | |
| | Implement programs for medical screening, health and safety monitoring, and reporting | Construction sites at Project substation, transmission and distribution lines | Inspection of records | H&S programs implemented | Regular during construction | |
| | Limit occupational exposure to EMF by use of shielding materials, and train workers accordingly | | Interviews Inspection of training records | Shielding materials in place. All workers trained accordingly. | | |
| | Record all accidents and incidents | | Inspection of records | Recording implemented | | |
| Public Health and Safety (Part 1) | Ensure that traffic is not interfered by construction through proper traffic management | Residents living near Project/subproject construction/rehabilitation activities | Inspection of complaints Interviews | No complaints from residents | Regularly during construction | EDCL social and environmental safeguards specialists |
| | Notification of the public on upcoming construction | | | Public informed About upcoming construction | In advance of construction | |

| Activity / Impact | What (Is the parameter to be monitored?) | Where (Is the parameter to be monitored?) | How (Is the parameter to be monitored?) | | When (Define the frequency/or continuous?) | Who (Is responsible for monitoring?) |
|--|--|---|---|--|---|--|
| | | | Method | Indicator | | |
| Public Health and Safety (Part 2) | Public education and outreach efforts to provide information about hazard awareness, upcoming construction activities, safety measures, reporting unsafe conditions and environmental impacts, in advance of construction period | Residents living near Project/subproject construction/rehabilitation activities | Interviews Inspection of complaints | Public accordingly informed No complaints | In advance of construction Regularly during construction | EDCL social and environmental safeguards specialists |
| | Inform population along public roads in advance in case of transporting heavy Equipment | Residents along public roads | Inspection of complaints and accident records | No complaints from residents; no accidents | Regularly during construction | |
| | Provide adequate security measures to prevent accidents and injury (e.g. keeping speed limits on public roads, grounding objects) | Residents living near Project/subproject construction/rehabilitation | | | | |

| Activity / Impact | What (Is the parameter to be monitored?) | Where (Is the parameter to be monitored?) | How (Is the parameter to be monitored?) | | When (Define the frequency/or continuous?) | Who (Is responsible for monitoring?) |
|-------------------|--|---|--|--|---|--|
| | | | Method | Indicator | | |
| | | activities | | | | |
| | Provide adequate security to prevent public access to the substations, work sites, hazardous materials and waste | Residents living near Project construction/rehabilitation activities | Visual inspection of records | Security measures implemented and No incident recorded | | |
| Noise (Part 1) | Reduce vehicle speeds in populated areas | Residents living near subproject Construction/rehabilitation activities | Inspection of complaints | No complaints from residents | Regularly during construction | EDCL social and environmental safeguards specialists |
| | Allow truck movements only during daylight, but not between 7 pm and 6 am | | | | | |
| | Utilization of low sound power mechanical equipment like bulldozer, air compressor, concrete pumps, excavator, concrete mixer etc. whenever possible | Residents living near subproject construction/rehabilitation | Visual inspection of complaints | Low sound equipment used No complaints from residents | | EARP-PIU Social and environmental safeguards |

| Activity / Impact | What (Is the parameter to be monitored?) | Where (Is the parameter to be monitored?) | How (Is the parameter to be monitored?) | | When (Define the frequency/or continuous?) | Who (Is responsible for monitoring?) |
|-------------------|---|--|---|---|---|---|
| | | | Method | Indicator | | |
| | Regular maintenance and service of building machinery and other during construction Works | activities | Inspection of maintenance records | Equipment regularly maintained | | specialists |
| Noise (Part 2) | Shut down or throttling down of noisy machinery to a minimum | | Inspection of complaints | No complaints from residents | Regularly during construction | EDCL social and environmental safeguards specialists EARP-PIU Social and environmental safeguards specialists |
| | For workers noise levels shall be kept below 80 dB (A), wherever possible. In case of exceeding this value, hearing protections must be provided to workers and warning signs must be installed | | Instrumental measurement in case of particularly noisy activities | Noise level below 80 dB (A); if noise levels higher than 80 dB (A): workers fitted with PPE and warning signs installed | | |
| | Notify nearby residents and businesses at least 24 hours in advance if particularly noisy activities are anticipated | Residents living near Project activities | Instrumental measurement in case of complaints Interviews | Residents informed in advance | | specialists |

| Activity / Impact | What (Is the parameter to be monitored?) | Where (Is the parameter to be monitored?) | How (Is the parameter to be monitored?) | | When (Define the frequency/or continuous?) | Who (Is responsible for monitoring?) |
|----------------------|--|--|--|--------------------------------|---|--|
| | | | Method | Indicator | | |
| | Conduct noise-generating activities during normal work hours during the day | Construction sites at Project | Inspection of complaints | No complaints from Residents | | |
| Air Quality (Part 1) | Reduction of speed and limited movement of Vehicles | Construction/Rehabilitation sites of Project | Inspection of complaints | No complaints from Residents | Regularly during construction | EDCL EARP-PIU environmental safeguard specialists Supervision |
| | Maintain vehicles and construction machinery properly, as recommended by suppliers | | Inspection of maintenance Records | Equipment regularly Maintained | | |
| | Use dust-suppressing water on unpaved roads, e.g. spraying of water with watering trucks in advance of transportation activity | Unpaved roads used for transport | Inspection of complaints | No complaints from residents | | |
| | Cover truck beds with tarps during material | Construction site | | | | |
| | Transport | at NTARUKA | | | | consultant |
| | Use dust-suppressing water spray during civil works, where necessary | HPP and transmission lines | | | | |

| Activity / Impact | What (Is the parameter to be monitored?) | Where (Is the parameter to be monitored?) | How (Is the parameter to be monitored?) | | When (Define the frequency/or continuous?) | Who (Is responsible for monitoring?) |
|--------------------------------|--|--|--|---|---|---|
| | | | Method | Indicator | | |
| Air Quality (Part 2) | Use equipment with dust suction devices in enclosed spaces during civil works, where Necessary | Construction sites at and NTARUKA HPP and transmission lines | Visual inspection | Dust suction devices used where Necessary | Regularly during construction | EDCL EARP-PIU environmental safeguard specialists Supervision consultant |
| | Store and handle material appropriately to limit dust (e.g. protect cement with tarpaulins) | | | Appropriate storage | | |
| | Avoid unnecessary idling of construction machines and vehicles | | | No unnecessary Idling | | |
| | Burning of rubbish onsite must be strictly Forbidden | | | No rubbish burned | | |
| Social Impacts (Part 1) | Prioritize employment of local people for construction works | Construction sites near NTARUKA HPP, transmission and construction lines | Visual inspection Interviews | Percentage of local people employed | Regularly during construction | EDCL EARP-PIU Supervision consultant |
| | Improve recruitment of women for construction works | | | Percentage of women employed | | |

| Activity / Impact | What (Is the parameter to be monitored?) | Where (Is the parameter to be monitored?) | How (Is the parameter to be monitored?) | | When (Define the frequency/or continuous?) | Who (Is responsible for monitoring?) |
|--------------------------------|--|--|--|---|---|---|
| | | | Method | Indicator | | |
| | Facilitate other economic opportunities for local communities | Residents living near substation | | Other economic opportunities established | | |
| | Health awareness workshops for workers by contractor | Construction sites | Inspection of workshop records | All workers participated | | |
| Social Impacts (Part 2) | Develop and implement a Grievance Redress Mechanism | Construction sites at Project distribution lines and NTARUKA HHP | Inspection of grievances | Percentage of grievances adequately treated | Regularly during construction | EDCL EARP-PIU Supervision consultant |
| | Announce start and duration of works through media and signs to the public in advance of construction period | Residents living near MV lines and NTARUKA HHP | Interviews | Public informed About construction works | In advance of construction | |
| Traffic | Use of existing access roads to construction site | Residents living | Inspection of | No complaints from | Regularly | EDCL EARP- |

| Activity / Impact | What (Is the parameter to be monitored?) | Where (Is the parameter to be monitored?) | How (Is the parameter to be monitored?) | | When (Define the frequency/or continuous?)) | Who (Is responsible for monitoring?) |
|-------------------|---|--|--|-----------|--|---|
| | | | Method | Indicator | | |
| Management | | near substation, MV lines and NTARUKA HHP | complaints | residents | during construction | PIU |

| Activity / Impact | What (Is the parameter to be monitored?) | Where (Is the parameter to be monitored?) | How (Is the parameter to be monitored?) | | When (Define the frequency / or continuous?) | Who (Is responsible for monitoring?) |
|-------------------|---|---|--|--|---|---|
| | | | Method | Indicator | | |
| | Keep to speed limits in public roads | Construction/Rehabilitation sites at program transmission lines | Inspection of | No complaints | Regularly during construction | Supervision consultant |
| | Establish rights-of-way, speed limits onsite, vehicle inspection requirements, operating rules and procedures before commencement of construction | | complaints Visual inspection | Speed limits, inspection requirements, operating rules | | |

| Activity / Impact | What (Is the parameter to be monitored?) | Where (Is the parameter to be monitored?) | How (Is the parameter to be monitored?) | | When (Define the frequency / or continuous?) | Who (Is responsible for monitoring?) |
|-----------------------------|--|--|--|---|---|--|
| | | | Method | Indicator | | |
| | | | | established | | |
| Traffic Management (Part 2) | Maintain vehicles regularly and use manufacturer approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure | Construction/Rehabilitation sites of Project activities, Local communities | Inspection of maintenance records | Vehicles regularly maintained and approved parts used | Regularly during construction In advance of construction | EDCL social and environmental safeguards specialists EARP-PIU Social and environmental safeguards specialists |
| | Minimize transport distances by using locally sourced materials, if possible | | Visual inspection | Locally sourced material used, if Possible | | |
| | Collaborate with local communities and authorities to improve signage, visibility and overall safety of roads, particularly along stretches located near power lines construction or HPP | | Visual inspection Interviews | Improvement of overall safety of roads started | | |

| Activity / Impact | What (Is the parameter to be monitored?) | Where (Is the parameter to be monitored?) | How (Is the parameter to be monitored?) | | When (Define the frequency / or continuous?) | Who (Is responsible for monitoring?) |
|-------------------|--|--|--|---|---|---|
| | | | Method | Indicator | | |
| | rehabilitation. | | | | | |
| | Collaborate with local communities about traffic and pedestrian safety | Local communities Emergency responders | Interviews | awareness program about traffic and pedestrian safety established | In advance of construction | |
| | Coordination with emergency responders | | | Coordination established | | |

5.6.3.3. Monitoring during Operation and Maintenance

| Activity / Impact | What (Is the parameter to be monitored?) | Where (Is the parameter to be monitored?) | How (Is the parameter to be monitored?) | | When (Define the frequency / or continuous?) | Who (Is responsible for monitoring?) |
|--|---|--|--|---|---|--|
| | | | Method | Indicator | | |
| Employee Health and Safety | Develop Health and Safety Management Plan (HSMP) and implement HSMS for operation and maintenance of substations | (NTARUKA HHP, stores and MV construction lines | Visual inspection | HSMP developed and HSMS implemented | Operation and maintenance | EDCL EARP-PIU Environmental and social safeguards team |
| | Erect fire walls between transformers foreseen in switchyard of EARP substation to prevent spreading of fire in case of an accident | | | Fire walls erected | | |
| Disposal of CFLs (Compact Fluorescent Lamps) | Develop a waste disposal plan for disposal of the CFLs | Disposal area | Visual inspection | Availability of effective Waste disposal plan for | Operation and maintenance | EDCL EARP-PIU safeguards |

| | | | | | | |
|---|---|---|--|--|----------------------------------|--|
| <p>Pollution of land (soil), river and other natural water sources.</p> | | | | <p>CFL</p> | <p>ce</p> | <p>specialists REMA</p> |
| <p>Reservoir sedimentation: Changes to hydrological flow: hazardous and non-hazardious wastes</p> | <p>Watershed management in the reservoir area that minimize erosion and sedimentation in the Ntaruka reservoir; and Maximize useful life of the reservoir through continuous monitoring and use of sedimentation model for calculation of reservoir sedimentation. Downstream flow maintenance through allowing the minimum ecological flow rate and following approved reservoir operation procedures. Having a waste collection, transportation and disposal subscription/ contract with licensed company including</p> | <p>NTARUKA HPP and its surroundings including downstream community.</p> | <p>Visual inspection and public consultation on the nearby community</p> | <p>Availability of watershed management, and contract with waste management licensed company</p> | <p>Operation and maintenance</p> | <p>EUCL RDB REMA FONERWA</p> |

| | | | | | | |
|--|---|--|--|--|--|--|
| | licensed companies for hazardous waste. | | | | | |
|--|---|--|--|--|--|--|

VI. INSTITUTIONAL ENVIRONMENT AND SOCIAL CAPACITY ASSESSMENT

6.1. Roles and Responsibilities of Rwanda Energy Group, EDCL PIU

The ESMP/ESIA will address with specific details how the environmental and social impacts and their designed mitigation measures are to be monitored during implementation (construction/rehabilitation works) and operation (including maintenance stages). EDCL with the technical support of EARP-PIU has the responsibility to successfully manage, mitigate or monitor any adverse impacts caused by their activities under this program during construction phase while during operation responsibilities to manage and maintain fall under EUCL responsibilities. The main roles and responsibilities of EDCL and EARP-PIU for monitoring impacts of their activities and their corresponding mitigation measures will be as follows; EDCL assisted by EARP-PIU environmental and social safeguard specialists' team will monitor the implementation of the approved ESMP and technical designs.

- Environmental and Social Safeguards Specialists

The EDCL Environmental and Social Safeguards Specialists will monitor and evaluate the environmental and social impacts at all project sites, regularly and as frequently as required and will maintain suitable records to be made available to the REMA. The social and environmental safeguards specialists will also be responsible for monitoring impacts and mitigation measures resulting from the actions of their contractors, transporters, suppliers and all third parties in the course of their duties under this program. EDCL now has 5 Environmental and social safeguards, will recruit three more safeguards staff to satisfy the program safeguards need.

Wherever environmental and social impacts are or can be attributed to Rwanda Universal Energy Access Program activities, the appropriate mitigation measures will apply consistent with this ESMF and their associated ESMP, and the Environmental and Social Safeguards specialists would be responsible for monitoring and evaluating them.

6.2. Rwanda Environment Management Authority

REMA will play the leading oversight role of monitoring the RUEAP activities. REMA will carry out this role by ensuring that the environmental and social management plans (ESMPs) contained in the cleared design package is being implemented as specified therein. REMA will monitor the reports on a regular basis, perhaps quarterly. They will rely on a bottom up feedback system to them from the ground by going through the monitoring reports prepared by the EDCL's Environmental and Social specialist as well as consultants in cases where they will be used in preparing of the ESMP. REMA will

also make regular site visits to inspect and verify for themselves the nature and extent of the impacts and the success or lack off, of the mitigation measures.

REMA will prepare brief consolidated periodic monitoring reports for submission to the World Bank and AfDB.

6.3. For the RUEAP components

The EDCL-PIU Environment and Social Safeguards Specialists and using external qualified environmental consultants will screen the design (using all drawings, specifications for workmanship and materials, screening checklist and review forms in Annex 3), for the rehabilitation and new works, at the NTARUKA HPP and along the proposed distribution lines, that all planning, building and environmental laws and requirements are complied with, and to identify any adverse potential and social environmental impacts of the designs.

EDCL social and environmental experts and EARP-PIU environmental and social specialists will work with the team of EDCL engineers to ensure that any adverse environmental impacts identified will be mitigated in the designs, before they are finalized. Some mitigation measures would be adjustments to the technical drawings, while others may require incorporation/adjustment of clauses to contract conditions or specifications for goods and workmanship. The EDCL engineers will also be provided with adequate training in environmental best practice aspects and management procedures related to design of distribution lines, effective mitigation and monitoring measures and reporting.

Where land acquisition that leads to resettlement is expected, such as at the distribution and access to electrical lines, the Social Safeguards Specialist will use the separately prepared and disclosed Resettlement Policy Framework for this program, to guide and manage external consultants to prepare on behalf of EDCL, the appropriate Resettlement Action Plans (RAPs), one for each affected site in accordance to the sub-project.

EDCL EARP-PIU social and environmental specialists using external qualified consultants will prepare an Environmental and Social Management Plan (ESMP) to accompany the final designs (including complete set of contract documents) which will include details of all mitigation measures, including RAPs or ARAP, which will be sent to World Bank and AfDB for review and clearance.

Only after clearance of the ESIA/ESMP and from RDB can tenders be launched to select contractors to carry-out the works. RDB may require certain revisions to the ESIA before granting its clearance. Additionally, for sites affected by resettlement activities that lead to impacts on affected people

requiring them to lose the assets, Construction works will commence after the PAPs are paid for their assets. The RAPs will be reviewed for compliance with the disclosed RPF.

6.3.1. Implementation of ESMP

The Organic Law requires that all projects be subjected to a review and screening process in order to determine whether or not a full-scale Environmental Assessment (EA) is necessary and at which level. This is done through preparation of a project report with details on the sub-projects, to be prepared by REG. Each sub-project of construction, rehabilitation or extension will need to be reviewed independently for potential environmental and social impacts. In cases where a full scale ESIA is required, it will be paramount that the subproject feasibility studies occur concurrent with the ESA study in order to ensure that the findings of the ESIA are incorporated in the feasibility study at the design stage. This will ensure that environmental sound design including proposed mitigation measures as well as alternatives are incorporated in the feasibility reports at the design stage hence avoiding design change at an advanced stage.

6.3.2. Program administration and coordination

In Rwanda, each Ministry and independent agency have a unique PIU in charge of implementation of the project activities. This arrangement avoids the multiplication of development partners led PIUs within one Ministry implementing projects. PIU staffs are civil servants supported by national technical assistance recruited, as needed. This program will use the existing PIU for RESSP operating in the EARP. EDCL provides overall coordination of the project implementation. The implementation arrangement involves the following main actors:

- EDCL Project Implementation Unit (PIU) to coordinate all the program activities;
- Energy Project liaison Officers to regularly monitor and report on environmental and social issues at districts level.
- The district land valuer from one stop centre will assist, the project valuer in the identification and demarcation of the properties of project affected people
- The Community who will be employed as manpower and get paid.
- The community will be member of grievance redress committee at Cell and Sector level

Note that the field officers based at districts will be coordinated by Environmental Safeguards Specialist and Social Safeguards Specialist who will be at the Central Level and these will be the ones to consolidate reports to be submitted to the World Bank and AfDB. The Environmental and Social Safeguards Specialists and Field Officers will be provided with the Capacity Building Training for improvement of their capacity to follow up on environmental and social safeguards matters.

The program Implementation will be guided by the Project Implementation Manual (PIM).

6.3.2.1. Rwanda UEAP Subproject Preparation, Approval and Reporting

This section of the ESMF describes the process for ensuring that environmental and social concerns are adequately addressed through the institutional arrangements and procedures used by the project for managing the identification, preparation, approval and implementation of subprojects. This section sets out the reporting systems and responsibilities of the institutions in implementing the ESMF including the details to be addressed by the ESMF and the specific steps to be undertaken to ensure adherence to the ESMF.

6.3.2.2. RUEAP Projects' sub-project

RUEAP Subprojects activities will need to be reviewed for potential environmental and social impacts. The project is expected to produce net benefits. However, certain project activities may have environmental and social impacts that will require mitigation. For this reason, this program has been classified Substantial risk under the World Bank ESS1. The subprojects are categorized among the projects which must undergo ESIA process before their implementation.

6.3.2.3. Subproject Screening and Screening Checklist

Subprojects and activities with either substantial or moderate risks will need to be reviewed for potential environmental and social impacts. The project is expected to produce net benefits; however, certain project activities may have environmental and social impacts that will require mitigation. For this reason, this project has been rated as substantial risk under the World Bank ESS1. The screening will further ensure that subprojects that may have potential adverse impacts are studied in greater detail including need for subproject specific ESIA, the due diligence will be also critical to assess the social and environmental impact of the sub-project.

As part of the identification of sub-projects, the project proponent will prepare a sample screening checklist.

The screening checklist will lead to the preparation of an ESIA or ESMP Report for review by Rwanda Development Board (RDB). Project reports will be prepared by independent consultants registered under RAPEP, who will be paid by the project implementing agency or when possible, the study may be done by existing EARP social and environmental safeguards team. The EARP's environmental and social Safeguards specialists will offer guidance in the preparation of the screening forms and project reports.

6.3.2.4. Screening Checklist Review Form

Based on this application, the proposal will be reviewed and selection for the next stage of evaluation undertaken. At this selection stage, a first level of environmental and social screening takes place on the basis of the screening checklist completed by the proponent.

The screening checklist will be reviewed using the Review Form, to be completed either by the district officer in charge of environment or the EARP's Environmental Safeguards Specialist. Where there are social impacts indicated, the form will have to be reviewed in addition by EARP's Social Safeguards Specialist. The form prompts the reviewer to verify the information provided by the proponent and confirm the best course of action. The reviewer must consider the nature and location of the subproject and the anticipated impacts, and based on his/her judgment, confirm or propose the best course of action.

6.4. Anticipated challenges based on lessons learnt from on-going projects (WB and other DPs)

6.4.1. Anticipated program challenges

The resettlement impacts present different challenges which should be handled fully so that the project be implemented smoothly. With respect to previous project implementation the main challenges included relocation issues, compensation payment delays, encroachment, disclosures meeting participation, contractors delaying to start which affect the relevancy of the RAP (Resettlement Action Plan), certified valuers using not updated asset prices and contractors using not enough skilled safeguards staffs. All challenges were addressed in the previous project but also, they served as a lesson learnt for this project to be implemented with least challenges due to the preparedness at hand. The table below illustrate the challenge, which is anticipated, the reason that would contribute to the defect and the way to overcome the challenge which should be used for effective preparedness and timely project implementation.

Table 20: Anticipated challenges

| Challenge | Reason | How the challenge will be addressed |
|-------------------|--|---|
| Relocation issues | PAPs with family conflicts will pose a serious issue to the project involving physical relocation. | - Engage fully local authorities and community court known as ABUNZI to handle family and social issues involving litigation to be resolved in advance. |

| Challenge | Reason | How the challenge will be addressed |
|------------------------------------|--|---|
| | <p>Some other social issues like asset which were given like a collateral also may delay the relocation process.</p> <p>PAPs which are not on board due to different reason especially when they are not in the country and deny giving the power of attorney.</p> | <ul style="list-style-type: none"> - To use public treasury account for compensation to people who are not on board during the required time as stipulated in the expropriation law 32/2015 of 11/6/20015. |
| <p>Compensation payment delays</p> | <p>PAPs with family conflicts will pose a serious issue to the project involving physical relocation.</p> <p>Some other social issues like asset which were given like a collateral also may delay the relocation process.</p> <p>PAPs which are not on board due to different reason especially when they are not in the country and deny giving the power of attorney.</p> <p>PAPs who do not have the land titles`</p> <p>PAPs without the Bank account</p> <p>PAPs without National ID</p> | <ul style="list-style-type: none"> - Engage fully local authorities and community court known as ABUNZI to handle family and social issues involving litigation to be resolved in advance. - To use public treasury account for compensation to people who are not on board during the required time as stipulated in the expropriation law 32/2015 of 11/6/20015. - Work closely with Local Government Officials to deliver the required document for compensation on time and the District One Stop Center role will be crucial. |
| <p>Encroachment</p> | <p>PAPs who can build houses in the Right of Way with intention to be compensated for their houses after the cut-off date is proclaimed.</p> | <ul style="list-style-type: none"> - To work closely with local Government Officials for timely information transmission. - Contractor staffs on board should regular check the irregular activities in the line routes. - To establish Grievance Redress |

| Challenge | Reason | How the challenge will be addressed |
|---|---|---|
| | | <p>Committees at all cell levels and make sure that they are trained for timely reporting.</p> <ul style="list-style-type: none"> - To announce the cut off date to all concerned PAPs using UMUGANDA (Community works) and community assemblies' meetings. |
| Disclosures meeting participation | PAPs who are not available during the public disclosure and hence do not raise their issues on time due to different reason such as people who are not in localities during the disclosure time, people who were not informed of the disclosure activity, People who neglected the attending due to their mindset. | <ul style="list-style-type: none"> - Work closely with Local Government Officials and GRC for mobilization to attend, and the relevancy of the meeting. - Prepare in advance the disclosure and be communicated publicly in different meetings assembling public. |
| Contractors delaying to start which affect the relevancy of the RAP | Some contractors may delay to start the works or may even fail to deliver and quit without any single activity as the case experienced by RESSP for Overseas Infrastructure Alliance (India) Private Limited which completely failed to deliver and this resulted in the contract termination after two years of delay. | <ul style="list-style-type: none"> - Procurement should consider the past performance of the contractor within the country for the same duties where possible. |
| Certified valuers using not updated asset prices | Valuers who use the prices which are not up to date and result in over valuation or under valuation of assets because the prices that are set by IRPV are updated annually and based on real market value. | <ul style="list-style-type: none"> - Regular inspection of valuers during asset inventory exercises and be ready to notice any inconsistency in the valuation on time. - To work closely with IRPV to handle the insolvent valuers. |

| Challenge | Reason | How the challenge will be addressed |
|--|--|---|
| contractors using not enough skilled safeguards staffs | Contractors who make internal recruitment and recruit inexperienced staff due to different reason including the reason that experienced worker are expensive, hence they fail to perform the safeguards duties properly. | - EDCL should make sure that every safeguard staff's CV is approved by the project for competitiveness. |

VII. PROGRAM ENVIRONMENTAL AND SOCIAL CAPACITY ASSESSMENT, TRAINING AND IMPLEMENTATION ARRANGEMENT

7.1. Capacity assessment

The capacity assessment conducted at the administrative district level in the implementation of environmental and social impacts management show that district have two departments in the environmental and social impact management These are the one stop centre and the department of environment and natural resources management. However, the department of social protection sometimes intervenes in the management of social risks related to construction project implementation such as conflict redress mechanisms, and gender and inclusion. In the case of Electricity access, the staff in charge of electricity (District electricity Engineer) and land valuator are more involved. The PIU has environmental and social safeguards specialist with solid background in WB safeguards policies implementation and are now working for RESSP. Moreover, the EDCL has the experienced environmental and social safeguards who are now working in Transmission lines. However, there is a need to train the existing safeguards staff on WB ESF to boost their knowledge and skills but also to enable them to train the remaining of the PIU and administrative Districts staff on the safeguard requirements.

7.2. Capacity development

Effective implementation of Environment and Social Management Framework requires technical capacity in the human resource base of implementing institutions as well as logistical facilitation. Implementers (Project PIU and Districts Liaison Officers) need to understand inherent social and environmental issues and values and be able to clearly identify indicators of these. Even with existence of policies and laws such as the Environment new Law (2018), evidence on the ground still indicates that there is significant shortcoming in the abilities of local and district level stakeholders to correctly

monitor, mitigate and manage environmental performance of development projects. It is important for EDCL PIU staff, District Environmentalist, Districts Liaison Officers and Electricity Engineer to get the appropriate trainings to DPs safeguards policies including WB ESSs and AfDB OSs and National environmental law and policy, which will help them ensuring that the project complies with Rwandese and DPs environmental and social laws & Policies, and that the project adheres to this ESMF. Enough understanding of the mechanisms for implementing the ESMF will need to be provided to the various stakeholders implementing the sub-projects. This will be important to support the teams appreciate their role in providing supervision, monitoring and evaluation including environmental reporting on the project activities. The PIU should carefully analyze the project scope, their availability to the project activities and their capacity for the successful implementation of the project and its ESMF. The program will recruit 3 more safeguards specialists' staff additional to the 5 existing in the PIU.

7.3. Implementation Arrangement

Effective implementation of the Environmental and Social Management Framework for RUEAP will require technical capacity in the human resource base of implementing institutions as well as logistical facilitation. Implementers need to understand inherent social and environmental issues and values and be able to clearly identify indicators of these.

The RUEAP will be implemented by EDCL and BRD. The existing EARP-PIU has the necessary capacity for the project coordination, fiduciary, and safeguards management aspects and has been rated satisfactory for the ongoing Bank-supported portfolio under its mandate. The social and environmental specialists existing in RESSP will ensure compliance with environmental and social safeguards related issues during the implementation of RUEAP subproject activities, public awareness, particularly among construction contractors and their works about the importance of undertaking development work while safeguarding the environment both biophysical and social environment.

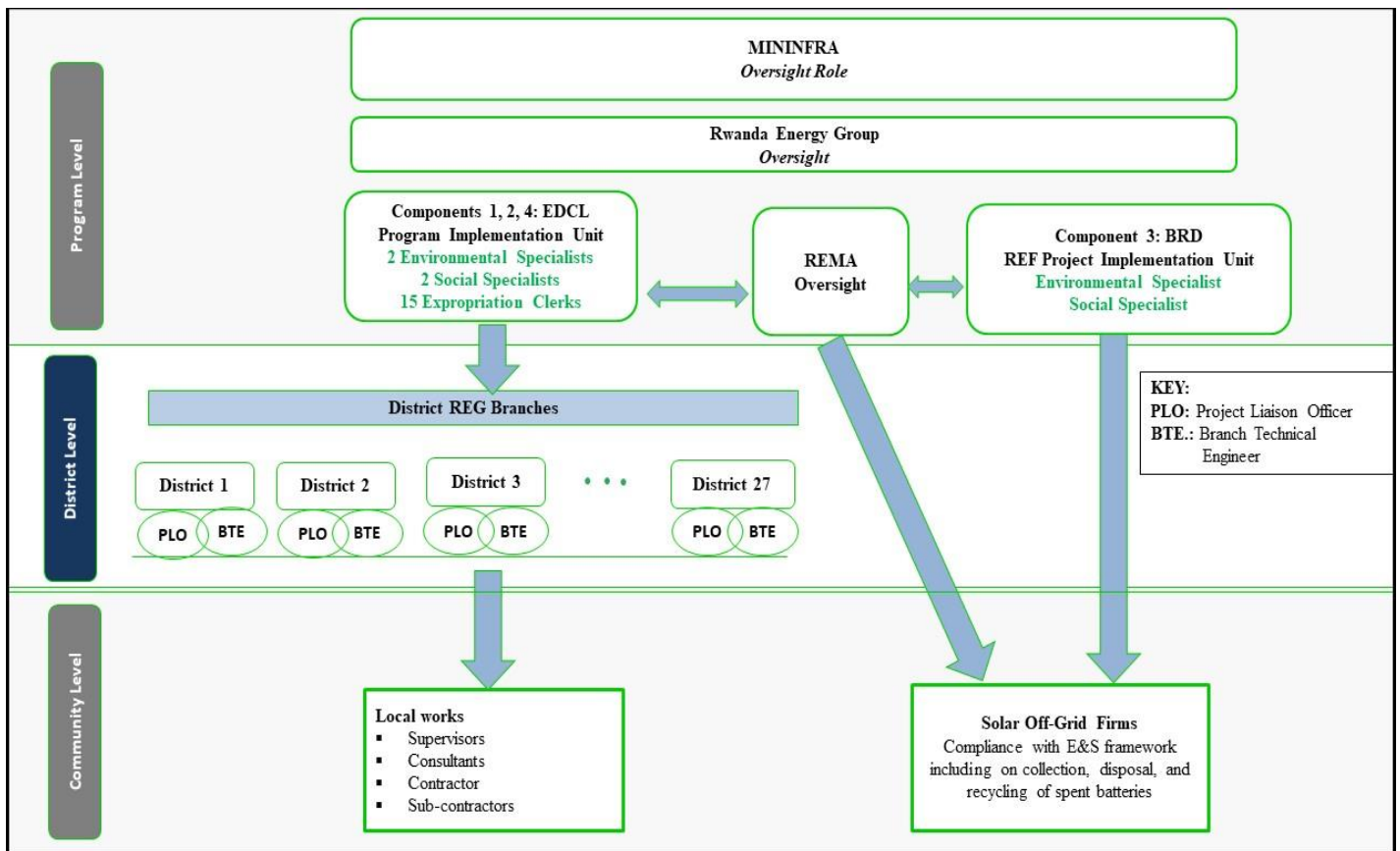
The RUEAP will fund the capacity building of PIU staffs. The main objective of the training is to support the newly created entities to develop capacity and in the medium term to have in-house capacity to mainstream safeguard activities and to upgrade skills and carry regular outreach about the utility benefits of compliance. This will help to improve the effectiveness of stakeholders at various levels in the management of environmental and social impacts during planning, implementation and operation of RUEAP subproject, and this is good for continued implementation and sustainability of project activities.

As regards the institutional capacity building of EDCL and the districts staff as the key stakeholders of RUEAP implementation at local level are necessary in different aspects of the implementation of the ESMF, including interpretation and implementation of environmental impact management guidelines and the World Bank ESSs and EHS guidelines, including the EHS Guidelines for Electric Power Transmission and Distribution.

7.3.1. Responsible team and support

Given that ESMF activities will be implemented by several partners in 27 administrative Districts, there is a need to ensure that all concerned entities are included or kept informed on the ESMF implementation process during all stage of the project activities, the below figure illustrate the key concerned staff.

Figure 9: Safeguards Institutional Arrangement under RUEAP



7.3.2. Environmental and Social management Unit under RUEAP

The program will have an Environmental and Social Management Unit composed of:

- National Team
- District team
- Contractor team

d. Supervision team

The PIU will have an Environmental and Social Management Unit composed of a Social Safeguards Specialist and an Environmental safeguards Specialist that are responsible for overseeing and coordinating all activities associated with ESMF, manage all activities related to database, logistics, and interaction with other departments of Implementing Agencies. The responsibilities will be as follows:

- i. The implementation of ESMF activities will be directly managed by the Environmental and Social Management Unit based in PIUs.
- ii. For component 1, 2 and 4 as above mentioned, Districts will have Project Liaison Officer who will work closely with the Branch Technical Engineer based at REG District Branch.

The component 3 will be implemented by Rwanda Development Bank in REF PIU, this will have a Social and Environmental Specialist at National level with the responsibility of overseeing the compliance with the Environmental and Social Framework including collection, disposal and recycling the spent batteries in the community in collaboration with the E-waste recycling facility. District based Project Liaison Officer will be supporting the District in monitoring effectiveness of ESMF, represent and periodically report to PIUs issues and concerns related to Stakeholders.

The Environmental and Social management Unit at PIU and the Project Liaison Officer at District level will supervise the implementation of all resettlement activities. Furthermore, the Safeguard team will ensure that all stakeholder engagement aspects are a permanent item on all high-level management agendas and that all actions arising from management decisions are implemented. They will play a critical role as internal change agent for environmental/social and stakeholder-related matters in the PIU. This becomes important if environmental/social and stakeholder risks identified needs to be escalated for higher-level decision-making to identify a resolution. The Safeguards team is required to remain actively involved with the ESIA and ESMP process implementation in order to identify potential risks or opportunities and ensure that the necessary administrative support is provided. Moreover, grievances submitted as a result of project implementation, temporarily land acquisition/resettlement processes need to be addressed under the GRM scheme. Responsibilities of the Safeguard team are detailed in sections below:

7.3.3. Safeguard team and expropriation clerks based at EDCL-EARP PIU

The team is comprised of Environmental and Social Specialists based in EARP-EDCL PIU. The team main role is to: (detailed responsibilities are described in the EARP Program Implementation Manual), the safeguards team shall work closely with the expropriation clerks for speeding up the PAPs payments and other required documents when needed.

- i. Oversee all environmental safeguarding aspects of project activities implemented under the Rwanda Universal Energy Access Program;
- ii. Lead the development of guidelines/manuals and trainings materials for contractors to support implementation of the ESMF and other safeguard instruments;
- iii. Ensure a satisfactory implementation of the ESMF through frequent visits to project sites;
- iv. Assess closely the efficiency of GRM and regularly communicate with GRCs
- v. Ensure capacity building is provided to the GRCs through trainings,
- vi. Update RPF and other safeguards instruments as required and recommend on necessary changes;
- vii. Report on quarterly and annual basis the progress of ESMF and associated instruments to the WB and other development partners and facilitate external environmental audits if required

7.3.4. Project Liaison Officer at District level

Those will be EDCL-EARP staffs based at every administrative District supporting the PIU in fulfilling safeguard obligations. District Project Liaison officer and Branch Technical Engineer staff will oversee and monitor project's aspects related to environment, social, health and safety. The main responsibilities will include but not limited to:

- (i) Supporting PIU Environmental and Social Management in EDCL-EARP, in assessing the effectiveness of RPF and associated documents as prepared;
- (ii) Carryout regular site visits and take records of grievances logged by contractor and grievance committee and ensure complaints/grievances are handled following GRM;
- (iii) Establish and maintain effective working relationships with safeguarding experts working for contractor and supervisor;
- (iv) Liaise with District Administration Officials, supervising firm and contractors' safeguards to ensure that stakeholder ESMF requirements/protocols are understood;
- (v) Carryout regular stakeholder's consultation, risk and impact assessment and propose mitigation measures for emerging issues;
- (vi) Collect necessary data related to ESMF and other associated documents;
- (vii) Collect necessary data related to off grid for the users;

- (viii) Arrange field visits as required by PIU;
- (ix) Report the implementation status of ESMF and prepared ESMP;
- (x) Represent EDCL-EARP PIU in all field activities including meetings with stakeholders at district level.

7.4. ESMF Implementation Activities and allocated Budget for the program

The total budget for the ESMF implementation under this program is estimated at US\$ 400,00.00, taking into account of existing current norms and expert estimates for proposed activities. The estimated total budget is highly influenced by the number of connections and MV lines that would require a full or partial environmental assessment to be undertaken before and during the subproject's implementation. The budget for the implementation of the program environmental and social enhancement measures will be detailed while preparing ESIA or ESMPs for RUEAP subprojects. The budget stands open for revision and improvement as and when needed by REG/EDCL.

The ESMPs are site-specific and will be prepared at each subproject site in consultation with EARP Environmental and Social Safeguards Specialists. The ESIA will be prepared by the ESIA experts following the ESIA guidelines in Rwanda. Actions to be undertaken before and during the project implementation include (1) Training and capacity building for the project PIU; (2) Training and capacity building for Project Liaison Officers, contractor staff and supervisor staff, including the supporting staff, PAPs and local communities; (4) Preparation of ESIA for subprojects with that conditions; (5) Preparation of ESMP for subprojects, (6) Implementation of Environmental and Social Management Plan (ESMP); Monitoring and evaluation of ESMPs; and Implementation of grievance redress mechanism. The cost associated with these activities is shown in Table below.

Table 21: Indicative Budget for the ESMF implementation for the program

| No | Activity to be undertaken | Number (Districts) | Unit cost (USD\$) | Unit cost (USD\$) |
|----|---|--------------------|-------------------|-------------------|
| 1 | Training and capacity building for the project PIU | 27 | 185 | 5,000 |
| 2 | Training and capacity building for District Environment Officers, District Electricity Engineers, contractor staff and supervisor staff, including the supporting staff | 27 | 556 | 15,000 |
| 3 | Tranings of contractor staffs, consultation meetings with PAPs and local communities | 27 | 741 | 20,000 |
| 4 | Preparation of ESIA for the projects | 27 | LS | 100,000 |

| No | Activity to be undertaken | Number (Districts) | Unit cost (USD\$) | Unit cost (USD\$) |
|----|---|--------------------|-------------------|-------------------|
| 5 | Preparation of ESMP for different subprojects | 27 | LS | 110,000 |
| 6 | Implementation of Environmental and Social Management Plan (ESMP) | 27 | LS | 120,000 |
| 7 | Monitoring and evaluation of ESMPs | 27 | LS | 15,000 |
| 8 | Implementation of grievance redress mechanism | 27 | LS | 15,000 |
| | Total | | | 400,000 |

LS: Lump Sum

VIII. PUBLIC CONSULTATION AND DISCLOSURE

8.1. Disclosure of the ESMF

The ESMF serves as the program's umbrella for the environmental and social management document, setting out the strategy to screening process that will ensure capturing all the program's environmental and social issues. Disclosure of ESMF should conform to the Public Communications Policy of the WB: Disclosure and Exchange of Information which requires that the ESMF document for WB projects be accessible to the interested parties and the general public. As soon as the client (MININFRA) receives the cleared ESMF from the development partners, should initiate the process of public hearings which includes the disclosure of the ESMF document, arrangement of communication interaction with stakeholders and conduct public hearings. At the same time, the bidding commission shall include draft check list for ESMPs in the bidding packages and add a provision specifying that if new information arises out of (may occur in parallel) public hearings for the ESMPs to be updated, without effect on the budget of contracted companies (it is extremely rare occasion when changes in ESMPs checklists on the basis of public hearings require a significant budget increase which can put bidders at risk). After the successful contractor is selected, the contractor prepares site specific ESMP with due account of the contractor's equipment, technology, status of the facility etc. This document shall be included in the first monitoring report on the sub-project.

8.2. Public Consultation

Public participation and community consultation have been taken up and should continue to be an integral part of social and environmental assessment process of the program. Consultation is used as

a tool to inform project affected people, beneficiaries and stakeholders about the proposed activities both before and after the development decisions are made. It assisted in identification of the problems associated with the program as well as the needs of the population likely to be impacted. This participatory process helps in reducing the public resistance to change and enabled the participation of the local people in the decision-making process. Initial Public consultation has been carried out within mentioned 6 Administrative districts composing the project area, key institutions involved in project implementation and land acquisition. Further consultation is planned during the preparation and implementation of Resettlement Action Plans. The objectives of those consultations are to minimize probable adverse impacts of the program and to achieve speedy implementation of the program through bringing in awareness among the community on the benefits of the project.

8.3. Program Stakeholders

Key stakeholders have been identified and initial discussions held with decision making bodies, key stakeholders, sector institutions and specialist experts were made on the very concepts and nature of the proposed program, giving emphasis on levels of public participation, role of key stakeholders and joint contributions of these actors to the success of the program. In addition, the scope of the proposed program and possible means of maximizing local communities' social, economic and environmental benefits from the project implementation were underlined. Key stakeholders identified for consultation during preparation of this ESMF include but not limited to the following:

At national level:

- Ministry of Environment (MoE);
- Ministry of Infrastructure (MININFRA);
- Rwanda Environment Management Authority (REMA);
- Rwanda Development Board (RDB);
- Rwanda Land Use and Management Authority (RLUMA)

At local level:

- Local Government Officials (Districts and Sectors);
- REG District Branch managers and
- Potential Project Affected People (PAPs).

List of consulted people is attached on annexe 9 of this ESMF.

8.4. Public participation – methods and process

During the Public consultation, the study team applied different participatory methods, namely; interviews, face-to-face discussions, focused group discussions (FGD) and official meetings with stakeholders. Stakeholders consulted were informed on the proposed project and by using the key guiding questionnaires, the study was able to guide discussions and obtain relevant information on the likely impacts of the project activities.

8.5. Feedback from initial consultation from stakeholders

Initial one-to-one consultation and meeting were held with government or private institutions, academicians and researchers, concerned administrative districts officials, Administrative Sector level and few numbers of members of local communities, the detailed consultation outcome is available on annexe 7 of this ESMF.

Table 22: Summary of the feedback from stakeholders’ consultation

| No | Stakeholder | Issues raised | Response provided |
|----|--|---|--|
| 1 | Rwanda Environment management Authority (REMA) | Has the Ministry of Infrastructure budgeted for Resettlement Impacts | Once the project designs are completed and required land and other assets known, the Ministry will request for the compensation from Ministry of Finance and Economic Planning to secure the compensation fees. |
| | | What will be done to ensure that the project does not adversely affect the environment? | The program is preparing this ESMF to foresee all environmental and social impacts so that to develop the required mitigation measures. The projects will carry out ESIA for a detailed environmental and social impacts mitigation. |
| | | What is the mechanism put in place to ensure that People are compensated on time | The Ministry has agreed with DPs that construction works will start after compensation of affected People. |

| No | Stakeholder | Issues raised | Response provided |
|----|--|--|--|
| 2 | Rwanda Land Management and Land Use Authority | How the ministry is planning to work with administrative districts especially land Bureau? | The concerned administrative districts are fully involved in project preparation and implementation and the administrative districts will be in charge of Resettlement process. |
| | | How land under ROW will be used after implementation of the project? | The land use under RoW will be used referencing on the Guidelines No 01/GL/EL-EWS/RURA/2015 |
| 4 | District Land Bureaus (District One stop Centres) | Will all program components be implemented in the same time? | Program components will be implemented in the same time as this is urgently needed to achieve NST1 target on time. |
| | | How will you mitigate or avoid Environmental and social impacts related to the program? | To mitigate these issues, the ESIA for each project will be prepared in accordance with National environmental regulations and WB ESF requirements detailing all mitigation. |
| 4 | Sector Level officials (SLM and Executive Secretaries) | What do you think on expropriation and compensation for this project? | This project will make difference to other project as the consultation was started at early stage and your views will be incorporated in the preparation of this project and you will be informed on the further process of the project. |
| | | How this project should support vulnerable people? | For vulnerable people who might be affected by the project, they suggest that these people must be compensated and suggested that a family member or relative to vulnerable people must be prioritized during job recruitment, and this will be detailed in ESIA which will be prepared. |

| No | Stakeholder | Issues raised | Response provided |
|----|--|--|---|
| 5 | Local Community including farmers organization | We have heard even experienced some projects that do not compensate affected assets or delay in providing compensation. | The REG-EDCL PIU will work closely with the administrative districts and ensure that all compensations are made before engineering works start. |
| | | Some of us will be affected by the project. Which compensation mode do you prefer? (compensation in cash or compensation in kind). | The consultation meeting will be organized during RAP and ESIA preparation and all concerned PAPs will choose the compensation methods to be applied. |
| | | Will our cooperatives benefit from this project | Your organizations/cooperative will be able to increase their productivity due to the availability of the electricity and the service delivery to your customers will be improved because you will work many hours as you want for achieving your organizational goals. |

IX. CONCLUSION AND RECOMMENDATIONS

This Environmental and Social Management Framework (ESMF) has been prepared in order to guide program planners, implementers and other stakeholders to identify and mitigate environmental and social impacts in the Context of Rwanda Universal Energy Access Program. The ESMF provides project implementers with an environmental and social screening process that will enable them to identify, assess and mitigate potential environmental and social sub-projects' impacts, in accordance with the Government of Rwanda, African Development Bank ISS and the World Bank Environmental and Social Framework and EHS guidelines. The implementation of the project will have the environmental and social impacts that should be mitigated following the ESMF guidelines. Successful implementation of this ESMF will depend to a large extent on the active participation of different key stakeholders (MININFRA, REMA, RDB, REG, EDCL, EARP PIU, Districts, Private operators,

academician and researchers, Home Solar Systems Companies and local communities). To be successful it is recommended that:

- Environmental and Social awareness and education for the key stakeholders and affected communities must be an integral part of the ESMF implementation.
- EDCL PIU staff, District Environmentalist, District Electricity Engineers and Sector land managers should be adequately trained to implement the screening process, and where required to help develop and to implement appropriate Environmental and Social Management and Monitoring Plans. They should be empowered to adequately administer the ESMF and should be given the necessary support and resources to ensure effective implementation.
- This ESMF should be regularly updated to respond to changing local and environmental conditions and should go through the national approval processes, reviewed and approved. It should also incorporate lessons learned from implementing various Components of the project activities.

REFERENCE

1. AfDB Group's, December 2013. Integrated Safeguards System, Policy Statement and operational Safeguards.
2. Government of Ghana (GoG), August 2019. ESMF, Savannah Investment Programme (SIP)
3. Government of Rwanda (GoR), 2015. ESMF, Rwanda Electricity Sector Strengthening Project.
4. GoR, 2012. ESMF, Third Rural Sector Support Project.
5. GoR, 2010. ESMF, Land Husbandry Water harvesting and Hill sides irrigation project.
6. GoR, 2004. Rwanda National Land Policy. Ministry of Lands, Environment, Forests, Water and Mines.
7. MININFRA, 2020. Concept note for Rwanda Energy Access and Quality Improvement Project.
8. MININFRA, 2019. Biomass Energy Strategy, A sustainable path to clean cooking solution.
9. MINIRENA, 2013. Law N° 43/2013 of 16/06/2013 governing land in Rwanda;
10. MINIRENA, 2010. Law No 17/2010 of 12/05/2010 establishing and organizing the real property valuation profession in Rwanda;
11. MoE, 2018. The Law (No. 48/2018 of 13/08/2018) on Environment determining the modalities for protecting, conserving and promoting the environment;
12. GoR, 2017. National Strategy for Transformation (2017-2024) _NST1;
13. GoR, 2013. Ordinary Law N° 43/2013 of 16/06/2013 Governing Land in Rwanda, Repealing Organic GoR, 2005. Law N° 08/2005 of 14/07/2005 Determining the Use and Management of Land in Rwanda;
14. National Institute of Statistics of Rwanda, November 2018. EICV5
15. MIFOTRA, 2018. Law N° 66/2018 du 30/08/2018 Regulating Labour in Rwanda;
16. MoE, 2019. Ministerial Order N° 001/ 2019 of 15/04/2019 establishing the list of projects that must undergo environmental impact assessment, instructions, requirements and procedures to conduct environmental impact assessment.
17. MININFRA, 2015. Rwanda Energy Policy;
18. MININFRA, 2018. Law amending Electricity law;
19. MININFRA, 2016. Rural Electrification strategy;
20. MININFRA, 2018. Energy sector strategic plan
21. GoR, 2015. Law No. 32/2015 of 11/06/2015 Relating to Expropriation in the Public Interest.
22. REG, 2019. REG Strategic plan;
23. MININFRA, 2020. Rwanda Universal Energy Access Program, Aide-Memoire;
24. WB, Environmental and Social Framework;
25. WB, Environmental and Social Review Summary;

ANNEXES

Annex 1: General Sub-Project Information

| INSTITUTIONAL AND ADMINISTRATIVE INFORMATION | | | | |
|---|-------------------------------------|--|--------------------------|------------|
| Country | | | | |
| Sub-project Title | | | | |
| Sub-project area and Scope | | | | |
| Institutional arrangements (Name and contacts) | World Bank (Project Team Leader) | Project Management | MININFRA (Recipient) | |
| Implementation arrangements (Name and contacts) | Safeguard Supervision | Local Supervision (District Electricity Engineer or Environmentalist) | Construction Supervision | Contractor |
| SITE DESCRIPTION | | | | |
| Name of facility/site | | | | |
| Describe the location | | | | |
| Who is the land lot owner? | | | | |
| Describe the geographical, physical, biological, geological, hydro-graphical and socio-economic context | | | | |
| Indicative need construction | | | | |

| | |
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| Materials | |
| LEGAL FRAMEWORK | |
| Identify national and regional legal framework and permits applicable to the project | |
| Identify when / where the public hearings took place | |

Annex 2: Checklist to Identify the Scope of Environmental Assessment and Application of Safeguard Provisions

| ENVIRONMENTAL/ SOCIAL SCREENING FOR THE APPLICATION OF SAFEGUARDS PROVISIONS | | |
|---|--|---------------|
| Will the site activity include/involve the following aspects | Activity/issue | Status |
| | A. General reconstruction and construction activities | []Yes []No |
| | B. Impact on surface and ground waters | []Yes []No |
| | C. Buildings belonging to historical and cultural heritage and artifacts | []Yes []No |
| | D. Land lot acquisition | []Yes []No |
| | E. Hazardous or toxic materials and wastes | []Yes []No |
| | F. Conservation of forests, wetlands and/or protected natural territories | []Yes []No |
| | G. Risk of unexploded ordnance | []Yes []No |

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|--|--|----------|
| | H. Traffic and pedestrian safety]No | []Yes [|
|--|--|----------|

Annex 3: Checklist for Environmental Selection (Screening) of Sub-Projects

| CRITERIA | YES | NO | Comments by SPIU Consultant for Engineering and Technical Monitoring |
|---|-----|----|--|
| Will the planned economic activity be located within or near protected natural territories or vulnerable area (unstable slope, gully, ravines, wetlands, water bodies) | | | |
| Can the works under this sub-project have a potential impact on areas that are important for local or national cultural heritage (memorial sites, tombs, cultural sites, etc.) | | | |
| Have residents or public associations expressed concerns or clear opposition with regard to environmental aspects of the planned economic activity? | | | |
| Is the vegetation cover planned to be disrupted during the reconstruction and retrofitting of the facility? | | | |
| Are the soil, lands and landscapes planned to be disrupted during the reconstruction and retrofitting of the facility? | | | |
| Will the planned economic activity induce an increased level of noise, ionizing radiation and vibration which will require the arrangement of noise, vibration and radiation management as required by the laws of the Republic | | | |
| Will the level of noise make an impact on neighboring? and staff or on facilities located close by (natural habitats, hospitals and medical institutions, social welfare centers)? | | | |
| Will measures be taken to reduce atmospheric air pollution during the performance of construction works? | | | |

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|---|--|--|--|
| <p>Is it planned to arrange and timely service appropriate toilets at the construction site?</p> | | | |
| <p>Is it planned to use hazardous materials and/or substances? in accordance with the laws of the Republic of Rwanda during the performance of reconstruction and retrofitting works, which:</p> <ul style="list-style-type: none"> • require special permits or licenses • require licenses or trained personnel or prohibited • are subject to handling requirements in accordance with the laws of the Republic of Rwanda • can cause soil and water pollution in case no adequate management measures are taken | | | |
| <p>Will a system be arranged to handle construction waste and solid utility waste during the performance of construction works?</p> | | | |

Annex 4: Suggested Format for a Sample Environmental and Social Management Plan (ESMP)

The ESMF emphasizes that an Environmental and Social Management Plan (ESMP) should fit the needs of a subproject and be easy to use. The basic elements of an ESMP are:

- a) A description of the subproject activity
- b) A description of potential Environmental and social impacts;
- c) A description of planned mitigation measures;
- d) An indication of institutional/individual responsibility for implementing
- e) mitigation measures (including enforcement and coordination);
- f) A program for monitoring the Environmental and Social effects of the subproject both positive and negative (including supervision);
- g) A time frame or schedule; and
- h) A cost estimate and source of funds.

Table below is a matrix to be filled out for each subproject that will have a separate ESMP according its impact level.

| Subproject Activity | Potential Environmental or Social Impacts | Proposed Mitigation Measures | Responsibility (including enforcement and coordination) | Monitoring Requirements (including supervision) | Time Frame or Schedule | Cost Estimate |
|---------------------|---|------------------------------|---|---|------------------------|---------------|
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Annex 5: Impact Mitigation Measures

| ACTIVITY | PARAMETER | CHECKLIST FOR IMPACT MITIGATION MEASURES | BUDGET |
|---|--------------------------------|--|--------|
| 0. General Conditions | Notification and worker safety | <p>(a) District Director of One Stop Center, District Environmentalist, District Electricity Engineer and Sector Land Manager have been notified of upcoming activities.</p> <p>(b) The public has been notified of the upcoming works through appropriate notification in the media and/or at publicly accessible sites (including the site of the works).</p> <p>(c) All legally required permits to perform construction/repair/rehabilitation works, including extraction and transportation of required materials such as sands and gravels where needed, have been acquired.</p> <p>(d) The Contractor has formally consented that all works will be carried out in compliance with construction safety measures and construction rules to maximally minimize negative impacts on the health of neighboring residents and the environment.</p> <p>(e) Workers' personal protective equipment are available and will comply with international standards (there will always be used construction helmets and, where required, respirators and protective glasses, fall arrest mechanisms and special footwear).</p> <p>(f) Appropriate signposting of the sites will inform workers of key rules and regulations to follow.</p> | |
| A. General Reconstruction, rehabilitation and /or extension | Atmospheric air Quality | <p>(a) Dust management measures are taken during earthworks, e.g.: water spraying and topsoil watering.</p> <p>(b) Construction waste excavated earth and aggregates are kept at controlled temporary storage sites with regular watering and dust control.</p> <p>(c) During pneumatic drilling or removal of road surface layer or base, dust should be suppressed by ongoing water spraying and/or installing on-site dust screen enclosures.</p> | |

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| activities | | <p>(d) Pavements and roads around the site are kept free of dust and construction waste to reduce dust.</p> <p>(e) All machinery shall undergo timely maintenance at service stations with regard to CO emissions and smoke; construction equipment engine idling on site is not allowed.</p> | |
| | Noise | <p>(a) Construction/rehabilitation works shall be performed exclusively during working hours specified in the permit.</p> <p>(b) During operations the engine covers of generators, air compressors and other powered equipment should be closed, and equipment placed as far away from residential areas as possible.</p> | |
| | Water quality | <p>a) Anti-erosion and anti-slump measures shall be taken, in particular, the construction/rehabilitation site shall be banked; rainwater sewerage can be built, or earth stabilization can be done to prevent the slumped soil from moving beyond the construction site boundaries.</p> | |
| | Waste Management | <p>(a) Collection sites and facilities to use, neutralize and bury wastes shall be specified for all basic wastes expected to be generated during the works to remove fertile topsoil, dismantling works and construction/rehabilitation works.</p> <p>(b) Construction/rehabilitation wastes will be separated from municipal wastes through their collection in different containers.</p> <p>(c) Construction/rehabilitation waste will be collected and appropriately disposed in authorized dumpsite</p> <p>(d) Waste management records will be maintained to prove appropriate waste management.</p> | |
| B. Impact on surface and ground waters | Water quality | <p>(a) No uncontrolled ground water intake and no uncontrolled discharge of cement solutions or other polluted waters into soil or nearby surface waters will be done. If necessary, the Contractor will apply and be granted permits for water use.</p> <p>(b) The site shall be equipped with sewerage systems and measures shall be taken to prevent pollution, blocking or other negative impact that construction/rehabilitation works can make on natural ecosystems.</p> <p>(c) Measures shall be taken to prevent spillage of fuels, lubricants and other toxic or hazardous substances.</p> | |

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| | | (d) Construction vehicles and machinery shall only be washed at specially designated areas, and polluted waste waters shall be prevented from getting into surface waters. | |
| C. Buildings belonging to historical and cultural heritage and artifacts | Cultural heritage | <p>(a) If construction works are performed near a cultural site or habitat for protected trees or animals, REMA and the Ministry in charge of Culture shall be notified, and all necessary permits shall be obtained from competent authorities, and all construction/rehabilitation works shall be planned and performed in accordance with the national laws.</p> <p>(b) All necessary rules and requirements shall be met to ensure that artifacts or other possible 'chance finds' discovered during earthworks or construction works are inventoried and put on the register, the responsible persons are informed, and all works are suspended or their schedules are changed, depending on the finds' nature. To this end, chance finds procedure is attached in Annex 10 of this ESMF. The chance finds procedure will be annexed to the site specific ESIA/ESMPs for subprojects as well.</p> | |
| D. Land lot acquisition | Land lot acquisition Formalities | <p>(a) If no extension of territory has been planned but such necessity arises, advice shall be promptly sought from the Project Implementation Team of the Ministry of Infrastructure.</p> <p>(b) An approved Land Lot Selection Certificate will be implemented to locate the facility (if the design so requires).</p> | |
| E. Hazardous or toxic materials and wastes | Asbestos management and other hazardous waste in | <p>(a) Training of staff who can potentially come into contact with the material to avoid damage and prevent exposure. The plan should be made available to all persons involved in operations and maintenance activities.</p> <p>(b) Repair or removal and disposal of existing Asbestos Containing Materials in buildings should only be performed by specially trained personnel following host country requirements, or in their absence, internationally recognized procedures.</p> | |

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|---------------------------------------|---|---|--|
| | Ntaruka HPP | <p>(c) The asbestos removal should comply with the Prime Minister’s Instructions determining procedure for eradication of asbestos materials...52N° 002/03 du 05/05/2015.</p> <p>(d) The contractor should work with Rwanda Asbestos removal Project under Rwanda Housing Authority which has asbestos removal in its attributions.</p> <p>(e) The contractor should have the contract with waste management company licensed by RURA with mandate to collect hazardous waste or nonhazardous waste.</p> | |
| | Management of hazardous substances and wastes | <p>(a) Temporary on-site storage of all hazardous or toxic substances and wastes belonging to hazard classes 1 and 2 will be arranged in separate rooms (mercury-containing wastes, intact spent lead batteries with electrolyte inside, cell batteries etc.), including restricted access and marking affixed.</p> <p>(b) The hazardous waste management procedures shall be specified in the waste management manual.</p> <p>(c) Wastes shall be transported in accordance with legal requirements applicable to the transportation of hazardous wastes.</p> <p>(d) Paints or solvents with toxic ingredients or lead-based paints will not be used.</p> <p>(e) All solar Home systems companies should present the certificate that they have contract with Enviro Serve Company which is Bugesera E-waste recycling company being in charge of e-waste management in Rwanda including recycling options.</p> <p>(f) Companies in Off grid components should submit waste management Plan addressing the collection, storage, Transportation and disposal of used solar panel and batteries.</p> | |
| F. Conservation of forests, | Ecosystem protection | <p>(a) All-natural ecosystems, wetlands and protected territories located in the immediate vicinity of the construction site will not be disturbed or used.</p> <p>(b) Protection measures should be taken regarding nearby wetlands to avoid erosion and fallout, including, e.g. construction site banking.</p> | |

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| wetlands and/or protected natural territories | | <p>(c) It is prohibited to arrange borrow pits or storage sites or keep waste without authorization in adjacent areas, especially in unprotected areas.</p> <p>(d) It is prohibited to damage or use natural ecosystems, wetlands and protected territories located in the immediate vicinity of the construction/rehabilitation site.</p> | |
| G. Risk of unexploded Ordnance | Hazard for human health and safety | a) Prior to any earthworks, the Contractor shall make sure that the construction site has been inspected for the availability of unexploded ordinance. | |
| H. Safety of public transport and pedestrians | Direct or indirect hazards to public traffic and pedestrian s by constructi on | <p>(a) In line with national legal requirements, the contractor guarantees that the construction site will be fenced, and that the construction works will be clearly regulated at the site.</p> <p>(b) Visible warning signs shall be posted for the public and public transport to notify of all potentially hazardous works.</p> <p>(c) A traffic management system and personnel training shall be arranged, especially about the access to the site and heavy traffic in the vicinity. Safe passages and crossings for pedestrians will be provided in the locations of public traffic and construction machinery traffic.</p> <p>(d) Working hours shall be corrected depending on local traffic, e.g. to avoid heavy traffic in rush hours or livestock driving hours.(e) Where needed, traffic management shall be carried out at the site to ensure safe passage of people.</p> <p>(f) Safe and uninterrupted access for the public to nearby offices, sales outlets and residential houses shall be maintained during construction works.</p> | |

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| <p>G. Technical assistance activities</p> | <p>Direct &/or indirect E&S impacts</p> | <p>Policies/regulations to be prepared through the TA activities should focus on:</p> <ul style="list-style-type: none"> • Reviewing taxes of cook stoves equipment by putting in this sector the intensive that will make the cook stove affordable to the community. • The energy source/fuel to be used in the cook stove should be tested for the emissions and the biomass with lower emissions shall be used. • Reducing the tax of LPG (<i>Liquefied Petroleum Gas</i>) which will reduce the buying price to the community, which will help to reduce the pressure on the forest. • Increasing the tax on charcoal which is massively used by the community to reduce by the half the population who depends on firewood. • People who previously should be given the alternative and priority in the promoted fuel eg: Clean cooking stove. | |
| <p>H. NTARUKA HPP rehabilitation activities</p> | <p>Direct &/or indirect E&S impacts</p> | <p>Reservoir sedimentation: Carry out of watershed management in the reservoir area to minimize erosion and sedimentation in the Ntaruka reservoir; and Maximize useful life of the reservoir through continuous monitoring and use of sedimentation model for calculation of reservoir sedimentation.</p> <p>Changes to hydrological flow: Maintain downstream flow through allowing the minimum ecological flow rate and following approved reservoir operation procedures.</p> | |

Annex 6: Terms of Reference for Environmental and Social Impact Assessment

These Terms of Reference (TOR) are applicable to development projects involving Energy development projects. The ToRs outline the aspects of an Environmental and Social Impact Assessment (ESIA) which when thoroughly addressed will provide a comprehensive evaluation of the sites, in terms of predicted environmental impacts, needed mitigation strategies, potentially viable alternatives to the development proposed and all related legislation.

Planned Areas: Issues such as slope stability, impact on drainage patterns, property etc. should be examined. The path of the corridor cleared of vegetation for transmission lines, substations and Hydro power plants should be the major focus of this exercise.

Rivers/ Riverine Areas: Issues such as erosion and siltation, macro invertebrate habitat destruction, disrupting of regular flow of the river and the possible impact of upstream activities on the area ecosystems e.g. wetlands etc.

Distinct Terrestrial Forest Types: Issues relating to the specific growth form of the vegetation, the carrying capacity, the successional stage of the forest and the projected level of disturbance which the forest can withstand.

Sites located within and adjacent to areas listed as protected or having protected species:

The main issue(s) of concern will be in part determined by the local legislation as well as Government of Rwanda (GoR) responsibilities under applicable international conventions. The impact of the development on the specific sensitivities of the protected area should be highlighted. Mitigation of impacts should assess if the post mitigation status would be acceptable in the protected area context. Alternative sites should be rigorously evaluated. Socio–Economic issues such as land acquisition and impact of these conveyances on commerce in the community should be closely examined.

The Environmental Impact Assessment should:

- 1) Provide a complete description of the corridor proposed for development. This should include a description of the main elements of the development, highlighting areas to be reserved for construction, the creation of verges and other green areas.
- Identify the major environmental and social issues of concern through the presentation of baseline data which should include social and cultural considerations. Assess public perception of the proposed development.
- Outline the Legislations and Regulations relevant to the project.

- Predict the likely impacts of the development on the described environment, including direct, indirect and cumulative impacts, and indicate their relative importance to the design of the development's facilities.
- Identify mitigation action to be taken to minimize adverse impacts and quantify associated costs.
- Design a Monitoring Plan which should ensure that the mitigation plan is adhered to.
- Describe the alternatives to the project that could be considered at that site

To ensure that a thorough Environmental and Social Impact Assessment is carried out, it is expected that the following tasks be undertaken:

1. Executive summary

- Concisely discusses significant findings and recommended actions.

2. Legal and institutional framework

- Analyses the legal and institutional framework for the project, within which the environmental and social assessment is carried out, including the issues set out in ESS1, paragraph 264.
- Compare the Borrower's existing environmental and social framework and the ESSs and identify the gaps between them.
- Identifies and assesses the environmental and social requirements of any co-financiers.
- Outline the pertinent regulations and standards governing environmental quality, safety and health, protection of sensitive areas, protection of endangered species, siting and land use control at the national and local levels. The examination of the legislation should include at minimum, legislation such as the land law, Environmental protection and conservation law, expropriation law, the Public Health Act, the urban Planning Act, Building Codes and Standards, Development Orders and Plans and the appropriate international convention/protocol/treaty where applicable.

3. Description of the subproject

- Concisely describes the proposed subproject and its geographic, environmental, social, and temporal context, including any offsite investments that may be required (e.g., dedicated pipelines, access roads, power supply, water supply, housing, and raw material and product storage facilities), as well as the project's primary suppliers.
- Through consideration of the details of the project, indicates the need for any plan to meet the requirements of ESS 1 through 10.

- Includes a map of sufficient detail, showing the project site and the area that may be affected by the project's direct, indirect, and cumulative impacts.

4. Baseline data

This task involves the generation of baseline data which is used to describe the study area as follows:

- Physical environment
- Biological environment
- Socio-economic and cultural constraints.

It is expected that methodologies employed to obtain baseline and other data be clearly detailed.

Baseline data should include:

(A) Physical

- A detailed description of the existing **geology** and **hydrology**. Special emphasis should be placed on storm water run-off, and drainage patterns. Any slope stability issues that could arise should be thoroughly explored.
- **Water quality** of any existing rivers, ponds, streams or coastal waters in the vicinity of the corridor or substation. Quality Indicators should include but not necessarily be limited to suspended solids, turbidity, oil and grease.
- Climatic conditions and air quality in the area of influence including particulate matter wind speed and direction, precipitation, relative humidity and ambient temperatures,
- Obvious sources of pollution existing and extent of contamination.

(B) Biological

- Present a detailed description of the flora and fauna (aquatic and terrestrial) in the proposed corridor of influence, with special emphasis on rare, endemic, protected or endangered species. Migratory species should also be considered. There may be the need to incorporate microorganisms to obtain an accurate baseline assessment. Generally, species dependence, niche specificity, community structure and diversity ought to be considered.

(C) Socio-economic & cultural

- Present and projected population; present and proposed land use; planned development activities, issues relating to squatting and relocation, community structure, employment, distribution of income, goods and services; recreation; public health and safety;
- Cultural peculiarities, aspirations and attitudes should be explored. The historical importance of the area should also be examined. While this analysis is being conducted, it is expected that an assessment of public perception of the proposed development be conducted. This assessment may vary with community structure and may take multiple forms such as public meetings or questionnaires.

5. Identification of Potential Environmental and Social Impacts

Takes into account all relevant environmental and social risks and impacts of the program. This will include the environmental and social risks and impacts specifically identified in ESS2 – 8, and any other environmental and social risks and impacts arising as a consequence of the specific nature and context of the program, including the risks and impacts identified in ESS1, paragraph 28.

Identify potential impacts as they relate to, (but are not restricted by) the following:

- public health and safety, risk assessment, change in drainage pattern flooding potential and aesthetics
- landscape impacts of excavation and construction
- loss of natural features, habitats and species by construction and operation
- noise, air pollution, pollution of potable, coastal, surface and ground water - Socio-economic and cultural impacts.
- Loss of land and assets due new transmission lines construction and operation
- Distinguish between significant positive and negative impacts, direct and indirect, long term and immediate impacts.
- Identify trigger, avoidable reversible and irreversible impacts.

6. Environmental and Social Management Plan

- Identifies mitigation measures and significant residual negative impacts that cannot be mitigated and, to the extent possible, assesses the acceptability of those residual negative impacts.
- Identifies differentiated measures so that adverse impacts do not fall disproportionately on the disadvantaged or vulnerable.

- Assesses the feasibility of mitigating the environmental and social impacts; the capital and recurrent costs of proposed mitigation measures, and their suitability under local conditions; the institutional, training, and monitoring requirements for the proposed mitigation measures.
- Specifies issues that do not require further attention, providing the basis for this determination

Design a plan to monitor implementation of mitigation or compensation measures and program impacts during and post construction and decommissioning of the power lines. **An Environmental and Social Management Plan** for the long-term operations of the development should also be prepared.

An outline **monitoring** programme should be included in the EIA, and a detailed version submitted to RDB's e-portal system for review and approval and prior to the commencement of the development. At the minimum the monitoring programme and report should include:

- The activity being monitored, and the parameters chosen to effectively carry out the exercise.
- The methodology to be employed and the frequency of monitoring.
- The sites and program components being monitored. These may in instances, be predetermined by the EDCL and should incorporate a control site where no impact from the development is expected.

7. Design measures

- sets out the basis for selecting the particular project design proposed and specifies the applicable ESHGs or if the ESHGs are determined to be inapplicable, justifies recommended emission levels and approaches to pollution prevention and abatement that are consistent with GIIP.

8. Key measures and actions for the Environmental and Social Commitment Plan (ESCP)

- Summarizes key measures and actions and the timeframe required for the program to meet the requirements of the ESSs. This will be used in developing the Environmental and Social Commitment Plan (ESCP).

9. Appendices

- List of the individuals or organizations that prepared or contributed to the environmental and social assessment.
- References—setting out the written materials both published and unpublished, that have been used.

- Record of meetings, consultations and surveys with stakeholders, including those with affected people and other interested parties. The record specifies the means of such stakeholder engagement that were used to obtain the views of affected people and other interested parties.
- Tables presenting the relevant data referred to or summarized in the main text.
- List of associated reports or plans.
- Terms of reference;

Annex 7: Itinerary of Stakeholder Consultations and outcome

| Dates | Consulted person/ Position | Venue | Observation / Points raised by stakeholders | Suggestions by stakeholders and how they are considered by the program (proposed action in this ESMF) |
|--|---|-------------------------------|---|--|
| KARONGI Administrative District | | | | |
| January 20,2020 | V/M ED Director of OSC District Electrical engineer District environmental officer District land valuator Sector Executive secretaries Sector Land managers | District Headquarter's office | Considerable delays in compensation payments; Some cases of expropriation are also pending; Delays are generally due to errors not because of lack of funds but due to errors in account numbers; There is no problem with assets valuation. The district staff presented the priority areas that urgently need electricity and suggested that this should be the basis for planning on electrification within the district. Delayed people due to their cause like not having all required documents should not stop the project to move on The project should consider employing local people for their economic development | Local authorities should work hand in hand with SACCOs (bank) in order to avoid errors in accounts numbers. Local authorities should help the local population to secure the required document for a file to be complete. Local government officials should have a permanent eye on hired certified valuator for the quality of valuation but also they should speed up the activity of signing the forms within their offices so that they can be transferred to EDCL for payment Compensation payments should be done before the commencement of project works. |

| Dates | Consulted person/ Position | Venue | Observation / Points raised by stakeholders | Suggestions by stakeholders and how they are considered by the program (proposed action in this ESMF) |
|---------------------------------------|---|--|---|---|
| | | | | Local people who are physically capable will be given the priority for employment. |
| January 20,2020 | Community including PAPs | Nyarugenge e cell of Rubengera District | Electricity can help them to go on the same speed as the country, they said that the country development is leaving theme behind because they lack major infrastructures including lack of access to reliable electricity. The safety of the line will be safeguarded and different activities like welding, haircut, showing movies... Please we are capable, for physical work, consider giving us the job as we are ready to serve but also for development. | The project will be implemented, and they will be having electricity at the end of it. They should safeguard the electrical line and be ready to make this project productive by implementing the activities and project that are energy based and develop the areas. People who are ready and physically capable will be given the priority in employment as casual workers. |
| RUSIZI Administrative District | | | | |
| January 21,2020 | V/Mayor ED Director of OSC District Electrical engineer | District headquarter r office | The delay in compensation is an issue. REG should find a way to address all outstanding issues related to expropriation. There is an issue of poverty to local people, there is likelihood that they will not have the fund to purchase the cash power and | REG has inventoried all old cases from district, and all have undergone the valuation, there payment is being done. |

| Dates | Consulted person/ Position | Venue | Observation / Points raised by stakeholders | Suggestions by stakeholders and how they are considered by the program (proposed action in this ESMF) |
|--|---|-----------------------------|---|---|
| | District environmental officer District land valuator Sector Executive secretaries Sector Land managers | | make installation. Can the project help them in terms of installing their houses? | Client who want cash power, they get it free of charge and they pay 50% as they consume until the debt is finished. |
| RUTSIRO Administrative District | | | | |
| January 23,2020 | V/Mayor ED Director of OSC District Electrical engineer District environmental officer District land valuator Sector Executive secretaries Sector Land managers | District headquarter office | The project is appreciated. The compensation should be handled efficiently. The district will help to speed up the compensation process and will be the public awareness campaign after the project effectiveness and when all the lots are identified and marked. The encroachment after the cut off date will be avoided to the extent possible. When the project is expected to get started? | The valuation process will involve the local government officials as per Rwandan expropriation law. The involvement of the district will make the job easy. The project effectiveness is expected in July 2020. |

| Dates | Consulted person/ Position | Venue | Observation / Points raised by stakeholders | Suggestions by stakeholders and how they are considered by the program (proposed action in this ESMF) |
|--|---|----------------------------------|--|---|
| NYABIHU Administrative District | | | | |
| January 23,2020 | Director of OSC District Electrical engineer District environmental officer District land valuator Sector Executive secretaries Sector Land managers | District video conference office | <p>The project is appreciated and any help for its implementation will be rendered.</p> <p>Community mobilization will be carried out for a smooth asset inventory and valuation. The local authorities will help the valuer to avoid any delay and inconsistency in valuation.</p> <p>The district staff presented the priority areas that urgently need electricity and suggested that this should be the basis for planning on electrification within the district.</p> | <p>The district priority sites to be connected, will be handed over to EDCL Planning so that they can be taken into consideration.</p> <p>They will always be consulted before the implementation of any project so that what is being done to them(they service they are receiving) should be done considering the district priority</p> |
| NGORORERO Administrative District | | | | |
| January 24,2020 | V/Mayor FED Director of OSC District Electrical engineer | District headquarter office | <p>The project is appreciated and any help for its implementation will be rendered.</p> <p>Community mobilization will be carried out for a smooth asset inventory and valuation. The local authorities will help the valuer to avoid any delay and inconsistency in valuation.</p> | <p>The district priority sites to be connected, will be handed over to EDCL Planning so that they can be taken into consideration.</p> <p>They will always be consulted before the implementation of any project so that what</p> |

| Dates | Consulted person/ Position | Venue | Observation / Points raised by stakeholders | Suggestions by stakeholders and how they are considered by the program (proposed action in this ESMF) |
|---------------------------------------|---|------------------------------|---|--|
| | District environmental officer District land valuator Sector Executive secretaries Sector Land managers | | The district staff presented the priority areas that urgently need electricity and suggested that this should be the basis for planning on electrification within the district. | is being done to them (they service they are receiving) should be done considering the district priority |
| RUBAVU administrative district | | | | |
| January 27,2020 | V/Mayor FED Division manager District Electrical engineer District environmental officer Sector Land managers | District headquarters office | The district staff presented the priority areas that urgently need electricity and suggested that this should be the basis for planning on electrification within the district. This include the district industrial park being considered and Kanzenze sector. The information about compensation on the project being implemented should be shared with district so that they can handle different relevant claims | The district priority sites to be connected, will be handed over to EDCL Planning so that they can be taken into consideration. They will always be consulted before the implementation of any project so that what is being done to them (they service they are receiving) should be done considering the district priority. |

| Dates | Consulted person/ Position | Venue | Observation / Points raised by stakeholders | Suggestions by stakeholders and how they are considered by the program (proposed action in this ESMF) |
|--|---|--------------------------------------|--|---|
| | | | | The information about expropriation is available on REG website and every PAP can access his/her own account. |
| | Local community | Akabagoyi cell of Busasama na sector | The community appreciated this project and they are waiting impatiently the starting. They said that they are expecting a lot from this project, like getting casual jobs, but also it will help them in the employment creation like welding, using mill, haircut saloon but also they are fed up of darkness caused by the lack of electricity access | The district priority sites to be connected, will be handed over to EDCL Planning so that they can be taken into consideration. They will always be consulted before the implementation of any project so that what is being done to them (they service they are receiving) should be done considering the district priority |
| GICUMBI administrative district | | | | |
| January 29,2020 | Dir OSC Sector Executive Secretaries Sector Land managers REG Branch manager | District headquarter office | The district together with REG branch manager proposed the site which are more isolated and need urgently electricity according to their priority. All people cannot afford the price of meters. Will you give them free meters? | The priority sites that were given will be handed over to EDCL planning department for their consideration Normally REG facilitate all people who do not have the means to purchase the meter. It |

| Dates | Consulted person/ Position | Venue | Observation / Points raised by stakeholders | Suggestions by stakeholders and how they are considered by the program (proposed action in this ESMF) |
|--|---|-----------------------|--|--|
| | | | The compensation is an issue. How are you planning to handle this? | is given before and the payment is postpaid. You pay 50% as you buy the cash power. We will involve local authorities and |
| RULINDO administrative District | | | | |
| January 31,2020 | V/Mayor ED District director of planning District Electrical engineer District environmental officer Sector Land managers ES-Sectors | District meeting hall | Due to the big pace of development we are undergoing, everyone needs access to electricity ever. Anything that you will need will be granted from the district as the main stakeholder. However, any planning on new sites to be connected should take into account the priority from district. The contractor should pay his workers on time. Always contractor do not pay labors on time. How will your project protect workers from accidents? | The Project team appreciated the effort of the district engagement and told the meeting attendant that the sites as prioritized by the district will be handed over to EDCL planning department for their consideration. However, after the project effectiveness, the project team will also consult the district to update the data. The project will use World bank environmental health and social guidelines to comply with occupational health and safety and Labor Management Procedure (LMP) is being prepared so that detail |

| Dates | Consulted person/ Position | Venue | Observation / Points raised by stakeholders | Suggestions by stakeholders and how they are considered by the program (proposed action in this ESMF) |
|--|--|-------------------------------------|---|--|
| | | | | concerning worker right should be captured and monitored for effective implementation. |
| GAKENKE administrative District | | | | |
| January 31,2020 | VM ED DES Dir OSC Dir Planning District Environmental Officer District Electricity Engineer | District Executive Secretary Office | <p>There is a problem of information sharing concerning expropriation process and update. What will you do improve this?</p> <p>Labors always claim from contractors, please follow up on contractors.</p> <p>The Health and safety of workers should be given the value, and workers be given the Personal Protective Equipment.</p> <p>The project should consider giving job to local people for their economic development.</p> <p>The District has the priority sites which urgently need electricity, and these should be the one to connect first.</p> | <p>The information on the update for expropriation for PAP can be now accessed through website on the link: https://www.reg.rw/customer-service/expropriation/</p> <p>Labor Management procedure is being prepared for compliance on workers rights and employers responsibilities.</p> <p>Health and safety will be complied to World Bank Standards, and the priority will be to eliminate the harm, but where not possible to Personal Protective Equipment will be used to ensure the safety of workers, employers , Visitors and the public.</p> |

| Dates | Consulted person/ Position | Venue | Observation / Points raised by stakeholders | Suggestions by stakeholders and how they are considered by the program (proposed action in this ESMF) |
|--|--|------------------------------|--|---|
| | | | | The sites provided by the district will be handed over to EDCL Planning department for their consideration. |
| KAYONZA administrative District | | | | |
| February 5, 2020 | Director of One Stop Center (OSC) District Electrical engineer District environmental officer District Land valuer Kabarondo SLM | District headquarters office | The district staff presented the priority areas that urgently need electricity and suggested that this should be the basis for planning on electrification within the district. The information about compensation on the project being implemented should be shared with district so that they can handle different relevant claims. The project should consider giving the local people the job. But also should any them on time and make sure that they are protected from any occupational hazard. | The district priority sites to be connected, will be handed over to EDCL Planning so that they can be taken into consideration. They will always be consulted before the implementation of any project so that what is being done to them (they service they are receiving) should be done considering the district priority. The information about expropriation is available on REG website and every PAP can access his/her own account. The information on the update for expropriation for PAP can be now accessed through website on the link: |

| Dates | Consulted person/ Position | Venue | Observation / Points raised by stakeholders | Suggestions by stakeholders and how they are considered by the program (proposed action in this ESMF) |
|-------|-------------------------------|---|---|---|
| | | | | <p>https://www.reg.rw/customer-service/expropriation/</p> <p>Labor Management procedure is being prepared for compliance on workers rights and employers responsibilities.</p> <p>Health and safety will be complied to World Bank Standards, and the priority will be to eliminate the harm, but where not possible to Personal Protective Equipment will be used to ensure the safety of workers, employers , Visitors and the public.</p> |
| | Local community | Kabarondo Sector, Cyabajwe Cell, Rwagwa Village | <p>The community appreciated this project and they are waiting impatiently the starting.</p> <p>They said that they are expecting a lot from this project, like getting casual jobs, but also it will help them in the employment creation like welding, using mill, haircut saloon</p> | <p>The district priority sites to be connected, will be handed over to EDCL Planning so that they can be taken into consideration.</p> <p>They will always be consulted before the implementation of any project so that what is being done to them (they service they are</p> |

| Dates | Consulted person/ Position | Venue | Observation / Points raised by stakeholders | Suggestions by stakeholders and how they are considered by the program (proposed action in this ESMF) |
|---------------------------------------|---|---|--|--|
| | | | but also, they are fed up of darkness caused by the lack of electricity access | receiving) should be done considering the district priority |
| KIREHE administrative District | | | | |
| February 5, 2020 | Mayor Dir OSC District forest officer District irrigation officer District environmental officer OSC Legal Advisor | District headquarters District offices | Compensation of losses is an issue since the payments process is long. After having collected the signed lists of beneficiaries on which the damaged assets and owed amount is mentioned, the lists are sent to continue the journey to Kigali EDCL headquarter to MINECOFIN, which pays beneficiaries through BNR (Banque National du Rwanda) then from there the compensation is deposited to the beneficiary's account. The process is too long. The district has the two dumpsites where waste is sorted. However, Inorganic waste is becoming accumulated and will have to be transported for recycling industries. | District officers suggested the decentralization of not only the funds for compensation and expropriation but also to be given the ESIA report and involve its officers in the planning and implementation of EARP subprojects The project will conduct public consultations during environmental and social studies and reports will be disclosed to the public. |

| Dates | Consulted person/ Position | Venue | Observation / Points raised by stakeholders | Suggestions by stakeholders and how they are considered by the program (proposed action in this ESMF) |
|--|--|-------------------------------|---|--|
| NGOMA administrative district | | | | |
| February 6, 2020 | Dir OSC District irrigation officer District environmental officer REG Branch Manager | District headquarters offices | <p>The district together with REG branch manager proposed the site which are more isolated and need urgently electricity according to their priority.</p> <p>All people can not afford the price of meters. Will you give them free meters?</p> <p>The compensation is an issue. How are you planning to handle this?</p> <p>The district dumpsite will help for waste management; However, Inorganic waste is becoming accumulated and will have to be transported for recycling industries.</p> | <p>The priority sites that were given will be handed over to EDCL planning department for their consideration</p> <p>Normally REG facilitate all people who do not have the means to purchase the meter. It is given before and the payment is postpaid. You pay 50% as you buy the cash power.</p> <p>We will involve local authorities and local population by timely public awareness campaign after the project effectiveness.</p> |
| NYAGATARE Administrative District | | | | |
| February 6, 2020 | Mayor Dir OSC District of Social development | District headquarters offices | <p>The district together with REG branch manager proposed the site which are more isolated and need urgently electricity according to their priority.</p> <p>The district is a secondary city to Kigali and is developing itself, the only matter is the lack of reliable energy to make</p> | <p>Priority sites provided will be given to EDCL Planning department for their consideration.</p> |

| Dates | Consulted person/ Position | Venue | Observation / Points raised by stakeholders | Suggestions by stakeholders and how they are considered by the program (proposed action in this ESMF) |
|--|---|-------------------------------------|---|--|
| | District environmental officer REG Branch Manager | | heavy industries working. The existing electricity service is single phased and this only facilitates us only for lighting purposes, we can not use machines. We will help the project to speed up compensation by getting involved in all steps of the compensation up to the district. We will carry out the public awareness campaign to mobilize people avail the required documents on time, and we will help them to secure those documents easily like land title, id cards, account so that we can have all PAPs cleared on time | There is another project under Enabel which has started doing the upgrade from single phase to three phases. |
| KAMONYI administrative District | | | | |
| February 8, 2020 | DES Dir OSC Dir Planning District Environmental Officer | District Executive Secretary Office | There is a problem of information sharing concerning expropriation process and update. What will you do improve this? Labor always claim from contractors, please follow up on contractors. | The information on the update for expropriation for PAP can be now accessed through website on the link: https://www.reg.rw/customer-service/expropriation/ |

| Dates | Consulted person/ Position | Venue | Observation / Points raised by stakeholders | Suggestions by stakeholders and how they are considered by the program (proposed action in this ESMF) |
|-------|--|-------------|--|---|
| | District Electricity Engineer; REG Branch Manager GACURABWENGE SLM | | <p>The Health and safety of workers should be given the value, and workers be given the Personal Protective Equipment.</p> <p>The project should consider giving job to local people for their economic development.</p> <p>The District has the priority sites which urgently need electricity, and these should be the one to connect first.</p> | <p>Labor Management procedure is being prepared for compliance on workers rights and employers responsibilities.</p> <p>Health and safety will be complied to World Bank Standards, and the priority will be to eliminate the harm, but where not possible to Personal Protective Equipment will be used to ensure the safety of workers, employers , Visitors and the public.</p> <p>The sites provided by the district will be handed over to EDCL Planning department for their consideration.</p> |
| | Local community | Rubona Cell | <p>The community appreciated this project and they are waiting impatiently the starting.</p> <p>They said that they are expecting a lot from this project, like getting casual jobs, but also it will help them in the employment creation like welding, using mill, haircut saloon</p> | <p>The district priority sites to be connected, will be handed over to EDCL Planning so that they can be taken into consideration.</p> <p>They will always be consulted before the implementation of any project so that what is being done to them (they service they are</p> |

| Dates | Consulted person/ Position | Venue | Observation / Points raised by stakeholders | Suggestions by stakeholders and how they are considered by the program (proposed action in this ESMF) |
|--|--|-----------------------|---|---|
| | | | but also, they are fed up of darkness caused by the lack of electricity access | receiving) should be done considering the district priority |
| MUHANGA administrative District | | | | |
| February 12, 2020 | V/Mayor ED Director of OSC REG Branch Manager District director of planning District Electrical engineer District environmental officer Sector Land managers ES-Sectors | District meeting hall | Due to the big pace of development we are undergoing, everyone needs access to electricity ever. Any thing that you will need will be granted from the district as the main stakeholder. However, any planning on new sites to be connected should take into account the priority from district. The contractor should pay his workers on time. Always contractor do not pay labors on time. How will your project protect workers from accidents? | The Project team appreciated the effort of the district engagement, and told the meeting attendant that the sites as prioritized by the district will be handed over to EDCL planning department for their consideration. However, after the project effectiveness, the project team will also consult the district to update the data. The project will use World bank environmental health and social guidelines to comply with occupational health and safety and Labor Management Procedure (LMP) is being prepared so that detail |

| Dates | Consulted person/ Position | Venue | Observation / Points raised by stakeholders | Suggestions by stakeholders and how they are considered by the program (proposed action in this ESMF) |
|-------------------|--|-------------|--|---|
| | | | | concerning worker right should be captured and monitored for effective implementation. |
| February 13, 2020 | MINICOM-BUGESERA E-waste Recycling Facility: e-Waste management specialist | Head Office | <p>We are ready to manage electronic waste; However, the problem is that we normally do not get the totality of this waste due to scavengers who always go everywhere looking for the recyclable waste as illegal business. There is also people who do not know/do not care that if electronic material is used up should not be disposed of with other waste, but should be given to people who can treat them.</p> <p>We advise you to mobilize solar home systems companies to fully work with us and avoid to the extent possible the scavengers. People using the These solar Home Systems should be mobilized and make sure that at the end of solar system life, especially those batteries, they give them back to the company that sold the device to them, so that they can safely arrive at this e-waste recycling facility which was done for that purpose.</p> | <p>The safeguards team through Social and Primary Energy department in EDCL will liaise with all solar Home Systems companies on this issue. They will be mobilized to mobilize the clients and give a regular report on the status of devices and the waste management arrangement in place.</p> |

| Dates | Consulted person/ Position | Venue | Observation / Points raised by stakeholders | Suggestions by stakeholders and how they are considered by the program (proposed action in this ESMF) |
|--|--|-------------------------------|---|--|
| RUHANGO administrative district | | | | |
| 17/02/2020 | Dir OSC District irrigation officer District environmental officer REG Branch Manager | District headquarters offices | <p>The district together with REG branch manager proposed the site which are more isolated and need urgently electricity according to their priority.</p> <p>All people can not afford the price of meters. Will you give them free meters?</p> <p>The compensation is an issue. How are you planning to handle this?</p> <p>The district dumpsite will help for waste management; However, Inorganic waste is becoming accumulated and will have to be transported for recycling industries.</p> | <p>The priority sites that were given will be handed over to EDCL planning department for their consideration</p> <p>Normally REG facilitate all people who do not have the means to purchase the meter. It is given before and the payment is postpaid. You pay 50% as you buy the cash power.</p> <p>We will involve local authorities and local population by timely public awareness campaign after the project effectiveness.</p> |
| NYANZA Administrative District | | | | |
| 18/02/2020 | V/Mayor ED Director of OSC REG Branch Manager | District meeting hall | <p>Due to the big pace of development we are undergoing, everyone needs access to electricity ever. Any thing that you will need will be granted from the district as the main stakeholder. However, any planning on new sites to be connected should take into account the priority from district.</p> | <p>The Project team appreciated the effort of the district engagement, and told the meeting attendant that the sites as prioritized by the district will be handed over to EDCL planning department for their consideration.</p> |

| Dates | Consulted person/ Position | Venue | Observation / Points raised by stakeholders | Suggestions by stakeholders and how they are considered by the program (proposed action in this ESMF) |
|--|---|-------------------------------------|---|--|
| | District director of planning District Electrical engineer District environmental officer Sector Land managers ES-Sectors | | The contractor should pay his workers on time. Always contractor do not pay labors on time. How will your project protect workers from accidents? | However, after the project effectiveness, the project team will also consult the district to update the data. The project will use World bank environmental health and social guidelines to comply with occupational health and safety and Labor Management Procedure (LMP) is being prepared so that detail concerning worker right should be captured and monitored for effective implementation. |
| NYAMAGABE Administrative District | | | | |
| 19/02/2020 | DES Dir OSC Dir Planning District Environmental Officer | District Executive Secretary Office | There is a problem of information sharing concerning expropriation process and update. What will you do improve this? Labors always claim from contractors, please follow up on contractors. | The information on the update for expropriation for PAP can be now accessed through website on the link: https://www.reg.rw/customer-service/expropriation/ |

| Dates | Consulted person/ Position | Venue | Observation / Points raised by stakeholders | Suggestions by stakeholders and how they are considered by the program (proposed action in this ESMF) |
|--|--|------------------------------|--|---|
| | District Electricity Engineer; REG Branch Manager GACURABWENGE SLM | | <p>The Health and safety of workers should be given the value, and workers be given the Personal Protective Equipment.</p> <p>The project should consider giving job to local people for their economic development.</p> <p>The District has the priority sites which urgently need electricity, and these should be the one to connect first.</p> | <p>Labor Management procedure is being prepared for compliance on workers rights and employers responsibilities.</p> <p>Health and safety will be complied to World Bank Standards, and the priority will be to eliminate the harm, but where not possible to Personal Protective Equipment will be used to ensure the safety of workers, employers , Visitors and the public.</p> <p>The sites provided by the district will be handed over to EDCL Planning department for their consideration.</p> |
| NYARUGURU Administrative District | | | | |
| 20/02/2020 | Dir OSC District Social development District environmental officer | District headquarter offices | <p>The district together with REG branch manager proposed the site which are more isolated and need urgently electricity according to their priority.</p> <p>The district is developing itself, the only matter is the lack of reliable energy to make heavy industries working. The</p> | <p>Priority sites provided will be given to EDCL Planning department for their consideration.</p> |

| Dates | Consulted person/ Position | Venue | Observation / Points raised by stakeholders | Suggestions by stakeholders and how they are considered by the program (proposed action in this ESMF) |
|-------------------------------------|--|-------------------------------|--|--|
| | REG Branch Manager | | <p>existing electricity service is single phased and this only facilitates us only for lighting purposes, we can not use machines.</p> <p>We will help the project to speed up compensation by getting involved in all steps of the compensation up to the district. We will carry out the public awareness campaign to mobilize people avail the required documents on time, and we will help them to secure those documents easily like land title, id cards, account so that we can have all PAPs cleared on time</p> | There is another project under Enabel which has started doing the upgrade from single phase to three phases. |
| HUYE Administrative District | | | | |
| 21/02/2020 | Mayor Dir OSC District forest officer District irrigation officer | District headquarters offices | Compensation of losses is an issue since the payments process is long. After having collected the signed lists of beneficiaries on which the damaged assets and owed amount is mentioned, the lists are sent to continue the journey to Kigali EDCL headquarter to MINECOFIN, which pays beneficiaries through BNR (Banque National du Rwanda) then from their | District officers suggested the decentralization of not only the funds for compensation and expropriation but also to be given the ESIA report and involve its officers in the |

| Dates | Consulted person/ Position | Venue | Observation / Points raised by stakeholders | Suggestions by stakeholders and how they are considered by the program (proposed action in this ESMF) |
|---|---|------------------------------|---|---|
| | District environmental officer OSC Legal Advisor | | the compensation is deposited to the beneficiary's account. The process is too long. The district has the two dumpsites where waste is sorted. However, Inorganic waste is becoming accumulated and will have to be transported for recycling industries. | planning and implementation of EARP subprojects The project will conduct public consultations during environmental and social studies and reports will be disclosed to the public. |
| GISAGARA Administrative District | | | | |
| 22/02/2020 | Dir OSC Sector Executive Secretaries Sector Land managers REG Branch manager | District headquarters office | The district together with REG branch manager proposed the site which are more isolated and need urgently electricity according to their priority. All people cannot afford the price of meters. Will you give them free meters? The compensation is an issue. How are you planning to handle this? | The priority sites that were given will be handed over to EDCL planning department for their consideration Normally REG facilitate all people who do not have the means to purchase the meter. It is given before and the payment is postpaid. You pay 50% as you buy the cash power. We will involve local authorities and |

Annex 8: Timeframe for the consulted stakeholders

a. Districts Administration

| Dates of consultation | Administrative District name/Local Government | Participants category | Number of participants by gender | |
|-----------------------|---|---|----------------------------------|--------|
| | | | Male | Female |
| 20/01/2020 | Karongi | Districts officials, Sector Executive Secretaries, SLM and Local Community, EARP Team, EUCL District Branch Manager | 19 | 3 |
| 21/01/2020 | Rusizi | Districts officials, Sector Executive Secretaries, SLM and Local Community, EARP Team, EUCL District Branch Manager | 26 | 6 |
| 21/01/2020 | Nyamasheke | Districts officials, Sector Executive Secretaries, SLM and Local Community, EARP Team, EUCL District Branch Manager | 8 | 2 |
| 23/01/2020 | Rutsiro | Districts officials, Sector Executive Secretaries, SLM and Local Community, EARP Team, EUCL District Branch Manager | 12 | 1 |
| 23/01/2020 | Nyabihu | Districts officials, Sector Executive Secretaries, SLM and Local Community, EARP Team, EUCL District Branch Manager | 17 | 4 |
| 24/01/2020 | Ngororero | Districts officials, Sector Executive Secretaries, SLM and | 15 | 3 |

| Dates of consultation | Administrative District name/Local Government | Participants category | Number of participants by gender | |
|-----------------------|---|---|----------------------------------|--------|
| | | | Male | Female |
| | | Local Community, EARP Team, EUCL District Branch Manager | | |
| 27/01/2020 | Rubavu | Districts officials, Sector Executive Secretaries, SLM and Local Community, EARP Team, EUCL District Branch Manager | 9 | 1 |
| 31/02/2020 | Gakenke | Districts officials, Sector Executive Secretaries, SLM and Local Community, EARP Team, EUCL District Branch Manager | 29 | 14 |
| 25/02/2020 | Musanze | Districts officials, Sector Executive Secretaries, SLM and Local Community, EARP Team, EUCL District Branch Manager | 13 | 7 |
| 29/01/2020 | Gicumbi | Districts officials, Sector Executive Secretaries, SLM and Local Community, EARP Team, EUCL District Branch Manager | 27 | 5 |
| 31/01/2020 | Rulindo | Districts officials, Sector Executive Secretaries, SLM and Local Community, EARP Team, EUCL District Branch Manager | 26 | 8 |
| 31/01/2020 | Burera | Districts officials, Sector Executive Secretaries, SLM and | 9 | 2 |

| Dates of consultation | Administrative District name/Local Government | Participants category | Number of participants by gender | |
|-----------------------|---|---|----------------------------------|--------|
| | | | Male | Female |
| | | Local Community, EARP Team, EUCL District Branch Manager | | |
| 13/02/2020 | Bugesera | Districts officials, Sector Executive Secretaries, SLM and Local Community, EARP Team, EUCL District Branch Manager | 7 | 2 |
| 05/02/2020 | Kayonza | Districts officials, Sector Executive Secretaries, SLM and Local Community, EARP Team, EUCL District Branch Manager | 11 | 1 |
| 06/02/2020 | Ngoma | Districts officials, Sector Executive Secretaries, SLM and Local Community, EARP Team, EUCL District Branch Manager | 21 | 9 |
| 06/02/2020 | Nyagatare | Districts officials, Sector Executive Secretaries, SLM and Local Community, EARP Team, EUCL District Branch Manager | 7 | 0 |
| 07/02/2020 | Gatsibo | Districts officials, Sector Executive Secretaries, SLM and Local Community, EARP Team, EUCL District Branch Manager | 9 | 4 |
| 05/02/2020 | Kirehe | Districts officials, Sector Executive Secretaries, SLM and | 8 | 1 |

| Dates of consultation | Administrative District name/Local Government | Participants category | Number of participants by gender | |
|-----------------------|---|---|----------------------------------|--------|
| | | | Male | Female |
| | | Local Community, EARP Team, EUCL District Branch Manager | | |
| 11/02/2020 | Rwamagana | Districts officials, Sector Executive Secretaries, SLM and Local Community, EARP Team, EUCL District Branch Manager | 7 | 2 |
| 12/02/2020 | Muhanga | Districts officials, Sector Executive Secretaries, SLM and Local Community, EARP Team, EUCL District Branch Manager | 27 | 5 |
| 17/02/2020 | Ruhango | Districts officials, Sector Executive Secretaries, SLM and Local Community, EARP Team, EUCL District Branch Manager | 7 | 4 |
| 18/02/2020 | Nyanza | Districts officials, Sector Executive Secretaries, SLM and Local Community, EARP Team, EUCL District Branch Manager | 8 | 3 |
| 8/02/2020 | Kamonyi | Districts officials, Sector Executive Secretaries, SLM and Local Community, EARP Team, EUCL District Branch Manager | 13 | 2 |
| 19/02/2020 | Nyamagabe | Districts officials, Sector Executive Secretaries, SLM and | 13 | 2 |

| Dates of consultation | Administrative District name/Local Government | Participants category | Number of participants by gender | |
|-----------------------|---|---|----------------------------------|--------|
| | | | Male | Female |
| | | Local Community, EARP Team, EUCL District Branch Manager | | |
| 20/02/2020 | Nyaruguru | Districts officials, Sector Executive Secretaries, SLM and Local Community, EARP Team, EUCL District Branch Manager | 9 | 3 |
| 21/02/2020 | Huye | Districts officials, Sector Executive Secretaries, SLM and Local Community, EARP Team, EUCL District Branch Manager | 13 | 2 |
| 22/02/2020 | Gisagara | Districts officials, Sector Executive Secretaries, SLM and Local Community, EARP Team, EUCL District Branch Manager | 9 | 3 |

b. Public and Private Institutions

| Date of consultation | INSTITUTION | FULL NAMES | POSITION |
|----------------------|-------------------------|-----------------------------|---|
| 24/02/2020 | Ministry of Environment | Mr. DUSINGIZIMANA Theophile | Environment & Climate Change Policy Specialist& |

| Date of consultation | INSTITUTION | FULL NAMES | POSITION |
|-----------------------------|---|------------------------------|--|
| 24/02/2020 | MININFRA | Mr. SAFARI Brian | Energy Economist |
| 24/02/2020 | RLUMA | Miss. NISHIMWE M. Grace | Head of Land Administration Department |
| 25/02/2020 | RDB | Mr. KARARA Jean de Dieu | EIA Specialist |
| 25/02/2020 | REMA | Mr. DUHUZE Remy Norbert | Director of environmental regulation and pollution control |
| 24/02/2020 | Rwanda Forest Authority | Mr. MUGABO Jean Pierre | Ag. DG |
| 13/02/2020 | Enviroserve Rwanda Green Park/Rwanda E-waste recycling Facility | Mr. NDUWAYEZU Venuste | Technical Supervisor |
| 25/02/2020 | RURA | Mr. MUTWARE Alexis | Director of electricity and Renewable Energy |
| 26/02/2020 | IRPV | Mr. MUNYABUGINGO Bonaventure | Member of Committee on research and reference prices |

| Date of consultation | INSTITUTION | FULL NAMES | POSITION |
|-----------------------------|-------------------------------|--------------------------|--|
| 26/02/2020 | Energy Private Developers | Mr. NDAYISABA Eduard | Vice Chairman & Director of Operations and Development |
| 26/02/2020 | University of Rwanda | Mr. NSENGUMUREMYI Damien | Academician |
| 17/02/2020 | Catholic Institute of Kabgayi | Dr. Innocent SIMPUNGA | Academician and researcher |

Annex 9: Attendance List of consulted people

| No | Full names | Position |
|--|-----------------------|-------------------|
| KARONGI ADMINISTRATIVE DISTRICT | | |
| 1 | NIRAGIRE THEOPHILE | V/MAYOR ED |
| 2 | NTAKIRUTIMANA GASPARD | ES MUBUGA |
| 3 | NIYONSABA CYRIQUE | ES GITESI |
| 4 | AYABAGABO FAUSTIN | ES BWISHYURA |
| 5 | HABIMANA PROTEGENE | ES GASHALI SECTOR |
| 6 | NKUSI MEDARD | ES RUGABANO |
| 7 | NSENGIYUMVA R. SONGA | ES MUTUNTU |
| 8 | MUDACUMURA APHRODIS | ES MURUNDI |
| 9 | UWIMANA PHANUEL | ES MURAMBI |

| | | |
|--|-------------------------|--------------------------|
| 10 | KUZABAGANWA VEDASTE | ES RWANKUBA |
| 11 | UWIMANA EMMANUEL | SLM/GITESI |
| 12 | UWIMBABAZI ELIE | SLM/RUGANDA |
| 13 | MBATEZIMANA JOSIANE | ETAT CVM |
| 14 | ISAAC MANANTIRENGANYA | ENGINEER |
| 15 | GATERANO ETIENNE | SLM/MUNK |
| 16 | DUSENGIMANA DAMIEN | BRANCH MANAGER |
| 17 | RUKESHA K. EMILE | ES RUBENGERA SECTOR |
| 18 | HAVUGIYAREMYE THARCISSE | LAND MANAGER RUBENGERA |
| 19 | NIKUZE MICHEL | LAND MANAGER RUGABANO |
| 20 | NSANGANIRA VIANNEY | ES/SECTOR |
| 21 | NSHIMYUMUREMYI JOEL | BILLYING OFFICER |
| 22 | DUSABIMANA CONCORDE | TWUMBA SLM |
| RUTSIRO ADMINISTRATIVE DISTRICT | | |
| 1 | RUTAYISIRE M. DEO | ES RUHANGO |
| 2 | HAGENIMANA MATTHIEN | DISTRICT ELECTRICAL ENG. |
| 3 | MUKESHIMANA MARIE ALICE | SLM |
| 4 | KAGABA JEAN BAPTISTE | LAND MANAGER |
| 5 | NDAGIJIMANA ALOYS | LAND MANAGER |
| 6 | HARERIMANA XAVERIEN | LAND MANAGER MANIHIRA |
| 7 | NIZIYIMANA AIME ADRIEN | ENVIRONMENTAL OFFICER |

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|---------------------------------------|--------------------------|---------------------|
| 8 | KABARE JEAN PAUL | EUCL/RUTSIRO BRANCH |
| 9 | RUGABA ABEL | AGRONOME/RUSEBEYA |
| 10 | IREMISHAKA PASCAL | SLM /GIHAGO |
| 11 | SEKAMANA THEOPHILE | SLM/RUHANGO |
| RUBAVU ADMINISTRATIVE DISTRICT | | |
| 1 | NZABONIMPA DEOGRATIAS | V/MAYOR ED |
| 2 | NTIBATEKEREZA INNOCENT | ELECTRICAL ENGINEER |
| 3 | NIYIBIZI NTABYERA HUBERT | DIVISION MANAGER |
| 4 | NDUWAYO ELIE | SLM/CYANZARWE |
| 5 | BUREGEYA EVARISTE | SLM/KANAMA |
| 6 | CAMUBANDI FRED | SLM/BUSASAMANA |
| 7 | KABERA | SLM/KANZENZE |
| 8 | AYINKAMIYE ODILLE | SLM/NYAMYUMBA |
| RUSIZI ADMINISTRATIVE DISTRICT | | |
| 1 | KANKINDI LEONCIE | V/M ED |
| 2 | DUKUZUMUREMYI ANNE MARIE | SES/NYAKARENZO |
| 3 | HABIMANA EMMANUEL | S/E GASHORA |
| 4 | BANZUBAZE THOMAS | LAND MANAGER |
| 5 | NIYOMUGABO YUSUF | LAND MANAGER |
| 6 | MUSHIMIYIMANA JANVIER | ES OF THE SECTOR |
| 7 | RUKESHA EMMANUEL | ES BUTARE SECTOR |

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|----|-----------------------------|-----------------------|
| 8 | NDAMYIMANA DANIEL | ESAI OF THE SECTOR |
| 9 | RWANGO JEAN DE DIEU | ES/NZAHABA SECTOR |
| 10 | HATEGEKIMANA CLEVER | ES GIKUNDAMVURA |
| 11 | MUNYEMANA PROSPER | T.E RUSIZI BRANCH |
| 12 | HABIMANA MATHIAS | ELECTRICITY M.ENG. |
| 13 | NTIKUGURURWA GERVAIS | ES BUGARAMA |
| 14 | NTWUHARUWE NAPOLEON | AIR OF SECTOR |
| 15 | CYIMANA METOR | SCM /GIKUNDAMVURA |
| 16 | MURAGIMANA PIE | SLM/BWENGE |
| 17 | HAGENIMANA JEAN DE DIEU | ES GIHEKE |
| 18 | IRAGUHA BASILE | SLM |
| 19 | IBONABYOSE JEAN DAMASCENE | SLM |
| 20 | KAMANYANA EVELYNE | SLM |
| 21 | BYIRINGIRO ZEPHANIE | SLM |
| 22 | SIBOMANA APHRODIS | SLM |
| 23 | NKURUNZIZA EMMANUEL | SLM |
| 24 | KARANGWA ALEXIS | DISTRICT DASSO COORD. |
| 25 | NIYIBIZI JEAN DE DIEU | ES GIHURWE SECTOR |
| 26 | BISENGIMANA EUGENE | AI ES NYAKABUYE |
| 27 | NZEYIMANA JEAN BEN FONTAINE | LAND MANAGER KAMEMBE |
| 28 | NZABANDORA PIERRE | LAND MANAGER BUGARAMA |

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|--|------------------------|-----------------------|
| 29 | IZADUKIZA MARIE CLAIRE | SLM NYAKARENZO |
| 30 | NYIRANEZA RACHEL | SLM GASHONGA |
| 31 | MUKANYANGEZI CHANTAL | SLM MUGANZA |
| 32 | NEMA ESTHER | SLM MURURU |
| NYABIHU ADMINISTRATIVE DISTRICT | | |
| 1 | UWIMANA BLANDINE | AGRONOME |
| 2 | DUKUZUMUREMYI BEATRICE | |
| 3 | DUSABUMUREMYI CLEMENT | SLM/SHYIRA |
| 4 | NSHIMYUMUKIZA ISRAEL | SLM/KABARA |
| 5 | NIYIGENA ERNEST | SLM/JENDA |
| 6 | BAVUDIRIJE JUVENAL | DIRECTOR of OSC |
| 7 | NDANDU MARCEL | ES of Rurembo sector |
| 8 | KAMPIRE GEORGETTE | ES/JENDA SECTOR |
| 9 | MITALI ADOLPHE | TECHNICAL ENG.NYABIHU |
| 10 | NDAHUNGA PRIMIEN | CUSTOMER CARE OFFICER |
| 11 | NDIKUMANA J. BAPTISTE | AGRONOME |
| 12 | MUSIRIKARE ADALBERT | ES/JOMBA |
| 13 | HABIYAREMYE AMINADABU | LAND MULINGA |
| 14 | BYUKUSENGE EMMANUEL | ES/MULINGA |
| 15 | HAKIZIMANA INNOCENT | ES/KINJOMBO |
| 16 | NDAHIMANA JEAN PAUL | SSLM/KARANGO |

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| 17 | UWIRINGIYIMANA ADEOOTUS | LSLM/RUREMBO |
| 18 | TUYIZERE FIACRE | LAND RAMBURA |
| 19 | NKURUNZIZA JOSEPH | FORESTER MUKANIRA |
| NGORORERO ADMINISTRATIVE DISTRICT | | |
| 1 | PATRICK UWIHOREYE | V/MAYOR ED |
| 2 | KAYANGE CARINE | INFRASTRUCTURE |
| 3 | NIYOYITA FRANCIS | SLM/NDARO |
| 4 | UWIMANA JOSELYNE | SLM/NYANGE |
| 5 | MUNYANEZA FABIEN | INTERN/NGORORERO |
| 6 | NTEZIRYAYO PHILPPE | SLM/HINDIRO |
| 7 | MUJYANAMA MATHIAS | SLM//KAGEYO |
| 8 | MAPENDANO JMV | SLM/NGORORERO |
| 9 | IHORIKIZA MARIE CLAUDINE | SLM/MUHORORO |
| 10 | MUGEMANA J. BOSCO | SLM/KABAYA |
| 11 | TWAYIGIRA J.DE DIEU | SLM/MATYAZO |
| 12 | KAGABO NOEL | SLM/KAVUMU |
| 13 | HABINEZA SIMON PIERRE | T.E NGORORERO |
| 14 | KAYANGE JEAN D AMOUR | ES SECTOR /NGORORERO |
| 15 | NSANZIMANA AIMABLE | SLM/BWIRA |
| 16 | BIZIYAREMYE J. CLAUDE | SLM/GATUMBA |
| 17 | NTAYIMANA JP CELESTIN | DIR.OSC |

| GICUMBI ADMINISTRATIVE DISTRICT | | |
|--|-------------------------|--------------------------|
| 1 | MWANAFUNZI DEOGRATIAS | ES/MIYOVE SECTOR |
| 2 | REBERAHO TELESPORE | AGRONOME/RUSHAKI SECTOR |
| 3 | MANIRAGUHA ANASTASE | FAO/RUSHAKI |
| 4 | NIYITEGEKA ALPHONSE | Ag.ES RUKOMO |
| 5 | NTIVUGURUZWA SYLVESTRE | Ag.ES MANYAGIRO |
| 6 | BYIRINGIRO DAVID | SECTOR LAND MANAGER |
| 7 | MBONIMPAYE HONORE | Ag. LAND OFFICER RWAMIKO |
| 8 | NSHIMYIMANA THEOGENE | LAND OFFICER/MANYAGIRO |
| 9 | BIZIMENYERA THEONESTE | LAND OFFICER/NYANKENKE |
| 10 | NDACYAYISENGA SCHOWLWCK | LAND OFFICER /BUKURE |
| 11 | INGABIRE FRANCINE | LAND OFFICER MUKARANGE |
| 12 | MUKAWIZEYE | LAND OFFICER BUKURE |
| 13 | NTEZIRYAYO ALPHONSE | ELECTRICITY /GICUMBI |
| 14 | CHRYSOLOGUE NGENDAHAHO | REG/EUCL MB |
| 15 | TUGIRIMANA EMMANUEL | SLM/RUKOMO |
| 16 | BAYINGANA JMV VIANNEY | ES/NYAMIYAGA |
| 17 | UWABAGIRA SERAPHINE | LAND OFFICER |
| 18 | HAKIZIMANA EPAPHRODITE | LAND OFFICER |
| 19 | SIBOMANA DAVID GILBERT | LAND OFFICER |
| 20 | NSABIMANA JEAN PAUL | LAND OFFICER/ |

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| 21 | KWITARE LAMBERT | ES/SHANGASHA SECT. |
| 22 | BENINGOMA OSCAR | ES/MUKARANGE |
| 23 | MBARUSHIMANA PRUDENCE | ES/MUTETE |
| 24 | NKUNZABERA SYLVESTRE | ES/BUKURE |
| 25 | RUSIZANA JOSEPH | ES/RWAMIKO SECTOR |
| 26 | JOLIE BEATRICE | ES/NYANKENKE SECTOR |
| 27 | MUNYARUGERERO M. | CRMO/KANIGA |
| 28 | ICYIMANA GERARD | Ag.ES RUTARE |
| 29 | NSHIMIYIMANA VALENS | Ag.ES/BYUMBA |
| 30 | ISHIMWE SAMWEL | LAND OFFICER/MUTETE |
| RULINDO ADMINISTRATIVE DISTRICT | | |
| 1 | MULINDWA PROSPER | V/MAYOR ED |
| 2 | RUBAYITA ERIC | ES KINIHIRA SECTOR |
| 3 | MUTUYIMANA JEANNETTE | ES CYUNGO SECTOR |
| 4 | BIZUMUREMYI AL BASHIR | D ES RULINDO |
| 5 | NIYONIRINGIYE FELICIEN | DIRECTOR OF OSC |
| 6 | AYABAGABO ILDEPHONSE | SLM |
| 7 | NSABIMANA EMMANUEL | SLM |
| 8 | MUHAWENIMANA DESIRE | SECTOR LAND MANAGER |
| 9 | NZEYIMANA JEAN VEDASTE | ES MBOGO |
| 10 | NDAGIJIMANA FRODUALD | ES/RWIGE |

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| 11 | MWUMVINEZAYIMANA FIACRE | E/S B. SECTOR |
| 12 | KAYIRANGA J. NEPO | OSC LAWYER RULINDO HQ |
| 13 | NSENGIYUMVA CHARLES | LAND ADMIN |
| 14 | NDAHAYO LEOPOLD | SLM /CYUNGO |
| 15 | SEBAZUNGU J.BAPTISTE | SLM /KISARO |
| 16 | UWANYAGASANI | SLM/NTARABANA SECTOR |
| 17 | NDARUHUTSE JEAN CLAUDE | SLM/RUKOZO |
| 18 | NDIKUMANA ERNESTE | SLM/MBOGO |
| 19 | IYAKAREMYE PASCAL | SLM/BUYOGA |
| 20 | TWIZERIMANA JEAN BERCHMAS | SLM/RUSINE |
| 21 | MUSHIMIYIMANA JEAN PIERRE | DASSO CYINZUZI SECTOR |
| 22 | NIYONSABA SYMPHORIEN | SLM/BUSHOKI |
| 23 | MUHIGIRA ANTOINE | ES OF SECTOR |
| 24 | SHUMBUSHO PAPIAS | ES OF RUTONDE CELL |
| 25 | UMUBYEYI MEDIATRICE | ES/TUMBA SECTOR |
| 26 | NZEYIMANA PIERRE CLEVER | ES/BUSHOKI SECTOR |
| 27 | UWIRINGIYIMANA THOMAS | RULINDOHQ/BUSHOKI |
| 28 | NYIRAMUGISHA CHRISTINE | SLM/BASE |
| 29 | KUBWAMUNGU ELIE | GOOD GOVERNANCE/MASORO |
| 30 | UGIRIMBABAZI CONCESSA | S/E KAJEVUBA |
| 31 | MUHAYIMANA CELESTIN | RULINDO REG-MANAGER |

| | | |
|--|--------------------------|--------------------------|
| 32 | UMUHOZA MARIE GRACE | SLM/MASORO |
| 33 | NKUNDABERA FAUSTIN | SLM/CYINZUZI |
| MUHANGA ADMINISTRATIVE DISTRICT | | |
| 1 | KAYIRANGA INNOCENT | VICE MAYOR ECONOMIC |
| 2 | KAYIRANGWA VESTINE | ACTING ES/S |
| 3 | BIGIRIMANA J.PAUL | ACTING ES/S |
| 4 | BAZIZANE PACIFIQUE | ACTING ES/CYEZA SECTOR |
| 5 | MUKAMUTARI VALERIE | ES SHYOGWE |
| 6 | DUKUNDANE SERGE | SLM SHYOGWE |
| 7 | NTEZIYAREMYE GERMAIN | ACTING ES KIYUMBA |
| 8 | NYAMINANI AIMABLE | ACTING ES |
| 9 | NTAWURUHUNGA CHARLES | ELECTRICAL ENGINEER |
| 10 | MUKASETI ROSINE | REG BRANCH MANAGER |
| 11 | NZABONIMPA ONESPHORE | Dir OSC MUHANGA DISTRICT |
| 12 | NSENGIMANA SILAS | ES/NYAMABUYE |
| 13 | NDAYISABA AIMABLE | ES KABACUZI |
| 14 | NSHIMIYIMANA JEAN CLAUDE | ES KIBANGU |
| 15 | BYICAZA CLAUDE | Ag MUHANGA |
| 16 | NIRAGIRE EZECHIEL | WATSAN |
| 17 | MVUYEKURE EDOUARD | SLM/RONGI |
| 18 | RUZINDANA FIACRE | AIR ES/MUHANGA |

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| 19 | HAKIZIMANA ALPHONSE | SECTOR LAND MANAGER |
| 20 | MUSHIMIYIMANA ESPERANCE | S.LAND MANAGER |
| 21 | HAGENIMANA EMMANUEL | S.LAND /M.NYAMABUYE |
| 22 | NIYONSENGA ALPHOSE | SECTOR LAND MANAGER |
| 23 | NDACYAYISABA ILDEPHONSE | SECTOR LAND MANAGER |
| 24 | NYIRAMUNINI MUKIZA SOLEIL | SECTOR LAND MANAGER |
| 25 | HABINEZA INNOCENT | SECTOR LAND MANAGER |
| 26 | NKUBITO AMOS | SECTOR LAND MANAGER |
| 27 | NKURUNZIZA J.M.V | SECTOR LAND MANAGER |
| 28 | NTURANYENABO EMMANUEL | SECTOR LAND MANAGER |
| NGOMA ADMINISTRATIVE DISTRICT | | |
| 1 | MUTABAZI CELESTIN | DIRECTOR OF OSC |
| 2 | KANAYOGE ALEXIS | ES NGOMA |
| 3 | TURYAREBA SYLVESTRE | ELECTRICITY ENG.NGOMA |
| 4 | SEMATABARO MBWECK | DISTRICT ENV.OFFICER |
| RWAMAGANA ADMINISTRATIVE DISTRICT | | |
| 1 | IGOOMA STEPHEN | BM/REG |
| 2 | MUKANDAYISHIMIYE OLIVE | DISTRICT EME |
| 3 | RUBANGUTSANGABO ANSELME | LAND VALUER |
| KAYONZA ADMINISTRATIVE DISTRICT | | |
| 1 | JEAN DE DIEU NYIRINGANGO | BRANCH MANAGER |

| | | |
|--|--------------------------|--------------------------|
| 2 | DUKUZUMUREMYI EPIPHANIE | DISTRICT EME |
| 3 | GAKUNZI EMMANUEL | Dir OSC |
| 4 | KARANGWAYIRE CHARLOTTE | LAND OFFICER/KABARONDO |
| 5 | UZABAKIRIHO LAUBEN | UMUTURAGE/CYABAJWA |
| 6 | TWIZEYEMUNGU NOWA | USHINZWE ISIBO KABARONDO |
| 7 | NSENGIYUMVA PATRICE | UMUTURAGE |
| 8 | NSENGIYUMVA CELESTIN | UMUTURAGE CYABAJWA |
| 9 | NDUWAYEZU | UMUTURAGE |
| 10 | NTAWUKIRUWABO FERETIEN | UMUTURAGE |
| 11 | MUNYANEZA JEAN DAMASCENE | MUTEKANO |
| 12 | UWIMANA SAMSON | UMUJYANAMA |
| 13 | MBONIGABA JEAN PAUL | UMUTURAGE |
| 14 | MANIRAGUHA LAURANT | UMUTEKANO |
| 15 | NIZEYIMANA ERIC | MUTWARASIBO |
| 16 | NSHIMIYIMANA JEAN PIERRE | MUTWRASIBO |
| 17 | NDAGIJIMANA EMMANUEL | USHINZWE UMUTEKANO |
| 18 | MUSAYIDIZI ANANIAS | ES OF CELL |
| NYAGATARE ADMINISTRATIVE DISTRICT | | |
| 1 | MUSHABE DAVID CLAUDIEN | MAYOR/NYAGATARE |
| 2 | NIYONKURU BENOIT | BM/REG |
| 3 | SAM GATUNGE | Dir OS SOCIAL |

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| 4 | MUGENZI | ENVIRONMENTAL |
| 5 | MANIHIRA JEAN CLAUDE | BUILDING INSPECTOR |
| 6 | UWIZEYIMANA ETIENNE | ELECTRICAL ENGINEER |
| KAMONYI ADMINISTRATIVE DISTRICT | | |
| 1 | BAHIZI EMMANUEL | DES |
| 2 | KALISA ROSINE | REG-MANAGER |
| 3 | ABRAHAM UKWISHAKA | DIRECTOR/OSC |
| 4 | RUBADUKA SAMSON | DIRECTOR/PM&E Ag. |
| 5 | KABALISA VALUAS | DDMO |
| 6 | UZABATUNGA BERTRARD | SLM GACURABWENGE SECT. |
| 7 | MINANI JEAN PAUL | TEACHER (RUBONA PRIMARY) |
| 8 | NISHIMWE ALLERUA | TAILLEUR/GACURABWENGE |
| 9 | HITAYEZU FIDELE | UMUCURUZI/RUBONA |
| 10 | HAKUZIYAREMYE XAVER | UMUCURUZI/RUBONA |
| 11 | NDIHOKUBWAYO AROYS | UMUCURUZI/RUBONA |
| 12 | NSENGIYUMVA JUVENSI | UMUCURUZI |
| 13 | BIKORIMANA PASTOR | EPR |
| 14 | NSENGIYUMVA JEAN | UMUHINZI/UMWUBATSI |
| KIREHE ADMINISTRATIVE DISTRICT | | |
| 1 | MUZUNGU GERALD | MAYOR/KIREHE |
| 2 | EGIDE MASUMBUKO | CUSTOMER CARE OFFICER |

| | | |
|---|-----------------------|----------------------------|
| 3 | MARC NTIRENGANYA | ELECTRICIAN |
| 4 | BUTETO MONIQUE | DISTRICT IRRIGATION OFICER |
| 5 | NGIRABAKUNZI OCTAVIEN | DISTRICT ENVIRON. OFICER |
| 6 | KALINDA M. VITAL | FOREST&NR |
| 7 | MUNYANEZA WILLIAM | DIR OSC/KIREHE DISTRICT |

GAKENKE ADMINISTRATIVE DISTRICT

| S/N | FULL NAME | POSITION |
|-----|------------------------|---------------------------|
| 1 | NDAYISENGA P. FRED | CRNO/MINAZI SECTOR |
| 2 | NDATIMANA ALFRED | INTERNAL AUDITOR |
| 3 | MULANGI RONALD | INTERNAL AUDITOR |
| 4 | MUNYANEZA EMMANUEL | RUSHAKI/ESJOMA |
| 5 | NDAGIJIMANA ZEPHANIE | RUSHAKI/GS KARUNGU |
| 6 | NSENGIYUMVA FRANCOIS | SECTOR ACCOUNTANT /RULI S |
| 7 | J BOSCO TWUZUYEMBAZI | GS MUYUNGWE |
| 8 | TWIZEYIMANA ALPHONSE | RP RULI |
| 9 | MUSENGAYUMVE FRANCOISE | GS CONGOLI |
| 10 | NTIRENGANYA EPIMAQUE | GAKENKE DISTRICT |
| 11 | NSEKANABO ALEXANDRE | GS KIREBE/KARAMBO |
| 12 | NSENGIYUMVA EMMANUEL | KIVURUGA/GAKENKE |
| 13 | EMMANUEL | BHIO/GAKENKE D |
| 14 | MUGWANEZA PACIFIQUE | EP RWANKUBA/HEADTEACHER |

| | | |
|----|---------------------------|-----------------------------|
| 15 | HAKIZIMANA CALLIXTE | GS.BUSAN/H.TEACHERANE |
| 16 | MUKANDAKALI REGINE | H. TEACHER MUYONGWE/GAKENKE |
| 17 | HATEGEKIMANA THEONESTE | ACCOUNTANT |
| 18 | SAFARI JEAN BOSCO | TUTULAIRE |
| 19 | UMUTESI EMERTHE | RULI |
| 20 | MUKARUGWIRO ANGELE | MUHONDO |
| 21 | NYIRAHAKIZIMANA DOMITILLE | COKO |
| 22 | HAGENIMANA LEONIE | MINAZI |
| 23 | BUREGEYA JEAN DAMASCENNE | GASHENYI |
| 24 | MUZINDUTSI JEAN PIERRE | GASHENYI |
| 25 | NAMBAJIMANA JEAN | NEMBA |
| 26 | NDORIMANA D | GASHENYI |
| 27 | MUKANOHELI PENINE | KIVURUGA |
| 28 | RENZAHO VIATEUR | RUSASA |
| 29 | HARAGIRIMANA GERARD | RULI/H.TEACHER |
| 30 | NDACYAYISENGA WELLARS | RULI/H.TEACHER |
| 31 | MUGISHA THEOPHILE | DIRECTEUR/KAMUBUGA |
| 32 | MUNYEMANA GRATIEN | DIRECTEUR/BUYANGE/MATABA |
| 33 | K. PHOCAS | H.T.E.P.RUKORO 2 |
| 34 | NDAGIJIMANA FRODOUARD | H. TEACHER |
| 35 | BICAMUMAMUKUBA JMV | H.TEACHER |

| | | |
|----|----------------------------|--------------------|
| 36 | MANIRAKIZA ELISOPHON | H.TEACHER/MINAZI |
| 37 | RURANGIRWA FERDINAND | H.TEACHER CYABINGO |
| 38 | SOBUGA FAUSTIN | H.TEACHER |
| 39 | BISENGIMANA JANVIER | E.S MUHONDO |
| 40 | HAKIZIMANA JEAN BOSCO | ES KARAMBO |
| 41 | NDANGIZI KAGOBORA ETIENNE | ES RUSHASHI |
| 42 | NDACYAYISENGA PATRICK | ES COKO |
| 43 | NSENGUMUREMYI CASSIEN | ES AI NEMBA |
| 44 | RWIZIGURA SESHOB A AIMABLE | E.C/GASHENYI |
| 45 | MUKEBWAMANZI GAUDENCE | ES /KIVURUGA |
| 46 | MWISENEZA ERIC | ES MUGUNGA |
| 47 | MUKESHIMANA ALICE | ES CYABINGO |
| 48 | NKURUNZIZA J.BOSCO | ES/SECTOR |
| 49 | UWIMANA CATHERINE | UMASOC GAKENKE |
| 50 | AIME FRANCOIS NIYONSENGA | VICE MAYOR ED |
| 51 | NKURANGA JOSEPH | DES |
| 52 | CHARLES R. NSANZABANDI | DM |
| 53 | MUKANGANGO FLORA | DAF/NEMBA DH |
| 54 | Dr KANEZA DEOGRATIAS | DG NEMBA HOSPITAL |
| 55 | MBONYINSHUTI ISSAIE | ES MATABA |
| 56 | GASASA EVERGISTE | ES MUZO |

| 57 | DUSABIMANA ALEXIS | COMPTABLE DISTRICT |
|--|-----------------------------|----------------------|
| 58 | KAMANA ALPHONSE | COMPTALE MUZO SECTOR |
| 59 | HABUMUMUREMYI JEAN BAPTISTE | SCHOOL MANAGER |
| 60 | HAGUMIMANA STRATON | SCHOOL MANAGER |
| BUGESERA ADMINISTRATIVE DISTRICT | | |
| S/N | FULL NAME | POSITION |
| 1 | NZAMURAMBAHO VALENS | ELECTRICAL ENGINEER |
| 2 | MUDASINGWA ALEX | REG-BUGESERA BM |
| 3 | NKURUNZIZA K. EGIDE | Ag. Dir OSC |
| NYAMAGABE ADMINISTRATIVE DISTRICT | | |
| S/N | FULL NAME | POSITION |
| 1 | KARINGANIRE INNOCENT | REG BM |
| 2 | EUGENE | REG T.E |
| 3 | UWIZERA DESIRE | NYARUGURU Dir OSC |
| 4 | NKUBITO GILDAS | Ag. Dir OSC |
| GISAGARA ADMINISTRATIVE DISTRICT | | |
| S/N | FULL NAME | POSITION |
| 1 | DOMINIQUE BAKENERINZUNGU | REG MANAGER |
| 2 | MAURICE BAYINGANA | DIRECTOR OSC |
| 3 | HABINEZA JEAN PAUL | VMED |
| 4 | KABANDA CLAUDE | ENVIRONMENT OFFICER |

| 5 | SAFARI PACIFIQUE | ELECTRICITY OF MAINTAINANCE |
|---------------------------------------|-----------------------|--------------------------------------|
| NYANZA ADMINISTRATIVE DISTRICT | | |
| S/N | FULL NAME | POSITION |
| 1 | MARCEL HABIMANA | REG/EUCL |
| 2 | NSHIMYUMUREMYI EPHRON | NYANZA DISTRICT /ELECTRICAL ENGINEER |
| 3 | HABIMANA EVARISTE | NYANZA Dir of OSC |
| 4 | USENGIMANA PHILBERT | DISTRICT ENV.OFFICER |
| NYANZA ADMINISTRATIVE DISTRICT | | |
| S/N | FULL NAME | POSITION |
| 1 | KAYIBANDA OMAR | BRANCH MANAGER |
| 2 | SEBUTEGE ANGE | MAYOR |
| 3 | MUSAFIRI JEAN PIERRE | DIRECTOR I.OSC |

Annex 10: Chance find procedures under RUEAP

Chance find procedures under Rwanda Universal Energy Access Program will be designed as follows:

- Immediate Stop the construction activities in the area of the chance find.
- Delineate the discovered site or area.
- Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be present until the responsible local authorities take over. The Institute of National Museum of Rwanda shall be responsible for significant movable and immovable cultural property that pertains to Rwanda history, heroes and the conservation of historical artifacts and the National Museum shall be responsible for significant movable and immovable cultural and natural property pertaining to collections of fine arts, archaeology, anthropology, botany, geology, zoology and astronomy, including its conservation aspect. Institute of National Museum of Rwanda Cultural Properties Division take over. The address of Institute of National Museum of Rwanda is as follows:

- Rwanda, Huye
 - Address: SH IRD 2
 - P.O.BOX 6397, Kigali
 - +250730741093
 - +250783379597
 - E-mail: info@museum.gov.rw
- Notify the supervisory Engineer who in turn will notify the responsible local authorities and the Institute of National Museum of Rwanda Cultural Properties Division immediately (less than 24 hours).
 - Contact the responsible local authorities and the Institute of National Museum of Rwanda Cultural Properties Division who would be in charge of protecting and preserving the site before deciding on the proper procedures to be carried out. This would require a preliminary evaluation of the findings to be performed by the archaeologists of the Institute of National Museum of Rwanda Cultural Properties Division (within 72 hours). The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage, including the aesthetic, historic, scientific or research, social and economic values.
 - Ensure that decisions on how to handle the finding be taken by the responsible authorities and the Institute of National Museum of Rwanda Cultural Properties Division. This could include changes in the layout (such as when the finding is an irremovable remain of cultural or archaeological importance) conservation, preservation, restoration and salvage.
 - Implementation for the authority decision concerning the management of the finding shall be communicated in writing by the Institute of National Museum of Rwanda Cultural Properties Division; and
 - Construction work will resume only after authorization is given by the responsible local authorities and the Institute of National Museum of Rwanda, Cultural Properties Division concerning the safeguard of the heritage.
 - These procedures must be referred to as standard provisions in construction contracts, Safeguards Procedures for Inclusion in the Technical Specifications for Contracts. During project supervision, the Site Engineer in collaboration with the contractor safeguards shall monitor the above regulations relating to the treatment of any chance find encountered are observed.
 - Relevant findings will be recorded by the safeguards and will be reported in monitoring and Evaluation Report on quarterly basis to the World Bank, and Implementation Completion Report on safeguards

part will assess the overall effectiveness of the project's cultural property mitigation, management, and activities when the chance find encountered during the implementation.

Annex 11: Environment Health and Safety Guidelines for Electric Power Transmission and Distribution

The EHS Guidelines for Electric Power Transmission and Distribution include information relevant to power transmission between a generation facility and a substation located within an electricity grid, in addition to power distribution from a substation to consumers located in residential, commercial, and industrial areas.

1. Environmental Impacts mitigation guidelines

Right-of-way construction

- Proper Site transmission and distribution rights-of-way, access roads, lines, towers, and substations to avoid critical habitat through use of existing utility and transport corridors for transmission and distribution, and existing roads and tracks for access roads, whenever possible;
- Installation of transmission lines above existing vegetation to avoid land clearing;
- Avoidance of construction activities during the breeding season and other sensitive seasons or times of day;
- Revegetation of disturbed areas with native plant species; Removal of invasive plant species during routine vegetation maintenance (see right-of-way maintenance section below).

Right of way maintenance

- Implement an integrated vegetation management approach (IVM). The selective removal of tall-growing tree species and the encouragement of low-growing grasses and shrubs. Observing manufacturer machinery and equipment guidelines, procedures with regard to noise, and oil spill prevention and emergency response;
- Avoiding clearing in riparian areas;
- Avoiding use of machinery in the vicinity of watercourses.

Forest Fires

- Monitoring right-of-way vegetation according to fire risk;
- Removing blowdown and other high-hazard fuel accumulations;
- Time thinning, slashing, and other maintenance activities to avoid forest fire seasons;

- Planting and managing fire resistant species (e.g. hardwoods) within, and adjacent to, rights-of-way; Establishing a network of fuel breaks of less flammable materials or cleared land to slow progress of fires and allow firefighting access.

Avian and Bat Collisions and Electrocutions

- Aligning transmission corridors to avoid critical;
- Maintaining 1.5 meter (60-inch) spacing between energized components and grounded hardware or, where spacing is not feasible, covering energized parts and hardware;
- Considering the installation of underground transmission and distribution lines in sensitive areas (e.g. critical natural habitats).

Aquatic Habitat Alteration

- Site power transmission towers and substations to avoid critical aquatic habitat (e.g. watercourses, wetlands, and riparian areas);
- Minimizing clearing and disruption to riparian vegetation.

Electric and Magnetic Fields

- Evaluating potential exposure to the public against the reference levels developed by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). Average and peak exposure levels should remain below the ICNIRP recommendation for General Public Exposure;
- Considering siting new facilities so as to avoid or minimize exposure to the public. Installation of transmission lines or other high voltage equipment above or adjacent to residential properties or other locations intended for highly frequent human occupancy, (e.g. schools or offices), should be avoided;
- If EMF levels are confirmed or expected to be above the recommended exposure limits, application of engineering techniques should be considered to reduce the EMF produced by power lines or transformers.

Hazardous Materials

- The use of SF₆ should be avoided due to its potential GHGs potential effect.
- Replacing existing transformers and other electrical equipment containing PCB, and ensuring appropriate storage, decontamination, and disposal of contaminated units;
- Prior to final disposal, retired transformers and equipment containing PCB should be stored on a concrete pad with curbs sufficient to contain the liquid contents of these containers should they be spilled or leaked.

The storage area should also have a roof to prevent precipitation from collecting in the storage area. Disposal should involve facilities capable of safely transporting and disposing of hazardous waste containing PCB.

Wood Preservatives

- Poles should be pre-treated at an appropriate facility to ensure chemical fixation and prevent leaching, and to impede the formation of surface residues at the right-of-way.

2. Occupational Health and Safety guidelines

Occupational health and safety hazards specific to electric power transmission and distribution projects primarily include: Live power lines; Working at height; Electric and magnetic fields; Exposure to chemicals

Live Power lines

- Only allowing trained and certified workers to install, maintain, or repair electrical equipment;
- Deactivating and properly grounding live power distribution lines before work is performed on, or in close proximity, to the lines;
- Ensuring that live-wire work is conducted by trained workers with strict adherence to specific safety and insulation standards;
- Workers should not approach an exposed energized or conductive part even if properly trained unless: The worker is properly insulated from the energized part with gloves or other approved insulation or the energized part is properly insulated from the worker and any other conductive object or the worker is properly isolated and insulated from any other conductive object (live-line work);
- Where maintenance and operation is required within minimum setback distances, specific training, safety measures, personal safety devices, and other precautions should be defined in a health and safety plan;
- Workers not directly associated with power transmission and distribution activities who are operating around power lines or power substations should adhere to local legislation, standards, and guidelines relating to minimum approach distances for excavations, tools, vehicles, pruning, and other activities;
- Minimum hot stick distances may only be reduced provided that the distance remaining is greater than the distance between the energized part and a grounded surface.

Working at height on poles and structures

- Testing structures for integrity prior to undertaking work;

- Implementation of a fall protection program that includes training in climbing techniques and use of fall protection measures;
- Inspection, maintenance, and replacement of fall protection equipment; and rescue of fall-arrested workers, among others;
- Establishment of criteria for use of 100 percent fall protection (typically when working over 2 meters above the working surface, but sometimes extended to 7 meters, depending on the activity). The fall protection system should be appropriate for the tower structure and necessary movements, including ascent, descent, and moving from point to point;
- Installation of fixtures on tower components to facilitate the use of fall protection systems;
- Provision of an adequate work-positioning device system for workers; Connectors on positioning systems should be compatible with the tower components to which they are attached;
- Hoisting equipment should be properly rated and maintained and hoist operators properly trained;
- Safety belts should be of not less than 16 millimeters (mm) (5/8 inch) two-in-one nylon or material of equivalent strength. Rope safety belts should be replaced before signs of aging or fraying of fibers become evident;
- When operating power tools at height, workers should use a second (backup) safety strap;
- Signs and other obstructions should be removed from poles or structures prior to undertaking work;
- An approved tool bag should be used for raising or lowering tools or materials to workers on structures.

Electric and magnetic fields Electric and magnetic fields (EMF)

- Identification of potential exposure levels in the workplace, including surveys of exposure levels in new projects and the use of personal monitors during working activities;
- Training of workers in the identification of occupational EMF levels and hazards;
- Establishment and identification of safety zones to differentiate between work areas with expected elevated EMF levels compared to those acceptable for public exposure, limiting access to properly trained workers;
- Implementation of action plans to address potential or confirmed exposure levels that exceed reference occupational exposure levels developed by international organizations such as the (ICNIRP), and the Institute of Electrical and Electronics Engineers (IEEE). Action plans to address occupational exposure may include limiting exposure time through work rotation, increasing the distance between the source and the worker, when feasible, or the use of shielding materials.

Exposure to chemicals

- Train personnel to apply pesticides and ensure that personnel have received the necessary certifications, or equivalent training where such certifications are not required;
- Respect post-treatment intervals to avoid operator exposure during reentry to crops with residues of pesticides;
- Ensure hygiene practices are followed to avoid exposure of family members to pesticides residues.

3. Community Health and Safety guidelines

The operation of live power distribution lines and substations may generate the following industry-specific impacts to the community: Electrocutation; Electromagnetic interference; Visual amenity; Noise and Ozone and Aircraft Navigation Safety

Electrocutation

- Use of signs, barriers (e.g. locks on doors, use of gates, use of steel posts surrounding transmission towers, particularly in urban areas), and education / public outreach to prevent public contact with potentially dangerous equipment;
- Grounding conducting objects (e.g. fences or other metallic structures) installed near power lines, to prevent shock.

Noise and Ozone

- To mitigate this impact during project planning stages to locate rights-of-way away from human receptors, to the extent possible and use of noise barriers or noise canceling acoustic devices should be considered as necessary.

4. Performance Indicators and Monitoring

Environment: Environmental monitoring activities should be based on direct or indirect indicators of emissions, effluents, and resource use applicable to the particular project. Monitoring frequency should be sufficient to provide representative data for the parameter being monitored. Monitoring data should be analyzed and reviewed at regular intervals and compared with the operating standards so that any necessary corrective actions can be taken.

Occupational Health and Safety: Projects should try to reduce the number of accidents among project workers (whether directly employed or subcontracted) to a rate of zero, especially accidents that could result in lost work time, different levels of disability, or even fatalities. Facility rates may be benchmarked against the performance

of facilities in this sector in developed countries through consultation with published sources. Facilities should also maintain a record of occupational accidents and diseases and dangerous occurrences and accidents.

Annex 12: Guidelines for Management of Solar Panels and Batteries (including Recycling/Safe Disposal) in Off-grid Electrification (part of Component 3)

1. Quality requirement

Crystalline type solar PV panels are the only minimum quality recommended panels for importation.

2. Minimum Service level requirements

They should have enough electricity to power at least:

- Three lamps of at least 120 lumens each, operating at least four hours per day
- A mobile phone charge supply for at least two hours per day
- A radio charge supply for at least five hours per night
- Supply the above loads for least one day without input from the solar module/when there is sunshine
- Product labeling for system part is mandatory. Eg: Batteries: Voltage storage capacity(in mAh, Ah, or Wh), battery chemistry(eg: lead-acid, lithium iron phosphate, lithium-ion,...)
- Dismountable system parts (eg: lamp and battery) and system compatibility is recommended to allow for spare parts replacement.

3. Warranty requirements

- A minimum of three years warranty and after sales contract that commits to the availability of spare parts and technical service for minimum five years after the installation of the system.

4. Electrical installation

Electrical regulations shall follow the REGULATIONS 002/EL/ENRGY/RURA/2012 ON ELECTRICAL INSTALLATIONS

5. Battery

No batteries should contain Cadmium or Mercury at levels greater than treatable amounts

6. Agreement

The agreement of between purchase and supplier shall cover the following:

- Responsibilities of purchase/user with timeline
- Responsibilities of the supplier
- Dispute resolutions/complaints handling
- Details of the after sales services including timeline,

7. Waste management

The supplier, herein the company that has contract with EDCL to supply the solar home system in the community should:

- Have contract of waste collection and transportation with Enviroserve Rwanda Green Park/Rwanda E-waste recycling Facility which can recycle the panel and the used batteries.
- Submit the waste management Plan providing the details about collection and transportation of used panel and batteries
- The waste management plan should be established based on the annex 12 of Waste management Plan of this ESMF,
- Waste management should comply with REGULATIONS N0 002 OF 26/04/2018 GOVERNING E-WASTE MANAGEMENT IN RWANDA

Annex 13: Indicative contents of waste management plan

- Introduction: Here the contractor should provide the executive summary on waste management and the relevancy to the project Component.
- A review and analysis of national and institutional policy and legislation related to waste
- A description of National legal, policy and procedures in relation to waste management
- A description of the general types and an indication of likely quantities of waste likely to be generated by the proposed development;
- Waste Management Principles; These principles, with the procedures above, will form the basis of the waste management Plan including the used solar panels and batteries. The contractor should discuss in detail the way to
 - Minimize,
 - Reuse,
 - Recycle,

- Disposal and recover.
- Waste management implementation plan and institutional arrangement: In this section the contractor should discuss in detail how the waste management will be implemented focusing mainly on the way to:
 - Collect waste
 - Storage of waste
 - Waste transportation
 - Waste disposal

He should also discuss an arrangement showing how he will be working with Local Government Officials and Local population to access to produced waste especially waste concerning the used solar home system including used panels and batteries at the end of life.

The implementation arrangement should also show the need to work with certified company for electronic waste management where the contract for collection, transportation and disposal is mandatory and a pre-requisite requirement for being awarded a contract to work in the area of Off Grid intensification in Rwanda for the RUEAP.

Annex 14: Expected Administrative Districts under RUEAP per development Partners

| ID | Province | District | DP |
|-----------|-----------------|-----------------|-----------|
| 1 | East | Bugesera | EIB |
| 2 | East | Gatsibo | EIB |
| 3 | East | Kayonza | EIB |
| 4 | East | Kirehe | EIB |
| 5 | East | Ngoma | EIB |
| 6 | East | Nyagatare | EIB |
| 7 | East | Rwamagana | EIB |
| 8 | North | Burera | WB&AFD |
| 9 | North | Gakenke | OFID&SFD |
| 10 | North | Gicumbi | WB&AFD |
| 11 | North | Musanze | WB&AFD |
| 12 | North | Rulindo | WB&AFD |
| 13 | South | Gisagara | AfDB |
| 14 | South | Huye | AfDB |

| ID | Province | District | DP |
|-----------|-----------------|-----------------|-----------|
| 15 | South | Kamonyi | OFID&SFD |
| 16 | South | Muhanga | OFID&SFD |
| 17 | South | Nyamagabe | AfDB |
| 18 | South | Nyanza | AfDB |
| 19 | South | Nyaruguru | AfDB |
| 20 | South | Ruhango | AfDB |
| 21 | West | Karongi | WB&AFD |
| 22 | West | Ngororero | WB&AFD |
| 23 | West | Nyabihu | WB&AFD |
| 24 | West | Nyamasheke | WB&AFD |
| 25 | West | Rubavu | WB&AFD |
| 26 | West | Rusizi | WB&AFD |
| 27 | West | Rutsiro | WB&AFD |
| 28 | Kigali City | Gasabo | EIB |
| 29 | Kigali City | Kicukiro | EIB |
| 30 | Kigali City | Nyugenge | EIB |