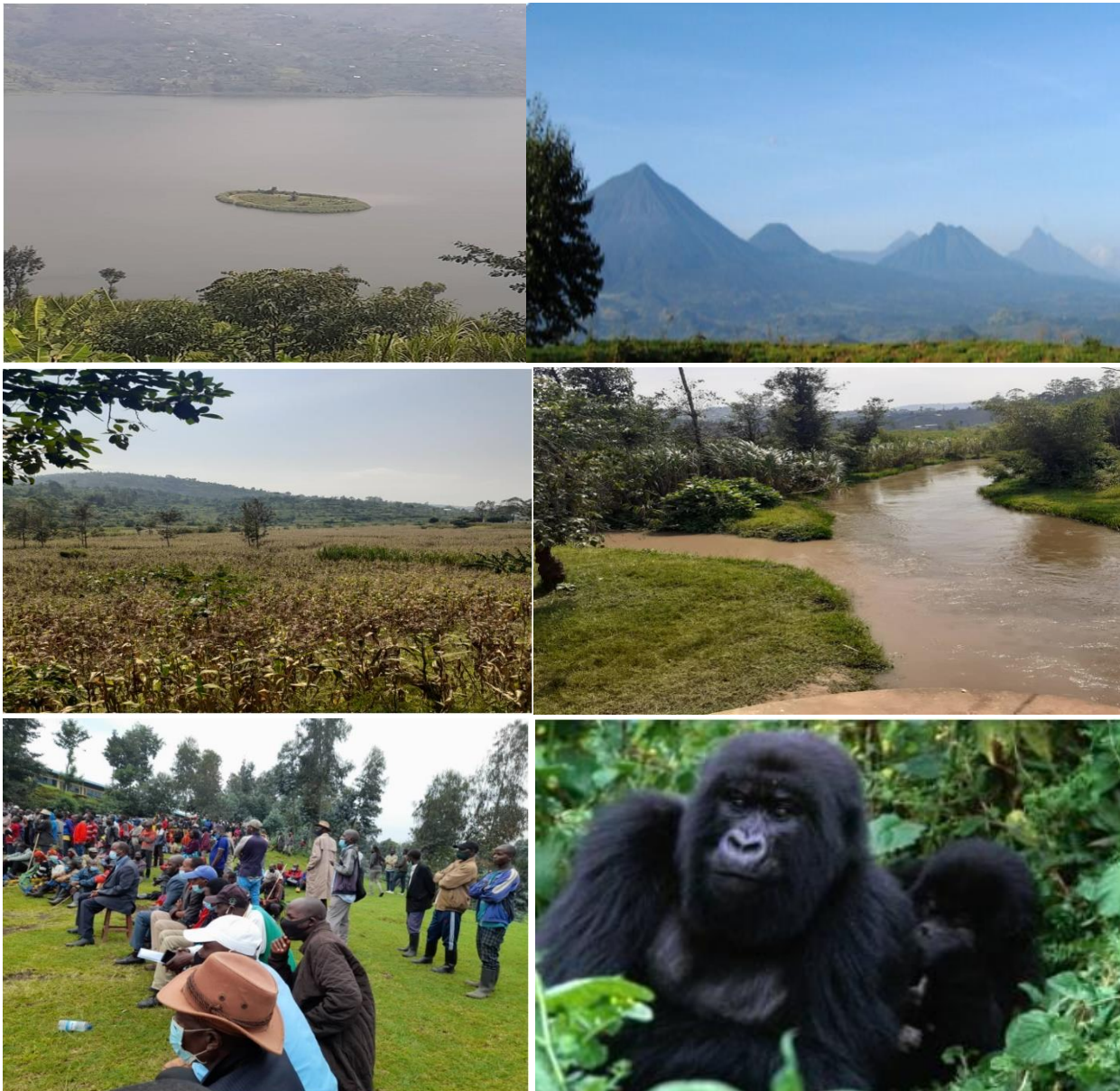


ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

PROJECT TITLE: Plant Design, Supply and Commissioning of Rwanda Energy Access and Quality Improvement project (EAQIP) in Musanze and Rubavu districts



Prepared by EDCL Safeguards and GIS Team

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Executive Summary

The Government of Rwanda, in its effort to sustain economic growth, has increased and stabilized the power production and distribution, hence reducing power shortages. The Government of Rwanda (GoR) also exercises a strong leadership role in donor coordination and has begun to work with donors on a clearer division of labour by identifying areas of individual donor comparative advantage. In connection with the mentioned strategy, the Government of Rwanda through Energy Development Corporation Limited (EDCL) has embarked on a country-wide electricity distribution to realize the National Strategy for Transformation (NST1) target aimed at increasing access to electricity from 34.5% (Estimates 2017) to 100% by 2024.

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) has developed a program titled “Rwanda Universal Energy Access Program which comprises project namely Rwanda Energy Access and Quality Improvement Project (EAQIP)” financed by World Bank and co-financed by AFD (joint co-financing), the OFID (parallel co-financing), SFD (parallel), and the Korean Fund for International Development (parallel). This multi-donor energy sector investment financing project will support the Government of Rwanda’s energy access objectives during this period of the National Strategy for Transformation (NST1; 2017-2024).

The Energy Access and Quality Improvement Project (EAQIP) would have a total volume of an estimated US\$ 550 m. The total IDA investment would be US\$150 million, spread across four components of EAQIP. These include Grid electrification, improving grid reliability and efficiency, advancing off-grid energy and clean cooking, and providing technical assistance, capacity building and implementation support. The grid-related and Technical Assistance components will be implemented by the Rwanda Universal Energy Access Program (RUEAP) in Energy Development corporation Limited (EDCL). The off-grid and clean cooking components will be implemented by Renewable Energy Fund (REF) PIU in the Development Bank of Rwanda (BRD). The EAQIP will allow the Government of Rwanda to achieve and expand upon results from Electricity Access Rollout Programme (EARP) which continues to construct the backbone of the power supply system to rural areas and will align generation capacity and demand to achieve an efficient tariff. RUEAP is being implemented within the framework of a Sector Wide Approach (SWAp) to encompass all donors active in the sector under one common sector investment program.

The sub-projects of Energy Access and Quality Improvement Project (EAQIP) project will have environmental and social implications especially the 1st component related to Increase Grid access. Reducing the burden of environmental impacts is necessary if energy development is to become sustainable. As resources become limited, environmental impacts are becoming more complex, and as a result, Environmental and Social Management Plan (ESMP) is of ever-increasing importance as a tool for decision-making before energy projects implementation.

The aims and objectives of ESMP is to inform the process of decision-making by identifying the potentially significant environmental effects and risks of development projects on a short term and to promote sustainable development by ensuring that development projects do not undermine critical resources and ecological functions or the wellbeing, lifestyle and livelihood of the communities and people who depend on them.

This Environmental and Social Management Plan (ESMP) was prepared to meet the national and World Bank safeguards policies related to the environmental and social safeguards requirements only for the first component of the EAQIP related to increasing Access to Grid especially in MUSANZE and RUBAVU administrative districts where the sub-project will be implemented by EDCL in-house teams.

The ESMP 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. Further this ESMP is following the ESMF and recommendations of disclosed Strategic Environmental and Social Assessment (SEA) for Rwanda Universal Energy Access Program.

The WB Environmental and Social Standards (ESSs) applicable to this project under this ESMP, 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).

The ESMP evaluated the project in view of the potential impacts (both negative and positive) related to the construction of medium voltage (MV) Lines to supply power in Musanze and Rubavu districts of Northern and Western Provinces of the Republic of Rwanda.

The ESMP has been prepared on the basis of field surveys, site visits and desk studies including review of key documents relevant to the environmental legislative, Social protection and policy frameworks for Rwanda, WB Environmental and Social framework (ESF) and ESSs which are the main tools to assist in implementing the ESMP and monitoring parameters to ensure the MV distribution lines are constructed in compliance with the relevant laws, policies, and guidelines, identification of potential environmental and Social adverse impacts and recommendation of an Environmental Management and Monitoring Plan.

Special attention has been given to the management of site installation, vegetation clearing, affected people and properties compensation, site clearing, impacts on the vegetation, soil, ground and surface water, air quality, human nuisance, dust generation increase, flora and fauna, wastes generation, health

and safety of workers, security, cultural heritage including Genocide against Tutsi memorial sites, religious monuments, and protection of the nearby rivers and National Parks.

In addition, this ESMP indicates, the positive impacts of the project that are encouraging and dwell mainly on socio-economic improvements, electricity supply, employment, wealth creation and affordability of medical insurance and education for the employed workers. The project 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 and social. The project is expected to have 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 caused by the use of heavy vehicles and machines, and air pollution from the burning of fossil fuel, among others.

All potential impacts (negative and positive) associated to the development of this project have been identified with allocated mitigation measures. Furthermore, an environmental and social monitoring plan indicating the mitigation measures, procedure to be followed, the responsible parties to implement these measures and likely cost of implementing each of these mitigation measures have all been included in this plan. In summary, it was found that the Project will have predominant low environmental negative impacts based on project planned activities, Environmental and social summary review prepared during the project initiation and disclosed Strategic Environmental Assessment (SEA) if the proposed Environmental and Social Management Plan (ESMP) is implemented, and all proposed mitigation measures are fulfilled.

This ESMP concludes that there are no major negative impacts associated with the construction of MV distribution lines in Musanze and Rubavu administrative districts since the negative impacts caused by the construction of the distribution lines are limited to the Right of Way (RoW) where the activities are planned and can be mitigated, minimized, or managed as determined by the National mandated Authority for Utility Regulatory (RURA) Guidelines N° 01/GL/EF-EWS/RURA/2015.

Further, the ESMP provides recommendations in relation to compensation process and timing, inventory of properties, recruiting an environmental and social safeguards specialist to monitor the ESMP implementation, provision of PPEs, various training, awareness, tool box meetings and sensitization programme, excavated soil management, noise generated by the project activities, waste management, protection of Cultural Heritage, first aid and fire extinguishers, incidents recording, GRM records and follow up the functionality of a Grievance Redress committee and mechanism to handle the grievance, gender related requirements and child abuse or exploitation including GBV in general.

The ESMP implementation budget refers to all costs that will be incurred to implement the requirements or recommendations in this Environmental and Social Management Plan (ESMP). The estimated cost for implementing the requirements/recommendations of this ESMP requires approximately 54,341US Dollars (~ 55,450,000 Rwandan Francs).

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LIST OF ABBREVIATIONS

CAE:	Child Abuse and Exploitation
EAQIP:	Energy Access and Quality Improvement Project
EDCL:	Energy Development Corporation Limited
EUCL:	Energy Utility Corporation Limited
EIA:	Environmental Impact Assessment
ESF:	Environmental and Social Framework
ESHP:	Environment, Health and safety Plan
ESMP:	Environmental and Social Management Plan
ESSP:	Energy Sector Strategic Plan
ECOSAN:	Ecological Sanitation
ESSs:	Environmental and Social Standards
GBV:	Gender Based Violence
GoR:	Government of Rwanda
GRC:	Grievance Redress Committee
IDA:	International Development Association
KV:	Kilo-Volt
LCPDP:	Least Cost Power Development Plan
LV:	Low Voltage
MININFRA:	Ministry of Infrastructure
MOE:	Ministry of Environment
MV:	Medium Voltage
NGO:	Non-Governmental Organisation
NST:	National Strategy for Transformation
OFID:	OPEC Fund for International Development
PAP:	Project Affected People
PPE:	Personal Protective Equipment
SDGs:	Sustainable Development Goals
STD:	Sexually Transmitted Diseases
RwF:	Rwanda Franc
RAP:	Resettlement Action Plan
RAPEP:	Rwanda Association of Professional Environmental Practitioners
REG:	Rwanda Energy Group
REMA:	Rwanda Environmental Management Authority
RDB:	Rwanda Development Board
RBS:	Rwanda Bureaus of Standards
REF:	Renewable Energy Fund
RoW:	Right-of-Way
RURA:	Rwanda Utility Regulation Authority
ToR:	Terms of Reference
WB:	World Bank

I. INTRODUCTION

1.1. Background and Overview

The energy balance-sheet of Rwanda has been characterized by the importance of biomass in meeting the people's needs and constituted the main sources of energy for the majority of the population, especially in rural zones. In rural areas, the reliance on biomass accounts for about 83% of the total energy consumption. Most Rwandans live in rural areas where traditional biomass, mainly wood fuel has remained the leading source of energy for cooking. Therefore, deforestation continues to represent a serious environmental concern, due particularly to energy consumption demand by a high population density. Rwanda has considerable gas methane, solar and hydroelectric resources; the development of which would contribute to increased consumption of modern energies and reduce pressure on forest resources.

Recently, electricity power production has increased and stabilized since the severe power shortages of 1994; however, the total capacity remains very low at 238.36 MW with reliance on domestic generation including hydropower (47%), methane gas (13%), imported diesel thermal generation (26%), Peat (7%), solar (5%), biomass (0.03%) and import (2%) (LCPDP, 2020). Therefore, in line with the high energy demand, the Rwandan electricity infrastructure needs to be upgraded. Electricity transmission and distribution all have to be increased. 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 to contribute to Rwanda's Vision 2050 medium and long-term goals and to promoting Rwanda's achievement of the Sustainable Development Goals (SDGs) especially poverty reduction, gender empowerment and sustainable growth. To achieve the said objectives, in line with Government of Rwanda (GoR)'s stated ambitious target of achieving universal access to electricity by 2024), the Government of Rwanda through EDCL is developing the Energy Access and Quality Improvement Project (EAQIP) to enhance the electricity supply in Musanze and Rubavu districts in accordance with the Laws of Rwanda and the WB guidelines with respect to Environmental and Social Framework (ESF).

The main key physical works of EAQIP include investment in grid connections for households, construction of Medium and Low Voltage (LV) lines, installing distribution transformers and prepayment meters on the different households and productive use within Musanze and Rubavu districts

Some of the key activities of EAQIP project have environmental and social implications. To address environmental and social issues of EAQIP, the ESMP has been prepared based on the GoR's policy and legal frameworks, WB ESF and ESSs applicable to the project. In addition, social instruments (such as Resettlement Action Plan-RAP, Environment, Health and safety Plan-ESHP) have been prepared to address key social issues of the project.

In practice, ESMP is applied primarily to prevent or minimize the adverse effects of major development projects. It is also used as a planning tool to promote sustainable development by integrating environmental considerations into a wide range of proposed actions. More limited forms of ESMP can be used to ensure that smaller scale projects, conform to appropriate environmental and social standards or site and design criteria.

1.2. Objectives of the study

The ESMP was conducted to examine, analyse and assess the proposed construction of distribution lines and service connections in Musanze and Rubavu so that the project is implemented in an environmentally sound and sustainable manner. The immediate aim of this ESMP is to inform the process of decision making by identifying the potentially significant environmental effects and risks of development projects. The ultimate (long term) aim of ESMP is to promote sustainable development by ensuring that the development of EAQIP do not undermine critical resource and ecological functions or the wellbeing, lifestyle and livelihood of the communities and people who depend on them in Musanze and Rubavu districts.

1.2.1. General Objective

The general objective of this study is to carry out a comprehensive ESMP study that will guide environmental compliance process during construction and operation phases of the Energy Access and Quality Improvement Project (EAQIP) to improve the power supply reliability and increase on-grid electricity access through construction of medium voltage (MV) Lines to supply power in Musanze and Rubavu districts of Rwanda.

1.2.2. Specific objectives

The specific objectives of the study are the following:

1. Analyze the initial state and describe the baseline environmental and social issues of the area covered by Energy Access and Quality Improvement Project (EAQIP) and assess how these conditions would be altered by the proposed distribution lines.
2. To detect the effects of the Energy Access and Quality Improvement Project (EAQIP) on the Biodiversity and Living Natural Resources, Labour and Working Conditions, Resource Efficiency and Pollution, Community Health and Safety, Land Acquisition, Land Use and Involuntary Resettlement and Cultural Heritage and then to detect Environmental and Social risks and Impacts.
3. To propose mitigation measures and alternatives measures where it is noticed that adverse effect may occur.
4. To set up an Environmental and Social Management and Monitoring Plan that will govern all activities of the project for the better protection of the environment.

1.3. Approach and methodology used to prepare this ESMP

In general, the Environmental and social safeguards team started the ESMP by reviewing all existing information on the project area including its surroundings, review of existing project documents, review of the relevant National and international policies, institutional and regulatory framework, international goals, treaties and conventions on environment, relevant WB ESF and ESSs in the context of the Rwanda Energy Access and Quality Improvement Project (EAQIP). Upon reviewing the existing information on this project area, a detailed analysis of the area was carried out through site visits with target to collect information on location, status of infrastructure, views and concerns of local people, interviews with project staff, public consultation with stakeholders who were directly or indirectly related to the project to better understand the environmental and social systems in Musanze and Rubavu districts and to better understand the environmental and social concerns of local community including PAPs and local governmental officials.

During consultation, stakeholders were asked their views and concerns about the project. 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. In general, the aim of the site visit was to assess the surrounding environment (physical and human) of the proposed infrastructure. The consultation outcome highlighted trade-offs, impacts/risks and social issues and bottlenecks associated with the implementation of this project, as well as the proposed mitigation measures.

After collecting the data from the site visits, an analysis was done to assess activities under the proposed project and sub-projects direct, indirect and cumulative impacts. These impacts were then weighed on their significance based on whether they are direct or indirect, their frequency, whether they were reversible or irreversible, time of occurrence, among others. It is those impact activities that were considered in establishing mitigation measures and eventually the environmental and social management and monitoring plan.

Responsibility

The Environmental and Social Safeguards team was to provide the technical expertise on:

- i. Environmental baseline conditions,
- ii. Identification of potential impacts of the project,
- iii. Impacts mitigation and management options and legal framework,
- iv. Development of the ESMP with the required content.
- v. Submit the final ESMP report for the approval process and its public disclosure.

1.4. Reporting

The final step in the ESMP process is to submit the draft reports to the stakeholders to incorporate the comments into the final documents and finally for approval.

Report Layout

The layout of the report has been structured as follows:

- **Section 1:** Introduction
- **Section 2:** Institutional, legislative and policy frameworks
- **Section 3:** Project Description
- **Section 4:** Environmental and social baseline conditions
- **Section 5:** Nature and Extent of Key Environmental and social Impacts of the Proposed Project
- **Section 6:** Assessment of Environmental and Social Impacts and Proposed Mitigation Measures
- **Section 7:** Public Consultations and Participation
- **Section 8:** Environmental and Social Management and Monitoring Plan
- **Section 9:** Training and awareness plan
- **Section 10:** Grievance Redress Mechanism
- **Section 11:** Conclusion
- **Section 12:** Recommendations

II.LEGISLATIVE, POLICY AND INSTITUTIONAL FRAMEWORK

2.1. Introduction

This chapter reviews the relevant national and international legislative and policies which will guide the implementation of the project and taken time to integrate the policies and institutions involved in this project into the practice during preparation of the associated environmental and social safeguards instruments. This chapter reviews also the relevant legal and institutional arrangements that would hinder or guide the development of the project in line with national and international laws. Being a signatory to various international conventions and laws, it is important that Rwanda's national Policies, programs and projects are in line with these laws, and so some of the relevant international conventions are reviewed in this chapter.

The ESMP considers the national policies, laws and guidelines and WB ESF and ESSs which are the main tools to assist in implementing the ESMP and monitoring parameters to ensure the distribution lines are constructed in compliance with the mentioned laws, policies, and guidelines.

Vision of the energy sector is to contribute effectively to the growth of the national economy and thereby improve the standard of living for the entire nation in a sustainable and environmentally sound manner. The energy policy vision contributes directly to achieving Rwanda's Vision 2050, medium and long-term goals. It also contributes to promoting Rwanda's achievement of the Sustainable Development Goals (SDGs) especially poverty reduction, gender empowerment and sustainable growth. The mission of the energy sector is to create conditions for the provision of sufficient, safe, reliable, efficient, cost- effective and environmentally appropriate energy services to households and to all economic sectors on a sustainable basis.

2.2. National Legislations

2.2.1. Legislative framework

The Rwandan regulatory framework for environmental management is based on the Law on Environment (2018), which establishes a comprehensive legal framework to regulate the protection and management of the environment in Rwanda.

In addition to general provisions, the law regulates the field of the natural environment (soil, subsoil, water resources, biodiversity, atmosphere), the human environment, the obligations of the State and local authorities, community participation, incentives, control, monitoring and inspection as well as preventive and repressive measures.

In addition to this law, the environmental legal framework consists of a series of laws, decrees and orders including:

Amongst the laws that will have a bearing to the construction of distribution lines include:

- i. Constitution of the Republic of Rwanda, 2003 revised in December 2015.
- ii. The environmental Law, 2018.
- iii. Law relating to expropriation in the public interest, 2015

- iv. Law governing electricity in Rwanda as modified to date (No 52/2018 of 13/08/2018 – modifying law No 21/2011 of 23/06/2011)
- v. Law Governing Land in Rwanda, 2021
- vi. Law on mining and quarry operations, 2014
- vii. Law governing the preservation of air quality and prevention of air pollution in Rwanda, 2016
- viii. Ministerial Order determining the length of land on shores of lakes and rivers transferred to public property, 2010
- ix. Law governing biodiversity in Rwanda, 2013
- x. Law governing urban planning and building in Rwanda, 2012
- xi. Law relating to the prohibition of manufacturing, importation, use and sale of polythene bags in Rwanda, 2008
- xii. The Labor Law, 2009
- xiii. Ministerial order relating to the requirements and procedure for environmental impact Assessment (EIA), 2008
- xiv. Ministerial Order establishing the list of projects that must undergo environmental impact assessment, instructions, requirements and procedures to conduct environmental impact assessment, 2019.
- xv. RURA Guideline on the use of Right of Way (RoW), 2015.
- xvi. Rwanda building control regulations, 2012
- xvii. Ministerial order determining conditions for occupational health and safety, 2012
- xviii. Ministerial order establishing modalities of inspecting companies or activities that pollute the environment, 2008

Table 1:Key national laws relevant to the project

Law	Relevance	Compliance aspects
Constitution of the Republic of Rwanda, December 2015	It should be noted at the outset that, all laws and regulations in Rwanda must be aligned with principles in the Constitution. The Rwandan Constitution was approved in a national referendum and adopted in Parliament on 25th December 2015. It defines the principles and overall legal framework for the management of the water, energy and agricultural sector.	It is stipulated in the constitution that Every citizen is entitled to a healthy and satisfying environment. This ESMP was prepared in that compliance context, to make sure the project negative impacts don't harm the environment of people living in project areas crossed by the lines and the surroundings of the sites where distribution lines will be built. The project will be implemented in a healthy and environmentally sustainable context.
Law on Environment N° 48/2018 of 13/08/2018	The most relevant legislation for this project is the Law on Environmental Protection, Conservation and Management. This is the law that regulates the protection of environment in Rwanda. The law sets out the general legal framework for environmental protection and management in Rwanda. It also constitutes environment as one of the priority concerns of the Government of Rwanda. Under 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 Relevance of this law lies in the fact that it empowers stakeholders to take legal actions against the developer (EDCL) for any negative environmental and social consequences that may result from the implementation of the current project.	<p>During the study, the environmental and social safeguards team did not only review the law but also identified all the positive and negative environmental and social impacts likely to result from the project.</p> <p>The team has further developed measures to enhance the positive impacts and mitigation measures for the negative impacts and advised EDCL on how best to implement the mitigation measures to minimize the impacts in line with the requirements of this law.</p>

Law	Relevance	Compliance aspects
<p>Law governing electricity in Rwanda as modified to date (No 52/2018 of 13/08/2018 – modifying law No 21/2011 of 23/06/2011)</p>	<p>This Law governs activities of electric power production, transmission, distribution and trading within or outside the national territory of the Republic of Rwanda. This law establishes a system of authorizing licenses for transmission, distribution and sale of electric power (Art. 5). The license is obtainable after a due filled application and payment of a license fee as determined by the regulatory agency. Art. 8 under this law stipulates that the regulatory agency ensures prior to the issuance of a license, that the concerned individual or institution respect the rights of users and environment protection.</p> <p>With regards to the Right of Way, Art 47 provides for an authorization to operate in a public or a private domain to be granted for electricity transmission or distribution license holder. However the Art 48 provides for an Expropriation of right of way for public interest. The right of way is necessary to the operators in production, transmission, distribution and supply of electricity. It shall be exercised in accordance with the standards set by the regulatory agency. Expropriation shall be conducted in accordance with the Law governing expropriation for public interest.</p> <p>In case of issues arising from interference with property, Article 49 provides for their settlement and stipulates those complaints from license holders regarding interference with their property, including right of way, shall be brought to the regulatory agency for handling, and when deemed necessary,</p>	<p>The ROW of the proposed lines was assessed to ensure project activities don't harm the project environment and the ESMP was prepared to safeguard the rights of users and the environment.</p>

Law	Relevance	Compliance aspects
	to the courts in accordance with laws.	
Law n°49/2018 of 13/08/2018 determining the use and management of Water Resources in Rwanda.	Law regulating the use, conservation, protection, and management of water resources ¹ defines the rules to the use, conservation, protection and management of water resources.	The project will be implemented in context that avoids contamination of water resources and overuse of water during the project different phases.
N° 27/2021 du 10/06/2021 Law Governing Land in Rwanda	<p>Land in Rwanda has emerged as one of the most pressing issues facing the government of Rwanda and Rwandan citizens, heralding a need for broad information sharing about land matters coupled with solid research on land issues that can feed an adaptive policy environment.</p> <p>This Law determines modalities of acquisition, registration, allocation, possession, transfer, management, and use of land in Rwanda.</p> <p>This law stipulates that the landowner shall enjoy full rights to exploit his/her land in accordance with the provisions of this Law and other laws.</p> <p>The State recognizes the right to freely own land and shall protect the landowner from being dispossessed of the land whether totally or partially, except in case of expropriation due to public interest.</p> <p>The land where the project will be implemented belongs to the individual and state, specifically, the electrical lines will impose the restrictions on land use in accordance with the RURA guidelines. Therefore, the land belong to the public institutions will not be compensated unless it is using by the people as renter during assets inventory process and the property</p>	The impact related to socio-economic displacement was analysed to understand the significance related to losing assets as the power lines construction activities require land temporarily, permanently, partially or totally. Appropriate mitigation measures were recommended to sustain the livelihood of affected parties in the context of implementation of this public interest project.

¹ See Law No 62/2008 of 10/09/2008.

Law	Relevance	Compliance aspects
	owner will have the proof from the competent officials to prove that he/she was a land renter during assets inventory of the properties which will be affected.	
Law No 58/2018 OF 13/08/201 on Mining and Quarry Exploitation	<p>The Law carters for activities relating to prospecting, search, exploitation, purchase, stocking, handling, transport and commercialization of transferable substances other than hydrocarbon as well as quarry products within the Republic of Rwanda.</p> <p>Article 26 on duties of the holder of a mining licence stipulates that the holder of a mining licence must develop and mine the mineral deposits covered by the licence in accordance with the mine development program approved by the competent authority and the environmental management plan approved by relevant organs.</p>	If any quarry and borrow pit is to be exploited for the power line construction phase, a specific ESMP must be availed on site.
Expropriation law N° 32/2015 of 11/06/2015	<p>The law determines the procedures relating to expropriation in the public interest.</p> <p>Article 4 stipulates that: “Every project, at any level, which intends to carry out acts of expropriation in the public interest, shall budget for valuation of the property of the person to be expropriated and for fair compensation”.</p>	<p>An ESMP was undertaken indicating that:</p> <ul style="list-style-type: none"> • The project does not degrade the environment. Such land or place suits the project. <p>At the same time, a RAP study was prepared for adequate compensation of affected parties.</p> <p>Minutes of public consultative meetings that were held in the related in Musanze and Rubavu districts indicate that the concerned population was sensitized about the project, being a public interest project.</p>
Law no 47bis/2013 of 28/06/2013	The proposed lines alignments will clear vegetation and trees. Construction	The EDCL’s safeguards team has made recommendations on how the

Law	Relevance	Compliance aspects
determining the management and utilisation of forests in Rwanda.	activities entail clearing of trees to pave way for power line erection activities.	company can implement appropriate measures to promote and enhance the conservation aims enshrined in this law and that clearing of vegetation shall only be confined to the wayleave and for areas where trees reach a height of at least 3m, while planting of trees shall be encouraged during project implementation. EDCL has the duty to conserve and protect forests and consultations with authorities shall be held to make sure there are no prohibited activities that may negatively affect proper forest management.
Law n° 70/2013 of 02/09/2013 Governing Biodiversity in Rwanda.	<p>Article 9 of the law governing biodiversity in Rwanda on biodiversity management plan states that: “The control, containing and eradication of an invasive species shall be carried out by means of methods that are appropriate for the species concerned and the environment in which it occurs.</p> <p>Any action taken to control, contain and eradicate an invasive species shall be executed with caution and in a manner that may cause the least possible harm to biodiversity and damage to the environment”.</p>	The ESMP conducted investigated all invasive species before implementation of the project to avoid causing harm to biodiversity and damage the environment.
The Environmental Impact Assessment Regulations, 2007	REMA has developed EIA regulations that provide a guideline and the requirements for an EIA in Rwanda. The Law on environment made environmental Impact assessment (EIA) mandatory for approval of major development projects, activities and programs in the Republic of Rwanda. However, besides the legislation, guidance is needed of a more technical nature to	The ESMP was undertaken in consideration of the Rwanda Law on Environment of 2018 with a clear statement on the financial and environmental sustainability of the project.

Law	Relevance	Compliance aspects
	streamline the conduct of EIA and appraisal of EIA reports. As such, the establishment of “General Guidelines and Procedures for Environmental Impact Assessment”, which unifies the legal requirements with the practical conduct of EIA, meets a need in the pursuit for sustainable development in Rwanda.	
Guidelines No 01/GL/EL-EWS/RURA/2015 on ROW of Power Lines.	The guidelines specify the horizontal RoW of power lines depending on their voltage levels as per the following: For 30kv: 12m For 110kV: 25m For 220kV: 30m For 400kV: 50m The guidelines also provide the horizontal clearance from line conductors to liquid gas tanks (m).	The 12m horizontal RoW are considered for the 30kV power lines. No fuel tank was identified in both right of ways so there is no compliance to be considered or change of design based on this guideline.
Ministerial Order establishing the list of Protected Animals and Plants Species in Rwanda (No. 007/2008 of 15/08/2008)	According to this Ministerial Order, the species of protected animals are classified into: Mammals, birds, and reptiles (Art 1) and are listed in Appendix I of this Ministerial Order. These animals should not be hunted except when there is prior authorization from competent authorities (Art 2). This list comprises: Annex 1: - Mammals: 18 species Birds: 15 species Reptiles: 4 species Art 4: The list of protected plants is found in appendix II. The plants mentioned in appendix II should not be uprooted or cut without prior authorization from competent authorities.	The ESMP has determined sensitive and protected species to be affected by the project, and devise alternative or mitigation measures.

2.3. Policy framework

Table 2:Key national policies relevant to the project

Policy	Relevance	Alignment to the policy
The National Strategy for Transformation (NST1) 2017-2024 and Vision 2050	<p>The National Strategy for Transformation has among other outcomes, the “increased access to basic infrastructure (water, sanitation, electricity, ICT, Shelter achieved)”.</p> <p>Vision 2050 and NST1 shall enable the establishment of a viable infrastructure, which will be capable of addressing its current and future shortcomings and shall contribute to significant growth and economic development of Rwanda, in order to achieve the development objectives that are set out in both policy documents for the benefit of the Rwandan people.</p>	The Rwanda Energy Access and Quality Improvement Project (EAQIP) is a vital infrastructure that significantly contribute to access to electricity and significant economic growth as more activities are created.
National Environment and Climate Change Policy 2019	This Environment and Climate Change Policy reaffirms our commitment to address climate change and our resolve to lessen the potential hardships that climate change may pose to the sustainable development of our country. The policy, therefore, seeks to provide strategic direction on environment and climate change in Rwanda, bearing in mind its linkages with our socio-economic development.	The construction of 30KV power line will contribute to reducing gas emissions and adapt to climate change impacts with linkage to socio-economic development.
National Policy on EIA (2003)	Environmental management process operates within and towards the global concept of sustainable development. It is intended to achieve benchmarks and embrace commitment to international environmental conventions agreed upon in Ramsar (1971), Vienna (1985), Montreal (1990), Rio (1992), Kyoto (1998), and Stockholm (2001) to all of which, Rwanda is a party. EIA also provides a framework	The ESMP process has confirmed the environmental sustainability of the project and was undertaken in the context of compliance of existing laws and international legislations. Appropriate measures were recommended to mitigate the possible adverse impacts.

Policy	Relevance	Alignment to the policy
	for promotion of efficient decision-making in project approval. Lastly, EIA enables implementation of environmental safeguards to mitigate significant negative impacts, avoid ecological damage and large-scale irreversible loss of natural resource.	
Land Policy (2019)	<p>This land policy focuses on efficient use and management of land to support the national transformation goals without compromising the benefits of future generations.</p> <p>The National Land Policy aims at establishing a land tenure system that guarantees land tenure security for all Rwandans and giving guidance to the necessary land reforms with a view to good management and rational use of national land resources.</p>	The ESMP and RAP reports study were conducted
Forest Policy (2004)	It recognizes the need to manage forest resources to support the country's development goals for sustainable, low-carbon and climate resilient growth to improve livelihoods of present and future generations.	The ESMP has recommended appropriate mitigation measures to ensure no impact of those forest resources in the context to support sustainable development, country's development goals, low carbon and climate resilient growth.
Energy Policy (2015)	The overall goal of the policy is to ensure that all residents and industries can access energy products and services that are sufficient, reliable, affordable, and sustainable.	The Rwanda Energy Access and Quality Improvement Project (EAQIP) will increase access to energy for Rwandan households and industries and new services that are sustainable, realisable, affordable and sufficient will be created in Musanze and Rubavu districts.

Policy	Relevance	Alignment to the policy
Biodiversity Policy (2011)	<p>The Biodiversity Policy provides the framework for developing strategies, plans and programmes for implementing the environmental targets set out in Rwanda's Vision 2020 (today 2050) and the EDPRS 2 (today the National Strategy for Transformation Strategy – NST1).</p> <p>Rwanda has ratified the Convention on Biodiversity and has the obligations related to:</p> <ul style="list-style-type: none"> • Establishing a system of protected areas, rehabilitating and restoring degraded ecosystems and promoting the recovery of threatened species; • Identifying and controlling all potential sources of adverse impacts on biodiversity and carrying out environmental impact assessments of projects likely to have "significant adverse effects" on biological diversity. 	<p>A system to conserve protected areas is proposed by the study. Degraded ecosystems if any will be restored and recovery of threatened systems will be promoted through the implementation of the project.</p> <p>All potential sources of impacts on biodiversity were identified through the environmental assessment and appropriate mitigation measures recommended.</p>
The Energy Sector Strategic Plan (2018/19 – 2023/24)	<p>The ESSP will ensure effective delivery of the targets for the energy sector as set out under the National Strategy for Transformation (NST-1) and guide the implementation of the National Energy Policy (REP). The ESSP thus functions as a plan that serves to translate policy directives and principles into concrete measures necessary to reach medium-term targets, reflecting current resource constraints and risk and uncertainties.</p> <p>This ESSP follows on from the earlier 2013/14 – 2017/18. This new ESSP reviews the current status of the sector and outlines high-level target objectives (HLTOs). These have been determined on the basis of political ambitions and rigorous technical</p>	<p>This Strategy takes stock of the previously existing policies, strategies and laws in relation to Energy sector in Rwanda. The project aims at the realization of this Strategy's objectives.</p>

Policy	Relevance	Alignment to the policy
	analysis. The HLTOs apply to all subsectors and serve to translate the policy goals laid out in the REP and NST-1 into tangible outcome indicators achievable by the end of the NST-1 period (2018/19 to 2023/24).	
The Rwanda Rural Electrification Strategy (2016)	<p>The Government of Rwanda recognizes the vital role that electricity access plays in accelerating economic development through improving health and standards of living. Energy and particularly access to electricity is the Government's key priority. Therefore, significant investments have been made and progress registered led to over 68% of households getting access to electricity. More efforts need to be made for the Government to achieve the set targets of 100% by 2024.</p> <p>For the above targets to be met, a combination of solutions that focus on the location, income and consumption level is required instead of the traditional connection to the grid that may not be suitable for all households. The most cost effective means for increasing access to electricity is through the use of off grid solutions that have wide range of technologies such as a basic solar lantern that can charge a phone or radio to a solar home system</p> <p>The Government developed this strategy with the objective of ensuring that Rwanda's households have access to electricity through the most cost effective means by developing programmes that will facilitate both the end users to access less</p>	The project is to be implemented in the context of achieving universal access to electricity and accelerate economic development.

Policy	Relevance	Alignment to the policy
	costly technologies and increase private sector participation in the provision of these solutions.	
Ministerial Order establishing the list of Projects that must undergo Environmental Impact Assessment, Instructions, Requirements and Procedures to conduct Environmental Impact Assessment in Rwanda (No 001/2019 of 15/04/2019)	<p>The Ministerial Order defines environmental impact assessment as: systematic process of identifying environmental, social and economic impacts of a project, before a decision of its acceptance is made,</p> <p>Art 3 and 4 specifies respectively the works, activities and projects that must undergo a full environmental impact assessment (listed on Annex I) and those that must undergo a partial environmental impact assessment (listed on Annex II). No public institution is authorized to take a decision, to warrant a certificate, approve or authorize the commencement of a project mentioned in the annexes of this Order without prior environmental impact assessment.</p> <p>Art 5 precises that projects, works and activities that are not listed on the Annex I and II to this 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.</p>	<p>The ESMP is in direct compliance with the provision of this law</p>
The National Wetlands Management Policy (2015)	<p>Sanctions are also provided for the ones who:</p> <p>Clears or drains a wetland without a written authorization</p>	<p>The SEA has identified the areas and extent of impacts on wetlands to be addressed through the ESMP.</p>

Policy	Relevance	Alignment to the policy
	<p>Erects, constructs, places, alters, displaces or destroys any structure that is in, under or on a wetland;</p> <p>Disturbs a wetland by practicing boring or by excavating a tunnel in a way that is likely to have negative effects on a wetland;</p> <p>Destroys, damages or disturbs any wetland in a way that is likely to have negative effects on plants, animals or their habitats;</p> <p>Introduces any exotic plant or animal species that is likely to harm wetlands;</p> <p>Draws the soil from the wetland or practices bushfire in the wetland;</p> <p>Omits, neglects or refuses to protect shores against environmental degradation;</p> <p>Pursues an activity subject to suspension or prohibition.</p>	

2.4. Institutional Framework

The country's institutional architecture for promoting environmental sustainability has also improved. The establishment of REMA in 2006 provided the country with the institutional machinery for supporting the implementation of the environmental policies and laws. The post Genocide against Tutsi political dispensation, especially the principles associated with decentralization and democratization, has helped to ensure the engagement of the population in development of Rwanda's environmental policies and laws. Globally, poor people who are largely dependent on natural resources continue to have precarious livelihoods.

Table 3:Key national institutions relevant to the project

Institution	Roles and responsibilities
MoE	<p>The Ministry is responsible for:</p> <ul style="list-style-type: none"> • The development and land use; • The development of environmental policies and procedures; • The protection of natural resources (water, land, flora and fauna) • The environmental legislation, • The biodiversity and other environmental aspects. <p>MoE has an Environmental Department that coordinates and monitor the environmental related actions as well as the coordination of actions of the various conventions on the environment. It oversees the Office of the Rwanda</p>

Institution	Roles and responsibilities
	Environment Management Authority (REMA), which is the implementing agency of policies and laws related to the environment.
Ministry of Infrastructure	<p>The mission and purpose of the ministry include among others to:</p> <ul style="list-style-type: none"> • To initiate, develop and maintain sustainable power generation facilities to supply clean, cost-effective and uninterrupted energy for the country and the region; • To initiate programs aimed at increasing access to affordable energy, water and sanitation, and transport infrastructure and related services for the population; • To ensure that the development of policies and strategies concerning national infrastructure are in line with regional integration and harmonization policies with the EAC; • To supervise the implementation of quality standards and norms, cost effectiveness, response to environmental sustainability, safety and cross-cutting issues in infrastructure development; • To supervise activities meant to elaborate, monitor and assess the implementation of national policies and programs on matters relating to habitat and urbanism, transport, energy, water and sanitation.
MINALOC	<p>The Ministry of Local Government, Community Development and Social Affairs is responsible for territorial administration, supervision of decentralized entities operations and capacity building. In terms of environment, it is involved in outreach and environmental awareness of the population in decentralised administrative entities.</p> <p>Preparation and monitor Implement nation social protection policy at decentralized level.</p>
REMA	The establishment of REMA in 2006 provided the country with the institutional machinery for supporting the implementation of the environmental policies and laws. REMA is in charge of monitoring environmental management of all projects and is the custodian of Environment in Rwanda.
EDCL	<p>EDCL was mandated to:</p> <p>a) Increase investment in development of new energy generation projects in a timely and cost-efficient manner to expand supply in line with national targets.</p> <p>b) Develop appropriate transmission infrastructure to evacuate new plants and deliver energy to relevant distribution nodes.</p> <p>c) Plan and execute energy access projects to meet the national access targets.</p>
EUCL	The Energy Utility Corporation Limited (EUCL) was incorporated to have devoted attention in providing energy utility services in the Country through operations and maintenance of existing generation plants, transmission and distribution network and retail of electricity to end-user.

Institution	Roles and responsibilities
Rwanda Development Board (RDB)	<p>During a cabinet meeting in 2009, it was decided the environmental unit seating in REMA and in charge of review of EIA reports and issuance of Environmental Certificates be deployed to RDB to enhance assistance to the private sector.</p> <p>Since then RDB review the applications for EIA studies, approves the ToRs and issue environmental certificates of various projects to be implemented in the country.</p>
Rwanda Standards Board (RSB)	<p>It is a public institution established by Rwanda Government Legislation N° 50/2013 of 28/06/2013 determining the mission, organization and functioning of the Rwanda Standards Board to undertake all activities pertaining to the development of Standards, Conformity Assessment and Meteorology services in the country.</p> <p>It is the only body with powers to define and possess national standards. Public services and public or private firms must present their standards to RSB for adoption at national level. RSB is governed by the Board of Directors composed of major stakeholders from government, industry and academic institutions, as well as consumer associations.</p> <p>RSB publishes standards documents that establish specifications and procedures designed to maximize the reliability of the materials, products, methods, and/or services people use every day.</p> <p>Standards address a range of issues, including but not limited to various processes/systems to help maximize product functionality and compatibility, facilitate interoperability and support consumer safety, trade promotion and public health.</p>
Rwanda Association of Professional Environmental Practitioners (RAPEP)	<p>The Rwanda Association of Professional Environmental Practitioners (RAPEP) is a professional association comprising environmental practitioners licensed to operate in the Republic of Rwanda and recorded on its register; and established by Law No 36/2016 of 08/09/2016</p>
Administrative Districts or Local Governments	<p>The districts as defined local government entities, responsible for the provision of access to basic services, including roads, water, sanitation and solid waste management. Local governments have financial autonomy (fiscal decentralization); own the Top center infrastructure; are in charge of implementing local projects; are encouraged to contract private operators for infrastructure O&M; prepare and implement consolidated district development plans.</p> <p>Implement nation social protection policy and collaborate with other stakeholders at local government.</p>

2.5. International Legislations

2.5.1. Conventions and treaties

Rwanda is a signatory to several conventions on sustainable development and is a member of various bilateral and multilateral organizations. This assessment has identified some of the relevant conventions and treaties that Rwanda ratified or signed.

2.5.1.1. Conventions and treaties ratified or signed by the GoR

Rwanda has signed and/or ratified several international agreements and conventions relating to the environment both at regional and global level such as ones below. However, due to the low environmental sensitivity of the project sites no impact associated with these conventions are anticipated as shown below:

1. EAC Protocol on Environment and Natural Resources Management, 2006. Article 3 of this Protocol states that “it is a protocol of general application and shall apply to all activities, matters and areas of management of the environment and natural resources of the Partner States, including environmental impact assessment and environmental audits”;
2. The EAC Regional Environment Impact Assessment Guidelines for shared ecosystems, 2005;
3. The international Convention on Biological diversity and its habitat signed in Rio De Janeiro in Brazil on 5 June 1992, as approved by Presidential Order No 017/01 of 18 March 1995;
4. The Cartagena protocol on biodiversity to the (CBD) Convention on Biological Diversity signed in Nairobi from May 15, to 26, 2000 and in NEW YORK from June 5, 2000 to June 4, 2001 as authorized to be ratified by Law No 38/2003 of 29 December 2003;
5. The United Nations Framework Convention on Climate Change (UNFCCC), signed in Rio De Janeiro in Brazil on 5 June 1992, as approved by Presidential Order No 021/01 of 30 May 1995;
6. The Kyoto Protocol to the framework on climate change adopted at Kyoto on March 6, 1998 as authorized to be ratified by Law No 36/2003 of December 2003;
7. The Ramsar International Convention of February 2, 1971 on Wetlands of International importance, especially as water flows habitats as authorized to be ratified by Law No 37/2003 of 29 December 2003;
8. The Stockholm Convention on Persistent Organic Pollutants, signed in Stockholm on 22 May 2001, as approved by Presidential Order No 78/01 of 8 July 2002;
9. The Basel Convention on the Control of Trans boundary Movements of Hazardous wastes and their disposal as adopted at Basel on 22 March 1989, and approved by Presidential Order No 29/01 of 24 August 2003 approving the membership of Rwanda;
10. The Montreal International Conventional on Substances that deplete the Ozone layer, signed in London (1990), Copenhagen (1992), Montreal (1997), Beijing (1999), especially in its article 2 of London amendments and Article 3 of Copenhagen, Montreal and Beijing amendments as approved by Presidential Order no 30/01 of 24 August 2003 related to the membership of Rwanda.
11. The foregoing notwithstanding, the developer and Construction team will have a contractual obligation to avoid impacts that may violate above conventions, wherever encountered.

2.5.2. World Bank Group

The World Bank Environmental and Social Framework sets out the World Bank's commitment to sustainable development, through a Bank Policy and a set of Environmental and Social Standards 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 ESMP 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 applicable the World Bank ESSs except (a) 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; and (b) ESS9 (Financial Intermediaries).

The potentially applicable environmental and social safeguard which are considered in the study are the following:

ESS1 on Assessment and Management of Environmental and Social Risks and Impacts,
ESS2 on Labour and Working Conditions,
ESS3 on Resource Efficiency and Pollution Prevention,
ESS4 on Community Health and Safety,
ESS5 on Land Acquisition, Restrictions on Land Use and Involuntary Resettlement,
ESS6 on Biodiversity Conservation and Sustainable Management of Living Natural Resources,
ESS 8 on cultural heritage.
ESS10 on Stakeholder Engagement and information disclosure

2.5.2.1.1. World Bank Environmental and Social Framework

ESS1 on Assessment and Management of Environmental and Social Risks and Impacts

The purpose of ESS1 is to ensure that projects funded by the Bank are environmentally feasible and viable, and that decision making is improved through appropriate analysis of actions and their probable environmental impacts. This standard is applicable if the project is likely to cause potential (negative) environmental risks and impacts in its zone of influence.

ESS1 covers:

- à Impacts on the physical environment (air, water and land);
- Living environment, health and safety of populations.
- Physical resources.

In the present case, ESS1 is applicable due to the fact that the Project is likely to cause negative environmental and social risks and impacts in its zone of influence.

The Bank undertakes environmental screening to determine the appropriate extent and type of environmental assessment to be conducted. The Bank classifies the proposed projects into categories, depending on the type, location, sensitivity, scale of the projects and the nature and magnitude of their potential environmental

impacts. Depending on these factors, a project can be classified as: high risk, substantial risk, moderate risk and low risk.

In the present case, the project has been classified. The environmental assessment will thus have to examine the project's potential negative and positive environmental impacts and recommend any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance.

For all high and substantial risk projects, during the environmental assessment process, project-affected groups and stakeholders have to be consulted about the project's environmental aspects and their views must be considered. The consultations must be initiated as early as possible. Consultations can also be conducted throughout project implementation to address related issues that affect them.

For meaningful consultations, all relevant material must be provided in a timely manner prior to consultation, in a form and language that are understandable and accessible to the groups being consulted.

The activities of Rwanda Energy Access and Quality Improvement project (EAQIP) related to increasing access to grid electricity in Musanze and Rubavu district, 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 line routes will be designed to avoid sensitive ecosystem and residential places and the project will not imply permanent land acquisition as the land which will be used for RoW is the agricultural land, and PAPs are allowed to use it for agricultural purposes with condition that the grown trees/crops should not exceed 3m of height for power line and community health and security/safety matters. The compensation will be done at full replacement cost based on market price for all asset located in the Right of Way.

The project has prepared ESMP instrument to manage these risks and impacts in manner consistent with the ESSs and satisfactory to the World Bank. Environmental and social management plan was prepared as required and will be implemented and monitored accordingly.

ESS2 on Labour and Working Conditions.

ESS2 recognizes the importance of employment creation and income generation in the pursuit of poverty reduction and inclusive economic growth. Borrowers can promote sound worker-management relationship and enhance the development benefits of a project by treating workers in the project fairly and providing safe and healthy working conditions. The objectives are:

- To promote safety and health at work.
- To promote the fair treatment, non-discrimination, and equal opportunity of project workers.
- To protect project workers, including vulnerable workers such as women, persons with disabilities, children (of working age, in accordance with this ESS) and migrant workers, contracted workers, community workers and primary supply workers, as appropriate.
- To prevent the use of all forms of forced labor and child labor;

- To support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law.
- To provide project workers with accessible means to raise workplace concerns.

Anticipated key labor risks and impacts are mainly associated with the planned construction works. There may be risks of child labor associated with the use of local labor. The project 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 project will also need to adhere to such standards. To ensure health and safety of workers during the construction phase of the project, a Health, Safety and Environmental (HSE) plan and EHS Guideline for Electric Power Transmission and Distribution were prepared, based on site-specific ESMP for the project, with general guidance provided as part of ESMF. The plan includes 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 project 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.

ESS3: 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 project, is expected to improve access to energy and efficiency of energy services delivery in the Musanze and Rubavu districts, largely in the rural areas. Thus, in addition to improving resource/energy-efficient practices, the project will have positive environmental contribution through reducing greenhouse gas emissions². However, the project will have risks and impacts of pollution in relation to management of oils and lubricants for transformers and support infrastructures, and construction activities, among others. The project may also have environmental damage due to improper management of construction material (such as extraction of excess sands and gravels), waste, and domestic waste which may cause expansion of project's environmental footprint. The management of impacts/risks of the above issues are addressed in the project design and in this ESMP (including application of WBG EHS Guidelines for Electric Power Transmission and Distribution) during the project implementation stage.

² 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.

ESS4 on Community Health and safety.

ESS4 addresses the health, safety, and security risks and impacts on project-affected communities and the corresponding responsibility of Borrowers to avoid or minimize such risks and impacts, with particular attention to people who, because of their particular circumstances, may be vulnerable.

This standard is applicable as the distribution lines project may have impact on health and safety of workers and people in the project area.

The Project Developer will identify, evaluate, and monitor the potential traffic (all motorized transportation relevant to the project) and road safety risks to workers, affected communities, and road users throughout the project life cycle and, where appropriate, will develop measures and plans to address them. The Project Developer will incorporate technically and financially feasible road safety measures into the project design to prevent and mitigate potential road safety risks to road users and affected communities

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 project 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 project 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.

Except the above risks and impacts (which will be managed through implementing site specific ESMP for project, the project is generally expected to result in positive community health impacts specifically for those households who will benefit from grid connection.

ESS5 on Land Acquisition, Restrictions on Land Use and Involuntary Resettlement,

ESS5 recognizes that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons. The project will involve civil works in on-grid connection for a portion of the currently unelectrified households across different parts of the Musanze and Rubavu districts. 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 project.

The standard is applicable as we noted there will be loss of assets, leading to loss of income sources. Businesses and subsistence agriculture activities will be affected by the project. The standard has the objectives to mitigate unavoidable adverse social and economic impacts from land acquisition or restrictions on land use by providing timely compensation for loss of assets. No resettlement or displacement is envisaged. Therefore, there are no any legacy issues regarding land use patterns and arrangements

ESS6 on Biodiversity Conservation and Sustainable Management of Living Natural Resources.

ESS6 recognizes the importance of maintaining core ecological functions of habitats, including forests, and the biodiversity they support. Habitat is defined as a terrestrial, freshwater, or marine geographical unit or airway that supports assemblages of living organisms and their interactions with the non-living environment. All habitats support complexities of living organisms and vary in terms of species diversity, abundance and importance.

The standard is applicable to the project considering that the lines will cross forests with a diversified habitat that needs to be considered and conserved for sustainable management of resources.

The project will comply with this environmental and Social Standard requirement by avoiding constructing or passing through critical habitat such as national parks (Volcanoes park) 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). Also, impacts and risks of other project 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 ESMP, including the environmental and social screening process for managing risks and impacts to biodiversity and natural resources.

ESS7: Indigenous Peoples/ Sub-Saharan African Historically Underserved Traditional Community

This standard aims to avoid or minimize impact on indigenous peoples/ Sub-Saharan African Historically Underserved 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 project as Rwanda does not have indigenous people, or historically underserved traditional community in the project proposed implementation areas.

ESS8: Cultural heritage

ESS8 recognizes that cultural heritage provides continuity in tangible and intangible forms between the past, present and future. People identify with cultural heritage as a reflection and expression of their constantly evolving values, beliefs, knowledge and traditions. Cultural heritage, in its many manifestations, is important as a source of valuable scientific and historical information, as an economic and social asset for development, and as an integral part of people's cultural identity and practice. ESS8 sets out measures designed to protect cultural heritage throughout the project life cycle.

The standard is applicable as the cultural heritage could be affected through assets but also the culture of people living in the area of influence. The 1994's Genocide against Tutsi memorial sites have been identified around the project site. This ESMP seeks to protect the identified cultural heritage sites from adverse impact of the project activities and support its preservation.

ESS 9: Financial Intermediary

ESS9 is not applicable to the project as there are no Financial Intermediaries that receive financial support from the Bank.

ESS10: Stakeholder Engagement and information disclosure.

Stakeholder engagement is an inclusive process conducted throughout the project life cycle. Where properly designed and implemented, it supports the development of strong, constructive, and responsive relationships that are important for successful management of a project's environmental and social risks. Stakeholder engagement is most effective when initiated at an early stage of the project development process and is an integral part of early project decisions and the assessment, management and monitoring of the project's environmental and social risks and impacts.

The standard is applicable to the project. The Borrower will continue to engage with and provide sufficient information to stakeholders throughout the life cycle of the project, in a manner appropriate to the nature of their interests and the potential environmental and social risks and impacts of the project.

The Project Developer will respond to concerns and grievances of project-affected parties related to the environmental and social performance of the project in a timely manner. For this purpose, the Borrower will propose and implement a grievance mechanism (The grievance mechanism to be provided under this ESS may be utilized as the grievance mechanism required under other ESSs (see ESSs 5 and 7) to receive and facilitate resolution of such concerns and grievances.

Henceforth, this ESMP will be publicly disclosed for easy access by the stakeholders and other interested party for environmental and social sustainability.

World Bank Group Environmental, Health, and Safety General Guidelines

The Environmental, Health, and Safety (EHS) Guidelines³ 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 EAQIP 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 justification should demonstrate that the choice for any alternate performance levels is protective of human health and the environment.

³ http://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/ifc+sustainability/our+approach/risk+management/ehsguidelines

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.

III. PROJECT DESCRIPTION

3.1. Introduction

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) is developing a project titled “Rwanda Energy Access and Quality Improvement Project (EAQIP)” financed and led by World Bank and co-financed by Agence Française de Développement (AFD) (joint co-financing), the OFID (parallel co-financing), and SFD (parallel). This multi-donor energy sector investment financing project will support the Government of Rwanda’s energy access objectives during this period of the National Strategy for Transformation (NST1; 2017-2024). The EAQIP Project would have a total volume of an estimated US\$ 288 million. The total IDA investment would be US\$150 million and US\$ 10 million grant from Clean Cooking Trust Fund (CFF), spread across four components of i) increasing grid electrification, ii) enhancing the efficiency of electricity service, iii) increasing access to off-grid electricity and clean cooking solutions, and iv) technical assistance, institutional capacity building and implementation support. The project will also receive the funds from other development partners namely AFD loan and The OPEC Fund for International Development and the Saudi Fund for Development investment financing.

The Project Development Objective is to increase access to modern energy for households, enterprises and public institutions; and enhance the efficiency of electricity services in Rwanda.

The project has four main components:

Component 1: Increasing access to grid electricity which will increase access to Households within 14 administrative districts located in three provinces of Rwanda namely Western, Southern and Northern Province.

Component 2: Enhancing the efficiency of electricity service which will include the following subcomponents: 2a) Rehabilitation of the Ntaruka Hydro Power Plant; 2b) Investments to improve stability and reliability of the power system; 2c) Improvements in the operational performance of Energy Utility Corporation Limited (EUCL).

Component 3: Increasing access to off-grid electricity and clean cooking solutions with the following subcomponents: 3a) Increasing off-grid electricity access and 3b) Increasing access to clean cooking solutions.

Component 4: Technical assistance, institutional capacity building, and implementation support which includes as subcomponents: 1) Technical Assistance.; 2) Capacity building.; 3) Implementation Support; and 4) RETF grant from Clean Cooking Fund.

Therefore, this section describes the proposed Environmental and Social Management Plan (ESMP) of Energy Access and Quality Improvement Project(EAQIP) for MUSANZE and RUBAVU Administrative districts where the project will imply the Plant Design, Supply, and Installation of Medium Voltage and Low Voltage Lines and Service Connections in 26 administrative Sectors of MUSANZE and RUBAVU Districts in Northern and Western Provinces of Rwanda respectively with 215.161 km of MV Line and 1238.792 of LV Lines and 47,806 new connections as summarized in table 4 for all project lots.

This ESMP was prepared to meet the national and World Bank safeguards policies related to the environmental and social safeguards requirements for increasing Access to Grid especially in MUSANZE and RUBAVU where the sub-project will be implemented by EDCL in-house teams.

3.2. Description and Location of Sub-Project

The on-grid electrification Project covered by this ESMP consists of plant design, supply, and installation of medium voltage and low voltage in the MUSANZE and RUBAVU Districts.

In Musanze District, the project covers 15 administrative sectors namely Muhoza, Cyuve, Busogo, Gacaca, Gashaki, Gataraga, Kimonyi, Kinigi, Muko, Musanze, Nkotsi, Nyange, Remera, Rwaza, Shingiro. In Rubavu District, it covers 12 administrative sectors (Bugeshi, Busasamana, Cyanzarwe, Gisenyi, Kanama, Kanzenze, Mudende, Nyakiliba, Nyamyumba, Nyundo, Rubavu and Rugerero).

During the implementation of this project within the aforementioned Districts, the project components which are likely to have environmental and social implications include construction of medium voltage distribution lines and this will involve bush clearing for the Right of Way, creation of access road for site accessibility and materials transportation, poles elevation and stringing. The proposed lines are described as follows:

Table 4: Description of Lots for MUSANZE and RUBAVU Administrative Districts

MUSANZE AND RUBAVU ADMINISTRATIVE DISTRICTS						
S/N	Lots	District	# Sectors to be covered	Length of MV Lines (km)	Length of LV Lines (km)	New Connections (households)
1	All	MUSANZE	15 Administrative Sectors	129.402	783.587	29,826
2	All	RUBAVU	12 Administrative Sectors	85.759	455.205	17,980
Total				215.161	1238.792	47,806

Source: EDCL, 2022

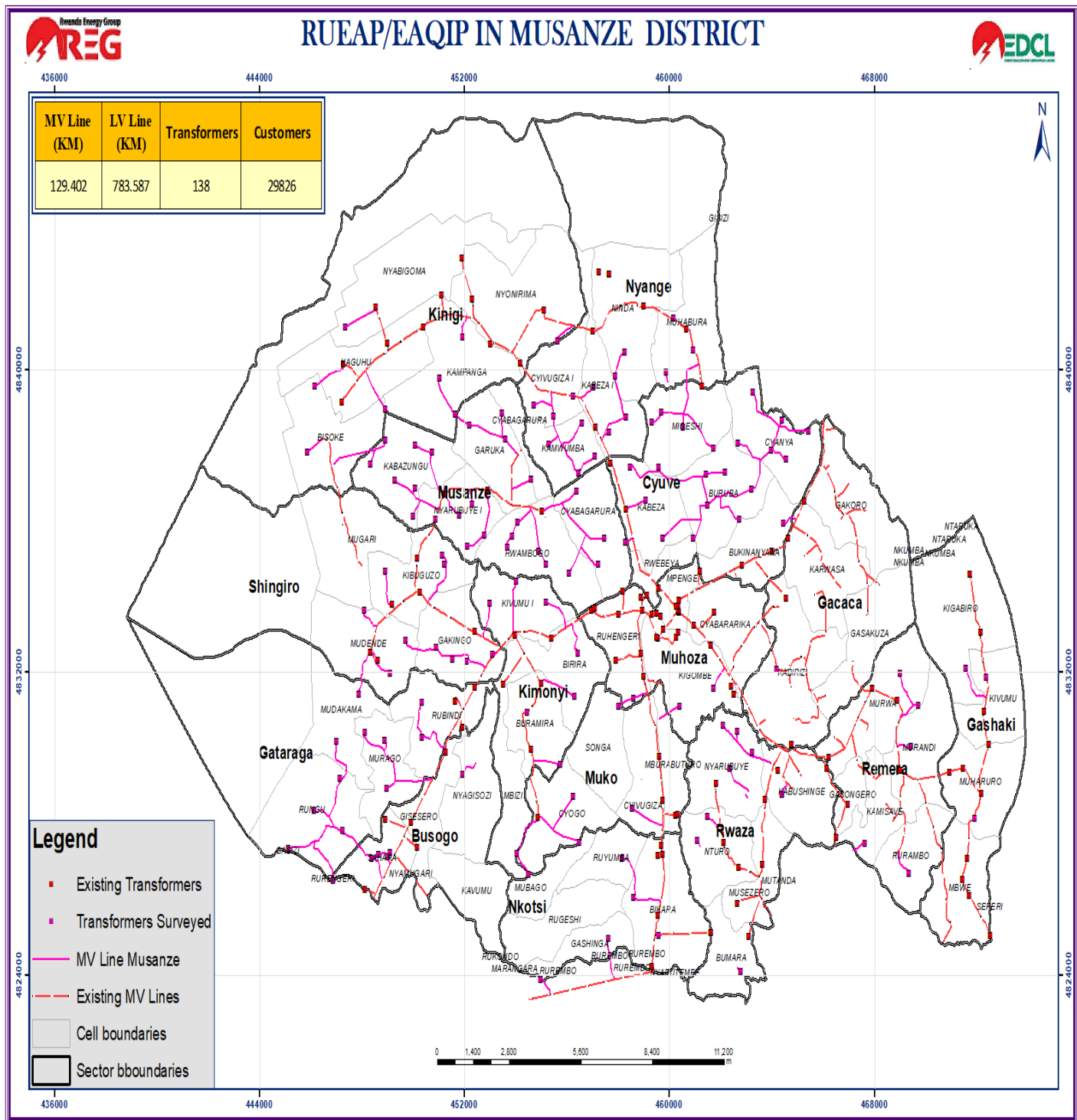


Figure 1: Map of Project location in Musanze Administrative District

Source: EDCL, 2022

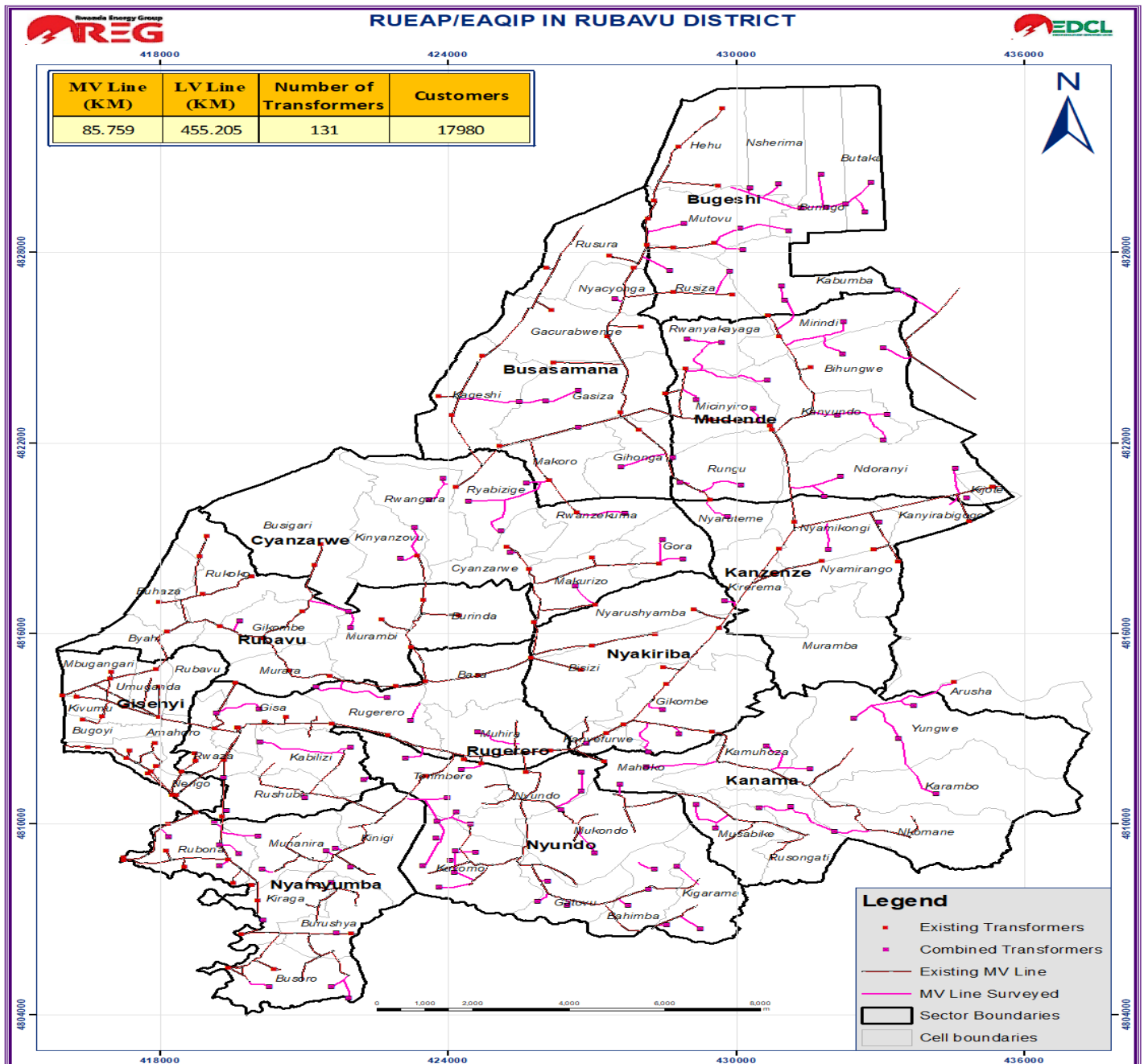


Figure 2: Map for RUBAVU Administrative District

Source : EDCL, 2022

3.3. Sub-Project Activities and works Description

Mainly, this project consists of the construction of new 30kV distribution lines and service on-grid connections for unelectrified households. During the project implementation, the activities will be divided into 4 phases Design and Planning phase, Construction Phase, Commissioning Phase and Operation Phase. During Design and Planning Phase, it will be a process of survey and mapping for new distribution routes, site selection to avoid harming sensitive ecosystems. During construction Phase, the project will involve civil works in on-grid connection for a portion of the currently unelectrified households across different parts of the Musanze and Rubavu districts. MV and LV lines will be passing alongside the roads and in lands for agriculture only, these activities will involve compensation process for the crops and trees damage, temporally restriction on land use and expropriation. No voluntary land donation anticipated under this project

3.3.1. Foundation excavation and poles erection

Foundation Excavations and erection of poles consists of creating the foundations for erecting poles. The general outlines of the poles may be varied but the general dimensions, phase spacing, clearances and the configuration of the conductors and earth wire are already known.

3.3.2. Construction of access roads

There is also provision of sites access on which consisting of the provision and maintenance of all access from the main ways to the line routes. The length of the access road is the distance between the edges of public roads to the lines.

The activity of clearing the right-of-way consist of felling any vegetation and dispose of waste material along the entire length of transmission lines. The transmission line right-of-way is 12 meters wide for the 30kv lines symmetrical about the centerline.

3.3.3. Right of Way (RoW)

According to RURA Guidelines on electrical power lines, the proposed right-of-way (RoW) for the 30 kV distribution lines is 12 meters, equivalent to 6 metres on either side of the distribution lines. Individual assets shall be affected from this RoW and vegetation height limited. It is possible to continue growing low crops and banana plantations in the RoW, but very high palm, Avocadoes, mangoes, eucalyptus plantations and forest shall not be allowed.

3.3.4. Electrical lines

The project shall consist of the construction of 30kV distribution lines by taking into consideration environmental and social issues to avoid, minimize or mitigate the negatives impacts that may take place during construction and operation phase of the project.

3.3.5. Poles Erection

The proposed poles of the 30 kV distribution lines shall be of the type of steel, wooden and concrete poles. They shall be used alternatively basing on the angle points or location and their spacing shall vary as well as their foundation and height as per the attached drawing of the poles.

3.3.6. Line Configuration

The 30 KV single circuit lines shall be constructed as follows:

3.3.6.1. Types of Poles:

- Wood poles for MV Line
 - ✓ 12m Wooden Poles, S140
 - ✓ 12m Wooden Poles, S190
 - ✓ 12m Wooden Poles, S255
 - ✓ 14m Wooden Poles, S255
- Steel poles for MV Lines
 - ✓ 12m Steel pole 800 daN
 - ✓ 14m Sectional Steel pole 2000 daN
- 12m Concrete poles for MV lines
 - ✓ Type 1000 daN
 - ✓ Type 1250 daN
 - ✓ Type 850 daN
- 9m Wood Pole for LV Line construction
 - ✓ Type S140
 - ✓ Type S190
 - ✓ Type S255

3.3.6.2. Types of conductors and cable

Overhead conductor

- ABC- 3phase
 - ✓ 3 x 70 + 54.6mm² ABC
 - ✓ 3 x 50 + 54.6mm² ABC
 - ✓ 3 x 35 + 54.6mm² ABC
- MV three phase ACSR conductor
 - ✓ 120/20mm² ACSR Conductor length
 - ✓ 70/12mm² ACSR Conductor length
 - ✓ OPGW
 - ✓ GSW 35sqmm

3.3.6.3. Switchgear CBS in 3 phases (6mm²)

3.3.6.4. Insulator Fuse cut-outs

- 30kV Fused Air Breaker Switch mounted on cross arm
- 30kV Drop out Fuses mounted on cross arm

3.3.6.5. MV surge arrestors

- 30kV Surge Arrestors mounted on transformer

3.3.6.6. Foundations

- Compact soil (wooden pole),
- soil+ cement (steel)

3.3.6.7. Transformer Stations

- 30kv transformer and structure

- Transformer Distribution Box
- Transformer circuit breakers in db (10ka)
- Feeder circuit breakers in db (10ka)
- LV steel armoured Copper cables from LV DB to ABC cable
- LV unarmoured PVC Cables from Transformer to LV DB
- Surge Arresters, Fused Air Breaker Switch, Drop Out Fuses & Earthing

3.3.6.8. Service Connections

- **Cable**
 - ✓ 2x10mm² service cable with communication wires
 - ✓ 4x10mm² service cable with communication wires
- **Prepaid meter**
 - ✓ Installation of Split Prepaid meter Single Phase
 - ✓ Installation of Split Prepaid meter Three Phase
 - ✓ Earthing of installation at house
- **Termination on pole**
 - ✓ IPC connector (6-10mm² connection to 35-70mm² ABC)
 - ✓ Connection from ABC to Meter for 10mm² x 2 wire
 - ✓ Connection from ABC to Meter for 10mm² 4 wire connection
 - ✓ Wedge clamp for termination on pole
- **Ready Board**
 - ✓ Ready board and additional two (2) LED lamps 9W each (one lamp in living room and another one for outside lighting)

3.3.7. Summary of works Description

1. pegging out works and bush clearing

- Line surveying, profiling and pegging of MV Lines
- Line surveying, profiling and pegging of LV Lines
- Bush clearing on right of way for MV Lines
- Bush clearing on right of way for LV

2. Excavation, Rock-Filled Backfilling and Concrete Foundations

- Excavation and back filling for 9m wooden LV Poles
- Excavation and back filling for MV wooden Poles 14 m
- Excavation and back filling for MV wooden Poles 12 m
- Concrete foundation for 12m Steel Poles
- Concrete foundation for 14m Steel Poles
- Concrete Foundation for 12m concrete Poles

3. Supply and Installation of Poles

- 9m Wood Pole for LV Line construction

- Wood poles for MV Line construction
 - Steel poles for MV Lines construction
 - 12m Concrete poles for MV lines construction
 - Pole Numbering for MV poles to specification
4. MV structure assemblies for 30kv including all brackets, bolts, nuts, washers and crimp joints.
 5. LV structure assemblies including all bolts, nuts, washers and crimp joints
 6. Stays and strut poles
 7. Overhead conductor installation
 8. Transformer stations
 9. Service connections

IV. ENVIRONMENTAL AND SOCIAL BASELINE CONDITIONS

This chapter gives background information of the project area as whole specific sites in terms of its location, physical and socio-economic environment, which will play a crucial role in the identification, predict and analysis of environment impacts and proposed appropriate mitigations measures and influence the overall direction in the development of the project.

4.1. Physical environment

4.1.1. Overview of Musanze District

4.1.1.1. Geographical location

The sub-project is located in Muhoza, Cyuve, Busogo, Gacaca, Gashaki, Gataraga, Kimonyi, Kinigi, Muko, Musanze, Nkotsi, Nyange, Remera, Rwaza, Shingiro sectors of Musanze district. Musanze is a district in the Northern Province of Rwanda. Musanze is bordered by the Republic of Uganda and Democratic Republic of Congo (DRC) to the North through Virunga National Park (60 Km²), Gakenke District in the South, Burera District to the East, Nyabihu in West and Ruhondo lake (28 Km²) in the South West. The total area of the district is 530, 4 km², among which 60km² of Virunga National Park and 28 km² of Lake Ruhondo. Musanze is divided into 15 sectors, 68 cells and 432 villages.

Musanze is Rwanda's most mountainous district, containing the largest part of the Volcanoes National Park. Five of the eight volcanoes of the Virunga chain (Karisimbi, Bisoke, Sabyinyo, Gahinga and Muhabura) are within the district boundaries. It is also in this Musanze District that most of Rwanda's Mountain Gorillas are found, making it the most popular tourist destination in the country.



Figure 3: Administrative Map of Musanze

4.1.1.2. Relief and Climate

Climate of Rwanda (1) Rainfall Schematically, rainfall increases from east to west. The wettest areas, which a mean annual rainfall of more than 2,000 mm are centered on the Congo-Nile divide, especially the western part of Nyungwe National Park, and the western volcanoes (Karisimbi). In most years November and April are the wettest months. January and February (the “short dry season”) are less humid, while June, July and August (the “long dry season”) are really dry (Fig. 4).

In Musanze district of Northern province, the line route is located in the north, 1,800 meters (5,900 feet) above sea level, near the Volcanoes National Park, with one of the coldest climates in Rwanda. The climate in Musanze is comfortable and overcast. The climatic relief from meteo Rwanda shows that the region experiences heavy rainfall with an average of 1420/year, the months of March, April and May having the highest rainfall. Musanze is characterized by cold and breezy days that are followed by cooler nights, making it a common feature of the residents to be clad in heavy sweaters. However, the rainy season is intense in this sector throughout the year. April and May normally have the heaviest rains, whereas October and November have a much more moderate rainy period.

The climate is of the type wet, characterized by two dry seasons and two rainy seasons which set out again over all the year in the following way: a small dry season extends from mid-December to February a great season of rain extends from March in mid-June a great dry season extends from June until September and a small season of rain extends from mid-September to December. Annual precipitations reach an average of 1420 mm; the temperature varies between 10.4o C and 22.3o C, according to the places and the season.

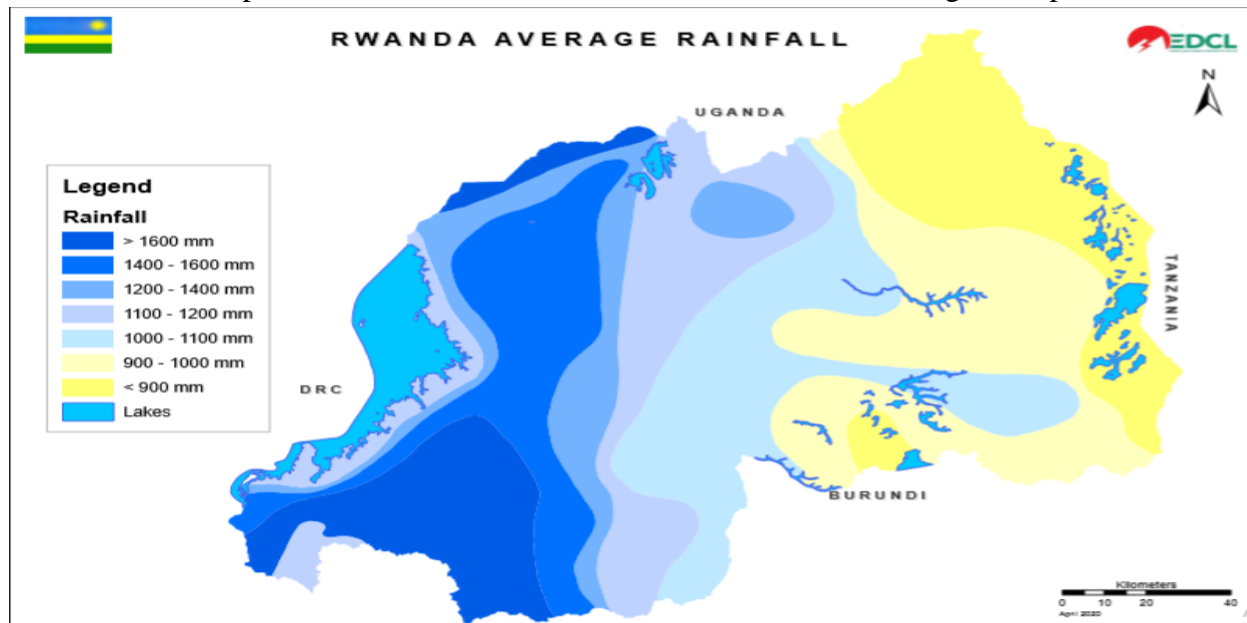


Figure 3:Rwanda Average Rainfall

4.1.1.3. Hydrography

Rwanda is divided into two major drainage basins (Congo and Nile Basin). The country’s hydrological network includes numerous lakes and rivers and its associated wetlands. A recent inventory of marshlands in Rwanda conducted in 2008 identified shows 860 marshlands, covering a total surface of 278,536 ha, which corresponds to 10.6 per cent of the country surface, 101 lakes covering 149,487 ha, and 861 rivers totaling 6,462 km in length.

Catchment and hydrology

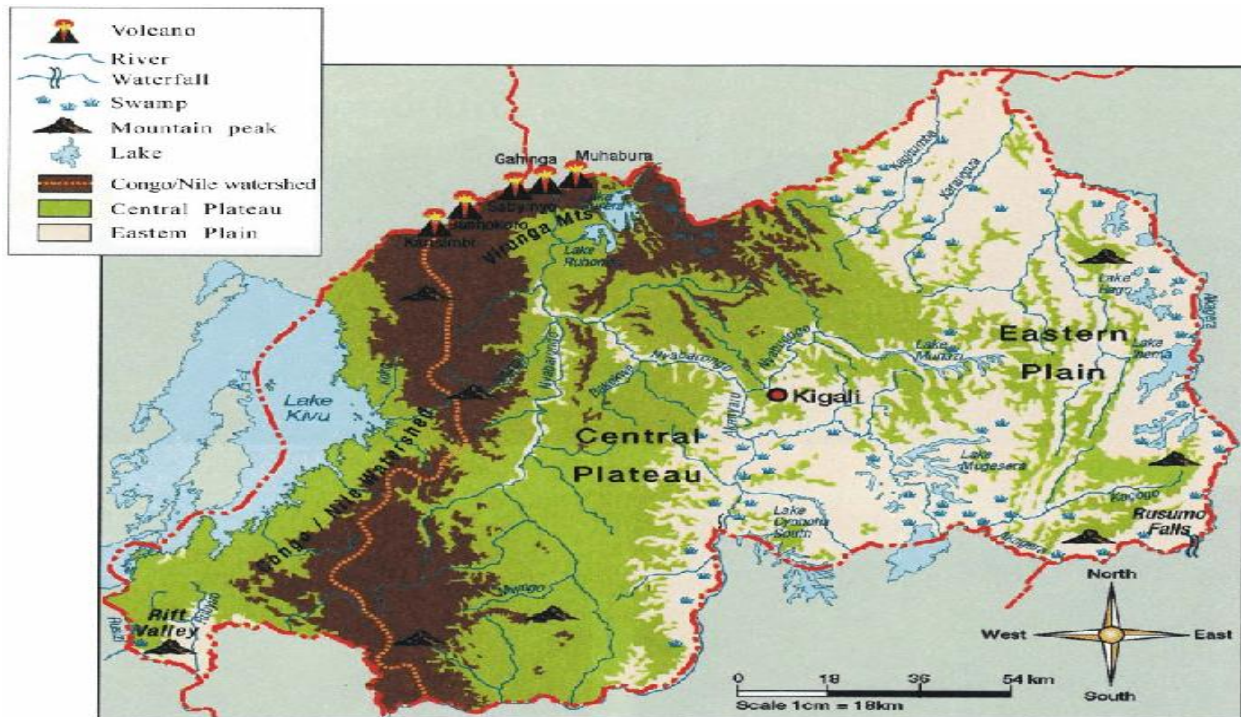


Figure 5: Catchment and hydrology



Ruhondo Lake



Mukungwa River

4.1.1.4. Biological environment

With the majority of the population of Musanze District working in agriculture, most of Musanze's jagged countryside has been stripped off its foliage and farmed to grow pyrethrum, sorghum, potatoes, etc

The Volcanoes National Park is still a rich and luscious habitat of green vegetation and animal life, but farmers outside the park have taken over the land all the way up to the park boundaries. The current land use in the subproject area of Musanze is dominated by agriculture and open land at 67.70%, and wetland make up 1.25% and forest at 4.57%.

	Residential (%)	Commercial (%)	Public, institutional & infrastructural facilities (%)	Mixed use area (%)	Agriculture and fallow or open land (%)	Wetlands (%)	Forests & hills (%)
Musanze	22.40	0.25	1.82	0.87	67.70	1.25	4.57



Figure 6: Volcanoes National Park

Forest plantation

Animal grasses

4.1.1.5. Flora and Fauna

Rwanda's mountain gorillas (*Gorilla beringei beringei*) are found in the Volcanoes National Park, making Musanze District the most popular tourist destination in the country. It is this popularity that has also prompted the government to promote Musanze as the secondary city for ecotourism. Biodiversity in this district is under threat, however, from the huge proportion of the population working in agriculture. They have stripped away much of the natural vegetation to grow food crops such as potatoes and sorghum or cash crops such as pyrethrum. Forests cover an area of about 11,616 ha in Musanze, broken down as follows: Bamboo forests: 2,517 ha; degraded natural forest: 2,223 ha; Eucalyptus Forest plantation: 1,626 ha; and mountain humid forest: 5,250 ha. State and district forests comprise 24 and 2 per cent of all forests in the district, respectively, while private forests comprise 74 per cent. The 33 ha Buhanga relict forest has a high level of biodiversity and cultural significance. It is host to 83 bird species, three of which are endemic to the Albertine Rift. It is also a stopover for the African Pitta, a migratory bird species. There are 189 plant species of which 38 are known medicinals and 13 mammal species. Some of the fauna in the area are the porcupine, jackal, wildcat, mongoose, hyrax and leopard.

The Volcanoes National Park is home to about 30 per cent of the global population of Mountain Gorilla. It has other 115 mammals' species, including the golden monkey, elephants, buffaloes, 187 bird species, 27 species of reptiles and amphibians and 33 arthropod species.



4.1.1.6. Geology and soils

Geology and soils are assessed in relation to the potential to encounter existing soil contamination, associated with past and current land use, or for new contamination to occur through accidental leaks or spills during the construction and operation phase of the project.

According to the Rwanda State of the Environment and Outlook Report (2015), Rwandan soils are naturally fragile. The rich volcanic soils in the northwest (highlands at more than 2,000 m) are generally fertile and allow cultivation of a wide range of food crops (for example, maize, potato, banana, beans, sorghum, green peas and wheat); acidic soils of Congo-Nile Crest (1,500 to 1,700 m) are suitable for other crops, such as tea, and soils in the larger river valleys and extensive wetlands are the most fertile. Most volcanic soils in naturally forested areas, such as the Volcanoes National Park and the Gishwati Forests, are high in nitrogen (Nzeyimana, Hartemink, & de Graaff, 2013).

The geology of Rwanda comprises of Mesoproterozoic¹¹ metasediments, largely comprising quartzites, sandstones, and shales of the Burundian Supergroup which are locally intruded by granite. There are four types of granite in the Kibaran Belt. In eastern Rwanda, there are “older granites” along with granitic-gneisses and migmatites of Palaeoproterozoic¹² age. In the project area of northwest and west are Neogene volcanics, ranging in age from Cenozoic to recent. Alluvium and lake sediments of Quaternary¹³ age occur in parts of the Western Rift and along rivers and in lakes throughout Rwanda. The geology of Rwanda is similar to the geology of neighbouring Burundi and southern Uganda.

Musanze has a landscape divided in two main areas: the volcanic plains and the mountain range. The volcanic plains cover the central and North part of the Musanze district including the Musanze, Muhoza, Muko, Kimonyi and Cyuve sectors; its average altitude is 1,860 m. mountain range is located in the South-East of the district, covering over a third of the total surface of the district. Its altitude ranges from 1,900 m to 2,000 m, covering the Muhoza, Cyuve, Gacaca, Rwaza, Gashaki, Remera and Nkotsi sectors. The highest peaks are Kalisimbi (4,507 m), Muhabura (4,127 m), Bisoke (3,711m), Sabyinyo (3,574 m), and Gahinga (3,474 m).

The soils of project area in Musanze district can be categorized as being volcanic on moderate to steeply slopes with volcanic ash soils and volcanic lava predominated with stones and shallow rocks. Musanze district is a gateway to the five of the eight famous volcanoes mountain ranges – the Vurunga Volcanoes.



volcanoes national park Rwanda



Soil in mountain range



Volcanic Soil

4.1.1.7. Land Use and Settlement

The land use in project area is mixed. It varies from urbanized area to semi urbanized area. The urbanized area is not dense and characterized by residential, commercial houses and public services buildings. The rural area is characterized by small-scale farming consisting of mixed seasonal, annual and perennial crops as well as rural grouped settlement. Most of time, many households which are scattered in the landscape which makes it difficult to connect many households at the same time. The most common type of habitat in Musanze district is the clustered rural settlement (known as Umudugudu).



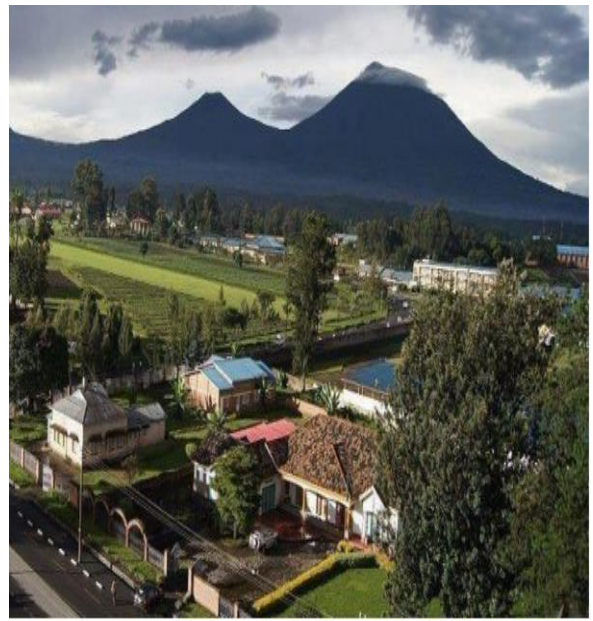
Kinigi IDP Model Village



Unpaved road



Rural area settlement



Urban area in Musanze district

4.1.1.8. Air quality

Considering that no industry and intense vehicle traffic are present. The mean concentration of PM_{2.5} and PM₁₀ in Musanze during the period April-June 2017 was 45µg/m³ and 54µg/m³. Black carbon levels were close to those in major US cities. It was a result of Agricultural burning, cooking fires, charcoal making, kerosene lightning, brick kilns, and older diesel generators/vehicles that were found to be major sources of air pollution in Musanze District⁴

Sensitive Ecosystems

The sensitive ecosystem in the project area is the Volcanoes National Parks and rivers including Mukungwa, lake of Ruhondo which are close to the project right of way. The project implementation shall avoid to damage or enter those ecosystems. The construction team shall commit to protect the National Park, lake and the rivers.



Ruhondo Lake



Volcanoes



Mukungwa river

⁴ inventory of Sources of Air Pollution in Rwanda. Determination of Future Trends and Development of a National Air Quality Control Strategy. 19 January 2018

4.1.1. Overview of Rubavu District

4.1.1.1. Geography of the District

The Rubavu district lies on the shores of Lake Kivu just across the border from the Congolese city of Goma.

It is bordered in the East by Nyabihu District, West and North by the Democratic Republic of Congo and South by Rutsiro district and is 154.7 km from city of Kigali the capital of Rwanda. Its geographic location and related features such as Lake Kivu helps the district to be a business and tourism hub (especially through cross border trade with DRC). The District of Rubavu is composed of 12 administrative sectors, 80 Cells and 525 Villages (Imidugudu). The total area of the district is 388 km² (150 sq mi) with density of 1000/km².

The project covers Cyanzarwe, Busasamana, Bugeshi, Mudende, Kanzenze, Kanama, Nyundo, Nyamyumba, Rugerero, Rubavu, Nyakiriba and Gasenyi sectors

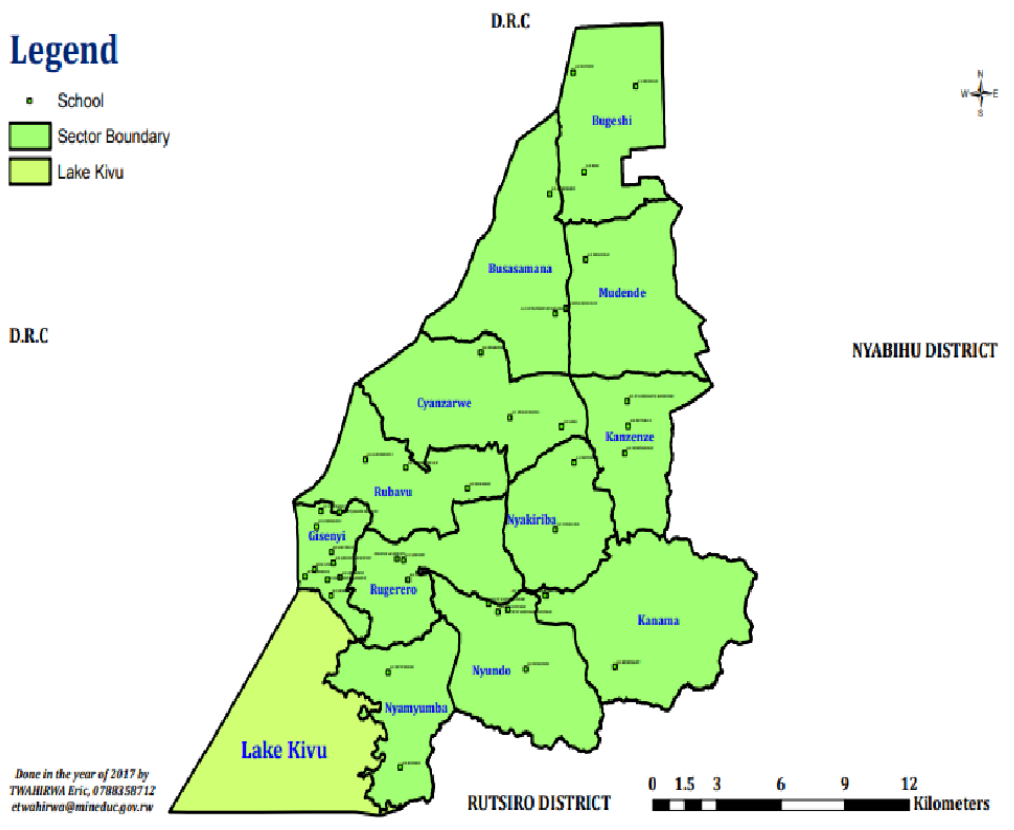


Figure 7: Administrative Map of Musanze

4.1.1.2. Relief and Climate

The periphery of Rubavu District is dominated by the Volcanoes National Park in the north and Gishwati Forest in the south. Its altitude is 1,470 m and it has an equatorial climate with an average altitude. Average temperature ranges from 15 ° C on the vertices, where night time temperatures can drop to 6 ° C up to 20 ° C at borders of Lake Kivu. Rainfall in Rubavu District varies between 1200 mm and 1500 mm per year well distributed throughout the year except for the period of long dry season which extends from June to mid-September.

The impact of climate change in Rubavu District is evidenced through the floods and droughts that occur with increasing frequency and sometimes magnitude. Major floods that occurred in the district have led to

socioeconomic challenges such as landslides, soil erosion, crop losses, infrastructure damage and human injuries and deaths. Environmental degradation, such as the deforestation in Gishwati forests, has led to the downstream sectors being extremely vulnerable to the increased rainfall associated with climate change. Rubavu has an average maximum temperature of 25°C and average minimum temperature of 15°C. The hottest month is observed in May. The climatic relief of Rubavu as shown by data from meteo Rwanda shows that the region experiences heavy rainfall amounting to over 1200mm/yr. March, April and October have the highest rainfall.

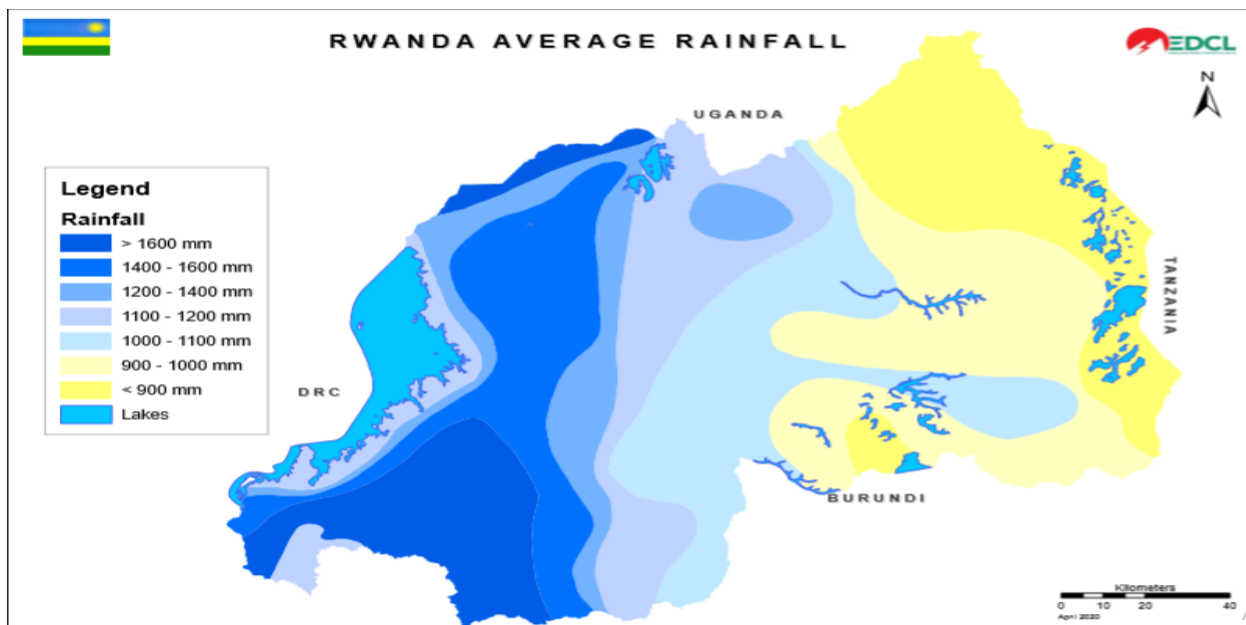


Figure 8:Rwanda Average Rainfall

4.1.1.3. Hydrography

Rubavu district is served by numerous river networks that include Pfunda river, Sebeya among other rivers feeding into Lake Kivu. The Sebeya and Lake Kivu catchments are some of the most upstream parts of the Congo River Basin (which flows into the Atlantic Ocean). The Sebeya River flows through the catchment for 48 km, running in a north-westerly direction from its origin in the mountains of the Congo-Nile divide, at an altitude of 2,660 masl (meters above sea level), into the catchment outflow at Lake Kivu at an altitude of 1,470 masl, at the town of Rubavu.



Kivu Lake



Sebeya River

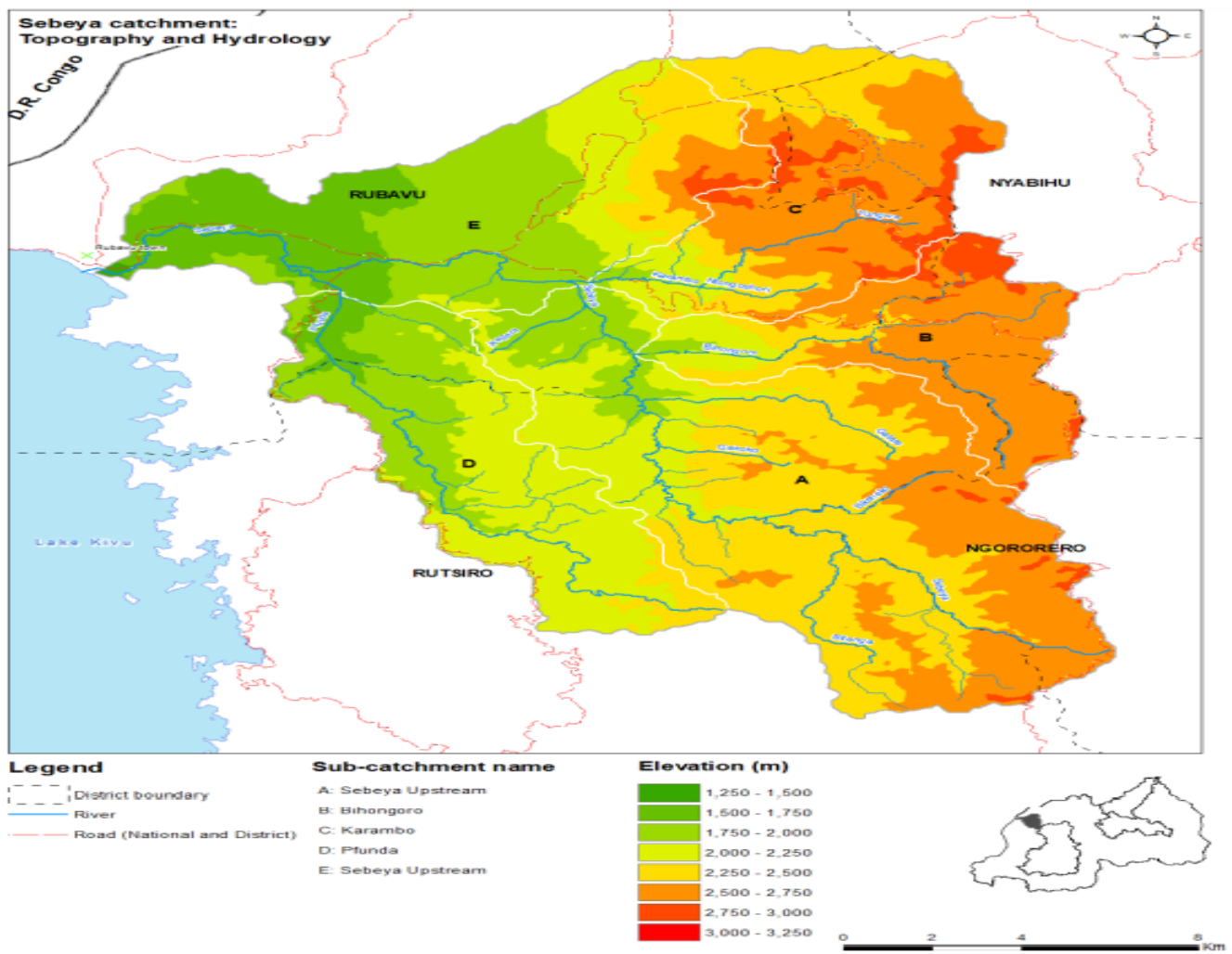


Figure 9: Sebeya catchment

4.1.1.4. Soils and Geology

The soil in the project area in Rubavu district has a very rich soil, but shallow, volcanic ash and lava decomposed, while land southeast has deep soils but poor, often acidic, sandy clay and leached by high erosion.



volcanoes national park Rwanda



Soil in mountain range



Volcanic Soil

4.1.1.5. Biological environment

The district of Rubavu presents two main relief categories: plain and mountainous area. These two zone types strongly condition the development of the district.

Plain area: The flat area in which the current town is situated is the most favorable area to the town extension because it has the least expensive development costs. However, this area is currently cultivated. The urban development would therefore be made at the expense of food crops.

Mountainous area: The mountainous area is made up of massif of Mount Rubavu on one hand, and the steep slopes in the south east of the site in the Nyamyumba and Rugerero sectors, on the other hand. This mountainous area which has slopes of more than 15% hinders the growth. Furthermore, the areas with steep slopes require costly and requires specific developments. Sensitive area such as Lake Kivu: The Lake is a fragile and sensitive zone which must be protected by appropriate measures from being polluted with increase urbanization.

Areas with steep slopes: Zones of more than 15% slopes which are at immediate proximity of the urban or urbanizable perimeter and constitute sensitive zones because of their fragility towards erosion and risks of landslide. These areas are to be protected.

Forest area: The forest zones existing in the study perimeter are reducing. Between 1988 and 2005, the forest cover within urban limit has decreased to more than 42%. Protecting the forest zone is important. The current land use in the subproject area of Rubavu district is dominated by residential (41.02), agriculture and open land at 30.98%, and forests and hills make up 25.08%.

	Residential (%)	Commercial (%)	Public, institutional & infrastructural facilities (%)	Mixed use area (%)	Agriculture and fallow or open land (%)	Wetlands (%)	Forests & hills (%)
Rubavu	41.02	0.12	2.80	-	30.98	-	25.08

4.1.1.6. Land Use and Settlement

The land use in project area is mixed. It varies from urbanized area to semi urbanized area. The urbanized area is not dense and characterized by residential, commercial houses and public services buildings. The rural area is characterized by small-scale farming consisting of mixed seasonal, annual and perennial crops as well as rural grouped settlement. Most of time, many households which are scattered in the landscape

which makes it difficult to connect many households at the same time. The most common type of habitat in Musanze district is the clustered rural settlement (known as Umudugudu).



Urban area



Rural area settlement

4.1.1.7. Air Quality

Air pollution levels in Rubavu district are likely to be heavily influenced by transboundary pollution from the adjacent city of Goma which lies adjacent to the border with the Democratic Republic of Congo (DRC) and is understood to experience poor air quality⁵. In addition, existing air quality will be influenced by natural sources such as the active volcano on Mount Nyiragongo. Air pollution in this city is likely to be dominated by sources such as: transboundary pollution from the adjacent city of Goma, human activity such as pollution from motorized transport and wood and charcoal burning and volcanic activity (Nyiragongo volcano).

4.1.1.8. Sensitive Ecosystems

The sensitive ecosystem in the project area is the Sebeya marchlands, Volcanoes National Parks and rivers, lakes including lake of Kivu which are close to the project right of way. The project implementation shall avoid to damage or enter those ecosystems. The construction team shall commit to protect the National Park, lakes and the rivers.

⁵ REMA, 2018. Inventory of Sources of Air Pollution in Rwanda



Kivu lake



Volcanoes



Sebeya catchment



4.2. Socio-Economic Environment

4.2.1. Socio-Economic Environment of Musanze District

4.2.1.1. Demography

The 4th Rwanda Population and Housing Census (PHC4) of 2012, has enumerated 368,267 inhabitants in Musanze District on a density of 694 Inhabitants/Km², where 47.4% are males and 52.6% are females: and 27.7% living in urban areas and 72.3% living in rural areas. Musanze population represents 3.5% of the total population of Rwanda. It represents 21.3 % of the Northern Province population (1,726,370 inhabitants). Muhoza is the highest populated (51,878) sector, whereas Nkotsi is the least (13,594).

The recent data of Ubudehe Profiling carried out by LODA in February 2018 shows that there is an increment of habitants from 406, 479 habitants in 2018 to 368, 267 habitants in 2012. The table 5 below is providing EICV 4 demographic data.

Table 5: Population Distribution in Musanze District by Sectors

Sectors	Male	Female	Total
Busogo	10,203	11,309	21,512
Cyuve	18,358	20,733	39,091
Gacaca	11,208	12,397	23,605
Gashaki	6,509	7,139	13,648
Gataraga	10,820	11,890	22,710
Kimonyi	7,225	8,364	15,589
Kinigi	12,818	14,403	27,221
Muhoza	25,377	25,377	50,754
Muko	8,959	9,978	18,937
Musanze	14,833	17,031	31,864
Nkotsi	6,204	7,342	13,546
Nyange	12,794	14,672	27,466
Remera	9,202	9,910	19,112
Rwaza	9,967	10,959	20,926
Shingiro	9,922	11,240	21,162
Total	174,399	192,744	367,143

Source: NISR, 2012 Population and Housing Census results

4.2.1.2. Agriculture

Regarding the size of land cultivated per household in Musanze District, the mean size of land cultivated per household is 0.45 ha, which is below the national average (0.59), the rural average (0.6) and the urban average (0.46) and is therefore countrywide among the lowest rates. However, a higher proportion of farmers cultivating larger areas create an enabling environment for the increase in production.

In terms of the percentage of agriculture households purchasing input in Musanze District, the utilization of pesticides (51.9%) and chemical fertilizers (46.5%) is much higher than that of improved seeds (13.8%) and organic fertilizers (13%). Furthermore, the purchase of chemical fertilizers and pesticides in Musanze is significantly higher than the national average (29% for chemical fertilizers and 31.2% for pesticides). Part of the post-harvest infrastructure of Musanze District is 10 Maize drying grounds. There is also one rehabilitated government-owned warehouse located in the Sector of Cyuve, which has a capacity of 3,500 MT. There is also one Irish Potatoes Collection Centre located in Kinigi Sector.

62.6% of households are raising livestock in the district, which is much less than the national average (68.2%). Therefore, the District needs to put more effort in livestock transformation to reach the national target. Chicken (55%), Cattle (38.4%) and Pigs (30.4%) are the most widespread types of animals raised by households in Musanze. However, the national average shows that in general Goat (55%), Cattle (47%) and Chicken (45%) are prioritized.



Plantations of Animal grass



cabbage



Irish Potatoes

4.2.1.3. Energy

PAHs distribution by source of lighting

District	Electricity		Chargeable torch		Kerosene lamp		Solar energy		Candle		Firewood		Battery		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Musanze	1,578	32.0	2,072	42.0	277	5.6	494	10.0	313	6.3	36	0.7	169	3.4	4,938	63.1
Rubavu	620	21.5	1,516	52.5	204	7.1	155	5.4	318	11.0	41	1.4	33	1.1	2,886	36.9
Total	2,197	28.1	3,588	45.9	481	6.1	649	8.3	631	8.1	77	1.0	201	2.6	7,824	100.0

Source: Primary Data, 2022

The above table illustrates that 7,824 households affected 28.1% have access to electricity and use it for lighting, 45.9% use chargeable torch for lighting, 6.1% remain using kerosene lamp, 8.3% use candle for in house lighting, 1% use firewood and 2.6% use batteries. Musanze and Rubavu also follow the same share of the overall rate defined. Electricity users in the surveyed households which will be affected, and these are mainly the households that have the plots of land within the project vicinity but living in the other area having electricity and this sub-project is expected to use fill in connections whereby the electricity users claimed to use it only for lighting without other productive activity; this also means that their crops and trees will be affected during the construction of the MV line in both Districts even if some of them are not living in the same area.

Table 6: Distribution of the PAHs by source of cooking fuel

District	Gas		Firewood		Charcoal		Electricity		Biomass Residue		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Musanze	72	1.5	4,300	87.1	289	5.9	48	1.0	229	4.6	4,938	63.1
Rubavu	8	0.3	2,413	83.6	391	13.6	0	0.0	73	2.5	2,886	36.9
Total	80	1.0	6,713	85.8	680	8.7	48	0.6	302	3.9	7,824	100.0

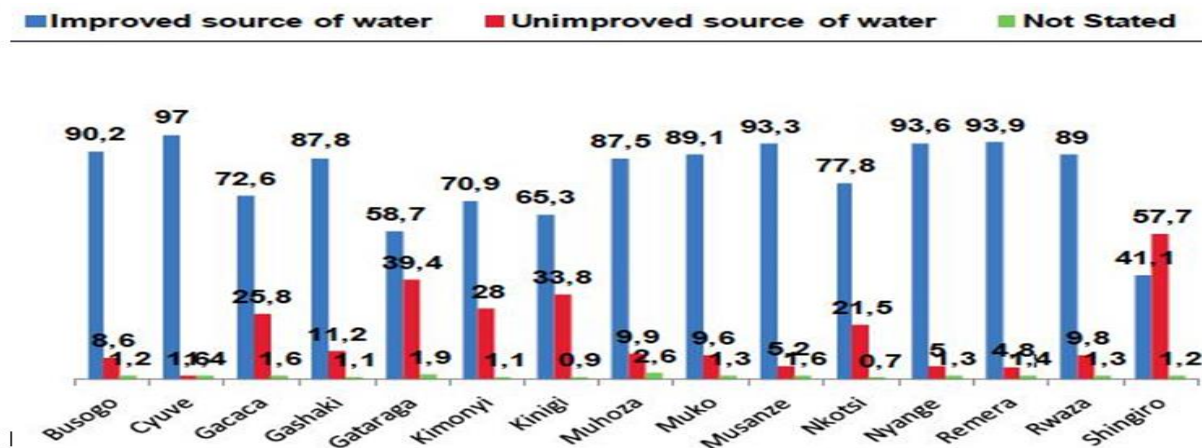
Source: Primary Data, 2022

The above table indicates that 7,824 households affected by the project 85.8% use firewood for cooking (87.1% for Musanze and 83.6% for Rubavu), 8.7% use charcoal for cooking (5.9% for Musanze and 13.6% for Rubavu districts), 3.9% use biomass residues (4.6% for Musanze district and 2.5% for Rubavu district), 1% use gas (LPG) (1.5% Musanze District and 0.3% for Rubavu District) and 0.6% use electricity as main cooking fuel in household (1% for Musanze district and 0% in Rubavu District). Finally, the most of PAHs use the firewood as source of cooking given that also the surveyed community is in the rural area where there is no other energy which would be used during cooking apart from firewood, this is a result of the rural area where the affected people are not able to use other different source of cooking. The connection to electricity is expected to reduce the dependency on firewood and hence contribute to environmental protection.

4.2.1.4. Water and Sanitation

95.3% of HHs in Musanze District have access to clean water, this is slightly higher to National level (84.8%) of HHs using an improved water source with 23.3% of HHs using protected springs, 60.6% using pipe, 9.9% having water piped into their dwelling/yard. On average, 43.9% of households in Musanze District are located within 15 minutes of walking distance to an improved water source. The mean time to an improved water source in Musanze District is 7.5 minutes, which is far below the national average (11.2 minutes). Musanze district ranks first on this indicator within Northern Province. However, 1.8% of households in Musanze district still walk more 30 minutes to reach an improved water source.

Figure 10: Distribution (%) of the Private Households of Musanze district by main source of Water and by sector



Source: Rwanda 4th Population and Housing Census, 2015 (NISR)

The District of Musanze has well performed in term of population with access to basic sanitation (84.27%) compared to national level (83.4%). The majority using protected latrines (82.0%) and 1.8% don't have latrine, which is a high score compared to national situation (3.2%) (EICV4). In Musanze District, waste management is still a problem where 52.4.9% of HHs thrown their domestic wastes in bushes or field and only 43.3% has composts. This is relatively higher than national level where respectively 40.2% thrown waste in bushes and 51.6% of HHs have composts. In the town, the rate of HHs using public rubbish is 3.0% while at national level is 6.2% (EICV4).

4.2.1.5. Urbanization and Human Settlement

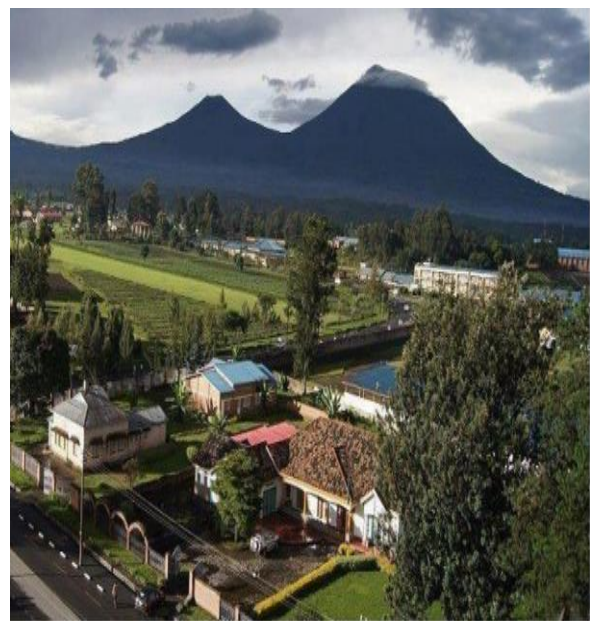
According to EICV4, In Musanze District 52.3% of households are living in settlement (Imidugudu) while 3.4% are living in unplanned clustered rural housing, 24.7% are living in isolated rural housing, and 5.6% living in unplanned urban housing. These are far below the national achievements: 49.2%, 8.7%, 25.6%, and 12.8% respectively. 97.7% of households are Single house dwelling, 1.5 % are Multiple HH dwelling, 0.6% are group of enclosed dwellings (Multiple HH) and the rest 0.1% are group of enclosed dwellings (single HH).

The most common type of habitat in Musanze district is the clustered rural settlement (known as Umudugudu). 66.6% of the private households are of that type, followed by spontaneous/ squatter housing (15.3%) and dispersed/isolated housing (14.2%). The type of habitat in Musanze varies according to the area of residence; In urban areas, the predominant type is spontaneous/squatter housing with 44.9%, followed by clustered rural settlement (umudugudu) (34.6%) and the planned urban housing (12.8%). In rural areas the predominant type is clustered rural settlement (umudugudu) with 78.6% followed by dispersed/isolated housing with 19.9%, and the spontaneous/squatter housing with 4.1% (Census, 2012).

At the national level, 28.7% of private households are headed by women and in Musanze; the high percentages of private households headed by female are found in the sectors of Kimonyi and Nkotsi (32%), Musanze (31.7%), Shingiro (30.7%), Kinigi (30.4%) and Nyange (30.3%), and the small ones are in Gashaki (23.2%), Gacaca (24%) and Muhoza (25%).



Rural area settlement



Urban area

4.2.1.6. Environment and Natural resources

94.5 % of land in Musanze District is protected from soil erosion, while it is 78.1% at national level. 29.73% of surface is covered by forest and 28.6% of land in Musanze is protected to maintain biodiversity.

Table 7: Musanze District Potentials

Sector	Potentiality	Product
Busogo	High soil fertility	Irish potatoes
		Wheat transformation
	Mineral deposits	Travertine, Cassiterite and Volcanic stones (lava)
	Agro-processing	Animal Feed Processing
Cyuve	High soil fertility	Irish potatoes
	Agro-processing	Animal Feed Processing
Gacaca	High soil fertility	Irish potatoes
	Lake for pisciculture	Fish farming
	Agro-processing	Animal Feed Processing
Gashaki	Lake for pisciculture	Fish farming
	Mineral deposits	Travertine, Cassiterite and Volcanic stones
	Agro-processing	Animal Feed Processing
Gataraga	High soil fertility	Irish potatoes
	Agro-processing	Animal Feed Processing
	Rivers for energy	Hydropower in Mutobo rivers
	Generation	
Kimonyi	Agro-processing	Animal Feed Processing
Kinigi	High soil fertility	Irish potatoes
	Agro-processing	Animal Feed Processing
Muhoza	High soil fertility	Irish potatoes
	Mineral deposits	Travertine, Volcanic stones
	Agro-processing	Animal Feed Processing
Muko	High soil fertility	Irish potatoes
	Mineral deposits	Coltan and wolfram
	Agro-processing	Animal Feed Processing
Musanze	High soil fertility	Irish potatoes
	Agro-processing	Animal Feed Processing
Nkotsi	Mineral deposits	Travertine, Cassiterite and Volcanic stones
	Agro-processing	Animal Feed Processing
Nyange	High soil fertility	Irish potatoes
	Agro-processing	Animal Feed Processing
Remera	Lake for pisciculture	Fish farming
	Agro-processing	Animal Feed Processing

Source: Musanze District, 2020

4.2.1.7. Archaeological and Cultural Heritage

The project area has many cultural sites including archaeological sites dominantly presented by lava tunnels and caves, genocide against Tutsi memorials and a public burial, touristic area and other social and cultural heritage.



Ndubi lava caves



Kinigi Genocide against Tutsi memorial site

Vulnerable groups

Vulnerable populations, such as people living with HIV/AIDS (PLHA), out-of-school youth, very poor or female-headed households, and orphans and vulnerable children (OVC) face challenges with respect to health, education, and economic stability.

There are several vulnerable groups in the project area. Women can be considered as one of these groups, especially women-headed households because of their social status in the community as well as their economic situation. Women-headed households are frequent in the area. Most of them are widows from the Genocide against Tutsi, the war or natural deaths due to diseases.

4.2.2. Socio-Economic Environment of Rubavu District

4.2.2.1. Demography

The 4th Rwanda Population and Housing Census (PHC4) of 2012, has enumerated 403,662 residents in Rubavu District on a density of 1039 Inhabitants/Km², where 51.7 % of the total population are females and 48.3 % are male. Reference to NISR 2012, total population in urban areas is 149,209 which makes 37% of the total district's population whereas 254,453 (63%) reside in rural areas. The district's population represents 3.8% of the total country's population and 16.3 % of the Western Province population (2,471,239 inhabitants). The average house-hold size is 5.2 against 4.8 at national level.

The population aged between 0-14 years old represented 43.8% and the population aged between 15 and 49 years old represented 47.8% while those above 50 years old represented 8.1%. (NISR, 2012). This population was estimated to be around 476,996 by 2017 and 579,584 by 2024 considering the population growth rate of 2, 6% each year in Rubavu District.

Table 8:Population distribution by sector and area of residence

Sectors	Area of residence									
	Total				Urban			Rural		
	Both sexes	Density (inhabitants per km ²)	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Rubavu District	403,662	1,039	194,989	208,673	149,209	73,562	75,647	254,453	121,427	133,026
Bugeshi	29,687	956	13,957	15,730	0	0	0	29,687	13,957	15,730
Busasama na	31,253	889	14,525	16,728	0	0	0	31,253	14,525	16,728
Cyanzarwe	29,615	851	13,900	15,715	0	0	0	29,615	13,900	15,715
Gisenyi	53,603	4,766	27,045	26,558	53,603	27,045	26,558	0	0	0
Kanama	29,220	681	13,653	15,567	6,406	3,024	3,382	22,814	10,629	12,185
Kanzenze	21,309	944	9,891	11,418	0	0	0	21,309	9,891	11,418
Mudende	26,031	786	12,252	13,779	0	0	0	26,031	12,252	13,779
Nyakiriba	30,068	1,373	16,332	13,736	10,124	4,867	5,257	19,944	11,465	8,497
Nyamyum	37,491	1,606	18,100	19,391	13,630	6,736	6,89	23,861	11,364	12,497

ba							4			
Nyundo	30,417	966	14,273	16,144	5,973	2,872	3,101	24,444	11,401	13,043
Rubavu	42,394	1,651	20,537	21,857	28,177	13,838	14,339	14,217	6,699	7,518
Rugerero	42,574	1,682	20,524	22,050	31,296	15,180	16,116	11,278	5,344	5,934

Source: RPHC4 (NISR, 2012)

The main socioeconomic indicators that should be described at the forefront are poverty and unemployment.

Energy is central to district development strategy. It cuts across almost all other sectors, including housing and urbanization, manufacturing, agro-processing, mining, tourism, and IT services. Energy sector in Rubavu District is at a low- level whereby the main source of lighting is electricity, which is used, by 27% of the total HHs for which 85.9% use main grid whereas 12.7% use off-grid energy. this needs to be increased and become relatively equal by 2024. However, the main source of cooking is firewood which is at 61.7%. and needs to be decreased by 50% by 2024. Rubavu District has got two hydro-powers, solar energy and methane gas which can generate electricity to achieve the target of 100% electricity connection for the whole district. Within these six years (ESSP 2018-2024).

Education: 81.8% of children attend primary school compared to the national average of 88.2%, The number of students that attend high school in Rubavu District is 22% compared to 23.8% at a national level. Computer literacy in the district is still very low where only 9.2% are confident to use a computer although the national average is also still low.

Health: The percentage of women aged 15-19 who have begun childbearing (DHS, 2014/15), and the number of deliveries 16 to 19 years (Teen Mothers) (MoH, 2016).

Integrated grouped settlement is the most common type of housing in Rubavu for which its percentage is 36.2% and at the national level is 49.3%. Rubavu has invested much in improved water source and sanitation, which is at 98.4%, 80.1% of the total households respectively, and time to improved water source is less compared to the national, which is 8.5 to 11.2 minutes. The waste management is commonly done through compost dumping in the Rubavu District at 28%, which is less compared to the national one, which is 51.6%.

Agriculture: Regarding the size of land cultivated per household in Rubavu District, the mean size of land cultivated per household is 0.33 ha, which is below the national average (0.59), the rural average (0.4) and the urban average (0.43) and is therefore countrywide among the lowest rates. However, a higher proportion of farmers cultivating larger areas create an enabling environment for the increase in production. In terms of the percentage of agriculture households purchasing input in Rubavu District, the utilization of pesticides (41.9%) and chemical fertilizers (46.5%) is much higher than that of improved seeds (13.8%) and organic fertilizers (13%).

Land consolidation on priority crops increased. Fertilizer use increased from 34.2% in 2013 to 40% in 2018 which was also the DDP target. Productivity on priority crops also increased as follows; Maize

increased from 3.5MT per hectare in 2013 to 5MT per hectare in 2018, Beans from 1.7MT per hectare in 2013 to 2.6MT per hectare in 2018 and Irish potatoes from 22.4MT per hectare in 2013 to 30.2 MT per hectare in 2018.

As part of efforts to promote use of improved seeds, Rubavu district currently has six green houses for Irish potato seeds multiplication. Post-harvest infrastructure has also been increased in the district with. Maize drying grounds in 2018 compared to 2 in 2013. The district also has 20 storage facilities which with a capacity of 1,442 T.

Energy: In Rubavu District, access to electricity increased to 41.5% in 2017/18 up from 27.7% in 2013.

Business and Tourism development: Tourism in Rubavu District has also grown over the period of DDP5 new hotels have been constructed and existing ones upgraded. Total accommodation rooms in the district meeting required standards are more than 2,518 in 2018.

Table 9: Rubavu district Potentials

Sector	Potentiality	Production
Bugeshi	Suitable lands for crop production	Staple production: maize and Irish potatoes Coffee
	Business facilities	Cross border trade with DRC with emphasis on agriculture and livestock products
Busasamana	Suitable lands for crop production	Staple production: maize and potatoes Coffee
	Business facilities	Cross border trade with DRC with emphasis on agriculture and livestock products
	Touristic sites	“Destination management area” as defined by RDB
Cyanzarwe	Suitable lands for crop production	Staple production: maize and Irish potatoes Coffee
	Business facilities	Cross border trade with DRC in agriculture and livestock products
Gisenyi	Suitable lands for crop production	Staple production: maize and Irish potatoes Coffee Pisciculture
	Business facilities	Cross border trade with DRC in agriculture and livestock products
	Touristic sites	“Destination management area” as defined by RDB
Kanama	Suitable lands for crop production	Staple production: maize and potatoes Coffee
Kanzenze	Suitable lands for crop production	Staple production: maize and potatoes Coffee
Mudende	Suitable lands for crop production	Staple production: maize and potatoes Coffee
Nyakiliba	Suitable lands for crop	Staple production: maize and potatoes

Sector	Potentiality	Production
	production	Coffee
Nyamyumba	Suitable lands for crop production	Staple production: maize and potatoes
		Coffee
		Pisciculture
	Lake Kivu maritime transport	Maritime transport
Nyundo	Suitable lands for crop production	Staple production: maize and potatoes
		Coffee
Rubavu	Suitable lands for crop production	Staple production: maize and potatoes
		Coffee
	Business facilities	Cross border trade with DRC in agriculture and livestock products
	Touristic sites	“Destination management area” as defined by RDB
Ruggero	Suitable lands for crop production	Staple production: maize and potatoes
		Coffee

Source: Rubavu District ,2020.

4.2.2.2. Archaeological and Cultural Heritage

The project area has many cultural sites including archaeological sites dominantly presented by lava tunnels and caves, genocide against Tutsi memorials and a public burial, touristic area and other social and cultural heritage.

Vulnerable groups

Vulnerable populations, such as people living with HIV/AIDS, out-of-school youth, very poor or female-headed households, and orphans and vulnerable children (OVC) face challenges with respect to health, education, and economic stability.

There are several vulnerable groups in the project area. Women can be considered as one of these groups, especially women-headed households because of their social status in the community as well as their economic situation. Women-headed households are frequent in the area. Most of them are widows from the genocide against Tutsi, the war or natural deaths due to diseases.

V. NATURE AND EXTENT OF KEY ENVIRONMENTAL IMPACTS OF EAQIP

This project and its activities will have potential impacts (both positive and negative) within and on the surrounding and connected communities, both directly and indirectly as there will be direct and indirect interactions between project activities and the environment.

This chapter identifies analyses and classifies these impacts that could arise from the activities of the project, either during the construction phase or the operational phase.

The impacts also apply on socioeconomic environment (health, security, economic activities, employment, finances, population; present land use; planned development activities; community structure; distribution of income, goods and services; recreation; public health; cultural properties, etc) and to the biophysical environment (fauna, flora, water, air, soil, landscape) .

All these impacts affect the environment and the community at different degrees, and their duration differs also. That is why the impacts are classified differently according to their range in space and time as described as such in this study.

5.1. Impacts classification and identification

5.1.1. Impacts Classification

The range of the impacts varies in space and time. The intensity of these impacts is classified according to the following criteria:

- Impacts on the human health
- Impacts on fauna and flora
- Loss of habitats
- Transformation of natural landscapes
- Effects on the present use of available natural resources
- Impact on social activities in the region of the project
- Abandonment of either use or future production of natural resources.

The criteria of classification of the impacts as being high, middle or weak are according to:

- Extent/Size and geographical extent
- Ecological context
- Irreversibility
- Duration, incidence and frequency

Table 10: Classification and analysis of significance ranking for impacts

Significance of impacts	Implication for project	
	Negative impacts	Positive impacts
Very Low significance	Negligible effects	Negligible effects
Low significance	Acceptable effects	Some benefits

Moderate significance	Effects are serious enough to cause serious concerns. Changes to the project should be considered	Appreciable improvements to or will sustain resources
High significance	Unacceptable effects. The project should not proceed unless design is changed so that the significance of this impact is reduced to acceptable levels	Very substantial to the existing resources
Very high significance	An automatic fatal flaw. The project should not proceed unless design is changed so that the significance of this impact is eliminated or reduced to acceptable levels.	Extremely beneficial and enduring

5.1.2. Impacts identification

5.1.2.1. Impacts during Construction phase

5.1.2.1.1. Positive Impacts

Throughout the project phases, the local inhabitants of this area are positioned to benefit in the following aspects:

Employment to the locals with the bulk of the staff recruited from/within the area. Enhancement measure of employment opportunity will need to be maximized on local labour for the non-skilled and skilled category during the project phases. It is likely that the majority of the non-skilled will be secured from the project area and employed in construction phase. For skilled category, availability of expertise will also be assessed before bringing people from elsewhere. The skilled labour however will consider a majority coming from other areas or other countries of the region and beyond. The skilled staff will be employed for specific tasks in design, construction and operation phase of this project. All staff (local and national) will be trained and their role will be broken down in accordance with skill base.

The influx of four groups of people is composed by:

- Labour force: the labour force and associated needs for good and services, will not be fully supplied locally, although the Project has set up notable local employment targets. Part of the labour force will be brought in from outside the area.
- Returning family, extended family members and former residents – seeking improved living conditions and employment or opportunities to provide goods and services to the Project or local population.
- Camp followers - who are entrepreneurs arriving to capture business opportunities associated with the construction labour of the Project.
- Opportunistic migrants, Unskilled, semi-skilled or skilled people seeking direct or indirect employment or entrepreneurial opportunities.

The developer will commit to a policy that gives priority to the locals in the neighbourhood at the time of employing casual or skilled labour: **positive impact, local, national and temporal.**

- i. Government taxes revenues:** revenues shall be collected by Government from the procurement of construction materials and finishes, employees' salaries, such as; VAT from sold products (the whole trading chain) among others: **positive impact, national and permanent.**
- ii. Project as an income earner to truck and machine owners:** Truck and machine owners will earn from renting out their vehicles for transportation of construction material and machines that will do various construction activities (clearing, loading among others): **positive impact, national and temporal.**
- iii. Affordability of medical insurance for workers:** Employees shall from their pay afford medical insurance (Mutuelle de santé) and even pay school fees for their children: **positive impact, national and temporal.**

5.1.2.1.2. Negative Impacts

As the construction goes on, there will be a soil disturbance and increased traffic around the site as a result of heavy trucks delivering various construction materials and taking away the generated waste including construction debris. All these are likely to pollute and worsen the environment, through noise, and dust and air pollution.

Potential adverse impacts emanating from construction activities are described in detail here below:

1. Heavy truck and machine movement

It is obvious that there are bound to be trucks delivering construction materials and disposing debris to dumping sites.

Expected adverse impacts

With the truck movements several impacts related to heavy machine and truck movements are likely to occur, which are:

- Considerable amounts of exhaust fumes resulting from various engines such as earth compacting equipment, generators, dumpers and trucks: **negative impact, local and temporal**
- Noise pollution to neighbouring residents: **negative impact, local and temporal**
- Road safety risks to workers, affected communities, and road users: **negative impact, local and temporal**

2. Waste management

Most activities involved in the construction phases are waste generators, such as: metal and debris, wasted wooden, steel, concrete, cardboard, organic waste on site (from fruits, foods...), safe boxes, bags, waste earth materials, fuel oils, among others.

Expected adverse impacts

Debris from the different activities during construction shall affect the environment. The likely impacts of such waste generated are:

- Contamination from cement and lime of the storm water drainage along the road: **negative impact, regional and permanent,**
- Bad odors from waste due to decomposing organic waste (food, fruit, scraps): **negative impact, local and temporal,**
- Dumping sites are potential habitats for vectors and diseases, e.g. mosquitoes, flies, etc.: **negative impact, regional and permanent,**

- Sharp objects and falling debris e.g. glass, steel bars, nails from construction works, possess a threat to the workers on site because of expected injuries to be occurred, cuts and accidents and accidents from falling debris or workers falling: **negative impact, local and permanent**

3. Sanitary facilities

During the planning phase of the project, temporary toilets shall be planned for being used during site preparation, construction, and operational project phases. Given the big number of workers expected during the construction phase, many impacts can be predicted, which are:

- Possible bad odors from the latrines that may be a dangerous and nuisance to the neighboring residents: **negative impact, national and temporal**
- Likelihood of ground water and surface water contamination from the site toilets may be a potential impact: **negative impact regional and permanent**

4. Soil Erosion

Construction activities could lead to increased soil erosion due to excavation activities in and around work sites. These impacts are expected to be **short term and of low significance**.

Soil erosion	
Criteria	Assessment
Nature,	Negative
Extent	Local
Duration	Temporary
Significance of impact	Low

5. Loss of vegetation and Deforestation

The development of the proposed infrastructures is expected to cause loss of vegetation of eucalyptus, grevillea, goyava, banana, Acacia, Euphorbia trees, Pennisetum, potatoes plantation among others. **Significance of these impact are Medium**

Clearing of vegetation and deforestation	
Criteria	Assessment
Nature	Negative
Duration	Temporary
Significance of impact	Medium

6. Climate change

The removal of the vegetation will have some minor effects on local climate, such as rising of temperature and reduced air humidity. The energy transported will be mainly fed with imported power. This may avoid or minimize future power production by thermal power plants in the areas served by the new line, causing a considerable contribution towards stabilising CO₂-emissions. **Significance of this impact is minor**

Climate change	
Criteria	Assessment
Nature	Negative
Extent	Local
Duration	Long term
Significance of impact	Minor

7. Air Quality

During construction phase, potential dust pollution will be generated from:

- Site preparation activities such as stripping and excavation. **negative impact local and temporal**
- Movement of vehicles over unpaved surfaces. **negative impact local and temporal**
- Dust blown from stockpiles, earth moving operations and other dusty surfaces. **negative impact local and temporal**

Air Quality	
Criteria	Assessment
Nature	Negative
Extent	Local
Duration	Short term
Significance of impact	Medium

8. Noise and vibrations

Noise levels along the project site depend on whether there are activities releasing noise or new developments. During the construction phase, activities, such as excavations, movement of vehicles and the operation of heavy machinery will cause noise and vibrations which may have impacts on people living nearby the access roads as well as in the neighbourhood of the construction site. However, **these nuisances will be short-term** effects restricted to daytime.

Noise and vibrations	
Criteria	Assessment
Nature	Negative
Extent	Local
Duration	Short term
Significance of impact	Medium

9. Water pollution

The potential water contamination could arise from disturbance of soil, spillage of fuels, lubricants and other toxic materials at the construction site, and disposal of waste and wastewater from sanitary convenient provided to construction workers. Construction activities such as clearance of vegetation, excavation and operation of large equipment can also lead to significant soil disturbance at construction sites, resulting in soil erosion and/or compaction, degradation of affected areas and siltation of drainage channels. Storage and handling of construction materials such as concrete additives, oil, fuel and solvent at the construction site could lead to spills on site, along roads and in surrounding areas. Contaminated run-off from spill sites could adversely affect soils, vegetation and water quality. The extent of impact will depend on the size, frequency and timing of spills in relation to flow conditions in the receiving waters.

Waste and wastewater	
Criteria	Assessment
Nature	Negative
Extent	Local
Duration	Short term
Significance of impact	Minor

10. Camp site construction/ management and site storage.

During the construction phase, some work camps will be needed as storage area for construction material, fuels and lubricants. They comprise workshops, offices and accommodation for staff etc. for a period of several months during the construction period. Therefore, they will be excessive water usage from the

national utility water supply, need of wastewater discharge and treatment systems, waste disposal facilities, as well as health care facilities.

Generally, a work camp will be used only for several months during the construction period. The next work camp will be established some weeks prior to finishing the main construction work at the first line stretch and this process will continue throughout the whole construction phase. Constructing the work camp in succession will minimize the cumulative effect related with construction along the wayleave and provide opportunity to the contractor to rehabilitate the campsite when the next camp is ready for use.

Camp site construction/ management and site storage is expected cause loss of vegetation, generation of waste, soil and ground water contamination from oil spills among others.

Criteria	Assessment
Nature	Negative
Intensity	Medium
Duration	Temporary
Significance of impact	Medium

11. Impacts on Health, Traffic Mobility & Safety

Construction workers will be exposed to risks of accidents and injuries during construction activities. Such injuries can result from accidental falls from height, injuries from hand tools and construction equipment cuts from sharp edges of objects and risk of vehicular accidents. exposure to physical hazards from use of heavy equipment; trip and fall hazards; exposure to various incident, such as, dust and noise; falling objects; hazardous materials and chemicals; sharp materials; electrical hazards; live power lines; and working at height.

Criteria	Assessment
Nature	Negative
Extent	Local
Duration	Short term
Significance of impact	Minor

12. Impacts due to ancillary works

The sourcing of construction materials (gravel, sand etc.) from borrows pits and gravel pits can potentially result in removal of vegetation lead to loss of important ecological resources

Clearing of vegetation and deforestation	
Criteria	Assessment
Nature	Negative
Intensity	Medium
Duration	Temporary
Significance of impact	Medium

5.1.2.2. Impacts during Operational phase

5.1.2.2.1. Positive Impacts

During the operational phase, the expected positive impacts or benefits include:

5.1.2.2.1.1. Impacts on Local and National Economy

Employment/Jobs generation and poverty alleviation

Implementation of the project will result in the creation of many direct new jobs/ employment opportunities for surrounding local communities and generally, other related Engineers from countrywide. This will include opportunities for employment on connected areas as well as various aspects of infrastructure rehabilitation management and safeguarding positive impact, local permanent and national permanent.

Diversified impacts

Substantial economic diversified effects will result during operation of the project. These include: Numerous jobs, will be indirectly created or supported by electricity uses activities providing goods and services to the project. Sectors of the economy that are closely related to the project include the retail and wholesale trading sectors, manufacturing, construction, transport and financial sectors; the development will enhance the value of neighbouring properties: positive impact, national and permanent.

Improved community and public revenues

Increased employment opportunities and other diversified effects downstream in the economy will provide opportunities for increased revenue for Rwanda revenue authority due to augmented expenditure in the form of taxes payment, v.a.t, etc from different business created due to the presence of electricity. The businesses operating on the site will also make substantial contributions in the general development of local communities as they will be occupied by diversified activities involved in the whole development chain: positive impact, national and permanent.

5.1.2.2.1.2. Impacts on Infrastructure and general urban development

Musanze and Rubavu districts, as secondary cities, are currently being developed through a rapid urbanization (creation of commercial centers), which has not been matched by the provision of infrastructure especially in electricity and other energy sources.

- The Rwanda Energy Access and Quality Improvement Project (EAQIP) will aim to fulfil a growing demand and urgent need for modern property such as electricity energy infrastructures: **positive impact, national and permanent.**
- The Rwanda Energy Access and Quality Improvement Project (EAQIP) development will also serve as sources of employment and development of private sector of course related national revenues like commercial destination and provide food products processing/ Agro-industries for the local area and for the whole country and even the region. Due to this, it is predictable that the project will provide a gorgeous and exciting alternative marketable and commercial spirit, which will increase the economic and trading development to a great extent. The project is fully compatible with the general development tendency in the area and will maximize the potentialities of the project focused area: **positive impact, national and permanent.**

- It is projected that the Rwanda Energy Access and Quality Improvement Project (EAQIP) project will set a model for well planned, structured and aesthetical development in different districts in the country as well as excite the promotion and redevelopment of other possible programmes and projects as well as enhancing other development activities in the area including the area to be developed as an integrated lump providing a huge and full range of services. It is anticipated that implementation of the program together with other key projects in the whole country areas will help to persuade and push forward the agenda for the management of energy sector as whole: **positive impact, national and permanent.**

5.1.2.2.1.3.Impacts on general Security of the area

It is anticipated the project will improve the general security in the country areas from the light availability as the measures of protecting the country will be enforced also the region will benefit to this security system: **positive impact, local and permanent.**

5.1.2.2.2. Negative Impacts

Commercial activities and other businesses will increase accordingly because of the presence of electricity. Given the size of the sites and activities involved, it is anticipated that the project will generate considerable amounts of solid wastes at the time of construction and operation (disposed wastes during construction), which will require proper management.

The mismanagement of solid and fecal wastes could be, a source of bad odor, a high potential of disease transmitting vectors and a source of leaching that can lead to ground and surface water pollution and water borne diseases. The following are negative impacts provided during operational phase:

waste disposal

Once the project components are fully operational, it is expected that the occupants shall generate waste, such as construction broken materials, wastes from scrap materials, containers and wooden crates used for packaging heavy equipment, soil and ground water contamination from transformers oil spills. Wastes from the activities mentioned above if not well managed shall have the following impacts on the environment:

- **Degradation of the environmental quality.** i.e. water and soil quality: **negative impact, regional and permanent,**
- **Health risk for communities,** workers and neighbouring residents because of mismanagement of organic wastes which could lead to disease transmitting vectors such as flies, mosquitoes, bugs, etc.: **negative impact, regional and permanent,**
- **Creation of bad odours** from small fecal dumping masses: **negative impact, local and permanent**
- **Leaching from litter dumping sites:** **negative impact, local and permanent,**

Disturbance or cultural heritage

Even though field surveys have not yet showed any cultural heritage on the right of way, the likelihood of coming across them during the construction phase is still there.

VI. ASSESSMENT OF ENVIRONMENTAL AND SOCIAL IMPACTS AND PROPOSED MITIGATION MEASURES

6.1. Positive impacts

6.1.1. Increase electrical network capacity of Musanze and Rubavu Districts

The project will allow increasing the access of electricity in the identified areas

6.1.2. Employment creation

The project will be the opportunity of the creation of employment within the population of the project area as well as the improvement of the livelihood of the local population.

6.2. Negative impacts

6.2.1. Impact on vegetation cover

During the construction phase, all type of vegetation on the Right of Way will be cleared:

- Forest plantation: Eucalyptus, banana plantations, and Grevillea.
- Agroforestry: Grevillea, Markamia Lutea, Cacia, Acacia trees
- Fruit trees: Avocado trees, Papaya trees, Mango trees
- Crops: Banana plantation, Potatoes, beans, beetles, Maize.

Mitigation measures

- Only vegetation on the ROW will be cleared
- Reforestation plan

6.2.2. Involuntary resettlement

The power lines to be constructed are crossing human settling structures, community structures, crops and trees.

Mitigation measures

- Relocate or deviate some electrical poles to avoid involuntary resettlement
- Proper compensation of affected assets (crops and trees) in accordance to the nation and international requirements

6.2.3. Soil degradation/pollution

Soil erosion from exposing soils during excavation and levelling during construction. Oil spillage from refuelling of equipment or automobiles during construction

Mitigation measures

- Proper drainage of storm water
- Proper compaction
- Proper soil restoration

6.2.4. Air pollution

Dust from excavation works and emission from heavy machines and tracks during construction

Mitigation: Workers shall be equipped with personal protective materials

6.2.5. Solid waste

Organic waste from food leftovers, metal craps, cardboards, paper littered on site during construction, decommissioning of existing towers.

Mitigations

- Segregation of waste
- Minimization of construction waste by good technical planning and Training of staff.

6.2.6. Noise/vibration

Excavation works, compaction, vibration activities during construction are sources of noise during construction.

Mitigations

- Regular maintenance and service of building machinery and others during construction works.
- Shut down or throttling down of noisy machinery to a minimum.
- Utilization of ear protection devices by the workers if they are exposed to high noise level

6.2.7. Poor sanitation

During construction, lack of toilets on site, existence of unhygienic toilets could be a source of diseases to humans around the site.

Mitigation

Mobile toilets installed on site

6.2.8. Potential hazards

There is a possibility on poles falling on the ground, and during the operation phase, contact with the transmission lines can result in electrocution.

Mitigations

- Use safe work practices every time electrical equipment is dealt with.

6.2.9. Impact from Electromagnetic fields

There have been some concerns about possible increasing risk cancer from exposure to electromagnetic radiation from power lines. Electric utility workers typically have a higher exposure to EMF due to working in proximity to electric power lines.

Mitigations

For those concerned with EMF, there are environmental modifications that can be made to reduce it.

operations should comply with principles and guidelines described in the General EHS Guidelines to meet exposure limits for general public exposure to electric and magnetic fields published by the International Commission on Non-Ionizing Radiation Protection (ICNIRP).

ICNIRP exposure limits for public exposure to electric and magnetic fields.		
Frequency	Electric Field (V/m)	Magnetic Field (μT)
50 Hz	5000	100
60 Hz	4150	83

6.2.10. Bird electrocution or corrosion

During operation, Migratory birds could get entangled with these conductors and get electrocuted.

Mitigations

- Installing visibility enhancement objects such as marker balls, bird deterrents, or diverters.
- Aligning transmission corridors to avoid critical habitats (e.g. nesting grounds, heronries, rookeries, bat foraging corridors, and migration corridors);

6.2.11. Fire risk

During operation, electrical circuits could be caused by broken conductors, lightning, resulting in fires.

Mitigations


- 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.
- Disposal of maintenance slash by truck or controlled burning
- Controlled burning should adhere to applicable burning regulations, fire suppression equipment requirements, and typically must be monitored by a fire watcher.
- Establishing a network of fuel breaks of less flammable materials or cleared land to slow progress of fires and allow firefighting access

6.2.12. Destruction or disturbance of cultural heritage

Even though field surveys have not yet showed any cultural heritage on the right of way, the likelihood of coming across them during the construction phase is still there.

Mitigation measures

Chance find Procedure

-  **Purpose of the chance find procedure:** As per the requirements of the WB ESS8 related to cultural sites a chance find procedure for this project will be put in place. The chance find procedure is a project-specific procedure that outlines actions required if previously unknown heritage resources, particularly archaeological resources, are encountered during project design, construction or operation. A Chance Find Procedure, as described in IFC Performance Standard 8,

is a process that prevents chance finds from being disturbed until an assessment by a competent specialist is made and actions consistent with the requirements are implemented

- ✚ **Induction/ Training:** All personnel, especially those working on earth movements and excavations, are to be inducted on the identification of potential heritage items/sites and the relevant actions for them with regards to this procedure during the Project induction and regular toolbox talks.
- ✚ **Application protocol:** If any person/worker under this project discovers a physical cultural resource, such as (but not limited to) archaeological sites, historical sites, remains and objects, or a cemetery and/or individual graves during excavation or construction, the following steps shall be taken:

Stop all works in the vicinity of the find, until a solution is found for the preservation of these artefacts, or advice from the relevant authorities is obtained especially the Institute of National Museums of Rwanda (INMR);

1. Immediately notify the foreman. The foreman will then notify the Site engineer and the Health and safety Officer;
2. Record details in Incident Report and take photos of the find;
3. Delineate the discovered site or area; secure the site to prevent any damage or loss of

- ✚ **Responsibility:** The project Implementation Unit is responsible for siting and designing the project to avoid any damage to cultural heritage. When the proposed location of a project is in areas where cultural heritage is expected to be found, either during construction or operations, the EDCL will implement chance find procedures established through the Social and Environmental Assessment. Construction teams will not disturb any chance finds further until an Assessment by a competent specialist is made and actions consistent with the requirements of this Performance Standard are identified.
- ✚ **Scope of the chance find procedure:** This procedure will be applicable to all activities conducted by the personnel that have the potential to uncover a heritage item/site including bodies of victims of the 1994 Genocide against the Tutsis. The procedure details the actions to be taken when a previously unidentified and potential heritage item/site is found during construction activities. Procedure outlines the roles and responsibilities and the response times required from both project staff, and any relevant heritage authority.

VII. PUBLIC CONSULTATIONS AND STAKEHOLDER ENGAGEMENT

This chapter is an exposition of the public consultation and stakeholder engagement during the preparation of the project ESMP in line with the ESS10 of the WB ESF and EAQIP disclosed SEP. The section starts with a brief description of the public consultation and stakeholder engagement then continues with the identification of stakeholders later giving an outline of the public consultations and stakeholder engagements carried out in the project.

The Safeguards (Environmental and Social) and GIS team have undertaken several public consultation meetings to ensure that the Project activities and the likely impacts on the local people and their livelihoods were explained and openly discussed. Consultation meetings with the affected communities and individuals is a key element of the ESMP preparation and implementation process. The gathering of stakeholders and open discussion was the key approach used during the process of the stakeholder's consultation because it brings the participants to develop effective relationships and interpersonal or social trust. During the consultation, several categories of the society have been considered at each stage from central to the decentralized governments.

7.1. Key Objectives of consultation and Stakeholder Engagement

The public consultation aims to improve and facilitate decision-making and create an atmosphere of understanding that actively involves individuals, groups, and organizations that can affect, or be affected by the development of the Project. Community consultation meetings covered the following issues: description of the project objectives, components, and implementation activities; property and livelihood impacts associated with project implementation; the resettlement/compensation alternatives and strategies available for PAPs; the rights of PAPs; Grievance redress; ESMP and RAP preparation; valuation principles and procedures; RAP public disclosure; and the approval process.

PAPs were mainly concerned about the likely impact of the Project activities on their livelihood with respect to displacement on the encroached RoW and damage to the developments/structures, trees and crops on their land. The PAPs and stakeholders consulted voiced the need for prompt and adequate compensation for the PAPs to enable them to re-establish their property and livelihood activities. The views of the PAPs and other stakeholders consulted were documented and will be integrated into the resettlement measures and strategies outlined in this ESMP. PAPs also were explained that there will be no physical displacement as the project activities will affect only crops and trees within the RoW of 12m.

Table 11: Summary of Stakeholder Analysis

Primary stakeholder	Secondary Stakeholders
WB	Local Governments Entities
MININFRA	FBOs
MINECOFIN	Farmers organizations
REG-EDCL	Civil Society Organizations
RDB	Private Sector Federation
Beneficiaries/Local community members and the Project Affected Persons-PAPs	Academia, University of Rwanda (UR), Centre of Excellent and Biodiversity, Rwanda polytechnic (RP)
REMA	International and Local NGOs
RURA	
RLMUA	
IRPV	

7.2. Methodology used along the Public Consultation Planning and Implementation

People were mobilized in collaboration of the safeguards, GIS, and local authorities. The safeguards sent an official invitation letter describing the project in brief (concept note) to the concerned Districts, its objectives and detailed schedule of meetings in each administrative District and sector. It also described where the line route will pass through (administrative sectors and cells) in order to facilitate local authorities to invite right people.

The district administrative officials informed the sectors and requested the Executive Secretaries of interested sectors to facilitate the safeguards by inviting right people (people affected by the Project activities and everyone that will benefit from the Project works) to participate in these public consultation meetings. After the above administrative methods, the safeguards did call for follow-ups (with sectors executive secretaries) to make sure that people are mobilized to attend the meetings.

Meetings were held at different sector offices and establishment of Local Resettlement Committees (LRCs) held at cell level. Public meetings were chaired by mostly the Executive secretary who introduced team of safeguards and GIS to people attended meetings. After the opening remarks given by the local authority, the safeguards briefly explained the project, process of ESMP and later RAP, brief on expropriation law, new WB ESF, grievance mechanism, valuation process & principals, the cut-off date etc. After the presentations, the community was given opportunity to give their views, comments, and queries. Questions were answered, clarifications offered, their recommendations received and taken into considerations.

7.3. Stakeholder Groups

A stakeholder refers to individuals or groups who are affected or likely to be affected by the project (project-affected parties) and may have an interest in the project (other interested parties) (World Bank, 2016). Projects resulting in physical or economic resettlement call for special consultation process that provides a medium of free flow of information among key project stakeholders. For effective resettlement to be carried out without raising conflicts, the project must incorporate regular consultation with a wide range of project stakeholders. Broadly defined, stakeholders in such projects (projects resulting in physical or economic resettlement) are classified in two broad categories primary and Secondary.

- Primary stakeholders are those directly affected, either positively or negatively, by the project, decisions, or actions, whereas
- Secondary stakeholders are those that are indirectly affected by the project, or decision, or actions (Republic of Rwanda, 2020).

From this board classification, the stakeholders can further be classified into 3 categories as outlined in the SEP which includes Government agencies, Project Affected People, and other Interested Parties.

Government agencies: Have a role in the project implementation (also known as ‘implementing agencies’): they consist mainly of government agencies (ministries, Musanze and Rubavu Administrative Districts).

- Project Affected People: This group includes people who will lose resources (crops and trees) and/or livelihoods due to project activities, vulnerable groups and users of the project area who

will lose their livelihoods due to the project activities such as farmers, etc. under this category, you will also find a sub-category of vulnerable people who are likely to be disproportionately affected by project activities such as poor households, poor women headed households, elderly people and people living with disabilities as well as children headed households.

- Other Interested Parties may have an interest in the project. They include individuals or groups whose interests may be indirectly affected by the project and who have the potential to influence the Project outcomes in any way, in this group are found civil society organizations, opinion leaders in the project vicinity, the private sector etc.

As per groups of stakeholders, the consultation of major stakeholder groups is summarized below:

7.3.1. Government Agencies

Institutions of the Government of Rwanda influence the Project through acting as the lead project proponent, as well as the regulatory process of monitoring for compliance, issuing licenses and permits. REG/EDCL/RUEAP-EAQIP is the Project Proponent, working under its parent ministry, the Ministry of Infrastructure (MININFRA).

In addition, the Ministry of Environment and Land Use and Management Authority has a key role in governing resettlement. The implementation of this project ESMP will involve a Project Implementation Unit (PIU) within REG/EDCL/ RUEAP-EAQIP, made up of engineers, social and environmental professionals, and any other person to be appointed by the project developer.

District Level Administrations play a key role in the planning and implementation of the land access and resettlement project and the future planning of the area. The District Resettlement Committees set up in each Cell and Sector will be the key implementing bodies for ESMP related activities at their respective entity level, coordinating with REG/EDCL/ RUEAP-EAQIP Implementation Unit.

7.3.2. Communities and Grievance Redress Committees

The elected Grievance Committees at Cell level participated in the census activity, valuation and following up on the sign-off process. These committees are set up in each cell where the project will pass through.

At the Cell (Akagali) level, there are mediation committees (Abunzi) whose work is to hear and handle local disputes, particularly land and other associated disputes. They are also involved in the implementation of the ESMP and RAP as much as possible to ensure that everything is done right.

7.3.3. Public Consultation

Public participation and community consultation have been taken up as an integral part of social assessment process of the project. Consultation was used as a tool to inform and educate stakeholders about the proposed action both before and after the development decisions were made. This participatory process enables the participation in the decision-making process. Initial Public consultation has been carried out in the project areas with the objectives of minimizing probable adverse impacts of the project and to achieve speedy implementation of the project through bringing in awareness among the community on the benefits of the project. The project consultations were made to consult with the public as well as several local authorities, to determine their thoughts, opinions, and feedback on the impact of the electrification project in the district.

The PAPs were also provided with relevant and sufficient information on the project prior to its start-up. These stakeholders include the central and local authorities, as well as the population. Socio-economic information was obtained during informal meetings with local authorities and PAPs during the field visits as well as the information obtained from field survey. Efforts were made to reach as many people as possible. For this purpose, the strategies of reaching people in public meetings “INTEKO Z’ABATURAGE where applicable” were mainly exploited by the informed people on the project to disseminate sufficient information to all concerned people. The public consultation was carried out with different groups in different areas. All consultative meetings were done by observing the National Health Guidelines to curb the spread of COVID-19.

Public Consultation Meetings and Stakeholder Engagement Conducted in MUSANZE and RUBAVU Administrative Districts

Table 12: Issues and Response Matrix for MUSANZE Administrative Districts.

The consultation meeting was guided by the safeguards and GIS team in collaboration with the Local Government Officials of the concerned administrative Districts.

S/N	Location: MUSANZE (26-28/10/2021). Venue of the meetings: Different Cells Administrative Offices, Number of participants: 80 people	
	Topic or Concerns and expectations raised	Explanation/Response
1.	Brief Introduction of the project, Background, and its objectives.	Team of safeguards explain the project to local people
2.	Are you supporting this project?	Yes, we support the project
3.	What are the project opportunities and positive impacts of the project on your livelihood?	Lightning of our homes and charging of our devices Wellbeing through connection of health and education facilities Development of new business
4.	What are the negative impacts of the project on your livelihood?	Delay in compensation of affected assets Unfair compensation
5.	How could we mitigate or avoid above negative Impacts?	Advocacy on compensation related to our assets and payment to be done before the implementation of this project
6.	What is your contribution as citizens during implementation of this project?	We will provide all supports where needed We will participate in construction activities We will mobilize people to protect constructed infrastructures
7.	Is there a similar project implemented in the area?	Hydro Power plant and Transmission line Projects in nearby places
8.	If there is another project required expropriation and compensation in the area, which negative impacts it caused? How can we avoid these impacts	No negative impacts caused
9.	What do you think on expropriation and compensation for this project?	We hope that the compensation process will consider our concerns
10.	How should this project support vulnerable people?	Job opportunities for their children or other family members & relatives on their behalf

S/N	Location: MUSANZE (26-28/10/2021). Venue of the meetings: Different Cells Administrative Offices, Number of participants: 80 people	
	Topic or Concerns and expectations raised	Explanation/Response
11.	Some of you will be affected by the project. Which compensation mode do you prefer? (Compensation in cash or compensation in kind)	Some prefer cash, but they must be paid on time Others said that they have no preference as long as the compensation is fair.
12.	Introduce the cut-off date and inform them that a new asset/house to be constructed within the right of way after survey/valuation will not be compensated.	The expropriation law explained to local people especially article 36 stipulate that after survey, no one allowed to add new asset. The added assets will not have been considered during compensation. This cut-off date has validity of 120 days.
13.	<p>Considerable delays in past compensation payments from other REG projects;</p> <p>There is no problem with assets 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>Delayed people due to their cause like not having all required documents should not stop the project to move on</p> <p>The project should consider employing local people for their socio-economic development</p>	<p>Local Government Officials should work hand in hand with SACCOs (bank) to avoid errors in accounts numbers.</p> <p>Local authorities should help the local population to secure the required document for a file to be complete.</p> <p>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.</p> <p>Compensation payments should be done before the commencement of project works.</p> <p>Local people who are physically capable will be given the priority for employment.</p>

Table 13: Open discussion/ Questions and Answers & Recommendation MUSANZE and RUBAVU Administrative Districts.

No	Gender	Question raised	Response
1	Male	The project is genuine and very good for us, but how about the loss of our properties?	The Safeguards team suggested that they will make a list of people affected, and apply the rules and regulation in line with compensation. The RAP will investigate these loses.
2	Female	What will happen if there is no agreement on the compensation rate?	The Certified Independent valuer from IRPV oversees and explains methodology he/she used. If the owner of assets still refuses the compensation rate, this enter in grievance to be handled by external team as per expropriation law in public interest.
3	Male	We are representing other people who have not attended this meeting. Can we let them know when the project will be started?	As per the EDCL-RUEAP-EAQIP plan, it is supposed to start in 2022 after all PAPs are paid.
4	Female	Wishes to speed up the electrification in the area (project)	This is likely to occur based on NST1 targets.
5	Female	Comment – If my land is restricted to use, will you employ me for my survival?	The team explained that the employment does not replace the compensation process prescribed by the law. They assured the project affected people that they will be compensated in line with the law and capable PAPs will be temporarily employed.

Table 14: Issues and Response Matrix for RUBAVU Administrative Districts.

S/N	Location: RUBAVU (29-31/10/2021), Venue of the meeting: Different Cells Administrative Offices, Number of participants: 97 people.	
	Topic or Concerns and expectations raised	Explanation/Response
1	Brief Introduction of the project, Background, and its objectives	The project explained briefly to local people by team of safeguards
2	Are you supporting this project?	Yes, we support it
3	What are the project opportunities and positive impact of the project on your livelihood?	The main opportunity is to speed up development through creation of new investments which will create new jobs and wellbeing in general, Development of the area New investment like industries and SMEs Job creation
4	What are the negative impacts of the project on your livelihood?	Non-fair compensation of assets to be affected by the project Delay in compensation payment
5	How could we mitigate or avoid above negative Impacts?	Fair compensation of assets to be affected by the project (considering market rates for each asset to be affected) To compensate on time (before implementation of the project)
6	What is your contribution as citizens in implementation of this project?	To give any support when needed Mobilisation of people and owning the project
7	Is there a similar project implemented in the area?	Yes, the electrification project conducted by Lucky Exports in NYAMYUMBA, NYUNDO, KANAMA Sectors.
8	If there is another project required expropriation and compensation in the area, which negative impacts it caused? How can we avoid these impacts	The caused impact relates to delay in providing compensation, but we found out that it has been caused by ourselves due to the lack of supporting documents of our expropriation files, for this project, we are ready, and we gained experience to dispose all supporting documents as

S/N	Location: RUBAVU (29-31/10/2021), Venue of the meeting: Different Cells Administrative Offices, Number of participants: 97 people.	
	Topic or Concerns and expectations raised	Explanation/Response
		early as possible such we can have the compensation on time (Said one of the PAPs) for leaving our land for the project activities implementation.
9	What do you think on expropriation and compensation for this project?	As this consultation is done at early stage of the project, we hope this project will make difference to other implemented elsewhere and hope to receive compensation on time
1	How should this project support vulnerable people?	Job opportunities to them depending on their capacity Given that the vulnerable PAPs will be identified during socio-economic baseline data collection, we will conduct the advocacy to the local government officials so that they can be assisted by other social protection scheme as provided by LODA.
1	Some of you will be affected by the project. Which compensation mode do you prefer? (Compensation in cash or compensation in kind)?	Most of them prefer cash compensation Other prefer in kind compensation, but for this project, the cash compensation is preferred because it will affect only trees and crops either seasonal or perennial.
1	Introduce the cut-off date and inform them that a new asset/house to be constructed within the right of way after survey/valuation will not be compensated.	The cut-off date was explained to them, and team of safeguards highlighted those new buildings will not be considered during expropriation. People committed to respect established cut-off date by avoiding the RoW encroachment.

Table 15: Open Discussions/ Questions and Answers & Recommendation RUBAVU Administrative District

#	Gender	Question raised	Response
1	Male	We have experienced such project, at the beginning, they seem to be good, but during the implementation it becomes something else. They cut our Banana, sugar can, trees and other crops without compensation.	The safeguards team explained that each project is unique, therefore the current one will fully comply with all the principles and laws and regulations as well as procedures related to compensation.
2	Male	How land under RoW will be used after implementation of the project?	Land under RoW will be owned by you and will be used by agriculture activities but with restriction of not growing higher trees & plants for respecting vertical clearance as of RURA Guidelines
3	Female	When the project will be implemented	It is supposed to start implementation early this year of 2022 after all PAPs are paid.
4	Female	Electricity will be connected to only cells where the line will pass through?	Not necessary, this project is expected to connect all PAPs and is being implemented in accordance to 7 Year Government Program or NST1 where all citizens will be connected either on grid electricity or off grid, but this one will connect all citizens on grid based on National Electrification Plan -NEP.
5	Male	This project will be supplied to the people, or it is only the lines?	Power to be transported by this MV lines will be constructed to supply the electricity to the people but it will require transformers and other accessories before connecting to your house, you will only be required to install your house and other location where you need to use the electricity.
6	Female	What is the capacity of this power Lines	Medium Voltage
7	Female	What is the cost for connecting to the power of this project?	As usually, Rules and conditions of Electricity connection policy will apply for this project.

#	Gender	Question raised	Response
8	Female	I appreciate the project, but I am wondering whether the project will let us harvest our crops and trees. And if the forest is removed who will benefit the timber from it, can I harvest my forest early given that it has been pegged?	The safeguards team pointed out that this will be taken care of it and the project will give you enough time for harvesting your seasonal crops and mature ones will be your properties without deduction to your cost of compensation, and your forest can be harvested as needed.

7.3.4. General outcome of the consultation meetings from all venues and all stakeholders

The table below summarizes the findings from the consultation meetings, roadmap of public consultation meetings and key issues discussed during meetings.

Table 16: Summary findings from the consultation meeting and Stakeholder Engagement

Brief Introduction of the project: Team of safeguards and GIS briefly explained the project (objectives, components, and activities), process of ESMP and RAP, brief on new expropriation law, grievance redress mechanism, valuation process & principals and the cut-off date etc.	
Directives, issue asked by the safeguards	Concerns and expectations raised by participants
Are you supporting this project?	People from all visited sites supported the project
What are the project opportunities and positive impact of the project on your livelihood	The main opportunity of this project as said by most of participants is development of areas. They emphasized that the project would increase investment which will create new jobs and will drive to the sustainable development. Wellbeing will be improved through electrification of houses, health, school facilities as well as administrative facilities.
What are the negative impacts of the project on your livelihood?	In general, most of visited area blamed delay in compensation of assets affected by the project as well as unfair valuation
How could we mitigate or avoid above negative Impacts?	To mitigate these issues, they suggested that valuation and compensation rates must be based on local market rates. They also suggested that compensation payments must be paid before commencement of any project activities so that people move from their assets after reception of compensation fees. They also requested enough time to move from their assets after reception of compensation payments
What do you think on expropriation and compensation for this project?	They said that they are hoped that this project will make difference to other project as the consultation was started at early stage of the project and ask to continue informed on the further process of the project.
How should this project support vulnerable people?	For vulnerable people who might be affected by the project, they suggest that a family member or relative to vulnerable people must be prioritized during job recruitment.
Some of you will be affected by the project. Which compensation mode do you prefer? (Compensation in cash or compensation in kind)	Most of them suggested to be compensated in cash (if compensation payment will not be delayed as for other projects). A small number of people suggested in kind compensation

Introduce the cut-off date and inform them that a new asset to be planted within the right of way after survey/valuation will not be compensated.	The cut-off & its principles were introduced and explained to local people. People committed to respect the cut-off date, but they were worried on the delay in implementation of big project projects.
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Source: Primary data, 2022

7.3.5. Summary of meetings conducted in MUSANZE and RUBAVU Administrative Districts

Table 17: Category of Participants in consultation meetings and Stakeholders Engagement

Dates	District	Venue	Category of the participants
26-28/10/2021	MUSANZE	Cells Offices	PAPs, Sector& SLM, Cells executive secretaries and villages leaders, National Youth Council, REG/EDCL representative, National Women Council, Civil society organization representative.
29-31/10/2021	RUBAVU	Cell Offices	PAPs, Sector & SLM, Cells executive secretaries and villages leaders, National Youth Council REG/EDCL representative, National Women Council, Civil society organization representative.

Source: Primary Data, 2022

Apart from the above consultation meetings, the following table presents key informants' persons (KIP) discussed from regulatory institutions and they had been consulted and engaged about clarifications on key regulations related to the electrification and energy projects.

Table 18: Names and institutions of people contacted in Regulatory Institutions

S/N	Names	Institution and Position
1.	Mr. KARARA Jean de Dieu	EIA Specialist/RDB
2.	Mrs. NISHIMWE M. Grace	Head of Land Administration Department/RLMUA
3.	Mr. BYIGERO Alfred	Director Energy/RURA
4.	Mr. Eric MIHIGO	Program Manager/RUEAP
5.	Mr. Emmanuel NKULIKIYE	Project Coordinator/EAQIP
6.	Mrs. Chantal NGWINONDEBE	Director of Corporates Services/EDCL
7.	Mr. Simeon HARELIMANA N.	Environmental Analyst/RDB

Source: Primary Data, 2022

The interview guide was utilized during the consultation with the above stakeholders and the findings were incorporated in the general outcome of the consultation and engagement meetings.

7.4. Future Stakeholder Engagement (During ESMP implementation)

The disclosure process of the ESMP shall be undertaken in a manner that is inclusive, culturally appropriate and ensures participation of all stakeholders including vulnerable groups. Key public consultation and engagement periods to be performed during ESMP implementation will include:

- ESMP Public Disclosure meetings.
- Household Sign-Off on Compensation & Valuation individual file.
- Consultations and sensitization during construction.
- Ongoing livelihood and vulnerable assistance.
- Ongoing consultation & participation and inputs into project development.
- ESMP Monitoring and implementation.

7.5. Individual Household Sign-Off Process

The sign-off of individual households after agreement of the final valuation of assets and compensation entitlements provides a further opportunity for consultation, addressing of concerns, and confirmation of final preferences regarding compensation.

7.6. Documentation of Consultation

The Project will maintain an active file regarding all public consultation and disclosure documentation collected throughout the Project, which will be available for public review upon request. The Project Implementation Unit (PIU) will ensure all consultation and disclosure activities are adequately recorded.

Record keeping will take the following form:

- Maintaining an electronic and hard copy filing system for all external relations activities
- Recording issues raised at meetings and distributing the report to attendees for verification at regular.
- Attendance registers completed at all meetings, and as far as possible taking digital photographs and/or video recordings at all engagement.

Keeping a comprehensive record for reporting purposes of:

- All meetings (dates, venues, attendees, objectives, etc.)
- All events such as training, workshop, etc.
- All comments, compliments, grievances, and responses.
- Times and content of media advertisements, radio broadcasts.
- REG/EDCL/RUEAP-EAQIP will disclose all documentation locally, and will make the following available:
 - i. Full ESMP in English available at all times in Project information offices.
 - ii. Simplified ESMP and RAP version showing the eligibility and entitlement policies in Kinyarwanda in Project; information offices, and one copy to each of the Local Resettlement Committees.
 - iii. Update notes when needed, given to each of the Local Resettlement Committees and publicly available at Project information offices.

The list of consulted persons and parties are annexed to this study report

VIII. ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN

8.1. General Introduction

The EDCL and construction team of the proposed project acknowledges the fact that the proposed project activities will have some impacts on the biophysical environment, health and safety of its employees and members of the public, and socio-economic wellbeing of the local residents. Thus, the main focus will be on reducing the negative impacts and maximizing the positive impacts associated with the project activities through a programme of continuous improvement.

The main aim of ESMP is to protect and enhance the existing environment of the project area. The purpose of this ESMP is to establish actions required to prevent, mitigate, and control possible negative impacts of the project on the environment, and to analyze steps that could be taken with regard to it.

In this regard this ESMP was developed to aid the proponent in managing significant environmental impacts associated with the project. The ESMP outlines a plan of action to be instituted by the project to ensure that environmental quality is maintained and improved throughout the life of the project through a program of continuous improvement.

This project bears the potential for several negative impacts on the environment. However, if proper environmental and social management procedures are in place and adhered to then there would be very minimal negative impact of concern emanating from it.

The ESMP addresses all the anticipated impacts of the project, locations of impacts, mitigation measures, cost, responsible person/institution, and monitoring measures. Plans are essential and shall be undertaken in various phases of the project cycle.

8.2. Responsibilities for Environmental and Social Management Plan implementation

8.2.1. Role of the construction team

Internal Construction teams of REG/EDCL will implement and ensure that the mitigation measures in the ESMP are to be followed during construction of the power lines. The Construction teams will undertake regular monitoring of all the activities occurring at the project site to ensure compliance with to the ESMP. Construction teams will include an environmental specialist and social as part of the team specifically responsible for the implementation and reporting on the proposed mitigation measures in the ESMP. The Construction teams in conjunction with sector authorities shall be responsible for organising meeting and sensitization and awareness programmes on GBV, CAE, HIV Aids and STD prior and during project implementation.

8.2.2. Role of EDCL-RUEAP/EAQIP management

EDCL shall be the overall project coordination at national level and funds allocation for the project of the distribution lines construction project. EDCL shall also be responsible for overseeing the ESMP implementation through their Environmental and Social Safeguards specialists under the RUEAP/EAQIP. Inspection on site will be conducted to ensure ESMP compliance.

8.2.3. Role of MININFRA

The Ministry of Infrastructures which is the ministry in charge of energy sector will be the project executing Ministry with the key role of developing and maintaining Electricity Access Program (RWANDA ENERGY ACCESS AND QUALITY IMPROVEMENT PROJECT (EAQIP) project). It has also a big role in coordinating the key stakeholders involved with distribution lines construction and in general develop policies and guidelines and laws related to energy generation and distribution

8.2.4. Role of REMA

General Monitoring and inspection visits. As the lead agency responsible for the protection of the environment in Rwanda, REMA will undertake environmental audits to ensure that the project proponent enforces the ESMP and other environmental regulations. REMA will also conduct monitoring visits to verify if there are any emerging environmental issues arising from the projects activities that were not anticipated by the ESMP.

8.2.5. Role of Local Authorities.

During the construction of the distribution lines, local authorities will be in position to undertake visits to assess compliance with the ESMP through a district environmental officer. The local authorities will also ensure that the development is in line with the proposed country development plan, the district's master plan and the goals of the district development Plans.

They will also have the role of approving the necessary construction permits and land deeds when land is acquired and ensuring that documentation in regard to the development are all in order. The district shall have a key in assisting the Construction team through census, public consultation in relation to resettlement and inventory of affected assets and properties.

8.3. Environmental and Social Management and Monitoring Plan

This environmental and social management and monitoring plan is made as part of the whole ESMP for the construction of the distribution lines. It is intended to ensure that all the environmental and social management issues outlined in the ESMP are addressed through a comprehensive and proper environmental and social management and monitoring programme.

This environmental and social monitoring plan aims at:

- Defining the mitigation monitoring and execution requirements associated with the construction of the distribution lines.
- Defining the process to be used to identify and execute mitigation actions related to the distribution lines construction.
- Ensuring that the mitigation measures proposed in the ESMP are incorporated in the 30Kv distribution lines construction specifications and duly implemented.
- Ensuring that any other impacts that may arise can be identified and appropriate mitigation measures are taken.

- Establishing roles and responsibilities and implementing procedures for effective execution of the mitigation process.

Finally cost estimations of what the mitigation measures shall require. The estimated cost for implementing the recommendations of this ESMP requires approximately 54,341 US Dollars (~ 55,450,000 Rwandan Francs)

The environmental social management and monitoring plans for the construction of the distribution lines are given according to the proposed mitigation measures mentioned in previous chapter.

Table 19:Environmental and Social Management and Monitoring Plan

Environmental and Social Management and Monitoring Plan for the construction camp site, storage and offices						
Potential impacts	Mitigation measures	Indicator	Frequency	Responsible	Cost (RWF)	Time frame
Storage of materials including hazardous materials	The Construction team to ensure the storage of materials are located in the designated stores and separated from other non-hazardous materials. Where necessary, provide impervious floors.	The Construction team to ensure the storage of materials are located in the designated stores and separated from other non-hazardous materials. Where necessary, provide impervious floors.	Weekly	EDCL's SAFEGUARDS TEAM	3,000,000	Before construction of the camp site
Storage materials are exposed and accessible by unauthorized people and workers	The storage area is well designated, demarcated and fenced. The access of unauthorized people should be controlled, and warning sign installed.	Storage demarcated and fenced	Weekly	EDCL's SAFEGUARDS TEAM	1,500,000	Before construction of the camp site
Risk of fire outbreak on camp site, offices, and storage of materials	<ul style="list-style-type: none"> - Provide fire extinguishers and regularly maintain them. - Have a Health & Safety Officer on site trained on fire fighting. - No open fire is allowed within the construction camp. 	Fire extinguishers provided and maintained.	Daily	EDCL's SAFEGUARDS TEAM	3,200,000	Before construction of the camp site

Poor handling of hazardous materials Lack of proper PPE when dealing with hazardous materials	Staff dealing with hazardous materials to be trained on how to handle hazardous materials. Provide PPE to staff involved in using hazardous materials	Staff trained PPE provided to workers	Monthly Daily	EDCL's SAFEGUARDS TEAM	2,500,000	During the construction of the camp site
Poor camp site rehabilitation at the end of construction	The site shall be vegetated, reseeded, at almost at its natural state and all waste removed from the site	Trees and grasses planted.	During and after construction works	EDCL's SAFEGUARDS TEAM	Included in project costs	At the end of the construction works.

Environmental and Social Management and Monitoring Plan for Environmental Training and Awareness

Environmental, social, health and safety requirements noncompliance due to lack of knowledge and awareness	Training, awareness programme and toolbox meetings on environmental, social, health and safety management shall be organized regularly for the workers, site foreman, equipment operators and truck drivers.	Reports of training, awareness programme and toolbox meetings	Monthly	EDCL's SAFEGUARDS TEAM	2,000,000	During the construction works.
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Environmental and Social Management and Monitoring Plan for impacts due to vegetation clearing Monitoring

Impacts related vegetation clearing, removing of trees. People will have their properties destroyed	Compensation shall be paid for felled trees to the owner. Determinate necessary storage area on a site that does not require clearing. Avoid as much as possible the cut of large trees - Measures for landscape are equally available - All woody vegetation cleared on the	- Proof of compensation - Tree planting in place of felled trees - Landscaping plan available - Wood wastes are availed to initial	Weekly	EDCL's SAFEGUARDS TEAM	To be determined by RAP	During the construction works.
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	RoW is made available to villagers for use firewood	owners				
Environmental and Social Management and Monitoring Plan for impacts on resettlement, land use and tenure						
Impacts on land acquisition. Crops and assets are affected or destroyed	<ul style="list-style-type: none"> Affected properties compensated according to the legislation in place in Rwanda: Identification of all the Persons Affected by the Project (PAP) with a participatory census. Both the economic and physical displacements should be taken into consideration. Ensure affected properties are estimated at market price, The compensation of affected people and properties should be completed prior to commencement of all works, Engagement of the PAPs about compensation measures and support for their reinstallation. Permission of the farmers to cultivate in the RoW after the construction with the limit of not planting trees but with full permission to cultivate 	<ul style="list-style-type: none"> Land acquisition titles Compensation report provided prior to commencement of works Farmers cultivate the compensated plots 	Weekly	EDCL's SAFEGUARDS TEAM	To be determined by RAP	Before commencement of the construction works.

Environmental and Social Management and Monitoring Plan for impacts due to extraction and use of building materials						
Impacts to natural resources due to the extraction and use of raw construction materials related to unauthorized extraction and dumping, excessive wastes	<ul style="list-style-type: none"> ▪ The Construction team will source building materials such as sand, ballast and hard core from registered quarry and sand mining firms. ▪ The Construction team will only order for what will be required through accurate budgeting and estimation of actual construction requirements. This will ensure that materials are not extracted or purchased in excessive quantities. ▪ The Construction team will ensure that wastage, damage or loss (through run-off, wind, etc.) of materials at the construction site is kept minimal, as these would lead to additional demand for and extraction or purchase materials. ▪ The Construction team shall consider reuse of building materials and use of recycled building materials. This will lead to reduction in the amount of raw materials extracted from natural resources as well as reducing impacts at the extraction site 	<ul style="list-style-type: none"> ▪ District License for quarry and sand mining ▪ No excessive materials on site ▪ Excessive wastes reused 	Weekly	EDCL's SAFEGUARDS TEAM	No budget	During the construction works.

Environmental and Social Monitoring Plan for Erosion Control						
Due to the kind of project activities, there is a high risk of soil erosion	<ul style="list-style-type: none"> • Sensitive planning of access ways above all in susceptible areas, careful construction work as well as adequate mitigation measures have to be performed; if possible, access ways have to be recultivated after the construction phase. • Use of heavy machinery in the clearance of the wayleave should be avoided in order to minimize soil compaction, which makes the soil susceptible for erosion. • Use better gabions instead of stonewalls; stonewalls will often increase the erosion risk nearby and may become instable, whereas gabions will be covered with vegetation in the long run. • In areas prone to soil erosion suitable sediment binding grasses such as Pennisetum clandestinum, Chloris roxburghiana and Eragrostis superba have to be planted in degraded substrates. In the long term, the natural vegetation cover should be reconstituted. The plantations will have to be preserved against grazing during the first years; charge people or 	<ul style="list-style-type: none"> • Detailed documentation of sensitive areas and erosion damages (mapping) • Development and implementation of drainage and erosion control plan; • Measures complied as proposed • Development of erosion, update of maps • A developed and implemented rehabilitation plan for disturbed areas; 	Weekly	EDCL's Safeguards Team	9,000,000	During the construction works.

	<p>administration for suitable surveillance.</p> <ul style="list-style-type: none"> • Installing and maintaining proper erosion control during construction to minimize run-off of top soil and disturbances to natural areas 					
Environmental and Social Monitoring Plan for noise Control						
Impacts due to noise emitted from line construction	<ul style="list-style-type: none"> - Construction works should be done during the day when people are away and also the outside environment is also noisy. This should be restricted between 7.00 am and 6.00pm. - Use quiet equipment (i.e. equipment designed with noise control elements). 	<p>Complaints from residents</p> <p>Portable barriers installed</p>	Weekly	EDCL's Safeguards Team	1,200,000	During the construction works.
	<ul style="list-style-type: none"> ▪ Co-ordinate with relevant agencies regarding all construction activities in the residential areas. ▪ Limit pick-up trucks and other small equipment to a minimum idling time and observe a common-sense approach to vehicle use, and encourage workers to shut off vehicle engines whenever possible. 	<ul style="list-style-type: none"> ▪ Vehicles inspection Certificates 	<ul style="list-style-type: none"> ▪ Weekly 	EDCL's Safeguards Team	<ul style="list-style-type: none"> ▪ No budget 	<ul style="list-style-type: none"> ▪ During the construction works.

	<ul style="list-style-type: none"> Heavy machinery and vehicles to be used by the project will be in good condition and emitting low noise levels. 					
Environmental and Social Management and Monitoring Plan for impacts on air quality						
Dust pollution due to excavation works affecting the quality of air	<ul style="list-style-type: none"> Watering all active excavated and construction areas as and when necessary to lay dust. Cover all trucks hauling soil, sand and other loose materials or require all trucks to maintain at least two feet of freeboard. Pave, apply water when necessary, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction site. Provide Personal Protective Equipment (PPE) such as nose masks to the workers on site and visitors. 	<ul style="list-style-type: none"> Hauling covers available for all trucks Number of watering times in dry season PPE on site 	Weekly	EDCL's Safeguards Team	2,000,000	During the construction works.
<ul style="list-style-type: none"> Air pollution from exhaust fumes from trucks and 	<ul style="list-style-type: none"> Proper planning of transportation of materials to ensure that vehicle fills are increased in order to reduce the 	<ul style="list-style-type: none"> Number of maintenance of trucks and 	Weekly	EDCL's Safeguards Team	No budget	During the construction works.

other equipment	<p>number of trips done or the number of vehicles on the road.</p> <ul style="list-style-type: none"> Equipment shall be properly tuned and maintained. All trucks and vehicles shall have a valid Vehicle Inspection Certificate. 	<p>equipment</p> <ul style="list-style-type: none"> Vehicle inspection certificate available 				
Environmental and Social Management and Monitoring Plan for soil pollution						
<ul style="list-style-type: none"> Impact of soil pollution due oil spills 	<ul style="list-style-type: none"> All machinery must be keenly observed not to leak oils on the ground. This can be affected through regular maintenance of the machinery. Maintenance must be carried out in a designated area (protected service bays) and where oils are completely restrained from reaching the ground. Such areas should be covered to avoid storm from carrying away oils into the soil or water systems. All oil products and materials should be stored at well designated stores. They should be handled appropriately to avoid spills and leaks. Oil spill kits will be kept on site and 	<ul style="list-style-type: none"> Vehicle inspection certificates available Designated maintenance area provided Store for oil with impervious floor constructed 	Weekly	EDCL's Safeguards Team	2,000,000	During the construction works.

	all oils and fuels will be removed from the site for proper reuse/recycling or disposal as appropriate.					
Environmental and Social Management and Monitoring Plan for impacts on water use						
Impacts due to excessive water usage from the national utility	<ul style="list-style-type: none"> Pressure on the water supply will be reduced at maximum, all rainwater shall be harvested in storage tanks where possible like camp site and site offices and be used for cleaning or gardening activities. The project will optimize the quantity of water used for different needs i.e. ensure conservative use of water during construction to avoid wastage, The Construction team shall ensure that water is used efficiently at the site by sensitizing construction staff to avoid irresponsible water usage. Any water leaks through damaged pipes and faulty taps will be fixed promptly by qualified staff. 	Rainwater gutters and collection tanks installed	Monthly	EDCL's Safeguards Team	1,600,000	During the construction works.

Environmental and Social Management and Monitoring Plan for waste management						
Impacts of wastes generated on site to the soil, Water, air and human health	<ul style="list-style-type: none"> Put in place proper housekeeping and implement wastes management hierarchy (avoid, reduce, reuse and recycle) Develop and enforce waste management procedures Install dustbins or receptacles and apply wastes sorting at source Collect separately materials suitable for recycling and composting. Other not hazardous wastes have to be deposited at specific landfill sites already used for this purpose in compliance with Rwandan regulations. No open-air incineration should be allowed at all (even if this is common for all kinds of waste). Hazardous materials to be handled properly and far away from water bodies, hazardous 	<ul style="list-style-type: none"> Waste hierarchy observed on site Refuse bins installed on site Waste sorted on site <ul style="list-style-type: none"> Hazardous materials store constructed Hazardous materials brought to facilities, which are officially approved for this specific treatment 	Weekly	EDCL's Safeguards Team	800,000	during the construction works.

	wastes have to be brought to facilities, which are officially approved for the treatment of such stuff					
Environmental and Social Management and Monitoring Plan for workers' health						
Impacts on workers' health due to poor sanitation, poor waste management, diseases spread	<ul style="list-style-type: none"> • Fit base camps and offices with functional sanitary equipment and a health centre to treat illnesses and accidents; • Supply potable water for workers in all base camps and offices, • Implement a waste management procedure system in accordance with international good practices and national guidelines and laws, • Implement a control programme for preventing the spreading of epidemics and other diseases: • Liaise and encourage voluntary medical examination of workers during line construction, • Sensitization campaign for employees and surroundings population on HIV/AIDS and 	<ul style="list-style-type: none"> • Clean sanitary facilities installed • Clean drinking water available • Awareness on HIV, STD and malaria reports 	<ul style="list-style-type: none"> • Daily • Weekly • Monthly 	EDCL's Safeguards Team	1,500,000	During the construction works.

	<p>distribution of condoms, STD and Malaria,</p> <ul style="list-style-type: none"> • Provide health training for employees to minimize risks, which should cover good hygiene and sexual transmissible diseases; • Additionally, consider supporting local health centres in order to improve the existing infrastructure and treatment of patients. 	<ul style="list-style-type: none"> • Training report 	<p>hly</p> <ul style="list-style-type: none"> • Mont hly 			
Environmental and Social Management and Mitigation Plan for Gender based Violence and Child Abuse and Exploitation						
Impacts due gender based violence and child abuse/ exploitation due to lack of awareness	<ul style="list-style-type: none"> • GBV and CAE awareness meeting shall be organized prior to commencement of the works and once in a month to all workers. • Defaulters shall be informally and formally warned and strict sanctions (loss of employment, reported to competent authorities) shall be applied to defaulters • A GBV and CAE committee composed of the project manager, the environmental and social specialist, the human resources and 	<p>GRC, GBV and CAE committee in place</p> <p>Awareness meeting reports</p>	Monthly	EDCL's Safeguards Team	1,200,000	During the construction works.

	women representative at the cell level.					
Environmental and Social Management and Mitigation Plan for Gender and disabled discrimination						
Impacts on gender and people with disabilities due to discrimination during recruitment, hiring and work	<ul style="list-style-type: none"> • Ensure positive discrimination in job allocation to distribution lines construction workers whereby women are given priority (at least 30 %) and to tasks they would do best, based on their potential. • Where access to private property or public resources/ places is severed, the construction team should provide safe temporary access that is both gender-friendly and usable by disabled persons. In this regard, temporary culverts instead of wood planks would be more appropriate. • Workplace environment including tools and fixtures should be gender-friendly. 	<ul style="list-style-type: none"> • Recruitment report • Field observation 	Monthly	EDCL's Safeguards team	No budget	During the construction works.
Environmental and Social Management and Mitigation Plan for fire preparedness						
Impacts of fire outbreak due to negligence, lack of	<ul style="list-style-type: none"> • Eliminating all sources of ignition from the working environment e.g. Litter will be removed on a regular 	<ul style="list-style-type: none"> • Emergency training report • Fire extinguishers 	Monthly	EDCL's Safeguards Team	1,750,000	During the construction works.

<p>awareness and training, electrical faults, smoking and carelessness</p>	<p>basis to prevent the risk of combustion from long-term storage.</p> <ul style="list-style-type: none"> • Workers should be trained in emergency evacuation procedures and first line of attack firefighting techniques. • Fire Fighting contacts number should be displayed at strategic points of the distribution lines, camps site and offices, • Mobile fire extinguishers and foam shall be kept at strategic locations in the project site and camp site. Both hand and trolley mounted fire extinguishers will be positioned at strategic locations for firefighting. They will include both carbon dioxide dry and carbon powder. • Emergency exits: The camp site and offices will be designed with adequate exits to ease evacuation in case of fire. 	<p>in place and maintained</p> <ul style="list-style-type: none"> • Fire Fighting contacts number displayed on site • Signage for emergency displayed on site 				
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Environmental and Social Management and Monitoring Plan for security and safety on site						
Lack of security on site impacts on the safety of materials, injuries and theft.	<ul style="list-style-type: none"> The project camp site and offices should be enclosed using suitable walls to beef-up security and to control movement within the site. Security guards must always guard the gate of the offices to keep away the intruders and to control movement within the office and camp site. Lighting as well as security alarms should be installed in strategic positions all over the site after the completion of the project. Construction team should provide adequate security of on sites materials and equipment during the construction period when there are no works on the site. The guards stationed at the gates should document movements in and out of the site/ property. 	<ul style="list-style-type: none"> Offices and camp site fenced Security guards available on office and camp site 	Daily	EDCL's Safeguards team	6,000,000	During the construction works.

Impacts on safety related to injuries, accidents, breach of site rules and lack of PPEs	<ul style="list-style-type: none"> • Store hazardous products in an area not accessible to the population; • Ensure that base camps, storage areas and active construction sites are fully enclosed and implement 24/24 access control on site; • Ensure that Construction team provide appropriate Personal Protective Equipment for all their employees, and monitor the good condition of this equipment • Avail first aid kits to the base camp and offices and train technicians on its use. • Rigorously ensure that vehicles are properly maintained and that speed limits are respected; • Strictly control of the skill of drivers: they will be trained on safe road traffic rules (including speed and alcohol); • Train employees on construction safety rules. Specific training for certain employees will be provided: 	<ul style="list-style-type: none"> • Hazardous materials store constructed • PPE available and used • First Aid Kit on site • Technician trained • Sign post installed • Workers training on health and safety reports 	Monthly Daily Monthly Weekly Monthly	EDCL's Safeguards Team	2,000,000	During the construction works.
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	working at height, work on electrical equipment or other specific equipment. Only those with proper accreditation will perform these specifics tasks.					
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IX. Training and awareness plan

Training and site specific are very important to ensure proper ESMP implementation and monitoring. The training and awareness plan aim at equipping the staff and workers involved in the project with required skills related to activities with environmental, social, occupational health and safety potential high negative impacts.

The proposed table below shows the training/ awareness title, the proposed trainee, schedule, responsible and related estimated cost.

Table 20: Training and awareness campaign on ESMP

TITLE	TRAINEE	SCHEDULE	RESPONSIBLE	COST (RWF)
Occupational Health and Safety Management and site rules	All workers	Once a month	EDCL Safeguards team	3500,000
Grievance Redress Mechanism and roles of the GRM Committee	Grievance Redress Committee	Once a month Election for the entire project	EDCL Safeguards team	1,500,000
HIV, STD, Malaria prevention and testing programme	All workers	Once in a month	EDCL Safeguards team	2,200,000
Fire Fighting Techniques and First Aid	Selected workers	Once in 3 months	EDCL Safeguards team	3,500,000
Gender Based Violence and Child Abuse Prevention	All workers	Once in a month	EDCL Safeguards team	3,500,000
Toolbox programme for newly recruited workers	Recruited workers	Weekly	EDCL Safeguards team	No cost
Total Cost				14,200,000

X. GRIEVANCE REDRESS MECHANISM

10.1. Process of grievance redress

Grievance mechanisms provide a formal avenue for affected groups or stakeholders to engage with the project implementers or owners on issues of concern or unaddressed impacts. Grievances are any complaints or suggestions about the way a project is being implemented. They may take the form of specific complaints for damages/injury, concerns about routine project activities, or perceived incidents or impacts. Identifying and responding to grievances supports the development of positive relationships between projects and affected groups/communities, and other stakeholders.

Grievances can be an indication of growing stakeholder concerns (real and perceived) and can escalate if not identified and resolved. The management of grievances is therefore a vital component of stakeholder management and an important aspect of risk management for a project. A distribution lines project construction may have a range of potential adverse impacts to people and the environment in general, identifying grievances and ensuring timely resolution is therefore very necessary.

The electrification project shall ensure principle of zero tolerance of corruption, transparency and social justice like for all government projects in Rwanda. Community members in the right of way and its vicinity shall be kept informed about the activities under the project. In addition, during the implementation of the project, communities shall be given equal opportunities and access especially the women and youth.

In the event that, during project implementation, there are perceived issues of unfairness, error or misapplication of the procedures by which the project will be implemented, it is essential that everyone affected has the opportunity to raise their concerns, and have them listened to, investigated and, if found to be correct, there is appropriate redress. In order to achieve this, the project has designed a process for lodging grievances.

A grievance can be made by an individual, a household, or a group/community - anyone can lodge a grievance it is their choice whether to make a formal or informal approach. Grievances may be raised informally or formally:

- An informal grievance is one raised verbally, mostly requesting for clarification of facts or process.
- A formal grievance is a written complaint raised through the Cell or Sector offices, mostly on issues of misinformation, exclusion from project opportunities, discrimination, inadequate communication or inadequate response to previously raised issues.

10.2. Establishment of Grievance Redress Committee

Each Administrative Cell and Sector in the project area of intervention shall have a Grievance Redress Committee (GRC) established for the purpose of handling grievances related to environmental and social concerns or any other issue. The GRCs will be ad hoc institutions established primarily for the distribution lines in each sector.

It is proposed that the GRC shall comprise of:

1. Project Affected Persons representative
2. Energy Projects Liaison officer at District Level;
3. Environmental and Social Safeguards,
4. Sector social development officer,
5. Cell and Sector Executive Secretary,
6. Women representative,
7. Youth Representative,

This GRC should freely elect the Chairperson (he/she will be the one to call for meeting whenever there is a grievance) and the secretary (who is in charge of taking minutes, recording the grievance and keep the grievance logbook). A template of a grievance redress log form can be found in annex 2.

10.3. Grievance Redress Mechanism

The electricity project will provide a simple and accessible extra-judicial mechanism for managing grievances and disputes based on explanation and mediation by third parties. Each of the affected persons will be able to trigger this mechanism, while still being able to resort to the judicial system.

The common types of grievances and disputes likely to occur in resettlement process include:

(i) Misidentification of assets or mistakes in valuing them, (ii) disputes over plot limits, either between the affected person and the Project, or between two neighbors, (iii) dispute over the ownership of a given asset (two individuals claim to be the owner of this asset), (iv) recent change of asset ownership, (v) disagreement over the valuation of a plot or other asset, and (vi) Proposed successions, divorces, and other family issues, resulting in disputes between them and other family members, over ownership or ownership shares for a given asset.

A grievance Log will be established. Grievances should be recorded in a log by the Grievances Management Committee. It will record all information of peoples complained, nature of complaint, how it was resolved and timeframe for close-out. The grievance handling procedure will be produced and informed to the Committee.

10.4. Monitoring and evaluation of the execution

The following monitoring and evaluation approach will be used in the ESMP:

Internal progress (Input/Output) monitoring: measures whether inputs are delivered on schedule and as defined in the ESMP.

Monitoring will also seek to document and investigate specific conflict or hardship situations arising from the implementation of the ESMP. Monitoring keeps track of ESMP implementation efficiency and indicates whether changes have to be made to make the program work more efficiently. Progress monitoring will be done internally by the Project. Monitoring of compensation disbursement will be done by an EDCL Safeguards team.

Outcome evaluation: this is defined as the extent to which the project is achieving or likely to achieve the objectives of the ESMP. Re-establishment of businesses and earning acceptable returns

over a reasonable period is an example of outcome. Outcome evaluation looks beyond numerical compliance to the longer-term impacts of program inputs and outputs, do determine what works and what does not work, and what needs to be changed. Outcome evaluation will be done by an independent entity after six months monthly reports.

At the end, Audit of compliance and completion is defined whether the ESMP and applicable requirements have been complied with, and if the implementation can be deemed complete. Completion audit will be done by an independent entity or assigned EDCL team to assess the compliance.

Monitoring indicators are outlined below and include (but not limited to):

- Number and place of public consultation meetings held with PAPs and local authorities in preparation of ESMP;
- Number of PAPs effectively compensated and aggregated amount disbursed compensation (actual versus planned);
- Number of trainees segregated by gender and covered topics environmental and social related.
- Number of complaints including total received, total justified, and total non-justified.
- Total number, nature and level of all complaints received and resolved.
- Number of sites disposed material and rehabilitation status.
- Submission of monitoring reports at the frequency indicated in the M&E of the ESMP implementation report.

XI. Reporting, Monitoring, Training

11.1. Non-conformities

The Construction team shall record all environmental incidents, non-conformities and non-compliances through the Project's environmental incident reporting procedure. The environmental incident reporting procedure. It is a systematic approach designed to identify, evaluate, investigate, correct and document environmental incidents, non-conformities and non-compliances during the Project. Environmental incidents will be evaluated and managed in the standards as defined in the environmental incident reporting procedure.

11.2. Ad-Hoc and Monthly Progress Reporting

During the Works, in addition to the this ESMP requirements, the Construction team will submit to EDCL project management ad-hoc, weekly and monthly progress reports, using the data reporting formats approved by (RUEAP). Ad-hoc reports will deal with a specific environmental and/or social issue as may be requested.

Monthly progress report shall include:

- (i) Summary of all E&S initiatives implemented in relation to the Works and specified key performance indicators;
- (ii) The results of monitoring analysis (drinking water, wastewater, storm-water, discharge from sedimentation ponds, air quality, dust, noise, light pollution etc.) carried out during the month;
- (iii) The status of environmental non-compliances and non-conformities opened or closed during the month;
- (iv) The status of community grievances opened or closed during the month;
- (v) Particular activities carried out during the last week and scheduled for the coming month;
- (vi) Status of E&S-related permit applications and approvals, and
- (vii) Any other information requested by the Employer relating to the Works

11.3. Site Inspections

The E&S safeguards team will carry out an E&S inspection of the Works on a weekly basis. The daily inspection checklist shall be elaborated. A detailed written report will be drafted by the E&S safeguards team for each weekly inspection, in a format approved by EDCL project management (RUEAP), addressing non-conformities detected and good practices. The report shall be submitted to EDCL project management (RUEAP) within 3 days of the inspection. Non-conformities and good practices shall be documented and photographed, with relevant evidence explicitly indicating the location, date of inspection and a brief description of the nonconformities /good practice in question.

11.4. Monitoring

The Contractor shall prepare a Monitoring and Measuring Plan that lists the regulatory and other monitoring requirements, the relevant parameters, criteria to be measured, the periodicity. This plan will cross reference the Procedure that describes incident reporting and corrective action.

11.5. Staff Code of Conduct and Training

- The Contractor shall prepare and implement a detailed E&S training programme for its Personnel.
- Training for each role is identified through a comprehensive training and competency / skills matrix covering the training that will be required for each role.
- Training sessions are two-fold: Induction sessions for starting the Works, and technical training as required in relation to the execution of the Works. The training activities are to be documented in the monthly progress report.
- Induction sessions are organized for each Personnel and shall cover as a minimum:
 - Rules of procedure.
 - Workers Code of Conduct and engagement with local community.
 - Protection of biodiversity, including restrictions on harvesting, hunting and purchase of bushmeat.
 - Protection of areas adjacent to the Site, including fire control measures.
 - Waste Management.
 - Risks relating to sexually transmitted diseases.
 - Basic health: combating waterborne diseases and improving hygiene.
 - Asset damage procedure in the event of accident
 - Relationship with the local communities.
 - Regular tool-box-talks on relevant and topical issues and related to incident reporting figures.

11.6. Documentation of Worksite Conditions

The Construction team shall document changes in condition of all Works areas from the start of Works. Documentation shall comprise dated and geo-referenced colour photographs taken weekly from a constant angle and viewpoint.

The Works areas condition shall be documented as a minimum for the following stages:

- Before any disturbance at the start of the Works.
- On completion of the Works

The Construction team shall specify in each E&S procedures:

- I. The list of viewpoints to be used,
- II. Areas to be photographed, and
- III. Methods used for taking and archiving photographs.

Unless instructed otherwise by EDCL Project management (RUEAP), structures to be buried will be photographed weekly until covered. As a minimum the structures are photographed twice for Works with duration of less than seven days, and at least once a week for Works with a longer duration.

Photographs are to be archived in digital format and provided to EDCL Project management (RUEAP) on a monthly basis in format and medium approved by EDCL Project management (RUEAP). The nomenclature of electronic files for photographs shall explicitly indicate the Works area, date and structure documented.

XII. CONCLUSION AND RECOMMENDATIONS

12.1. Conclusion

The ESMP identified and highlighted several issues pertaining to the proposed Rwanda Energy Access and Quality Improvement Project (EAQIP) Project and on Musanze and Rubavu sub-project specifically. The issues/impacts have been assessed and described in some detail to gain an adequate understanding of possible environmental effects of the proposed project during construction and mitigation measures in response to negative aspects have been proposed.

The Environmental Management Mitigation / Monitoring provides way forward in relation to negative impacts mitigation, monitoring indicators, frequency of monitoring, responsible for monitoring and costs estimates.

The environmental and social safeguard team is recommending that the EDCL construction teams to assign an environmental and social expert to undertake the monitoring of the mitigation measures for distribution lines during its construction.

Given the nature and location of the project, the conclusion is that the potential impacts associated with the proposed project are of a nature and extent that can be reduced, limited, and eliminated by the application of the proposed appropriate mitigation measures in this ESMP with some recommendations.

12.2. Recommendations

It is recommended that the Construction team if responsible but not limited to the following:

- ☞ Payment for land acquisition should be done prior to commencement of the distribution lines construction,
- ☞ The inventory and compensation of the affected properties should also be done prior to commencement of the distribution lines construction,
- ☞ The Construction team should ensure that the workers do not enter Virunga National Parks, kill any animal or cut any tree or pollute the rivers and other mentioned marshlands;
- ☞ The Construction team shall comply with this ESMP requirements in compliance with national and international environmental and social safeguards laws and policies,
- ☞ Proper Personal Protective Equipment (PPE) are provided to all workers and visitors at the site;
- ☞ Training, awareness, tool box meetings and awareness campaigns on HIV and STD prevention, GBV, occupational health and safety and environmental management are organized,
- ☞ Excavated soils should be used for backfilling or else transported to designated dump sites while trucks are covered,
- ☞ To avoid dust pollution, excavations should be done after watering the areas and dust masks provided to implicated workers;
- ☞ Noisy activities shall be carried out during working hours when people are at work;
- ☞ Refuse bins to be installed at strategic positions to avoid accumulation of wastes a housekeeping team shall be appointed to regularly monitor the waste management

- ☞ First Aids Kits should be provided on site and emergency numbers (Police, Ambulance and Firefighting brigade) clearly displayed and emergency response signage (assembly point, exit, entrance) provided at strategic and appropriate points;
- ☞ It is also recommended that the Construction team should avail an incident record and filled on daily basis whenever there is an incident, near miss or injury (A template is annexed to the report)
- ☞ A Grievance Redress Mechanism Log book should be availed on site and grievances recorded and solved as they are received
- ☞ A Grievance Redress Committee shall be formed to record and solve grievances and register them in a logbook.
- ☞ Women should be given priority while recruiting or hiring workers especially the casual labour,
- ☞ The Construction team should not employ kids under 18 years and should comply with the national labour law.
- ☞ Bush clearing should be avoided where possible and/ or minimized especially during poles construction and access
- ☞ No hunting shall be allowed by the workers or residents as prohibited by national regulations.
- ☞ During stringing people shall be informed and proper communication equipment and techniques used.
- ☞ In order to have access permission to private land, the Construction team assisted by local authorities shall carry out awareness and sensitization meetings on a regular basis,
- ☞ At the decommissioning phase, the right of way shall be rehabilitated to almost its initial state before project implementation
- ☞ To avoid any complaint and delay on payment of casual labour, the EDCL/RUEAP/ EAQIP shall ensure the casual labour have been paid their full payment on time.
- ☞ Revegetation shall be done during and at the decommissioning phase
- ☞ Areas highly prone to erosion shall be identified and protected during construction,
- ☞ Excavated soil shall not be exposed for a long time especially during rainy seasons
- ☞ Backfilling should be applied after excavation to reduce soil erosion
- ☞ The construction team shall ensure by all means avoid to destroy existing infrastructures (water pipelines, electrical cables, public lighting, road and fiber optic).
- ☞ The construction team shall contact the infrastructure owner whenever there is a risk of damaging the infrastructures.
- ☞ The construction team shall ensure waste segregation prior to their disposal;
- ☞ Dispose of wastes at a recognized landfill approved by the districts;
- ☞ Whenever there are scaffolding works or any work at height, workers should be provided with good safety harnesses and proper signage provided at that area to warn workers and residents on the work, taking place,
- ☞ A full time and trained health and safety officer should be assigned to work full time;
- ☞ Mobile toilets like ECOSAN shall be provided at strategic points during project implementation and ensure there a cleaner on full time basis to clean them.
- ☞ Burning of wastes shall be avoided on site.
- ☞ Transport of workers shall not be mixed with transport of materials at the same time.

- ☞ Proper sign posts (men at work, limit speed, big trucks crossing) shall be provided at all road crossings, residential area and where activities are taking place,
- ☞ All workers shall have valid medical insurance “mutuelle de santé” prior to commencement of construction works,
- ☞ The construction team shall have valid insurance certificates of the project activities, vehicles and equipment
- ☞ Although blasting is not planned to be used, any blasting shall not be allowed without permission from the district authorities and EDCL and any social, economic and environmental consequence or damage shall be borne/ paid by the EDCL.
- ☞ Assign the implementation of the ESMP and other tools to a registered and qualified environmental and social specialist to ensure compliance.
- ☞ Copies of this ESMP should be displayed in the construction team’s offices at all time;
- ☞ The key mitigations strategies are to have a proper system of collecting and managing wastes, compensation and adjusting efficiently the width of Right of Way as well as take all measures to avoid hazards during power line construction and operational

Implementation of those recommendations proposed in the present document will greatly improve the net environmental worth of the project. EDCL and concerned Administrative Districts shall take their responsibilities to closely monitor activities especially at construction and operational stages as well and at the same time avail funds for all planned activities.

XIII. References

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Annex 1: List of Consulted People during ESMP Preparation



ABITABIRIYE INAMA YO KUMENYEKANISHA UMUSHINGA WO GUKWIRAKWIZA AMASHANYARAZI

(RUEAP) YABEREYE MU MURENGE WA Buranga...../MUSANZE KUWA 27/10/2021

S/N	Amazina yombi	Akagari	Sex	Umudugudu	Telephone	Umukono
01	Nurimeza Constantine	Sahara	F	Nyamubuye	0780961799	
02	Muhamusoni Beatrice	Sahara	F	Nyamubuye	0785425461	
03	Ingabire Germaine	Sahara	F	Nyamubuye	0780322562	
04	Uramukunda Gashyamba	Sahara	F	Nyamubuye	078	
05	Batamuniye Marie Grace	Sahara	F	Nyamubuye	0780773660	
06	Muhamusoni Marie Claude	Sahara	F	Nyamubuye	0789650411	
07	NSABIRAREMYE MARITUMI	Sahara	M	Nyamubuye	0785488860	
08	Muriroho Rya Rya	Sahara	F	Nyamubuye		
09	Sengendo SAMPATU	Sahara	M	Nyamubuye	078 68 30418	
10	NSABANIKA Cheoneste	Sahara	M	Nyamubuye	0783165716	
11	Uramukunda Gashyamba	Sahara	M	Nyamubuye	0785488860	
12	Uramukunda Marie Claude	Nyamubuye	F	11	0788547435	



ABITABIRIYE INAMA YO KUMENYEKANISHA UMUSHINGA WO GUKWIRAKWIZA AMASHANYARAZI

(RUEAP) YABEREYE MU MURENGE WA NKAZI...../MUSANZE KUWA 28.../10/2021

S/N	Amazina yombi	Akagari	SEX	Umudugudu	Telephone	Umukono
1.	TUYI RIMYE	RUYUMBA	M	GASI ZA	078 3480644	
2.	INGABIRE Fwamsim	RUYUMBA	F	GASI ZA	079 1085012	
3.	MUSKIMIJIMANA M. Claire	RUYUMBA	F	GASI ZA	0787556304	
4.	MZABERA Usenti	RUYUMBA	F	GYIVUGI ZA	0788562303	
5.	MUKARUBUGA Bonfido	Bikara	F	NYAKIYAMA	0787831720	
6.	MUKARUGWI ZA Vestime	RUYUMBA	F	GYIVUGI ZA		
7.	MUSETIGIMA NA panga'ole	RUYUMBA	M	NYAKIGEZI	0787365530	
8.	MZABURERA J. Baptiste	RUYUMBA	M	NYAKIGEZI	0783571464	
9.	MTEZIYAREMYE Veruste	RUYUMBA	M	NYAKIGEZI		
10.	NYIRAMBARA RABO	Ruyumbwa	F	Gyivugizo	-	
11.	MUKANZIGIYE bibiaw	Ruyumbwa	F	Gyivugizo	-	
12.	MUKANDEKEZI Selphine	Ruyumbwa	F	Gashya	-	
13.	NKIRAMUGU	Ruyumbwa	M	Gashya	-	
14.	HAGUMIMANA theoneste	Ruyumbwa	M	Gyivugizo	-	
15.	Subwomane	Ruyumbwa	M	Gyivugizo	-	
16.	NYIRABOZUWE	muboga	F	Gashya	-	



ABITABIRIYE INAMA YO KUMENYEKANISHA UMUSHINGA WO GUKWIRAKWIZA AMASHANYARAZI
(RUEAP) YABEREYE MU MURENGE WA CYANZARUWE. AKARERE KA RUBAVU KUWA .30.. /10/2021

S/N	Amazina yombi	Akagari	Sex	Umudugudu	Telephone	Umukono
1	BIZABAZAHU MARIKO	CYANZARUWE	M	CYANZARUWE		
2	NYIRABE TATYA	Rushura	F	Rushura		
3	Rwagasore Rwigyezi	Cyanzome	M	Cyanzome		
4	NTAHONDEGE J. Acuru	Cyanzome	M	Rushura	078114262	
5	NYIRABAGAZI Chemuruti	CYANZARUWE	F	Cyanzome		
6	NYIRAKAMANA Kwatoro	Cyanzome	F	Cyanzome		
7	MUSINGI ZIMANA Ndagipimura	Cyanzome	M	Rushura		
8	BYANUAGABA XIS	Cyanzome	M	Cyanzome		
9	UDABABAZI	Cyanzome	M	Cyanzome		
10	ZIRIMUWABAGABO JIMU	Cyanzome	M	Noranga	079454285	
11	BICUNDRO J' de clera	Cyanzome	M	Rushura	078088276	
12	SEBATUNZI Ndamitandiro	Cyanzome	M	Noranga		
13	Ndirikwendera Viteza	Cyanzome	F	Rushura		
14	NSAMANA Jemur	Cyanzome	M	Noranga	078155006	
15	NYIRANTEGE Verediana	Cyanzome	F	Gatungu	0782268257	
16	MAFAMARE Muvielel	Cyanzome	F	Cyanzome		
17	BURERAMANA Jemur	Cyanzome	M	Cyanzome	0782331877	



ABITABIRIYE INAMA YO KUMENYEKANISHA UMUSHINGA WO GUKWIRAKWIZA AMASHANYARAZI
(RUEAP) YABEREYE MU MURENGE WA RUG. R. S. D. AKARERE KA RUBAVU KUWA 30.10/2021

S/N	Amazina yombi	Akagari	Umudugudu	Telephone	Umukono
1	MBUZEHOSE Lawrence F	Rwanda	Rwanda	0780265901	
2	BAVUGAMERISHI INNOCENT M	Rwanda	Mushokoro	0782171793	
3	MUKABATSIMBA Franck F	Rwanda	Byima	0787811090	
4	NTABOMIMATA Theogen M	Rwanda	Cyanka	0791041791	
5	NYIRAMBAWE NIMATA FLORENCE F	Rwanda	Kirozi	0782926498	
6	NEZABAKUZE CLAUDIA F	Rwanda	Kirozi	0789496151	
7	IGIRAMBA EMILE V	Rwanda	Gashuku	0783496313	
8	NYIRAKAMATA DROCELA F	Rwanda	Kirozi	0789366195	
9	NYIRAMBARIBITSE FRANYE F	Rwanda	Gashuku	0785497693	
10	NYIRAMAHAMBA ESPERANCE F	Rwanda	Gashuku	0782798463	
11	UWIMANA J. PIERRE M	Rwanda	Rwanda	0787578269	
12	UWIMAHORO SCHASTIC F	Rwanda	Cyanka	0786234404	
13	DUFATANYE ERIC M	Rwanda	GATEKO	0786509260	
14	NDIHOZUBWIMATA INNOCENT M	Rwanda	GATEKO	0790435891	
15	NSATIGIRAMBA CELESTIN M	Rwanda	GATEKO	0786509260	
16	NYIRAKABUGA MARKELINE F	Rwanda	GATEKO	0787382111	
17	BARATYERETSE S. BIRISSEM	Rwanda	GATEKO	0786509260	



ABITABIRIYE INAMA YO KUMENYEKANISHA UMUSHINGA WO GUKWIRAKWIZA AMASHANYARAZI
(RUEAP) YABEREYE MU MURENGE WA Nyundo..... AKARERE KA RUBAVU KUWA .30../10/2021

S/N	Amazina yombi	Akagari	SEX	Umudugudu	Telephone	Umukono
1	GIASHEMA Athanase	TERIMAERE	M	RUHANGO	0785830844	
2	NZAJIRWANDA Y. Batiste	TERIMAERE	M	KANJAMATEHRE	0789456110	
3	KANJAMAZA Pascal	TERIMAERE	M	RUHANGO	0787747064	
4	NIRAGIRE SIPRIYANI	KAVOHO	M	KINJENDARO	0790875880	
5	NZABARANKIZE FEROMINA	TERIMAERE	F	DOHRE	-	
6	MUKANOHERI VESTINE	NYUNDO	F	HUJE	-	
7	HABARUGIRA Celestin	MUKONDO	M	TANDA	078299605	
8	MUNDANIKURE Clodine	NYUNDO	F	KIRIBATA	0787579026	
9	NDISEBUJE JAVANE	NYUNDO	F	KIRIBATA	078543668	
10	MPZEMAZI Y. H. Viane	TERIMAERE	M	RUHANGO	0784800673	
11	NZABAKURANA Yon	TERIMAERE	M	RUHANGO	0784029160	
12	HABARUSHIMANA Y. Pierre	TERIMAERE	M	RUHANGO	0787941640	
13	RWASEKARE APALIMEL	TERIMAERE	M	RUHANGO	-	
14	RUVAMWARO Auto	TERIMAERE	M	RUHANGO	-	
15	BAKURU KONSIRIYA	TERIMAERE	M	KANJAMATEHRE	-	
16	HABYARIHANA Visenti	TERIMAERE	M	RUHANGO	-	
17	RUBAHUMIHIGO Fidel	TERIMAERE	M	KANJAMATEHRE	0789291310	



ABITABIRIYE INAMA YO KUMENYEKANISHA UMUSHINGA WO GUKWIRAKWIZA AMASHANYARAZI
(RUEAP) YABEREYE MU MURENGE WA NJUNDO..... AKARERE KA RUBAVU KUWA .30./10/2021

S/N	Amazina yombi	Akagari	SEX	Umudugudu	Telephone	Umukono
1	GIASHEMA Athanase	TERIMBERE	M	RUHANGO	0785830844	
2	NZAJIRWANDA Y. Batiste	TERIMBERE	M	KANYAMATEMBE	0789456110	
3	KANYAMAZA Pascal	TERIMBERE	M	RUHANGO	0787747064	
4	NIRAGIRE SIPRIJANI	KAVOHO	M	KINYENDARO	0790875880	
5	NZAMARANKIZE FEROMINA	TERIMBERE	F	NOABE	-	
6	MUKANOHERI VESTINE	NJUNDO	F	HUJE	-	
7	HABARUGIRA Celestin	MUKONDO	M	TANDA	078799605	
8	MUNDANIKURE Clodine	NJUNDO	F	KIRIBATA	0787579026	
9	NDISEBUJE JAVANE	NJUNDO	F	KIRIBATA	078543668	
10	MPDZEMAZI Y. H. Viane	TERIMBERE	M	RUHANGO	0784800673	
11	NZABAKURANA Yon	TERIMBERE	M	RUHANGO	0784029160	
12	HABARUSHIMANA Y. Pierre	TERIMBERE	M	RUHANGO	0787941640	
13	RWASEKARE APALIME	TERIMBERE	M	RUHANGO	-	
14	RUVAMWARO Auto	TERIMBERE	M	RUHANGO	-	
15	BAKURU KONSIRIYA	TERIMBERE	M	KANYAMATEMBE	-	
16	HABYARIHANA Visenti	TERIMBERE	M	RUHANGO	-	
17	RUCAHUMIHIGO Fidel	TERIMBERE	M	KANYAMATEMBE	0789291310	



ABITABIRIYE INAMA YO KUMENYEKANISHA UMUSHINGA WO GUKWIRAKWIZA AMASHANYARAZI

(RUEAP) YABEREYE MU MURENGE WA KANZORO...../MUSANZE KUWA 26.../10/2021

S/N	Amazina yombi	Akagari	Sex	Umudugudu	Telephone	Umukono
1	NTAWERA Glisvie	Nyamirima	F	Buturwa II	0785390326	
2	Uzabakiriko Evaniste	Nyamirima	M	Kanzoro	0784365411	
3	MUKURUKU YUMPA FREDERIE	Nyamirima	M	KANSORO	0789031553	
4	IZABAYO S. PIERRE	Nyamirima	M	KANSORO	0785908841	
5	TWIGIRIMU ZUFOUSIM	Nyamirima	M	KANSORO	0788684758	
6	RUGWIZAMU GUY ZANDIMU	Nyamirima	M	Kansoro	078467434	
7	Nakuru Bonakura	Nyamirima	F	Kansoro	078911407	
8	Munadde Bonakura	Nyamirima	F	Kansoro	0782300639	
9	KABEKERU Athanas.	Nyamirima	M	KANSORO	0789789156	
10	NZABANTUMU	Nyamirima	M	KANSORO	078031526	
11	KSEKAMBABAYE	Nyamirima	M	KANSORO	0787208046	
12	GAKARA	Nyamirima	M	KANSORO	0789709582	



ABITABIRIYE INAMA YO KUMENYEKANISHA UMUSHINGA WO GUKWIRAKWIZA AMASHANYARAZI
(RUEAP) YABEREYE MU MURENGE WA ~~NJYUMBA~~ AKARERE KA RUBAVU KUWA 31/10/2021

S/N	Amazina yombi	Akagari	SEX	Umudugudu	Telephone	Umukono
01	MAHIRIRO Adolphe	BURUSHA	M	KABERAMO	0783164545	
02	MANIRARORA Theodoric	BURUSHA	M	KABERAMO	0781583000	
03	HABARUGRA Theogene	BURUSHA	M	KABERAMO	074207169	
04	SAFARI EMMANUEL	BURUSHA	M	KABERAMO	0782326083	
05	HTIYAREMYE JUSTIN	BURUSHA	M	KINTWALI	0788237806	
06	IRANKUNDA TRISICI	BURUSHA	F	KINTWALI	0788633845	
07	NYOMUKIZA LAURENT	BUSORO	M	BUYANO	0789073062	
08	MAVUGIMANA J. DODIE	BURUSHA	M	KINTWALI	0784801582	
09	NYONGURU SHADRACK	BUSORO	M	BUYANO	0780791868	
10	OMAPILI ATANASI	BURUSHA	M	KABERAMO	0785424340	
11	KWISHAKA J. MUY	BURUSHA	M	KABERAMO	0785695488	
12	NSTIMUYIMANA A. LEXX	BUSORO	M	BUYANO	0798794440	
13	HTIMANA J. DAMACENE	BURUSHA	M	KABERAMO		
14	AXIRWANDA J. BUSCO	BURUSHA	M	KABERAMO	0787003504	
15	NYIRAKANA	BUSORO	F	BUYANO	0784557126	
16	RUKUNDO MOISE	BURUSHA	M	MUTENGE	0784404112	
17	NDAYIZEYE YATELI	BUSORO	M	BUJENJE	0784127080	

Mydend

10th Floor KCT, KN 2 ST, Nyarugenge District, P.O. Box 3855 Kigali, Rwanda
Tel.: + (250) (0) 787172265. email: info@edcl.rw. website: www.edcl.rw



ABITABIRIYE INAMA YO KUMENYEKANISHA UMUSHINGA WO GUKWIRAKWIZA AMASHANYARAZI
(RUEAP) YABEREYE MU MURENGE WA KANZENZE..... / RUBAVU, KUWA ..34../10/2021

#	Amazinayombi	Sex	Akagali	Umudugudu	Telefoni	Umukono
1	HAREKIMANA Faustin	M	Kirerema	Rushasho	0788767354	
2	MUBIRABUMVA Jean Bosco	M	Nyamikongi	Ruramukungu	0782018137	
3	NIZEYIMANA Emmanuelli	M	Kirerema	Rushasho	0780807924	
4	BASENDA Simeon	M	Kirerema	Rushasho	0788858270	
5	KAVANO Jean Pierre	M	Kirerema	Rushasho	0785115193	
6	NKUNDA BACENZI Israël	M	Kirerema	Rushasho	0784236438	
7	HATEGE NZAMUKOSHA Claudine	F	Kirerema	Rushasho	0783419240	
8	NJENGUYUMA GEMATERI Bernard	M	Kirerema	Rushasho	078362366	
9	MURINJA Jean Domascon	M	Nyamikongi	Nyamikongi	0784415824	
10	BURANGA Alphonse	M	Nyamikongi	Ruramukungu	0788552649	
11	MURURAGALA Alphonse	M	Nyamikongi	Nyamikongi	-	
12	UWAYEZU MARIENYI	M	Nyamikongi	Kirerema	0788889279	
13	HAGUMIMANA J. BATISTE	M	MURAMA	LUBARA	-	
14	SEBINGU JOSEPH	M	KIREREMA	RUSHASHO	0786499984	
15	NYAMUKONGU Valens	M	KIREREMA	RUSHASHO	0786680640	
16	NYIRANZAKUTWATIMANA Cande	F	KIREREMA	KABARI	0781948013	
17	NDUSHABANDI PIER	M	NYAMIKONGI	NYAMIKONGI	0788623896	
18	HABIMANA THEONESTU	M	KIREREMA	KIREREMA	-	
19	NZABZIKURIKIZA AUGUSTIN	M	NYAMIKONGI	NYAMIKONGI	-	
20	SEBIRARE JEAN	M	NYAMIKONGI	KABARI	0781606194	
21	MUKUNINDA MAGERA	F	NYAMIKONGI	KABARI	-	



ABITABIRIYE INAMA YO KUMENYEKANISHA UMUSHINGA WO GUKWIRAKWIZA AMASHANYARAZI
(RUEAP) YABEREYE MU MURENGE WA BURINGO. AKARERE KA RUBAVU KUWA 29 /10/2021

S/N	Amazina yombi	Akagari	Sex	Umudugudu	Telephone	Umukono
1.	MASYAMBEYE EMMANUEL	Buringo	M	Buringo	0785050802	
2.	MUNYEMBABAZI Theogene	BURINGO	M	BURINGO	0784802053	
3.	BAMBARIZE	BURINGO	M	BURINGO	07802090	
4.	LWIMANA Valens	BURINGO	M	BURINGO	0783228964	
5.	MTABANGANYI MANA Dione	BURINGO	F	BURINGO	078198193	
6.	N. RNTI KUBWIMANA	BURINGO	F	BURINGO	078853044	
7.	KAKUKURATIGORENE	Buringo	M	Buringo		
8.	NTIRENGANYA Epimache	Buringo	M	Buringo	0782708261	
9.	N. Nomafo mpe ne Kimistina	Butaka	F	Buringo	078938290	
10.	HAREKI MUKA SBT	BURINGO	M	BURINGO	982672067	
11.	H. RA BUKO BWA GIPPE	BUTAKA	F	KABINGO	079327366	
12.	H. RA BUKO BWA	BUTAKA	F	KABINGO	078374128	
13.	H. RA RUKIKO ANHONSO	BURINGO	F	BURINGO	0782662341	
14.	H. RA MASHAMBE KEAMEL	BUTAKA	F	KABINGO	-	
15.	UWE MANA NABING	BURINGO	F	GABARABO	-	
16.	Twigishimi Simama Emul	BURINGO	M	GABARA	0780063925	
17.	REKA JULI SIMON	BURINGO	M	BURINGO		



ENERGY DEVELOPMENT CORPORATION LIMITED

ABITABIRIYE INAMA YO KUMENYEKANISHA UMUSHINGA WO GUKWIRAKWIZA AMASHANYARAZI (RUEAP) YABEREYE MU MURENGE WA..... / RUBAVU, KUWA/10/2021

#	Amazinayombi	Sex	Akagali	Umudugudu	Telefoni	Umukono
1	HABIZIMUNA dieye Olanje	M	KAMUHOZA	RUKORO	0788231478	[Signature]
2	MUNYAGISENJI J. Claude	M	KAMUHOZA	BAMBIRO	0788867733	[Signature]
3	BIAFUKUBANO ATIANZI	M	MUSABIKO	NTERANYA	0710968959	[Signature]
4	PAHIMATA PAIRICE	M	KAMUHOZA	RUKORO	0784222144	[Signature]
5	MDAMUKIRA ELIZABETH	M	KAMUHOZA	NYAMIGOGO	0782995405	[Signature]
6	MUKAMUGEMATYI Sipeyigaza	F	KAMUHOZA	BAMBIRO	0789599262	[Signature]
7	MDIBUGURUZA KATYABUSOYI	M	KAMUHOZA	BAMBIRO	0783104858	[Signature]
8	HAKIZIMATA Mwojane	M	KAMUHOZA	BAMBIRO	0785329450	[Signature]
9	MUMYAKAZI ELIAKU	M	MUSABIKO	NYAKIBATDE	0784656314	[Signature]
10	NYABATYDEBA Jadamun	M	KAMUHOZA	BAMBIRO	0781092023	[Signature]
11	SEGAHINDA Mwojane	M	KAMUHOZA	BAMBIRO	0786413045	[Signature]
12	MUTUMUKI ZA EMO	M	KAMUHOZA	BAMBIRO	0781094709	[Signature]
13	DITWAKI KIBASE	M	KAMUHOZA	BAMBIRO	0721778193	[Signature]
14	MISIRIYO Samuham	M	KAMUHOZA	BAMBIRO	0786064248	[Signature]



ABITABIRIYE INAMA YO KUMENYEKANISHA UMUSHINGA WO GUKWIRAKWIZA AMASHANYARAZI
(RUEAP) YABEREYE MU MURENGE WA ...Muk.../MUSANZE KUWA 27/10/2021

S/N	Amazina yombi	Akagari	SR	Umudugudu	Telephone	Umukono
1.	NTEZIMANA John peter	Gyogo	M	Karabiro	0781732970	<i>[Signature]</i>
2.	Hagenimana Jean	Gyogo	M	Karabiro	0782497961	<i>[Signature]</i>
3.	KAKUZE Faburoni	Gyogo	F	Karabiro	-	<i>[Signature]</i>
4.	MUKUNDU fite Faburoni	Gyogo	F	Karabiro	0789621306	<i>[Signature]</i>
5.	NJIRA no mba Marciane	Gyogo	F	Karabiro	0738466139	<i>[Signature]</i>
6.	Ruvugayimi Kose Théo gine	Gyogo	M	Karabiro	-	<i>[Signature]</i>
7.	HAKIZIMANA Jean Dominique	Gyogo	M	Karabiro	-	<i>[Signature]</i>
8.	MUKA ndekezi Daphrose	Gyogo	F	Karabiro	-	<i>[Signature]</i>
9.	Ntegezezi mana Schadrack	Gyogo	M	Karabiro	-	<i>[Signature]</i>
10.	Nzirangirabanzizi Louise	Gyogo	F	Karabiro	-	<i>[Signature]</i>
11.	TUYENGE Innocent	Gyogo	M	Karabiro	0783876850	<i>[Signature]</i>
12.	Uwariho Ignace	Gyogo	M	Karabiro	0788886245	<i>[Signature]</i>
13.	N'panzabaza Espérance	Gyogo	F	Karabiro	-	<i>[Signature]</i>
14.	N'pazanku odelthe	Gyogo	F	Karabiro	0785690528	<i>[Signature]</i>
15.	Semshago Faustin	Gyogo	M	Karabiro	-	<i>[Signature]</i>
16.	Sinunvayabo	Gyogo	M	Karabiro	0783077069	<i>[Signature]</i>
17.	UZA mukunda peteronile	Gyogo	F	Karabiro	-	<i>[Signature]</i>
18.	NJIRA bunane claudine	Gyogo	F	Karabiro	0781559692	<i>[Signature]</i>
19.	Ayiringeneze claudine	Gyogo	F	Karabiro	-	<i>[Signature]</i>

Annex 2: Grievance Redress Mechanism Log Frame Template

PROJECT:	District	Sector	Cell	Village
Grievance number:			
Name of the recorder:.....			Title:.....	
Date: / /				
Complainant Names:		Signature of complainant..... Date: / /		
Province	District	Sector	Cell	Village
Details of Complaint:				

Grievance Closure Out

Grievance number: :.....

Define immediate action required:

.....

Define Long term action required (If necessary):

.....

Corrective action plan taken	Due date
Responsible party (Filled in and signed by the complainant when she/he receives compensation or file closed):.....	
.....	

Complainant Name:Date: .../...../..... Signature.....

Responsible Grievance Redress Committee

1. Title.....Name.....Date.../...../..... Signature.....

2. TitleName.....Date.../...../..... Signature.....

3. TitleName.....Date.../...../..... Signature.....

Annex 3: Checklist for monitoring

Environmental and Social Monitoring Check list for the construction camp site, storage and offices

Impacts	Indicator	Frequency	Time
Storage of materials including hazardous materials	Separate storage with impervious floor	Daily	Before construction of the camp site
Storage materials are exposed and accessible by unauthorized people and workers	Storage demarcated and fenced	Daily	Before construction of the camp site
Risk of fire outbreak on camp site, offices and storage of materials	Fire extinguishers provided and maintained.	Daily	During the construction of the camp site
Poor handling of hazardous materials Lack of proper PPE when dealing with hazardous material	Staff trained PPE provided to workers	Daily	During the construction of the camp site
Poor camp site rehabilitation at the end of construction	Trees and grasses planted.	During and after construction works	At the end of the construction.

Environmental and Social Monitoring check list for Environmental Training and Awareness

Impacts	Indicator	Frequency	Time
Environmental, social, health and safety requirements noncompliance due to lack of knowledge and awareness	Reports of training, awareness programme and tool box meetings	Weekly	During the construction works.

Environmental and Social Monitoring check list for impacts due to vegetation clearing Monitoring

Impacts	Indicator	Frequency	Time
Impacts related vegetation clearing, removing of trees. People will have their properties destroyed	Proof of compensation Landscaping plan available Wood wastes are availed to initial owners	Weekly	During the construction works.

Environmental and Social Monitoring checklist for impacts on resettlement, land use and tenure

Impacts	Indicator	Frequency	Time
Impacts permanent acquisition of land. Crops and assets are affected or destroyed	Land acquisition titles Proof of payment to affected people for their properties	Weekly	Before commencement of the construction works.
PAPs are not compensated prior to commencement of works Farmers are not allowed to cultivate on their land low height crops	Compensation report provided prior to commencement of works Farmers cultivate the compensated plots	Weekly	Prior to the commencement of works During construction

Environmental and Social Monitoring check list for impacts due to extraction and use of building materials

Impacts	Indicator	Frequency	Time
Impacts to natural resources due to the extraction and use of raw construction materials related to unauthorized extraction and dumping, excessive wastes	District License for quarry and sand mining No excessive materials on site Excessive wastes reused	Weekly	During the construction works.

Environmental and Social Monitoring check list for noise control

Impacts	Indicator	Frequency	Time
Impacts due to noise emitted from line construction	-Complaints from residents -Portable barriers installed -Vehicle's inspection Certificates	Daily Monthly	During the construction works.

Environmental and Social Monitoring check list for impacts on air quality

Impacts	Indicator	Frequency	Time
Dust pollution due to excavation works affecting the quality of air	-Hauling covers available for all trucks -Number of watering times in dry season -PPE on site	Daily	During the construction works.
Air pollution from exhaust fumes from trucks and other equipment	Number of maintenance of trucks and equipment Vehicle inspection certificate available	Daily	

Environmental and Social Monitoring check list for soil pollution

Impacts	Indicator	Frequency	Time
Impact of soil pollution due oil spills	-Vehicle inspection certificates available -Designated maintenance area provided -Store for oil with impervious floor constructed	Weekly	During the construction works.

Environmental and Social Monitoring checklist for impacts on water use

Impacts	Indicator	Frequency	Time
Impacts due to excessive water usage from the national utility	Rainwater gutters and collection tanks installed	Monthly	During the construction works.

Environmental and Social Monitoring checklist for solid waste management

Impacts	Indicator	Frequency	Time
Impacts of wastes generated on site to the soil, air and human health	Waste hierarchy observed on site Refuse bins installed on site Waste sorted on site	daily	During the construction works.

Environmental and Social Monitoring check list for security on site

Impacts	Indicator	Frequency	Time
Lack of security on site impacts on the safety of materials, injuries and theft.	Offices and camp site fenced Security guards available on office and camp site	Daily	During the construction works.

Environmental and Social Monitoring check list for workers' safety

Impacts	Indicator	Frequency	Time
Impacts on safety related to injuries, accidents, breach of site rules and lack of PPEs	Hazardous materials store constructed PPE available and used First Aid Kit on site Technician trained	Daily	During the construction works.
Lack of signage and risk of accidents	Sign post installed Workers training on health and safety reports	Daily	During the construction works.

Environmental and Social Monitoring check list for workers' health

Impacts	Indicator	Frequency	Time
Impacts on workers' health due to poor sanitation, poor waste management, diseases spread	Clean sanitary facilities installed Clean drinking water available	Daily	During the construction works.
Risk of diseases contamination of diseases such as HIV, STD and Malaria	Awareness on HIV, STD and malaria reports Training report	weekly	During the construction works.

Environmental and Social Mitigation Plan for Gender based Violence and Child Abuse and Exploitation

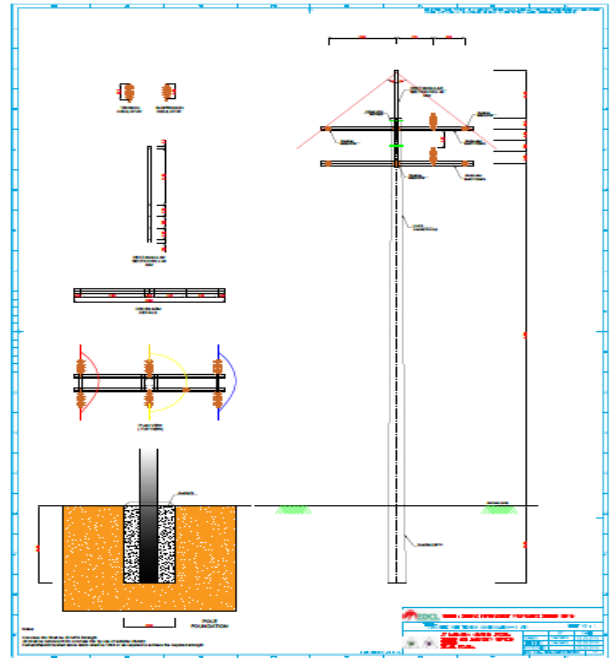
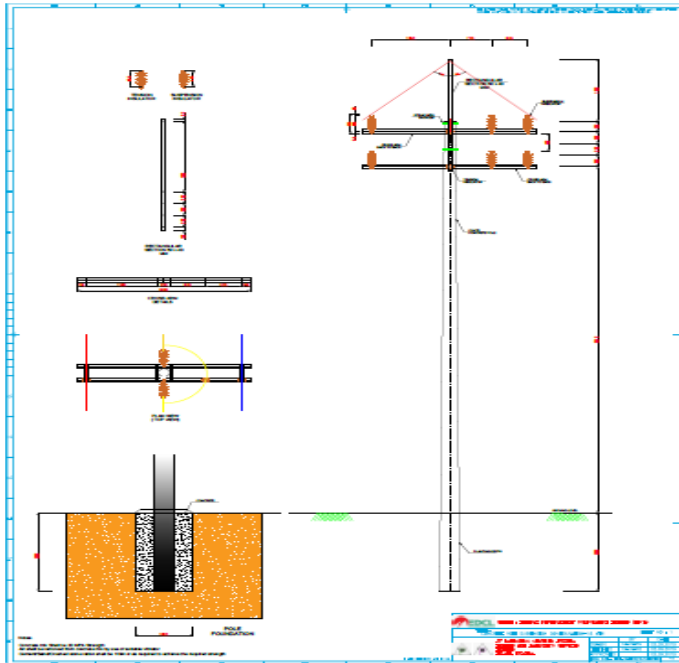
Impacts	Indicator	Frequency	Time
Impacts due gender based violence and child abuse/ exploitation due to lack of awareness	GRC, GBV and CAE committee in place Awareness meeting reports	weekly	During the construction works.

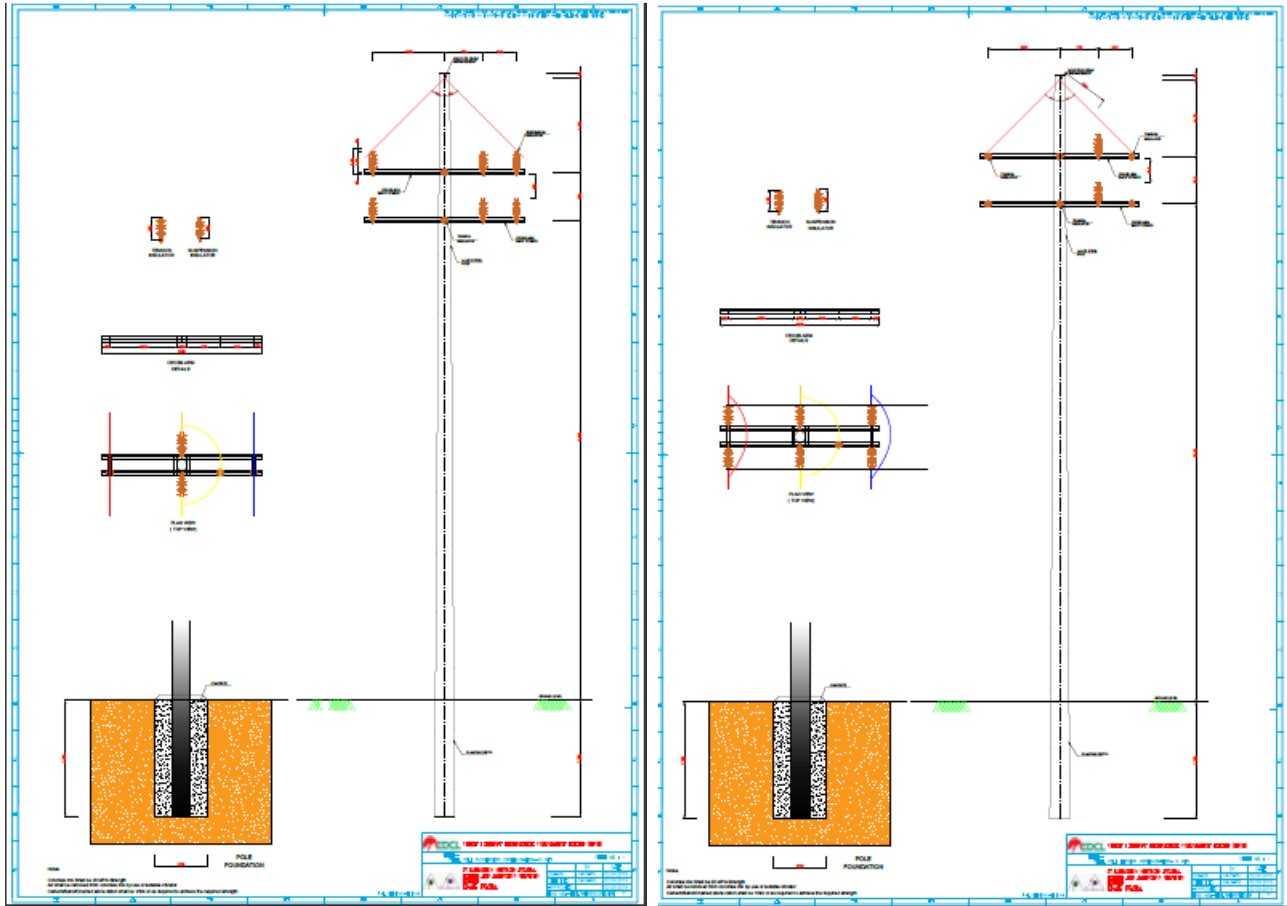
Environmental and Social Monitoring check list for Gender and disabled discrimination

Impacts	Indicator	Frequency	Time
Impacts on gender and people with disabilities due to discrimination during recruitment, hiring and work	Recruitment report Field observation	Monthly	During the construction works.

Environmental and Social Management and Mitigation Plan for fire preparedness

Impacts	Indicator	Frequency	Time
Impacts of fire outbreak due to negligence, lack of awareness and training, electrical faults, smoking and carelessness	Emergency training report Fire extinguishers in place and maintained Fire Fighting contacts number displayed on site	weekly	During the construction works.

Annex 4: Poles drawings with foundations and heights



Annex 5: Pictures of Consultation meetings





