



Plant Design, Supply, and Installation of Low Voltage and Medium Voltage Lines and Service Connections in the Gatsibo, Kayonza, Ngoma and Rwamagana Districts, Eastern Province of Rwanda

CONTRACT AGREEMENT N° 11.07.023/1257/19/EDCL-MD/FG/cm



ENVIRONMENT AND SOCIAL MANAGEMENT PLAN

Project: Plant Design, Supply, and Installation of Low Voltage and Medium Voltage Lines and Service Connections in the Gatsibo, Kayonza, Ngoma and Rwamagana Districts, Eastern Province of Rwanda

Contract No.: 11.07.023/1257/19/EDCL-MD/FG/cm

Contractor: STEG International Services (STEG-IS)

Client: ENERGY DEVELOPMENT CORPORATION LIMITED (EDCL)

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Acronyms and abbreviations

- OHSAS: Occupational Health and Safety Assessment Series,
- ISO: International Organization for Standardization,
- PMP: Project Management Professional
- ILO: International Labor Organization,
- PPE: Personal Protective Equipment,
- EDCL: Energy Development Corporation Limited,
- EUCL: Energy Utility Corporation Limited,
- STEG-IS: Steg International Services,
- ESMP: Environmental and Social Management Plan,
- HSMP: Health and Safety Management Plan,
- RoW: Right of Way,
- MV: Medium Voltage,
- LV: Low Voltage,
- QSE: Quality, Security, Environment,
- EPC: Engineering, Procurement and Construction,
- PCB: Poly Chloro Biphenyl,
- kV: kilo Volt,
- km: kilo meter,
- AIDS: Acquired Immunity Deficiency Syndrome,
- CCA: Copper Chromium Arsenic,
- CO2: Carbon Dioxide,
- EIA: Environmental Impact Assessment,
- ESIA: Environmental Social Impact Assessment,
- GPS: Global Positioning System,
- HIV: Human Immune Virus,
- NOx: Nitrogen Oxide,
- OHS: Occupational Health and Safety,
- RFP: Request for Proposal,
- RGC: Rural Growth Centers,
- Sox: Sulphur Oxide,
- STIs: Sexually Transmitted Infections,



- TC: Trading Centers,
- VOC: Volatile Organic Compounds,
- REMA: Rwanda Environmental Management Authority,
- MININFRA: Ministry of Infrastructures,
- RHA: Rwanda Housing Authority,
- UNFCCC: United Nations Framework Convention on Climate Change,
- UNCDD: United Nations for Convention to Combat Desertification and Drought,
- OP: Operational Policy,
- BP: Bank Procedure,
- RESSP: Rwanda Electricity Sector Strengthening Policy.



I. EXECUTIVE SUMMARY

1. Project identification

Project	Proposed Plant Design, Supply, and Installation of Low Voltage and Medium Voltage Lines and Service Connections in the Gatsibo, Kayonza, Ngoma and Rwamagana Districts, Eastern Province of Rwanda
Location	Gatsibo, Kayonza, Ngoma and Rwamagana Districts
Client	EDCL: Energy Development Corporation Limited
Objectives of the project	<p>The main objective of this project is to strengthen the distribution networks and improve the electrification rate under Supply and Installation of Medium and Low Voltage Lines, Distribution Transformers and Connection of Customers in Un- Electrified Rural areas of Mainland Rwanda on Turnkey Basis.</p> <p>The purposes of this project are as follow:</p> <ul style="list-style-type: none">• Poverty reduction through improving the electricity access rate and the creation of short-term and long-term jobs.• Energy fuel saving and environment preservation through the reduce of firewood use and to the environment preservation (forest, gas emission, fuel and lubrication oil leakage) and noise pollution reduction.• Livelihoods improvement and social leisure through the improving of life conditions and improving delivery of social services and teaching conditions.• The reliable source of energy is a catalyst for social development such as road and communication infrastructures.
Scope of the project	<p>The project consists of the construction, of MV and LV networks, related distribution transformers and services connections, on EPC Contract basis. The project includes essentially:</p> <ul style="list-style-type: none">✓ 149,1 km of MV lines,✓ 264 km of LV lines,✓ 115 distribution transformers,✓ Connection of 9 352 households.



Objectives of the Plan	<p>The objective of this Environment and social Management Plan is to address the potential impacts of the project on the environment (including air, water, land, natural resources, flora, fauna, humans and interrelationships), produced not willingly while executing the project activities, and to ensure that the project is compliant with applicable national environmental legal requirements.</p> <p>Furthermore, this plan:</p> <ul style="list-style-type: none">✓ Outlines project background and the activities that will be undertaken during project implementation as well as its anticipated possible environmental impacts and;✓ Defines Environmental impacts;✓ Provides social impacts assessment;✓ Describes available preventive and mitigation measures,✓ Reviews Rwanda's policy, legal and administrative framework;✓ Provides a list of emergency situations and preparedness response;✓ Defines performance measurement and monitoring program including parameters to be followed, responsible of implementation and supervision;
Methodology and principles of this plan	<p>This Plan is formulated in accordance to:</p> <ul style="list-style-type: none">✓ ISO9001, ISO14001, OHSAS18001 guidelines,✓ STEG-IS certified Quality, Health, Safety and Environment Management System and best practices in the fields.✓ Observations during previous projects,✓ Documentation review; several legislative issued that were considered. <p>This is to ensure that the proposed project compliers with the relevant legislative and planning requirements of Rwanda. They generally comprise of legislations that encompass laws relating to environment, agriculture, water, public health and land.</p> <ul style="list-style-type: none">✓ Workers, experts' consultation.



2. Positive impacts

Employment creation: the major positive impacts are related to job opportunities. The direct and indirect job opportunities that will be provided by the project can be considered as a positive aspect. The local people will be directly employed to work at the construction sites. Some individuals may gain skills that can be applied in other transmission line construction projects.

The project will also generate indirect benefit to the women through vending food and selling basic items to the work force alongside sale of food in roadside restaurants to the workers.

Knowledge and culture transfer: in first hand side, the task force used for the project implementation will be managed and trained by Tunisians experimented technician, so that project will be an opportunity to local task force to gain knowledge and culture form foreign.

Improved local socio-economy and development: the household sources livelihoods economic activities in the project area is basically agriculture harvesting (banana, beans, maize ...) and farming. Availability of electricity will be an incentive of additional income-generation activities such as carpentry, mill, hair salons, repair and maintenance of vehicles, cleaning, restaurants and catering amongst others, which are hoped to lead to improved livelihoods of the operators in the community especially, the youth.

On a middle and long term, the electricity will be an incentive for potential set up of industrial activities companies.

Energy fuel saving and environment preservation: the electricity supply will contribute to reduce firewood demand and avoid the use of stand-alone generators and hence it will participate to the environment preservation (forest, gas emission, fuel and lubrication oil leakage) and noise pollution reduction.

Improved delivery of social services: electricity supply will bring about improved delivery of services in sectors such as health especially vaccination, child deliveries and surgical operations, education and general facilitation of trade activities in the project areas.

Improved teaching of science subjects in schools: the electricity supply will allow the evening classes and enhance the courses in science and computer-based lessons which were not possible due to lack of electricity.



Improved security: the electricity supply will lead to improved security through better lighting in the trading centers and institutions along the project areas and their environs which will contribute to security of residents and their investments.

Improved livelihoods and social leisure: the electricity supply will be an incentive factor for the householders to acquire items such as fridges, radio and television sets, improving so that alternatives for recreational and time for leisure.

3. Negative impacts

Bush clearing: Over the lines there are some vegetation to be pruned or cut to ensure the phase to earth clearance distance of 12 m according to safety requirements.

Mitigation measures: During the survey making the best choice of the poles locations and the line way to minimize clearance and during the bush clearing restrict to just the inevitable tree and thereafter adopt tree planting to compensate for lost trees while respecting the safety clearance distance.

Soil erosion concerns: Soil erosion can arise from the poles erection. The pole erection requires excavation, back filling and compacting. The hole is not properly compacted, this can lead to the soils loose and the drainage channels blocking.

Mitigation measures: this will be mitigated through proper compacting of the pole holes and full restoration of the work sites at the end of the project.

Waste: Simultaneously with the project activities implementation there are some solid waste such as card box, domestic waste in the housing site or on work site, possible damaged material, or liquid waste or spillage such as insulation oil from transformer, fuel or lubrication oil from vehicles and machines.

Mitigation measures: The major material use in the project are non-dangerous and recyclable. It is the contractor responsibility and his set up provisions to day to day cleaning and perform a proper waste management: awareness program for the workers, bag for waste sorting and collection, preventive maintenance for vehicles and machines.



Conflicts resulting from recruiting worker from other villages: some issues will likely arise from villagers in case they identify workers from other villages.

Mitigation: these issues are to be mitigated through the use as far as possible workers from the surrounding village and Consult the Grievance Redress Committee established (Local Resettlement committee).

Occupational Safety and Health (OSH) for the workers and the public: most OSH issues will likely arise during the construction, operation and maintenance of electric power distribution networks and include; work at height and falling height, exposure to physical hazards from material handling and shifting, use of heavy machine and cranes; public road accidents and fall hazards; exposure to dust and noise; falling objects; exposure to electrical shock from the use of tools and machinery, commissioning and lightening.

Mitigation: these issues are to be mitigated through provision of PPEs and First Aid Kits on site for the safety of the workers as well as continuous awareness on safety and health.

HIV/AIDS concerns: the interactions between the workers and the local communities may lead to the spreading of some STI/STD infections due to temporary sexual relationships

Mitigation: The contractor procures an awareness campaigns on HIV/AIDS to the workers and the local communities and provide shocking photos on possible diseases.

Noise from construction crew and traffic: During vehicles, cranes or truck motion, air and noise pollution can occur.

Mitigation: Construction activities will be implemented during daytime to avoid impacting peoples sleep hours. Vehicles, trucks and machines will be checked periodically. If needed, limitation on the vehicles and truck speed will be applied.

Impacts on traffic flow: the works along the road will likely affect traffic flow during its implementation.

Mitigation: This will be mitigated through employing traffic guides (flagmen) to control traffic at both approaches and use of safety signage with labels such as “men at work”.



II. BACKGROUND INFORMATION

1. Project Summary

The Government of Rwanda represented by ENERGY DEVELOPMENT CORPORATION LIMITED (EDCL) has received financing from the World Bank (WB) towards the cost of Construction of Medium Voltage and Low Voltage Networks in five provinces of Rwanda under Rwanda Electricity Sector Strengthening Project (RESSP).

The requirements in the tender specifications will be satisfied while adding our experience and expertise for the implementation of this project in a timely manner.

STEG INTERNATIONAL SERVICES had the honor to submit a technical-economic offer for plant design, supply, and installation of low voltage and medium voltage lines and service connections in the Gatsibo, Kayonza, Ngoma and Rwamagana Districts, eastern province of RWANDA on an EPC turnkey basis.

The client EDCL and the contractor STEG INTERNATIONAL SERVICES have signed the contract in June 25th, 2019.

The project components shown on table below:

Lots	District	Sectors	Activities	Unit	Scope of works as EDCL survey 22/07/2019	Scope of works as Contract
Lot 14	GATSIBO DISTRICT	Gasange, Kiziguro, Muhura, Murambi, Remera and Rugarama	MEDIUM VOLTAGE	km	62,4	62,000
			Low Voltage	TRF	53	38
				km	111,7	115,000
				cnx		3281
Lot 1	KAYONZA AND NGOMA DISTRICTS	Kabarondo, Kibungo, Remera and Rurenge	MEDIUM VOLTAGE	km	8,687	10
			Low Voltage	TRF	6	8
				km	17,765	24
				cnx		1489
Lot 3	RWAMAGANA DISTRICT	Fumbwe, Gahengeri and Musha	MEDIUM VOLTAGE	km	19,73	23
			Low Voltage	TRF	15	22
				km	27,66	37
				cnx		1312
Lot 4		Gahini, Kiramuruzi, Kiziguro, Mukarange,	MEDIUM VOLTAGE	km	40,59	42

	GATSIBO AND KAYONZA DISTRICTS	Murundi, Mwiri, Nyamirama and Rukara	Low Voltage	TRF	31	35
				km	51,46	65
				cnx		2694
Lot 12	RWAMAGANA DISTRICT	Kabarondo, Kibungo, Remera and Rurenge	MEDIUM VOLTAGE	km	12,65	12,1
			Low Voltage	TRF	10	12
				km	13,86	23
				cnx		576
TOTAL			MEDIUM VOLTAGE	km	144,057	149,1
			Low Voltage	RTF	115	115
				km	222,445	264
				CNX		9 352

Table 1: Project summary

All materials supplied in the frame of this project will be newly manufactured, of best quality and sized for working under the conditions specified and withstanding to the variations of temperature and atmospheric conditions arising under working conditions.

No toxic material (such as Halon, PCB, and Asbestos) will be used.

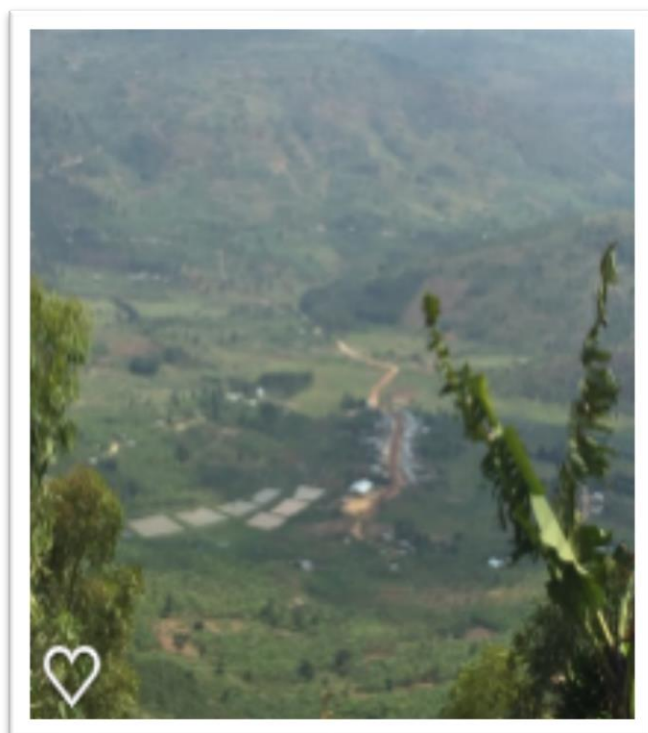


Figure 1 – Features from sites

Source: Site visit



2. Project organization and responsibilities

2.1. Steering Committee

The steering committee is composed of:

- EDCL representatives
- STEG-IS representatives

2.2. Project Organization

STEG International Services has mobilized the Project team described as follows:

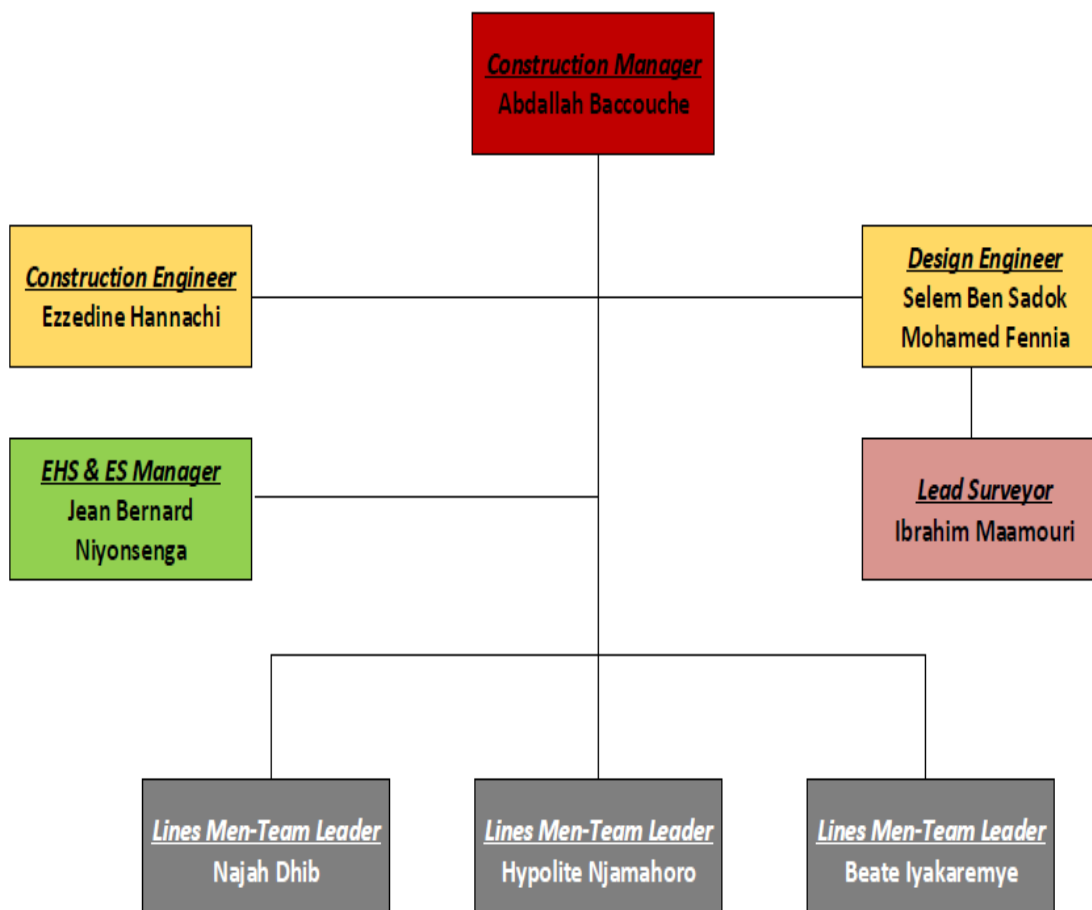


Figure 2 - Project organization chart



2.3. Responsibilities

N°	Activity	EDCL	EHS& ES Manager	Project Manager / Project Coordinator	Design Engineer	Construction Engineer	Site Supervisor	Team work member
1	Elaboration and update of the management plan	I	R	R	P	P	I	I
2	Implementation of the management plan	I	P	P	R	P	P	P
3	Compliance to Environment and social requirements	I	R	R	P	P	I	I
4	Awareness and sensitization campaign	I	R	R	P	I	I	I
5	Waste management on site	I	R	I	I	I	R	P
6	Complain management	P	R	I	I	I	R	P
7	Monitoring of the implementation of the management plan	P	R	R	P	I	I	I

Legend: R: Responsible P: Participant I: Information

Table 2: Environmental and social Responsibilities

3. Main equipment list of construction

The present list of equipment on site evolves according to the needs and nature of the work to be performed. It will be updated accordingly if needed.

S/N	NAME OF EQUIPMENT	Quantity
1	Selfloader	1
2	Pickup double cabins	6
3	Forklift	1
4	RTK Survey Trimble S5 Total Station	1
5	GPS equipment and software: Trimble Juno 3B / Garmin Etrex 30x	4
6	Compressor	1
7	Drill Bits Set	1
8	Fire Extinguisher	5
9	Generator	1
10	Heavy Duty Drill	1
11	Welding Equipment	1
12	Earthing kits complete with accessories	4
13	AMP Meters	2
14	Voltmeter	2

S/N	NAME OF EQUIPMENT	Quantity
15	Earth resistance meter c/w bag	4
16	Safety helmet, Safety belts with accessories, Climbing irons, Skinning knife, Linesmen pliers, Sledge hammer, Standard hammer	Lot
17	Tools for network construction	Lot

Table 3: Main construction equipment list

4. Project Location's

This sub section presents the project components at which the management of environmental and social impacts focuses. The maps below show some of the locations where the project components will be located within the 4 districts.

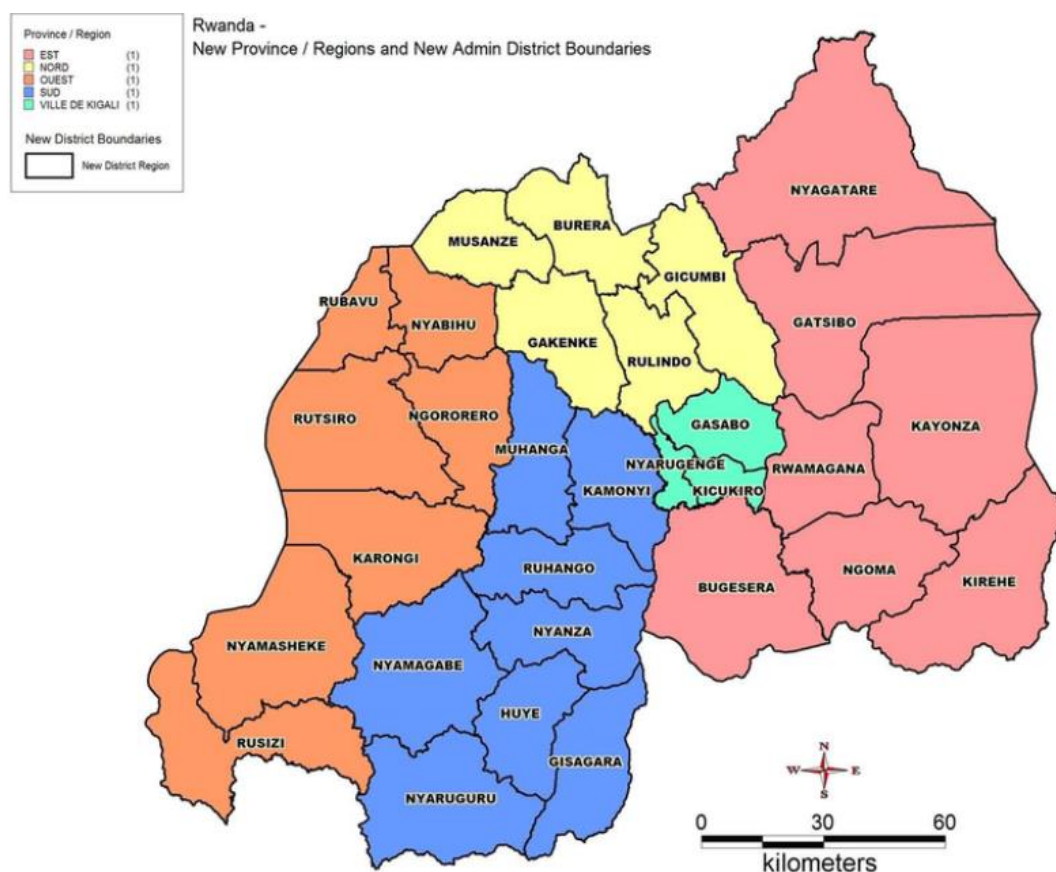


Figure 3: Rwanda provinces and Districts (source: wikipedia.org)



Figure 4: Project Map (Source: www.arcgis.com)

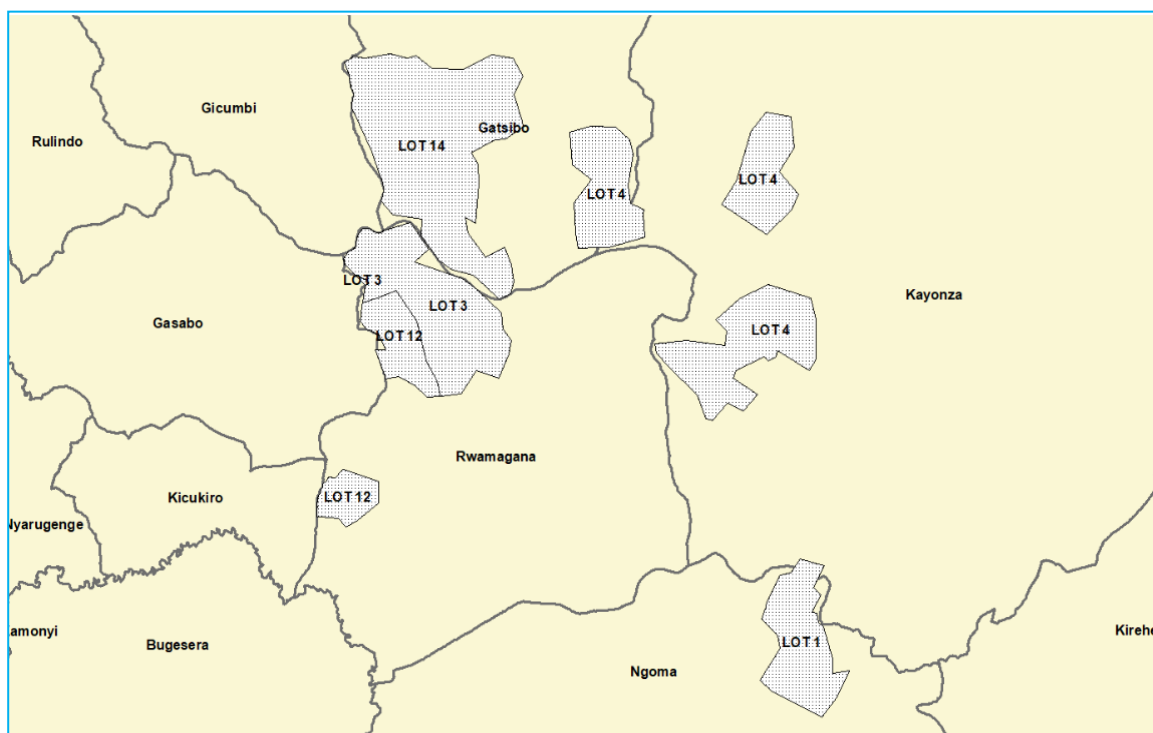


Figure 5: Eastern province (Lots 1,3,4,12 & 14) in Districts location

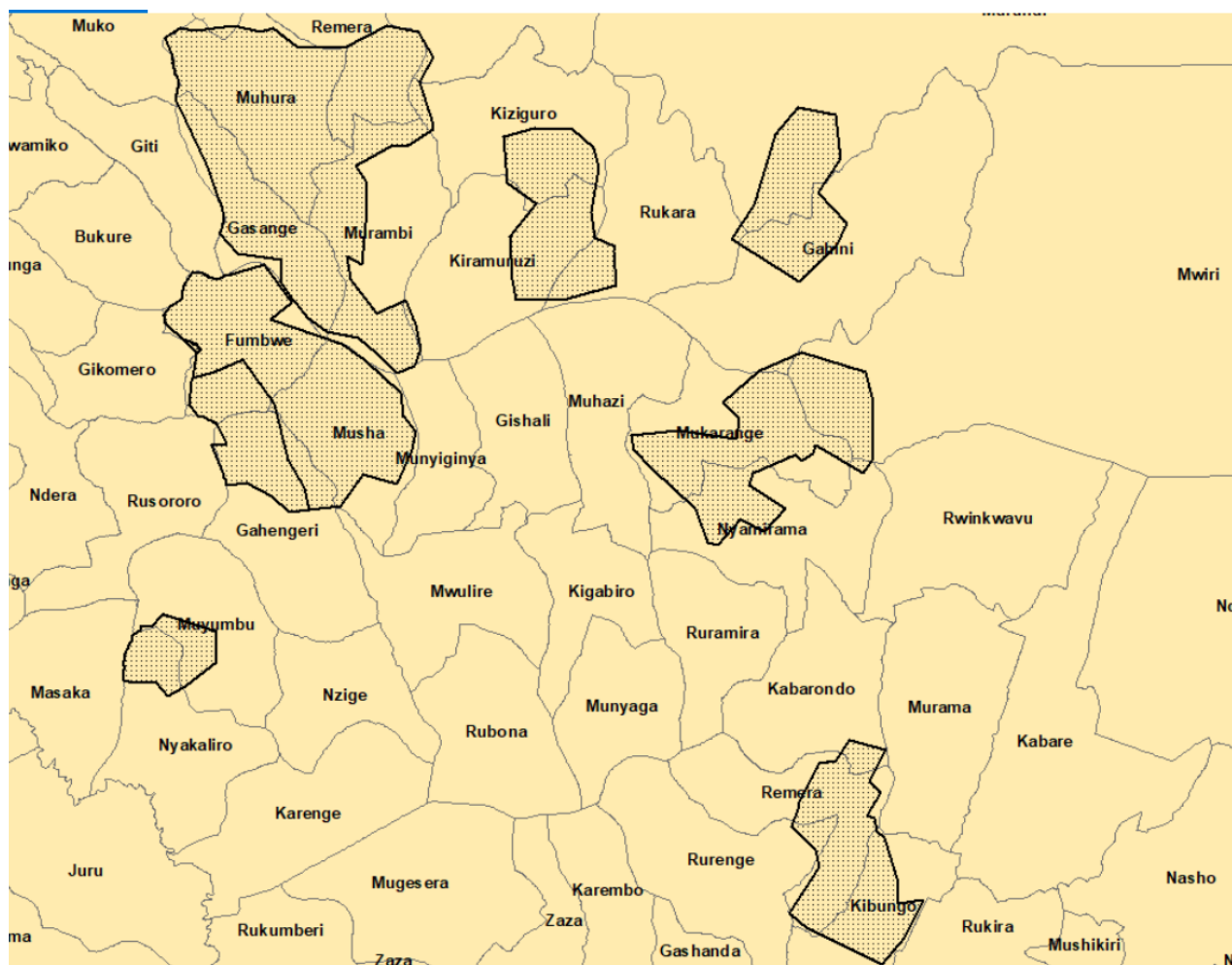


Figure 6: Eastern province, project location in sectors



Lots	District	Sectors	Activities	Unit	Scope of works as EDCL survey 22/07/2019	Scope of works as Contract
Lot 14	GATSIBO DISTRICT	Gasange, Kiziguro, Muhura, Murambi, Remera and Rugarama	MEDIUM VOLTAGE	km	62,4	62,000
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			Low Voltage	TRF	15	22
				km	27,66	37
				cnx		1312
Lot 4	GATSIBO AND KAYONZA DISTRICTS	Gahini, Kiramuruzi, Kiziguro, Mukarange, Murundi, Mwiri, Nyamirama and Rukara	MEDIUM VOLTAGE	km	40,59	42
			Low Voltage	TRF	31	35
				km	51,46	65
				cnx		2694
Lot 12	RWAMAGANA DISTRICT	Kabarondo, Kibungo, Remera and Rurenge	MEDIUM VOLTAGE	km	12,65	12,1
			Low Voltage	TRF	10	12
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				cnx		576
TOTAL			MEDIUM VOLTAGE	km	144,057	149,1
			Low Voltage	RTF	115	115
				km	222,445	264
				CNX		9 352

Table 4: Project scope summary and location's

5. Project Implementation Schedule

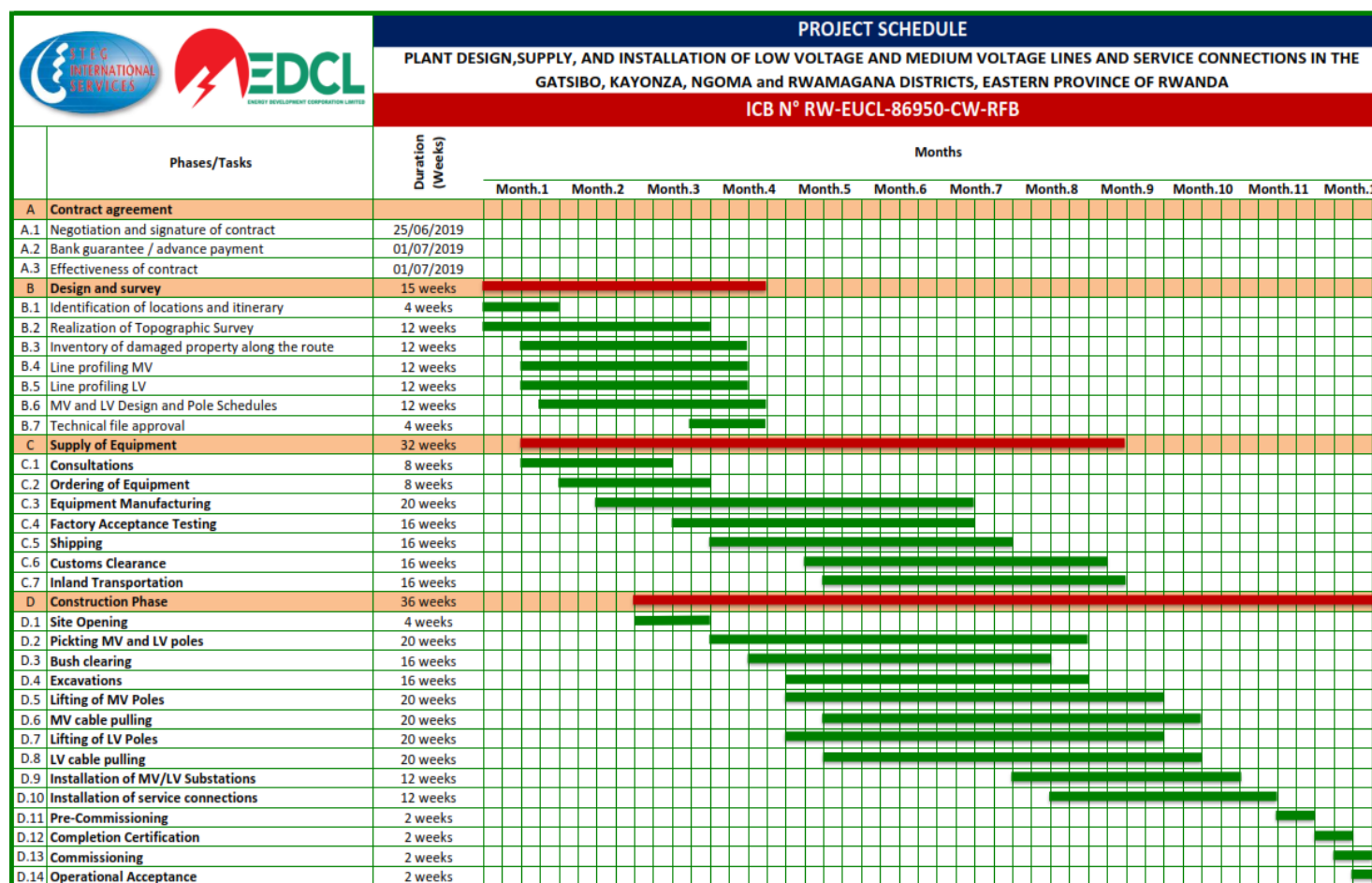


Figure 7: Project implementation Schedule



6. Project Activities

6.1. Line route survey

This activity involves the reconnaissance of the power line route previously projected and technically choose the best location for poles. The poles locations are substantiated through stacking wooden stakes.

While doing this, STEG-IS team's, in collaboration with the client representative and local authority, raises the awareness of the community on the importance of the project, asks community about its expectations and possible worries.

During this activity, the team must use vehicle on public road and to walk in field.

6.2. Bush clearing and site preparation

All tall trees and scrub within 6 m on either side of the centerline of the distribution line (i.e. approximately 12 m wide area) should be cut down to a height of not more than 1.25 m above ground. All tall trees outside the RoW, but of such height as could fall within 2 m of the conductors, shall also be felled.

Practically, this process of “bush clearing” is done in a very selective manner to do minimal damage to the vegetation cover and crops.

This activity will be done by manual means such as machete, wood saw and mechanical means such as chainsaw.

6.3. Storage and transportation of equipment and materials

Equipment and materials to be used in the construction of the distribution network include:

- ✓ Wooden Poles
- ✓ Distribution transformers,
- ✓ Drums of cables and conductors,
- ✓ Metallic structures and frames,
- ✓ Porcelain and Composite insulators (different models),
- ✓ Hardware and fittings,
- ✓ Construction materials (cement, sand, gravel, iron ...)

STEG-IS has prepared a main warehouse in Rwamagana district in order to store all plants and material and temporary yard for pole storage in Gatsibo, Ngoma and Kayanza. Plant and material



transportation at the workplace will be done using trucks, handling, loading and unloading are done manually and mechanically using self-loader, crane or forklift.

6.4. Pole foundation excavation

Location identified for poles erection are excavated mainly manually using pickaxe, shovel, and forged crowbar. In case of rocky soil, the use of electrical drill hammer is possible.

The pole whole will have specific depth (1.5m; 1.8m or 2.2 m) according to pole length and minimum diameter allowing the pole erection and not affecting the soil integrity.

The soil excavated is put in a manner to do not upset circulation or constitutes a source of hazard for worker or neighborhood villagers.

6.5. Pole erection

If the access to the pole location allows, the pole erection is made with a crane to easy and speed up the task. If it not possible to use the crane, a team containing enough persons does the operation manually. They can use strap, rope and a holding device during the pole vertical setting.

After vertically setting the pole, the foundation is done using consecutively stone layer, excavated materiel layer and stone layer. All layers are wedged using a hand compactor.

For unsupported MV/LV poles, foundation can be done with concrete (cement, sand, crashed stone).

6.6. Tower dressing

Pole dressing consists of the installation of the line fittings and insulators. This activity requires the pole climbing by lineman. So that, this is work at height and needs devices for climbing and lineman securing. It needs also tools for the fitting's assembly to the pole such us wrenches, straps. During this activity, there are some lineman working at height and some other working on the ground.

6.7. Cables and conductors stringing and sagging

The conductor reel is mounted on stands or jacks, leaving it free to rotate with just enough braking force on the reel to prevent over-run, backlash or loops. The pulling team pulls the cable past each tower structure. At each structure, the conductor is lifted and placed into a stringing sheave. A stringing sheave may also be referred to as a traveler, block, dolly, sheave, stringing block, or stringing traveler. The pulling team continues to the end of the line section being installed.

The sagging starts from the final span of the line section being installed and goes back to the conductor reel in order to turn back the conductor to the reel easily and without damage or need to cut it.

It is used temporarily clamps, wire grips, hoist, winch in order to have the desired conductor tension and then tighten the permanent clamps.

During this activity, there are some linemen working at height and some other working on the ground.

6.8. Distribution Transformer installation

This includes all activities of steel work, equipment (transformers, bus bar, panel ...) mounting.

6.9. Services connection

This is the establishment of the link of the household to the power network in a manner to allow him to benefit from power.

During this activity, there are some linemen working at height and some other working on the ground.

This activity is supposed to be on a network not energized.

6.10. Pre-commissioning tests and commission

The pre-commissioning test covers all activities of verification and check before the commissioning such as the earthing and the insulation level measurement, the sagging tension and the tightening of mechanical parts. After that, the new plants can be energized.

III. ADMINISTRATIVE, INSTITUTIONAL POLICY AND REGULATORY FRAMEWORK

This section describes the National institutional, legal and policy framework for environmental and social requirements in Rwanda, the relevant World Bank (WB) safeguards operational policies applicable to the project as well as the international laws and conventions that bear relevance to the implementation of this project.

1. *National Legal, Regulatory and Policy Framework*

1.1. *Constitution of Rwanda*

The constitution states that all citizens have the right of equal access to public service in accordance with their competence and abilities. In the Constitution of the Republic of Rwanda of 2015, article 40 states that every citizen is entitled to a healthy and satisfying environment. The law determines the modalities for protecting, safeguarding and promoting the environment. Different policies and laws from the constitution, the Vision 2020, the PRSP and EDPRS and the National Decentralization Policy (the —Decentralization) take into account environmental aspects and are in accordance with international policy framework mentioned in earlier section (5.1)

The laws and regulations of Rwanda and their pertaining policies were reviewed to identify those relevant to the proposed development. These are Environmental Organic Law; The law governing Land; Energy Law; Forest law and Wetland Law.

1.2. *Law N° 48/2018 on Environment*

Article 30 states that the Ministerial order establishes the list of projects for which the public administration shall not warrant any authorization without an EIA describing direct and indirect consequences of the project to the environment.

Furthermore, the law sets out the general legal framework for environment protection and management in Rwanda. The law determines the modalities of protecting, conserving and promoting the environment.

1.3. *Organic Law governing land in Rwanda No 03/2013*

Article 3 of this law stipulates that land is part of the public domain of all Rwandans; ancestors, present and future generations.

With exceptions of the rights given to people, the state has supreme powers to manage all the national land. This is done in the public interest aimed at sustainable, economic development and social welfare, in accordance with procedures provided for by law. In that regard, it is the state that guarantees the right to own and use the land. The state also has rights to expropriation due to public interest, settlement and general land management through procedures provided by law and after appropriate compensation.

Article 4 requires that any person or association with legal personality has the right over the land and to freely exploit it as provided for by this organic law in Articles 5 and 6. Any discrimination either based on sex or origin in matters relating to ownership or possession of rights over the land is prohibited. The wife and the husband have equal rights over the land.

Under Article 7, the rights over the land acquired from custom and the rights acquired from written law are equally protected. According to the law, all owners of land acquired from custom (persons who inherited the land from their parents), those who acquired it from competent authorities or those who acquired it through any other means recognized by national custom whether purchase, gift or exchange have rights over the land.

Land ownership is divided into the following categories: individual owned lands and State lands (whether urban or rural). Individual land is comprised of land acquired through custom, written law, acquisition from competent authorities, purchase, gift, exchange and sharing (Article 11).

Land in Rwanda is categorized into two categories: individual Land and public land (Articles 12 and 13). The latter is subdivided into two categories: the state land in the public domain and the state land in the private domain. State land in the public domain includes national land reserves for environment conservation; land over which administration building are erected, state roads, and land containing lakes, rivers, stream and springs. State land in the private domain includes swamps that may be productive in terms of agriculture, vacant land with no owner, land purchased by the state, donations, land acquired through expropriation and land occupied by state-owned forests.

1.4. National Strategy for Transformation 2017-2024 (NST1)

Vision 2020 ensures social and economic transformation while addressing environmental and natural resource management. Environment protection and management rank among the main pillars of vision 2020. To this effect, every individual including the corporate world should make efforts in ventures that will bring sound development aimed at improving Rwanda's per capital GDP.

NST1 integrates far-sighted, long-range global and regional commitments by embracing:

- The Sustainable Development Goals (SDGs) consisting of 17 Goals with associated targets and indicators, across a range of economic, social and environmental aspects;
- The African Union Agenda 2063 and its First 10-Year Implementation Plan 2014- 2023 which is dedicated to the building of an integrated, prosperous and peaceful Africa, driven by its own citizens and representing a dynamic force in the international arena;
- The East African Community (EAC) Vision 2050 which focuses on initiatives for job creation and employment by prioritizing development enablers which are integral to long-term transformation, value addition and acceleration of sustained growth;
- The COP 21 Paris Agreement on Climate Change and other agreements.

NST1 merges the 7 Year Government Program (2017-2024) and the national medium term development strategy, which were previously stand-alone documents.

NST1 provides the platform and pillars for accelerated transformation on the pathway to the prosperity sought by Vision 2050. The strategy will be implemented and coordinated through the framework.

1.5. Expropriation Law No32/2015

The law determines the modalities and the procedures relating to expropriation in the public interest. It states that only the Government shall carry out expropriation. Expropriation as provided for in this law shall be carried out only in the public interest and with prior and just compensation. Every project, at any level, which intends to carry out acts of expropriation in the public interest, shall provide funds for inventory of assets of the person to be expropriated and for just compensation on its budget.

Article 3 stipulates that expropriation can only be carried out by the Certified Value and only in the public interest and with prior fair and just compensation. Underground or surface activity may be carried out with a public interest aim, on land belonging to a person. No landowner is permitted to oppose such activity. In the event that the activity causes any loss to the landowner, he shall receive fair and just compensation for it.

Article 12 stipulates that the relevant Land Commission, after receiving the request for expropriation, shall examine the basis of that project proposal. In case it approves the basis of the project proposal, the relevant Land Commission shall request, in writing, the District authorities concerned to convene a consultative meeting of the population where the land is located, at least within a period of thirty

(30) days after receipt of the application for expropriation, and indicating the date, time and the venue where the meeting is to be held. The relevant Land Commission shall take a decision within a period of at least fifteen (15) days after the consultative meeting with the population.

Article 17 stipulates that a person or representatives to be expropriated shall be informed in the presence of representatives of the local administrative entities of the beginning of the process of the land survey and the inventory of the properties thereon. The owner of the land is not allowed to carry out any activities after the land survey and the inventory of the properties. In case the beneficiary carries out any activities, they shall not be valued in the process of expropriation. In case the owner of the activity who was informed through procedures provided by this law does not appear, a report shall be made and signed by the representatives of the local administrative entities as well as those who conducted the survey and the inventory.

Article 18 stipulates that the person who owns land intended for public interest shall provide evidence of ownership of the land and certificate of acknowledgment of the members of his/her family. The evidence shall specify in which conditions the land was acquired and shall include a document or statement of local administrative entities indicating rights of the expropriated person on the land; a document of witnesses; or a Court certificate. The person who occupied reserved land after the publication of relevant laws shall not be entitled to any compensation.

According to Article 21, the properties to be valued for just compensation due to expropriation include land and activities that were carried out on the land including different crops, forests, any buildings or any other activity aimed at efficient use of land or its productivity. The value of land and the activities thereon that belong to the person expropriated shall be calculated considering their size, nature and location and considering the prevailing market prices.

Article 23 provides that through agreement between the person to expropriate and the one to be expropriated, the just and fair compensation may be monetary or an alternative land and a building equivalent to the determination of just monetary compensation. In order for the expropriation to be implemented, the just compensation shall be awarded to the expropriated person before he or she relocates.

Article 24 stipulates that the timeframe for compensation shall not exceed one hundred and twenty

(120) days from the day of approval of the compensation. Subsequent to receiving just compensation, the expropriated person has a period that does not exceed ninety (90) days, in order to relocate or to cultivate and harvest crops within that period. Forceful relocation is permitted where a person receives an award and refuses to relocate. Competent authorities shall supervise such relocation. In case the expropriator does not pay the agreed just compensation on time as provided by Article 24, he or she shall pay an annual interest on delays of 5% in addition to the just compensation agreed or awarded to the expropriated person. Such a period shall not exceed two (2) years.

According to Article 25, compensation payment transactions shall be made through banks or any financial institution recognised by law and of his or her own choice in the country. In case of compensation, rights on the property as a family or as a legally married spouse shall be applied and the money shall be deposited on a joint account and any withdraw shall be done with consent of account owners.

2. Institutional framework

2.1. Ministry of Infrastructure

The main institutions in electricity supply for Rwanda is the Ministry of Infrastructures (MININFRA). MININFRA is responsible for policy development, advisory and monitoring. It is responsible for setting policies related to energy; urbanization and settlements; road and communication infrastructure and Water supply. MININFRA ensures the infrastructures developments that protect fragile ecosystems where development projects may destroy natural habitat are being implemented. Besides organizing human settlement, MININFRA has the mandate for town planning, public infrastructure and transport; the management of water supply as well as actions to encourage water harvesting in the settlement and housing sector. It also ensures the proper use, management and rehabilitation of all public infrastructures and other related.

2.2. Rwanda Energy Group (REG).

The Rwanda Energy Group Limited (REG Limited) and its two subsidiaries; The Energy Utility Corporation Limited (EUCL) and The Energy Development Corporation Limited (EDCL) entrusted with energy development and utility service delivery.

The Rwanda Energy Group Limited was incorporated to expand, maintain and operate the energy infrastructure in the Country through its two subsidiaries the Energy Utility Corporation Limited (EUCL) and the Energy Development Corporation Limited (EDCL).

It has to ensure focused attention to enhancing efficiency in utility operations on one hand and ensure more timely and cost efficient implementation of development projects on the other. Moreover, the REG holding structure provides the overall coordination and ensures effective development of energy and investment plans. REG ensures the effective implementation of Government policies, monitoring

the execution of strategic plans; improvement of service delivery and effective project execution by the subsidiaries. It also plays a coordination role to ensure the smooth interrelationships of the two subsidiaries.

2.2.1. Energy Development Corporation Limited (EDCL).

The Energy Development Corporation Limited (EDCL) was incorporated to have devoted attention to increasing investment in development of new energy generation projects in a timely and cost efficient manner to expand supply in line with EDPRS and other national targets. It has also to develop appropriate transmission infrastructure to evacuate new plants and deliver energy to relevant distribution nodes. Planning and execution of energy access projects to meet the national access targets is at its central point of attention. This ring-fenced approach to development is designed to enhance accountability of development resources with the various stakeholders while at the same time opening space for increased private sector participation.

2.2.2. The Energy Utility Corporation Limited (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-users. The EUCL has to ensure the following as part of ensuring the proper running and development of the energy sector and related initiatives:

- Optimized generation capacity and economic plant dispatch to meet short and long-term energy supply requirements,
- Enhanced operational efficiency (progressive system loss reduction, billing and collection efficiency, network reliability and high quality of service),
- Improved customer service, and
- Network growth and increased connections within the footprint of electrified areas thereby making an effective contribution to the EDPRS targets.

The Company has four main processes feeding into the core business; Policies planning, Marketing planning and development, Distribution planning and development within already electrified areas and Operation & Maintenance of Power Plants and Transmission & Distribution Networks owned by the Utility.

The utility will also play a key role in the execution of Power Purchase/Power Sales Agreements with IPPS and other regional utilities for import and export.

2.3. Rwanda Housing Authority (RHA)

Rwanda Housing Authority agency under the ministry of infrastructure, legally established in order to organize the construction industry as a whole and by doing so to spur Economic Development and Poverty Reduction which guide Rwanda's medium-term development. Rwanda Housing Authority has to ensure the implementation the National Housing, Urbanization, construction and Government Assets management policies through coordination, conception, development, monitoring and evaluation of actions and programs set out in its mission.

Its specific objective is to ensure adequate institutional, legal and regulatory framework (including capacity building), increase the volume of infrastructure and equipment, ensure quality of services, minimize and stabilize costs, increase accessibility, ensure continuity/durability, and ensure safety in housing infrastructure for its user/beneficiaries. Majors of its functions which are regulate the housing, legislation, construction, urban development industries and management of government assets both fixed and non-fixed assets and also to develop a reliable database that encompass land use/management, housing and construction.

The Rwanda Housing Authority developed Urban Planning Code and Rwanda Building that provides urban planning principles that include criteria of defining urban centers, basic public infrastructures, objectives and requirements of site development and land subdivision, plot restructuring and re-plotting, plot development parameters based on zoning principles, categorization of urban land use, neighborhood design principles, traffic circulation principles, etc. These guide the setting of electricity networks in order to ensure the effective use of energy resources available in Rwanda and sustainably use available resources urban and rural areas electrification.

2.4. Ministry of Environment (MINOE)

Ministry of Environment is responsible for addressing issues of policy, in particular through Ministerial orders and/or orders that set out laws and procedures for the administration, planning and allocation of land. It governs the implementation and application of organic law and land use master plan. It puts in place mechanism for the sustainable management of natural resources in conformity with the national priorities set by the national development pillars (Vision 2020, EDPRS II, and MDGs).

2.5. Rwanda Natural Resources Authority (RNRA)

RNRA is an authority that leads the management of promotion of natural resources which is composed of land, water, forests, mines and geology departments. It is entrusted with supervision, monitoring and to ensure the implementation of issues relating to the promotion and protection of natural resources in programs and activities of all national institutions. It is particularly responsible for the enforcement of all national laws and international conventions/treaties ratifies Rwanda on matters related to the conservation of natural resources. Its mandate also goes to the government technical advisory in different matters related to natural resources sustainable use and ensuring good collaborations with stakeholders in natural resources at all levels. It plays also a valuable role in natural resources inventories, registration and records keeping for their proper uses and planning.

2.6. Rwanda Environmental Management Authority (REMA)

REMA is non-sectorial institution mandated to facilitate coordination and oversight of the implementation of national environmental policy and the subsequent legislation. REMA has a key role to play towards the achievement of the national goal of sustainable development as set in out in the National Development Vision 2020. The alarming rate of environmental destruction as a result of population pressure, serious erosion, pressure on natural resources, massive deforestation, pollution in its various forms etc. necessitated the Government, to form REMA to coordinate, supervise and regulate environmental management for sustainable development in Rwanda. With regards to the management of the bio-physical environment throughout Rwanda, the overall responsibility now lies

with the Rwanda Environment Management Authority. In November 2003, the Government of Rwanda approved the law establishing the Rwanda Environment Management Authority (REMA).

REMA is also tasked to coordinate different environmental protection activities undertaken by environmental promotion agencies; to promote the integration of environmental issues in development policies, projects, plans and programs; to coordinate implementation of Government policies and ensure the integration of environmental issues in national planning among concerned departments and institutions within the Government; to advise the Government with regard to the legislation and other measures relating to environmental management or

implementation of conventions, treaties and international agreements relevant to the field of environment as and when necessary; to make proposals to the Government in the field of environmental policies and strategies

2.7. Rwanda Water and Forestry Authority.

Rwanda Water and Forestry Authority (RWFA) is a public institution that implements policies, laws, strategies and Government decisions related to the management of forests and natural water resources.

RWFA has a key role to implement policies, laws, strategies and Government decisions related to the management of forests and natural water resources. It has advised Government, monitor and coordinate the implementation of strategies related to the management of forests and natural water resources and assist public and private institutions in charge of management of forests and natural water resources in a bid to fight erosion. It has the mission to establish programs and strategies for production of tree seeds, prepare programs of reforestation, forest promotion and appropriate management and support districts in the management of forests and natural water resources;

It has also the mission to undertake research, studies and other relevant activities with regard to the importance of forests in the national economy and to the exploitation of trees and wood based products and disseminate the findings. It has to assist in the establishment of standards and regulations relating to the management of forests and natural water resources and receive, check and advise on applications for permission for the use of water resources; monitor the respect of conditions to get permission for water use; provide advice on determining fees to be paid for the use of natural water resources; monitor the execution of agreements related to natural water resources management and distribution at the regional and international level and cooperate with other institutions and international organizations whose mission is related to forests and natural water activities.

2.8. Rwanda Utilities Regulatory Authority (RURA)

Rwanda Utilities Regulatory Authority (RURA) is a national institution established by the Law N°39/2001 of 13/09/2001 for the Regulation of Certain Public Utilities.

RURA has a legal personality and autonomy in the management of its finances, assets and employees and has its own official seal and Regulates; RURA has a legal

personality and autonomy in the management of its finances, assets and employees and has its own official seal and regulates;

The public utilities regulated by RURA are Energy, Telecommunications, Water and Sanitation, and Transport.

The Legal Mandate under Energy

1. Ensure energy service provision throughout the country is meeting the demand;
2. To ensure that licensees have adequate means to finance their activities;
3. To promote the interest of users and potential users of services through effective competition;
4. Ensure Consumer protection ;
5. Facilitate and encourage private sector participation in investments by setting up conditions enabling electric power investments;
6. Ensure compliance by public utilities with the laws;

2.9. Governance and Decentralization framework in Rwanda

The Republic of Rwanda is divided into 4 provinces plus Kigali City, (Eastern, Western, North and Southern Provinces) which are further divided into districts (there are 30 districts), which are further divided into 416 Sectors and the Sectors are divided into cells. The cells are subdivided into villages commonly known as -Imidugudu|| and are the smallest administrative bodies and the closest to the local communities. The District is an autonomous administrative structure with a legal status and financial autonomy.

3. International Legal Framework

Rwanda has ratified and signed a number of international conventions and protocols on or related to environment and has taken further steps to confirm his commitment in the area of environmental and natural resources management. Rwanda is an active participant in major international multilateral conventions relating to environmental governance, most notably the Convention on Biological Diversity (CBD), the United Nations Framework Convention on Climate Change (UNFCCC), the Convention to Combat Desertification and Drought (UNCDD) and the international policy framework such as the MDG.

Conventions and Treaties	Date of signature	Approved by law and date signed/ratified by GoR
International convention on biological diversity and its habitat signed in RIO DE JANEIRO in BRAZIL	June 5th, 1992	Presidential Order No 017/01 of March 18th, 1995
United Nations framework convention on climate change signed in RIO DE JANEIRO in BRAZIL	June 5th, 1992	Presidential Order No 021/01 of May 30th, 1995
STOCKHOLM convention on persistent organic pollutants	May 22nd, 2001	Presidential Order No 78/01 of July 8th, 2002
BASEL convention on the control of trans-boundary movements of hazardous wastes and their disposal	May 22nd, 1989	Presidential Order No 29/01 of August 24th, 2003
ROTTERDAM international convention on the establishment of international procedures agreed by states on commercial transactions of agricultural pesticides and other poisonous products	September 11th, 1998	Presidential Order No 28/01 of August 24th, 2003
MONTREAL: on substances that deplete the ozone layer	1997	Presidential Order No 30/01 of August 24th, 2003
CARTAGENA protocol on bio-safety to the convention of biological biodiversity signed in NAIROBI and NEW YORK	Nairobi May 15th to 26th, 2000 and New York from June 5th, 2000 to June 4th, 2001	Law No 38/2003 of December 29th, 2003
KYOTO protocol to the framework convention on climate change	March 6th, 1998	Law No 36/2003 of December 29th, 2003
BONN convention on conservation of migratory species of wild animals	June 23rd, 1979	Law No 35/2003 of December 29th, 2003
Washington agreement on international trade in endangered species of wild flora and fauna	arch 3rd, 1973	Presidential Order No 211 of June 25th, 1980
African Agreement on the Nature Conservation and Natural Resources	15/09/1968	20/05/1975

Table 5: International conventions and protocols

4. Environmental policies and legislative framework

This ESMP has been prepared to fully comply with environmental legislations and procedures in Rwanda and with the WB environmental and social safeguard policies. In this chapter, the key safeguard policies that provide the policy context to the ESMP includes WB legal requirements on environmental assessment have been outlined.

4.1. World Bank Environmental and Social Safeguards Policies

The World Bank provides guidance on EA requirements through the Environmental Assessment Sourcebook (World Bank 1994) which includes sectoral guidelines. The World Bank EA process is implemented through a set of Operational Policies/Directives whose primary objective is to ensure that Bank operations do not cause adverse impacts and those –do no harm. These safeguard policies are grouped into Environment and Rural Development, Social Development and International Law.

4.1.1. OP/BP 4.01 Environmental Assessment (January 1999).

Environmental Assessment is one of the 10 safeguard policies of the World Bank. The World Bank Environment and Social Safeguard Policy aims at improving decision making, to ensure that project options under consideration are sound and sustainable, and that potentially affected people have been properly consulted.

The World Bank's environmental assessment policy and recommended processing are described in Operational Policy (OP)/Bank Procedure (BP) 4.01. The World Bank system assigns a project to one of three project categories, as defined below:

Category A: Environmental Assessments are normally required because the project may have diverse significant impacts (projects in this category are forestry, large

industrial plants, irrigation and drainage, mineral development (including oil and gas), pipelines (oil, gas, and water), resettlement, rural roads, tourism, urban development, large transmission lines, etc.).

Category B: A limited environmental analysis is appropriate, as the project may have specific environmental impacts. Projects in this category include agro-industries (small scale), aquaculture & marine culture, small industries, mini-hydropower station, public facilities (hospitals, schools, housing complexes, rural electrification, telecommunications, small-scale tourism, rural water supply, etc.

Category C: Environmental analysis is normally unnecessary, as the project is unlikely to have significant environmental impacts. Projects in this category include education, family planning, nutrition, institutional development, technical assistance, etc.

4.1.2. OP/BP 4.04 Natural Habitats (June 2001)

The Bank supports the conservation of natural habitats and the maintenance of ecological functions as a basis for sustainable development. The Bank does not support projects that involve the significant conversion or degradation of critical natural habitats.

II.4.3. OP 4.36 Forests (November 2002) Aims to reduce deforestation and enhance, through sustainable economic development, the environmental and social contribution of forests. The Bank does not support projects which involve significant conversion or degradation of critical forest areas or related critical natural habitats.

4.1.3. OP/BP 4.11 Physical Cultural Resource (July 2006)

Cultural property is defined to include both remains left by previous human inhabitants (e.g. middens, shrines) and unique natural environmental features such

as canyons and waterfalls. The Bank does not support projects that will significantly damage non-replicable cultural property and assists only those projects that are sited or designed so as to prevent such damage.

4.1.4. OP 4.10 Indigenous Peoples (July 2005)

Indigenous peoples in particular geographical areas are identified by having: a close attachment to ancestral territories and to the natural resources in these areas; self-identification and identification by others as members of a distinct cultural group; an indigenous language, often different from the natural language; presence of customary social and political institutions; and primarily subsistence- oriented production.

The Bank's objective is to ensure that indigenous peoples do not suffer adverse effects from Bank financed projects and that they receive culturally compatible social and economic benefits. Effectively the World Bank requires a project to develop a program for addressing issues based on the informed participation of the indigenous people themselves. Any project that affects indigenous peoples is expected to include components or provisions that incorporate an —Indigenous Peoples Development Plan.

4.1.5. OP/BP 4.12 Involuntary Resettlement (December 2001)

Details involuntary resettlement, emphasizing the severe economic, social and environmental risks, if unmitigated. It ensures that the population displaced by a project receives benefits from it and also covers those with usufruct or customary rights to land or other resources taken for the project. The Operational Policy is specifically inclusive, ensuring that all those affected both directly and indirectly by project developments are compensated as part of the project. Affected population, include those with income derived from informal sector and non-farm activities, and from common property resources. The absence of legal title does not limit rights to

compensation. The World Bank's Policy objectives urge that involuntary resettlement be avoided whenever possible. If unavoidable, displaced persons need to:

Share in project benefits, or Participate in planning and implementation of resettlement programs, and to Be assisted in their efforts to improve their livelihoods or standard of livings or at least to restore them, in real terms, to pre-displacement levels or levels prevailing prior to the beginning of project implementation, whichever is higher. OP 7.50: International Waterways

Operational Policy (OP)/Bank Procedure (BP) 7.50: Projects on International Waterways may affect the relations between the World Bank and its borrowers, and between riparian states. Therefore, the Bank attaches great importance to the riparian's making appropriate agreements or arrangements for the entire waterway, or parts thereof, and stands ready to assist in this regard. In the absence of such agreements or arrangements, the Bank requires, as a general rule, that the prospective borrower notifies the other riparian's of the project

The Policy lays down detailed procedures for the notification requirement, including the role of the Bank in affecting the notification, period of reply and the procedures in case there is an objection by one of the riparian's to the program.

4.1.6. OP 7.60: Disputed Areas

Operational Policy (OP)/Bank Procedure (BP) 7.60: Projects in Disputed Areas may affect the relations between the Bank and its borrowers, and between the claimants to the disputed area. Therefore, the Bank will only finance projects in disputed areas when either there is no objection from the other claimant to the disputed area, or when the special circumstances of the case support Bank financing, notwithstanding the objection. The policy details those special circumstances. In such cases, the project documents should include a statement emphasizing that by supporting the project, the Bank does not intend to make any judgment on the legal or other status

of the territories concerned or to prejudice the final determination of the parties' claims.



As per the nature of the present project and the category it classified to, the Environmental Assessment (OP/BP 4.01) and Involuntary Resettlement (OP/BP 4.12) bank procedures are triggered and the requirement of an ESMP and an ARAP is herewith considered prior to the implementation with compliance of bank safeguards requirements.

4.2. World Bank Environmental Management Plan Guidelines

WB places strong emphasis on the preparation of EMPs during project processing and on setting out conditions and targets to be met during project implementation. The terms of reference for an ESIA thus require the Borrower or their consultants to prepare an ESMP as a major output of the environmental and social assessment. Where appropriate, the key contents of EMPs are incorporated into the loan agreement, for implementation and monitoring by the Borrower.

WB requires that an EMP be included as part of the EIAs and IEEs (for Category B projects deemed environmentally sensitive). The EMP is carefully reviewed to ensure environmental safeguard compliance prior to the first MRM. However, at this stage in the project cycle, the specific construction and operational activities may not be well defined. And often it is not possible or practical to provide the details required for an effective EMP. The WB requires that the Borrower ensure that a revised EMP be prepared at the beginning of the implementation stage. The contents of complete ESMP are:

- Summary of Potential Impacts,
- Description of Planned Mitigation Measures,
- Description of Planned Environmental Monitoring,
- Description of Planned Public Consultation Process,
- Description of the Responsibilities and Authorities for Implementation of Mitigation Measures and Monitoring Requirements,
- Description of Responsibilities for Reporting and Review,

	<p><i>Plant Design, Supply, and Installation of Low Voltage and Medium Voltage Lines and Service Connections in the Gatsibo, Kayanza, Ngoma and Rwamagana Districts, Eastern Province of Rwanda</i></p> <p>CONTRACT AGREEMENT N° 11.07.023/1257/19/EDCL-MD/FG/cm</p>	
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- Work Plan including staffing chart, proposed schedules of participation by various members of the project team, and activities and inputs of various government agencies,
- Environmental Responsible Procurement Plan,
- Detailed Cost Estimates.

4.3. Relevant International Conventions and Treaties in relation with safeguards

Rwanda is signatory to several international conventions and treaties that would need to be adhered to, in implementing this project. Some of these includes and not limited to:

- Convention on Wetlands or the Ramsar Convention
- Convention on Biodiversity
- Convention on the Conservation of Migratory Species
- United Nations Framework Convention on Climate Change
- United Nations Convention to Combat Desertification
- Protected Areas for international Importance

5. Induction, training and capacity building

5.1. Worker induction

We will provide a site induction is provided for all workers before starting work and monthly. The induction outlines:

- the expectations outlined in this Management Plan, including all policies and procedures
- the emergency situation
- the site rules and facilities
- any site specific waste
- the hazard substance
- the waste management
- the environment respect and preservation
- any incident reporting
- the respect of the third party property
- the respect of society values
- the OHS hazard
- the prevention of fire on site

5.2. Worker training

We will:

- ensure workers are trained and competent for the work to be carried out
- ensure workers are trained to deal with any risks associated with the work and understand the control measures in place
- ensure workers are trained on first-aids
- ensure workers are trained on firefighting equipment
- ensure on-site training and supervision is provided

Type of training	Frequency	Trainees	Duration	Trainer
Induction to environmental Issues; <ul style="list-style-type: none"> ▪ Environmental safeguards, ▪ Environmental Management and monitoring ▪ Occupational Health and Safety 	Once in two Months	All workers	1 day per batch of 50 trainees (<i>depending on the number of workers employed</i>)	Environmental and social officer/contractor Environmental Officer/consultant
Induction course on safety and health issues;	Monthly	All workers	1 day per batch of 50 trainees	Safety and Health officer
Introduction course on social Issue <ul style="list-style-type: none"> ▪ Employment guidelines, ▪ Protection of children ▪ Gender issues ▪ HIV/AIDS prevention, awareness, ▪ Public safety 	Monthly	All workers	1 day per batch of 50 trainees	Environmental and community affairs officers

Table 6: Training program

6. Related potential impacts

This section aims to give details and explanation the type and range of impacts likely to result from the different project's activities, measuring its extents and severity. The specific purpose of this section is to:

- identify and assess the range of potential impacts and extent of their severity;
- explain the ways in which the project might affect the environment, ecology, socio-economic resources, human health and security as well as access and infrastructures issues;

The presented impacts are based on observation during the site visits and experience in similar projects.

6.1. Socio-economic positive impacts

- Positive impacts of this project include employment opportunities, income generation, development of commerce and small industries, improvement in service delivery, technology transfer and capacity building.
- Regarding the environment, increased distribution of electricity to the project areas will ease the pressure on the use of fuel wood that is bad in the areas and in effect help to conserve the fragile and diminishing forest cover of the region by providing an alternative source of energy.
- During construction phase, there will be temporary employment opportunities for local contractors and others who will supply services for workers and contractors.
- Significant social benefits will come through the safer and more efficient operation of key services, through the provision of electricity access to the villages served by the project. Small industries and other agricultural processing businesses, which need electricity, will also be important beneficiaries.
- One of the long-term direct positive impacts is therefore access to reliable electricity supplies, which will lead to better provision and easier management of goods and services, and in turn enable development of new facilities such as agricultural projects storage.
- The use of communication facilities, such as internet will be increased. In addition, Social and environmental costs associated with the use of firewood and others means of lighting will be reduced.

Overall, the project will promote an improved quality of life for households and socio-economic opportunities in the area.

6.2. Negative Impacts Assessment

Potential impacts have been analyzed for severity through screening for diverse attributes including extent (volume), criticality and potential of reversibility. Potential impacts were subsequently ranked on a scale as Severe, Moderate, Low and Insignificant.

The potential impacts, without being exhaustive, during the pre-project, project and post-project activities are the following:

N°	Social / Environmental factor	Impact description	Classification
1	Population: Health, safety, cultural, social, and economic aspects	<ul style="list-style-type: none"> - Loss of income due to loss of trees and crops - OHS concerns and Sexually transmissible diseases such as HIV/AIDS can occur and affect workers and surrounding householders - Embarrassment of surrounding householders - Disturbance of road traffic - Potentially negative impacts in terms of Customs and manners of the local population due to social and cultural interaction foreign workers - Potentially impact on the landscape which will be more artificialized by Row Bush clearing and the presence of temporary structures, construction machinery and various storage facilities. Aesthetic impacts during the construction phase will be limited to work areas 	Moderate
2	Land / Soil	<ul style="list-style-type: none"> - Soil contamination after spillage or leakage of lubricating oil or fuel due to the use of vehicles, truck and crane - Soil contamination after spillage or leakage of insulation oil from the transformer - Soil pollution due to worker's waste or leftovers construction aggregates - Soil pollution due to worker's waste, packing materials or possible damaged plant 	Low
3	Water	- No impact on water resources	Insignificant
4	Atmosphere	- Fine particles (dust) and pollutants (gas exhaust), can occur due to vehicles, trucks and cranes	Insignificant
5	Climate	- No direct and immediate impact on climate	Insignificant
6	Biological factors of fauna and flora Vegetation	- fauna (birds, reptile, small rodent) disturbance during the work	Insignificant
		- Loss of natural low vegetation, food and crops, outside the RoW band, is likely to occur due to the team walking and trucks and cranes circulation	Low
7	Noise / vibration	<ul style="list-style-type: none"> - Noise impact due to the vehicles or trucks and cranes circulation during working hours - Micro vibration can rise due to trucks and cranes circulation 	Insignificant

Appendix n°2 reports the detailed quantitative environmental aspect assessment.

Table 7: Potential impacts

7. Waste management plan



7.1. Principle

- **Prevention:** Waste prevention at source,
- **Minimization:** Reduce the amount of waste produced,
- **Re-use:** Re-use materials where ever possible,
- **Recycle:** Transfer waste to approved recycling plants to minimize environmental impact,
- **Energy recovery:** residues of wood and cut trees waste can be valorized by local inhabitant for cooking fire,
- **Disposal:** Sending of waste to landfill is a last resort. Hazardous waste will be disposed of and treated by authorized disposal contractors and facilities,
- Sort waste by categories,
- Collect and dispose of waste in accordance with current regulations,
- Limit volumes to be disposed of: compaction of waste,
- Analyze the possibility of local collection and recovery: wood, green waste, metals ...
- Provide specific waste bins,
- Ensure that the bins are inaccessible to foreign persons in order to limit the removal of uncontrolled waste outside,
- Avoid burning waste,
- Daily collect all wastes from the site work and dispose in the temporary waste bin at the warehouse and site to be managed by the approved collector.

7.2. Waste list and treatment

Inert Waste	Waste		Treatment	Remarks
	Soil and excavated material		Reuse for backfilling	
	Residue of construction material (sand, stone, concrete ...)		Reuse for backfilling	

Non Hazardous Waste	Waste		Treatment	Remarks
	PLASTIC			
	Plastic of packing	Sorting, temporary collect (bins at house		In respect of the regulation in

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		and at the warehouse) and disposal in an authorized place	force, for approved treatment by RURA certified waste handler
	DOMESTIC WASTE		
	Ordinary Household waste	Sorting, collect in temporary bins (bins at house and at the warehouse) and treatment by RURA certified waste handler	In respect of the regulation in force, for approved treatment by RURA certified waste handler
	WOOD AND GREEN WASTE		
	Wood for construction (formwork...)	Re-use	In respect of the regulation in force, for approved treatment by RURA certified waste handler
	Residue of packing (calage, palette...)	Sorting, collect and reuse	
	Green Waste (tree branches, bush, herbs)	To leave on the nature to rotten or to be used by local habitants	
	CARTDBAR & PAPER		
	Residue of packing	Sorting, collect in temporary bins (bins at house and at the warehouse) and final treatment by RURA certified waste handler	In respect of the regulation in force, for approved treatment by RURA certified waste handler
	Paper (printing & photocopying)	Sorting, collect in temporary bins (bins at house and at the warehouse) and final treatment by RURA certified waste handler	
	METALLIC ELEMENT		
	Residue of packing	Sorting, collect in temporary bins (bins at house and at the warehouse) and final treatment by RURA certified waste handler	In respect of the regulation in force, for approved treatment by RURA certified waste handler
	Broken metallic plants	Sorting, collect in temporary bins (bins at house and at the warehouse) and final treatment by RURA certified waste handler	
	Metallic spare parts	Sorting, collect in temporary bins (bins at house and at the warehouse) and final treatment by RURA certified waste handler	

HAZARDOUS WASTE	Waste	Treatment	Remarks
	COMMON SERVICES		
	Used Ink cartridges	Sorting, collection, passivation. An agreement with an authorized entity to collect daily the waste and dispose in regulated deposit	In respect of the regulation in force, for approved treatment by RURA certified waste handler
	Used cells		
	Small leak of Lubricating oil for vehicles and isolation oil for transformer	Collection of the contaminated soil in hermetic bag. The authorized waste collector disposes in regulated deposit	
	Excreta	-Houses are connected to the sanitation network - On site, mobile toilet will be provided and kept clean	respect of the regulation in force,

Table 8: Waste classification and treatment

8. Environmental and Social Management Plan

This plan contains an Environmental Management and Monitoring Plan to report potential environmental and social impacts, proposed mitigation measures, monitoring indicators and the responsible entity for coordination and implementation, during the pre-construction, construction and operation and maintenance phases.

During the two first phases, implementation of environmental mitigation measures is the responsibility of the contractor (STEG-IS) and the supervision is the responsibility of the client. Some other entities such as local authority or utilities can be appealed to facilitate or supervise the implementation of these measures.

The major issues that need to be monitored during the project implementation and operation and maintenance phase are: impacts on line route, properties damage, waste, vegetation damage, air and water pollution, Occupational and Health concerns (accident related the work, traffic road, STD), social impact etc....

In view of the fact that the project activities inevitably generate negative impacts, despite all possible actions to eliminate the aspects, mitigation measures should be put in place to minimize the possible adverse significant impacts.

The mitigation measures tend toward avoiding or reducing vegetation loss, pollution of soil, water, and air by waste or emissions from construction activities.

The mitigation measures cover also mitigation provision against concerns related to people health and safety as well as their socio-economic impacts.

The following table shows the relationship between, activity, impact, mitigation measure and the responsible of implementation.



Activities	Potential Impacts	Mitigations measures	Monitoring indicators	Method	Frequency	Responsible	Cost
Line Route Survey & Right of Way survey	Job creation	Enhance recruitment of local workers, train them as sensitize	Number of job created	Site visit and inspection	During line route survey	STEG-IS / EDCL / Local authority	Included constructor's budget
	Adverse impact on protected areas, archeological or historical sites	<p>-The projection of the line route should avoid passing through or near declared protected area, archeological or historical sites by national regulations.</p> <p>- Verify with local authority the presence of protected area, archeological or historical sites and study the possible way to avoid passing through (if any)</p> <p>-Apply national regulations specifying the minimum distance between the line route and sensitive areas;</p>	Number of tree from the list of species to be preserved	Site visit and inspection	During line route survey	STEG-IS / EDCL / Local authority	Included constructor's budget
	<p>-Loss of vegetation, trees, foods and crops</p> <p>- Loss of the land value due to its fragmentation by the line route</p>	<p>During the survey, the team survey makes the best choice of the poles locations and the line in a way to minimize damage</p> <p>-Awareness regarding the respect and the preservation of private properties.</p>	Existing Damage census / complains	Site visit and inspection	During line route survey	STEG-IS / EDCL / Local authority	Included constructor's budget



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Activities	Potential Impacts	Mitigations measures	Monitoring indicators	Method	Frequency	Responsible	Cost
	-Embarrassment of surrounding householders - Conflict regarding access to properties	-Good coordination with the local authority to inform population of the project activity and mandatory presence during site visit to answer to the any population's information request and solve unlikely rising conflict. - Consult the Grievance Redress Committee established (Local Resettlement committee)	Number of complains			STEG-IS / EDCL / Local authority	Included constructor's budget



Activities	Potential Impacts	Mitigations measures	Monitoring indicators	Method	Frequency	Responsible	Cost
	-OHS accidents experienced by the construction workers or residents likely to occur during the construction phase.	<ul style="list-style-type: none"> - Ensure safe design of the network structures - Provide provision to keep people away from the working site - Establish a Health and Safety construction plan covering all activities in compliance with the best Health and Safety Working practices/conditions. - Provide insurance to workers. - Provide adequate PPE for all workers and spare items for visitors - Provide FIRST AID kits and have among the personnel persons having competencies in first aid assistance - Provide Emergency plan and check its capacity preparedness and response - Rise awareness for workers among health and safety matters, and requires the workers to use the provided safety equipment. - Rise awareness for workers among Sexually transmissible diseases such as HIV/AIDS 	<p>Number of accidents</p> <p>Availability of PPE</p> <p>Noncompliance to the Health and Safety construction plan</p> <p>Insurance certificate</p> <p>First AID Kit</p> <p>Awareness campaign</p>	<p>Site visit and investigation</p> <p>Certificate</p> <p>Record of campaign</p>	<p>Monthly</p> <p>Before starting work</p> <p>Before starting work</p>	STEG-IS / EDCL /	Included constructor's budget

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Activities	Potential Impacts	Mitigations measures	Monitoring indicators	Method	Frequency	Responsible	Cost
	<p>-Sexually transmissible diseases such as HIV/AIDS can occur and affect workers and surrounding householders</p> <p>- Accident arising from the public road traffic</p>	<p>- The Health and Safety construction plan should provide provisions for regular safety checks of tools, devices, vehicles and material.</p> <p>-Rise awareness for workers among the respect of the traffic rules, use vehicles in good conditions, respect the authorized load for truck, ensure proper and stabilized truck load, provides protective tools (man with flags, marking cone and tape, ensign “man at work”) in case the work is near to the public road, ask assistance of the traffic police in case of need.</p>	<p>marking cone and tape, ensign “man at work”) available and used</p>	<p>Site visit and investigation</p>	<p>Monthly</p>		

Table 9: Environmental and Social Management and Monitoring Plan for the Pre-construction Phase



Activities	Potential Impacts	Mitigations measures	Monitoring indicators	Method	Frequency	Responsible	Cost
Line Route Survey & Right of Way survey	Positive impact of the project activities that will be an opportunity to create directly employment for skilled and unskilled workers and for local companies of transportation and indirectly to enhance small business such as sale of food for workers.	Enhance employment of local taskforce and opportunity to get new knowledge and skills	Number of employment created	Site visit and inspection	Monthly	EDCL / STEG-IS	Included constructor's budget
	Adverse impact on Culture values by a foreign expert working on some project activities requiring external experts.	Awareness campaign regarding the respect of local culture	Number of complain	Site visit and inspection	Monthly	EDCL / STEG-IS	Included constructor's budget
	-Construction related impacts: Including accidents experienced by the construction workers or residents likely to occur during the construction phase.	<ul style="list-style-type: none"> - Ensure safe design of the network structures -Provide provision to keep people away from the working site - Establish a Health and Safety construction plan covering all activities in compliance with the best Health and Safety Working practices/conditions. -Provide insurance to workers. 	<ul style="list-style-type: none"> Number of accidents Availability of PPE Noncompliance to the Health and Safety construction plan 	<ul style="list-style-type: none"> Site visit and investigation Certificate 	Monthly	STEG-IS / EDCL	Included constructor's budget



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Activities	Potential Impacts	Mitigations measures	Monitoring indicators	Method	Frequency	Responsible	Cost
	<ul style="list-style-type: none"> - Sexually transmissible diseases such as HIV/AIDS can occur and affect workers and surrounding householders - Accident arising from the public road traffic 	<ul style="list-style-type: none"> - Provide adequate PPE for all workers and spare items for visitors - Provide FIRST AID kits and have among the personnel persons having competencies in first aid assistance - Provide Emergency plan and check its capacity preparedness and response - Rise awareness for workers among health and safety matters, and requires the workers to use the provided safety equipment. - Rise awareness for workers among Sexually transmissible diseases such as HIV/AIDS - The Health and Safety construction plan should provide provisions for regular safety checks of tools, devices, vehicles and material. 	<p>Insurance certificate</p> <p>First AID Kit</p> <p>Awareness campaign</p>	<p>Record of campaign</p> <p>Site visit and investigation</p>	<p>Before starting work</p> <p>Before starting work</p>		



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Activities	Potential Impacts	Mitigations measures	Monitoring indicators	Method	Frequency	Responsible	Cost
		-Rise awareness for workers among the respect of the traffic rules, use vehicles in good conditions, respect the authorized load for truck, ensure proper and stabilized truck load, provides protective tools (man with flags, marking cone and tape, ensign "man at work") in case the work is near to the public road, ask assistance of the traffic police in case of need.	marking cone and tape, ensign "man at work") available and used		Monthly		
	-Loss of vegetation, trees, foods and crops outside the RoW band	-Make provision to proper identify the RoW band -Rise awareness for workers among the respect of RoW band, -Accelerate the expropriation and compensation procedure - Consult the Grievance Redress Committee established (Local Resettlement committee)	Number of claim rising	Site visit and investigation	Monthly	STEG-IS / EDCL	Included in Constructor budget





Activities	Potential Impacts	Mitigations measures	Monitoring indicators	Method	Frequency	Responsible	Cost
	<ul style="list-style-type: none"> - Soil contamination after leakage of lubricating oil or fuel due to the use of vehicles, truck and crane - Soil contamination after leakage of insulation oil from the transformer, 	<ul style="list-style-type: none"> - No camp site is planned during all the construction phase: Foreign workers leave in Nyanza city and local workers are recruited from villages to be electrified. - Rise awareness for workers among the respect of the environment and the proper management of waste, - All vehicles, trucks and cranes should have valid Inspection certificates and in good condition in order to avoid leakage and spillage, in case of an unexpected breakdown the vehicle will be stopped until fixing the problem, a retention will be applied to collect the oil and the contaminated soil will be collected in a hermetic bag for proper disposal. Also, oil replacement or 	<p>Certificate of vehicles and trucks used</p> <p>Number of noncompliance finding: waste, oil imprint</p>	<p>Site visit and investigation</p>	<p>Monthly</p> <p>Before starting work</p>	<p>STEG-IS / EDCL</p>	<p>Included in contractor budget</p>



Activities	Potential Impacts	Mitigations measures	Monitoring indicators	Method	Frequency	Responsible	Cost
	- Soil pollution due to worker's waste or leftovers foods, construction aggregates, packing materials or possible damaged plant	refueling should be done on fuel station. - All waste generated by workers basically leftovers foods, construction aggregates, packing materials or possible damaged plant, all of this waste are daily collected in hermetic bags and transferred to Nyanza for proper disposal within an authorized waste gatherer. - Mobile toilet will be installed temporarily on site and kept clean	Convention with the agreed waste manager	Site visit and investigation			
	-Impact of firing of forests and vegetation	-The use of fire is prohibited on site work; - Provide the work team with first intervention firefighting devices	Number of provoked fire Available firefighting device	Site visit and investigation	Monthly	STEG-IS / EDCL	Included in Contractor budget
Carriage of plants and material to installation	This activity could disturb the road users and surrounding population by the blocking access and emission of noise,	- Inform in advance surrounding population -Avoid hour of rest	Number of people claim	Site visit and investigation	Monthly	STEG-IS	Included in Contractor budget



Activities	Potential Impacts	Mitigations measures	Monitoring indicators	Method	Frequency	Responsible	Cost
location of the work site		- Chose early morning hours for the traffic of trucks					
	This activity could produce air pollution due to the use of trucks and cranes	- Prestart check of all vehicles, trucks and cranes should have valid inspection certificates and in good condition in order to avoid abnormal gas exhaust emission, in case of an unexpected breakdown the vehicle will be stopped until fixing the problem.	Certificates of vehicles and trucks Number of complain regarding fume emission	Site visit and investigation	Bimonthly during carriage phase	STEG-IS	Included in Contractor budget
Commissioning	Risk of electric shock during the activity of energizing the new network	- Good coordination with utility and local authority - Apply properly the procedure of work permit: put the line out of power, lock the device of power cutout, put information ensign on the device, verification of the absence of voltage and earthing of the line, delimitation of the work area	Protective device available Application of the work procedure	Site visit and investigation	Each operation	STEG-IS / EDCL	Included in Contractor budget
	Population disturbance during the activity requiring	- Good coordination with utility	Compliance with the activity Schedule	Site visit and investigation	Each operation	STEG-IS / EDCL	Included in Contractor budget

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Activities	Potential Impacts	Mitigations measures	Monitoring indicators	Method	Frequency	Responsible	Cost
	the interruption of the electricity supply	<ul style="list-style-type: none"> - Inform in advance the affected population - Speed up the activity by good preparation 					

Table 10: Environmental and Social Management and Monitoring Plan for the Construction Phase



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Activities	Potential Impacts	Mitigations measures	Monitoring indicators	Method	Frequency	Responsible	Cost
During all maintenance activities: excavation, tower erection, cables & conductors pulling and sagging	Positive impact of the project activities that will be an opportunity to create directly employment for skilled and unskilled workers and for local companies of transportation and indirectly to enhance small business such as sale of food for workers.	Enhance employment of local taskforce and opportunity to get new knowledge and skills	Number of employment created	Site visit and inspection	Monthly	STEG IS	Included in operational budget
	-Construction related impacts: Including accidents experienced by the construction workers or residents likely to occur during the maintenance activities.	-Provide provision to keep people away from the working site - Establish a Health and Safety construction plan covering all activities. -Provide insurance to workers. - Provide adequate PPE for all workers and spare items for visitors - Provide FIRST AID kits and have among the personnel persons having competencies in first aid assistance - Provide Emergency plan and check its capacity preparedness and response	Number of accidents Availability of PPE Noncompliance to the Health and Safety construction plan Insurance certificate First AID Kit	Site visit and investigation Certificate	Monthly Before starting work	STEG IS	Included in operational budget



Activities	Potential Impacts	Mitigations measures	Monitoring indicators	Method	Frequency	Responsible	Cost
	<p>Sexually transmissible diseases such as HIV/AIDS can occur and affect workers and surrounding householders</p> <p>- Accident arising from the public road traffic</p>	<p>- Rise awareness for workers among health and safety matters, and requires the workers to use the provided safety equipment.</p> <p>-Rise awareness for workers among Sexually transmissible diseases such as HIV/AIDS</p> <p>- The Health and Safety construction plan should provide provisions for regular safety checks of tools, devices, vehicles and material.</p> <p>-Rise awareness for workers among the respect of the traffic rules, use vehicles in good conditions, respect the authorized load for truck, ensure proper and stabilized truck load, provides protective tools (man with flags, marking cone and tape, ensign "man at work") in case the work is near to the public road, ask assistance of the traffic police in case of need.</p>	<p>Awareness campaign</p> <p>marking cone and tape, ensign "man at work") available and used</p>	<p>Record of campaign</p> <p>Site visit and investigation</p>	<p>Before starting work</p> <p>Monthly</p>		



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Activities	Potential Impacts	Mitigations measures	Monitoring indicators	Method	Frequency	Responsible	Cost
	-Loss of vegetation, trees, foods and crops outside the RoW band	-Make provision to proper identify the RoW band -Rise awareness for workers among the respect of RoW band,	Number of claim rising	Site visit and investigation	Monthly	STEG IS	Included in operation al budget
	- Noise / Vibration related impacts from construction machineries -Dust related impacts from construction machineries -Possible disturbance and conflict in case of property access or damage	- All construction activities are held during working hours 7-17h and avoid religion and sensitive time - Inform local authority in advance and ask for assistance if needed -Prestart check of all vehicles and preventive maintenance, trucks and cranes should have valid Inspection certificates, in case of an unexpected breakdown the vehicle will be stopped until fixing the problem. -Rise awareness for workers among the respect of owners' properties,	Certificate of vehicles and trucks used Number of people claim	Site visit and investigation	Monthly	STEG IS	Included in operation al budget



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Activities	Potential Impacts	Mitigations measures	Monitoring indicators	Method	Frequency	Responsible	Cost
		- Inform local authority of the work in advance in order to inform owners to facilitate access and avoid work during hours of rest / keep attention to do not damage properties outside the RoW band, if this happens contacts local authority for arrangement with owners.					
	<ul style="list-style-type: none"> - Soil contamination after leakage of lubricating oil or fuel due to the use of vehicles, truck and crane - Soil contamination after leakage of insulation oil from the transformer, 	<ul style="list-style-type: none"> - No camp site is planned during all the construction phase, - All vehicles, trucks and cranes should have valid Inspection certificates and in good condition in order to avoid leakage and spillage, in case of an unexpected breakdown the vehicle will be stopped until fixing the problem, a retention will be applied to collect the oil and the contaminated soil will be collected in a hermetic bag for proper disposal. Also, oil 	<p>Certificate of vehicles and trucks used</p> <p>Number of noncompliance finding: waste, oil imprint</p>	<p>Site visit and investigation</p> <p>Site visit and investigation</p>	<p>Monthly</p> <p>Before starting work</p>	STEG IS	Included in operational budget





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Activities	Potential Impacts	Mitigations measures	Monitoring indicators	Method	Frequency	Responsible	Cost
	- Soil pollution due to worker's waste or leftovers foods, construction aggregates, packing materials or possible damaged plant	replacement or refueling should be done on fuel station. All waste generated by workers basically leftovers foods, construction aggregates, packing materials or possible damaged plant, all of this waste are daily collected in hermetic bags and transferred to within an authorized waste gatherer.	Convention with the agreed waste manager				
	-Impact of firing of forests and vegetation	-The use of fire is prohibited on site work; - Provide the work team with first intervention firefighting devices	Number of cause fire Available firefighting device	Site visit and investigation	Monthly	STEG IS	Included in operational budget
	Population disturbance during the activity requiring the interruption of the electricity supply	- Good coordination with utility - Inform in advance the affected population - Speed up the activity by good preparation	Compliance with the activity Schedule	Site visit and investigation	Each operation	EDCL/ STEG IS	Included in operational budget

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Activities	Potential Impacts	Mitigations measures	Monitoring indicators	Method	Frequency	Responsible	Cost
Carriage of plants and material to installation location of the work site	This activity could disturb the road users and surrounding population by the blocking access and emission of noise,	<ul style="list-style-type: none"> - Inform in advance surrounding population - Avoid hour of rest - Chose early morning hours for the traffic of trucks 	Number of people claim	Site visit and investigation	Monthly	STEG IS	Included in operational budget
	This activity could produce air pollution due to the use of trucks and cranes	- Prestart check of all vehicles, trucks and cranes should have valid Inspection certificates and in good condition in order to avoid abnormal gas exhaust emission, in case of an unexpected breakdown the vehicle will be stopped until fixing the problem.	Certificates of vehicles and trucks Number of complain regarding fume emission	Site visit and investigation	Bimonthly during carriage phase	STEG IS	Included in operational budget

Table 11: Environmental and Social Management and Monitoring Plan for the post-Construction Phase

9. Cost and implementation schedule of the ESMP

N°	Item	Estimated cost	Scheduled time
1	ESMP redaction	7500 \$	July/ August
2	Follow up of the implementation of the ESMP	7500 \$	Weekly starting from July 2019 up to the project closing
3	Workers sensitization	500 \$ (Contractor project resources)	Monthly starting from August 2019 up to the project closing
4	Workers training	1500 \$ (Contractor project resources)	August-September 2019
5	Installation of temporary waste bins	500 \$ (Contractor project resources)	September 2019 and maintained up the project closing
6	Provision of bag for waste collection on site	150 \$ (Contractor project resources)	September 2019 and maintained up the project closing
7	Agreement with REMA certified waste handler	500 \$ (Contractor project resources)	Annual agreement for weekly disposal stating from August 2019
8	Installation of extinguishers at the warehouse and in project vehicles	400 \$ (Contractor project resources)	from September 2019 and maintained up the project closing
9	Owner compensation for right of way	To be estimated by the evaluator (EDCL budget)	From September 2019
10	Installation of latrines in the warehouse	500 \$ (Contractor project resources)	September 2019 and maintained up the project closing
11	Warehouse cleaning and weeding for fire prevention	350 \$ (Contractor project resources)	Monthly up the project closing
12	Vehicles check to prevent oil or fuel leakage on site	No cost	Monthly up the project closing



Table 12: Cost and implementation schedule of the ESMP

10. Emergency situation and response preparedness

In this section, we will deal with the potential emergency situations and the actions to prevent or mitigate the consequences these emergency situations.

This section deals only with environmental and social situations, situations concerning health and safety will be considered in the Health and Safety construction plan.

The response plan is checked before the work starting and quarterly to ensure the efficiency of the plan and make the possible improvements.

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10.1. Contact numbers of responsible team members for emergency response



	Name	Contact Details
Client : EDCL		
Project Coordinator	Clementine UMUGWANEZA	0788 842 692
Project Manager	Dieudonnée HIRWA	0784 439 377
Construction Engineer	Jean Bosco GATO	0788 562 430
Environmental Specialist	Pascal TUYISHIME	0783 776 603
Social Safeguard specialist	Willy UWIZEYE	0788 350 349
Contractor: STEG International Services		
Resident Manager	Mr. Hatem KHEMISSI	0784 649 159
Construction Engineer	Mr. Ezzedine HANNACHI	0782 483 817
EHS & ES Manager	Mr. Jean Bernard NIYONSENGA	0788 504 052
Other public Utilities: National Police / Fire fighting service		
	Police	112
	Ambulance	912
	Emergency/ Hospital: Rwamagana Hospital Kibungo/ngoma Hospital Kiziguro Hospital Rwinkavu hospital	
	Emergency Fire & Rescue Brigade : Rwamagana poste	111 0788 311 025
	SAHAM Assurance Rwanda	+250 252 57 55 96 / +250 252 50 12 10

Table 13: Emergency situation Contacts



10.2. Emergency situation and preparedness response

N°	Situation	Responsible	Prevention provision	Response	Capacity (minute)	Record	Communication
1	Fire	Site supervisor	<ul style="list-style-type: none"> -Awareness to avoid using fire in work place, - Avoid storing and transportation of flammable products - Emergency contact list 	<ul style="list-style-type: none"> -In case of localized fire, personnel who have been trained in the use of fire extinguishers intervene to extinguish the fire. The other persons present must deviate from the dangerous zone and wait for instructions before returning to their workplace -In the event of a major fire, all personnel must depart from the fire and call firefighting services (IN.SE.04 : Mesure de lutte contre le feu) 	10	Incident report	<ul style="list-style-type: none"> - Firefighting services - Rescue authority - Safety manager -Site Manager - EDCL
2	Accidental spillage of fuel, lubricating oil from vehicle on work site / Accidental spillage of insulation oil from transformer on work site	Site supervisor	<ul style="list-style-type: none"> -Prohibit the refueling or oil replacement on site -Prestart check of vehicle and preventive maintenance 	<ul style="list-style-type: none"> -Vehicle will be stopped until fixing the problem, meanwhile a retention will be applied to collect the oil or fuel -Application of a retention to collect the insulation oil until fixing the problem -The contaminated soil will be collected in a hermetic bag for proper disposal. 	05	Incident report	Construction manager / project manager

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N°	Situation	Responsible	Prevention provision	Response	Capacity (minute)	Record	Communication
3	Accidental fume emission from vehicle	Site supervisor	-Prestart check of vehicle and preventive maintenance	-Vehicle will be stopped until fixing the problem,	05	Incident report	Construction manager / project manager
4	Accidental Damage of properties outside the RoW band	Site supervisor	-Identification of the RoW band -Precaution during work activities	-Identify the damage, - Contact the owners, -Contact the local authority for indemnification	72	Incident report	Construction manager / project manager/ Local authority
5	Encounter with archeological monument or preserved vegetal specie within the RoW band	Site supervisor	-Prestart check during the line survey	-Stop work, - Protect the site with markers, -Contact the local authority for indemnification	60	Incident report	Construction manager / project manager/ Local authority/
6	Conflict with property owner	Site supervisor	-Awareness regarding respect of private properties - Emergency contact list -Inform in advance local authority to inform population and ease the entry to private properties - Recruiting workers locally to intervene to solve conflict	-Alert local authority and ask for assistance -Explain to the owner the importance of the work and benefits - Delivery of first aid if necessary	10	Incident report	- Firefighting services - Rescue authority - Safety manager -Site Manager - EDCL

Table 14: Emergency situation and preparedness response

10.3. Emergency situation preparedness Control

The following table provides the schedule for the mock test to verify the preparedness and the effectiveness of the planned provisions in case of emergency situation arising:

Scenario	Frequency	Date
1	1 time/ year	September 2019
2	1 time/ year	October 2019

Table 15: Mock test schedule

IV. COMMUNICATION PLAN

OBJECT (WHAT?)	TRANSMITTER (WHO?)	RECEIPT (WHO?)	MOYEN DE (HOW?)	FREQUENCY (WHEN?)	TRAITEMENT (WHY?)
Work announcement	EHS& ES Manager	Third party	Project Sign on site project	At the beginning	Inform third party (citizens, local authorities ...) of the work for better understanding and facilitation of access
Project management plan	EHS & ES Manager	Team members	Email/meeting	At the beginning and at each change	Implementation of health and safety provision
Environmental Management and operational documentation	EHS & ES Manager	Team members	Email/meeting	At the beginning and at each modification	Understanding, awareness of the project team and implementation
Stakeholders claim	Any stakeholders	EHS& ES Manager	Claim file	At each claim	Analyze and action plan
Accident / incident	Team supervisor	Project Manager, EHS& ES Manager	Incident / accident report file	At each accident/incident	Awareness and accountability of staff to avoid accidents
Monitoring of the indicators/target	EHS& ES Manager	Team members	HSSE officer	Monthly	Awareness and accountability of staff for achieving objectives
Site visit and inspection	EHS& ES Manager	Team members	Site visit checklist	Weekly	Ensure application of the project management plan provision
Monitoring report	Project Manager / EHS& ES Manager	Client	Email	Monthly	Monitoring and reporting
Internal audit	Internal auditor	Project Manager / EHS& ES Manager	Report	Quarterly	Compliance check and improvement action
Mock test	EHS& ES Manager	Team members	Mock test report	Quarterly	Emergency preparedness check

Table 16: Communication Plan

V. STAKEHOLDERS CONSULTATION AND PUBLIC PARTICIPATION

We welcome suggestions and information from relevant stakeholders, visitors and the general public, which shall help improve its operations in order to minimize impact on the environment and worker health and safety. The Site Manager is open to the general public for complaints and suggestions.

Complaints received from the public will be documented and follow-ups made to ensure that such grievances are addressed accordingly and in line with the established grievance redress mechanism.

1. STEG-IS and EDCL Meeting

First meeting at EDCL headquarter during June 2019, during this kickoff meeting, the participants have discussed among other the environmental and social aspect of the project and the need for an Environmental and social management plan to control all relating aspects.

Field visits and public consultation will be conducted starting from July 2019 relating the site handover.

During these site visits, the survey team met EDCL and villages' authorities' representatives as well as people from villages to be electrified.

Public consultancy and sensitization before work commencement in every schemes to be electrified.

Several people will be interviewed:

- Men, women and youth of various categories of local people (farmer, shopkeeper, travelling salesman, pupils, laborers ...)
- Authorities (mayor, sector chief, village chief ...)

Briefly, the field visits will allow to:

- Make a statement on the establishment of the population and their economic activities in the project area;
- Collect ideas from the people on the project's expected benefits, concerns and recommendations related to the installation of the project.
- Present Benefits of accessing to electricity in their locality,
- Present Means and line route to benefiting as many villagers as possible,

- Present Social infrastructures or facilities such as schools, health facilities, public and private administrative offices, commercial that would benefit from the project;
- Benefits of accessing to electricity by the households or by the community in general;
- Expropriation and compensation in case land or crops are damaged by installation of the power lines;
- Possibility to work within the project;
- Possible risks from the power line.

2. Disclosure plan

District	Responsible	Week	Subject
Huye	EDCL / STEG-IS & local authority	Week 03 of 2020	Project's benefits, project's potential impacts on the environment, STD/AIDS awareness
Nyamagabe		Week 04 of 2020	
Nyanza		Week 05 of 2020	
Kamonyi		Week 06 of 2020	
Ruhango		Week 07 of 2020	

Table 17: Disclosure Plan

VI. INSPECTIONS AND AUDITS

1. *Site Inspection*

Site inspection requirements specific to individual sub-plans are described in the sub-plans, such as the waste management Plan as given in the Specific ESMP. Daily and weekly inspections will be carried out to cover all aspects of environmental and social management on the site.

2. *Daily Site Inspection*

The purpose of the daily inspection is to identify any environmental issues and rectify them without delay (for example waste generation, stopping unnecessary vegetation clearance etc.). Any environmental issues identified will be recorded in a site diary. Daily site inspections of specific work areas will be carried out by the project site engineers under supervision or leadership of the Contractor's Environmental and Social Consultant.

3. *Weekly Inspections*

The weekly inspections will be jointly undertaken to verify that the daily inspections are identifying any maintenance requirements and that these requirements are being completed in an appropriate time frame. Some parameters may however be monitored on a monthly interval. All aspects contained in the mitigation measures or management activities shall be monitored and included in the weekly monitoring reports. Other aspects that will be considered during the weekly inspection include:

- Weather conditions (current and predicted);
- Work areas and sensitive receiving areas clearly defined; e.g. human habitat areas etc.
- Observations of spills and clean-up actions; location and contents of spill kits;
- Poles and other materials storage areas;
- Site tidiness (litter, materials);
- Emerging social behavior and treatment of workers on the site against the socially acceptable requirements
- Gender sensitive facilities on the site.

Those environmental aspects requiring action will be noted in the Weekly Environmental Inspection Report and communicated to the appropriate site staff for action. The weekly inspections will also provide an opportunity to fine tune and improve the efficiencies of existing controls. Future work areas will be investigated during these inspections.

The weekly inspection will be jointly undertaken by the Contractor's Environmental and Social Officers and the Client Environment Specialist. A monthly Environmental Compliance Report will be produced following each inspection and will incorporate any actions identified during any inspections. The inspection report will summarize the status of the site's compliance and include photographic records if appropriate.

4. Non-Conformance, Corrective Action and Preventative Action

Where near misses, non-conformances with the requirements of this ESMP or areas for improvement are identified, an opportunity for improvement form will be completed by the Environmental and Social officer. The opportunity for improvement form should be certified by the Contractor's Environmental and Social Manager with the consent of the Client Environment Specialist.

The Environment and social consultant(s) will review all environmental OFI's raised to ensure close out in the timescales specified. Corrective actions will include provisions to ensure preventative action is taken to avoid a re-occurrence of any incidents or non-conformance.

Any emerging social behavior arising from the interaction between the Contractor's staff and local population shall be promptly addressed through regular monitoring by the Contractor's social and environmental staff. Consistent with the Contractor's Safety Plan, the site nurse shall be employed to ensure the treatment of workers and refer any serious complications to the closest health units with which established arrangements are made for the purpose.

5. Meetings

Environmental and social compliance meetings should be held on a weekly basis to discuss certain work activities. Other parties including but not limited to EDCL and STEG IS Representatives should be invited. Attendance will be recorded and kept by the Environmental and Social consultant who is responsible to comply with the mitigation measures.

The purpose of the meetings will be to review the effectiveness of the environmental and social measures, environmental and social successes, non-compliances and enhancements, and to consider future environmental and social requirements.

6. Monthly Environmental and Social Report

A Monthly Environment Report will be prepared in fulfilment of the STEG IS contractual reporting obligations. The report will highlight the different activities undertaken to manage environmental and social aspects of the project in line with contract specifications, laws, standards, policies, and

plans of Rwanda and World Bank Safeguard policies. The report will be discussed during the monthly progress meetings.

7. Environmental and Social Management Plan Reviews

The ESMP is a living/dynamic document subject to similar influences and changes from variations to the provisions of the project specifications.

The Environmental and Social manager will review the ESMP at an interval of three months (quarterly basis) in order to identify any required amendments. Such review can also be done in the event of significant changes to activities on site. The review will be communicated to the EDCL (Environmental and Social specialists) for comments.

8. Monitoring and approval of the ESMP Activities



Monitoring of the implementation of the ESMP is the responsibility of STEG IS under the guidance and supervision of EDCL to whom he reports. The EDCL Environmentalist and Social Specialist will supervise STEG IS monitoring activities and approve the STEG IS monthly environmental and social monitoring report. EDCL's Environmental Management and Social Specialists will also independently monitor the implementation of the ESMP and/or verify the accuracy and content of the Contractor's monitoring report and then report to EDCL. The report will also be shared with The Bank and other relevant stakeholders.

STEG-IS is the implementing organization responsible for carrying out the mitigation measures pertinent to the power line construction phase. Other parties such as EDCL and other stakeholders are responsible to liaise /cooperate on the implementation of operation phase mitigation for the ESMP.

The monitoring of STEG IS activities will be guided by the monitoring indicators elaborated in this ESMP. The monitoring activities will include visual observations, measurements using calibrated equipment (noise, etc.) and relevant records (grievances records, and waste transfer records), among others. The following are some of the key parameters and issues considered for monitoring;

Public complaints;

- Gender disaggregated data;
- HIV/AIDS awareness, testing and counselling;
- Destruction of people's property;
- Waste collection and disposal

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- Occupational health and safety
- Intrusive lighting,
- Effectiveness of mitigation measures, etc.
- Destruction of wetlands
- Oil spills from the transporting vehicles for the poles

9. Audits and Project Completion Reports

9.1. Environmental and Social Compliance Audit

Overall, STEG-IS will have the leading role in daily monitoring to ensure that its various environmental and social obligations contained in this ESMP and scattered in various permits, approvals and licenses are met.

In relation to the social compliance audit, STEG-IS will undertake internal reviews to assess its level of compliance to legal and policy requirements. The independent environmental and social audit will assess the functionality of social management systems in addressing emerging risks.

9.2. Final Environmental and Social Management Report

STEG-IS shall at the end of the project prepare and submit to EDCL a final environmental and social management report detailing how the environmental and social issues have been addressed during the course of the project and how the decommissioning plan has been complied with. STEG-IS will therefore prepare a Final Environmental and Social Management Report and submit it to EDCL for approval before handover of the project.

VII. CONCLUSION

This project is part of the effort to implement Rwanda policies of development such as the energy policies and state development strategies in view of its economic and social benefits.

However, inevitably, the project activities can generate concerns regarding adverse social and environmental impacts.

The present Management Plan gives a detailed assessment of possible adverse impacts. But also, it proposes adequate preventive and mitigation measures to offset the adverse impacts in return.

The philosophy of this plan acts first on prevention such as the good organization, good preparedness, the advance information, the awareness campaign, having the skilled staff, ensuring the good conditions of vehicles, machineries, tools and devices used for the construction work. It acts then on the impact reduction through the availability adequate means such as firefighting devices, waste management plan ...



The management and monitoring program, part of this plan, provides parameters to be monitored and responsibility.

The Implementation of this plan, continuous monitoring and possible improvement update on it is a condition of success of the project and of achievement of its objectives meanwhile preserving the health and safety of workers and surrounding people and preserving the environmental and the social capital.



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