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ELECTRICTY ACCESS SCALE-UP ROLL-OUT PROGRAM (EARP)

Project brief

Electrification of Cyanika-Miko in Nyamagabe District

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A. GENERAL INFORMATIONS

Project Title: Electrification of Cyanika-Miko in Nyamagabe District
Country: Rwanda

1. Introduction

In its effort to sustain economic growth, the Government of Rwanda has increased and stabilized the power production since the severe power shortages in 2004. However, infrastructure bottlenecks in the urban areas and limited access in the rural areas have emerged as a significant constraint.

The government of Rwanda is committed to increasing access to electricity, providing reliable and quality service and this has been demonstrated through its different strategies like Poverty Reduction Strategy Paper (PRSP, 2002-2005), Economic Development and Poverty Reduction Strategy (EDPRS 2008-2012) that all gather to a single vision 2020, whose electricity access rate targets are 35% of the total population by 2020 and 25% by 2010 respectively, unlike current target of 16% by 2012.

One of three major strategic objectives of the Economic Development and Poverty Reduction Strategy (EDPRS 2008-2012) is to expand access while also improving the quality and lowering the cost of economic infrastructure, especially transport, power, and communications. These objectives require the availability of reliable and affordable electricity supply. To this end, the GoR is pursuing an investment drive to urgently rehabilitate and expand electricity generation, transmission and distribution capacities in the country.

In connection with the mentioned strategy, the Government of Rwanda through the national electricity corporation (RECO) is embarked on a country-wide Electricity Access Program to realize the primary EDPRS target for the electricity sector of tripling access by 2012 to about 16 percent of households and at least 50 percent of identified public institutions in health, education and local administration with an extensive rural electrification programme that is part of its corporate structure.

The project will connect 300,000 new customers and service providers to the grid and build 2,500 km of medium voltage lines and 6,000 km of low voltage lines. Around US$300 Million will be allocated and invested into this programme.

In this regard, RECO has established a new Electricity Access Scale-up Roll-out Program (EARP) as a part of its corporate structure. The program will be implemented within the framework of a Sector Wide approach (SWAp) to encompass all donors active in the sector under one common sector investment program.

The overall investment envelope for the first SWAp time (2009-2013) is estimated at $378 million, for the program period covered by the Prospectus that has been endorsed by all the Partners and key sector institutions in Rwanda, including RECO. A number of development partners so far committed to support the program include the Government of Rwanda, RECO, and major Donors such as World Bank/IDA, World Bank GEF/ESMAP CEIF, African Development Bank, BADEA, OFID, FDA/AFD, Saudi Funds, Netherlands, Japan, and others.

The activities of the EARP will be sub-divided for a better monitoring into five zones being Kigali-Central Zone, Northern zone, Western zone, Southern zone and the Eastern zone.

Thus, the electrification of Cyanika-Miko Project in Nyamagabe District ranges among many others medium lines to be constructed across the country within the said context of rural electrification.

2. Project Objective

The EARP Project goal is to implement an extensive rural electrification programme by increasing private connections in order to meet the demand, thereby promote economic growth and improved standard of living of the population.

If the entire Project will connect 300,000 new customers and service providers to the grid and build 2,500 km of medium voltage lines and 6,000 km of low voltage lines, the Electrification of Cyanika-Miko Project will count around 1000 new customers for 8 km of medium voltage lines and 18 km of low voltage.

3. Project description

The project is composed of seven divisible lots of material supply and construction of MV/LV lines as follows:

Medium Voltage Network

The medium voltage line has a tension of 15kV with the length of 8 km**.** The overhead line will be branched at Taba substation from tower with transformer and will be constructed with metallic poles and with 70/12 (AL/AC) Armed Aluminum steel reinforced and the lightning conductor of 35mm² AC . There will be installation of 5 substations with mounted transformer on the pylons at Cyanika, Rugogwe, Miko and Mbazi centers.
The 5 substations are:

(i) MV/LV Substation of Cyanika paroisse: 100 kVA
(ii) MV/LV Substation of Cyanika Secteur: 50 kVA
(iii) MV/LV Substation of Rugogwe agglomeration : 50 kVA
(iv) MV/LV Substation of Miko: 50 kVA
(v) MV/LV Substation of sector Mbazi 50 kVA

Low Voltage Network

The low voltage line construction will be done with wooden poles and AL/AC 70/12 conductors. The total length of the low voltage network is estimated to be 18 km and will be supplying 1,000 clients in 5 rural centers (Cyanika, Rugogwe, Miko, Mbazi centers).

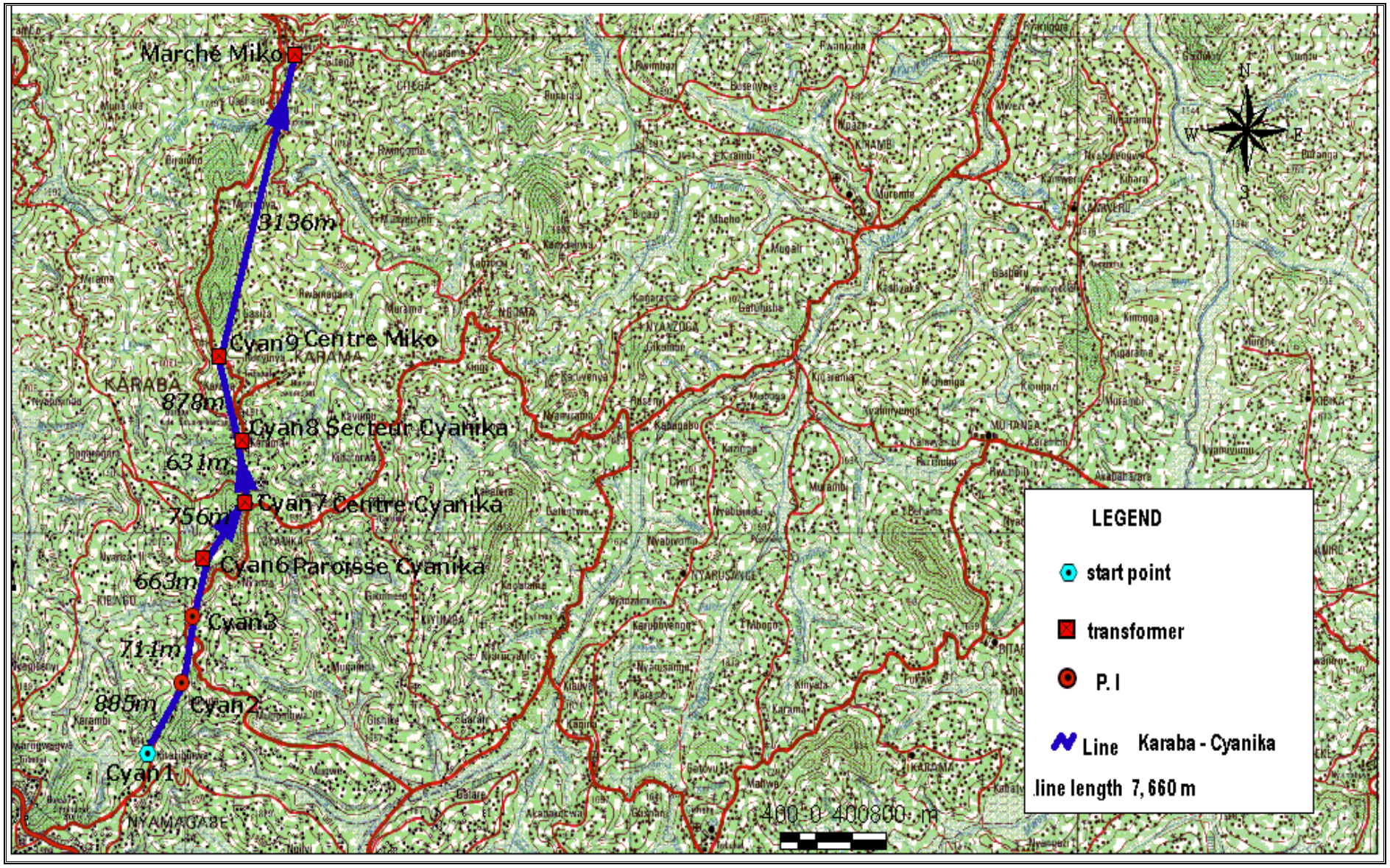
Taba substation, where the line will starts

Some of the centers that will benefit from the project

The project will consist of the following components:

(i) Detailed implementation studies, line survey, profile making, line design, design and statistical calculations for all type of pylons, street poles and foundations to be approved by the Employer.
(ii) Civil works
(iii) Erection works and commissioning
(iv) Inventory of damaged items along the path for compensation and completion inventory.
(v) Bush clearing along the path, 18 m wide path with the line at the centre of the path.

4. Location of the project



B. ENVIRONMENTAL AND SOCIAL IMPACTS

1. Major Environmental and Social Impacts

The project will have a wide range of environmental and social implications. In general, successful implementation of the Project will have high socio-economic benefits to the people. The environmental and social impacts identified include:

1.1 Potential Positive or Beneficial Impacts

Successful implementation of the Project investment will have numerous socio-economic benefits including:

- Better access to electricity facilities leading to improved standard of living;
- The Project will contribute to increase in local development and employment as the local population are likely to be employed during the construction phase and after construction employment creation through increased business activity and electricity related investments as a result of energy availability;
- In the construction phase there will be temporary employment opportunities for local contractors and those who will be employed or supply services and provisions for workers and to contractors. Within the respective project areas there will be opportunities for petty trading and small business service provision on construction site.
- The program is expected to contribute to rural communities well-being associated with improved services, stability, work opportunities, settlements, health, empowerment and education training.
- Improved social service delivery in housing developments, hospitals and schools. Stable access to power in rural residential areas and social sectors will also contribute toward improving the quality of life for women and children through time saving on household work and care giving, and through increased employment opportunities.

- The long-term direct positive impact is therefore in access to reliable electricity supplies, which will lead to better provision and easier management of goods and services, and enable new facilities for processing and storage. Data management with computers is made possible and communication facilities like Internet can be made available, as also charging for mobile phones; also, electric lighting adds to security at night and enables extended opportunities for work and study.

- It would improve financial, managerial and administrative skills to the community due to the electricity access; It would support sustainable development in the commercial sector (shops, bars, and restaurants); to small and medium industries (flour mills, rural water supply installations, tanneries, and coffee processing plants), to the residential sector by replacing/reducing the consumption of woody biomass and petroleum products used for lighting and motive power, to education (kindergarten, elementary schools, junior secondary schools, secondary schools and technical colleges), and to the health sector (pharmacies, health centers and hospitals).

In brief, the project would assist in the facilitation of economic growth in Project affected areas and create long-term employment opportunities for the poor, including women, thereby increasing income levels and reducing poverty.

1.2 Potential Negative Impacts

a. Land Acquisition

There is no need of land acquisition for the construction of the line and its substations, and yet compensation for some crop should be done.
Consultations and discussions with the concerned population and local authorities, then compensation according to the national procedures will be fulfilled before the implementation of the project.

b. Destruction of vegetation cover/crops

The project areas do not present a variety of vegetation; it is rather a field lying fallow. These tufts of grass will inevitably have to be removed to pave way for the construction of the substation.

Mitigation measures

During the survey to map the routes, emphasis will be placed on ensuring that the routes avoid sensitive ecosystems, densely populated settlements and farmlands in order to avoid impacts associated with resettlement, compensation and relocation.

However, since this is a linear project land use related impacts in terms of crop and trees destruction and acquisition is inevitable. EARP will compensate for all the crops that will be destroyed. This compensation will be calculated according to the guidelines presented in the Resettlement Policy Framework (RPF) document and will include compensation for labor. Damage to trees should be limited as far as possible, and any removals should be undertaken in consultation with the landowner still it always a public property.

c. Fugitive Dust

Fugitive dust may be emitted from construction works and stock piles of materials including machinery as well as from truck traffic. This could cause health related impacts to the communities around the road and workers in the project site.

Mitigation measures

Fugitive emissions from roads and site work to be eliminated or minimized by applying water on a need basis to dirt roads, unpaved surfaces and exposed construction areas during the dry season.

The dirt roads and exposed construction areas should be moisturized during the dry season to prevent or minimize the fugitive dust emissions.

d. Vehicular Emission

During the construction of the substations, increased use of heavy equipment and machinery could cause increased vehicular emission (CO_2) in the atmosphere and will cause to some extent some form of atmospheric pollution. This impact though is expected not to be significant and to last only up until the construction phase.

e. Noise Pollution

The machinery and equipment that will be used to undertake heavy equipment loading and different civil works during the construction phase of the substations will cause noise pollution in the immediate surroundings of the project area. The impact is expected to last only during the construction phase and will be short term in nature and not very significant.
The equipment and machines that will be used are mainly trucks and these do not normally generate noise to levels that would be of concern or harmful to the residents.

Mitigation measures

All equipments and machinery installed must be tested to verify if they are compliant with the national acceptable standards. Noise emitting equipment should comply with the applicable Rwanda noise standards and should be properly maintained. Major part of the Project sites are far enough of residential zone.
All workers in the project site must be equipped with the necessary and required Personal Protective Equipment (PPE) but not limited to facilities to protect against noise impacts, ear muffs, safety helmets, boots, dust masks, gloves, overall, goggles, hearing protection etc.

f. Localized Soil Erosion

There is a likelihood of localized soil erosion and interference with the local drainage during the civil works which will entail minimal earth excavations when constructing the foundations for the towers and access roads if necessary. However, these impacts will be largely localized to the project specific areas and will only occur during the construction phase.

Construction equipment used for excavating the ground on where to install the towers and create ROW will be manual hand held tools like pick axe, forks, spades as well as mechanical equipment etc.

Mitigation measures

Minimization of disturbances and scarification of the surface should be observed to reduce erosion impacts.
Borrow pit areas (if any) should avoid other non site areas; borrow areas should be reworked to blend into the surroundings. Re-vegetation should be performed using local plants. All slopes and working surfaces should be returned to a stable condition.
Design and construct transmission line towers with staggered legs so as to eliminate the need to excavate a level pad into slopes on which to construct towers.

g. Borrow Pit Impacts

Borrow pits created during the construction works if not rehabilitated could cause impacts including becoming breeding grounds for disease vector, hazards that could drown animals and people, and ecological destruction if borrow pits are located in sensitive environments. The project does not expect to use materials from borrow pits but if this occurs, these materials will emanate from government approved borrow pit areas in Rwanda.

h. Localized Oil Spills

The project does not anticipate extensive use of motorized equipment and machinery that use fuel oil and lubricants that could impact on soil and water from accidental spills or unsound disposal or handling. However motorized vehicles will be used and that can cause oil spills.

Mitigation measures

For the waste oil or used oil, the company contracted will collect the used oil for proper disposal. All waste oils and lubricants from maintenance of construction equipment should be segregated and disposed properly in accordance with the similar waste disposal plan.

i. Bird Strikes/Collusions

Transmission and distribution networks are known to be a potential source of bird strikes that get entangled to the lines causing their injury or even instant death. This is especially more significant when birds migrate from one point to another and usually get struck by these transmission lines.

Mitigation measures

The routing of the distribution and transmission network should avoid areas known to be migratory routes for birdlife.

j. Storage and treatment of waste

Solid waste materials during the construction include paper wrapping, scrap metal, excavated soils, polythene, plastic, metal containers; liquid wastes including especially oily water and might cause pollution if disposed not appropriately. Waste oil is an output of the project that poses potential environmental hazard in case of poor handling and disposal methods.

Mitigation measures

EARP and the contractor should develop a solid waste disposal plan which includes the provision of receptacles at strategic points within the construction site, recycling programmes for recyclable wastes, separation of wastes; and remove wastes from the site to the recommended waste management site.
Warning signs against littering and dumping within the construction site should be erected by the contactor.
The contractor should make attention and avoid the use of transformer with PCBs.

k. Fire Hazards/Accidents

During the construction phase the chances of fire hazards occurring cannot be overlooked due to the use of combustible machinery and equipment in undertaking the construction works.

Mitigation measures

The contractor is expected to provide equipment for fire suppression as stipulated in the tender documents.
Emergency zones should be planned and developed where necessary.

l. Workers Health and Safety

Adverse impacts on the workers health and safety is likely to occur especially through workers interaction with the equipments and machines during construction and operation of the plant. Accidents are likely to occur during construction and operations when the equipments are in use, and further to this if workers are exposed to the air emissions and incessant noise of the equipments could lead to potential harm on health of the workers.

Mitigation measures

All workers entering the construction site must be equipped with PPE including ear muffs, overalls, gloves, dust masks, among others. The PPE should be those that meet the international standards of PPE.

Personal protection gear must be provided and its use made compulsory to all. The entire workforce of the plant should be trained in the use of protective gear, handling of chemical products, electric safety equipment, procedures for entering enclosed areas, fire protection and prevention, emergency response and care procedures.

'Restricted ENTRY' signs should be installed to keep away unqualified workers from access to restricted areas.

Machines and Equipments must be operated only by qualified staff and a site supervisor should be on site at all times to ensure adherence.

The contractor should develop an Emergency Response Plan for handling any emergencies arising thereof during the construction.

A perimeter fence should be constructed all around the project site to keep away unauthorized persons from the site.

1.3 Possible Enhancement Measures

Possible enhancement measures of beneficial impacts would include the following:

- Avoid sitting lines through protected areas, other environmentally sensitive areas or through mature forest stands.
- Avoid cultural and heritage sites.
- Site towers on high points of land such that conductors can be strung over valleys thereby eliminating the need to remove trees.
- Locate transmission lines along the base of mountain slopes by avoiding where birds could come into contact with conductors.
- Locate transmission lines to avoid running through villages and instead run lines behind villages.
- Consult villagers regarding location of valued village resources and locate transmission lines to avoid these features.
- Situate transmission lines not far away from roads, but behind roadside forested areas so as to minimize visual intrusion.
- Ensure minimum clearance distances between conductors and ground, waterways, road crossings, buildings, communication systems etc. are incorporated into design.
- Strictly define ROW clearing activities in the contract specifications.
- String conductors under tension to minimize potential damage to remaining ground vegetation.
- Adhere to recommendable best construction practices that make effective and economical use of locally available resources including materials, expertise and labour.
- Highly reduce productions of solid, liquid and hazardous wastes.
- Give preference to local employment (youth, women and men).

C.CONCLUSION

In concluding, a successful implementation of the Project will have, in general, high socio-economic benefits to the people of Cyanika Sector. Based on the environmental impacts and mitigation measures sorted out, the project is environmentally and socially viable with negligible adverse environmental impacts that have been mitigated. Being an urgency project, most of the impacts will be short term with low magnitude confined within the project site.

Some of the impacts are inevitable and can only be minimized. If the Mitigation measures, proposed in this project brief are implemented, the impacts of the project will either be eliminated or minimized to a manageable and sustainable level.