



# STUDY ON THE INTERCONNECTION OF THE ELECTRICITY NETWORKS OF THE NILE EQUATORIAL LAKES COUNTRIES

## FEASIBILITY REPORT VOLUME 3 B – UGANDA-RWANDA INTERCONNECTION ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT

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The feasibility report includes the following volumes:

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- Volume 5: Burundi – DRC – Rwanda interconnections and upgrade
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# 1. INTRODUCTION

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## 1.1. PRESENTATION OF THE PROJECT

The study is carried out in the frame of the interconnection of the electricity networks of the Nile Equatorial Lakes Countries under the Nile Equatorial Lakes Subsidiary Action Programme (NELSAP). The sectoral objective of this study is to improve the rate of access to electrical power for the peoples of the Equatorial Nile Basin.

The characteristics of the project can briefly be summarised as follows:

### **Five countries concerned**

- Burundi,
- Kenya,
- Uganda,
- Democratic Republic of Congo, DRC
- Rwanda

### **Four main projects**

- Uganda - Rwanda interconnection
- Burundi - Rwanda interconnection
- Uganda - Kenya interconnection
- Strengthening of the interconnection between Burundi, DRC and Rwanda

### **Three study phases**

- pre-feasibility
- feasibility
- detailed studies and tender documents

**A. Uganda - Rwanda interconnection**

The project consists in constructing an HV power line, 172 km long, between the substations at Mbarara in Uganda and Birembo in Rwanda. This line should enable Rwanda to import first a minimum amount of 20 MW of power to overcome its production shortfall, thereby benefiting from the development of the Ugandan hydro-electric resources, and in the longer term, to have the possibility to export (or import) up to 150 MW according to the periods and expansion scenarios.

**B. Burundi - Rwanda interconnection**

The project consists in constructing an HV power line, approximately 103 km long, between the Rwegura hydroelectric power station in Burundi and the Kigoma substation in Rwanda. The purpose of the line is (i) to improve the stability of the grid linking the electricity production and distribution systems of Burundi, eastern DRC and Rwanda, and (ii) to improve the security of the electricity supply and the working flexibility of these networks by creating a loop passing through Butari.

**C. Uganda - Kenya interconnection**

The purpose is to strengthen the interconnection between the Kenyan and Ugandan networks so that the hydro-electric power station at Bujagali, which is planned to be commissioned in 2011/12, can export surplus power from Uganda to Kenya. The project consists in constructing a 255 km HV power line between Jinja in Uganda and Lessos in Kenya, duplicating the existing 45-year old, double 3-phase 132 kV power line.

**D. Strengthening of the interconnection between Burundi, DRC and Rwanda**

The purpose of the project is to increase the transmission capacity and working flexibility of the transmission network and to improve the security of the electricity supply in Burundi, DRC eastern grid and Rwanda. The project involves:

- increasing the operating voltage of the 112 km power line between the hydro-electric power station at Rusizi I (DRC) and Bujumbura (Burundi) from 70 kV to 110 kV,
- increasing the operating voltage of the 150 km power line between Rusizi I and Goma in DRC from 70 kV to 110 kV,
- constructing a 60 km, 110 kV power line between Goma (DRC) and Mukungwa (Rwanda), closing thereby the loop around Lake Kivu and
- constructing a 19 km, 110 kV power line between Bujumbura and Kiliba (DRC).

Appropriate techniques used to connect the villages along the routes of the different interconnections to the power lines will also form part of the study.

To these characteristics, the large distances between projects could also be added. As an example, the Jinja - Lessos interconnection is more than 800 km from the Bujumbura – Kiliba one.

More specifically, the present Volume 3B of the study concerns the Environmental and Social Impact of the reinforcement of the network ('interconnection) between Uganda and Rwanda.

## 1.2. CONTEXT AND OBJECTIVES OF ENVIRONMENTAL AND SOCIAL ASSESSMENT

According to the African Bank of Development (AfDB) and as mentioned under the Terms of Reference for the Study of the interconnection of the electricity networks of the Nile equatorial

lakes countries, the project is subjected to an environmental and social impact assessment (ESIA) and envisages a program of compensation of the losses.

The general objectives of the environmental and social impact assessment are:

- To identify the potential impacts environmental and social as well positive as negative of the interconnection;
- To develop an environmental and social management plan (ESMP) including mitigation measures of the impacts and program of environmental monitoring.

The ESIA was prepared in concordance with the guidelines of the governments of Uganda and Kenya, as well as the policies and procedures of the African Bank of Development (see section 3 on the legal and institutional framework).

### 1.3. EVALUATION METHODOLOGY

For the elaboration of the study of environmental and social impact of the project of interconnection between Uganda and Rwanda, the consultant has:

- collected relevant information from particularly available regulations and studies;
- effected visits and environmental inventories at site;
- done detailed socio-economic investigations
- consulted people affected by the project, the local, regional and national authorities and NGOs;
- identified the environmental and social impacts;
- analyzed the impacts on basis of below criteria and emerged mitigation measures of negative impacts and optimization of positive impacts
- developed a programme of compensation of losses.

All line and substations locations were visited. Data and information was collected from local government at site (technical services, local authorities).

Moreover, a consultation plan consultation was executed in order to collect information from local, regional and national authorities (see section 4).

Moreover, a socio-economic survey was carried out along the future route of the line. This work allows draw up the detailed socio-economic profile of the various zones concerned and the households affected by work.

The study privileged a participative method which will progressively integrate the opinions from different stakeholders and respect their concerns. The Plan of work is based on four major thrusts of intervention:

- The analysis of the project concept paper and other strategic and of planning documents at the national or regional level; consultation of the documents resulting from the preliminary studies; integration of the results from prefeasibility phase. Other external project documents which could be helpful for the study were also consulted. This stage made it possible to identify the complementary data to be collected on site.
- Visits of project sites between Mbarara and Birembo to collect complementary data on the social biophysical environment, especially on line route, the urban zones and affected human settlements, environmental sensitive areas such as wetlands and forests, agriculture rural areas, etc. Sites visits were effected by experts in consideration of particular concerns for carrying out the EISA;

- Consultation with interested and/or affected local people, the institutional stakeholders mainly concerned by the project (administrative authorities and local government), local associative movements, public technical services, local NGOs and other active organizations in the concerned area, local socio-professional stakeholders. Local meetings were organized with different interested people and institutions;
- The analysis of information and the environmental study includes the following: initial study, impact identification, public consultation, environmental and social management framework which includes mitigation measures, compensation program, training requirements and monitoring program.

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## 2. PROJECT DESCRIPTION

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### 2.1. JUSTIFICATION OF PROJECT

The general objective of the project is to increase the transit capacities and the flexibility of operation of the grid system and to improve sustainable electricity supply in Burundi and Rwanda.

Today, the rate of access electricity is lower than 7% in Uganda and 5% in Rwanda. The interconnection project will be a main way for economic and social development in the region by improving and increasing power availability. This project will also reduce the imports of the fuel for the existing thermal plant and power generators. This project of modern energy will lead to the cost saving and an environmental profit by air quality improvement and reducing greenhouse gases emissions generated by fossil energies.

The project will bring sustainability in energy supply for these two countries and will increase the power supply in neighboring areas which are still not supplied in electrical power. Indeed, even if the study framework is limited to the interconnections, it appears that this initiative will develop rural electrification projects at a lower cost and increase quickly the power supply for the villages located along the line drawings.

### 2.2. BENEFIT OF ENERGY ACCESS

The energy being presently a key factor of development, the augmentation of rate to access to the electricity will contribute certainly to reach the Objectives (goals) of the Millennium for the Development as defined by the U.N. particularly the one related to the reduction of the extreme poverty and hunger, Indeed, the energy is (sees) considered more and more as an essential asset without which a real development is impossible.

Thus, the access to energy and in particular to the electricity constitutes an essential lever of development owing to (thanks to) its effects.

- On Poverty and hunger

The access to the electricity enables to have a work day which is very long thanks to the light and savings of time and money (very easiest access to the energy and water). Besides, the use of electrical and energizing equipments for the irrigation enables to get an increase of the agricultural production.

The availability of the energy is also a factor of economic development because it (enables) permits the development of small and medium enterprises together with the mechanization of activities of transformation of agricultural products and their conservation (refrigeration).

- On Health

The presence of the electricity within the health centers enables the conservation of medicines (refrigeration) and an increased safety during the night at the child birthday. Besides, the access to means of communication (television, radio, and internet) facilitates the transmission of knowledge on the issues related to basic health, such as the protection against the HIV-AIDS

and malaria together with the telemedicine. Finally, the access to the electricity, by improving life and work conditions of health service providers, inciting them to remain in the villages,

- On Education

The gain of time thanks to the energy and to the access to the electric light enables children to study in the evening in good conditions. The availability of the electricity enables the access to the internet and to the tele education augmenting the access to knowledge. The presence of electricity also incites teachers to remain in rural zones and not to relocate to town. In addition, the access to the electricity and water at school enables to improve the teaching conditions and the organization of courses for adults in the evening.

- On the improvement of life conditions in particular for women

In the family, the domestic tasks are often reserved to women. The access to water may be improved thanks to the presence of pumps. More over, projects of mechanization of certain operation (dissecting etc.) may reduce the time and the effort of work. The projects of agribusinesses' development may enable to hold personal revenues which ensure them an increased autonomy and a best quality of life. Further more, the access to media (television, radio, internet) enables also to let evaluate the woman's image among (inside) traditional societies.

- On the limitation of rural exodus

The improvement of life condition of rural households and the local job creation thanks to economic development enables to reduce the incitement to the rural exodus.

- On the environment

The access to the electricity at home will decrease the use of piles and to batteries but also to the biomass often over exploited. The use of the electricity from hydraulic origin permits also an avoidance of the production of gas with hot house effect such as the CO<sub>2</sub> deriving from the combustion of diesel or of the fuel for the existing generators.

## 2.3. GENERAL CRITERIA OF LOCALIZATION

At the preceding step of the feasibility study, the knowledge of the environment and more specifically to stakes and sensitive elements of the zone of study has enabled to elaborate general criteria that have served as guide within the study of different alternatives. These criteria are of two types:

- The restrictive criteria which recommend to avoid in the possible extent, certain elements of environment due to their intrinsic characteristics.
- And the incitative criteria which oblige to seek some elements of environment because they provide mainly a level of low sensitivity.

The general criteria of location considered for the location of transmission lines and the implantation of substations within the context of the present project and which have been taken into account for the elaboration of corridors are presented below. These ones are related to a technical environmental and socio-economic aspect and certain may be classified within more than one category:

- Looking for the more direct orientation between the departure point and the arrival one in order to reduce the perturbations caused to the environment and to social aspect, and reduce the project's cost;
- To avoid divided the territory and the creation of residual spaces in looking for an orientation of the corridor which respects the general structure of the lands' cutting up.
- To exploit the elements of the territory such as the administrative limits and the linear equipments (roads, electric lines, railways etc.), together which the interfaces between the



different types of soil's use, to minimize the anticipated impacts, to minimize the corridor size and increase the visual integration of the line;

- To avoid the sectors visually very displayed, either on the dominant tops or on the displayed slopes;
- To walk around the villages and avoid the areas where it is found a large concentration of housings (which are less compatible with the presence of electric infrastructures, and which would require numerous transfer of population and strong compensations).
- To avoid the sensitive environments (natural reserves, humid environments, flooded zones, zones replanted with trees, industrial cultivations, etc.) and go within the areas of little sensitivity able to hold the line with a minimum of anticipated impacts,
- To avoid the areas having large relief and the high slopes, where the accesses are more difficult for the building sites' machines, and where the erosion risks are very high, able to endanger the safety of the connection.

Concerning what is linked to the reception areas for the substation's connections, the location criteria which have been taken into account are the following:

- Avoid the sensitive environments (natural reserves, replanted with tree zones, industrial cultivations etc.) and look for areas of little sensitivity able to hold the substation with a minimum of anticipated impacts;
- Be far from villages and concentration of housings to avoid potential conflicts with the territory's uses (noise and visual nuisances) and foresee the extension of urbanization perimeters;
- Avoid the humid zones and the zones of rocky surfaces and look for the spaces of good supporting capacity and an adequate drainage;
- Locate the substation at proximity of a road access in order to facilitate the accessibility;
- Bring the substation at the nearest possible point to the existing HV line connections in order to minimize the environmental and visual impacts together with the additional costs able to be arisen by the derivation's lines.

A local optimization of the line has been achieved at the moment of on site studies; this enables to avoid or to walk around certain elements which are the most sensitive or constraining on the crossed territory.

## 2.4. THE HOLD

The width of the ascending (Hold) must be at maximum of 30 meters. The limits have been determinate by the limit falling over of conductors by the effect of the maximum wind together with the environmental limits such as the audible noise, the electric field and the interference radio and TV. The complete action of clearing of the ascending where the line crosses wooded zones must be limited to a strip of 5 to 10 meters of width's length of the axis in order to enable the un-winding of conductors. A part from that strip, but within inside of ascending all the vegetation having a height superior of 4-5 meters must be cleared, including the trees presenting a potential danger but off the ascending (see figure of the following page).

Not with standing which precedes, some plantations and in particular the banana trees should be allowed within the ascending. In all the cases, the cultivations which the height does not exceed three meters are allowed even also the farming or other compatible activities.

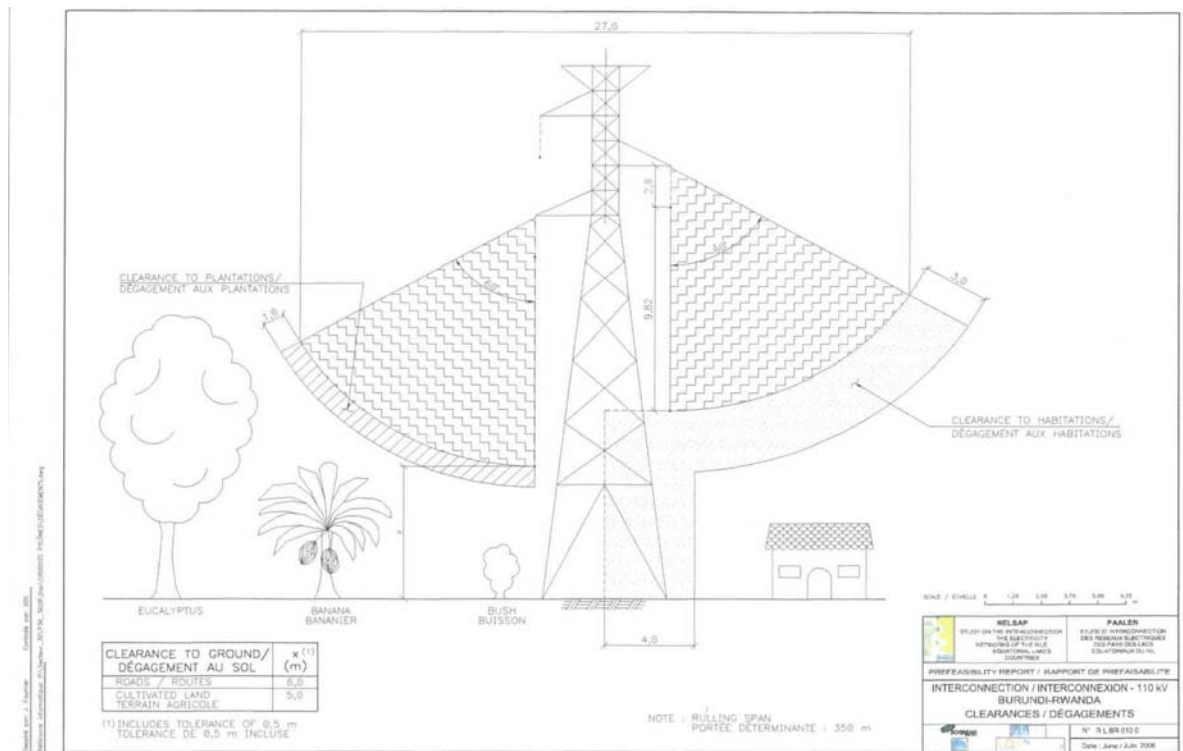
Although this approach can be different from the methods used by the owners, the experiment from other projects in the area and at the international level showed that by engaging the local communities present along the line for the maintenance of the hold and the line monitoring, the operational limits of the hold can be respected. This approach is also proved to be effective to

the minimum to reduce the theft of metallic material and earthing of the pylons in addition of reducing the maintenance costs related to the control of the vegetation in the hold.

This type of understanding enables the user to maintain his activities (eg. Agriculture, farming, plantation etc.) only if they do not cause nuisance to the line operation.

Furthermore, the final positioning of towers, if well done is a factor which would again reduce the clearing of sails' needs.

The acquisition of the ground will be limited to the towers' location. As the agriculture is focused on a plantation and a manual harvesting the towers basis surface may reach 100 m<sup>2</sup> (10x10 meters) , in a normal situation, the lost surface will be limited to 4 columns of reinforced concrete, that is to say at total 6,25m<sup>2</sup> (2,5x2,5m). On the soils which are of very little holding capacity, each basis may be located between 0,5 and 1,0 m more wide. Generally, the soils are "excavated" on a depth of 3,5 m maximum.



**Figure N° 1. INTERCONNECTION - 110 KV- BURUNDI-RWANDA CLEARANCES**

## 2.5. PROVISIONS FOR THE RURAL ELECTRIFICATION

The techniques that give the possibility of connecting the villages located along HV transmission lines of interconnection have been studied and chosen during the pre-feasibility technical study. Thus, the transmission lines and the corresponding power stations were designed to provide a reliable source of electricity to the villages.

In Uganda distribution lines already exist and are foreseen within all the zones bordering the planned interconnection line. In facts, all the villages of that zone are or will soon be electrified. The construction of the substation of Mirama is included in the development of the rural electrification. Also the presence of the new line will enable to reinforce the programs of electrification of that region.

In Rwanda, the rural electrification is not really developed. Therefore the techniques enabling to connect the villages located along the High Voltage lines of interconnection have been studied. Thus, the substation's lines and the corresponding substations have been designed to provide a reliable supply of electricity in the villages.

It is therefore foreseen that the line will help to supply nine and six villages located along the line respectively in Uganda and Rwanda. To that end, as there already exist some lines of distribution within the region( Nyagatare) , it is proposed to prolong that connection towards the villages and to integrate it to the substation of Mirama because it is very long actually.

## 2.6. THE INTERCONNECTION UGANDA- RWANDA

### 2.6.1. LINE ROUTE

In conformity with the designs of NELSAP, the extremities of that interconnection are found at Mbarara in Uganda and at Birembo (Kigali) in Rwanda They will be connected on one side to the connection of the Uganda Electricity Transmission Company Limited (UETCL) in Uganda and to the connection of Electrogaz in Rwanda.

The interconnection transmission line of Uganda to Rwanda starts from the Northern substation of Mbarara towards the south in direction of the substation of Mirama and the Rwandan border. The line crosses the districts of Mbarara and Ntungamo in Uganda before arriving in Rwanda at the Kakitumba border then to be directed towards Nyagatare, Ngarama and Gikomero before reaching the northern suburb of Kigali at the substation of Birembo.

In Uganda, the line in general follows the one planned (drawn out) by the UETCL, only some minor modifications have been applied in order to avoid the residences and public buildings such as schools etc. In Rwanda, the western line route has been considered owing to the feasibility study which has taken into account technical, economic, environmental and social criteria.

### 2.6.2. LINE

The line has a length estimated to 177 km. With a determining span between pylons estimated of around 350 meters for the line 220 KV, the height of towers from the top of foundations until the lower crossing must be located between 14 and 28 meters,

Pylons foundations in gates or in concrete are already used on the existing lines. These two types of foundations are possible for the interconnection line.

**Tableau N° 1. LINE SPECIFICATIONS**

Specifications/Caractéristiques	Uganda Section Section Ugandaise	Rwanda Section Section Rwandaise
Lenght of the line (estimated) Longueur de ligne (estimée)	61 km	116 km
Level of tension Niveau de tension	220 kV exploité à 132 kV	220 kV exploité à 132 kV
Circuits	1	1
Number and type of phase conductor Nombre et type de conducteurs de phase	1 ACSR	1 ACSR
Number and type of groundwire Nombre et type de fils de garde	1 GSW + 1 OPGW	1 GSW + 1 OPGW
Average length of line span Longueur moyenne de portée	380 m	380 m
Number of pylons Nombre de pylônes	25	289

### 2.6.3. SUBSTATION

#### 2.6.3.1. NORTH MBARARA

There is a project which is under way at the substation to the north of Mbarara consisting in the fitting out of a second transformer 145 KV, extension of the Bus bars 145 KV , of a second transformer 132/33 KV, the protection's connection of transformer and the extension of the switchboard type 36 KV GIS with 4 incomings.

The works planned within the scope of NELSAP include:

- one 132 KV bay, simple bus bars
- extension of 132 KV bus bars

#### 2.6.3.2. MIRAMA

The works planned within the scope of NELSAP include:

- one 132 KV line bay,
- one Control protection and monitoring building with auxiliaries,
- Four 5 MVA capacitor banks with breaker.

#### 2.6.3.3. BIREMBO

The substation of Birembo is a new substation that will be constructed by Electrogaz at the outskirts of Kigali. In the final phase, it will be the main substation of the Electrogaz connection and the main supplying substation of the distribution network of Kigali.

The works planned within the scope of NELSAP include:

- 132KV:  
1 new 132KV line bay, with 1 autotransformer 132/110 KV which is necessary to connect the Uganda 132 KV Network with the 110 KV Electrogaz Network, it should be planned to modified this bay to 220 KV in the future
- 132KV:  
1 132 KV line bay from Mirama substation, with 1 autotransformer 132/110KV
- 1 autotransformer 132/110 kV, 50 MVA, YNynod11, with neutral solidly earthed;
- 1 inductance of 10 Mvar.

## 2.7. MAINTENANCE AND OPERATION ACTIVITIES

### 2.7.1. WAYLEAVE

A permanent area of land will be required to accommodate the transmission line, when completed. A parallel strip of land through those sections of the route which pass through vegetation shall be completely cleared. The width of the strip may vary according to the mean height of the vegetation and shall be determined by ensuring that any standing tree would not cause flashover from a conductor deflected up to 45° from the vertical. In determining the flashover clearance and in estimating the mean height of the vegetation due allowance shall be made for seasonal growth. In addition, any tree that may fall in the direction of the overhead line shall be cleared unless located more than 20 m plus the height of the tree clear of the route centre line.

Routine maintenance is carried out along the ROW to ensure the appropriate clearances between towers, conductors and vegetation and other objects are maintained according to the required safety/operation specifications listed above. A 5 m wide path along the line route could be required in the absence of a public road. Maintenance is normally carried out twice a year (dependent on site conditions and utilities planning).

### 2.7.2. SUBSTATIONS

An ongoing maintenance program will be required for the substations. This will involve periodic replacement of coolants/lubricants in the transformers. Both UETCL and Electrogaz have indicated that they will no longer use transformers containing PCBs (as commonly used in old equipment) which are toxic to the environment and humans.

## 2.8. AREA OF IMPACT

The area of immediate impact will be the line corridor right-of-way (ROW) which will be 30 m in width by 177 km in length (an area of 531 ha) from Mabara in Uganda to Birembo in Rwanda. A parallel strip of land (5 m width) through those sections of the route which pass through vegetation will also be completely cleared of all trees above a height of 4-5 m during the construction stage. Appropriate clearance between conductors and vegetation/structures along this corridor will be maintained throughout the life of the transmission line. Cropping and grazing beneath the conductors is normally permitted. Tower foundations will require a permanent area of approximately 2.5 m x 2.5 m (6.25 m<sup>2</sup>) based on a typical 220 kV line tower. The temporary area required during tower foundation construction will be 10 m x 10 m. Tower foundation materials and equipment will be stored in the area reserved for stringing along the line corridor.

## 2.9. PROJECT IMPLEMENTATION

In line with similar projects implemented in Uganda and Rwanda, construction is expected to start after contract signing following international competitive tendering. Pre-construction activities associated with design work include soil investigations and detailed survey of the transmission line route and substation location as well as the constitution of the Project Implementation Unit (PIU), negotiation of assets of the Project Affected Parties (PAPs) for compensation purposes. Actual mobilization for construction work will follow within nine months of contract agreement. The mobilization period includes activities for preparation of material storage areas, camps, water, power, communication and other site facilities.

Construction of the transmission line will then start by preparation of tower foundations, followed by tower erection and conductor stringing. Works will be required within the substations to connect the conductors to the electricity grids within Uganda and Rwanda.

The project is planned to be completed within 19 months from the date of signing of contracts (no date has been set).

## 2.10. PROJECT COSTS AND SCHEDULE

The total Project cost calculated on August 2007 value and allowing for 10% physical contingency and using an average inflation of 5% per year is estimated at 42 million USD. This value includes costs for both Uganda and Rwanda.

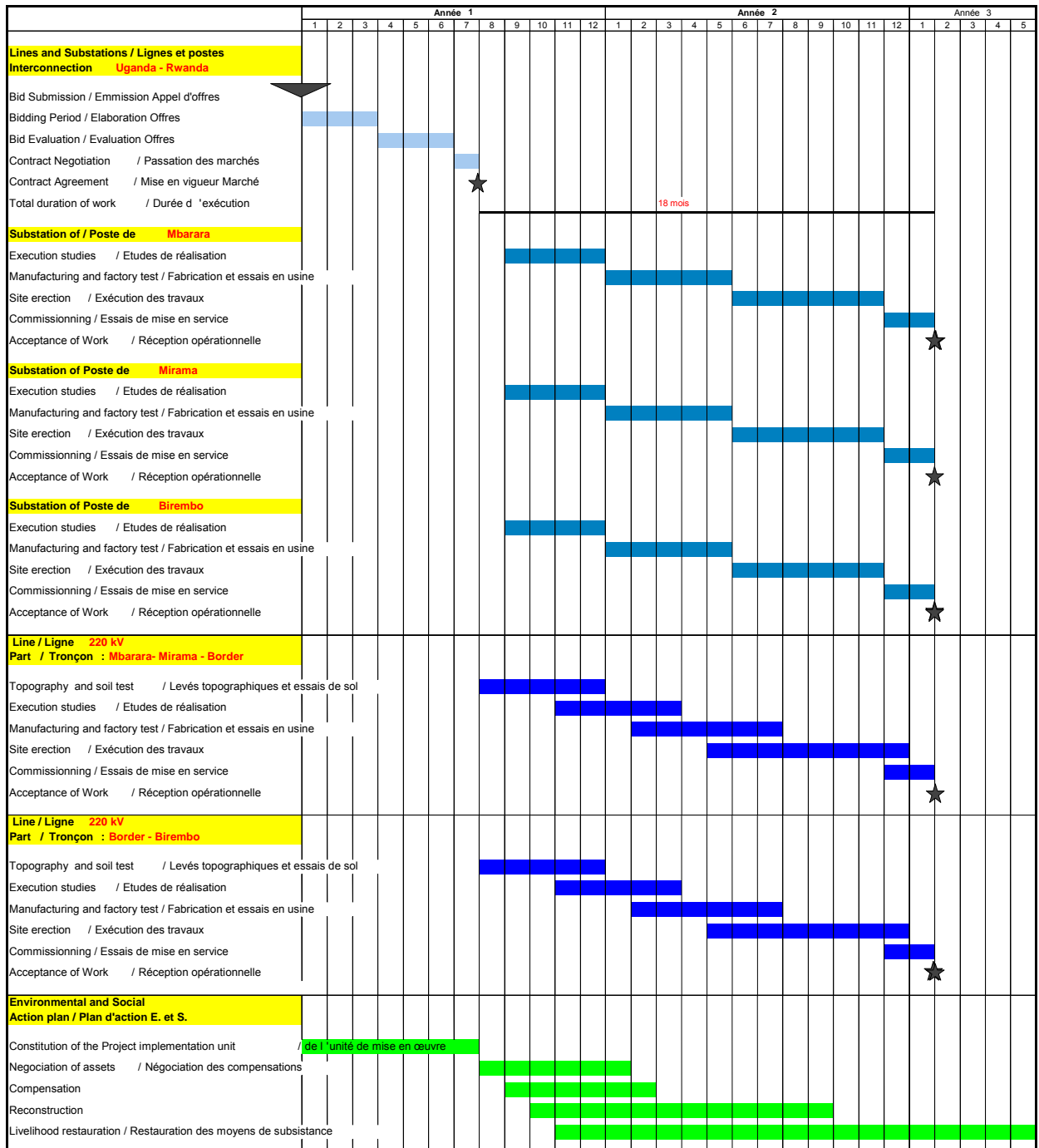
It also includes a cost of 5 048 670 USD for the mitigation program for environmental and socio-economic impacts of the Project, covering compensation for the loss of permanent and temporary assets (4 668 670 USD) and an environmental monitoring program (380 000 USD)

A detailed breakdown of costs associated with compensation for lost assets of project-affected people is given in the Resettlement Action Plan (Chapter 8). Environmental monitoring costs estimate is given in Section 7 of this Report.

The Project implementation schedule is presented on the next page.

**NILE BASIN INITIATIVE – NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAM**  
**STUDY OF THE INTERCONNECTION OF THE ELECTRICITY OF THE NILE EQUATORIAL LAKES COUNTRIES**  
**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT – VOLUME 3B**  
**UGANDA-RWANDA INTERCONNECTION**

**INTERCONNEXION: UGANDA - RWANDA**  
**Project Schedule / Programme Prévisionnel de Travaux**







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## 3.

### INSTITUTIONAL AND LEGAL FRAMEWORK

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#### 3.1. UGANDA

In Uganda, the concept of environment protection is very much linked to the need to eliminate or reduce the risk of jeopardizing people's wellbeing for the present and future generations. The country's diverse cultures, agricultural lands, wetlands, lakes and rivers, fish and wildlife, pasture, woods, soils and climate are vital to the livelihood of Ugandans.

Construction of the transmission line will require that the legal and institutional framework, in which this project shall be operated, be understood. This section therefore outlines the legal and institutional arrangement and responsibilities for environmental management relevant to the proposed project.

#### 3.1.1. LEGISLATIVE FRAMEWORK

##### 3.1.1.1. NATIONAL LEVEL

Environmental approvals for the construction and operation of the transmission line are primarily under the jurisdiction of the National Environment Management Authority (NEMA), although there are several other Ugandan statutes and regulations pertinent to the project.

This section summarises the Ugandan statutory and regulatory requirements pertinent to the interconnection project. As NELSAP is seeking financing assistance from international funding institutions for the interconnection project, this ESIA also complies with the environmental and social review requirements of the lenders. Consequently, this chapter section also discusses the applicable guidelines and policies of the African Development Bank and the World Bank Group.

In Uganda a number of sectors have put in place policies covering environmental and social sustainability issues among others.

##### 3.1.1.1.1. POLICIES

###### Policy Framework for Environment

The National Environment Management Policy (1995) provides for the overall framework for environmental management with the overall policy goal being: "Sustainable social and economic development which maintains or enhances environmental quality and resource productivity on a long term basis that meets the needs of the present generations without compromising the ability of future generations to meet their own needs".

The National Environment Management Policy also provides for the formulation of sectoral or lower levels of government policies concerning environment and natural resources management. In conformity with this, some policies have been formulated including: the Water Policy 1995, Fisheries Policy 2000, Forestry Policy 2001 and several District Environment Management Policies formulated after 2000.

###### Energy Policy for Uganda

The main policy goal in the energy sector in Uganda is to meet the energy needs of the Ugandan population for social and economic development in an environmentally sustainable

manner. The Energy Policy therefore covers a number of issues among them the environmental sustainability, dealt with under Objective 5. Here it is stated that the Government will ensure that environmental considerations are given priority by energy suppliers and users. It also prescribes a monitoring mechanism to evaluate compliance with established environmental protection guidelines.

#### Gender Policy, 1997

The overall goal of this policy is to mainstream gender concerns in the national development process in order to improve the social, legal conditions of the people in Uganda and in particular women. This policy has a bearing on the project in terms of the requirements to safeguard the interests of female headed households and other vulnerable groups.

#### Land Acquisition and compensation policies

Uganda has no specific resettlement and compensation policy but a study on resettlement and compensation was undertaken 1995. Many of the findings and recommendations of this study was incorporated in the Ugandan Constitution of 1995, the Local Government Act of 1997 and in the Land Act of 1998. These laws deal with issues of land tenure, resettlement and compensation, land acquisition and the role of local government in relation to these issues.

A new National Resettlement Policy, covering all sectors, is currently under development by the commissioner responsible for resettlement in the Prime Minister's Office.

### 3.1.1.1.2. LAWS AND REGULATIONS

#### The Uganda Constitution, 1995

The Uganda Constitution is the supreme law and it provides for environmental protection and conservation. In the National Objectives and Directive Principles of State Policy, the Constitution provides that the State shall promote sustainable development and public awareness of the need to manage land, air and water resources in a balanced and sustainable manner for the present and future generations. The State is required to take all possible measures to prevent or minimize damage and destruction to the resources due to pollution or other causes.

The Uganda Constitution of 1995 includes several articles concerning protection of natural resources such as Article XIII regarding: "the protection of important natural resources on behalf of the people of Uganda" and Article XXVII regarding: "the needs for sustainable management of land, air and water resources", etc.

Above all, Article 39 of the Constitution entitles every Ugandan to a clean and healthy environment. Therefore under Article 17(1) (j) it is the duty of every citizen of Uganda to create and protect a clean environment and healthy environment. An individual therefore can bring and action for breach of the right to a clean and healthy environment and failure to observe the corollary duty. This capacity is general notwithstanding that specific rights in person or property of the given individual have not been violated (Art. 50 (2)). The National Environment Act, Cap 153 expands this right to include non – Ugandans.

The State is required to create and develop parks, reserves and recreation areas to ensure conservation of natural resources and to promote the rational of natural resources (Art. 237). The management of environmentally fragile resources such as natural lakes, rivers, wetlands, national parks, game reserves and forest reserves is vested in the state in accordance with the principle under Article 237 (2) (b).

#### National Environment Act, Cap 153

The National Environment Act, Cap 153 is perhaps the most important piece of national environmental legislation and contains provisions for environmental management and protection including the need to carry out an Environmental Impact Assessment Studies for projects. ESIA studies to produce an "Environmental Impact Statement" are required when projects are likely to have a significant impact on the environment. Other principles of environmental management in this act include:

- To conserve and use the environment and natural resources of Uganda for the benefit of both present and future generations, taking into account the rate of population growth and the productivity of the available resources;
- Respect the principle of optimum sustainable yield in the use of natural resources;
- To reverse the degradation of natural resources and reclaim the lost ecosystems where possible;
- Establish adequate environmental protection standards and monitor changes in the quality of the environment;
- To publish relevant data on environmental quality and resource use;
- Ensure that polluter pays;
- Ensure that environmental awareness is treated as an integral part of education at all levels;
- Promote international co-operation between Uganda and other states in the field of environment.

#### Environmental Impact Assessment Regulations, 1998

NEMA has issued guidelines on Environmental Impact Assessment (EIA) (Environmental Impact Assessment Regulations, S.I. No. 13/1998)). These regulations are now part of the Environmental Legislation of Uganda. The actual implementation of the EIA process remains a function of the relevant line ministries and departments, the private sector, NGOs and the public. Part I-V of the EIA Regulations describes the process of environmental impact Statement. After an initial screening of potential impacts of the project the National Environment Management Authority (NEMA) decides if a full EIA is necessary.

#### Uganda Wildlife Act, Cap 200

The Uganda Wildlife Policy formed the basis for the enactment of the Uganda Wildlife Act, Cap 200 and the establishment of the Uganda Wildlife Authority (UWA). The purpose of this Act is to promote the conservation and sustainable utilisation of wildlife throughout Uganda so that the abundance and diversity of their species are maintained at optimum levels commensurate with other forms of land use.

The Act provides for preservation of community property rights and encourages public participation in wildlife management. Local communities and individuals that have property rights in land within the protected areas will be permitted to carry on activities compatible to conservation of wildlife resources.

The Act also requires an Environment Impact Assessment (EIA) for any project that may have a significant effect on any wildlife species or community. Uganda Wildlife Authority shall, in consultation with NEMA, carry out audits and monitoring of projects carried out in accordance with the EIA regulations, S.I. No. 13/1998.

#### The Local Government Act, 1995

This Act provides the legal foundation for the Government Policy on decentralization and devolution of functions, powers, and services to Local Governments. Under this Act, District and lower Local Councils are given the responsibility of managing their natural resources including environment at each local government level. Some of the areas for which District Councils are responsible include land administration, physical planning and conservation of forests and wetlands. Districts and lower levels of administration therefore play an important role in projects that impinges on these areas of administration. Thus, local governments will be especially involved in issues of land acquisition, compensation and resettlement.

#### Land Act, Cap 227

The Land Act provides for the tenure, ownership, and management of land and dispute resolution. Subject to Article 237 of the Constitution, all land in Uganda is vested in the citizens of Uganda and is owned in accordance with the customary, freehold, mailo and leasehold land

tenure systems. The land law provides security of tenure to customary and bonafide occupants which is likely to strengthen their interests in conserving the land as a resource. Section 30 defines lawful and bonafide occupancy and use of land which may be registered (freehold, mailo, lease or sub-lease).

Under the Land Act, all owners and occupiers of land are to manage it in accordance with National Forestry and Tree Planting Act Cap 8/2003, Mining Act Cap 9/2003, National Environment Act, the Water Act Cap 152, Uganda Wildlife Act Cap 200, the Town and Country Planning Act and any other relevant law.

This Act makes provision for the procedures and method of compulsory acquisition of land for public purposes whether for temporary or permanent use. The Government or developer is to compensate any person who suffers damage as a result of a project development.

Section 40 prescribes the written consent from the spouse(s) and children before the household head transfers, sells or enters into contract of land where the household derives its livelihood.

The Law creates a series of land administration institutions (Section 47-74) consisting of Uganda Land Commission (ULC), District Land Boards (DLB), Parish Land Committees (PLC) and Land Tribunals. Section 42 (7a-e) states the procedures for any compulsory acquisition of land by the Land Commission while Acquisition of land by Government or Local authority for public use is provided for under section 43.

The Act gives valuation principles for compensation under Section 60 (1) while Section 78 requires compensation rates to be yearly approved by DLBs. The Value for customary land is the open market value, the value for buildings on land taken shall be the replacement cost in rural areas whereas 30% and 15% (of total sum assessed) disturbance allowance is to be paid if less than six months or six months notice respectively is given for vacating the land.

Land dispute resolution is by land tribunals as stipulated under Section 77 (a-e) and 78 while resolution by traditional authorities is covered by Section 89. Section 90 (2) deals with the role and function of a mediator.

The Electricity Act, 1999

The 1999 Electricity Act also contains provisions for land acquisition. Part VIII Section 69 of the Act stipulates that land required by the developer /licensee may be acquired by agreement with the owner. However, if privately owned land cannot be acquired through agreement, the authorities can expropriate the land through the District Land Board and put it at the disposal of the developer.

### 3.1.1.2. INTERNATIONAL AGREEMENTS

Uganda is party to several international environmental conventions, as summarized in table 2. Only these with relevance to the interconnection project are listed.

**Tableau N° 2. INTERNATIONAL AGREEMENTS RATIFIED BY UGANDA**

International Convention Convention internationale	Year of ratification Année de ratification	Description of the Convention Description de la convention
1968 African Convention on the Conservation of Nature and Natural Resources	1977	To ensure conservation, utilization and development of soil, water, flora and fauna resources in accordance with scientific principles and with due regard to the best interests of the people.
Convention on Wetlands of International Importance especially as Waterfowl Habitat	1988	To stem the progressive encroachment on and loss of wetlands for today and in the future, recognizing the fundamental ecological functions of wetlands and their economic, cultural, scientific, and recreational value.
1985 Vienna Convention for the Protection of Ozone Layer	1988	This convention was the preliminary step to further agreements (such as the Montreal Protocol) to reduce the adverse affects of pollutants on the ozone layer.
1987 Montreal Protocol on Substances that Deplete the Ozone Layer	1988	An international agreement designed to protect the stratospheric ozone layer.
1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	1991	To ensure a control of the "overexploitation of certain endangered species by means of a system of import-export permits"
1977 Convention concerning the protection of workers against occupational hazards in the working environment due to air pollution, noise and vibration	1979	To ensure protection of workers against occupational hazards
1992 International Convention to Combat Desertification	1992	Took place during the Rio de Janeiro Earth Summit pertaining to land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climate variations and human activities.
1992 Convention on Biological Diversity	1993	This convention was an agreement on developing nation strategies for the conservation and sustainable use of biological diversity.
1992 Convention on Climatic Changes	1993	The United Nations Framework Convention on Climate Change has been the centrepiece of global efforts to combat global warming. It also has been one of the international community's essential tools in its efforts to promote sustainable development.
1994 Lusaka Agreement on Co- operative Enforcement Operations Directed at Illegal Trade in Wild Flora and Fauna	1994	Convention on International Trade in Endangered Species of Wild Fauna, where the main operations of this agreement are directed at Illegal Trade in Wild Fauna and Flora.
Intergovernmental Authority on Drought and Desertification	1996	It includes a plan of action and participation to aid the drought and adverse environmentally affected regions of the participating nations in the arid and semi-arid regions of Africa, especially in case of emergency situations.

### 3.1.2. INSTITUTIONAL FRAMEWORK

#### 3.1.2.1. INSTITUTIONAL ACTORS IN ENVIRONMENT

##### National Environmental Management Authority (NEMA)

At the national level, the NEMA was established in accordance with section 5 of the Environment Management Act Cap 153, with the following principal duties and responsibilities among others:

Advise Government on environmental matters and initiate the formulation and ensure enforcement of environmental policies and strategies;

Coordinate sectoral institutions on environmentally related issues and ensure that environmental concerns are integrated into all social and economic development plans;

Provide a link with macro-economic authorities in establishing resource accounts systems and operational ways of valuing natural resource depletion;

Build capacity and provide technical backstopping to local governments and councils, NGOs and the Private Sector on environmental management; collect, process and disseminate information;

Oversee compliance with laws, regulations, EIAs and standards;

Develop, promote and implement environment education and public awareness programs.

##### Lead agencies

The creation of NEMA did not release the lead agencies from their mandates to manage the various sub-sectors in the environment and natural resources sector. Various sectoral institutions therefore exist with whom NEMA is horizontally linked. These include:

- Uganda National Forest Authority (NFA);
- Uganda Wildlife Authority (UWA);
- Ministry of Water, Lands and Environment (where Forestry Inspection division, Wetlands Inspection Division, Directorate of Water Development exist);
- Ministry of Energy and Mineral Development (MEMD);
- Ministry of Agriculture, Animal Industry and Fisheries (MAAIF).

The Lead Agencies have the responsibility to develop internal capacity to contribute to sustainable environmental management, collect data and disseminate information, and promote environmental education and public awareness in their respective sectors. They also ensure enforcement, implementation, compliance, and monitoring of laws, policies and activities within their jurisdictions. The lead agencies are also expected to supervise within their legal and administrative setup the conduct of environmental assessments, set environmental standards and carry out inspections related to the environment.

##### Local Governments and Councils

The institutional arrangement, that should be established and/or strengthened at the district and lower levels, includes the District and Local Environment Committees, District Technical Committees and the Environment Officer. The committees have the responsibility of spearheading proper environmental management. They are also responsible in ensuring that environmental concerns are taken care of in district and lower level developmental plans. The specific roles of these institutions are described below.

##### District Environment Committee (DEC)

The District Environment Committees (DECs) should be established as created by the National Environment statute, 1995. The DEC is a subcommittee of the District Council. The DEC

consists of Councillors. However, officers drawn from relevant line departments (e.g., from Agriculture, Parks/Game, Forestry, Water and any other appropriate departments depending on district priorities), NGOs, and representatives of women groups and the private sector are ex-officio members of this committee. The key activities of DEC are:

- Provide guidance to the District Technical Planning Committee (DTPC) in the creation of District Development Plans that incorporate environmental concerns;
- Receive draft District Development Plans from the DTPC for discussion; develop in consultation with the DTPC, a District Environmental Action Plan;
- Based on potential environmental impact, endorse all development activities and environmental action plans sent for approval to the DC;
- Recommend, in consultation with the DTPC, district environmental policies and bye-laws to the Council.

#### Local Environment Committees (LEC)

The National Environment Act, Cap 153, in section 17, also provides for the establishment of the Local Environment Committees at the lower local government levels, i.e., municipal, sub-county, town council, parish and village levels. This is done with the advice of the District Environment Committee. The key activities of the LEC are:

- To identify environmental problems within the sub-county;
- To plan, monitor and evaluate local development activities to ensure they have minimum impact on the environment;
- To plan, implement, monitor and evaluate local environmental activities that lead to better economic and social development of the district;
- To monitor district policy impact on the environment and make recommendations for their improvement;
- Recommend environmental policies and bye-laws to the DEC;
- Collect environmental information according to guidelines provided by the DEO;
- Advise and consult DEC, DEO and DPTC on environmental issues; and mobilize members of the public to initiate and participate in environmental activities.

#### District Technical Planning Committee (DTPC)

The key environmental activities of the DTPC are to:

- Assist the DEC to plan and develop District Environmental Action Plans for approval by the DC;
- Develop and monitor general implementation of environmental plans/programmes;
- Advise and consult the DEC, line officers and, as requested, the DC on environmental issues;
- Mobilize members of the public to initiate and participate in environmental activities;
- Monitor national and district policy impact on the environment and make recommendations for their improvement.

#### District Environment Officers (DEO)

The responsibilities of DEO are to:

- Assist the district to incorporate environmental and land use concerns in overall development plans;
- Assist in the creation and operations of the Local Environment Committee;

- Increase the capabilities of lower LCs in dealing with environmental issues;
- Assist the DTPC to coordinate environmental activities of other sectors;
- Increase community participation in the design, implementation, monitoring and evaluation of environmental activities;
- Assist NEMA in gathering environmental information;
- Maintain good links and working relationships with NEMA and the district;
- Develop outreach/education programs for the districts.

### 3.1.2.2. INSTITUTIONAL ACTORS IN ELECTRICITY SECTOR

#### Electricity Regulatory Authority (ERA)

The Electricity Regulatory Authority (ERA) is an independent body set up by the Electricity Act, 1999. Under this act three separate companies have been created: the Uganda Electricity Generation Company Ltd; the Uganda Electricity Transmission Company Ltd and the Uganda Electricity Distribution Company Ltd. ERA regulates all utility companies in Uganda ERA and issues licences for generation, transmission and distribution of electricity as well as approving tariffs and terms and conditions of electricity services. ERA also prepares industry reports, provide procedures for investment programs, and approve standards and codes of conduct for companies in the electricity sector. The Authority also has an important monitoring role.

## 3.2. RWANDA

### 3.2.1. THE LEGAL FRAMEWORK

#### 3.2.1.1. THE NATIONAL MEASURES

##### The vision 2020

The document of the vision 2020 (MINECOFIN, 2020), fixes plans the orientation of the multisectoral development at long term. Among the main objectives (goals) to achieve up to 2020, we may mention:

- The reconstruction of the country and that of its social capital;
- The rational and durable management of the environment and natural resources particularly the land (soil), water, energy and biodiversity;
- The agriculture modernisation and his integration to other economic activities;
- The development of entrepreneurial spirit and that of a private sector focused on a strong class of businessmen and entrepreneurs. The contribution of the private sector within the total of investments must be increased and diversified sensibly in order to create jobs and revenues out of the agriculture and then reduce poverty in a perceptible way.

Among the measures linked to the energy sector, the vision 2020 plans the specific objective to achieve a rate of electrification of the population to 35% while it was at 6% IN 2000. The consumption of heating wood must move from 94%to 50% of the national consumption in energy in order to reduce the deforestation phenomenon. The inadequate and expensive energy procurement constitutes a limiting factor to the economic development.

Rwanda wishes thus to increase and augment its ways an her energy production and improve the distribution and accessibility to that energy. The government will therefore (favour) encourage the participation of the private sector within the energy sector while supporting



technically and financially the local institution and organisations in the management of renewable energies.

The pressure on the natural resources must be sensitively lightened and the process of degradation of environment, invented the increase of the Rwandan population. Finally, the management and protection of environment must be more rational and well regulated in order to preserve (conserve) and to devise on the basic inheritance to future generations.

The strategic plan of poverty reduction, 2000

The national strategic plan of poverty reduction is a policy undertaken at middle term of the vision2020. In the sector of electrification, the following action is judged (assessed) as of first priority:

- To propose the options for the rehabilitation, the extension of the connection and the construction of new hydroelectric plants;
- To implement a programme of rural electrification after having considered the best balance public private for the service supplying. The accent must be first focused on the availability of the electricity for the economic activities before the households consumption.
- To extend the connection in order to enable by first priority the connection of villages which in proximity of existing lines.

This strategic plan must be provide, besides the orientations within the domain (FIELD° OF ENVIRONMENT PROTECTION). It stresses that the environment is a transverse theme which must be considered within each sector of development.

The National Environmental policy in Rwanda, 2004

This policy rises out the greatest environmental preoccupations within several among which that of energy development. It defines as global objectives the one consisting of improving the human welfare, using strictly the natural resources and protecting and managing rationally the ecosystems for a sustainable and equal development (MINILAND, 2004). Among the principals on which this policy is focused, we find among others;

- The right for any person to live within a healthy and well balanced environment and his obligation to protection the environment's healthiness;
- The establishment of principles of prevention and the one of polluting agent-payer, in order to encourage the promotion of technologies which are less polluting of transport, storage and elimination (destruction) of products or industrial wastes;
- The necessity to analyse the environmental impacts for any project and programme of development;
- The increase of the energy provision while minimizing the negative impacts on environment and taking care of the respect of the environmental dimension (size) within the development of infrastructures;
- The diversification and the use of alternative sources of energy to biomass, in particular, the use of electricity;
- The respect of safety principles within the production, transport and distribution of energy.

The national gender policy, 2004

The national gender policy is incorporated within the context of the agenda of sustainable development adopted by the government an his articulated around tree following policies and strategies: the vision 2020, the national strategy of poverty's reduction and the policy of decentralization.

The main goal of the national gender policy consists of defining clearly the process of integration of issues linked to all the development sectors in order to (promote) make the promotion of equality and balance between sexes in Rwanda. A particular attention will be

focused on the gender inequalities within the rural zones. So, specific problems to which rural women are confronted will be taken into account in an effective manner (way).

The national gender policy targets different priority's fields among which the environment sector, within this field, the defined objective by the national gender policy consists of ensuring that the size (dimension) gender be systematically and affectively taken into account within policies, programmes activities of environment protection and the management of natural resources. The strategies for the protection of environment tend to:

- Undertake actions which intend to integrate the gender idea within the laws concerning the protection of environment and the management of natural resources.
- Undertake measures which intend to ensure the effective participation of women and to the protection of environment and to management of natural resource.

Within the context of the implantation of this policy, the role of each actor is defined in reference to the policy of decentralization where the execution role passes from the central administration to the local administration organs. The private sector will take care of the promotion of procedures of recruitment and (ensure) assure a work environment which takes into account the differences and inequalities of the gender. He will implement a policy which tends to develop the feminine entrepreneurship spirit.

The national policy of decentralization, 2000

The policy of decentralization has a global objective (goal) to assure the political, economic, social, administrative and technical habilitation of the local population, to combat (fight against) poverty in the planning and management of his development's process.

The district is a legal entity having power to judge and be judged in court and is then considered as a local government. The province, the area and the quarter are political administrative divisions having as task the effective execution of governmental activities, both at central and local levels, together with the local community's development and the services' provision.

The creation of provinces and districts must respect certain criteria among others; the population number, the economic viability, the accessibility to public services and the environmental conservation.

The national forests' policy, 2004

The national forests' policy is concerned with the problem, related to forests, but also the ecologic and economic safety consisting of planting trees, that of forestry research, and forestry in all its forms (aspects) and that of reinforcement of capacities. It enables to orient the forestry towards the rural development in establishing a relationship between the forestry and other actors in particular the beneficiaries. The objective of this policy consists of making the forestry as one of the key factors of the economy and the ecologic viability nationwide.

The vision of the forestry sector in Rwanda is that in 2020, the populations' requirements in wood and other forestry's resources be covered in terms of energy's production for domestic production. The sector will contribute effectively to generate the households' revenues, to the improvement of the human and cattle feeding, to the significant reduction of erosion of soils and to the improvement of fertility of agricultural lands. In order to materialize that vision, it is planned that the forestry coverage will reach at least 30% of the national territory and the agro forestry will be practiced on at least 85% of the family's agricultural exploitations.

The national energy's policy, 2004

The objective of this policy is to respond to the challenge and requirements in energy of the population of Rwanda for an economic and social development and this is done within the environmental context which is reliable and sustainable. More specifically, the energy's policy tends to:

- Make available a supplying in affordable and sufficient energy within all the country;

- Reform the market of energy services and establish an institutional appropriate institutional context, this one will facilitate the investments, the expansion of services, the effective price mechanisms and the inciting measures related to the financial aspect;
- Reinforce the development and use of energy's sources and technologies which are local and renewable;
- Take into account in an appropriate way the environment considerations within all the energy's activities;
- Increase the sectors (fields);
- Increase the education in the energy field and build a gender balance in the planning, the implementation and control of the energy sector.

### 3.2.2. THE LEGAL FRAMEWORK

There are many legislative and regulatory wording of law, which would guide one or several activities of the actual project, they mainly the following wording of law.

The constitution of the Republic of Rwanda

Adopted by the Rwandans during the Referendum of 26th March, 2003, it stipulates through different wordings of law the following message:

- Article 29. Each person has right to hold a private property, individual or collective. The private property, individual or collective is in violable. No one can make prejudice on it unless there is a necessity of public interest, in the context and ways established by the law and in exchange of an equal and previous compensation.
- Article 30. The private property of soil and other real rights putting a strain to the soil granted by the government (state). An Act determines the acquisition, transfer and exploitation means.
- Article 31. The state property consists of the public sector and the private sector of the government together with the public sector and private sector of decentralized public communities. The properties of the public sector are inalienable except in case of their previous disuse in favour of the private concession of the government.
- Article 32. Each person is submitted to respect the public properties.
- Article 49. Each citizen has the right to healthy and satisfying environment. Each person has the right to protect to conserve and promote the environment. The government will take care of the environment protection. An Act defines the procedures of protecting, conserving and promoting environment.
- Article 190. The treaties and international agreements regularly signed and approved have since their making public within the official magazine, an authority superior to that of the organic laws and those of ordinary laws, under reserve, for each agreement or treaty of its execution by the other part.

The organic law related to the Environment, N°04/2005 of 8/04/2005

Published in the official magazine of 1st May 2005 (MINILAND, 2005) it contains several articles which are pertinent for the implementation of this project in particular:

At the Article 7, paragraph 3, the organic law on payer. Thus, any physical or moral person whose the behaviours and activities damage or are able to damage the environment is submitted to a sanction or a tax (fine). He/she assumes, besides, all the measures of rehabilitation where possible.

At the chapter concerned with human environment, the article 29 stipulates that the competent authority, in reference to the existing laws can not grant the construction permit in case the buildings tend to bring a prejudice to environment.

At the Article 37, it is mentioned that the competent authority may take all the appropriate measures to let stop any kind of sound production able to cause nuisance to the health of human being, to constitute an excessive and unbearable discomfort to the neighbour hood or damage the properties.

At the level of the government's obligations, the local communities and the population, the Article 40 reminds that the public authorities, the private enterprises, the international institutions, the associations and the particulars must protect the environment at all the possible levels.

Concerning specifically the studies of impact on environment, the Article 67, stipulates that any project must include a study of previous environmental impact on the granting of each authorization of implementation. It is the same with programmes, plans and policies able to affect the environment.

Finally, the Article 80 related to the preventive measures stipulates that the building and agricultural, industrial, commercial or artisanal establishments or other furniture's, exploited or held by any physical or moral person either private or public should be constructed, exploited or used in the way to respond to technical principals into practice.

The law project related to the Housing

At the Article 34, it stipulates that the achievement of operation of housing development must the start after the compensation of proprietors (owners) or holders or after proving to the competent authority the amount of compensation done in conformity with the legislation which is current concerning the expropriation.

The organic law related to the Land policy in Rwanda N°08/2005 of 14/07/2005

It determines the terms of use and management of land in Rwanda. It also fixes the principles to be applicated to the recognized rights on the whole lands located along the national territory together with any thing connected to it and which is incorporated to it, eather naturally or artificially.

The Article 3, precise that the land is involved (included) within the common inheritance of all the Rwandan people; the ancestors, the presents and future generations. Not with standing the rights recognized to people, only the government (state) holds the distinguished related to the land's management along the national territory that it uses in the general interest of all in order to assure the rational economic and social development in a way defined by the law.

Related to this issue, only the government has power to grant the rights of occupation and use of the land, it also has the right to order the expropriation due to a public cause of public necessity, housing conditions, development (fixing up) of the national territory in the way defined by law against a fair and previous compensation.

The Article 4, mentions that any kind of discrimination, in particular the one focused on gender and to the use of land's rights is prohibited. The man and woman have the some rights related to the land's property.

Law's project on Electricity, 2007

This law's project is presently near being adopted and (published).

The Article 2, precise the extent of this law's project which will be referred to as « The Rwanda Law related to the Electricity ».It will enable the development and the improvement of the demand and connection of electricity in Rwanda and this one going invithin obligations and that of the promotion of the health, safety and welfare.

The Article 3, defines the objective which consists of establishing a legal context (framework) and provide a regulation of the electricity sector in Rwanda and this one going within the goal of

providing the Rwanda citizens with a service of high quality and at a reasonable (affordable) price. This law project will be applied to all the activities of the electricity sector involving the production, the transmission, the distribution, the procurement (supplying), the operating policy, the international trade of electricity, the authorizations of construction and maintenance of systems and equipments, the electricity consumption and the access to the demand of electricity.

The Act n°18/2007 dated 19/04/2007 related to expropriation due to a cause of public necessity

The quite new Act takes into account:

- The constitution funds related to the request of expropriation (set price);
- The funds of assessment of expropriation's compensation;
- The funds of payment of a fair compensation.

The competent authority together with the decision of expropriation due to a cause of public necessity are reserved to the Ministry in charge of land within its responsibilities (Ministry of Land, Environment Forests, Water and Mining) because the expropriation is to be dealt with in over one district (article 3, 4 and 5).

The examination are undertaken to fulfill (complete) the act referring to the demand's tariff which will be published by ministerial decree and which will be revised periodically. Meanwhile, a letter dated 27 October 2005 N° 2494/16.03/01.03 addressed to districts, towns and the city of Kigali proposes the alternative to proceed to the agreement between the expropriated and the expropriators according to the actual market (contract's) prices.

The article 16, precise that after the publishing of the last decision related to the expropriation due to a cause of public necessity, the competent land commission elaborates (draws up) an exhaustive list of owners and the persons holding right to land and to the achieved work on the funds. That list is displayed within a place which is to be reached by the public at the Office of the District, area and Quarter concerning the ground's location so that the concerned persons may become a ware.

The expropriation process can not extend a period of four (4) months stating from the date of decision – making related to the expropriation by the targeted organs at the article 10 of the present act.

The article 17 stipulates that the works of measuring and calculation of expropriation compensation are carried on in presence of proprietors (owners) or persons holding right or their representatives and the representatives of the local authorities.

The article 24 mentions that the fair compensation determined by the land's commission is deposited within a due time which does not exceed one hundred and twenty days (120) starting from the day of its determination, otherwise the expropriation is annulated and becomes without any effect.

The act n°47/1988 dated 5 December 1988 regulating the forest's organization policy.

It is applied to the whole Rwanda Republic. Its MAIN goal is the maintenance and development of planted with tree surfaces and the institutionalization of the nation land service. It distinguishes the national community and private forests it establishes the terms of their management and is actually near being adopted.

The article 64 precise that except for family consumption requirements any physic or moral person wishing to proceed to a partial or total cutting of trees or line's vegetation with the state's forestry concession, national or private, superior to 2 ha, must be holding a permit of cutting trees provided by the Minister having authority on the forests or his representative.

The article 70 launches a tax of 1% on the product derived from that cutting which was operated within the forestry exploitations which are both national and private of over 2 ha called "Tax for National Forestry Funds for the benefit of the funds. This tax is not applied to the products oriented to the family national consumption or to philanthropic actions.

The other relevant articles to that study of electric interconnection are particularly:

- The article 71: The request for the obtaining of the cutting of the tree permit is addressed to the competent authorities under care of, if the case arises, the owner of the forestry property.
- The article 73: The cutting of tree permit must be kept during the operations of tree cutting and presented to any requisition of the competent authorities.
- The article 75: Any clearance of a forest or a land of grounded forestry is submitted to a permit of clearance. The application for the obtaining of a clearance permit is addressed to the Minister having the forests within his responsibilities or his representative

### 3.2.2.1. THE INTERNATIONAL AGREEMENTS AND TREATIES

Rwanda has signatory of international treaties and agreements of which the most important at the environment level are the following:

**Tableau N° 3. INTERNATIONAL AGREEMENTS RATIFIED BY RWANDA**

Agreement/Conventions	Date of signature Date de signature	Date of ratification Date de ratification
Agreement on the biological diversity	10/06/1992	18/03/1995
Agreement - Context of the United NATIONS on the climate changes	10/06/1992	18/08/1998
Agreement related to the fight against desertification	10/06/1992	22/10/1998
The agreement Vienna on the protection of the ozone layer		6/12/2002
Agreement of Ramsar related to humid zones of international importance particularly the wild housing	1971	6/6/2003
International Agreement for the trade of the species in the process of disappearance (IATSPD)	20/10/1980	18/01/1981
Conservation Agreement of the animals of the migrating wild species (CMS)	23/06/1979	06/06/2003
African Agreement on the nature conservation and natural resources	15/09/1968	20/05/1975

These treaties and international agreements are relevant for the protection and the conservation of the environment and in particular the biodiversity in Rwanda together with the mobilization of funds as well at the bilateral and multilateral level.

### 3.2.3. THE INSTITUTIONAL FRAMEWORK

#### 3.2.3.1. INSTITUTIONAL ENVIRONMENT'S ACTORS

The Ministry of land, the Environment, the Forests, Water and Mines (MINITERE) is in charge of the legal policies and contexts within these fields. It must ensure the perfect of electric interconnection with the legal policies and contexts undertaken with the fields of its intervention.

The Rwandan Office for the Environment Management (ORGE) is the main organ of control, follow-up and evaluation of the integration of the environmental aspects in all the programs of development. It inspects and approves the studies reports of impact of environment on all the socio-economic activities fields submitted by any entity.

Moreover, he ensures the follow-up and the assessment of the development programs in order to control the respect of the environmental standards in the planning and the execution of all the projects of development, including those which are already undertaken and those that are able to have significant impact on the environment.

For this project, he will contribute to the acquisition of a compliance certificate to the organic Law related to the environment. The obtaining of this certificate requires a study of the environmental impact approved by the office.

The Ministry of Agriculture and Farming (MINAGRI) has the task of ensuring the agricultural and farming development's promotion at the national level. Within this project, he will accompany the programmes of relocation of households affected by the electric line's opening up. In reference to his intervention's fields of activities.

The Rwandan Office of Tourism and National Park is in charge of promoting the tourism industry in Rwanda and conserving the fauna and flora savages. Its tasks are related to:

- To ensure the tourism promotion;
- To preserve and protect the environment in the tourism's areas;
- To advise the government in the tourism's field and the protection of the tourism's areas;
- To determine the tourism sites and to propose the classifying of buildings which are of historical interest, intellectual, archaeological, cultural or tourist.

Within the framework of this project, he will intervene in the conservation of fauna and the flora savages (particularly those from humid zones) and the sites of tourist interest.

The Ministry of Gender and Family Promotion (MIGEPROF) plays a key role in the promotion of the equality and equity between sexes within the process of Rwanda's development and the reinforcing of the women's empowerment with all the field of activities. Its intervention with this project will be focused on the integration of the gender aspects within the programmes of the project in conformity with the political and legal context undertaken.

The Ministry of the Local Administration and social Affairs (MILASA) plays a role of first importance within the policies and the legal programmes of decentralisation and community's development. It plays a great role in the facilitation between local administrative entities with the structures of elaboration of programme of this project together with the integration of the project's components within the community's development within the zones served by the project. This concerns more particularly the programmes of sensitization of the population the relocation of residences to be expropriated and the rural electrification.

The Local Administrative Authorities (the city of Kigali, Districts and Areas) have a role of intervention is multidisciplinary at the local scale. They play an important role within the sensitization and relocation of residences which are found within the ascending of the electricity line together which the programmes of rural electrification.

The Non governmental Organizations work together with the communities, either in the national or international context. They play an important role in the sensitization of the communities affected, within the relocation programmes of the population and the programmes of rural electrification. During the consultations with the local and public authorities in general, two groups of national (local) NGOS have proved a representation at national level and within several fields of activities of the community's development. We refer to the Board of Meeting of the Organizations Supporting the Basics Initiatives (BMOSBI) and the group of Rwandan Organizations for the Promotion of Woman, peace and Development (Pro woman - Twese Hamwe).

### 3.2.3.2. THE INSTITUTIONAL ACTORS OF THE ELECTRICITY SECTOR

The Ministry of Infrastructures (MININFRA) is in charge of the policies and legal contexts within the field of development of infrastructure nation wide .It Intervenes within the development of electric interconnection lines also within the programmes of rural electrification. It takes care of ensuring the orientation and the conformity with the activities of the projects in relation with the legal policies and the context within the energy's sector.

Electrogaz is the national company which is in charge of the production, transmission, and distribution of the electricity and water. It plays a role of first importance in the implementation and management of the interconnection infrastructures of the electric lines of high voltage and within the programmes of rural electrification. It intervenes within the sectors of distribution, tariffication and maintenance of the equipments.

## 3.3. INTERNATIONAL FUNDERS POLICIES, PROCEDURES AND GUIDELINES

### 3.3.1. AFRICAN DEVELOPMENT BANK

The environmental and social policies of the African Development Bank were developed over the years and evolved to support the main objective of the AfDB to provide assistance to African Regional Member Countries in their economic and social development. To reach this objective, the AfDB will ensure that environment and gender issues are mainstreamed in each broad sectoral area and in a fully participatory manner.

Policy on the environment, 2004

The environment policy framework has been anchored in the concept of sustainable development and recognizes that economic growth will be the main engine of growth in Africa, and will aim to ensure its sustainability by preserving and enhancing the ecological capital that nurtures such growth.

The policy sets out the broad strategic and policy framework under which all AfDB operations will henceforth be made. The traditional sector-by-sector approach in the management of natural resources has been replaced by cross-sectoral environmental policy actions based on an integrated approach where the participation of a wide spectrum of stakeholders in protecting and managing the environment is essential. In addition, the policy has the goal to strengthen existing environmental assessment procedures and develop new environmental management tools.

Involuntary resettlement policy, 2003

African Development Bank has put involuntary resettlement policy in place and this covers involuntary displacement and resettlement of people caused by an AfDB financed project. This policy applies when a project results in relocation or loss of shelter by the persons residing in the project area, assets being lost or livelihoods being affected.

The primary goal of the involuntary resettlement policy is to ensure that when people must be displaced they are treated equitably, and that they share in the benefits of the project that involves their resettlement. The objectives of the policy are to ensure that the disruption of the livelihood of people in the project's area is minimized, ensure that the displaced persons receive resettlement assistance so as to improve their living standards, provide explicit guidance to AfDB staff and to borrowers, and set up a mechanism for monitoring the performance of the resettlement programs. Most importantly, the resettlement plan (RP) should be prepared and based on a development approach that addresses issues of the livelihood and living standards of the displaced person as well as compensation for loss of assets, using a participatory approach at all stages of project design and implementation.



Compensation at the full replacement cost for loss of lands and other assets should be made before projects implementation. The improvement of these living standards should also apply to host communities. In addition, the needs of disadvantaged groups (landless, female headed households, children, elderly, minority ethnic, religious and linguistic groups, etc.) must be at the centre of the development approach.

Economic benefits and costs should be applied to determine project feasibility with regard to resettlement. The full costs of resettlement activities necessary to achieve the objectives of the project should be included in the total costs of the project. The costs of resettlement like the costs of other project activities are treated as a charge against the economic benefits; and any net benefits to resettlers (as compared to the “without-project” circumstances) should be added to the benefits stream of the project.

Economic and social considerations should be taken into account in determining the requirements for compensation. Under the present policy, only displaced population having formal legal rights to land or assets and those who can prove entitlement under the country’s customary laws are considered and will be fully compensated for loss of land or other assets. However, a third category of displaced persons who have no recognizable legal right or claim to the land they are occupying in the project area will be entitled to resettlement assistance in lieu of compensation for land. Land, housing, and infrastructure will be provided to the adversely affected population, including indigenous groups, ethnic, religious and linguistic minorities, and pastoralists who may have usufruct rights to the land or other resources taken for the project.

The developer will be required to prepare a full resettlement plan (FRP) for any project that involve a significant number of people (200 or more persons) who would need to be displaced with a loss of assets, or access to assets or reduction in their livelihood. For any project involving the resettlement of less than 200 persons, an abbreviated resettlement plan will be produced.

Gender policy, 2001

The goal of the policy is to promote gender equality and economic and social development in Africa. Gender is singled out as a priority cross-cutting issue which must permeate all AfDB operations and the AfDB has to work closely with Regional Member Countries to mainstream gender and promote measures that will lead to the empowerment of women. The focus of the policy is on gender equality as a development goal rather than on women as a target group.

Integrated environmental and social impact assessment guidelines, 2003

The major objective of these guidelines is to provide reference material to the staff of the AfDB and Regional Member Countries on how to adequately consider crosscutting themes while assessing the environmental and social impacts of a project. Moreover, the guidelines can greatly assist in the project design, as many potential adverse impacts can be avoided or mitigated by modifying or adding certain project components to the initial design. As well, improvements in the project design can enhance several beneficial impacts at a minimal cost.

Appendix 8 of the guidelines is related to the specific sector of hydropower production, transportation and distribution and includes the typical environmental and social issues to consider in the description of the project environment, and the most frequent potential impacts and enhancement/mitigation measures that should be integrated as early as possible, preferably in the project design.

### 3.3.2. WORLD BANK SAFEGUARD POLICIES

The World Bank Resettlement Policy Framework (OP 4.12 and BP 4.12) is usually applied for projects that require international financing. The World Bank OP 4.12, Annex A (Paragraphs 17-31), describe the scope (level of detail) and the elements that a resettlement plan should include. These include objectives, potential impacts, socio economic studies, legal and institutional framework, eligibility, valuation and compensation of losses, resettlement measures, relocation planning, community participation, grievance redress procedures,

implementation schedule, costs and budgets, and monitoring and evaluation. This report conforms to the WB policy requirement on contents and structure. In the following the most relevant paragraphs from the policy is listed.

WB OP 4.12.(6a) demands that the resettlement plan includes measures to ensure that displaced persons are (i) informed about their options and rights, (ii) consulted on, offered choices among and provided with technically and economically feasible resettlement alternatives, and (iii) provided prompt and effective compensation at full replacement costs

WB OP 4.12 (8) requires that particular attention should be paid to the needs of vulnerable groups among those displaced such as those below the poverty line, landless, elderly; women and children and indigenous peoples and ethnic minorities.

WB.OP 4.12 (13 a) stipulates that any displaced persons and their communities and any host communities receiving them should be provided with timely and relevant information, consulted on resettlement options and offered opportunities to participate in planning, implementing and monitoring resettlement.

WB OP4.12 (12a) states that payment of cash compensation for lost assets may be appropriate where livelihoods are land-based but the land taken for the project is a small fraction (less than 20%) of the affected asset and the residual is economically viable.

WB OP4.12 Para (6 b & c) state that in case of physical relocation, displaced persons should be (i) provided assistance (such as moving allowances) during relocation; and (ii) provided with residential housing, or housing sites, or, as required, agricultural sites for which a combination of productive potential, locational advantages, and other factors is at least equivalent to the advantages of the old site.

In addition displaced persons should be offered support after displacement, for a transition period, based on a reasonable estimate of the time likely to be needed to restore their livelihood and standards of living; and provided with development assistance in addition to compensation measures such as land preparation, credit facilities, training, or job opportunities.

WB OP4.12 Para 13 (a) requires that appropriate and accessible grievance mechanisms are established to sort out any issues arising.

The World Bank's Operational Policy on Environmental Assessment (WB. OP 4.01 - point 14a and b) prescribes that public consultation is carried out at least 2 times, after environmental screening or during the process, and after submission of the EIA.

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## 4.

### THE MEASURES OF CONSULTATION OPERATED

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#### 4.1. THE COMMUNITY'S CONSULTATIONS

Within the context of project of interconnection a socio – economic survey has been initiated among the communities affected by the project .This study aimed to enable the quantification of the socio- economic conditions of the communities within the zones of the project. A questionnaire has then been carried out in order to collect the data and the public consultations have been done among the concerned communities. The socio-economic questionnaire and the communities wish is presented in enclosure N°1. The reports of consultancies achieved by the consultants in Uganda and Rwanda are respectively found in enclosures 2 and 3.

The goals of the public consultancies were those of several aspects among others:

- To inform the public on the project and particularly the persons who would be potentially affected by the project;
- To collect the requirements, priorities of the populations bordering an implantation site of the project and their reactions on the project;
- To identify the preoccupations of the population and the acceptance of the project.
- Promote the public cooperation and that of the bordering communities to different phases of the project's achievement.

After the presentation of the project, the population was invited to express its different questions and/ or its preoccupations on the project.

#### Uganda

The stakeholder consultations for the feasibility study on interconnection of the electricity networks of the Nile Equatorial Lakes Countries were carried out at two different levels; namely district level (see section 4.2) and community level.

A cross section of community members together with the village leadership were met in planned community meetings at major trading centers. The general approach in invitation was placed on village residents who are likely to be affected by the proposed line in whatever way. Details of meeting schedules and participants are shown in appendix 4.

Consultation meetings were held in Mbarara and Ntungamo districts. Villages and trading centers where community consultative meetings took place in the two districts are as shown in the table 4. Most meetings were attended by members from more than one village.

**Tableau N° 4. LIST OF VILLAGES CONSULTED IN UGANDA**

District	Villages/communities Villages/communautés
Mbarara	Ishanyu, Stock farm, Nyakakoni, Katojo, Nyakayojo-Nyamiyaga, Kagaga, Nyamatojo, Ibare, Kashekure, Rukandagye, Bugamba, Ekikoona-Kanyangogi, Nyabibale
Ntungamo	Nyakigufu, Rwoho, Rukoni, Kitwe, Kafunjo, Kicheche

**Rwanda**

The consultations with the communities have been made through different public assemblies (gathering) with the population within their villages « imidugudu ». Most of the meetings have been done within the shopping centers or within the primary schools according to the recommendations of the chief of the village.

In total, an audience of 371 persons has responded to the consultancy of communities among them 25,5 % are women. The importance of the audience per district relied on the number of villages crossed by the ascending of the electric line within each district. The majority of the audience was composed of farmers and breeders. The other professions were also represented: bricklayers, carpenters, teachers etc. The details related to the audience per district are found within the following table. The list of persons who were (consulted) contacted was found in annex 5.

**Tableau N° 5. DISTRIBUTION OF PEOPLE CONSULTED IN RWANDA**

Province	District	Villages "Imidugudu"	Nb of people presented Nb personnes présentes	Women Femmes %
Ville de Kigali	Gasabo	Nyakabingo, Gisagara, Gasharu, Nkona, Mirambo, Nyamigina, Kaduha	74	33,8
Nord	Gicumbi	Rurama, Gasharu, Miyange, Baliza, Gatare, Gasharu, Musenyi, Rugerero, Kirwa, Rugarama, Gasharara, Rusumo, Kabuga, Nyarurama, Karengo, Mwanza, Gatare	87	17,2
Est	Gatsibo	Rweza, Rwagakara, Ruziranyenzi, Kamuri, Rugarama, Kinyinya, Kanyinya, Munanira	52	28,8
Est	Nyagatare	Mirama, Ikorosi, Rurimbi, Kiboga, Gakirage, Isangano, Bihinga, Cyonyo, Kajevuba, Burumba, Akamonyi, Kibuye, Ryinkuyu	158	22,2
Total			371	25,5

## 4.2. CONSULTATION OF LOCAL LEADERS

### Uganda

At the district level, both the civic and political leaders were met and these included the Chief Administrative Officer, the District Environment Officer, District Planner, Head of Community Based Services and the District Production Officer. Districts met included Mbarara and Ntungamo districts. The sub county leadership both political and civic was also consulted.

Details of officials consulted are in appendix 6.

At the districts, one-on-one meetings were held and in other cases group discussions with Councillors were held.

### Rwanda

Previously referring to consultation among the communities, the consultations have been carried on at two levels in Rwanda:

- At central level is among the resource persons having on skill (a valuation) in are of the other field concerned by the study (land policy, the forestry, environmental, energy's field of activity etc.
- At the level of decentralized structures: the local administrative authorities have been consulted from the level of the province, district until the areas particularly within the zones which will be affected by the ascending of the electric line.

The consultations have taken the form of conversations or that of focus group conducted within all the provinces, the districts and the areas.

The authorities and experts consulted hold various services particularly: the Mayors (districts), the Executives secretaries (provinces, districts, areas), planning , social affairs, agriculture and farming, infrastructure development, conservation of land titles, the good governance, the energy, human resources, economic affairs and development. The details related to the consultations of community leaders are found at the annexe 7.

## 4.3. HOUSEHOLDS SURVEY

A socio-economic survey has also been initiated among the households living or having (holding) properties (infrastructures) within the zones of the project. The data collected must help to identify the impacts and to propose alleviation measures including a programme of relocating and compensation of the persons affected. The socio-economic questionnaire has the with of households and is presented at the enclosure 8.

The data collected were related to the administrative, spatial identification and the members of each household. Additional data collected were related to the living condition, the incomes and the types of production, the use and the electric line on the living condition. The methodologies used within each country are explained in more detail within the section 5.5.1.

The total of households within the ascending and the households sampled for the Ugandan and Rwandan parts are represented within the following table.

**Tableau N° 6. NUMBER OF HOUSEHOLDS IN THE WAYLEAVE**

Districts	Estimated total number of households within wayleave
Uganda	
Mbarara	250
Ntungamo	269
Total Uganda	519
Rwanda	
Gasabo	63
Gicumbi	69
Gatsibo	84
Nyagatare	87
Total Rwanda	303

#### 4.4. CONCERNS AND ISSUES RAISED

The consultation carried out at the level of local authorities and among the communities have proved (shown) similarities. The preoccupations identified during the consultations are described in details within the following table.

**Tableau N° 7. CONCERNS AND ISSUES RAISED FROM CONSULTATIONS  
 ACTIVITIES IN UGANDA AND RWANDA**

Component	Issues and concerns
Compensation measures for loss of land, properties, income, etc.	<p style="text-align: center;">Uganda</p> <p>Officials requested that their people's property be valued fairly, compensation to be given promptly and be given time to resettle before they destroy their houses if necessary.</p> <p>There were concerns in communities about compensation for people who don't have land titles. Some people wanted to know how much money would be given, whether there was a flat rate to be given to everyone affected and how much it would be. There were fears that properties may be undervalued and that people would have nowhere to run to complain to since this is a regional project.</p> <p>People were also worried that even if they are given money to establish other gardens, certain crops like bananas and coffee take long to mature, if most of their plot is taken by the way leaves their families may starve before they can harvest from these new gardens.</p> <p>Some people were worried that if land without any activity would be taken free of charge.</p> <p>In a particular village called Nyakakoni, it came out that land taken by the power transmission way leaves should go on a leasehold basis where by ownership is renewed after a specified period of time. People felt that giving up their land is such a big sacrifice especially since they are not going to benefit directly from the power.</p> <p>People were also interested in knowing what the procedure of compensation would be, where, when and by whom.</p>
	<p style="text-align: center;">Rwanda</p> <p>A preoccupation of legal reference has been expressed by the authorities of the Ministry having the land in its responsibilities, the authorities of the provinces and districts. The recent legal document is dated 1996. It consists of a ministerial decree n° 1808/1185 of 22/4/1996</p>

Component	Issues and concerns
	<p>wich fixed the tariff of the compensation rate to the expropriation due to a cause of public necessity. It was planned that this decree should be applied within all the 18 months and during the consultation it was without any use.</p> <p>As an alternative, we refer to that decree in applying the double of the tariff for the leasing (renting) and 10 times for the sale. Besides, specifically for the rural area (the new act of expropriation was either not yet promulgated), a letter dated 27 October 2005 n°2494/16, 3/01, 03 addressed to district, the city of Kigali proposes to proceed to an understanding between the expropriated and the expropriator according to the actual market price. Most of the authorities consulted are not yet aware of that letter.</p> <p>Concerning the authorities of the Eastern province especially the Mayor of the District of Gatsibo, the question of compensation and expropriation are of great importance. There must be included previously the authorities to propose the population to the expropriation. There are bad souvenirs for the population where for similar electrification projects, the compensation of expropriation have not been paid to the population. This is the case of the line Kayonza-Nyagatare where certain person has not yet received their compensations and it is already over 5 years. The delays in compensation lead to the population's unhappiness.</p> <p>The communities have many preoccupations on this question. They have said that the lands are small, rare and expensive. They ask if where they will find the land any more. They have expressed the wish to be compensated the earliest possible and at satisfying rate in order to enable them to buy (purchase) lands and reconstruct. In case the compensations will take a long period of time, their properties, will be recounted because the value of lands and properties (assets) vary each year. The population is also wondering if the banana trees and trees cut will be compensated by the land surveyor's during the line indication. Very often, problems arise at the stage of compensations' payment; the population has wished that the compensations should be paid to the straight holding rights.</p>
Displacement and resettlement of people	<p style="text-align: center;">Uganda</p> <p>Community members were anxious to know the exact line route alignment and the extent on ground of the way leaves; for purposes of estimating effect to their property/assets, and facilitation of preparations for resettlement. They requested to be given ample time to look for other places to resettle in since it is not very easy to find good plots.</p> <p>In Ntungamo district the Councillors at district level indicated that there is a high population between Rwoho and Rukoni and the same area has many bare hills while the Kitwe-Mirama area has a very low population. They advised that issues of population distribution and soil fertility along the corridor be put into consideration during line route alignment to minimize displacement of settlements.</p> <p style="text-align: center;">Rwanda</p> <p>The local authorities and leaders of communities have said that the policy of the government is the promotion of the gathered housing called « Umudugudu ». The authorities should be implicated in order to find a place of relocation of the affected population. In collaboration with that population, it should be preferable to pay them the balance of the compensations related to expropriation after having constructed houses or find for them new plots.</p>
	<p>The main preoccupations of communities related to the relocation are in particular:</p> <p>Be transferred towards another location to which they are not familiar, probably (undergoing) running the risks of being settled within the zones which is inoculated against malaria or near swamps or flooded zones.</p> <p>The lands are not yet fertile and should regularly during the manure. In case of resettlement for from their lands ,it will be difficult to put the manure on their remaining lands and there is the risk of theft within their fields</p> <p>They are tired to reconstruct particularly the former refugees newly resettled. They need more explanations and facilitations.</p> <p>Certain persons have said that they will not support the physical destruction of their houses if the case arrives.</p> <p>In case they are provided with houses constructed for them, it should be better to construct them nor for from the road and from the new electric line so that they can benefit from the development arriving in their region.</p> <p>Other persons say that the electric cables are aerial and wonder why these cables will be</p>

Component	Issues and concerns
	exploited while the people will be relocated (transferred) to another place.
Government Land/ Stock Farm	Uganda <p>It was established that the National Agricultural Research Organization (NARO)/Government of Uganda and Uganda Land Commission has overall authority over the land. It was pointed out that being a research institution, the project will definitely disrupt their experiments and other activities. They recommended that if possible, the project could use the boundaries and not the center of the farm.</p>
Rural electrification	Uganda <p>In Mbarara, Councillors wondered whether this project will result in the reduction or even complete elimination of load-shedding currently experienced in the district.</p> <p>The leaders requested that the power be stepped down for purposes of distribution in the areas where the line passes. It is expected that with the introduction of power, undeveloped areas will develop and there will be a boost economically. It was pointed out that the sub-county communities have many activities that could spring up or be boosted by power including HIV testing machines, laboratory and operating theatres in health centers, lighting for the health centers, schools, trading centers and sub-county headquarters. People could start up saw mills, maize mills, metal works, milk processing, etc.</p> <p>In all the trading centers people expressed a need for power which they said they had many uses for and these include the following; domestic use, use in schools, health centers, sub county headquarters and battery charging. They said they would be able to set up small scale industries such as maize mills, coffee and wine processing factories, saw mills, they would be able to buy fridges for their shops as well as milk coolers since a lot of milk is produced in the region. They also said barber shops, hair saloons, and welding activities need it.</p> <p>It was pointed out that with the introduction of power in the Rwoho-Bugamba area, people may be able to set up saw mills especially in places like Kitwe where forest plantations exist.</p> <p>Communities wondered how it was possible that they would simply have power lines pass over their heads while they had no electricity in their homes, shops, health centers, etc. They requested the programme to incorporate a component of distributing transformers to step down the power so that they are able to use it. As a matter of seriousness, some communities such as Katojo went as far as insisting that before work commences an agreement be signed between the programme and the community to ensure that they benefit from this line otherwise they would refuse to cooperate.</p> <p>Some communities were sceptical about getting power. In Kashekure, Ibare, Nyamatojo and others communities were disgusted by the fact that power lines have existed for the last 30 years in their areas but they had never benefited from it. They also feared that electricity is so expensive to the extent that even if it was to be stepped down many households may not be able connect it their houses let alone pay the monthly bill.</p>
	Rwanda <p>The access to the energy which is sufficient and to the jorning up has been largely discussed by all the authorities encountered.</p> <p>The electrification of tea facties which have difficulties to get heating wood. It consists of the tea factory of Mulindi. The other factory transformation of agricultural products is the flour- mill of Byumba. Additional projects of transformation of agricultural products and those of farming are planned and the great risk recorded was the availability of the energy, the milk collection factory, the factory of bananas, "transformations, the factory of transformation of bananas "maracoujas" and other fruits of high altitude (gicumbi) , a factory of maize dissecting (Gatsibo, Nyagatare) and that of rice (Nyagatare), a slaughterhose (Nyagatare), the development of the hotel industry and that of housing (Nyagatare).</p> <p>The other infrastructures which will benefit from the project are the offices of the areas and certain districts and the markets, the agglomerated housings, the prisons, the military barracks. The policy of housing construction in rural areas consists of moving from the isolated housing to the agglomerated one. The availability of the electricity is one of the attracting factors of the population to the agglomerations which will be the roles of development in rural area.</p> <p>Rwanda has launched a programme " a laptop computer to each pupil" and a programme of</p>



Component	Issues and concerns
	<p>teaching at distance. The supplying in electricity for the secondary and primary schools will contribute to the effective application of these programmes mainly within the zones which were enclosed and without the electricity. Consequently, the quality of teaching, the development of ICT (information communication technology) the learning at distance and the education for all will be improved.</p> <p>The population has expressed a quick need in electricity in order to facilitate the conservation of agricultural perishable products and also the milk products. A particular accent was (put at) focused on the markets and other trading centers in order to colder the drinks for sale. However, the costs of electricity are very high and have required a reduction of the consumption price adapted to their capacity of purchase. The access to electricity will enable them to be developed in the same way as the urbans, to leave the enclosing and the obscurity. However, the population is wondering if everyone will have access to electricity.</p>
Job opportunities	<p style="text-align: center;">Uganda</p> <p>Some people were interested in knowing whether the project would have any employment opportunities.</p> <p>The leaders in Mbarara District requested that the project as much as possible uses local labour to enable the people in the villages earn some income from it.</p> <p style="text-align: center;">Rwanda</p> <p>Within the context of the poverty reduction, the government supports the initiative and the project of high voltage (intensity) undertaken. All the authorities have wished that the project should contribute to create jobs in rural areas and to augment the purchasing capacity of the population and lighten the poverty effects.</p> <p>All the population encountered has expected the job creation from this project. The professional persons having shown their expectations for jobs are particularly the brick layers, the welders, the carpenters. They have shown hostility towards other projects which do not recruit the local labour and consequently the affected population does not benefit from the project.</p>
Consultation and sensitization activities	<p style="text-align: center;">Uganda</p> <p>Leaders of Ntungamo District advised that continuous consultation of the communities throughout the life of the project, should be undertaken to get the actual feelings of the people.</p> <p>The following active NGOs/CBOs in the area were identified for they could help in the mobilization and training in the future project activities:</p> <p style="padding-left: 40px;">ACTS, a religious NGO that is providing gravity flow water in Bugamba.</p> <p>Nyakayojo Aids Alleviation Front (NAAF) carrying out AIDS support and sensitization activities in Nyakayojo.</p> <p>Communities requested to be consulted when major decisions affecting them are to be made for purposes of incorporating their opinions. They also requested for the participation of their leaders (LC V and LC 111) so that there are sure that there leaders are aware of what is going on and can pass on relevant information. They therefore appreciated the steps taken by NELSAP</p> <p>They also said that it would be important for the surveyors and any other group to inform the community before they start with their work.</p> <p>The community members also requested to have a say in where the way leaves pass so that they ensure minimal destruction. They wanted to know whom to inform if there are such specific places where they would not like the line to pass.</p> <p style="text-align: center;">Rwanda</p> <p>The authorities who were contacted have expressed their satisfaction for the at the level of sensitization. The project will be great benefit in order to sensitize the populations to the programmes of agglomerated housing. They are assured that the rate of agglomerated housing will increase the level of the axes of electricity's joining up. The additional programmes which will be facilitated for the sensitization are the objectives of sustainable development. The vision 2020 and the strategy of poverty reduction, the programme of decentralization in accordance with all the sectors and the other programmes of development</p>

NILE BASIN INITIATIVE – NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAM  
 STUDY OF THE INTERCONNECTION OF THE ELECTRICITY OF THE NILE EQUATORIAL LAKES COUNTRIES  
 ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT – VOLUME 3B  
 UGANDA-RWANDA INTERCONNECTION

Component	Issues and concerns
	related to the organization from community basis.
Community infrastructures	Uganda People expressed the need to have community facilities like schools, health centers spared.
Sensitive/valuable areas	Uganda In Kagaga village, the community was concerned that their hills (Ittega Hills) which are rumoured to have precious stones may be exploited by the contractors of this project if they fall within the way leaves and yet they would have been a good economic resource to benefit the community. In Nyamatojo they had a fear that this project may affect stone quarrying in their hills.  There was a fear that the 15 m way leaves on either side is too big and could easily take up someone's whole garden and house.
Environmental concerns	Uganda Environmental officers advised that before construction environmental impact assessments should be done. In case of wetland use, the nuclear areas of the wetlands should be avoided. They encouraged the project implementers to be mindful of the ecosystem, nuclear settlements, compensation, health hazards of high voltage transmission, They also noted that the corridor area is heavily cultivated, so there is need to value land and compensation for affected assets be given to those affected.  They advised that before and during construction, an environment management plan should be prepared to facilitate environmental monitoring by stakeholders.
Agricultural practices	Uganda The district production department was concerned about the effects of the project on agriculture productivity in the area. It is a concern because community in the proposed project area mainly dependent on agriculture for their livelihood. They grow bananas the major staple crop in Uganda and these plantations are in every community along corridor. They also grow coffee, annual crops like maize, beans, millet, Irish potatoes and vegetables in the swampy areas. Other agricultural activities that are carried out are dairy farming, goat keeping, and fish farming. Whether the transmission line passes through swamps, valleys or hills, these agricultural activities may be disrupted in one way or the other.
Division of land	Rwanda The communication having no sufficient lands are preoccupied by the dividing up of their lands. The divided lands loss their worth and at that moment they would wish to take into account all the lands from the household which the lands' surface which are involved within the ascending and superior to the residence's land.
Project acceptance	Uganda Many community members asked what would happen if, having heard all about the project, individuals or a whole community refused to cooperate and hand over their land to the project after it has been demarcated as part of the way leaves.  Rwanda The local authorities who have been contacted find the resolution within the project in order to settle the problem of frequent alternative route owing to the insufficiency of the electric power. It is also a hope in order to make operational the planned projects related to the agricultural transformation and then respect their promises of agglomerated housing.
Social disruption	Rwanda Certain person encountered has expressed their regret to the transfer of some (certain) households who have been found within the ascending although they live together within many years. They have also mentioned the disintegration of families whose certain members will be obliged to be transferred for from their own extended households.
Health and safety	Uganda In some villages, there were rumours that one can contract cancers a result of living near such power lines. People also feared that animals and plants would also be affected. They had

Component	Issues and concerns
	<p>heard that their animals could die and the coffee plants and banana plantations could wilt. They wanted to know if direct contact with the poles posed a specific danger to people and their animals.</p> <p style="text-align: center;">Rwanda</p> <p>The authorities have expressed their preoccupations on the risk of electrocution accidents in case the population is not educated on the risks and the dangers that represent the electric power.</p> <p>The population contacted has expressed a need of being protected against short circuits and the over voltages. It has required an education and a large sensitization so as to be protected against the eventual accidents linked to electricity. It wonders if in case of eventual accidents for both properties and persons, who will bear the responsibility? Will there be insurance? An example may be linked to a strong rain which may let the towers and cables fall and consequently cause damages.</p>
Scheduled activities of the project	<p style="text-align: center;">Uganda</p> <p>The people requested that they should be given prior notice on the commencement dates for construction, so that they plan for the utilization of their properties within and along the wayleave to avoid wastage of time and resources.</p> <p>Others were simply eager to have this project started because this would mean that they would soon be able to access electricity and offer any other service as may be required by the project.</p>
Security	<p style="text-align: center;">Uganda</p> <p>Leaders in Ntugamo pointed out that there is a security threat in the area caused by the people from Tanzania who crosses the border to graze their animals in Uganda however, he was sceptical of their ability to affect the project</p>
Integration to other projects	<p style="text-align: center;">Rwanda</p> <p>The provincial authorities and those of districts have strongly emphasized the importance of the projects of development of planned infrastructures. The infrastructures consisting of attracting the population to live in villages are particularly the electricity, roads, water conveyance, the schools and health facilitations. In order to facilitate the transport, a road Rukomo- 5inyami) – Nyagahanga- Ruvune and Ngarama will be rehabilitated with the compacted "lalaterite". A nother axis will link Rukomo- Rutare – Giti and Rwesero (district Gicumbi and Gatsibo).Another axes of 40 km from Ngarama to Nyagatare will be also rehabilitated. These three axes will be the axes of electric joining up and poles of development of the region. This will enable to disclose these parts.</p>
Support from leaders	<p style="text-align: center;">Uganda</p> <p>District leaders appreciated and welcomed the project, they pledged to support it in their capacity as leaders and help in mobilization of the community. They thanked the project for informing them first before going down to start implementation.</p>



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## 5. BASELINE CONDITIONS

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### 5.1. PHYSICAL ENVIRONMENT

#### 5.1.1. CLIMATE

##### Uganda

Mbarara district is characterized by dry spells which are more severe in Kashari County where the Mirama substation is located. However, in Rwampara where the proposed line passes for most parts, annual rainfall is fairly distributed throughout the year. In Kashari County, rainfall is unevenly distributed. The average annual rainfall is 1,000 mm with less precipitation in Kashari and more in the Rwampara County, going as high as 1,520 mm.

Ntungamo district, on the other hand, lies in the southwestern climatic zone which receives convectional rainfall averaging 900 mm per annum. There are two rainfall regimes which are associated with the equatorial trough: the first lasts from March to May and the other, which is the longest, from August to November. Two dry seasons occur, with a pronounced one in May-August and a less severe one and often interrupted by scattered showers between December and February.

In Bugamba, Nyakayojo and Rukoni sub-counties, the average annual rainfall is above 1,000 mm which supports crop farming.

Ntungamo district experiences a mean annual maximum temperature of 26°C and a mean annual minimum of 14.5°C. High temperatures are recorded in the months of January-March and July-September, which are the months that correspond to the dry spells.

There is an average diurnal range of 5-7 hours of sunshine daily. The maximum hours occur in June, reaching 7 hours that in turn induces high evaporation.

##### Rwanda

In Rwanda, the climate is tropical temperate by the effect of the altitude with an average temperature of 19°C and an annual rainfall which varies between 900 and 1,600 mm. Concerning the zone of study, the climate should be that of equatorial type but the high altitude modifies the temperatures and the precipitations mainly within the southern zones between the district of the city of Kigali and the locality of Ngarama in the north-east.

In deed, the southern zone is marked by the precipitations and the hill's temperatures which occur on the central tray. The northern zone between Ngarama and the border with Uganda is more often marked (characterized) by a climate from sub-humid type to sub-arid climate.

The rains are divided into two seasons which alternate with the two dry seasons. The greatest raining season starts in the middle-February and ends at the end of May while the little raining season starts in the middle-December. Concerning the greatest dry season, it moves from June to the middle-September and the little dry season from the middle-December until the middle-February (MINECOFIN, 2005).

More specifically, the precipitations and the temperatures are different according to the two zones mentioned above. Within the first zone located between Kigali and Ngarama, the average annual precipitations vary from 1.100 to 1200 mm of rains while the average annual temperatures are comprised between 19°C and 20°C. The day time amplitude is comprised between 10°C and 12°C. The Northern zone moving from Ngarama and extends to the Ugandan border, benefits from a most hot and most dry climate. It is characterized with the precipitations and temperatures of East's low lands. The average annual precipitations vary from 850mm to 1.000 mm while the average annual temperatures are the hottest within the country and vary between 21°C and 22°C. The day time amplitude is over 13°C.

## 5.1.2. GEOLOGY, TOPOGRAPHY AND SOILS

### Uganda

#### Geology

The area is generally underlain by rocks of Precambrian age that include:

- The Karagwe-Ankole system that occurs extensively, especially in the southern and north-western parts of the district;
- Granitoid and highly granitised rocks;
- Pegmatites which contain mineral deposits (Tantalite - Cassiterites).

#### Topography

The projected transmission line passes through a landscape dominated by rolling hills (the Rwampara hills), interrupted by narrow to medium wide valleys occasionally filled by wetlands. The area tends to be flat with low-lying hills towards Rwanda. The major hills include Rwanyamahembe, Kibate, Kisiina Kabarama, Rwebikona, Rwoho, Kitwe and Mirama hills. The valleys at high terrain are deeply incised with gullies, an indication of high rates of erosion. The hilly terrain is prominent in the sub-counties of Nyakayojo and Bugamba in Mbarara district, as well as eastern parts of Rukoni in Ntungamo district.

#### Soils

The soils belong to the Karagwe-Ankole system. They are predominantly yellowish and lateritic loams. In the Rwampara rocky hillsides (Bugamba), the soils are shallow, yellowish with red silt clay/loams non-laterised with medium to low fertility, while the valleys and lower slopes have black sandy loams. The soils in lower hill slopes and valleys are fertile and support a variety of crops mainly bananas, coffee, maize and groundnuts.

In the wetlands are peat soils containing peat derived from the humified residues of swamp vegetation, mixed with some proportions of clay and other soil sediments.

In the hilly areas of Rukoni (in Ntungamo), the soils have similar characteristics as those of Bugamba. In the lower parts (valleys and lower hill slopes), the soils are mainly sandy loams with mica residues from mica schist occurring in some places. Sandy loams with black clays occur in some places in seasonal wetlands and at the fringes of the permanent wetlands. The soils in the lowland are low to medium in fertility while those on hill slopes are shallow, low in fertility.

Generally, the soils in the project area are very old and are in the last stages of development with very little mineral reserves left. Their productivity therefore is quite low supporting a few perennial crops like coffee and bananas and a variety of annual crops like maize, peas and beans. In areas where productivity is very low, predominantly the Bugamba hills and the low lands towards the Rwanda border, the major activity is pastoralism.

## Rwanda

### Geology

The region of altitude of over 1.500 m from Ngarama to Kigali is characterized by « schisto-quartzitic rocs and sanastones often forming the inselbergers from schisto- quartzic rocs and small hillocks with breast plated tops. The zone of hills from schisto- quartzic origin comprises a large proportion of scrawny soils , of quartzic materials shown on surface, of “ lateritic gremaille” and that of “lateritic” paving stones of smallest to the ones of greatest on the alluvial deporits and sediments which are recent.

### Topography

Le Rwanda is subdivided into three altitude zones:

The zone of low altitude inferior to 1.500 m which cover all the Eastern part of Rwanda; it extends from the Akagera national park, the Umutara until Bugesera passing by Gisaka. La zone de moyenne altitude (1500 -1900 m) qui se situe de part et d'autre des terres de la Crête Congo-Nil.

The zone of average altitude (1500m- 1900m) wich is located from part to another of lands of the Crete Congo-Nil.

The zone of high altitude superior to 1.900m and comprising the high lands which are volcanic. The relief of the study zone within the Rwandan part consists of three different storeys: hillis high lands and a tray.

Within the southern part, we may observe a relief of hills separated by large valleys completed with alluvial deposits.

The Average altitude for this topographic unit is comprised between 1.500 and 2.000m. The minimum is located around 1.434m and the maximum height is located at 1968m near the locality of Kinyami.

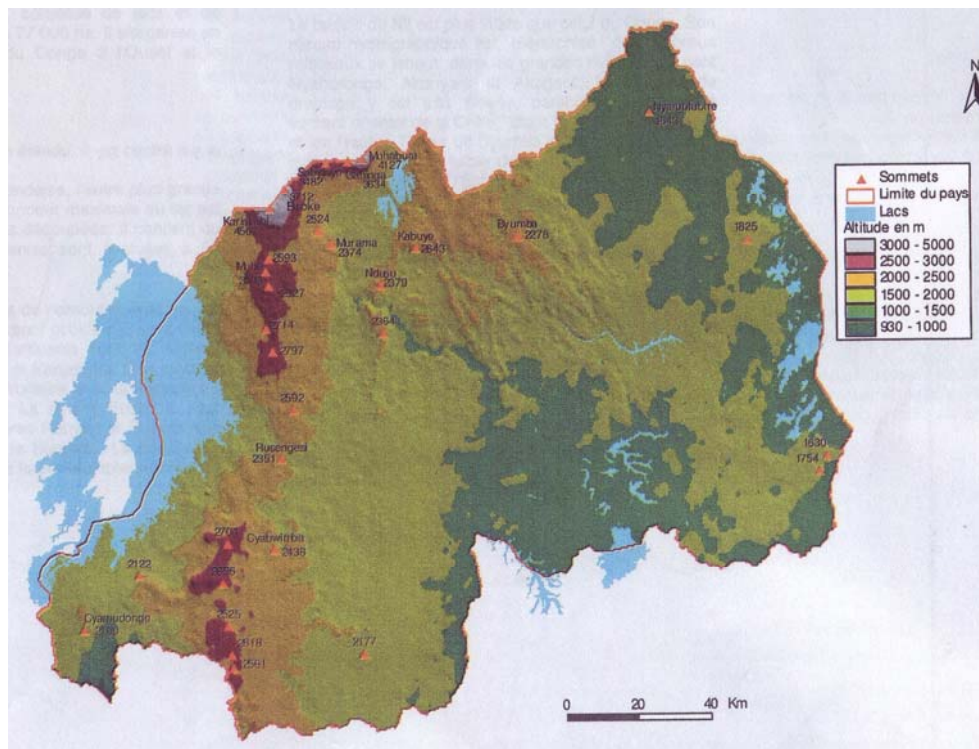
A bit northwards, we mention the presence of high lands of Byumba which the average altitude is comprised between 2.000m and 2.500m (the areas of Nyamiyaga and Rukomo within the district of Gicumba, in the northern province).

Far in the north- eastern part , after Ngarama until the Ugandan border , the relief is marked of tray and basins of the Eastern part of which the altitude varies from 1000 to 1500 m. The minimum altude is 1297m near the Uganda border while the maximum altitude is 1482m occurs after the locality of Nyagatare.

### The soils

The hills soils derive three types according to their origin: the soils deriving from the granite and “gneiss” which alternate with the soils derived from the intrusive basic rocs together with the soils derved from the alteration of schistest formations, of sandstone and quartzites within the altitude zone.

The grantic regions present generally the soils which are deepest, by places, with clay’s horizon which is alluvial accruing on the (surface) top of the relief. In general, the soils will be constituted of materials which are strongly alterated and cleaned by the erosion within the zones having a high slope. The reserves in nutritional elements are very low and lomited to the exchangeable fractions.



**Figure N° 2. RELIEF MAP OF RWANDA**

The deepest soils, generally of good agricultural quality, are concentrated in the thick/litre strips which follow the deepest part of the valleys and the plains. Within the zones, the soils are derived from the alluvial and colluvionary materials of the slopes basins which are neighbours. More northward, around Nyagatare, the soils are in great part dominated by the swelling clays according to the high altitude, the very steep banked valleys dominated per place the organic fragile soils marked by the deepest stratum peat-bog.

### 5.1.3. SURFACE AND GROUNDWATER RESOURCES

#### Uganda

For most parts of the corridor except the Rwampara hills, the area is endowed with natural water sources that include rivers, streams, numerous wetlands and springs. The area is drained by the River Rwizi near the Mbarara substation and Kagera River (Akagera River in Rwanda) near the Rwanda Border. There are also numerous streams within the way leave that include: Rugaga, Katukuru, Rwibogo and Rweimagu. Most of the major watercourses drain south into River Kagera and finally to Lake Victoria. The water from the rivers Rwizi and Kagera is of questionable quality as it is turbid and brown for most of the time due to the eroded soils from catchment areas.

#### Rwanda

The surface and underground waters are drained by the water sources and the swamped zones which are associated. Indeed, within the countries, the swamps occupy a surface which is estimated to 165 00 ha, of which 112 000 ha of little swamps (less than 2 000 ha) and 53 000 ha of grat swamps. The total surface which is exploited amounts to around 94 000 ha, that is to say 57% of the surface of swamps of the country and represent hearily 8% of the total cultivable surface.



Concerning the water surfaces within the zone located southward of the study zone, they are drained on one side by the river Nyabugogo near Kigali and on the other sides towards the lake Muhazi. The water circulation is oriented from North to South-West and flow within the greatest river of Nyabarongo. This one flows into the river Akagera which supplies the lake Victoria and would be the longest tributary of the Nile.

Within the zone of altitude located in high lands of Byumba and the hills located in the centre, the dense water ways system is associated to a swamped steep banked system and often is peat-bogged. The swamps associated with the main water ways, before the lake Muhazi at an altitude which is inferior to 1 600 m, are largest having basins flooded with water at some place.

Beyond the basin of the lake Muhazi's water, the water flowing is done from the south to the north-west. Northwards, within the zone of trays and basins located in the Eastern part, the swamped systems are large and often associated to the zones of flooded basins. The swamps flooded with floating papyrus have been observed on the shores of the river Warufu and Umuvumba. For this corridor, the inventory of the environmental elements has enumerated 19 water ways associated with the swamped zones (table 8).

**Tableau N° 8. LIST OF RIVERS BY DISTRICT AND SECTOR**

District	Sector Secteur	River or lake Cours d'eau ou lac
Gicumbi	Rutare	Nyakagezi, Nyabugogo, lac Muhazi
	Rebero	Nyabwihereko, Ruhondo, Nyakagezi
	Mutete	Rwafandi, Mwange
	Nyamiyaga	Kagorogoro, Mwange
	Ruvune	Warufu, Kamoko, Karungeli
Gatsibo	Nyagihanga	Kagorogoro, Nyarwambu, Warufu
	Ngarama	Warufu, Nyabitare
Nyagatare	Musheli	Kijojo, Kagitumba, Muvumba, Barrage de retenue d'eau



Photo 1. Muvumba River

## Groundwater

### Uganda

There has been no extensive survey carried out to determine the actual potential and distribution of underground water resources in the two districts of Mbarara and Ntungamo. However, it is well known that some significant water resources occur in the fissures and aquifers of the rocks as shown by the number of boreholes (for example there are over 266 bore in Rwampara county alone) well distributed in the sub-counties of Nyakayojo and Bugamba. These have been drilled for domestic water supplies. Although, the water quantities are satisfactory, they are inadequate and sustainability is not assured as some of the boreholes are not properly maintained. Drilled boreholes often dry up before their estimated lifetime and this spells out some degree of uncertainty in water supply from boreholes.

In Rukoni sub-county, a number of boreholes have been drilled in for domestic water supply.

Gravity flow schemes are also common in hilly areas of two districts Ntungamo and Mbarara. Of the 23 gravity schemes in Mbarara district, seven are found in Bugamba sub-county. There is no recorded gravity water scheme in Rukoni sub-county.

### Rwanda

The hydrogeology of underground waters is more studied at the exception of the study undertaken within the context of the master plan for the supplying in water of the rural communities and the cattle of the former province of Umutara in the North-Eastern part of the country (MINECOFIN, 2004).

Within the zone of altitude and according to the relief configuration the underground waters reoccur on the surface through the water sources laid out (developed) or not. Within the lowest zone of the Eastern part, the water sources are very rare. The study undertaken in 2002 (MINECOFIN, 2004) has registered 407 element for the in drinkable water within the 8 districts of the former province of Umutara of which 19,6% of the sources and 26,8% of bovines (drillings). The average of sources per district was reaching 10 sources while the sole district of Humure located in altitude counted 21 sources.

The zone of altitude in front of the locality of Ngarama presents a great potential of water sources capture as the climatic and hydrocological conditions are favorable to the forming of the

“aquifere layers”. Two categories of water sources are found within this region particularly the sources of bottom deepest part and the slopes sources perched at an altitude above the bottom of the main valley. This second category is very frequent within the zone of high altitude of Byumba over 2 000 m. in general, greatest rates of flow are those located within the bottoms where they represent the zones of underground water dump coming from the slopes.

## 5.2. BIOLOGICAL ENVIRONMENT

### 5.2.1. VEGETATION

#### Uganda

The vegetation of Mbarara and Ntungamo districts varies with the different ecosystems that characterize the area. In Mbarara it ranges from permanent swamps to grass savannahs and acacia savannahs, to post cultivation communities. The vegetation in Ntungamo district is similar to that of Mbarara.

The vegetation in the ROW for the proposed transmission line is discussed below and can be classified as follows:

#### Forests

The transmission line passes through and nearby individually owned small Eucalyptus woodlots along some sections of the ROW from Mbarara to Mirama hills. These woodlots are predominant in areas between the Mbarara-Kabale road junction and Nyamatojo trading centre. Elsewhere, Eucalyptus and Black wattle (*Acacia mearnsii*) woodlots are grown in the truncated valleys of the raised hills both in Ntungamo and Mbarara areas.

In the fringes of Rubingo swamp, natural trees have been cut down to give way for agriculture. However, few representative natural trees such as *Albizia*, *Combretum*, *Acacia* and *Erythrina* show evidence that the area at one time had forest cover and they are being threatened with extinction through agricultural activities and charcoal burning. One kilometre away from the Rwoho trading centre is the Rwoho forest reserve with *Cyprus* and coniferous trees as dominant tree species. The transmission line will not pass through this forest reserve.

#### Wetlands/swamps

The transmission line passes along the main permanent wetlands of Rwampara County and seasonal wetlands. In Mbarara, the line crosses the Rwizi River at the section where the wetland is dominated by *Cyperus papyrus*. However, this point is narrow. It again crosses the Kagaga wetland dominated by *Typha domingensis*. Other vegetation types in this wetland include sedges such as *Cyperus latifolia* and grasses like *Miscanthidium* and *Vossia*. Kagaga wetlands are earmarked by the district as wetlands of ecological and economic importance.



Photo 2. *Cyperus papyrus* stand along the Rwizi River near Mbarara/*Cyperus Papyrus* le long de la rivière Rwizi près de Mbarara

Other wetlands crossed by the projected line include the Katukuru swamp dominated by *Typha* spp., Rweibogo wetland dominated by papyrus and Rwimagu wetland dominated by phragmites. At the edges of these wetlands are relics of trees such as *Erythrina abyssinica* and *Acacia* spp. The transmission line passes along the wetlands most of the time and for the few places where it crosses over, it is only for a short distance of less than 1 km.

#### Savannahs and shrubs

In the Mbarara Stock Farm where the proposed line will pass, the predominant vegetation is *Acacia hockii* scattered in grassland dominated by species such as *Hyperhenia diplandra*. Grasses like *Cymbopogon afronardus* and *Brachiaria decumbens* (less palatable) are also common. In the uncultivated parts of the ROW, especially the Rwampara hills where the vegetation cover is frequently modified through seasonal fires, the vegetation is reduced to short grasses and shrubs making the hills remain bare for most of the time. In areas where there are very poor soils the dominant grass is *Loudetia kagerensis*. Various sedges are also in the poorly drained areas.





Photo 3. Mbarara Stock Farm and Rwizi River/Ferme expérimentale de Mbarar et rivière Rwizi

In Ntungamo district, the line passes through completely modified savannah where much of the areas have been turned into cattle grazing ground. The areas at the fringes of the Rubingo wetland and especially the flood plains are characterized by scattered trees and shrubs. There are associations of *Acacia* spp. and *Cymbopogon afronardus*. The dairy farms are fenced using *Euphorbia* spp.

The proposed area for the construction of the substation at Mirama Hills is located in the former degraded Kikagati game reserve. The tree cover in this area has been reduced to shrubs and thickets. The relics of the original savannah woodland represented by *Acacia* spp. still stand, but are threatened by charcoal burners.

#### Post-cultivation communities

Most of the length of the transmission line passes through post-cultivation plant communities which have arisen due to intensive agricultural activities and consequently abandonment due to loss of fertility of the soils. These are associated with impoverished and/or heavily leached soils that represent a stage in the succession sequence from agricultural crops to the climax vegetation associated with the particular area. The abundant species include: *Hyperrhenia* spp, *Imperata cylindrica* and *Cymbopogon afronardus*. In most of the cases, there is an abundance of weed *Lantana camara* and *Acanthus arborea*. The tree cover is usually sparse and consists of remnants of previous climaxes. This is exemplified by areas of Rwampara hills and some parts of the Kikagati game reserve.

#### Crop land

These are found almost everywhere along the line except for the hills of Rwampara. In the Mbarara part of the line, the dominant crops are banana and coffee. In the banana plantations and around homesteads are fruit trees such as mangoes, avocados, jack fruits and paw paws (*Asimina triloba*). Other crops seasonally planted include maize, ground beans, millet and sorghum.

The predominant crops for the Ntungamo section are bananas and fruit trees such as mangoes and avocados. Seasonal crops include maize, millet, sorghum and peas. In general, natural

vegetation has been degraded to give way for agriculture and charcoal, although some wetlands are still undisturbed.



Photo 4. Banana crops in Ntungamo District/Bananiers dans le district de Ntungamo  
Rwanda

We observe different land types in Rwanda: the natural forests, the wooded places, the swamped zones which are at the natural state yet, the hills cultivations combined with the essences (species) from agroforestry and the zones of meadow or pastures.

The natural forests are very few within the zone of study. They are particularly represented by a strip of forestry gallery at *Acacia* sp. along the river Muvumba near Nyagatare. The wooded places are dominated by the species of *Eucalyptus* sp., more often on the slopes and abrupt crests, of high mountains of Byumba. The wooded places of pines are also found at some places. The registering operated within the ascending indicates that the eucalyptus is dominant. The most encountered species are: eucalyptus and acacias, the pinus being less present.



Photo 5. Muvumba River, gallery forest dominated by Acacia sp./forêt gallerie dominée par les acacias le long de la rivière Muvumba

The food producing cultivations on hills are often combined with the agroforestry species (essences) of which the most dominant are the Focus (umuvumu), Markamia (umusave), Vernonia amygdalina (umubilizi), Acacia sieberana (umunyinya), Acacia polycantha and Acacia sp., Sesbania sesban etc. the exotic species are represented by the Grevillea robusta, Cedrela serrata, Maesopsis emini, Calliandra calothyrsus, Leucaena leucocephala et. The cultivations which are durable (lasting) or pluriannual encountered within the as cending indicate that the banana trees are the most dominant, Mainly, it has been identified: the banana trees, the cassava the coffee tree, the sugar cane tree. The fruits' cultivations are the pawpaw tree, the avocado trees and the lemon trees.

Finally, the meadows and postures are observed (found) within the former huntinf reserve which was allocated to the Akagera National Park and which was allocated to the farmers. The vegetation is dominated by a grass forming of "graminée" or tree of Acacia sp. The grass stratum is dominated by three high typical savannah "graminée" of Mutara which are Themeda triandra, Hypanthia filipendula and Cymbopogon afronandus. The dominant Acacia species are: Acacia hockii, Acacia gerrardii on the low slopes, the valleys' bottoms and the surroundings of plains and Acacia sieberana within the very humid zones. The fodder cultivations which are the most dominant are the reeds.

The flooded swamps are dominated by a vegetation of cyperaceae which floating with per place the colonies of vegetation related to Typha and to Cyperus, Phragmites and Pennisetum. Some savage (wild) palm trees Phoenix reclinata) are observed along the shores of the river Warufu near the locality of kabare. We find that the vegetation of Papyrus, Typha and Cyperus is largely used by the communities for the production of basketwork articles.

The vegetation of the swamped zones with fallow of the altitude located at 1 800 m is marked a vegetation of Miscanthus violaceus which is often in association with the Lobelia, the Ericaceae and certain "graminée" of high altitude. The "musical" stratum is composed of the Sphagnum and utricularia. Within the context of the actual development policy related to agriculture, the swamped zones or the deepest bottoms are places where the intensive cultivations of rice and moize are practiced. The other food- producing cultivations are practiced there whit in the dry season.

## 5.2.2. WILDLIFE

### Uganda

The wildlife in Mbarara district is diversified and concentrated mainly in the savannah woodland and swampy areas of Lake Mburo National Park located about 50 km from the project area. This park has been described to have faunal diversity richer than the Tanzanian Serengeti and Tarangire National Parks. The Park is the only one in Uganda where Impala (Aepyceros melampus) is recorded. Other animals common include the Eland (Tragelaphus oryx), Zebra (Hippotigris spp.), Buffalo (Syncerus caffer), Crocodile (Crocodilus niloticus) and Hippopotamus (Hippopotamus amphibius).

Due to habitat degradation, wildlife in Ntungamo is mainly in the wetlands with the exception of those that are adapted to settled communities.

In the proposed transmission line, there is occurrence of various mammals, birds and fishes in the wetlands. Some of these wetlands still support sitatunga or marshbuck (Tragelaphus spekeii) and other mammals of importance including crocodiles in Kacwamba-Kakitumba which is about 5 km from the proposed substation at Mirama. Baboons, monkeys and bush pigs also occur, although the local communities regard them as vermin. Mongoose, foxes, oribi, civets and other wildcats can also be found.

Various ichthyofauna species have been identified in the wetlands and excavated lakes, e.g., *Oreochromis niloticus*, *O. zilli*, *O. leucostictus*, *Hapagochromis* spp., *Clarius lazera*, *C. gariepinus* (*C. mozambicus*), mirror carp, tilapia and *Haplochromis* spp. Amphibians include *Xenopus* spp. and *Rana* spp. There are also several reptiles such as water and arboreal snakes.

However, in the project area and along the transmission line in particular, the savannah woodland has been degraded to give way for cultivation. The area therefore is less rich in fauna biodiversity. The ecosystems that are still providing habitat for different fauna are the post-cultivation communities, the wetlands and the grasslands.

In the wetlands ecosystem, especially those least disturbed by human activity such as Rubingo, there are reports (according to residents of the area), of rare animals such as sitatunga, Vervet monkeys and, occasionally, buffalos. However, the populations of these species are rapidly declining due to human pressure. There are also reported cases of crocodiles in Kicwamba-Kakitumba, section of River Kagera. Antelopes are reported to be found in the least undisturbed plains of degraded Kikagati game reserve which is far from the proposed corridor.

Other animals reported to be found in the corridor are wetland specific bird species such as ducks, ibis, egrets, herons, crakes, kingfisher, weaverbirds, hammerkop, hornbills, eagles, pelicans, Papyrus Gonolek (*Laniarius mufumbiri*) and Papyrus Yellow Warbler (*Chloropeta gracilirostris*). The Crested Crane (*Regulorum gibbericeps*), Uganda's national emblem, breeds in some of these swamps. It is for this reason, that these wetlands, e.g. the Katukuru and Kagaga swamp in Mbarara district, have been earmarked by district authority as wetlands of ecological and economic importance.

Where the line passes in human settled areas, wildlife diversity seems to be low except for birds which are common in crop land areas. The Rwampara hills, for example, with short grass and bushes, are the cattle grazing areas for the local communities. In this ecosystem there are less wild species that are considered ecologically important.

#### Rwanda

The natural Rwanda's fauna within the zone of study is mainly dominated by the water birds particularly the storks, the heron, the ibis, crowned cranes, kingfishers. The important observations of birds have been carried out within the swamps that were flooded at that period of time of the rain season respectively, that is to say the one located down stream of the lake Muhazi and the swamp with papyrus which is floating located between .....and Mimuli on the river Warufu. The birds have been also observed within the zones where the rice cultivation is practiced the deepest bottoms flooded which are located at the shores of the river Muvumba within the flooded meadows before arriving to Nyagaratare and within the rice's zones being



**Tableau N° 9. BIRDS OBSERVED IN THE CORRIDOR BETWEEN BIREMBO AND MERAMA**

	Name Nom	Specie Espèce	Place of observation Localités d'observation		
			A <sup>1</sup>	B <sup>2</sup>	C <sup>3</sup>
1	Sacred ibis / Ibis sacré	Threskiornis aethiopicus (CITES) <sup>4</sup>	X	X	
2	Ibis hagedash	Bostrychia hagedash (CITES)	X		
3	African Spoonbill Spatule d'Afrique	Platelea alba	X	X	X
4	African Openbill Bec ouvert d'Afrique	Anastomus lamelligerus	X	X	X
5	Hamerkop Ombrette africaine	Scorpus umbretta		X	
6	Yellow-billed Stork Tentale ibis	Mycteria ibis (CITES)	X		
7	Grey Heron Héron cendré	Ardea cinerea	X		
8	Black-headed Heron Héron mélanocéphale	Ardea melanocephala			X
9	Littel Egret Aigrette garzette	Egretta garzetta (CITES)	X		
10	Great Egret Grande aigrette	Egretta alba (CITES)	X		
11	African Wattled Lapwing Vanneau du Sénégal	Vanellus senegallus			X
12	Cattle Egret Héron garde-bœufs	Bubulcus ibis (CITES)	X		X
13	Pied Kingfisher Martin pêcheurs pie	Ceryle rudis	X		
14	Black Crowned-Crane Grue couronnée	Balealica regulorum (CITES)	X		X
	Number of species Nombre d'espèces		12	4	6

<sup>1</sup> Lake Muhazi wetland/Marais du lac Muhazi

<sup>2</sup> Warufu River wetland/Marais de la rivière Warufu

<sup>3</sup> Umuvumba River wetland/Le bas-fonds de la rivière Umuvumba

<sup>4</sup> Those species are on the CITES list. Ces espèces sont inscrites sur la liste de la CITES

It has been reported the presence within these swamped zones of the mongeese, chives and hyppopotamus mainly within the irrigation barricades of the rice zone perimeters near Mimuli (Nyagatare) and various species of the Ichtyfauna dominated by the « clarias » and « tilapias ».

### 5.2.3. PROTECTED AREAS

#### Uganda

The major protected areas in the affected districts are found outside the proposed line route. The former Kikagati wildlife reserve is found in Ntungamo district, at the border with the new district of Isingiro and Tanzania. However, this reserve has been degraded for charcoal burning and agriculture. Due to habitat depletion, the wild animals are forced to look for other areas to graze in and are sometimes found roaming within settled areas where they are hunted. These animals have also become vermin.

The other protected areas are wetlands which have already been highlighted.

#### Rwanda

In Rwanda, the zone of study does not cross any area (referring to) which is strictly protected or partially protected. This, the Akagera National Park is located out of the study zone eastward. This part, having a surface of 108 500 hectares, located along the border with Tanzania, cuts strictly with the hills own to the greatest part of Rwanda. Covered with a labyrinth of swamps and lakes (50% of the park's surface) that follow the winding water sources of the Akagera, the highest source of the Nile, the park together with its meadows of high grass linked to Acacias is a typical landscape of the African savannah. The Akagera is mainly a reserve for wild animals in the flocks of elephants and buffaloes, leopards, spotted hyenas, lions, giraffes, zebras together with dozens of species of antelopes among which the impalas (*Aepyceros melampus*), the cape's elk (*Taurotragus oryx*) and the "rouan antelope" (*Hippotragus equinus*).

## 5.3. HUMAN ENVIRONMENT

### 5.3.1. ADMINISTRATIVE FRAMEWORK AND LAND TENURE

#### Uganda

The proposed transmission line passes through the districts of Mbarara and Ntungamo in Uganda.

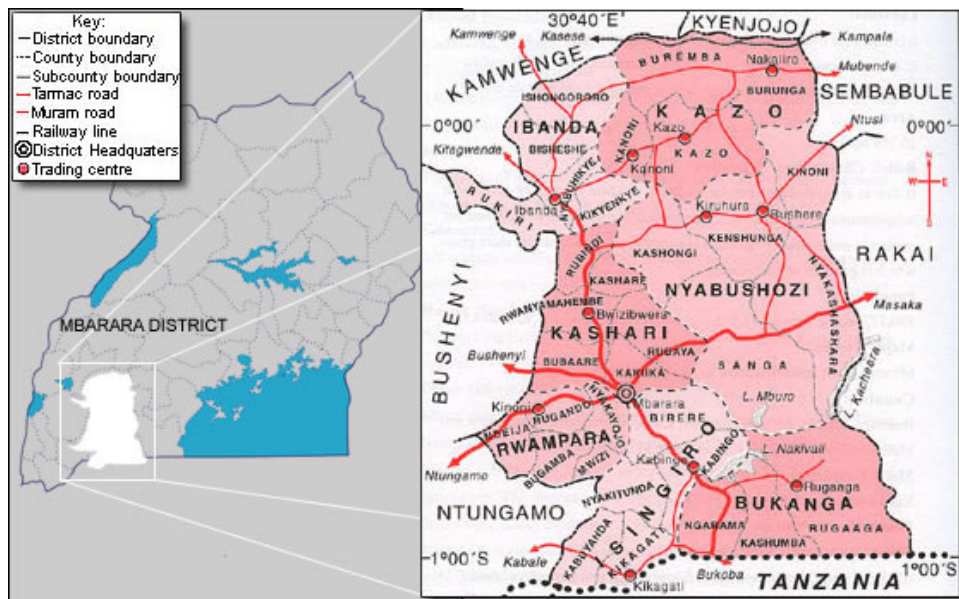


Figure N° 3. MBARARA DISTRICT MAP

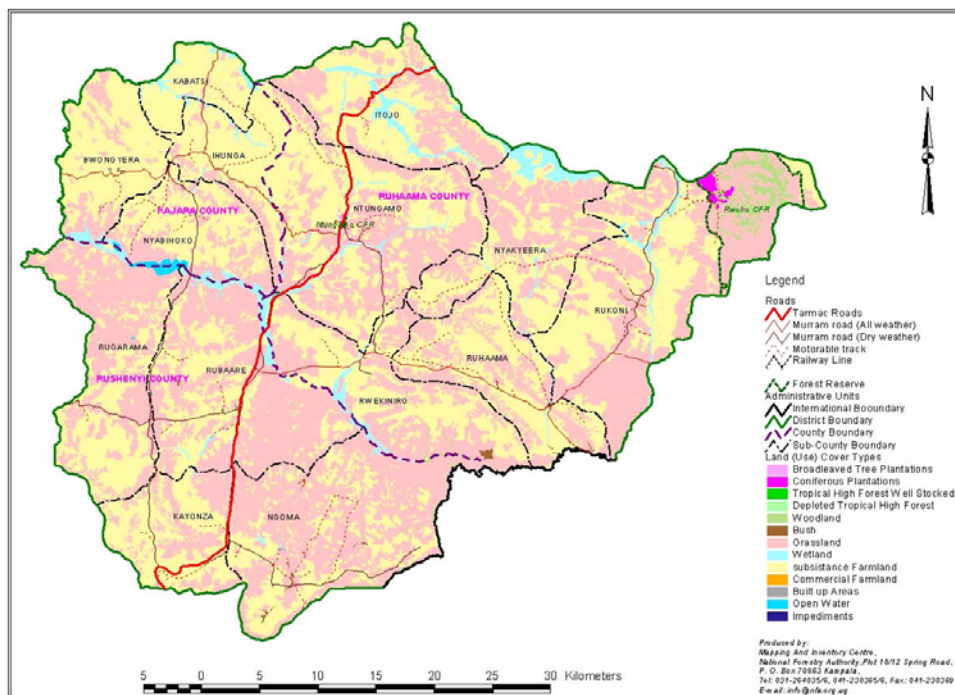


Figure N° 4. NTUNGAMO DISTRICT MAP

The proposed transmission line starts from the existing substation on the Mbarara – Ibanda Road in Mbarara Municipality, travels in the southern direction through the NARO – Mbarara Agricultural Research and Development Centre (ARDC) and crosses the Rwizi River near ARDC Fishery production site. It then crosses the Mbarara – Kabale Road and continues to the lowlands of Nyakayojo sub-county through Bugamba Hills in Rwampara. It then moves along the fringes of Rweibogo and Rubingo swamps to the proposed substation at Mirama hills in Rukoni sub-county, in the former Kikagati game reserves in Ntungamo district.

The Land Act (1998) recognises four tenure systems: customary, mailo, freehold and leasehold. About 90% of the land holdings in both Mbarara and Ntungamo districts are under customary tenure while the remaining 10% is under private or statutory leasehold. Under customary tenure, land is held according to the traditional rules of a particular clan. No land title is issued under this system, and ownership simply passes down from father to son. Property boundaries may be marked by ridges, trenches or trees and grass.

In rural areas, people tend to settle in fertile valleys and close to wetlands and water sources. Dwellings are scattered or grouped in small villages, with houses accommodating the members of extended families. Rural growth centres including administrative and trading centres are normally located close to roads.

#### Rwanda

Rwanda is subdivided into 4 administrative provinces (the Eastern, the Northern, the Southern and the Western) together with the city of Kigali. At the decentralized level, the country is subdivided into 30 districts, 416 are as and 9221 quarters, Each quarter in turn is subdivided in community villages called "imidugudu". The province is ruled by a governor and the districts by the mayors called Mayors of districts. Are as and quarters are ruled by an Executive Secretary (GIS, UNR, 2006).

It is important to mention, in addition, that Rwanda has undergone a recutting up of its provinces and districts and this change has been launched since January 1, 2006 (Figure 5).

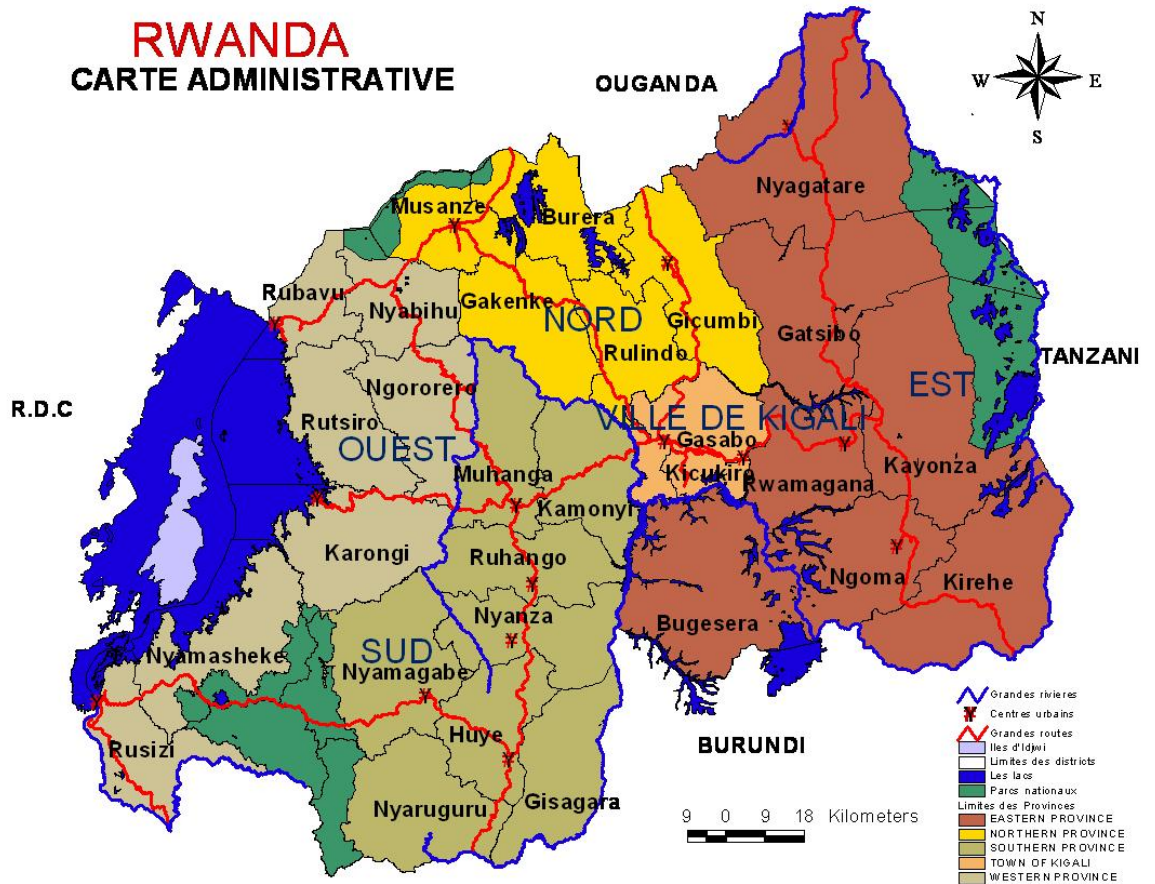


Figure N° 5. NEW ADMINISTRATIVE SUBDIVISION OF RWANDA

Concerning the land issue, the actual land policy is confronted to different constraints among which the excessive doudong up of lands, the rural separated housing the duality between the written law and the traditional one. This thwarts the investment within the land's development and prevents the mortgage. In order to settle the problem, the Government has recently implemented a strategy of agro farming development having as objective contribute, to the food supplying (provision).

Indeed, the land's act dated September 15, 2005, at its article 3, stipulates that the land is included in the common in heritage of the Rwandan people, the ancestors, the actual generation. Not wit standing the rights guaranteed to people, only the Government (state) holds an eminent right of management of the whole lands located a long the national territory, it applies it within the general interest of all in order to ensure the national economic and social development in the way defined by the law.

In this regard, the state (Government) is the sole holding power to grant the rights of occupation and use of the land. It also has the right to order the expropriation due to a cause of public necessity, housing and development of the national territory in the way which is defined by the law and against a fair and previous compensation. There are also lands' commissions at the national level, at level of the province and at that of the city of Kigali and at the level of Districts.

The urban lands and those that are comprised within the limits of the urban districts as defined by the law. All the remaining are rural lands. The private land's concession of particulars is composed of lands acquired by the traditional law and the written law which are not comprised either within the public concession or within the state's concession or that of the District, the town or the city of Kigali, the lands allocated by the competent authorities and the lands acquired by purchase (gift) donation, exchange or share. The land's public concession of the state is constituted of all the lands, which are affected, to a use or a public service and also the public lands that are reserved to the environmental protection of the nation. It consists of:

- Cots' lakes, those of rivers and water ways classified by the decree of the Minister having water within his management;
- The shores of the lakes and rivers until a length determined by the Minister having environment management in his responsibilities, starting from the most isolated part reached by water during the successive floods, exception done to exceptional floods;
- The lands holding the sources of water and the natural water sources determined by the Minister having water within his responsibilities;;
- The national lands (destined) reserved to the protection of environment and constituted with natural forests, parks, protected swamps, gardens and tourist location.
- The national roads and their ascendinds as determined by the decree of the Minister having the infrastructures within his responsibilities.
- Lands and buildings constructed which are affected by the Administration to a use or public service or those accommodating the different services of the Public Administration.

The refugees returned to the country exercise an additional lobby concerning the availability and sustainability (durability) of the agricultural exploitations as rural subsistence means. According to the Arusha agreement of 1993, the people who come back to Rwanda within 10 years may claim (complain) about their former possessions (ownerships) of land even if they have been occupied by other persons, even if legally they have right to their former lands, the other refugees returned after these 10 years must rely on the Government to be awarded a new land. As result, the government has embarked on programmes of redistribution and share of lands within certain regions of the country, without compensation to the persons affected. This approach is well stopped within the new agricultural act.

### 5.3.2. POPULATION AND DEMOGRAPHIC FEATURES

#### Uganda

The population of the Western region (including Mbarara, Ntungamo and 9 other districts) is 6.3 million, one-quarter of the national population. The population of Mbarara represents 4.5% of the total population, while Ntungamo represents 1.6%.

The high population rates in both districts can be attributed to the migration from other districts and the mass arrival of Rwandese in 1994. The following table summarizes some of the relevant demographic characteristics of the project area.

**Tableau N° 10. UGANDA/UGANDA - DEMOGRAPHIC CHARACTERISTICS**

Administrative Unit Entité administrative	Population	Density Densité (p/km <sup>2</sup> )	Rural Pop. Pop. Rurale (%)	Pop. under 18 yrs Pop. Moins de 18 ans (%)	M/F ratio Ration H/F	Aver. Household size Taille moyenne des ménages	Growth rate Taux de croissance 1991-2002
Mbarara District	1.088.356	111.8	91.5	54.7	97	4.9	2.8
Ntungamo District	379.987	191.8	96.5	56.1	92	4.9	1.9
Western Province	6.298.075	126.9	93.2	56.4	94	4.8	2.8
Uganda	24.442.084	123.9	87.7	56.1	95	4.7	3.3

Source: UBOS, 2005.

The demographic characteristics of the project area relate mostly to the sub-counties through which the transmission line will pass. These are presented in table below.

**Tableau N° 11. POPULATION PER PARISH ALONG THE PROJECT ROUTE**

District	Sub-county Sous-comté	Parish Paroisse	Households Ménages	Males Hommes	Females Femmes	Total
Mbarara	Kakika	Nyarubanga	226	659	474	1,133
		Nyakayojo	Nyarubungo	1,153	2,819	2,957
		Rukindo	1,046	2,231	2,241	4,472
	Bugamba	Kabarama	1,004	2,462	2,534	4,996
		Rweibogo	817	2,534	2,287	4,821
		Ngugo	936	2,185	2,292	4,477
		Nyaruhandaga	1,059	2,671	2,910	5,581
		Total		6,241	15,561	15,695
Ntungamo	Rukoni	Rwoho	989	2,442	2,426	4,868
		Kyamwasha	2,175	4,763	5,397	10,160
		Nshenyi	1,819	4,131	4,551	8,682
		Kitwe	n.a.	n.a.	n.a.	n.a.
		Kitojo	n.a.	n.a.	n.a.	n.a.
		Total		4,983	11,336	12,374

Source: 2002 Uganda Population and Housing Census

## Rwanda

Rwanda counted 8 162 715 inhabitants for a surface of 26 338 km<sup>2</sup>. It is a very populated country which counts the strongest densities in Africa, which is to say approximately 321 inhabitants with km<sup>2</sup>.

Some areas reach a density higher than 1 000 inhabitants per km<sup>2</sup>. The number of people by household is estimated at 4,5 (SNR, 2004). In the zone of study, we can observe remarkable disparities between the districts included in the zone of study. The two districts of Gatsibo and Nyagatare are the less populated and in very great part are consisted grounds cut down in 1996 by the Akagera National Park and whose settlement is recent for a great part.

**Tableau N° 12. RWANDA – DEMOGRAPHIC CHARACTERISTICS BY DISTRICT**

Districts	Area Superficie (km <sup>2</sup> )	Total Population Population totale	Density Densité (hab/ km <sup>2</sup> )
Gasabo	429,2	320 516	746,8
Gicumbi	829,5	359 716	433,7
Gatsibo	1 582,3	283 456	179,1
Nyagatare	1 920,1	255 104	132,9
Toute la Ville de Kigali	730	923 177 <sup>5</sup>	1 264
Rwanda	8 162 715	8 162 715	321 <sup>6</sup>

Source : MINECOFIN, 2003.

### 5.3.3. SOCIAL ORGANISATION AND ETHNIC GROUPS

#### Uganda

The dominant ethnic group in the project area is the Banyankole (92%). There are other tribes like the Bakiga, Baganda and Banyarwanda. The project area is cosmopolitan with a wide range of cultural practices due to the presence of different tribes and each with its own culture. The cultural diversity is further impacted on by the existence of various religious beliefs.

The population within the project area is basically Christian with the Catholics as the most dominant. However, traditional beliefs are very much part of the cosmology of the people.

#### Rwanda

Rwanda has registered, since the 1959, just at the previous day before the independence (1/7/1962) a lot of troubles that could be awarded to the ethnic bases (Hutu, Tutsi, Twa). These troubles to the resulted in 1994 to a terrible genocide. The actual government, within the programme of reconciliation of the whole Rwandan population, advocates the recognition of sale population composed Rwandans, possessing, the same culture, same language (the Kinyarwanda) and same territory since many centuries in order to eradicate the roots of the genocide's spirit and then thwart the history's malformation.

The actual ethnic diving up of the Rwandan population comprises around 85% Hutus, 14% and Tutsi, 1% of the Batwas. The Batwas compose the native group of the central region of Africa. It

<sup>5</sup> Source : ville de kigali, 2006

<sup>6</sup> Densité calculée sur base de la superficie habitable



consists of a community which is very marginalized to the social and economic plans. Having in origin traditional activities oriented to the exportation forests, they are actually concentrated within the rural zone. Generally, they do not possess the agricultural lands and depend mainly from the artisan's making of pottery as sources of revenue.

Consequence of the conflicts, the zone of study had and has always significant migrations of refugees as well as people moved inside the country. No data are easily available in order to specify these movements.

In addition, the society is organized in various social structures of which in particular no governmental often gathered in forum (NGOs) and at Community base (OBC) local and other nonofficial actors such as the religious confessions, the labor unions and the media.

The dominant religion is the Christianity (more than 90 %) of which Catholics and Protestants. The Moslems are slightly represented in the zone of study separately in certain urban centres.

#### 5.3.4. HEALTH

##### Uganda

Life expectancy in Uganda is 47 years, and is slightly higher for women than for men. It is assumed that men are exposed to higher risks (wars, alcoholism and drugs) in their life time than women.

In Mbarara district, the total fertility rate is 7.8 children per woman, considerably higher than the average of 5.2 for Sub-Saharan Africa and 6.9 for Uganda. Maternal mortality rate is estimated at 504/100,000 live births (Mbarara District State of the Environment Report 2004). In 2006, the infant mortality rate in Uganda was 66.15 deaths per 1,000 live births.

Common diseases in the Mbarara district include: malaria, respiratory diseases, intestinal infections, diarrhea and skin infections while the most prevalent disease in Ntungamo is malaria followed by intestinal worms, sexually transmitted diseases, diarrhea, skin diseases and others like injuries and burns.

The prevalence rate for HIV in Uganda has dropped from 15% in the 1990's to present levels of 6%, below the Sub-Saharan Africa average of 7%. However, prevalence rates are high among young people aged 15-24 (7%), and particularly among young women (10.3%).

In spite of this recent improvement, the situation may change in the future with the new "abstinence-outside-marriage" government approach instead of the previous ABC (Abstain, Be Faithful or use a Condom) approach (AWID, 2006).

For every one Ugandan boy infected with HIV, there are six girls. In fact, abstinence-only approaches fail to address the underlying reasons why girls and young women are more infected and affected by the virus. Many girls are forced by poverty into sex work. Others see no option but to enter into relationships with older men.

Furthermore, abstinence programs do not address the vulnerability of women within marriage to contract HIV from unfaithful or polygamous husbands. They also neglect the needs of lesbian, gay, bisexual and transgender individuals who are not recognized by Uganda's laws as full citizens.

The answer to the social inequalities that translate into the disproportionate toll that HIV/AIDS takes girls and women does not lie in condom use. However, neglecting this, or any other of the pillars of Uganda's success in bringing down HIV infection rates will inevitably have a disproportionate effect on girls, women and the LGBT community.

##### Availability and access of health facilities and services in Uganda

The majority of people in project districts live within 5 km of the nearest health facility, although 20-35% is more than 5 km away in some parts of the project areas.

**Tableau N° 13. ACCESSIBILITY OF HEALTH SERVICES (% POPULATION)**

District	≤ 5 km	> 5 km
Mbarara	65.6	34.4
Ntungamo	78.2	21.8
Western	71.5	28.5
Uganda	73.2	26.8

Source: 2002, Housing and Population Census

The majority of the people go to clinics and health centers level II, III and IV as per the Government categorization of health centers. The hospitals are relatively far from most households. These health centers are characterized by inadequate stock of drugs, lack of or no qualified medical personnel, lack of access to power and lack of modern facilities for proper diagnosis.

During the public consultations, it was established from the focus group discussions that the very poor resort to other means of treatment like witchdoctors, herbal treatment and community health workers.

Mbarara district has a total of 88 health facilities, including 72 Health Center (HC) II (outpatients department/OPD), 3 HC III (OPD and Maternity ward), 9 HC IVs (OPD, Maternity, Inpatients ward and an operation theatre) and 5 referral hospitals. However, the theatres at the HC IVs are not operational due to lack of power. While most HC IIs have no qualified medical staff as the Government's health policy concentrates on staffing only up to HC IIIs. The doctor-to-population ratio is 1:55,000, while that of nurses is 1:18,000. This indicates the gap in the provision of health services in the district (District State of the Environment report, 2004).

In the project area, each of the affected sub-counties of Nyakayojo and Bugamba has a health centre and many small private clinics and drug shops. They have Mbarara referral hospital which is in the municipality for complicated diseases.

Information about the distribution of health centers in Ntungamo was not easy to come by but from the literature reviewed, the status of health centers and mode of operation in Ntungamo is similar to conditions in Mbarara district. Itojo hospital serves the district as a referral hospital. Mini operation theatres have been built at the three HC IVs of Rwashamaire, Kitwe and Rubaare. HC III units which are located at every sub-county serve the community at lower levels. For example in the project area, there is a health centre in Rukoni and their referral hospital is Itojo which is about 30 km from the project area and 15 km from Ntungamo town.

The range of health services offered by these health centres are basically limited to outpatients departments, laboratory, maternity for normal delivery and inpatient services for communicable diseases. Dental, eye care clinics and operation theatres within the project area are not operational. On the whole, facilities are overstretched and inadequate. Medicines are also insufficient in many of the centres in rural areas and where they are available the people cannot afford the medical bills given the high incidence of diseases due to poor hygiene and low levels of sanitation. Most of these health facilities are far away from the roads and will not benefit from this project directly.

#### Rwanda

The life expectation in Rwanda reaches 44 years for men and 47 years for women (WHO, 2006). The indicators of development connected to health indicate a deterioration of the health of children and adults since has few years. The misses of infantile mortality (death) misses reaches 118 for has thousand borths. The yorothful mortality misses reaches 152 for has has thousand borths and the maternal mortality misses reaches 750 for 1 000 000 borths (UNDP, 2007). The adult mortality has for hand causes the malaria (6 510 boxes for 100 000 citizens) and the HIV/AIDS (13,7% among the population of 15-49 years). The AIDS prevailing reaches, moreover, 11, 2% At the national level and 10,8% in rural areas. The women aged from 15 to 24 years contaminated by the virus of AIDS represent 13,7% according to MINECOFIN/UN.

Within the north-eastern part of the districts of Gatsibo and Nyagatare, we register 20 health care centres and tree hospitals. The health infrastructures are less developed in contrary to the south-western and north-western par of the country.

Within the zone of high altitude of Byumba, we identify 30 health care centres and two hospitals. Each district possesses at least are health care centre.

### 5.3.5. EDUCATION

#### Uganda

Close to 60% of all Ugandans have no schooling or have only completed part of their primary education, and only 15% have completed the primary level. The status of education in Mbarara and Ntugamo Districts is good. The Districts have Primary Schools, Nursery Schools, Secondary Schools, Teacher Training Colleges, Farm Institutes, Technical Colleges, Technical Institutes with one University in Mbarara District. The table 14 shows the distribution of Educational facilities in Mbarara District.

**Tableau N° 14. EDUCATIONAL FACILITIES IN MBARARA DISTRICT**

Status	Number of schools Nombre d'écoles
Private Primary Schools Écoles primaires privées	3
Government Primary Schools Écoles primaires publiques	587
Private Secondary Schools Écoles secondaires privées	11
Government Secondary Schools Écoles secondaires publiques	39
Teacher Training Colleges Collèges pour futurs enseignants	3
Technical Colleges Collèges techniques	3
Technical Institutes (Private) Instituts techniques (Privés)	2
Farm School École d'agriculture	1
Farm Institute Institut agricole	1
National Teachers' College Collège national des futurs enseignants	1
University Université	1

Source: Department of Education, Mbarara District

However, issues of accessibility and quality are still a daunting challenge. Uganda Bureau of Statistics (UBOS) 2002 estimates show that 88% and 96% of households in respectively Mbarara and Ntungamo district live within 5 km of the nearest school.

With the Universal Primary Education (UPE) and Universal Secondary Education (USE) policy of free education entitles equal access to primary and secondary school education for girls and boys, more than 90% of the children are in school. Although there has been a significant improvement in primary education sex ratios, the national enrolment figures show that with higher classes, the gender imbalance increases with a ratio of 55:45 in favour of boys. This shows that girls are more likely to drop out of school, a reflection of the social and cultural disadvantages that they face.

#### Rwanda

In Rwanda, the most recent statistics indicate that the net enrolment rate at primary school has passed to 85,9% and to 10% at secondary school (UNDP, 2007). The illiteracy among the adults is highest women (48,5% than among men 37,5%). The illiteracy is mainly accented (stressed) among the poorest (54,1%). The level of profession's learning is highest among the men (9,1%) than among the women (5,8%). In the rural area, the average distance to reach the

primary school which is the nearest is 2,5 km in medium (average). Globally, 30% of the quarters have their own primary schools and 51% of quarters benefit from a literacy programme for adults (MINECOFIN, 2002).

Within the north-eastern part of the districts of Gatsibo and Nyagatare, we identify (register) around 116 primary schools, 17 secondary schools and a college.

Within the zone of high altitude of Byumba, we register over 164 primary schools and 27 secondary schools. Each district possesses at least fifteen of the primary schools and a secondary school.

Within the zone of high altitude of Byumba, we register over 164 primary schools and 27 secondary schools. Each district possesses at least fifteen of the primary schools and a secondary school.

### 5.3.6. GENDER EQUALITY

#### Uganda

In 1988, the Government of Uganda created the Ministry of Women in Development to mainstream gender into the development process and draw attention to key concerns affecting women, such as property ownership and legal rights, as well as exploring means of addressing these issues. Within the Local Council (LC) system of government from the village to the district level, up to one third of LC seats is allotted to women by law. There is also a Secretary for Women on each LC. Furthermore, each of the 56 districts has a woman representative in Parliament; women held 23.9% of the parliamentary seats (UNDP, 2005).

In Uganda, men own and control land while their wives only have user rights. A few women may gain control over land given to them by their fathers as a wedding gift. Traditionally, the daughter and her husband then control its use, but in a few cases, the woman's father remains the owner (Nyakoojo, 2002). Some widows can own and control the land that belonged to their husbands; and, pass it on to their daughters as well as sons. However, a widow's rights to land depend very much on her relationship with male in-laws (EASSI, 2002). The Land Act (1998) provides a legislative framework for equitable ownership of land, enabling women, especially rural women, to own as well as have control of their land. Currently, the Land Act and the Domestic Relations Bill are being amended to strengthen women's land rights.

Evidence from Uganda Participatory Poverty Assessment Process Phase II Report (UPPAP II) reveals that although women are usually responsible for feeding their families and providing for other household needs, they have no control over the productive resources like land, agricultural produce or money. Men decide on how family income should be spent, and in many cases, use it for their own benefit, instead of the household's. Furthermore, the unequal division of roles and responsibilities results in women being overburdened, there by reducing their productivity.

#### Rwanda

The concept gender is not yet well understood at the level of households at the same time by men and women. The discrimination towards the women originates from the culture and the tradition (custom) that have always considered the girl as inferior to the boy, physically, intellectually and socially and which should be submitted to the man. The women benefited from the masculine ^protection and that isolated them from the possession of immobilized properties a part from reducing their role in the society management. The frequency of the polygamy or cohabitation within certain regions constitutes also a constraint to the promotion of gender and to development

The legislative context does exist or remains discriminatory concerning the protection of the women's right. As demonstrated by the statistics reported above, the actual situation together with the opportunities remains fundamentally different and worse for the women than for the men.

Practically, the crisis worsened by the traditional inequalities woman/man for the access to the necessary resources in order to enable the households to respond to their basic (staple) requirements. The rural women have no access to the control of property, particularly by that of agricultural lands; they also confronted to a lack of education and necessary training to gain sufficient money in order to cover their family's requirements and/or acquire the means in order to improve the agricultural production.

Rwanda makes endeavours in order to progressively correct this situation but the culture constitutes again a barrier to the acceleration of the process. The new act on land's policy (the organic act n° 8/2005) elaborates the rights to equal properties for both women and men. Many feminine associations among which PRO-WOMEN TWESE HAMWE, HAGURUKA, DUTERIMBERE, WOMEN'S NETWORK, AVEGA AGAHOZO try to do their best to train women within the fields related to the promotion of the concept gender, to the promotion and protection of the women's rights and to the reduction of the poverty by the initiation of projects which generate the revenue to their target groups.

### 5.3.7. ECONOMIC ACTIVITIES

#### Uganda

The labour force participation rate is 67%. The formal sector employs 9.3 million people, where 95% are involved as own-account workers, unpaid family workers or temporary/casual labour in the private sector. The informal sector employs 1.5 million men and 1 million women.

The unemployment rate in Uganda is 3%, and is a serious problem in rural areas, where women are twice as likely to be without work compared with men. In urban areas, young people and, particularly, young women experience high levels of unemployment. In addition, the incidence of people being underemployed (15%) is five times the unemployment rate. In particular, for every man who is unemployed there are two more who are underemployed.

About 90% of the rural populations of Mbarara and Ntungamo depend on agriculture for their livelihood and incomes (UBOS, 2002). Both districts are known for raising dairy and beef cattle; 17% of the area of Ntungamo is devoted to this, including fenced farms and communal grazing areas. Other livestock include goats, pigs, rabbits and chickens. Nearly 80% of the population are engaged in pastoralism and practice subsistence agriculture.

Arable land represents 90% of the total area of Mbarara district and 43% of the total area is under cultivation. Major crops in both districts include bananas, coffee, maize, beans and millet. Other agricultural enterprises include beekeeping using traditional and modern hives (Ntungamo District State of the Environment report, 2004); and, lemon grass oil production and floriculture (Ntungamo District, 2005b).

In rural areas, men who are not farmers tend to be involved in wage employment (10.5%) as livelihood strategy. On the other hand, women who do not farm rely on family support (11%). Industrial development in the project area focuses on agro-processing of milk, coffee, hides and skins. Other small-scale industries include metal fabrication, wood works, brick making, shoe makers and grain milling. There are also stone quarries which provide materials for road construction and building.

The Gross Domestic Product growth rate in Uganda for 2005 was 5,3% and the GDP per capita was 1,900\$ in 2006. It is estimated that 35% of the population is living below poverty line.

## Rwanda

On the economic aspect, Rwanda is one of the poorest countries world wide (globally). It is estimated that 60% of the population lives under the poverty edge collectively, the economic activity in Rwanda is marked by the predomination of the agricultural sector. The population living thanks to agriculture was 87% in 2002 (providing) creating jobs to 88% of the active population, contributing to 47% of the IDP and for 71% of the exportation revenues (coffee, tea, “pyreter”).

The agricultural average surface per family is estimated 0, 76 ha. The subsistence agriculture constitutes around 66% of the agricultural production. The exchange on the market, which consists only of around 34% of the production, is destined to feed the non agricultural households (estimated to 11,4%) but also the agricultural households which rely on the market in order to satisfy partly their food supplying requirements.

The secondary sector employs 2% of the active population of which 0,2% are women. The services’ sector occupies only 6,6% of the population of which 4,1% are men and 2,5% of women. The informal sector represents 79,8% of jobs and the public sector and parastatal represent only 2,4% only within the city of Kigali. The other activities sectors consist of commerce (trade), the public service, the manufacturing activities, the extractive industries, the construction etc, and this one very little proportions being less than 2%.

The economically active population accounts 62,5% of people aged of seven years and beyond comprising the families of unpaid cultivators. The proportion of women who work (64,4%) is higher than that of men (60,3%). It is noted that 14, 5% of children carry on a remunerated work within the rural communities.

The IDP per (inhabitant) citizen is estimated to 1 600 \$ in 2006. The growth rate IDP for the same year is 5,8%.

## 5.3.8. AGRICULTURE AND LIVESTOCK FARMING

### 5.3.8.1. AGRICULTURE

#### Uganda

In the southern half of the country (where the transmission lines will be located), rich soil and rainfall permit extensive agriculture. Approximately 21% of the land is cultivated; and, 45% is woodland and grassland, some of which has been cleared for roads, settlements, and farmland. In both project districts:

Agriculture is practiced on the plains, low hill slopes, and on the fringes of wetlands.

Tree planting is along the roads, uppermost part of the valleys and hill tops.

Along the proposed line route, crop farming is the major system mainly found in all the affected sub-counties. The main perennial crops are coffee and bananas; the main annual crops include beans, millet, sorghum, peas, maize, groundnuts, onions, tomatoes, sweet potatoes and bananas. New crop varieties such as Irish potatoes are being introduced in an effort to diversify the economic base and to improve diet and nutritional levels. In the proposed wayleaves, there is a mix of agriculture and dwellings. Crops grown are mainly annual crops.

Because of the subsistence agricultural economy in the project area, as is the case in most of Uganda, agriculture assumes a high intrinsic value since without it the communities would perish. The crops are sold in their raw form which makes it difficult for a farmer to access regional markets (better prices). On the other hand there is a high potential for increasing the agricultural export value (commercial agriculture) through modernization of agriculture.

## Rwanda

The agriculture is the main economic activity of the country which is translated consequently by the intensive use of the soil for agricultural purposes. The available land to be cultivated by family's agricultural exploitation is 06,6 ha. There, however regional differences concerning the availability in cultivable land per household which varies from less than 0,25 ha to 2 ha. To this surface we may add the one occupied by the swamps which reach 165 00 ha.

The agricultural population that consisted of 87% in 2002 (provided) created jobs to 88% of the active population, contributing for 47% of the IDP and for 71% of the exports' revenues (coffee, tea, « pyreter »). The food-producing cultivations occupy 92% of the cultivated surfaces while the coffee and tea (occupy) cover respectively 6, 3 and 1, 6% of the cultivated lands. The typology of the exploitation policies enables to distinguish 3 types of producers with strategic specific characteristics: the small independent farmer, the autonomous producer, the production system referring to the capitalization that the production system referring to the capitalization that is encountered particularly among the agricultural cooperatives and associations. The average of cultivated surfaces on the period 1997-2003 reaches 1 423 033 ha<sup>4</sup>. These surfaces are decomposed in 18% for the cereals, 26% for the vegetables, 26% for banana trees, 28% for the cassava trees and the roots. In 2002, the cultivated surfaces represented 74% of lands, which were available whole the follows-pastures, wooded places and other uses represented respectively 14%, 7% and 5%. The typology of the agricultural exploitations indicate that 17% of the exploitations have less than 0, 25 ha; 26% between 0, 5 and 1 ha and only 28% have beyond 1 ha (MINAGRI, 2002).

Within the zone of study, the seasoning cultivations are done on the hills and also on the « deepest-bottoms » which are among which the sorghum, the sweet potatoes, the smallest peas the maize, the sunflower and the « colocases ». The lasting cultivations represented by the banana trees are among the most important ones then cultivated at altitudes that are inferior to 1 800 m. the cultivations of flooded swamps (trading cultivations) are mainly the sugar cane cultivations practiced from along the Nyabugogo river's swamps, behind the sugar facility of Kabuye until the fork of the road which flows along the Muhazi lake on the side of Rwesero. The flooded rice cultivation practiced in the north on the shores of the river Warufu and Muvumba from the locality of Mimuli just in front of the town of Nyagatare. The paddy cultivators are trained by the cooperative of the Paddy Development of the Valley of Mutara (COPADEVVA).

The strategy of the food guarantee consists of:

- the implementation of programmes related to the productivity's increase within the food-producing traditional sector,
- the intensification of the production for strategic products such as the paddy (rice), the maize, the potatoes,
- The targeting of the vulnerable zones and groups, taking into account the existing disparities among the social groups and at the level of regions and the possible shocks which would affect them. The zone of study is targeted for the intensification of the cultivation of rice (paddy) and maize in low altitude and the cultivation of fruits and the horticulture in high and middle altitude.





Photo 6. Flooded rice near Chabayaka

#### 5.3.8.2. LIVESTOCK FARMING

##### Uganda

In both districts:

Dairy farming is practiced on reclaimed wetlands and fenced off hill slopes.

Pastoralism is practiced on communal land located mainly on slopes of hills and in areas that are sparsely populated.

In Mbarara municipality where the line will start from, cattle grazing is common as exemplified by Mbarara Stock Farm for NARO.



Photo 7. Mbarara Stock Farm

## Rwanda

Concerning the farming, Rwanda possesses 991 697 bovinas (cattle) among which 86% belong to the local race with (weak) little milk and meat production, against 13% of the mixed races and 1% of pure races. It also accounts 1.270.903 «caprons», 371.766 ovines, 211918 porks, 498401 rabbits and 2482 124 poultry.

The bovine listock is concentrated in the north eastern part of the country, mainly within the districts of Gatsibo and that of NYAGATARE which counts over 280 000 cattle. The subsector of farming is aimed to cover 10% of the protein's requirement of the population that 5 to say 6 grams per person and per day ( according to the FAO/WHO standards calculated for Rwanda ). However, this proportion has never been reached and the achievement which is the most signification has been obtained in 1989 during which the report of farming was estimated to be 4 be grams per person and per day.

Concerning the practice of bovine farming in Rwanda, it is the of family-orveted sort (type). The behauaux way observed are those consisted of the integrated extensive pasture the integrated intensive posture, the ssemi-permanent stabulation. The little cottle is characterized by the cows's groups which are smallest in comporison to the requirements and having little genetic performances. The forming is mainly reserved to the peasants halding smallest exploitation (farms). The pork farming is mainly managed within a situation of semi-per manent "stabulation". For the poultry, the extensive traditional forming is composed mainly of the nation productron while the rabbits are domesticated withor the smallest strips able to move (corry) about 10 units.

The fish farming is generally practrced for the local requirements.



Photo 8. Grazing area in the northern Rwanda



Photo 9. Rwanda - Livestock near Nyagatare

### 5.3.9. INFRASTRUCTURES AND SERVICES

#### 5.3.9.1. TRANSPORTATION

##### Uganda

All the roads in the project area are gravel and a motorist can maintain a speed of 50-60 km/h without difficulties. Almost all sections of the area are accessible by a well established network except for some sections in Bugamba which is hilly and may be difficult to cross during the rainy season. The motorable road runs from the Mbarara – Kabale road to Mirama post on the Uganda Rwanda border.

##### Rwanda

The road network ( connectron) is organized in four categories ; the national roads, the asphalted roads, the non asphalted notional roads, the secondary or community roads and the urban roads. The average national distance to a road is unknown, however, a report from the imidugudu has anabled to calculate and ensure that the averge distance to amain road was 4.1Km but it changed from 0 to 20 km. in Rwanda, the roads are classified within 1.101 km of rood of international importance, 2.086 km of roads of national importance and 2163 km secondary or of roads of local importance. There are also 110 km of other urban roads and 6650 km pf roads or rural track.

On that network, 1069 km are asphalted. the main ways of access to parts ( harbours are straight road till Mombasa where the road reaches Kampala and also the rail way until Mombasa and the road till Issaka besides by the rail way or road until Dar-es Salaam. The improvement of these connectrons is a key factor in order to reinforce the integration to in ternational markets. The aerial way is so far less developed. Rwanda holds an internation air porort, the Kanombe air port located within the city of Kigali. For internat connections, the countries holds (possesses) three civil acrodromes at Kamembe, Rubavu and Huye.

#### 5.3.9.2. WATER

##### Uganda

Drinking water coverage in Mbarara district is estimated at 39% with 84% functionality rate, while Ntungamo district has 83% coverage with 82% functionality (Water and Sanitation Sector Performance Report, 2005). National average of safe water coverage is 61.3%.

In terms of accessibility, 6% of households in Mbarara district have water facilities on their premises and 60% live within 5 km of the nearest water source. In Ntungamo, 4% of households have water facilities on their premises, but 79% live within 1km of the nearest water facility (UBOS 2002). The main sources of drinking water in the districts are boreholes, protected and unprotected springs, and gravity flow schemes. Other sources include wetlands, streams and rivers.

Sanitation situation in both districts is characterized by poor solid waste management and low latrine coverage. This has resulted into water pollution and the increased burden incidence of water related diseases.

#### Rwanda

Water provision within rural areas in Rwanda is done through the means of three important systems that are: i) simple systems of water passage (788) with columns of water supplying (7421) and individual connection (2483), ii) sources of protected water (18241) and iii) systems of complex pumping which provide water through two or three districts (50) and though over one province.

The provision of water let arise two important questions for the reduction of poverty: the time wasted in searching for (seeking) water and the quality of the collected water which is used at home. The drinkable water is often isolated from the household (residence) mainly within the north-eastern zone, which constitutes a significant burden to the time management of women and girls in particular. For example, over a household out of five within the distance of gatere and Gatsibo live at a distance of beyond one hour from their water source this has implications on the life quality of women and girls, on their economic productivity and to the access to education and their personal safety.

The bad condition of access to the drinkable water should not constitute a major problem owing to a good level of water resources in Rwanda, with rains which are sufficient, a great number of sources within the valleys, many lakes, rivers and underground water tables. However, with the important number of hills and the populations, intention (tendency) to settle within the regions of high altitude, the distances to water source of the valleys are often very long and have an impact on the time and the chore (drudgery) of women and girls for the collection of water.

According to a report from ELECTROGAZ (a public enterprise supplying water, the electricity and gas), for the year 2005, the total number of customers in 2005 for water reached 38529 and the quantity distributed was 15843726 m<sup>3</sup> of which 11,8% for the rural area. It is probable that the individual connections are largely concentrated in the zones and households with high average incomes and that the poor groups in the rural and peri-urban zones and those of unauthorized residences do not have access to the limited services provided by this company.

#### 5.3.9.3. ENERGY AND RURAL ELECTRIFICATION

##### Uganda

Fire wood is the major source of energy in the project area. It provides over 90% of the energy requirements of most households in the districts. It is used for cooking, lighting and heating and is readily available in most rural areas either from neighboring forests and woodlands or from family woodlots. No firewood is brought from other districts.

With increased commercialization of wood fuel, most households have reverted to the use of agricultural residues such as maize, sorghum and cassava stems especially in areas of Rwampara where the tree cover has been reduced. The use of agricultural residues for energy is detrimental to soil fertility because residues are not returned to the soil to replenish soil nutrients.

Electricity coverage in the country is about 9% according to the Ministry of Energy and Mineral Development (2006). It is estimated that approximately 4% of the rural population of Uganda has access to electricity. After the sun sets in Uganda (reliably at 6PM throughout the year), the rural population must rely on reeds, candles or small kerosene lamps for light, which causes health and environmental problems. There is no electronic contact with the outside world except through battery-operated appliances. Work at night is not possible and economic development, even in daylight, is limited without electric power.

However, the Government has developed Energy for Rural Transformation Program. The long term objective of the Program is to develop Uganda's rural energy and information/communication technologies (ICT) sectors, so that they make a significant contribution to bringing about rural transformation. The Program aims at increasing rural access to energy from 1% (estimated at 4% as per 2006) to 10% in ten years through (i) grid extension/connection, (ii) independent power producers; and (iii) solar energy.

The Energy for Rural Transformation Program incorporates a cross-sectional approach under which an explicit effort is being made to ensure that the end user sectors such as Health, Agriculture, Education and Water benefit from the expansion of rural access to energy and ICTs. In this way, even people who are not directly connected by the expansion will also benefit from the newly introduced services. The table 15 below shows the rural electrification plans in the project areas.

**Tableau N° 15. RURAL ELECTRIFICATION PLAN IN THE PROJECT AREA**

District	Line Description Description de la ligne	Length Longueur (km)
Mbarara	Nabiganda - Kafunzo	42
	Kafunzo-Nyalubale	27
Ntungamo	Kitwe- Rwoho	19.6
	Kakukuru- Nyakera	20.6
	Rwentobo- Ngoma	6.3
	Butare Spur	4.9
	Rwashamaire- Nyabihoko	5.1

Distribution of proposed small hydro schemes which are likely to be developed for supply of energy to the existing or proposed grids in the project area are shown in the table 16 below.

**Tableau N° 16. SMALL HYDRO SCHEMES IN THE PROJECT AREA**

District	Site	Estimated Capacity Capacité estimée
Mbarara	Kikagati	3.5 MW
	Nsongezi	22 MW
	Rwizi	0.49 MW
	Cresta Mines	2 MW

#### Rwanda

The main source of energy in Rwanda is mainly the wood and it is used by 90,2% of population while 8,4% use the charcoal. Only, 2,4% of Rwanda dan households in rural areas are customers of electrogaz (subscribers). Other sources of light such as the candle and the kerosene lamps are used in highest proportions in rural areas, among which 80,6% and 72,2% of households within the districts of the north eastern parts (Gatsibo and Nyagatare).

The availability of the electricity in order to support the transformation of agricultural products and other related industries in rural areas remain the pertinent question in order to reduce the poverty. The provision of the electricity is well targeted at the level of the community and also to that of the households in the way to support the economic activity rather than the sole consumption. It seems also that there is a certain insufficiency of trading and transformation infrastructure within the rural area in order to prompt the development of electric productive infrastructures. Only related to the same report from electricity for 2005 the number of subscriptions to electricity reached 70 187 and the whole electricity distributed reached 203 599 mw/h.

During the contacts made among the communities of the zone of study, the needs in energy have repeatedly been expressed. This supplying in electricity is particularly important in order to support the development efforts of infrastructures undertaken. These infrastructures are particularly connection to the development of industries of transformation of agricultural products (maize, potatoes), to the development of tourism, of information technologies of communication (ICT) within the schools at all levels and within the agglomerations as prompted infrastructure.

### 5.3.10. CULTURAL HERITAGE

#### Uganda

Uganda has a very strong culture heritage. Many regions have kingdoms including Banyankole of Mbarara and Ntungamo. Kingdoms are common in the central and western parts of the country while other regions culturally operate through clans. Ugandans are remarkable hospitable and hail from a diversity of rich cultures and life styles. Each tribe has its own traditional practices.

Culture and traditions are also expressed through a wide range of arts and crafts made from wood, papyrus reeds and local materials. These include black smith implements, beaded jewellery, wood carvings and batiks.

There are a number of grave yards, for example Katatumba tombs near Mbarara, but at a certain distance of the proposed line corridor.

#### Rwanda

In Rwanda, the provinces of the project zone possess different cultural, historic or legendary sites recorded (registered) by the OTRPN (2005). There are over 83 natural and cultural sites within the country. Among these elements are mainly:

- elements of the natural environment having a significance symbolic system, history, legendary or cultural such as trees, caves, rocks, hills, sources, marsh, thickets, etc;
- elements of the built inheritance, like royal residences, wells, churches, etc
- the monuments like genocide memorials, tombs, etc.

No monument or another patrimonial element was located in the zone of study.

## 5.4. ENVIRONMENT CROSSED BY THE WAY LEAVE: COMMUNITIES

### 5.4.1. METHODOLOGY

The following data were collected during the meetings at community level: background socio-economic data, socio-educational infrastructures, socio-economic activities, industry and trade, access to drinking water, rural electrification, manpower and services, impacts related to the transmission line way leaves, and concerns about the impacts of the way leaves. All the information was recorded as well as names of participants.

After the presentation, group members in their diversity asked questions, sought clarification, and raised opinions and comments which were recorded. Questions were answered by the team, except those that were beyond their knowledge and related mainly to technical issues on electricity, construction of towers and contractual issues which the team could not authoritatively respond to. The team assured the groups that their unanswered questions and concerns would be addressed at later dates.

### 5.4.2. POPULATION AND RELIGION

#### Uganda

The population of the communities is considered rural at 99%. On average there 4.8 person in each household. There is slightly more women (53%) than men (47%) in the communities crossed by the wayleave. In the Uganda part of the project Christian represent 90% of the population, divided approximatly in two equal groups of Catholic and Protestant.

**Tableau N° 17. UGANDA/UGANDA - RELIGIOUS GROUPS**

Religion	%
Protestante Protestant	49%
Catholique Catholic	41%
Musulmane	5%

Muslim	
Pentecôtiste Pentecostalist	1%
Autres Others	4%
Total	100%

#### Rwanda

The population of the crossed sectors is mainly rural. The households include, on average, 4,5 people. The Christians are the essential of the population, among those Catholics represent 52% of the households.



**Tableau N° 18. RWANDA - RELIGIOUS GROUPS**

Religion	%
Catholique Catholic	52%
Pentecôtiste Pentecostalist	27%
Protestant Protestant	13%
Adventiste Adventist	5%
Musulman Muslim	1%
Baptiste Baptist	1%
Témoin de Jéhovah Jehova's witness	1%
Autres Others	1%
Total	100%

#### 5.4.3. ECONOMIC ACTIVITIES

##### Uganda

In the affected communities farming is the main economic activity. The families live mainly on their production and sale only a small percentage of their product. Tea and sugarcane are the main cash crops, aize, sorghum and cassava are the main food crops. Livestock are raised mainly for the families need.

A small proportion of the villages households are small merchants or qualified workers and offer their services or products.

##### Rwanda

The agricultural production occupies the huge majority of the families of the crossed communities. The production is mainly consumed by the farmers' families and only a small proportion of the production is sold. You can also find a certain number of household occupied by the activities of trade, of transformation or others.

#### 5.4.4. MANPOWER AND SERVICES

Among the communities crossed to Uganda and to Rwanda you can find some people having qualifications being able to allow them to possibly work with the construction of the line, of which welders, iron workers or drivers. A certain number of canteens or restaurants were also listed in the crossed communities.

**Tableau N° 19. UGANDA/UGANDA – NUMBER OF QUALIFIED WORKERS AND SERVICES IN VILLAGES CROSSED BY THE WAY LEAVE**

Métier - Profession	Nombre de personnes Number of persons
Monteur d'acier – Iron worker	9
Menuisier – Carpenter	23
Soudeur – Welder	11
Électricien – Electrician	7
Chauffeur de camion – Truck driver	16
Opérateur de machinerie lourde – Heavy machinery operator	3
Mécanicien – Mechanic	48
Maçon – Mason	46
Peintre – Painter	31
Autres – Others	29
Services	Nombre d'établissements Number of establishments
Transport	0
Mécanique – Mechanic	0
Essence et produits pétroliers – Gaz and petroleum products	0
Machinerie lourde – Heavy machinery	0
Matériaux (bois, pierre, sable, etc.) – Materials (wood, stone, sand, etc.)	6
Cantine et restaurant – Canteen and restaurant	22
Autres – Others	1

**Tableau N° 20. RWANDA - NUMBER OF QUALIFIED WORKERS AND SERVICES IN VILLAGES CROSSED BY THE WAY LEAVE**

Métier - Profession	Nombre de personnes Number of persons
Monteur d'acier – Iron worker	9
Menuisier – Carpenter	57
Soudeur – Welder	12
Électricien – Electrician	7
Chauffeur de camion – Truck driver	2
Opérateur de machinerie lourde – Heavy machinery operator	2
Mécanicien – Mechanic	22
Maçon – Mason	186
Peintre – Painter	100
Tailleur – Tailor	13
Autres – Others	12
Services	Nombre d'établissements Number of establishments
Transport	0
Mécanique – Mechanic	2
Essence et produits pétroliers – Gaz and petroleum products	0
Machinerie lourde – Heavy machinery	0
Matériaux (bois, pierre, sable, etc.) – Materials (wood, stone, sand, etc.)	32
Cantine et restaurant – Canteen and restaurant	1

#### 5.4.5. PUBLIC BUILDINGS

##### Uganda

The survey of the ROW showed that 11 community buildings will eventually have to be move before the line is constructed. There are 5 schools and 4 churches among them. An estimated value of the replacement cost have been calculated.

The communities have no objection to the relocalisations if proper compensations are paid. The communities also ask for proper time notice to be able to proceed to the reconstruction before the start of the project.

**Tableau N° 21. UGANDA/UGANDA – PUBLIC BUILDINGS WITHIN THE WAY LEAVE**

Type de bâtiment Type of building	Nombre Number	Valeur estimée (UGX) Estimated value (UGX)	Coût de remplacement (USD) Replacement cost (USD)
École School	5	219 000 000	131 374
Terrain de jeu Playground	1	10 000 000	6 000
Église Church	4	120 000 000	71 986
Forage Bore hole	1	18 000 000	10 798
Total	11	367 000 000	220 160

Rwanda

The evaluations of the layout have allowed to take a census of 7 Community buildings, including 4 schools, which will have to be moved. The price of reconstruction of these buildings was estimated at 250 467 DUS. The communities do not have an objection with the relocalization of these structures if the paid compensations are enough for rebuilding. They also ask to be informed rather early to carry out this rebuilding before the beginning of the line works.

**Tableau N° 22. RWANDA – PUBLIC BUILDINGS WITHIN THE WAY LEAVE**

Type de bâtiment Type of building	Nombre Number	Valeur estimée (FR) Estimated value (FR)	Coût de remplacement (USD) Replacement cost (USD)
Église/Church District Gicumbi, secteur Rutare	1	76 000 000	142 589
Écoles/Schools District Gicumbi, secteur Rutare	4	20 000 000	37 523
Église/Church District Gasabo, secteur Nduba	1	33 000 000	61 913
Bloc de toilettes/Toilets	1	4 500 000	8 442
Total	7	133 500 000	250 467

#### 5.4.6. ENERGY SOURCES USED FOR DIFFERENT PURPOSES AND INTEREST FOR ELECTRICITY

##### Uganda

Among the communities crossed by the future wayleave 10% have access to electricity. This energy is used for lighting, welding and some entertainment appliance (TV, Radio). Of course, all the communities not connected want to have access to electricity. The project is seen has a good opportunity to do so. Electricity can be use in health center, small scale industries such as maize mills, coffee and wine processing factories and saw mills. Moreover the electrified communities hope that the new line will reduce or eliminate load-shedding.

##### Rwanda

The crossed communities are almost entirely deprived of an access to the electrical supply network; only 3% of them are connected. The needs are significant. A tea factory at Mulindi tests difficulties of finding the firewood. The flourmill of Byumba would profit from an access to this energy. Agricultural projects of transformations and livestock products are in project but the availability of energy is the principal obstacle in their realization. There refore, the whole of the crossed communities hope that the project will enable them to profit from an access to electricity.

### 5.5. AFFECTED HOUSEHOLDS

#### 5.5.1. METHODOLOGY

##### Rwanda

Information on the households affected by the way leave was collected thanks to a detailed investigation of the households which will be affected. In general, 303 households are concerned by the influence of the powerline. The average size of these households is 4,5 people.

**Tableau N° 23. RWANDA : HOUSEHOLD AND POPULATION AFFECTED**

Districts	Nombre de Ménages Affectés Affected Households	Population (moyenne ménage : 4,5) Population (average household size: 4,5)
Gasabo	63	284
Gicumbi	69	311
Gatsibo	84	378
Nyagatare	87	392
Total	303	1364

##### Uganda

Data on affected household have been systematicaly collected. There is 519 household whose land is crossed by the future wayleave. Average size of these household is 7,5 persons.

**Tableau N° 24. UGANDA : HOUSEHOLD AND POPULATION AFFECTED**

Districts	Nombre de Ménages Affectés Affected Households	Population (moyenne ménage : 7,5) Population (average household size: 7,5)
Mbarara	250	1 875
Ntungamo	269	2 035
Total	519	3 910

### 5.5.2. POPULATION: NUMBER OF HOUSEHOLDS AND RESIDENTS LIVING IN PROJECT AREA

#### Uganda

Over 500 households are affected through the loss of structures, cultivation restriction (big trees) or loss of land for pylon or access road... The affected population profile is shown in the next tables.

The sex, age, marital status and occupation of the household head are good measures of vulnerability, because they determine the entitlements and coping strategies of various households. In that regard the above characteristics were investigated in detail as substantiated below.

Most (79%) of the respondents were males, this implies that it is mostly men who participate in the communal meetings especially during working hours as the women are always attending to their fields/gardens. Therefore during the course of implementation of this project, the time factor for any public consultations should be considered as it affects the gender representation. Most of the household heads (91%) are Banyankole.

The average household size for both districts is 7.5 persons. The large household size can be attributed to the extended family system. The majority (87%) of the surveyed household heads were male while significant percentages (13%) were females.

Table 36 below shows the economic activities of all the interviewed persons. The majority of the respondents (72%) are peasant farmers. From the proceedings of agricultural produce, they are able to purchase manufactured goods (radios, sewing machines, etc.), food items and clothes. A small proportion of household heads are shopkeeper (15%), or civil servant (6%).

The noteworthy number of female-headed families was attributed to the HIV/Aids scourge, the high rate of marriage breakdown and migration of the males to the city in search for jobs. This makes the population more vulnerable to deprivation in the absence of clear policy guidelines on distribution of resources. This population is considered highly vulnerable because of the fact that the majority are illiterate and relying solely on their small field for subsistence.

The table below shows the age distribution of household heads. Most (40%) of them were aged between 37-54 years. The significant number of households, 30%, headed by the elderly (55 and more) is attributed to the loss of lives of the middle aged persons because of the high prevalence of HIV/AIDS epidemic, which left many orphans in the custody of the elderly and migration of the middle aged to urban centers in search for jobs. (Table 32)

A large proportion of members of the households are young since 74% of them are 25 years old or less. (Table 35)

**Tableau N° 25. AGE OF HOUSEHOLD HEAD**

Groupe d'âge / Age group	%
1 – 18	1
19 – 36	29
37 – 54	40
55 – 72	16
73+	14
Total	100.0

**Tableau N° 26. UGANDA – HOUSEHOLD HEADS CHARACTERISTICS**

Caractéristiques Characteristics	% or age
Sexe et âge moyen / Sex and average age	
Hommes / Men	87%
Femmes / Women	13%
Âge moyen des hommes / Men average age	46
Âge moyen des femmes / Women average age	53
Âge moyen / Average age	47
Appartenance ethnique / Ethnic group	
Bagaganda	1%
Bakigas	5%
Banyankole	91%
Banyarwnadas	3%
Occupation	
Agriculteur / Farmer	72%
Éleveur / Breeder	0%
Artisan / Craftsman	1%
Commerçant / Shopkeeper	15%
Fonctionnaire / Civil servant	6%
Autre : directrice école privée, prêtre, occasionnel Other : private school principal, priest, occasional	5%

**Tableau N° 27. UGANDA – AGE GROUPS OF HOUSEHOLDS MEMBERS**

Groupe d'âge / Age group	Hommes / Men %	Femmes / Women %	Total %
0-4	9%	8%	17%
5-14	12%	12%	24%
15-24	12%	11%	23%
25-54	14%	14%	28%
55-64	2%	3%	5%
65 +	1%	1%	3%
Total	51%	49%	100%

**Tableau N° 28. UGANDA : OCCUPATION OF HOUSEHOLD HEAD**

Occupation	
Agriculteur / Farmer	72%
Éleveur / Breeder	0%
Artisan / Craftsman	1%
Commerçant / Shopkeeper	15%
Fonctionnaire / Civil servant	6%
Autre : directrice école privée, prêtre, occasionnel Other : private school principal, priest, occasional	5%

Rwanda

More than 300 households are concerned by the implementation of the line. It should be noted that a significant proportion of the households (34%) have a woman as a chief. The genocide of 1994 as well as the epidemic of AIDS probably explain this situation. The average age of the heads of household is 44 years. Among of these people (99%) state to practise agriculture. The proportion of young people of less than 25 years in the households is very significant; it reaches 64%.



**Tableau N° 29. RWANDA – HOUSEHOLD HEADS CHARACTERISTICS**

Caractéristiques Characteristics	% or age
Sexe et âge moyen / Sex and average age	
Hommes / Men	66%
Femmes / Women	34%
Âge moyen des hommes / Men average age	43
Âge moyen des femmes / Women average age	46
Âge moyen / Average age	44
Occupation	
Agriculteur / Farmer	99%
Éleveur / Breeder	0%
Artisan / Craftsman	0%
Commerçant / Shopkeeper	1%
Fonctionnaire / Civil servant	0%
Autre / Other	0%

**Tableau N° 30. RWANDA – AGE GROUPS OF HOUSEHOLDS MEMBERS**

Groupe d'âge / Age group	Hommes / Men %	Femmes / Women %	Total %
0-4	6%	5%	11%
5-14	14%	14%	28%
15-24	15%	10%	31%
25-54	16%	15%	31%
55-64	2%	2%	3%
65 +	1%	2%	2%
Total	53%	47%	100%

### 5.5.3. LAND IN THE WAYLEAVE USED BY THE HOUSEHOLDS

#### Uganda

The construction of the line will affect 331 houses and many kitchens, fences and latrines. All these structures will have to be move. In some cases the households have another piece of land for reconstruction but many do not. The fairness of compensation is very important for them because they need enough money to by another piece of land to reconstruct their house.

**Tableau N° 31. UGANDA/UGANDA - HOUSEHOLDS' STRUCTURES WITHIN THE WAY LEAVE**

Bâtiments Structures	Construction			Superficie moyenne Average area (m <sup>2</sup> )	Terrain pour reconstruction	
	Type	N	% des 519 ménages % of the 519 households		N	%
Structures principales / Main structures						
Maison House	Permanent	97	19%	147	46	47%
	Semi- permanent	117	23%	68	23	20%
	Temporaire Temporary	117	23%	75	31	72%
Structures secondaires / Secondary structures						
Abri pour animaux Animal shed	n.a.	19	4%	109	n.a.	
Clôture Fence		26	5%	2 281*		
Cuisine Kitchen		162	31%	26		
Toilette Toilet		214	41%	19		
Tombe Grave		19	4%	57		

\* longueur-lenght

Besides structures and houses the land in the wayleave is used for pasture, tree plantation, and annual crop. The percentage of the households using the wayleave for each of this activity is presented in table 40.

As also can be seen a number of animals are using the land in the future wayleave. Pasturing will be permitted in the wayleave. In that case the impact of the line on this activity will be limited to the construction period.

**Tableau N° 32. UGANDA/UGANDA – USE OF WAY LEAVE BY HOUSEHOLDS**

Usage Use	Type de culture Type of culture	N	% des 519 ménages % of the 519 households	Superficie totale (m2) ou nombre d'arbres Total area (m2) Or number of trees
Utilisation des terres à l'intérieur de l'emprise Land use within the way leave				
Habitation House	n.a.	331	64%	1 026 000
Culture annuelle Annual crop		188	36%	517 060
Plantation d'arbres Tree plantation		26	5%	156 835
Pâturage Pasture		52	10%	86 128
Autre Other		6	1%	19

**Tableau N° 33. UGANDA/UGANDA - ANIMALS IN THE WAYLEAVE IN FREE-RANGING OR FENCED AREA**

Animal	Nombre d'animaux Number of animals		
	Libre Free-ranging	Espace clôturé Fenced area	Total
Bovin-Cattle	402	727	1 129
Chèvre-Goat	45	97	143
Mouton-Sheep	0	110	110
Porc-Pork	0	0	0
Poulet-Chicken	156	13	169

Rwanda

The great density of the population and its dispersion on the territory make so that a significant number of houses and related structures were listed in the future way leave (Table 38). A good proportion of the households indicate that it have a ground to rebuild their residence but this possibility is not for every one. A careful evaluation and right of the grounds is a serious problem to participants in the consultations. Several worry is about not to receive a sufficient amount to pay the ground necessary to their rebuilding.

**Tableau N° 34. RWANDA - HOUSEHOLDS' STRUCTURES WITHIN THE WAY LEAVE**

Bâtiments Structures	Construction			Superficie moyenne Average area (m <sup>2</sup> )	Terrain pour reconstruction	
	Type	N	% des 303 ménages % of the 303 households		N	%
Structures principales / Main structures						
Maison House	Permanent	60	20%	56	52	81%
	Semi- permanent	207	68%	38	152	64%
	Temporaire Temporary	44	14%	20	20	45%
Structures secondaires / Secondary structures						
Abri pour animaux Animal shed	n.a.	52	17%	28	n.a.	
Clôture Fence		195	64%	67*		
Cuisine Kitchen		195	64%	14		
Grenier Granary		4	1%	4		
Etable Stable		4	1%	120		
Toilette Toilet		243	80%	4		

En In addition to the related residences and structures the way leave is used like pasture and for the annual crops. We also find there tree plantations. (Table 35-36).

**Tableau N° 35. RWANDA – USE OF WAY LEAVE BY HOUSEHOLDS**

Usage Use	Type de culture Type of culture	N	%	Superficie totale (m <sup>2</sup> ) ou nombre d'arbres Total area (m <sup>2</sup> ) Or number of trees
Utilisation des terres à l'intérieur de l'emprise Land use within the way leave				
Habitation House	n.a.	291	96%	153 697
Culture annuelle Annual crop		159	53%	276 368
Plantation d'arbres Trees plantation		20	7%	17 522 trees/arbres
Pâturage Pasture		12	4%	14 779

**Tableau N° 36. RWANDA - ANIMALS IN THE WAYLEAVE IN FREE-RANGING OR FENCED AREA**

Animal	Nombre d'animaux Number of animals		
	Libre Free-ranging	Espace clôturé Fenced area	Total
Bovin-Cattle	953	32	985
Chèvre-Goat	104	175	279
Mouton-Sheep	0	16	16
Porc-Pork	0	0	0
Poulet-Chiken	0	32	32

#### 5.5.4. ACTUAL USE AND DEMAND FOR ELECTRICITY AT HOUSE OR WORK PLACE

##### Uganda

Among the affected households only 1% has electricity at home and 3% indicated that there was energy at their workplace. The majority of households (61%) indicated that they were interested to have electricity for lighting, but only 30% for cooking and 27 % for food cold storage (refrigerator). The main obstacle for the households not willing to «hook up» was the price of electricity. The price suggested in the questionnaire was 426 UGX/kW/h and it was judged to expensive. It is interesting to note that 96% of the household buy kerozene for lighting and 41% wood for cooking/heating. On average they spend 12\$/month (20,400Ush/month) for kerozene and 7\$ (11,900Ush/month) for wood.

**Tableau N° 37. UGANDA/UGANDA - ACTUAL SPENDING OF MONEY FOR ENERGY**

Type d'énergie Energy source	%	Dépense mensuelle (USD) Monthly spending of money (USD)
Bois Wood	41%	7
Bougies Candles	9%	5
Pétrole Kerozene	96%	12
Bombones de gaz Bottled Gaz	0%	0
Électricité Electricity	1%	1
Charbon Charcoal	13%	17
Solaire Solar	1%	15
Biogaz	1%	2
Restes de récolte Sugarcane husks, maize stock, etc.	0%	0
Autres Others	0%	0

#### Rwanda

Among the only affected households 1% profit from electricity. The interest of the households for electricity remains relatively limited. Indeed 49% only are interested in electricity for lighting and 9% are for the kitchen. The suggested price of 112 RWF/kW/h is considered to be prohibitory and constitutes the principal reason called upon not "to connect"

However it is significant to note that the vast majority of the households is more than 90%, must buy wood and petroleum for cooking and lighting. On average the guarantors indicate that the households spend 10\$(5 500 FR) and 2,2\$ (1 220 FRW), per month, respectively for wood and petroleum.

**Tableau N° 38. RWANDA - ACTUAL SPENDING OF MONEY FOR ENERGY**

Type d'énergie Energy source	%	Dépense mensuelle (USD) Monthly spending of money (USD)
Bois Wood	94%	10
Bougies Candles	18%	1,3
Pétrole Kerozene	97%	2,2
Bombones de gaz Bottled Gaz	0%	0
Électricité Electricity	1%	7,2
Charbon Charcoal	1%	9
Solaire Solar	1%	15
Biogaz	0%	2
Restes de récolte Sugarcane husks, maize stock, etc.	24%	2,7
Autres Others	0%	0





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## 6. ENVIRONMENTAL AND SOCIAL IMPACTS

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The project will require extended construction works. Indeed, new pylons and a new line will be constructed to link Mbarara and Birembo substations. Moreover, the maintenance of ROW and line involve periodic access to the structures for maintenance activities.

The main impacts regarding the environment are the permanent loss of vegetation (trees, shrubs and plantations) in the ROW and the permanent loss of small portions of wetlands required for the construction of towers. Other impacts of temporary nature may also occur during construction works like dust emissions, noise, erosion, degradation of quality of water, soil contamination by poor waste management or accidental spill of hydrocarbons and displacement of wildlife.

For the household and communities affected the negative impacts are predominantly localised and short term and will occur during the construction period. The most important long-term impacts are the permanent lost of arable land (access road, tower base and substation) and restriction to tree planting to species that do not grow higher than 4-5 m in the ROW). Beside these impacts on agricultural activities, many houses and some public or private infrastructures (schools, mosques, churches, shops, etc.) will be relocated, in most cases, on another part of the same land or to an adjacent land plot.

If the household and communities have access to electricity many positive economic, educational and health related impacts would occur (see section 2.2 above for more details). Moreover, temporary employment during the construction phase, and income generated by the sale of food and other consumables to migrant workers will help financially the communities crossed by the wayleave.

In brief, if sufficient time of preparation before the start of construction and adequate compensation are given to affected household and communities the new transmission line will have minimal negative impact on communities or persons, and on private or common property assets.

The main sources of the negative impacts are:

- Displacement of structures houses, school, etc. (lost of time, organisation of daily live perturbed);
- Clearance of line corridor between towers and access roads (crop damage, removal of trees, etc.);
- Earth-moving and tower construction (crop damage, removal of trees, etc.);
- Arrival of skilled workers into rural areas (health concerns, esp. HIV/AIDs, overexploitation of local resources such as water, wood fuel and other natural resources);
- Construction of work camps (damage to crops and properties, potential effects from inadequate waste management facilities, etc.).

## 6.1. METHODOLOGY

This section deals in detail with a description of the impacts of the Project. The potential environmental impacts of the installation of the power transmission line from Uganda to Rwanda were assessed using data collected from field investigations (between May 2006 and May 2007), government offices, review of relevant documents and consultation with various stakeholders and the Project Affected Persons (PAPs).

The identification of the positive and negative impacts of the Project, their level of severity, whether they are long term or short term, direct or indirect, avoidable or unavoidable, reversible or irreversible and their classification into pre-construction, construction and operation has been based on the following:

- The socio-economic and environmental studies undertaken at the prefeasibility stage in 2006 (SOGREAH, RSWI, Hydro-Québec, Hifab, 2006);
- African Development Bank, October 2003. Integrated Environmental and Social Impact Assessment Guidelines;
- World Bank Environmental Assessment Sourcebook and updates (World Bank 1994);
- World Bank Operational Policies/Directives, namely: OP/BP 4.01 Environmental Assessment, OP/BP 4.04 Natural Habitats, OP/BP 4.12 Involuntary Resettlement, (see Section 8)
- International Agreements ratified by the Governments of Uganda and Rwanda (see Sections 3.1.1.2 and 3.2.2.1);
- National Environment Management Authority (NEMA), July 1997. Guidelines for Environmental Impact Assessment in Uganda;
- Consultation with people affected by the Project; officials from relevant ministries and government agencies (national, regional and local); village committees/elders; women and, NGOs/CBOs (see Appendices 2 to 7);
- Extensive surveys of communities and households directly affected by the wayleave to assess, in particular, activities and structures present in the future wayleave;
- Mitigation measures are presented in the Environmental and Social Management Plan (Section 7).

The nature and/or importance of the impacts described hereafter may change in the future if the Project is not implemented within the next two years. It is in fact probable that environmental and socioeconomic changes could occur in the Project area for different reasons (new projects, population displacement, changes in the economical situation or environmental conditions, etc.). It will later determine the nature and importance of the impacts described hereafter.

**IMPORTANT NOTE:** The description of impacts presented hereafter is not portrayed by country, like Section 5, but by impact categories. The categories of impacts are normally the same from one country to another but their importance and location could vary. It is for that reason, and to not weight down the text with numerous repetitions, that this organisation was preferred.

## 6.2. NATURAL ENVIRONMENT

### 6.2.1. SOILS

#### Erosion and contamination

The impacts of the project on soil are especially associated with the activities of preparation of the land and excavation for the implantation of the pylons, the preparation of the access paths and the stamping of the workers (transportation of the material and setting up of the wires).

Since construction of towers will require foundation covering an area of about 5.5m by 5.5 m and 2.5m deep depending on the soil conditions thus the areas affected will not be big. Excavators are likely to leave some areas bear, destabilized and vulnerable to soil erosion for hilly areas.

The oil and the fuel used by the machines during the construction of the line can also contaminate the soil and affect the cultures and human health.

#### Uganda

The largest area of the corridor is covered by ferralitic soils, which represent final stage in tropical weathering. These soils are very sensitive to disturbance and thus vulnerable to soil erosion. Preparation of foundations for pylons will cause destabilization of soils especially for the areas that are vulnerable to soil erosion. Hilly areas of Bugamba will especially be susceptible to slope instability.

On the other hand, the soils in several of the wetland areas are hydromorphic, always seasonal or permanently waterlogged, and mostly clayey. These are termed, as having bad soil conditions and excavation depth could be up to 4.0 m. Papyrus peat is another type of soil in the swampy valleys, which is sensitive. However, only one tower is expected in a distance of about 350 meters, which is a small percentage.



Photo 10. Soils vulnerable to erosion in the Bugamba region

#### Rwanda

For the northern part, from Nyagatare to Ngarama, topography is relatively flat with soils derived from granite and gneisses which alternate with soils derived from intrusive basic rocks while, in the zone of undulating altitude from Ngarama to Birembo, the soils are derived from the deterioration of the schist formations, sandstone and quartzite.

Generally, the soils are deep, by places with clay horizon, and without great risks to cause environmental risks of pollution in the event of excavation. However, the fragile alluvial soils, which are along the rivers and lakes, and soils made up of materials strongly faded and washed by erosion on the steeply sloping or abrupt zones present a greater environmental risk. The excavation of the fragile soils will particularly increase the phenomena of erosion and silting of watercourses in the valleys downstream. The risks of rock falls or mudslides are also possible in areas of fragile schisto-quartzic soils in the steeply zones.

### 6.2.2. WATER

Waterways in the form of streams and rivers are abundant throughout proposed corridor. Construction and operation of the transmission line across these resources may have both short-term and long-term effects. Water quality of waterways can be impacted by soil erosion resulting from driving vehicles through streams, by building temporary bridges, or by clearing of brush along the wayleave.

Drainage disruption and pollution due to preparation of access road and tower foundation; siltation due to soil erosion and pollution due to oil and lubricant spillages are the major impacts on drainage and water resources.

Pollution and siltation impacts if properly mitigated will only be short term but if not, they can be long term and irreversible. Drainage disruption will be long term because the access roads and

the foundations will be permanent. Roads could be eroded since they will be made of murrum, but with proper mitigation measures in place, this impact could be minimized as well.

During construction, spoil material will be generated from the excavations for foundations of towers. Leaving loose heaps of spoil material will be susceptible to soil erosion and silting of watercourses leading to pollution. Equally affected wetlands especially those that will have several pylons and where wayleaves will be constructed. These deposits will disrupt the normal flow of water in the wetlands and flood plains leading to siltation and flooding, flood plains or drainage routes will contribute to silting problem.

During construction, towers will be brought as a complete set and fitting done at the site. However, conductors can be measured and cut at the site, leaving small pieces of waste. Children in the area may pick them to make toys and these will end up being spread in the whole community. The littering of refuse by the workforce in the nearby bushes may result in contamination of the water sources.

Construction is expected to be mainly mechanized and thus workforce will be expected to participate in the construction at any time will not be large. The impact of the project on waste generation is short term thus expected to be minimal.

#### Uganda

Rwizi River, the source of Mbarara water supply is susceptible to pollution. Disposal of spoil material in wetlands, flood plains or drainage routes will contribute to silting problem.

Drainage disruption is also expected during preparation of tower foundations either in the middle of the wetlands or in the fringes. However, very few towers are expected to be located within or very close to the wetland or watercourses. Thus, the impact will not be very significant.

#### Rwanda

Almost all the powerline will pass through a zone of altitude except for the Northern part between the locality of Ngarama to the border with Uganda. The zone of altitude is made up of mountainous zones or plateaus with steeply sloping faces with soils vulnerable to erosion especially during the heavy rains of April, November and December. These zones constitute moreover watersheds for: springs arranged or not usually used by the population for drinking water or to water the cattle, permanent watercourses and lakes or reservoirs.

### 6.2.3. FLORA

#### Wetlands

The construction and maintenance of transmission lines and access roads can have impacts on wetlands vegetation that can be destroyed by heavy machinery or permanently damaged by changes in wetland hydrology.

Clearing forested wetlands can expose the wetland to invasive and shrubby plants, thus removing habitat for species in the forest interior.

Finally, vehicles and construction equipment can introduce exotic plant species such as purple loosestrife. With few natural controls, these species may out-compete high-quality native vegetation, destroying valuable wildlife habitat.

The line passes through wetlands some of which have been modified through agriculture but still have high capacity to contain rich biodiversity. Some of these wetlands are quite large implying that some few pylons are likely to be located in these wetland areas. This will lead to clearing many areas for foundation and access routes. The access routes will encourage encroachment of the wetlands hence opening up more wetlands for agricultural purposes thus destroying more vegetation.

Vegetation clearing on the ROW is more or less long term because the route has to be regularly maintained although only a narrow strip of 25 m width will be cleared. In fact, during operation and maintenance activities vegetation clearing will be a regular activity within the wayleave. This means no vegetation will be allowed to grow above 4-5 meters within the way leave.

#### Uganda

The line passes through important wetlands like Kagaga (see section 5.2.1) and Rubingo which is undisturbed, however the line mainly passes in the fringes, and where it crosses like Rwizi the width is less than 1km. This implies that only a few pylons are likely to be located in the wetland areas.

#### Rwanda

The zone crossed by the powerline goes through agricultural zones except for the part close to the locality of Nyagatare. This zone consists of a graminaceous meadow with a few specimens of acacia.

The project will also have an impact on eucalyptus plantations. The inventories made in the wayleave could counted 60.34 ha of Eucalyptus, 0.1 ha of Pinus and 1.5 ha of Acacia especially among the zone of low altitude and hot weather in the northern part of the corridor.

Since the country knows an increasing deficit of wood of 6.719 million m<sup>3</sup> (MINAGRI, 2004), the project will contribute to accentuate this deficit on that natural resource and consequently the impact on the availability of this domestic energy resources for the population in this area.



Photos : Rwanda – Forest and agro-forest species and permanent crops of sugar cane in the project area

#### 6.2.4. FAUNA

The fauna is mainly affected by destruction of habitat and noise. Due to widespread settlement throughout the route section and accompanying human activities, mammals and birds have virtually disappeared from proposed line route corridor except in some cases wetland fauna and a few others that are adapted to settled-in areas. The birds in wetlands, as well as forest patches, will be affected by the noise related to construction activities like transport, vegetation clearing, etc. The birds and other wetland fauna are likely to migrate to other areas where they will be threatened by hunting activities. However, this impact will be temporary and will end after construction.

Furthermore, the continued fragmentation of a forest can cause a permanent reduction in species diversity and suitable habitat.

Construction and maintenance equipment that crosses wetlands can stir up sediments, endangering fish and other aquatic life. Clearing overhanging trees and brush near the waterway can result in increased water temperatures, thereby affecting the habitat for fish and other aquatic species.

Risk of bird collision

Transmission lines can be collision obstacles for birds such as sand hill cranes, waterfowl and other large water birds.



Once established, the transmission line is likely to cause collisions of birds in flight during migration and local movements, especially during the night. Wetlands with higher populations of birds are spots of concern. These include in Uganda: Rwampara County wetlands, Rwizi River, Kagaga wetland, Katukuru wetland, Rweibogo wetland and Rwimagu wetland. In Rwanda Muvumba River, Warufu Ruver and the shores of Lake Muhazi,

Although the number of bird collisions on existing lines is not reported to be high and most of the bird species identified in the project area are common and widely distributed in wetlands, there is need for precautionary measures to be taken by making the transmission line more visible.

#### Uganda

Due to widespread settlement throughout the route section and accompanying human activities, mammals and birds have virtually disappeared from proposed line route corridor except wetland animals (including Sitatunga, which is rare, and birds highlighted in section 5.2.2) and a few others that are adapted to settled-in areas.

Most of the bird species identified in the project area are common and widely distributed and occur in scrubland, woodland and open cultivation. However, wetlands, especially those that are undisturbed like Rubingo, Kagaga are spots of concern where the transmission line could potentially prove to be a bottleneck for the water bird species during migration and local movements especially during the night. These areas would therefore require a precautionary measure to be applied to make the transmission line more visible.

#### Rwanda

The ecosystem crossed by the corridor is a typically agricultural ecosystem but which is characterized by important wetlands. These wetlands (river, ponds of water and marshes associated) constitute the principal habitat of the birds and fish associated with these habitats.

Certain species of these birds are vulnerable and benefit from the CITES convention. Most important of these wetlands are respectively the marshes associated with the rivers Kajevuba, Nyabugogo, Warufu, Kagitumba and Umuvumba. During the rainy season, after the floods, it is possible to observe important population of birds.

Near Mimuli (Nyagatare) the existence of hippopotamus and other mammals like mongoose and civet has been reported. The presence of workers and the extend of works are likely to disturb and chase away at least temporarily those animals.



Photo. Fresh water birds on banks of the Nyabugogo river

## 6.3. HUMAN ENVIRONMENT

### 6.3.1. HOUSES

Another potential impact at this stage is the preoccupations of many household with regard to land acquisition, displacement, behaviour of land surveyor, land and house evaluation and compensation as expressed in most consultation meetings (see above section 4).

Over 331 houses will be affected by the construction of the transmission line in Uganda and 291 in Rwanda. This impact is the most serious of the project especially for the households that do not have readily usable space to reconstruct

Demolition of buildings is most sensitive and can often become political. If not well-handled demolition of houses can derail the project. That is why proper compensation (in kind or money) should be given before any houses have to be demolished. Adequate time to reconstruct them should also be given before the start of the project related construction activities. To this effect, a proper compensation schedule will have to be put in place.

Different measures are proposed to mitigate these fears and reaction in the Environmental and Social Management plan below (section 7).

The potential change in property values due to the proximity to a new transmission line has been studied since the 1950s by appraisers, utility consultants, and academic researchers. Data from these studies is often inconclusive and has not been able to provide a basis for specific predictions. It is thus difficult to predict any change in the price of property related to this factor. On the other hand, if the new project permits access to electricity for the communities and households near the wayleave the economic impact will certainly increase the value of these properties.

The definitive number of households likely to be displaced will be established during the actual property and asset evaluation. This operation must start a year before the start of the project related construction activities.

### 6.3.2. ARABLE LANDS

In the construction period crops will have to be destroyed or delayed in the wayleave area. It is difficult to assess the exact impact on the annual harvest since the exact period and duration of construction in each locality are not known. For this reason compensation (cash equivalent) of a year of harvesting of the area under cultivation in the wayleave should be given to all the households. In addition, crops that may be removed from land to be temporarily used for construction purposes (camp, access road) will also have to be compensated on the same base (cash equivalent to a year of harvesting).

#### Uganda

An estimated area of about 250 hectares of land will no longer be used for some of the agricultural activities. 5 m corridor along the whole stretch (31 hectares of this) will not be used at all. The remaining part of the way leave can be used to cultivate only short crops mainly annual crops. Yet the major crops grown presently are coffee and bananas which are tall crops and cash crops. The actual amount of crops to be affected along the proposed line will be ascertained after valuation.

In addition, some areas may be temporarily occupied by the contractors as construction camps; which will in turn reduce the amount of land available for agricultural production.

#### Rwanda

The land's issue is a sensible issue in Rwanda due to (owning) the rarity ( scarcity )of agricultural lands. The land's conflicts are located ahead among the issues of the legal authorities such as people with local authorities). The latest report on the human development from the UNDP (2007), states that 11,5% of the households is live without londs and 28,9% hold londs inferior to 0,2 ha in Rwanda However, except with the zone of the exprovinve of Umutara ( district of Gasabo and Nyagatare ), the number of people living without lands and the average size of households' propertres do not constrtute a preoccupotions able to aggravate the impacts of the project.

The most frequently practiced cultivations are those called he food- producing cultivations, the fruit cultirations and the swanmps' cultivations within the deepest bottoms, the cultivations generating income such as the coffee tree and the sugar cones and the tree planting and agroforestry.

The project will also affect the lasting cultivations and the fruit trees. Referring to the importance order, we have just registered within the ascending 31,20 ha of banana trees, 7,46 ha cassava trees, 4,67 ha of coffee trees, 1,32 of reeds used as fodder for cottle, 0,42 ha of sugar cane. The fruits'trees registered are 240 pow pow trees, 100 avocado trees and 13 lemon trees. This will have an impact on the socio-economic life of the population affected because their clearance will be necessary during the construction.

The main seasonning cultivations are the forghum the maize corn) the sweet potatoes, the ground nuts etc, the irrigated rice culture is intensively practiced within the northern part, within the locality of mimuli and the district of Nyagatare. It is also stated that the foot producing cultivations practiced on hills during the raining season.

For the lasting cultivation and the food-producing raining season cultivations, the impact consists of short period. on the other hand, the tree planting and the agroforestry species ( eucalyptus, acacias, pinus etc.) which should be cleared, the impact is done for a long period (permanent) . in the case of seasoning food-producing cultivations the impact is reduced in the works are chieved during the great dry season, after the havesting, parti-cularsly with the zones which are the most productive of the northern part between Ngarama and Nyagatare.

### 6.3.3. FARMING ACTIVITIES

Transmission lines can affect farm operations and increase costs for the farm operator. Potential impacts depend on the transmission line design and the type of farming.

Transmission line and poles can:

- Create problems for turning field machinery and maintaining efficient fieldwork patterns;
- Create opportunities for weed encroachment;
- Compact soils and damage drain tiles;
- Result in safety hazards due to pole and guy wire placement;
- Hinder or prevent aerial activities by planes or helicopters;
- Interfere with moving irrigation equipment;
- Hinder future consolidation of farm fields or subdividing land for residential development.

Placement of transmission lines along field edges or between fields where windbreaks have been planted can increase erosion of soils, if the windbreaks must be removed.

On the other hand, the introduction of power in the area will result into improved storage and processing of agricultural products like dairy products, beef, hides and skin. This will in the long run, result into better prices for agricultural products.

#### Uganda

The activities of the Stock Farm, a research institution, will suffer temporal disruption particularly for their experimental fields.

There will be permanent restricted type of use of within the right of way for it is essential that trees of more than 5 meters are forbidden. In this particular case, the major cash and food crops in the area (banana and coffee) will not be affected.

#### Rwanda

Actually, except the zone which is near Nyagatare, the remaining part of the zone of project rely on the permanent « stabulation » farming within the cowsheds. Within these zones, the impact of the project is that of short term and will focus on the damaging of the fodder cultivations practiced on the embark ment of antierosire pits or the tough terraces. Yet, the inventory of environment element have restered 1,32 ha of reeds (penissetum sp ) that will be affected by the project within the zone of the wayleave.

Within the zone of Nyagatare, where it yet practiced the extensive farming of postures's the farmers have expressed their preoccupation concerning the risks related related to the electrocution of their cattle if the cours come near the electric towers or poss near the high voltage lines. This risk is inexistent (non existing). In order to reduce these fears, the diffusion (circulation) of the information, mation among the formers should be done however, the greatest trees particularly the acasion which are found within the ascending should be cut. They play the role of shelter in the period of high sun shining the impoct is permanent but will be reduced bt the presence of other planted trees sectors and by the implementation of a general policy of farming in permanent stabulation, the farmers will be then obliged to reduce their livestock and to clus ter within a protected space.

#### 6.3.4. OTHER ECONOMIC ACTIVITIES

It is expected that if there is distribution of power in the communities along the corridor there will be a boost in micro, small and medium enterprises which will in turn result into employment opportunities for the locals. In these conditions the project will have a positive impact on the people in the project area.

##### Uganda

Some economic activities being undertaken by the local communities within the proposed corridor may be interrupted. These mainly include sand mining, brick making near almost all wetlands in the project area. This is a potential negative impact on the livelihood strategies of the communities though temporary in nature.

#### 6.3.5. COMMUNITY BUILDINGS WITHIN WAYLEAVE

##### Uganda

Properties likely to be with in the wayleave include a school, a church in Nyakayojo, a borehole for Nyakayojo Secondary, a playground for Nyakayojo Secondary school, etc.

Discussions are still ongoing with the UETCL and the communities to find a solution (changes in the alignment of the transmission line) that could reduce the need for relocation.

During the construction of the transmission line, some of the above structures are likely to be demolished and some infrastructure relocated. Therefore, impact on land and structures will be high.

**Tableau N° 39. UGANDA/UGANDA RELOCALISATION OF COMMUNITY STRUCTURES**

UGANDA /UGANDA	Coûts de remplacement/Replacement costs
5 écoles/schools	219 000 000 UGX
1 terrain de jeu/playground	10 000 000 UGX
4 églises/churches	120 000 000 UGX
1 puits/bore hole	18 000 000 UGX
<b>COÛT TOTAL/TOTAL COST USD</b>	<b>470 646 USD</b>

#### Rwanda

The community buildings within the ascending have been registered. Two churches will be affected, the first is located within the area of Rutare, district of Bicumbi, it is a line of 630 m2 in well done bricks will be transferred (displaced).

Within the district of Gasabo, area of nduba, another church in “ordinary “bricks consisting of 450 m<sup>2</sup> will be affected. At Nyagatare, the ascending consists of a health block made in well done brocks of 37,2 m2 of a primary school.

The impact of project on these buildings’ users depends on the implement of the measure of information and compensation. These ones must be implemented in order to avoid the uncertainty among the users and or an important perturbation of their activities if these buildings have not been reconstructed before the startnning of the work.

**Tableau N° 40. RWANDA RELOCALISATION OF COMMUNITY STRUCTURES**

RWANDA	Coûts de remplacement/Replacement costs
2 églises/churches	109 000 000 RWF
4 écoles/schools	20 000 000 RWF
Bloc Sanitaire/Sanitary block	4 500 000 RWF
COÛT TOTAL/TOTAL COST USD	470 646 USD

#### 6.3.6. INFRASTRUCTURES

##### Uganda

The Katatumba Burial grounds are near the wayleave of the proposed transmission line. In this part of the country, people do not have strong attachments to burial grounds. However, in the next stages of the project implementation (Resettlement Action Plan) issues to do with relocation of ancestors need to be verified. There are no significant cultural features, apart from the burial grounds, near or within the proposed transmission line corridor.

##### Rwanda

The infrastructures which will be affected by the project are effectively the national roads, which are asphalted, together with the secondary roads and land compacted.

National asphalted road Kigali –Gitarama will be crossed tree times and also the road Kigali-Nyagatare. Additional secondary roads in compacted lands within the rural area will also be crossed by the electric lones’ conductors. The impact of the project on these infrastructure will be the temporary perturbationof the traffic along these roads particularly the roads of national importance driving the works. These impocts may be minimized by the addition of temporary particos and organizing, the work timetables so as to operate the construction tasks out of the periods of intensive roads’ use.

### 6.3.7. HEALTH AND WELL-BEING

Transmission of electrical energy through high voltage lines poses potential risks and hazards to the population living next to the lines due to the high level of energized flowing in the conductors. The high level of potential (voltage) and the high current flowing through the conductors contribute to the risk. However, the pertinent safety regulations and proven standard designs including effective and rapid protection systems do minimize potential risks and hazards and make transmission lines fairly reliable and safe infrastructure. The established national and international regulations and safety rules applicable to handling of high voltage plant and equipment and the electrical trade in general help to safeguard humans and animals from harm from electrical installations. Thus the wayleaves protection for electrical line and land use restrictions within such zones will prevent conflict with the energized conductors. Towers and foundations should be designed according to the best practices and applicable norms and standards. This will guarantee reliable and safe operation of the line while ensuring safety for the communities neighbouring the line.

The extension of Rwegura and Kigoma sub-stations will pose no additional risk or hazard to the existing installations and devices. Of course the greatest risk in the sub-stations is fire. The sub-stations are well equipped with fire alarm. Pursuant to the national guidelines, the sub-stations are also equipped with fire prevention and fire response equipment and procedures.

#### Exposure to Electro-magnetic field (EMF)

Health concerns over exposure to Electro-magnetic field (EMF) are often raised when a new transmission line is proposed. Exposure to EMF caused by transmission lines has been studied since the late 1970s. These fields occur whenever electricity is used. The EMF is created when electric current flows through any device including the electric wiring in homes.

The research to date has uncovered only weak and inconsistent associations between exposures and human health. To date the research has not been able to establish a cause and effect relationship between exposure to magnetic fields and human disease, nor a plausible biological mechanism by which exposure to EMF could cause disease.

#### Accidents

Pylons built at the edges of the roads, rivers or in other sensitive zones could, with time and especially erosion, collapse and cause accidents to the nearby inhabitants. During constructions, risks related to the collapse of pylons, cables or burns caused by equipment to residents along the line and their livestock are probable.

Construction sites pose potential hazards to both workers and nearby communities because they would raise curiosity especially among children. Increased traffic in the villages associated to construction activities could be a source of accidents as well.

#### Diseases

The existing health facilities are mainly health centres offering services limited to the outpatient department (OPD), laboratory, and maternity for normal deliveries and in patient services for communicable diseases. These facilities are not adequate for the existing population. It is anticipated that during the construction of the transmission line the population of the project area may increase slightly, leading to a temporary increased pressure on these health centres. As indicated, malaria in the project area is endemic and workers are likely to get a number of malaria episodes during construction. However, the number of construction workers is expected to be less than 100 at any time of the construction period.

People not immunized against malaria could be at the risks to catch the disease. Other possible diseases could be related to diseases that origin from water. The labour infested by various

parasitizes could contaminate the sources of water of the working area like conversely, it could be contaminated by contaminated water in the absence of drinking water.

Influx of workers from outside communities brings risk of spreading communicable diseases such as HIV/Aids to local communities. Besides infectious diseases, accidents are likely to happen especially to the construction crew and members of the public should they come to the construction area. Although the magnitude of impact on health is expected to be low, it may be long term in case of HIV/AIDS.

Construction sites pose potential hazards to both workers and nearby communities because they would raise curiosity especially among children. Increased traffic in the villages could be a source of accidents as well.

#### Dust and Noise

This will be an issue during the construction of access roads and clearing of vegetation along the ROW, especially dust emission since it is recommended that construction take place during the dry season. The fuel combustion from trucks and heavy machinery is a source of air pollution, as well as the burning of shrubs and trees coming from vegetation clearing in the wayleave may cause air pollution.

Noise resulting from access road and transmission line construction may disturb neighbouring communities and local fauna. In the construction period, noise of operations (trucks, heavy equipment) will be noticeable by the household bordering the wayleave and the access roads. This impact will be temporary nature only and can be minimised by adopting appropriate mitigation measures (refer to Section 7) including maintaining equipment and vehicles to manufacturers standards and limiting operating times to daylight hours.

Other types of noise e.g. sizzles, crackles, or hissing noises occur during periods of high humidity and are usually associated with high-voltage transmission lines. These noises are very weather dependent. They are caused by the ionization of electricity in the moist air near the conductors. Though this noise is audible to those very close to the transmission lines, it quickly dissipates with distance and is easily overshadowed by typical background noises.

#### Aesthetic impacts

Loss of vegetation and landscaping activities compounded by structures of transmission lines that do not blend with the background may lead to loss of esthetical value.

The overall aesthetic effect of a transmission line is likely to be negative to most people, especially where proposed lines would cross natural landscapes. The tall steel structures may seem out of proportion and not compatible with agricultural landscapes or wetlands.

Research and experience shows that reaction to aesthetic of transmission lines vary. Some residents do not notice them or find them objectionable from an aesthetic perspective. To some, the lines or other utilities may be viewed as part of the infrastructure necessary to sustain our everyday lives and activities and therefore acceptable. To others, new transmission lines may be viewed in a positive light because it represents economic development. In the community or household consultation, the aesthetic impact of the project was not mentioned. This indicates that it is not a big concern for the impacted populations.



### 6.3.8. JOBS OPPORTUNITIES

It is expected that some jobs will be available during the construction of the transmission line for the local population to be employed mainly as casual labourers.

The masons, welders and other workers who are not specially qualified could be recruited to work on the construction site. Moreover, the inhabitants of the area could be engaged in the maintenance of the line for vegetation control within the wayleave or for the maintenance of other infrastructures.

However, most of the employment opportunities will be temporary and the community will only benefit in the short run. The jobs will also be limited because not more than 100 people will be expected to work on the line at any time. Therefore, there will be a minimal positive impact on employment because only a few people are likely to be employed. Nonetheless, UETCL and Electrogaz should encourage local leaders to form a project liaison group to assist them in distributing jobs to local communities.

The skilled workforce, professional and administrative personnel, will most likely be from outside the project area, and this may cause some resentment from the local people. Nevertheless these workers will bring within the project area the much needed additional money to spend.

After construction, the rural electrification would undoubtedly be accompanied by the creation of jobs following the development of small trades like welding, carpentry, mills and food transformation. This could contribute to reduce migration among the rural population. It can also reduce the walking distance to find commodities for local residents.

#### Rwanda

During the public conversations (contacts) all the persons encountered (met) solicited the access to the job, mainly for the zones comprised between Birembo and Ngarama. This zone of high altitude is the less productive and the cultivated spaces have a little size in comparison with the northern part between Ngarama and the Uganda border. The percentage of households possessing less than 0,2 hectares of land varies from 17,1% to 25,3% of that section while within the zone of Gatsibo and Nyagatare this percentage has fallen to 8,5% (UNDP,2007) these numbers illustrate the living conditions of households within the zone.

The project would therefore have a positive impact which is temporary to job and the revenues of the population of the zone of study during the phase of the construction of the line of high voltage. These revenues will be distributed through the creation of temporary or permanent jobs for the local personnel or the supplying material at different sources together with the compensation which will be distributed. Referring to concrete impact, the mass of money which will be distributed with the zone of the project, will contribute to the improvement of the feeding (deduction) of malnutrition cases, the accessibility to health treatments and to opportunities of trade. In case the rural electrification is well done, the socio economic impacts and in particular the creation of trading opportunities and those of jobs, will benefit to be whole households of the zone.

### 6.3.9. CONSTRUCTION PROCUREMENT

Communities affected by the construction and operation of the transmission line expect business opportunities. The construction period and maintenance works will provide local benefits to communities along the line.

Some materials used for construction needs could come from the local market in particular for food products, building material for pylons foundations (stones, gravel, sand, cement, etc), renting of storage spaces and guesthouses, hiring of transport vehicles, provisioning of office supplies and petroleum products. Other materials could also be provided by companies that operate in the field of electricity in the country. The machines to transport the material which will be used on the line could be rented from national companies.

UETCL and Electrogaz should encourage local business leaders to form a project liaison group to assist them in monitoring local procurement practices.

### 6.3.10. RURAL ELECTRIFICATION

One of the most anticipated positive impact by the population is the increased power supply to the community and household. If the electrification of the areas crossed by the wayleave does go ahead many positive impacts can occur.

Education in the project area suffers from the lack of teachers and didactic material. Qualified teachers prefer to work in urban centres where they profit from facilities like drinking water and electricity. This line could make it possible to have teachers in the schools and make it possible to run laboratories in secondary schools.

Electricity in this zone will be able to allow the use of the Medias like television and mobile telephony.

#### Uganda

Several trading centers and community institutions were spotted along the line route and it was evident that there is need for power in the area. These included health centers, educational institutions (primary, secondary and vocational schools) and administration headquarters. Important of these are Bugamba Health Centre, Bugamba sub-county, Rukoni Health Centre, Rukoni sub-county and most of the trading centres after Nyakatojo where the grid presently stops. In terms of local entrepreneurs, a number of maize mills using alternative energy sources (gensets & solar) were spotted in the trading centers. If the power is stepped down and these centres are supplied with power, then the project will have a high positive impact in the project area.

It is anticipated that the new transmission line will lead to an increase in the economic activities due to availability of electricity. The impacts will be highly felt in areas that do not have electricity presently. These include Bugamba, Kitwe, Kafunjo, Rukoni and other small trading centres.

#### Rwanda

Les The expectations of the local authorities for the rural electrification has been largely expressed and these impacts will contribute to the long term development of the zones served and against the poverty. The greatest (crying) needs in rural electrification have also largely been expressed by the population found (encountered) within the zone of the project. The positive impacts to possible development of the rural electrification are development are particularly:

The contribution to the development of information technologies and communications (TCI) within the primary and secondary schools through the improvement of straight teaching and that at distance.

The improvement of the health equipments among which are health centres and existing and planned hospitals. Already the hospital of Ngarama is no longer provides in electricity and must

rely on a generator which functions a very limited period of time.

The development of trading centres enabling the conservation for a long period of perishable products or in supplying clients with cool products such as drinks.

The improvement of services provided by most the areas which are without electricity while they are considered actually as the basics of community development with the policy of decentralization.

The development of the arts and crafts such as the sculpture, the soldering (welding), the work of the wood sector mainly the area of Nyagihanga within the districts of Gasabo among which over 60% of its surface is occupied by the tree plantations (comm. person. the Executive Secretary of the Area).

The development of the transformation of agricultural products among which most of areas and districts have already planned. The specific sectors to develop (maracuja, bananas, maize, tomatoes, rice, groundnuts etc.)

The motivation of the population to the joining up to the policy of gathered housing called « umudugudu ». Within certain areas such as the area of Mimuli (Nyagatare the joining of the population to the gathered housing reaches 60%. The other responsible of areas think that the supplying of existing villages in electricity should encourage the population to be gathered within the umudugudu.

#### 6.3.11. CONTRACTORS CAMP

Construction camps may have an impact on the environment through vegetation clearance, compaction of soils and source of water pollution due to inappropriate management of solid and liquid wastes. These impacts can be ongoing if the camps are not adequately rehabilitated after their use and adequate sanitation facilities provided during operation.

Camps should be located away from residential areas and environmentally sensitive areas (forests, parks, wetlands, etc.). If mitigation measures proposed in the ESMP are implemented, the impacts from temporary construction camps can be managed to acceptable levels.

#### 6.3.12. CUMULATIVE IMPACTS

Uganda

No project of this nature and magnitude had taken place in the proposed area for the Mbarara – Mirama transmission line. Only low to medium voltage lines have been extended within the proposed project area from Mbarara to Nyakatojo, about 20km. These are usually associated with minimal impacts. Therefore, potential cumulative impacts in the area are negligible.

The participation of local authorities at all levels is highly recommended particularly in the planning and mobilization activities of the project. This will be vital for purposes of gaining political will and support for the project. This will result into active community participation and acceptance of the project.

#### Rwanda

The projects which should create cumulative impacts with the present project among the population of zone of study are for most, the cases of projects planned by the authorities of the districts of the of study.

At Bicumbi, a project of a unit of the transformation of maracuja at Rukomo together with the rehabilitation of the road Rukomo, Ruvune, Bwisigye, and Gihengeli in compacted "latérite", the electrification of the line Rukomo, Nyamiyaga, Giti and Rwesero (on the shore of the lake Muhazi). Other projects have been reported by the authorities of the districts of Nyagatare of which the construction of the construction of 200 houses, of a modern dairies and the rehabilitation of the road Cyabayaga-Nyagatare. The impacts of these projects are lessable to affect these areas so as to create cumulative impacts on the citizens because they are isolated some countries with others. Moreover, the trading environment will not be confronted to a lack of labour. The availability of this one and the little numers of local employees who should be employed during the construction of the line make this situation very unlikely.

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## 7.

### ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

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This Section addresses mitigation measures, monitoring and institutional arrangements for the environmental and social management of the Project.

The environment management plan (ESMP) is an action plan or system which addresses the how, when, who, where and what of integrating environmental mitigation and monitoring measures throughout an existing or proposed operation or activity. The ESMP addresses only the environmental and social issues relevant to the particular application identified or should link findings of the impact assessment into the management system of environmental performance. ESMP also serves as the function of integrating environmental conditions under various legislations.

The purpose of the environmental monitoring program is to ensure that the envisaged outcome of the Project is achieved and results in the desired benefits to Uganda and Rwanda. To ensure the effective implementation of the ESMP it is essential that an effective monitoring program be designed and carried out. The environmental monitoring program provides such information on which management decisions may be taken during construction and operational phases. It provides the basis for evaluating the efficiency of mitigation and enhancement measures and suggests further actions that need to be taken to achieve the desired Project outcomes. An environmental monitoring program is outlined in Section 7.5.

#### 7.1. PROPOSED ENVIRONMENTAL AND SOCIAL MANAGEMENT MEASURES

An outline of the environmental mitigation measures during the various stages of the Project is provided in the following Environmental and Social Management Plan. Appendix 9 also includes a selection of environmental prescriptions for construction activities which should also be included in all Construction Contracts.

**Tableau N° 41. PROPOSED ENVIRONMENTAL AND SOCIAL MANAGEMENT MEASURES**

Environmental concerns	Mitigation measures	Location	Budget (USD)	Responsible
<b>PRECONSTRUCTION</b>				
Social expectations and community consultation	<p style="text-align: center;">Sensitisation of communities.</p> <p>Informing all communities along transmission route of rights to compensation.</p> <p style="text-align: center;">Provision of sufficient project information.</p>	All communities along the ROW	Rwanda = 30 000 Uganda = 30 000	PIU (Project Implementation Unit, see RAP in chapter 8)
Job opportunities Construction procurement	<p style="text-align: center;">Development measures:</p> <p>It is recommended for the Contractor to develop and implement a plan to ensure that local residents are given first priority for job opportunities for which they are qualified, before workers from outside the region are hired. Details of specific job opportunities must be released and information provided on application procedures.</p> <p style="text-align: center;">Development measure:</p> <p>The Contractor should investigate local, regional and national capacity to supply construction materials, goods and services. Whenever goods or services are available on a competitive basis, the policy should be to purchase locally.</p> <p>Develop specific employment programs for women, young, poor and other vulnerable groups.</p>	All communities along the ROW	As part of works to be executed by the contractor	PIU (Project Implementation Unit, see RAP in chapter 8) Contractor
Land and building acquisition	<p>Final survey of all affected assets to update the RAP cost estimates prior to payment of entitlements. Put in place a grievance resolution mechanism. This operation should start a year before the beginning of construction activities.</p> <p>Appropriate valuation of the property affected should be done both by property owners and the project implementing body.</p> <p>Based on the valuation reports, appropriate compensation should be done before construction starts within sufficient time for affected household to transfer or reconstruct structures</p> <p>Complete all necessary land and building acquisition in accordance with RAP (see chapter 8) prior to commencement of any construction works.</p>	ROW	Rwanda = 100 000 Uganda = 100 000	PIU (Project Implementation Unit, see RAP in chapter 8)

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Environmental concerns	Mitigation measures	Location	Budget (USD)	Responsible
Training	Organise environmental management and safety training. All Contractors and sub-contractors employees shall attend the training.	On site	Included in Project costs	CES
Implementation of environmental management requirements	Preparation of contractor's environmental management plans	All work sites and activities	As part of works to be executed by the contractor	Contractor
Health and Safety issues	Preparation of health and safety plan for workers and impacted communities addressing issues including : Measures to prevent the spread of HIV/Aids such as public awareness and free condoms Education and sensitisation of workers and the communities on STDs including HIV/Aids and the dangers of construction activities. Provision of safety equipment for workers Use of child labour be prohibited Provision of protective wear to the workers (60) by the Contractor Warning signs should be placed near construction sites. Contractor should avail First Aid Box at each work site. Provide equipment, electricity etc. and assistance to at least one Health Centre in each of the affected districts in form of equipment for the laboratory (Microscope), medicine, connection to the grid.	ROW, campsites, all communities along the ROW	Rwanda = 50 000 Uganda = 50 000	ELECTROGAZ, UETCL, Contractor, Health inspectors
Work site survey, pegging and approval	Survey the proposed alignment with a level and peg the centerline. Jointly inspect the surveyed alignment. Locate, peg out and seek approval from the Engineer for each ancillary site prior to the commencement of related activities. Inspect and approve if correct all pegged ancillary sites.	Through ROW, all ancillary sites	As part of works to be executed by the contractor	Contractor, Engineer, SEO
Clearance approvals and borrow pit permits	Only licensed quarries and sand suppliers shall be used. Obtain written permission for borrow pit operation from the landholders with prior approval of the rehabilitation proposal of the borrow areas from the Site Environmental Officer (SEO) and provide copies to the CES. Provide a copy of all necessary permits to the CES. Adhere to all permit terms and conditions.	ROW, surroundings	As part of works to be executed by the contractor	Contractor, SEO, CES

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Environmental concerns	Mitigation measures	Location	Budget (USD)	Responsible
Temporary construction camps	<p>If the need arises to construct a contractor's camp then the following measures will be taken:</p> <p>Full compensation for any crops, properties and rent for the land while the works are ongoing will be paid. The District authorities will provide values for crops and structures respectively.</p> <p>If persons will be required to temporarily shift, then a disturbance allowance will be paid. The disturbance allowance is 15% or 30 % of the total amount assessed depending on whether the notice is six months or three under the Ugandan law.</p> <p>The Contractor will need to pay rent to the landowner as agreed prior to construction.</p> <p>In setting up a workmen's camp, consideration will be given to water availability and fuel supplies.</p> <p>Contractor should prepare for approval by the CES plans for the base camps and other work sites, which make adequate provisions for safe disposal of all wastes, and prevention of spillages, leakage of polluting material, etc.</p> <p>Contractor should be responsible for payment of all costs associated with cleaning up any pollution caused by his activities and to pay full compensation to those affected.</p> <p>Provide and maintain proper drinking water, worker's health check-up and sewage and waste disposal facilities at the camps.</p>		As part of works to be executed by the contractor	Contractor, SEO, CES
<b>CONSTRUCTION</b>				
Vegetation clearance Impacts on woodlands and eucalyptus plantations	<p>Vegetation clearing should be minimized.</p> <p>Adjusting tower placements and span length to minimize the need for tree removal and trimming along forest edges.</p> <p>Reduce the width of the ROW when crossing woodlands and plantations. Clearly mark out the extent of clearing within the approved worksite areas with pegs at 50 m intervals or less. Identify and mark individual trees for retention along a section within the marked extent of clearing. Seek approval for clearing from the CES at least 1 week prior to any proposed clearing.</p> <p>Inspect and approve all correctly located and pegged clearing sites. Vegetation clearance shall only be undertaken once consent to clear strip plantation / individual trees along the alignment has been obtained from each owner.</p> <p>Compensate for all trees and useful plants in the areas affected by the ROW.</p> <p>Instruct all construction workers to restrict clearing to the marked areas and not</p>	Through ROW, all ancillary sites	As part of works to be executed by the contractor	Contractor, SEO, CES



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Environmental concerns	Mitigation measures	Location	Budget (USD)	Responsible
	<p>to harvest any forest products for personal consumption.</p> <p>Stockpile cleared shrub foliage where possible within the ROW for later use as a brush layer.</p> <p>Allow tree and shrub species with limited heights of 4 to 5 m to grow within the ROW.</p> <p>Trees along the right of way should be protected from machinery.</p>			
Drainage disruption	<p>All necessary measures shall be undertaken to prevent earthworks from impending cross drainage at rivers/streams, irrigation canal, etc.</p> <p>In sections along watercourses, earth and construction wastes should be properly disposed of so as not to block rivers and streams.</p> <p>Where it occurred, remove backfill from the swamps/wetlands when tower erection is complete.</p> <p>Install culverts or bridges for temporary and permanent access roads.</p> <p>Survey and peg the designed drainage works prior to construction. Outlet drains into existing stable drainage lines, or where this is not possible, consult with adjoining downslope landowners on mutually acceptable locations for drain outlets.</p> <p>Construct all designed drainage works prior to, during or immediately following excavation work in order to minimise the erosion hazard. Inspect all works and ancillary sites for drainage and erosion problems after each major storm event during the period of construction. Repair all failed drains and take other appropriate action as directed by the Site Environmental Officer.</p>	Through ROW	As part of works to be executed by the contractor	Contractor, SEO, CES
Sedimentation	<p>Identify and map all areas where soil disturbance is susceptible to occur. For each of these areas, identify appropriate sediment control structures and install structures prior to commencement of works.</p> <p>When possible, schedule works requiring large areas of soil disturbance or river crossings to avoid rainy season.</p>	Through ROW	As part of works to be executed by the contractor	Contractor, SEO, CES
Soil erosion and slope instability	<p>Prior to construction install necessary temporary/permanent erosion and sedimentation control structures.</p> <p>Access roads along steep slopes should be avoided; roads can be located perpendicularly or diagonally to the slope.</p> <p>After construction, soil should be levelled off, areas stabilized to facilitate vegetation regeneration.</p>	All project area, specially steep slopes and river crossings	As part of works to be executed by the contractor	Contractor, SEO, CES

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	<p>Activities should be carried out in the dry season especially for the wetland areas.</p> <p>Avoid vegetation clearing on steep slopes.</p> <p>Wherever possible avoid locating towers, construction areas, access tracks and construction camps on steep slopes.</p> <p>Construction vehicles should remain in identified access tracks and ROW to avoid damaging soil and vegetation.</p> <p>Ensure topsoil is left in a non-compacted condition following completion of works. Ensure revegetation at the earliest time.</p> <p>Where erosion occurs on steep slopes, river banks, etc. all exposed soils should be rehabilitated immediately following construction activities (grass shall be seeded or other measures implemented depending like silt fences).</p>			
Top soil removal and re-use	Strip and save all available topsoil from within the ROW and all ancillary sites, including borrow pit areas, and re-use it for site rehabilitation.	Through ROW	As part of works to be executed by the contractor	Contractor, SEO, CES
Impact on waterways and water pollution	<p>Avoid the placement of pylons in or immediately adjacent to river banks to reduce the potential for soil erosion into the stream.</p> <p>Regular maintenance should be carried out on all vehicles and other machinery used for construction.</p> <p>Prohibit construction and maintenance vehicles from driving in waterways.</p> <p>Ensure that the Contractor submit Emergency Procedures prior to commencing activities on the site.</p> <p>Provide appropriate waste management strategy for soils and liquids to control soil pollution and degradation of the environment</p> <p>Use approved erosion control methods as outlined above.</p> <p>Ensure that potential sources of petro-chemical pollution are handled in such way to reduce possibility of spills and leaks.</p> <p>Vehicle maintenance should be confined to designated areas or in construction camps designed to contain any spill of fuel or lubricant.</p> <p>Waste petroleum products and used oils must be collected, stored and taken to authorised disposal facilities according to NEMA regulations.</p> <p>Ensure that Contractor have a spill kit in his possession at any time.</p> <p>The Contractor shall submit a Waste Management Plan for approval by the CES</p>		As part of works to be executed by the contractor	Contractor, SEO, CES

Environmental concerns	Mitigation measures	Location	Budget (USD)	Responsible
	<p style="text-align: center;">before commencement of work.            As part of this Plan to include:</p> <p style="text-align: center;">Provision of an appropriate number of toilets at worksites (1 for 15 persons);            Septic tanks or an alternative sewage system will be designed to accommodate the sewage level at the substation sites;</p> <p style="text-align: center;">Urinating or defecating anywhere other than in the toilets (latrines) shall not be permitted. The Contractor shall enforce the use of such sanitary facilities by all personnel on the site;</p> <p style="text-align: center;">Provision for on-site treatment of effluent at long-term work sites;            Training of construction employees on project sanitation practices.</p>			
Impact on wetlands	<p>Avoid construction of the transmission lines through wetlands and span wetlands wherever possible. Fine tuning of tower locations in consultation with local communities and the Wetlands Inspection Division.</p> <p>Where it's not possible to completely avoid wetlands, the use of mats and wide-track vehicles when crossing wetlands is preferable.</p> <p>Activities should be carried out in the dry season especially for the wetland areas to minimize disturbance of sensitive soils and problems of in flood prone areas.</p> <p>Use existing roads for construction and operational access wherever possible.</p> <p>If towers are to be erected in swamps not easily accessible from existing roads or causeways, specialised construction techniques should be used to access the sites in a way that does not require permanent access ways to be built. All temporary structures should be removed after works.</p> <p>Carefully clean construction equipment after working in areas infested by purple loosestrife or other known invasive, exotic species.</p>	<p>Every wetland but specially :</p> <p>Uganda:            Rwampara County,            Rwizi River,            Kagaga, Katukuru,            Rweibogo and            Rwimagu wetlands.</p> <p>Rwanda: Muvumba            and Warufu rivers            and lake Muhazi.</p>	As part of works to be executed by the contractor	Contractor, SEO, CES, Wetlands Inspection Division

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Environmental concerns	Mitigation measures	Location	Budget (USD)	Responsible
Impact on wildlife including illegal hunting of bushmeat by workers during construction	<p>Noise should be minimized during construction so that animals in the neighbouring areas are not chased away and land in the hands of hunters.</p> <p>Prohibit workers from possessing firearms and other hunting devices.</p> <p>Prohibit wildlife disturbance and poaching.</p> <p>Paths created through wetlands during construction and are not intended to be permanent should be blocked as soon as construction is complete so that area rejuvenates and the habitat restored.</p> <p>It is recommended that a precautionary measure be taken near wetland areas to reduce the risk for bird collision/electrocution. Such a measure could include use of reflectors placed at intervals on the ground wire along the line to minimize potential impact of bird collision.</p> <p>Maintain shaded stream areas for aquatic fauna, where possible.</p>	<p>Through ROW and camp sites</p> <p>Reflectors : Swamps and riverbanks</p>	As part of works to be executed by the contractor	Contractor, SEO, CES
Endangered/Threatened and Protected Species	<p>Where rare animals are known to be present in the project area, the area should be surveyed in order to identify the exact location of species. In some cases, wayleave can be managed to provide habitat for endangered/threatened resources.</p> <p>Before construction, the habitats of the rare sitatunga antelopes and hippopotamus should be surveyed in order to identify the exact location of species and elaborate protective measures.</p> <p>In wetlands areas, before construction, a comprehensive bird survey should be undertaken to specify their status and elaborate protective measures:</p> <p>In some cases, ROW can be managed to provide habitat for endangered/threatened resources.</p>	<p>Uganda: survey of Sitatunga in Rubingo and Kagaga wetlands</p> <p>Rwanda: survey of hippopotamus near Mimuli.</p>	<p>Rwanda = 5 000</p> <p>Uganda = 5 000</p>	UWA, KWS, NEMA
Construction traffic management	<p>Contractor and sub-contractors should use appropriate vehicles and comply with legal gross vehicles and axle loads limits.</p> <p>Contractors should repair damages at own expenses.</p> <p>Contractors should minimize road safety hazard and inconvenience to other road users by taking all appropriate measures.</p>	Through ROW	As part of works to be executed by the contractor	Contractor, SEO, CES
Access to the proposed corridor	<p>Where access tracks are not present (i.e. in areas where the new transmission line does not follow the existing line), an access track of approximately 5 m width will be cut through all vegetation along the wayleave, where possible following the centreline of the wayleave. Clearance for housing and other buildings will be maintained by local adjustment of the route. Cut trees will be left for the use of</p>	Through ROW	As part of works to be executed by the contractor	Contractor, SEO, CES

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Environmental concerns	Mitigation measures	Location	Budget (USD)	Responsible
	(or sale by) local owners.			
Dust pollution	<p>Spraying of water during the construction work will be done to suppress dust emission at construction sites adjacent villages/house.</p> <p>Vehicles delivering materials shall be covered to reduce spills and dust blowing off the load.</p> <p>Control speed and operation of construction vehicles.</p>	Through ROW	As part of works to be executed by the contractor	Contractor, SEO, CES
Noise pollution	<p>Noise pollution should be reduced to a minimum during construction phase. (Uganda – Noise Standards and Control Regulations, 2003).</p> <p>Workers in vicinity of strong noise will wear earplugs and their working time should be limited according to national guidelines.</p> <p>Construction would be stopped from 21:00 to 06:00 hrs at construction sites located within 300 m of residential areas.</p> <p>Machinery and vehicles will be well maintained to keep noise at a minimum level.</p> <p>The construction period should be made as short as possible.</p>	Through ROW	As part of works to be executed by the contractor	Contractor, SEO, CES
Landscape and interference with aesthetics along the corridor route	<p>Where possible, straight line runs are maximised so that the need for angle towers, which have a more negative visual impact due to their heavier construction, is minimised.</p> <p>Wayleave management can also mitigate aesthetic impacts by planting vegetative screens to block views of the line, leaving the wayleave in a natural state at road crossings, creating curved or wavy wayleave boundaries, pruning trees to create a feathered effect, and screening and piling brush from the cleared way-leave so that it provides wildlife habitat.</p> <p>Replant indigenous trees in areas where vegetation is unnecessarily removed. Short flora and trees will be retained.</p> <p>Landscaping of all disturbed areas will be undertaken.</p>	Through ROW	As part of works to be executed by the contractor	UETCL, ELECTROGAZ, Engineer, Contractor, CES
Risks, hazards, security	<p>Erect warning signs to avoid risks from moving vehicles.</p> <p>Erect an appropriate number of lightning arrestors.</p>	Through ROW	As part of works to be executed by the contractor	Contractor, SEO, CES
Electric and Magnetic Fields (EMF) Lighting strikes	<p>The transmission line will be designed and constructed to ensure that EMF levels are well below accepted guidelines for occupational and human health exposure limits.</p> <p>To minimise exposure of the general public to EMF, no business, schools or</p>	Through ROW	As part of works to be executed by the contractor	Engineer, Contractor

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	<p style="text-align: center;">residential building structure will be allowed in the ROW.</p> <p style="text-align: center;">No building structure (residential or business) should be allowed to be constructed within 20 m of the center line of the existing and proposed high voltage transmission lines.</p> <p style="text-align: center;">Incorporate ground wire on top of the line during design. This protects the transmission line from lightning strikes by arresting the lightning ions and propagating them safely to ground. Lightning is therefore not more likely to strike houses or vehicles close to the transmission line. Shorter objects under or very near a line may actually receive some protection from lightning.</p>			
Working conditions	The Contractor should adopt policies and procedures that comply with national and international legislation. Sub-contractors should adhere to labour and health and safety legislation.	Through ROW and camp sites	As part of works to be executed by the contractor	UETCL, ELECTROGAZ, Contractor
Public health, occupational health and safety, fire preparedness and response	<p style="text-align: center;">As a general precaution, no one should be on an object that is taller than 5 to 6 meters under an overhead high-voltage transmission line.</p> <p style="text-align: center;">Construction of residential and business building structures shall not be permitted within 20 m of the center line.</p> <p style="text-align: center;">Community and workforce sensitisation on STDs including HIV/Aids and the dangers of construction activities, including free condoms for workers.</p> <p style="text-align: center;">Provide assistance to at least a Health Centre in each of the affected districts in form of equipment for the laboratory (microscope, refrigerator, etc.), medicine and connection to the grid.</p> <p style="text-align: center;">The main danger during construction will be the likelihood of accidents to the construction mainly to the workers. It is there fore recommended as follows:</p> <p style="text-align: center;">Protective wear should be provided by the Contractor to the construction crew;</p> <p style="text-align: center;">Members of the public should not be allowed in the construction area;</p> <p style="text-align: center;">First Aid facilities should be availed to the workforce;</p> <p style="text-align: center;">Warning signs will be placed at the pylons and substations to warn intruders of the potential for electrocution.</p> <p style="text-align: center;">Install and maintain fire fighting equipment and machinery.</p> <p style="text-align: center;">Provide emergency fire assembly points at strategic locations, clearly marked.</p> <p style="text-align: center;">Provide billboards at site or entrance to notify motorists about the ongoing activity and turning of construction vehicles.</p> <p style="text-align: center;">Contractor should avail First Aid Kit at the site.</p>	Communities along ROW	See Healt & Safety budget in preconstruction activities	Contractor, Health and Safety Officers

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Environmental concerns	Mitigation measures	Location	Budget (USD)	Responsible
Climbing and Electrocutation Risk	All towers will be fitted with warning signs and anticlimbing devices. Sub-stations to be fenced.	All transmission towers and substation sites	As part of works to be executed by the contractor	Contractor
Waste management	<p>The Contractor should prepare a Waste Management Plan. This Plan should be approved by the CES before beginning of works.</p> <p>Ensure proper solid waste disposal and collection facilities.</p> <p>As part of the Waste Management Plan to be submitted by the Contractor, the following management measures shall be implemented:</p> <p>Waste management training for all workers;</p> <p>The Contractor shall identify a suitable site for the disposal of solid waste from construction activities in agreement with the local authorities and shall ensure that such a site is used properly;</p> <p>Wood etc. e.g., cable reels, may be sold for a nominal fee to local persons;</p> <p>Burning could be used as a last option and only when material cannot be disposed of at a licensed disposal location. Only dry, clean-burning material (wood, cardboard, paper, dry vegetal material) will be burned.</p> <p>Hazardous and dangerous wastes should be managed properly.</p>	Through the ROW and all camp sites and ancilliary sites	As part of works to be executed by the contractor	Contractor, SEO, CES
Increased population and workforce management	<p>Liaise with local communities regarding proposed construction activities.</p> <p>Residents in the project area should be employed to provide unskilled labour to minimise this impact.</p> <p>Ensure workers act in a responsible and respectable manner to local people and do not harvest or take personal resources, forest products or wildlife.</p> <p>Ensure that no or minimal wood is burnt by any construction worker on or off construction sites.</p> <p>Provide kerosene or gas for all workforce cooking needs.</p>	All communities along the ROW	As part of works to be executed by the contractor	Contractor
Cultural Property	<p>Should any archaeological or historic remnants be encountered, construction work should immediately stop along that section, and the CES should be informed forthwith. Any archaeological finds like broken pots, bones etc should be reported to the national authorities for follow up.</p> <p>If cultural or historical sites (e.g. shrines, graves etc) are found and affected by the Transmission Line they should be compensated and relocated in accordance with the customs and norms of the communities.</p>			Contractor, Ministry of lands (Chief Government Valuer), Ministry of Culture

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Environmental concerns	Mitigation measures	Location	Budget (USD)	Responsible
Roads and railways obstruction	In order to minimize inconvenience to road users, the contractor should be required to put measures in place to keep all roads and accesses affected by the work open and not to obstruct traffic flows and existing accesses at all times. Installation of electric cables over roads and railways should be done during non-peak traffic times to reduce impacts on pedestrian, cycle, car and rail traffic. Planning of construction activities should be done in collaboration with local authorities and well in advance of planned activities to ensure the shortest possible period for minimal traffic interference. To this end, UETCL and ELECTROGAZ will be responsible for strictly enforcing construction schedules.	Roads and railways crossings. Especially in Rwanda: Kigali-Gatuna national road and Kigali-Nyagatare road.	As part of works to be executed by the contractor	Contractor, SEO
Disruption of services	Inventory of all services to be disrupted during construction. Liaise and reach agreement with affected landowners, local authorities, public undertakings and local people regarding services to be maintained, temporarily cut and reinstated, including the timing and location of cuts and reinstatements. Obtain written permission from affected landowners / local people regarding the temporary cessation of services. Maintain or provide temporary services during construction, including temporary water supplies. Progressively reinstate or repair all interrupted services to their previous capacity.	See above 6.3.7.	As part of works to be executed by the contractor	Contractor, SEO, Local Authorities
Displacement of people and loss of structures	A total of 311 houses in Rwanda and 331 houses in Uganda are affected and the families there in should be compensated. In general, affected people preferred cash payment except in some case were land acquisition by the electricity producer should be done in favour of the displaced households (see above section 4 on consultation) Some 693 other structures (latrines, kitchen, fences, etc.) in Rwanda and 440 in Uganda will have to be displaced also.	Through ROW and camp sites	Cost of resettlement of structures: Houses: 2 854 048 Other private structures: 385 876  Costs are detailed in Chapter 8	PIU (Project Implementation Unit, see RAP in chapter 8)  NELSAP, UETCL, Electrogaz, Uganda Ministry of Lands, Housing and Urban Development (MoLH&UD), Chief Government Valuer, in Rwanda: local authorities
Community structures	Uganda: The survey of the ROW showed that 11 community buildings will eventually have to be move before the line is constructed. There are 5 schools and 4 churches among them. An estimated amount of 220 160 USD for	Through ROW	Uganda : 220 200 USD Rwanda: 250 446	PIU (Project Implementation Unit, see RAP in chapter 8)



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Environmental concerns	Mitigation measures	Location	Budget (USD)	Responsible
	<p>replacement cost have been calculated.</p> <p>Rwanda : The survey of the ROW showed that 7 community buildings, among them 4 schools should eventually be relocated . The cost of reconstruction is estimated to 250 467 DUS.</p> <p>During project implementation, it should be reasonable to consider minor realignment of transmission line by the contractor after consultation with local communities to evitate some of these community buildings.</p>		<p>USD</p> <p>Costs are detailed in Chapter 8</p>	<p>NELSAP, UETCL, Electrogaz, Uganda Ministry of Lands, Housing and Urban Development (MoLH&amp;UD), Chief Government Valuer ,</p> <p>Rwanda: autorités administratives locales</p>
Agricultural land and lost of crop	<p>Compensation for land acquisition is restricted to the towers base (6.25 square meter per towers X 314 towers= 1 963 squared meters or 0.20 ha)</p>	Through ROW and camp sites	<p>Approximate price of land base acquisition for towers is</p> <p>3 000 USD/ha in Uganda and 5 628 USD/ha in Kenya.</p> <p>Cost estimate for land acquisition: 1 073 USD</p>	<p>PIU (Project Implementation Unit, see RAP in chapter 8)</p> <p>NELSAP, UETCL, Electrogaz, Uganda Ministry of Lands, Housing and Urban Development (MoLH&amp;UD), Chief Government Valuer ,</p> <p>Rwanda: local authorities</p>
Loss of crops and trees	<p>Compensation (cash equivalent) of a year of harvesting of the area under cultivation in the wayleave should be given to all the households. In addition, crops that may be removed from land to be temporarily used for construction purposes (camp, acces road) will also have to be compensated on the same base (cash equivalent to a year of harvesting).According to projection from the survey 183 hectare in Uganda and 345 in Rwanda it is based on the type of crop and stage of maturity. There are fixed rates that apply.</p>	Through the ROW	<p>Cost estimate for loss of crops for one year is estimate to:</p> <p>Rwanda: 21 751 USD</p> <p>Uganda: 181 912 USD</p> <p>Costs are detailed in Chapter 8.</p> <p>Compensations for loss of trees are</p>	<p>NELSAP, UETCL and MoLH&amp;UD, local authorities</p>

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Environmental concerns	Mitigation measures	Location	Budget (USD)	Responsible
			estimate to: Rwanda: 23 333 USD Uganda: 17 095 USD	

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Environmental concerns	Mitigation measures	Location	Budget (USD)	Responsible
Farming activities	<p>Ensure that utilities to repair much of the damage that can occur during construction and provide fair monetary compensation for damages that cannot be easily repaired.</p> <p>The contractor should work with agricultural landowners to determine optimal pole heights, pole locations, and other significant land use issues to minimize interference with agricultural practices.</p> <p>If a field must be crossed, larger structures with longer spans can be used to span them.</p> <p>The potential for soil compaction and erosion by transmission construction and maintenance activities should be lessened. If compaction has occurred, affected soils can be chisel ploughed over successive seasons as needed to break up compacted layers.</p> <p>A cleaning of all construction debris and leftover should be done at the end of construction of each portion of the line.</p> <p>In order to reduce the impact of the project on land and agricultural production, permanent acquisition of land for the way leaves should not be done (except an area of 6.25 m<sup>2</sup> for each pylon) and instead leased with restrictions on cultivations practices (trees over 4-5 m height forbidden).</p>	Through the ROW	As part of works to be executed by the contractor	UETCL, ELECTROGAZ, Contractor, SEO
Ancillary sites rehabilitation and re-vegetation	<p>Rehabilitate ancillary sites as soon as they are not requested anymore such as borrow pits, temporary access roads, camps sites, material storage piles, etc.</p> <p>Restore sites to their previous state.</p> <p>Progressively sow all disturbed construction and ancillary site surfaces with a cover crop mix immediately following final use of each ancillary site.</p> <p>Regularly monitor the effectiveness of re-vegetation measures.</p>	All ancillary sites and other disturbed areas.	As part of works to be executed by the contractor	Contractor, SEO, CES
<b>MAINTENANCE AND OPERATION</b>				
Vegetation control in the ROW	<p>The ROW will require periodic maintenance to control vegetation growth under conductors and in substations</p> <p>Maintenance activities should be limited to the wayleave and not damaging vegetation outside.</p> <p>Manual or mechanical control of vegetation growth should be encouraged and the use of herbicides should be minimized.</p>	Through ROW	Operation and maintenance costs	UETCL, ELECTROGAZ

Environmental protection training	Prepare a training program for maintenance personnel		Operation and maintenance costs	UETCL, ELECTROGAZ
Public safety	Instigate educational programmes in schools and communities to educate people of hazards and safe practices when playing and working near high voltage power lines.	Communities along ROW	Operation and maintenance costs	UETCL, ELECTROGAZ

### 7.1.1. ENVIRONMENTAL PRESCRIPTIONS TO BE INCLUDED IN THE PROJECT EXECUTION PLAN

Much of the work during the construction stage can form part of the contractor's routine inspection activities as indicated in the Environment and Social Management Plan. The planned mitigation measures whose responsibility is the Contractor as indicated in the ESMG should be included on the list of contractual items. Construction contracts may require all qualified bidders to include environmental management plan as part of the submitted bids. The Contractor shall be obliged to appoint a Site Environmental Officer (SEO) to enforce both environmental mitigation and Occupational Health & Safety Policy (OH & Safety Policy). The additional costs of their plan cannot be predicted at this time, but they are considered an integral part the total project costs.

This ESMP shall be carried out as part of project planning and execution. It will interact dynamically as implementation proceeds, dealing flexibly with environmental impacts both expected and unexpected as they come up.

Appendix 9 also includes a selection of environmental prescriptions for construction activities which should also be included in all Construction Contracts. Section IV of this appendix presents specific attenuation measures for agricultural land.

### 7.2. ROLES AND RESPONSIBILITIES IN ESMP IMPLEMENTATION

The Promoter (UETCL/Electrogaz) is responsible for ensuring that environmental issues are taken care of throughout the project cycle. The Consultant Environmental Specialist (CES) (appointed by the Promoter) and the Contractor work on behalf of the Promoter. Environmental matters of the project could be retained by Contractor's SEO and the Consultant Environment Specialist to ensure that action is taken on impact mitigation and benefit enhancement.

The ESMP shall form part of construction tender documents. The Contractor shall be obliged to appoint an appropriately qualified SEO, acceptable to Electrogaz, UETCL, ORGE (Office rwandais de gestion de l'Environnement) and NEMA, who will be responsible for implementation of the measures set out in the ESMP on a day-to-day basis. The SEO shall report to the CES of any accident which has the potential to cause serious or material environmental harm.

UETCL and Electrogaz will appoint a CES with the responsibility of monitoring the effective implementation of the ESMP. The CES will report on a weekly basis to the Promoter's Project Manager. In the case of an incident which has the potential to cause serious or material environmental harm, the CES will be authorised to stop works or to issue instructions to the Contractor, to ensure the impacts of the incident are minimised or eliminated. The scope of the CES authorisation will also include Sub-contractors.

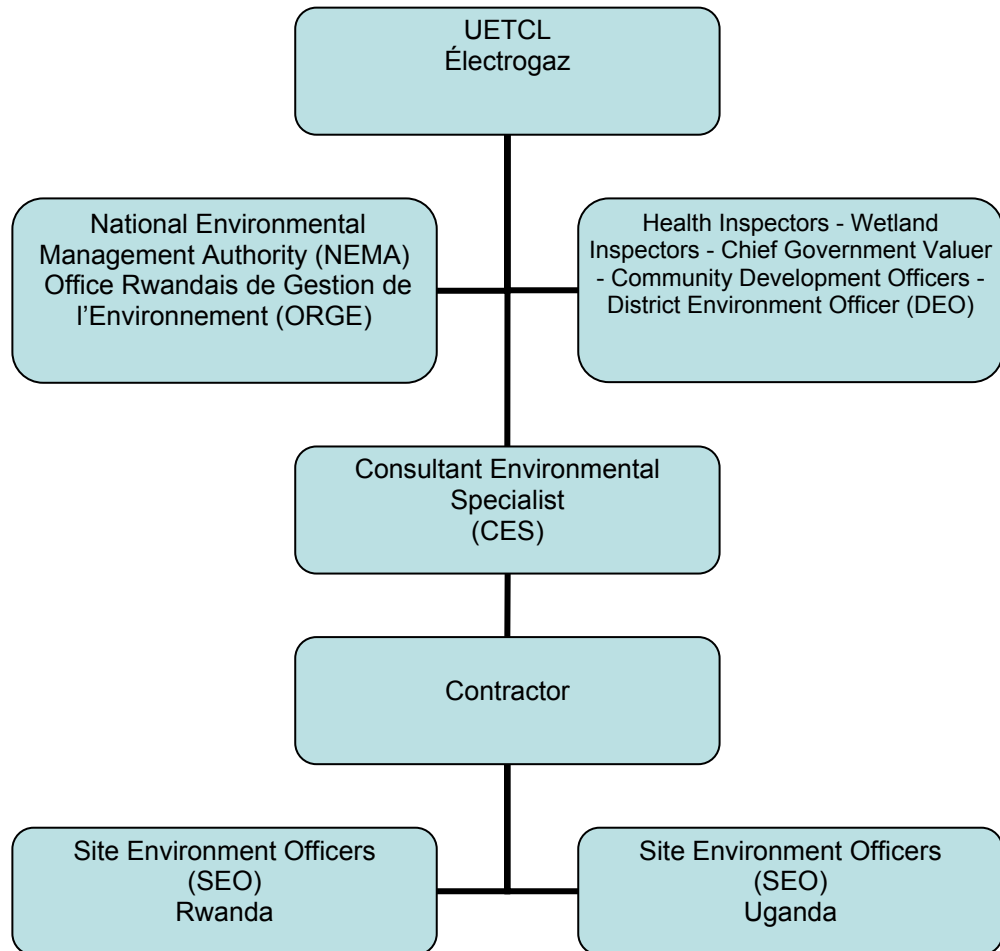
Staff from government agencies should be involved in the implementation of ESMP. These may include: Health Inspectors, Wetland Inspectors from wetland inspection Division of the Ministry of Water and Environment, Ministry of Lands and Urban Development (Chief Government Valuer), Community Development Officers and others as well as National Environment Management Authority (NEMA) represented by District Environment Officer (DEO) for compliance issues. Monitors (with exception of Contractor and Consultant) will need facilitation from the Client since the responsibility of environmental mitigation and monitoring lies in his hands.

During the construction period, the project managers will be given some responsibilities to prepare them for the eventual handover of the project. Some of the responsibilities might include but are not limited to:

- Supervision of the safety and health aspects;

- Restoration work such as decommissioning of access roads and quarries, placing soil over re-contoured land, and seeding/planting vegetation; and Maintenance of environmental data, records and files, plus preparation of regular status reports.

During the operational period, these managers will continue to monitor environmental baseline conditions and other related environmental impacts.



**Figure N° 6. ESMP ROLES AND RESPONSABILITIES**

### 7.3. REPORTING PROCEDURE

Internally, all staff will be required to report environmental incidents to their direct supervisor. Construction Team Supervisors (CTS) will be responsible for reporting to the SEO who in turn, will be responsible for implementing initial mitigation measures whilst notifying the CES.

The CES will be responsible for both reporting internally to the Project Manager. Externally reporting to the relevant Government Agencies (eg National Environmental Management Authority, District Environment Officer, etc.) is the responsibility of the Project Manager.

The following records are required to be kept by the SEO and approved by CES in the event of an incident or complaint:

- Time, date and nature of the incident/complaint;
- Type of communication (for complaints only, eg telephone, letter, in person, etc.);
- Name, contact address and contact telephone number of complainant (Note: if the complainant does not wish to be identified then "Not Identified" is to be recorded);
- Response and investigation undertaken as a result of the incident/complaint;
- Name of person responsible for investigating the incident/complaint; and
- Corrective action taken as a result of the incident/complaint investigation and signature of responsible person.

### 7.4. INSTITUTIONAL STRENGTHENING

There is need for strengthening of the institutions involved in environmental management, especially NEMA and ORGE, to ensure that the proposed ESMP has been implemented and the potential environmental and social impacts are minimized or entirely avoided. The institutions involved during construction, operation and maintenance need to have their capacities strengthened to ensure the proposed line operates without compromising the environmental and social quality. Close consultation with the environmental officers in the districts through which the line will traverse will be necessary but the environmental officers themselves may need some training on the qualities and hazards of electricity so that they may develop a broader perspective of the project.

All participating stakeholders will be provided with the necessary information (implementation activity schedules, mitigation and monitoring plan) and encouraged to adhere to the guidelines designed to safeguard and improve environment.

Transmission line projects are not common in Rwanda and only come up after many years. In this respect ORGE may not have adequately trained personnel, lead agencies and lead experts to effectively oversee such projects especially at District level. Therefore, capacity will need to be strengthened in this area. This also applies to the Energy Regulatory Commission, MINITERE and MININFRA institutional strengthening.

The Ministry of labour's Department of Occupational Health and Safety, the Judiciary and Attorney General's Department may not be adequately staffed to handle accident investigation and undertake court procedures in a timely manner.

Land valuation for purposes of compensation can only be carried out by Registered Valuers (Uganda) and the Commission foncière (Rwanda). There few such valuers within the project area and therefore their fees may end up being too high for the affected. Prior to the project, this shortcoming will need to be addressed.

Arrangements will be made by the Promoter to facilitate (logistics) all stakeholders to take on their roles and responsibilities.

## 7.5. TRAINING

Related to the above issue, training is important on the current environmental legislation, issues related to compensation and regulations governing the wayleaves. Experience gained from the already existing line shows that people are still erecting structures and buildings along the wayleaves. Continuing education and awareness creation directed to the public is necessary to avoid accidents and enhance safety.

All employees will receive environmental induction training prior to commencement of work on this project. The induction training will focus on training staff on environmental and social issues, Health, Safety and Quality Standards, this Environmental and Social Management Plan and the general environmental duty.

Staff directly engaged in the assessment and monitoring of environmental conditions will be given additional specialized training.

The Consultant Environmental Specialist will be responsible for delivering induction and on-going training during the Construction phase.

## 7.6. MONITORING

Environmental monitoring is an essential component of project implementation. It facilitates and ensures the follow-up of the implementation of the proposed mitigation measure, as they are required. It helps to anticipate possible environmental hazards and/or detect unpredicted impacts over time. Monitoring includes:

- Visual observations;
- Selection of environmental parameters at specific locations;
- Sampling and regular testing of these parameters.

Monitoring in the ESIA process happens at many levels to verify environmental impact prediction and adequacy of mitigation measures. Essentially, monitoring finds out if any major mistakes or omissions had been made in the project assessment and implementation. Monitoring depend on the type of environment the project is located and the degree to which it is likely to be affected. Monitoring include regular measurement of parameters such as water quality, observations of wildlife, fauna, flora, employment monitoring, control of resources, resettlement, compensation, etc.

Monitoring should be undertaken at a number of levels. Firstly, it should be undertaken by the Contractor at work sites during construction, under the direction and guidance of the SEO who is responsible for reporting the monitoring to the implementing agencies, Electrogaz and UETCL. It is not the Contractor's responsibility to monitor land acquisition and compensation issues, which will be monitored by the project implementation unit (see chapter 8). It is recommended that the Contractor employ two local full time qualified environmental inspectors for the duration of the Contract (one in Uganda and the other in Rwanda) capable of undertaking the required monitoring or to supervise an external monitoring group (such as a consulting group or a university) to undertake the monitoring on behalf of the Contractor.

The Consultant Environmental Specialist should include the services of an international environmental and monitoring specialist on a part time basis as part of their team.

Electrogaz and UETCL will have overall responsibility to oversee that all environmental measures are put in place and that regulations are enforced. The CES should assist Electrogaz



and UETCL in this process in order to make sure that contractors fulfil the environmental requirements.

Electrogaz and UETCL should in turn undertake independent monitoring of selected parameters to verify the results of the Contractor and to audit direct implementation of environmental mitigation measures contained in the ESMP and construction contract clauses for the Project. Electrogaz and UETCL also have the direct responsibility to implement and monitor land acquisition and compensation issues as outlined in the resettlement and compensation issues with assistance of the Project Implementation Unit (PIU) (see below RAP chapter 8). The Consultant Environmental Specialist should include the services of an international environmental and monitoring specialist on a part time basis as part of their team as well as a sociologist experienced in social impacts of infrastructures. Six person months per year should be allocated by each organisation to the Project during the pre-construction and construction stages. Periodic ongoing monitoring will be required during the life of the Project and the level can be determined once the Project is operational.

Both Uganda and Rwanda have National Environmental Management Authorities (NEMA and ORGE) that have the overall responsibility for issuing approval for the Project and ensuring that their environmental guidelines are followed during Project implementation. Their role therefore is to review environmental monitoring and environmental compliance documentation submitted by the implementing authorities and they would not normally be directly involved in monitoring the Project unless some specific major environmental issue arose.

Environmental monitoring of the following parameters is recommended as a minimum for the Project.

#### 7.6.1. JOBS AND CONSTRUCTION PROCUREMENT

Communities affected by the construction and operation of the transmission line expect business opportunities. The construction period and maintenance works will provide local benefits to communities along the line.

It is therefore recommended to monitor local jobs creation and spending done by contractor and or sub-contractor. The SEO will have to keep a record of employees residence and hours worked and also of all the materials (stone, sand, etc) and services (storage spaces, guesthouse, etc.) bought on a national, regional and local basis.

#### 7.6.2. WATER QUALITY MONITORING

Construction camps are often a source of significant surface and groundwater pollution if not managed and sited properly. It is recommended therefore that the Contractor undertake monitoring of any effluent or wastewater discharged from campsites. This would encourage the Contractor to implement proper wastewater treatment facilities on site using settling and treatment ponds.

The parameters to be analysed should include those in the following Table.

**Tableau N° 42. LIMITS FOR PROCESSED WASTEWATER, DOMESTIC SEWAGE AND  
 CONTAMINATED STORMWATER DISCHARGED TO SURFACE WATERS (FOR  
 GENERAL APPLICATION)**

Pollutant or parameter	Limit	(Milligrams per litre, except for pH, bacteria, and temperature)
	Ugandan standards	World Bank standards
pH	6.0 – 8.0	6.0 – 9.0
Chemical Oxygen Demand	100	250
Oil and grease	10	10
Total Suspended Solids	100	50
Heavy metals, total	-	10
Arsenic	0.2	0.1
Cadmium	0.1	0.1
Hexavalent chromium	0.05	0.1
Total chromium	1.0	0.5
Iron	10	3.5
Lead	0.1	0.1
Mercury	0.01	0.01
Nickel	1.0	0.5
Selenium	1.0	0.1
Silver	0.5	0.5
Zinc	5.0	2.0
Free cyanide	0.1	0.1
Total cyanide	-	1.0
Ammonia	10	10
Fluoride	-	20
Chlorine, total residual	1.0	0.2
Phenols	0.2	0.5
Phosphorus	-	2.0
Sulphide	1.0	1.0
Coliform bacteria	10 000 counts/100 ml	< 400 MPN/100 ml
Temperature increase <sup>7</sup>		Maximum 3°C above ambient temperature of receiving waterway

Source: World Bank Group, 1999.

Notes: There are no Rwandese standards

MPN = Most Probable Number

<sup>7</sup> The effluent should result in a temperature increase of no more than 3°C at the edge of the zone where initial mixing and dilution take place. Where the zone is not defined, use 100 metres from the point of discharge.

### 7.6.3. NOISE LEVELS MONITORING

Although noise during construction is not expected to be a big problem with the Project, periodic sampling of Contractor equipment and at work sites should be undertaken to confirm that it is not an issue. Noise level monitoring could be supplemented by consulting with Project Affected People in the first instance to identify the level of monitoring and impact of noise.

**Tableau N° 43. MAXIMUM NOISE LEVELS FOR CONSTRUCTION SITE**

Facility	Maximum noise level permitted (Leq) in dB (A)	
	Day	Night
Hospital, schools, institutions of higher learning homes for the disabled, etc.	60	50
Buildings other than those prescribed in paragraph (i).	75	65

Source: Uganda – National Environment (Noise Standards and Control) Regulations, 2003.

**Tableau N° 44. MAXIMUM NOISE LEVELS DURING OPERATION PHASE**

Facility	Maximum noise limits	
	Night	Day
Habitation, hospital, school	40 dB (A)	45 dB (A)
Campground, institution, high-density habitation	45 dB (A)	50 dB (A)
Comerse, parks	50 dB (A)	55 dB (A)
Industry, agriculture	70 dB (A)	70 dB (A)

Source: Government of Quebec (2006)

### 7.6.4. SOIL EROSION MONITORING

The excavation of earth for the establishment of towers, temporary and permanent access roads, work camps and storage facilities will exacerbate soil erosion. Therefore, it will be the responsibility of the Contractor's Site Environmental Officer to ensure the implementation and effectiveness of erosion control measures. Focus should be given to work sites where soil is disturbed and its immediate environ as well as along the ROW during and after vegetation clearing.

### 7.6.5. MONITORING OF VEGETATION CLEARING

Removing of vegetation for the establishment of the wayleave will be monitored by the Contractor's SEO to verify the respect of areas marked for clearing and that clearing is undertaken with minimal disturbance to the surrounding environment and only after compensation has been paid to the owner.

#### 7.6.6. MONITORING REHABILITATION OF WORK SITES

The Contractor's SEO should ensure that areas used as temporary campsites for workers, as well as any other ancillary sites (borrow pits, temporary access, etc.), are progressively rehabilitated as they are no longer required. Once a site is rehabilitated, it should be "signed off" by either Electrogaz or UETCL environmental staff.

#### 7.6.7. MONITORING OF ACCIDENTS/HEALTH

The Contractor's SEO must make sure that appropriate signs are posted at appropriate locations/positions to minimise/eliminate risk of electrocutions.

In addition, the environmental inspectors should make sure that:

- Measures to create awareness regarding sexually transmitted diseases, primarily HIV/AIDS, and other diseases such as malaria, schistosomiasis, leishmaniasis, and onchocerciasis are taken;
- Preventive measures to reduce/eliminate malarial, schistosomal, leishmanial, onchocercal infections where/when ever appropriate are put in place;
- Periodic health surveys are carried out along the transmission route.

The following parameters could be used as indicators:

- Presence of posted visible signs on towers, etc.;
- Presence of sanitary facilities at campsites;
- Level of awareness of communities pertaining to dangers/risks associated with power lines;
- Accident reports: records on actual accidents associated with the establishment of the transmission line could be compiled with the help of local peasant association officials, teachers/students of local schools.

#### 7.6.8. MONITORING OF SOCIAL IMPACTS

(Note: The monitoring and impacts of compensation and resettlement is explained in Chapter 8.)

The monitoring of the social impacts of the project is based on the experience of the communities and households. Through survey and/or focus-group information gathering techniques the following impacts should be monitored with the help of village's chief, local authorities and households.

Employment and procurement: impact on the community of the jobs offered and material bought locally by contractor and workers spending

Quality of life: impact of noise, dust, etc related to construction works on daily life of households

Community relationship: impact of arrival of workers in the community on relationship in the community and with the workers

Production/Work Activities: impact of construction and line's presence on normal productive activities (farming, commercial sale, etc).

**Tableau N° 45. MONITORING PLAN**

Environment Component	Project Stage	Parameter	Standard	Location	Frequency	Implementation	Supervision
Land Acquisition and Compensation	Pre-construction	Ensure compensation paid as per RAP	RAP	Along ROW for all PAPs	Monthly until complete	PIU	CES, UETCL, Electrogaz
Water Quality	Construction	pH, EC, SS, turbidity, colour, NH4+, NO3-, total P, Fe, Al, DO, BOD, grease & oil, total coliform	World Bank and national standards	Construction Camps	Monthly during operation of camp	Contractor	Site Environmental Officer
Noise Levels	Construction	Noise levels on dB (A) scale	Uganda guidelines	At equipment yards	Monthly as required by Site Environmental Officer	Contractor	Site Environmental Officer
		Noise levels on dB (A) scale	Uganda guidelines	Noise level metre kept at a distance of 15 m from edge of ROW	As directed by the Site Environmental Officer	Contractor	Site Environmental Officer
Soil Erosion	Construction	Turbidity in storm water	EPA guidelines	Along ROW	Pre-rainy and post rainy seasons	Contractor	Site Environmental Officer
Vegetation Clearing	Construction	Monitor clearing to ensure consistent with EMP	Drawings, EMP	Along ROW and works areas	As required	Contractor	Site Environmental Officer
Rehabilitation of Work Sites	Construction	Monitoring to ensure all work sites are progressively rehabilitated	Drawings, EMP	Work camps, material storage sites, along ROW		Contractor	Site Environmental Officer
Health	Pre-construction, Construction	Signs, posters displayed, health	EMP	Along ROW, work camps and	Monthly	Contractor	CES

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Environment Component	Project Stage	Parameter	Standard	Location	Frequency	Implementation	Supervision
		awareness lectures, mosquitoes nets in malaria areas for each worker, health checks for workers, condoms available		surrounding areas			
Accidents	Construction	Safety training for workers, accident reports, community consultation	EMP	Along ROW	Monthly	Contractor	CES
Social Impacts of job creation, construction activities, presence of line	Post-Construction	Surveys/focus groups with local authorities and impacted households	-----	Along ROW	At the end of project	CES	CES

## 7.7. ESMP IMPLEMENTATION SCHEDULE

As observed from the proposed Environmental and Social Management plan, some mitigation measures will be undertaken during the pre-construction, construction and operation and maintenance stages. It is recommended that pertinent safety regulations and proven standard designs including protection and monitoring systems be employed to minimize potential risks and hazards, and make transmission lines reliable and safe.

An updated Resettlement Action Plan (RAP) for compensating assets affected and resettling households to be displaced will need to be prepared. This involve negotiating of assets affected and resettling households to be displaced before project implementation; and information disseminated to affected households. It is proposed that the evaluation and negotiation with households start 1 year before the construction of the line begin to give time to the population to receive compensation and relocate. This will solve impacts related to land acquisition, damage to crops and other property, displacement and breakdown of social ties.

Full compensation for any crops, properties and rent for the land while the works are ongoing will be paid. The District land boards of all affected districts (Mbarara and Ntungamo) will provide compensation rates for crops and temporary structures respectively.

In Rwanda, the new law of expropriation stipulates that after the decision to expropriate for public reason is taken, the Land Commission establishes the list of beneficiaries. The compensation rates are based on market prices. The procedure could not take more than 4 months after the decision to expropriate has been done. All measurement and evaluation are done in the presence of the beneficiary and local authorities. The fair compensation should be payed within 120 days.

## 7.8. ESMP COSTS

A special budget for environmental protection (excluding relocation and compensation costs as they appear in the Chapter 8), in addition to the funds already allocated for construction activities should be considered. The budgets for environmental management and monitoring during the construction period should be estimated according to the Standards on Designing, Planning and Computing Construction Costs for a transmission line, while taking into consideration the actual situations at similar projects already in operation and the scope and planned environmental protection measures adopted for this project. In Uganda, a budget of 0.1% of the total project cost is payable to NEMA as processing cost. The details are presented in Section 7.1.

**Tableau N° 46. ESMP Costs**

Item	Kenya Cost USD	Uganda Costs USD	Total USD
Sensitization of communities and consultations	30 000 \$	30 000 \$	60 000 \$
Final valuation of assets	100 000 \$	100 000 \$	200 000 \$
Health and safety sensitization, equipment for health centers	50 000 \$	50 000 \$	100 000 \$
Survey of endangered species	5 000 \$	5 000 \$	10 000 \$
Cultural property		10 000 \$	10 000 \$
Total	185 000 \$	195 000 \$	380 000 \$



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## 8. RELOCALIZATION AND COMPENSATION PLAN

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### 8.1. INTRODUCTION

The Relocalization and Compensation Plan is in conformity with the directive OP 4.12 of the World Bank. It is particularly precised in it the objectives and principles guiding the actions to be undertaken, the compensation plan organization and the agenda of the operations to be respected in cash country, as well as the mechanisms for complaints and appeal to be set up. Following the surveys that been carried out in each country and described above (chapter 4) us (chapitre 4), the number of affected households and the projected budget have been worked out.

### 8.2. JUSTIFICATION

The construction of a power transport line implies the way leave clearance for security reasons. All the permanent or temporary structures such as houses, huts, barns, farm houses, latrines, etc. must then be rebuilt outside the way leave. Any kinds of trees whose height is more than 4 to 5 m must also be taken away from the way leave since they present electrocution risks. On the other hand, gardening, market gardening, banana trees, animal husbandry, pasture or any other activity that is not harmful to the line operation and maintenance are tolerated. Therefore the use of the way leave is possible, but it is submitted to limitations and particularly to a right-of-way.

The Mbarara (Uganda)-Birembo (Rwanda) interconnections line route has been set up in collaboration with UETCL and ELECTROGAZ at the prefeasibility stage in 2006. The way leave length of the High Voltage Line is 177 km. The way leave width is 30 m. so, the total area of the way leave is 531 ha.

### 8.3. OBJECTIVES AND PRINCIPLES OF THE PRC

The PRC aims at providing compensation for persons, households and communities affected by the line construction, and helping them restore their way of living and producing.

If necessary, the planning is expected to provide assistance for the relocalization of private structures (houses and outbuildings, etc.) or community structures (school, church, dispensaries, etc.). The affected persons, households and communities must regain so good an economic and social situation if not situation that is better than the one prevailing before the project.

The operational directive OP.12 of the World Bank puts forward the following principles for the setting up of the PRC:

- Minimizing as far as possible, the needs for relocalization and compensation through the examining of alternatives and the project design.

- The persons affected by the project (PAP) comprise all the persons who are going to lose their possessions or benefits because of the project implementation whatever the extent of the losses is like. The loss of possessions may include the loss of lands, structures, houses and other buildings, cultural possessions (graves, altars, etc.) as well as the disruption of activities (for example, losses due to the closing or the relocation of a business activity).
- All the PAP are eligible whatever their social or economic status, their sex, etc. may be.
- Information and participation measures for the PAP and the concerned parties to know, among others, the principles on which the PRC is based, the rights of the PAP, the scales of the compensation evaluation, the appeal mechanisms.

The relocalization and compensation measures to be planned are:

- Compensation in cash or in kind for houses and any other structures at the replacement cost without taking into consideration the depreciation of the replaced structures or the possibility of recovering the material from the displaced structures.
- Replacement of any affected cultivation, business, residence land by another one of the same value and/or productivity that is acceptable for the PAP, or, by an explained consent from the PAP, an equivalent amount according to the market value.
- A compensation in cash for affected crops and tree plantations or destroyed woods.
- A displacement allowance and some assistance for the restoration of activities.
- The estimation and the payment of compensations and the relocalization of the affected structures before the beginning of the high voltage line building works is approved by the ruling authorities.
- Mechanisms of follow-up, assessment and diffusion of results to the concerned authorities must be planned in advance.

The eligibility to the relocalization and to the compensation will be based on a detailed inventory of possessions owned by every household, firm or organization (church, school) and on the negotiation to be carried out by the Project Implementation Unit (PIU) at least six months before the beginning of the construction. Every household, firm or organization that is identified as being affected by the project will have right to a compensation and/or to a relocalization according to the principles established above and in conformity with the regulations of each country.

#### 8.4. ALTERNATIVES FOR REDUCING RELOCALIZATION NEEDS

At the time of the prefeasibility study, different options have been considered so as to reduce the impacts on the human and biophysical environment in Rwanda. The corridor in the Ugandan portion had been set up and selected by UETCL. The corridor A has been preferred to the corridor B, particularly because of its greater impacts.

In addition, from the phase of the prefeasibility study, it has been agreed to limit the way leave to 30 m so as to reduce the new line impacts to a minimum. While limiting the effects on the environment, this measure allows to meet short of the high voltage line security.

## 8.5. CONSULTATION OF THE PERSONS AFFECTED BY THE PROJECT (PAP)

From the phase of prefeasibility and at the phase of the feasibility study, consultations have been done with the persons affected by the project. These consultations have been done at different levels:

- With the local and regional authorities ;
- With the households settled inside the way leave, through socioeconomic surveys;
- With host communities, through information meetings.

As the reports of the consultations and the number of persons having participated in the different information and consultation activities are deemed authentic, the people have been able to express their opinions, their expectations and their wishes towards this project.

The PAP have generally welcomed the project as far as it permits to effectively improve the electrification of their environment. Nevertheless, some worries related to the evaluation procedures of possessions, the payment of compensations and the relocalization of households have been expressed. When the project implementation date will be known, the PIU will have to plan the opening of local offices that are accessible to the PAP. There, it will be possible to provide assistance and listen to complaints.

Since no realization date has been fixed yet for the project, it is agreed that other consultations will be done by the PIU at the realization stage. These ones are described further.

The section 4 of the report presents the account of the consultations. Detailed reports are included in the annexes 2 and 3.

## 8.6. SUMMARY OF IMPACTS

### 8.6.1. GÉNÉRAL POINTS

The choice of the site, the linear nature of the project and the limited width of the way leave arrange things so that the impacts on households and communities as well as on private and public possessions of the project will be limited. Nevertheless, compensations and relocalizations are planned where the way leave of the electric line affects houses, public services, farming, trade and other structures or activities.

The characteristics of affected communities and households are described in chapter 5 of this report whereas the detailed presentation of impacts is done in chapter 6. In general, the affected communities and households are situated in the rural area. So, farming and animal husbandry are the most widespread occupations.

### 8.6.2. NÉGATIVES IMPACTS

The project will generate impacts, mainly during the construction stage. They are those ones related to:

- The relocalization of private and public structures;
- The clearing of the way leave (destruction of woods and tree plantations);

- The excavation and tower construction works (damages done to crops, noise and dust for the bordering populations);
- The influx of specialized workers in the rural area (health problem, particularly HIV-ADS, increased demand and other natural resources such as water, firewood and other natural resources);
- The construction of the worker's camps (damages done to crops and to properties, problems related to the management of rubbish and liquid waste, etc.);
- The population and territory occupation density is very important. The number of households whose land has the way leave passing through it is then 519 in Uganda and 303 in Rwanda. Among these ones, it is estimated that the number of residences to be relocated is 331 in Uganda and 331 in Uganda and 311 in Rwanda. The proportion of households which may rebuild their residence close by varies according to districts and countries.

Since the project study area is linear and the line way leave is relatively narrow, no group relocation is planned. The whole of the affected community structures (school, church) may be rebuilt in the proximity to their original localization. About ten community structures (dispensaries, schools, churches) should have the possibility to be relocated in Uganda and eleven in Rwanda. Nevertheless, blight modifications relating to the route have still to be considered, and discussions with the communities must be continued so as to identify the best solution for each one of the cases. The impacts on the relocated households and on communities will then be limited if fair compensations are paid and the time allocated for relocating the structures is enough.

### 8.6.3. POSITIVES IMPACTS

The persons living in the project area will have the possibility to be provided with job and business opportunities, mainly during the period of building works. In fact, surveys within communities have shown in all the regions which the electric line passes through, there is a basin of a considerable contingent of manpower. These people are capable of being employed on the building site as manual workers, specialized workers, unskilled workers, car drivers, etc.

Those business opportunities, for both the goods suppliers and the services providers, will also be an occasion to make local communities benefit from positive project effects. Needs for feeding, clothing, tools, etc. from migrant workers and building companies will get some possibility to be satisfied, partly by local enterprises and private individuals, particularly women (feeding, laundry, etc.).

Nevertheless, the most important positive impact of the project, if connections are established, will consist in providing many communities which the line pass through with access to electricity. It has been shown in this study that the 220 kv new line will permit to realize rural electrification projects in the areas that do not have them yet, particularly in the district Ntungamo in Uganda and in the northern part of Rwanda (Nyagatare and Kagitumba) (section 2,5). The socioeconomic surveys that have been carried out (chapter 5) show that most of the communities situated in the project area are seriously affected by the lack of supply in terms of services and infrastructure.

Rural electrification projects after stand at the centre of poverty reduction strategies, as it is the case for many African sub-Saharan countries. The availability of this form of energy particularly encourages the settings up of development projects such as drinking water supply by means of pumps, the setting up of mills and other small scale industries, the extension or the improvement of existing installations, etc. the community consultations carried out within this survey have allowed to identify a lot of projects or even existing installations, particularly in the farm-produce sector that may benefit from that

electrification. Women will be able to benefit from it, particularly an easier access to water, which will lighten water transport time and effort.

The availability will favour investment in education, and in this way the capacity reinforcement. The access to electricity for the health installations will permit cooling equipment installation for the storage of vaccines and other vital medicines.

## 8.7. LÉGAL MEASURES

Laws and legal measures being applied for the project are described in chapter 3 of this report.

In Uganda, there is no specific expropriation law, nevertheless, the Land Act precises occupation and property rights and compensation measures to distribute in case of expropriation. It is also precised in Ugandan law that the written agreement of the wife is required for any selling act or land transfer by the head of the family. The land expropriation for public uses is under the jurisdiction of the Uganda Land Commission and the local jurisdictions for land administration. The value of expropriated lands must be established on basis of the market while the relocated structures are estimated on basis of the relocated structures are estimated on basis of the relocation cost. A compensation allocation for drawbacks that is equivalent to 30% of the value of expropriated possessions must also be paid if the expropriation is carried out in less than six months and 15% if the expropriation time is more than 6 months.

In Rwanda, the expropriations for public reasons are managed through the law relating to expropriation for public use reason. (Law n° 18/2007 of 19/04/2007). The competent authority as well as the decision relating to expropriation for public use reason is held by the Ministry empowered to be in charge of Lands (Ministry of Land , Environment, Forests, Water and Mines) because more than one district are concerned by expropriation (articles 3,4 and 5) . The law specifies the deadlines for the expropriation (4 months) and for the payment of compensations (120 days).

After the final decision on the expropriation for public use reason is published, the competent Land commission makes an exhaustive list of Land owners or parties entitled to Land and to works to be carried out by the fund. That list is posted up in a place that is accessible to the public at the office of the District, of the sector and of the Unit (cellule) in which the land is situated so as the concerned may get aware of it.

The expropriation procedure can not exceed 4 months' period, dated from the taking of the decision about expropriation by the organs aimed at in the article 10 of the present law.

The works concerning the measurement and the calculation of expropriation compensations are carried out in presence of the owner or the concerned parties or their representatives the concerned parties or their representatives and the representatives of the local authorities.

The right compensation determined by the Land commission is paid within a period not exceeding one hundred and twenty days (120) dated from its determination, otherwise the expropriation becomes invalid.

## 8.8. ORGANIZATION RESPONSIBILITY

The PRC setting up and good operation responsibility belongs to the electricity companies that are responsible for infrastructure implantation, that is to say Electrogaz (Rwanda) and UETCL (Uganda).

These companies must ensure that the Project Implantation Unit (PIU). This structure will make sure the PRC is implanted.

As it has been shown by the consultations carried out within the context of this study (chapter 4), households and chiefs of villages are worrying about not being compensated or not being compensated enough. Their worries come particularly from their past experiences.

In order to alleviate these worries and ensure that the compensation and relocation process is done in transparency and in good working order, it is proposed here that an independent organization from electricity companies, the Project Implantation Unit (PIU), should be set up. Observers from government authorities, particularly the district officials and persons in charge of land and electricity companies will participate in that PIU works.

At the time of the project approval, and at least one year before the beginning of works related to the way leave and the construction, a PIU will have to be set up in each concerned country (Rwanda and Uganda).

Under the responsibility of a coordinator authorized by the different parties that PIU will be responsible for:

- the PAP information and consultation activities;
- the inventory of possessions and the detailed estimation of compensations;
- the payment of these compensations;
- the good working order of relocation works;
- the PRC follow-up reports to appropriate authorities, to the network promoter in each country as well as to the person in charge of the line construction works.

The coordinator of each PIU must be a person who an their agreement and payment procedures. The coordinator must also ensure that the organization and the implantation of the PAP information and participation measures are st up and hire the required person from an NGO, or a private consultant to prevent the population from worrying.

Furthermore, a team of authorized assessment staff that is able to estimate the value of landss, crops, woods ans plantations as well as buildings must carry out the evaluation of possessions and compensations in conformity with the legal measures that are planned in each country

In any case, the women's and children's interests must be protected. In Uganda, for example, the written agreement of the wife is required before any property transaction by her husband.

The planned total amounts of compensation and relocation will have to be approved and endorsed by the PAP, the competent government authorities and by Electrogaz an UETCL.

## 8.9. PROGRESS OF THE PIU WORKS

A general schedule of works is presented in the document (XXX on page XX). All the relocation compensations and works must be completed before the beginning of the construction works.

After its setting-up, the PIU must:

- Spread out information to the PAP and the communities settled where the line passes about the procedures, methods and calculation criteria of compensations, and about relocalization measures, complaining mechanisms and the settlement of disputes;
- Carry out, in collaboration with public officials, the evaluation of possessions and required relocalizations and get the agreement from households and communities or organizations for what is relating to relocalization measures and agreed total amounts.
- Secure the payment of the agreed amounts or the acquisition or the transfer of equivalent lands, as the case may be.
- See to it that there is a good working order in reconstructions and demolitions of structures and buildings.
- Present a detailed report about paid compensations and realized works to the appropriate local and national ruling authorities as well as to Electrogaz and UETCL.

The realization of all these tasks by the PIU will take about 1 year.

## 8.10. COMMUNITY PARTICIPATION

It is very important that the persons affected by the project (PAP), the chiefs of villages and the heads of community structures (schools, churches) who will have to be relocated take an active part in the planning, the rebuilding and the restoring of their way of living.

Therefore, they must get involved into:

- The definitive inventory and the final evaluation of the relocalization costs;
- The selection of the relocalization site;
- The demolition activities;
- The rebuilding activities;
- The moving of possessions and people.

The required workers should first be chosen from the PAP. They should be hived and trained to rebuild their houses on their new parcel. This new approach is highly encouraged by the donors and it contributes to ensure the success of relocalization programs which come up to the PAP'S expectations

Taking into account the linear aspect of the Mbarara-Birembo line, a cot of relocalization possibilities on adjacent sites exist. In fact, in most cases, and according to the wish expressed at the time of consultations, the affected persons should be relocated in the immediate vicinity of the occupied original site. This solution will highly reduce drawbacks for the PAP.

Two options are possible:

- The first option consists then in an immediate relocalization by the way leave side.
- The first option consists then in an immediate relocalization by the way leave side.

Whatever may be the chosen solution, the costs related to relocalization will be entirely compensated.

The relocalization site selection will result from a mutual agreement between the PAP and the Project Implantation Unit (PIU).

Since, the payment in kind for compensations is a priority for the project, the PIU will take into consideration each PAP'S particular demands to get lands on which they will take either a long-term renewable lease or a tittle deed in due form.

The principles to be applied for identifying, buying and distributing lands will be:

- A similar plot of land or the one which presents a better potential will be proposed to the PAP on basis of an equivalent area.
- Tha land will be selected in consultation with the PAP and the host communities.

## 8.11. ELIGIBILITY

The PAP comprise all the persons who will lose possessions or benefits because of the project, whatever may be the extent of losses. The possessions to be compesateded include lands, crops and structures (houses and other constructions) or a combination of both. All the PAP will not be obliged to be relocated since in most cases only a small part of their possessions will be affected. In this case, they should be given a financial compensation for losses suffered.

Eligibility to relocation and compensation will be based on a detailed inventory of possessions belonging to cash household a company which will be carried out by the PIU at least six months before the beginning of the construction. Every household, company or organization identified asbeing affected by the project will have right to a compensation and/or to the relocation proportionally to the suffered impact.

The PAP also include persons without title deeds or without any lease (squatter).

Vulnerable persons such women and children who are heads of families as well as old people or the displaced (refugees or others) will have to be given special attention. Their particular needs must be taken into account and the required ressources for the restoring of their living conditions must be set up during the compensation and relocation process. Consultations with the members of their community and local NGOs should allow to find means for helping them and improving their living conditions.

## 8.12. EVALUATION AND COMPENSATION OF LOSSES

### 8.12.1. COMPENSATIONS FOR HOUSES

Within the context of the interconnection project, some 519 households in Uganda and 303 in Rwanda will be affected by this new infrastructure. Among these households, some 331 houses are considered to be temporary or permanent in Uganda and 311 in Rwanda will have to be relocated.

In the temporary type houses, the wolds are built in dry soil applied to a branch trellis (pisé) with a thatched roof. The semi-permanent houses are built in dry bricks with a thatched or iron sheet roof. The permanent houses are built in concrete or in bricks done to a turn, and they have an iron sheet roof (Table 47).

The affected houses are scattered on the whole of the line corridor, and not concentrated. The impact will consist, most of time, in rebuilding them at a few metres from the way leave, habitually on the same plot of land. In some cases, nevertheless, the residual portion, outside the way leave, is not enough to permit the rebuilding. The residence will have to be relocated to on and her parcel belonging to the same household or another parcel that will have to be throught.



**Tableau N° 47. NUMBER OF HOUSES TO RELOCATE BY TYPE**

Line section Section de ligne	Number of houses Nombre de maisons		
	Temporary/Temporaire	Semi-permanent/ Semi-permanente	Permanent/Permanente
Uganda/Uganda	117	117	97
Rwanda	44	207	60
Total	161	324	157

The total replacement cost of buildings is 2854048 US\$ from which 1868398 US\$ is for Rwanda and 985650 US\$ is for Uganda. The replacement cost of related infrastructure (cowsheds, latrines, fences, etc.) is 385875 US\$ from which 351669 is for Rwanda and 34206 US\$ for Uganda.

#### 8.12.2. COMPENSATIONS FOR PUBLIC INFRASTRUCTURES

A certain number of public buildings are situated within the way leave and are affected by the project construction. The detailed line planning, including the exact tower site, having not been done yet, a route optimization is still possible, and some of those structures will be saved. That is to say, particularly, churches, mesques whose symbolic value may be great and many communities will resitate as for as displacing them is concerned. Other consultations shall be carried out with communities so as to optimize the line route in order to reduce the number of the displacements of community buildings.

The list of affected community structures presented below then corresponds to the least optimistic scenario.

All public buildings (schools, health centres, woship places, etc) shall be rebuilt before the beginning of their demolition.

The list of buildings to relocate and their building cost is shown in the table below.

**Tableau N° 48. UGANDA/UGANDA – PUBLIC BUILDINGS WITHIN THE WAY LEAVE TO RELOCALISE**

Type de bâtiment Type of building	Nombre Number	Valeur estimée (UGX) Estimated value (UGX)	Coût de remplacement (USD) Replacement cost (USD)
École School	5	219 000 000	131 374
Terrain de jeu Playground	1	10 000 000	6 000
Église Church	4	120 000 000	71 986
Forage Bore hole	1	18 000 000	10 798
Total	11	367 000 000	220 160

**Tableau N° 49. RWANDA – PUBLIC BUILDINGS WITHIN THE WAY LEAVE**

Type de bâtiment Type of building	Nombre Number	Valeur estimée (FR) Estimated value (FR)	Coût de remplacement (USD) Replacement cost (USD)
Église/Church District Gicumbi, secteur Rutare	1	76 000 000	142 589
Écoles/Schools District Gicumbi, secteur Rutare	4	20 000 000	37 523
Église/Church District Gasabo, secteur Nduba	1	33 000 000	61 913
Bloc de toilettes/Toilets	1	4 500 000	8 442
Total	7	133 500 000	250 467

### 8.12.3. COMPENSATION FOR FARM PRODUCE

The total of the areas required for the project is estimated at 531 ha (177 km x 30 m). From that total, 1.96 ha (314 x 6.25 m<sup>2</sup>) will be lost permanently for the tower footing construction. This area is minimum in relation to the size of forms. In addition, crops whose height will be compatible with the line security and pasture will be authorized inside the way leave once when works are completed.

Les The cost associated with the compensation for the permanent losses of cultivated areas are estimated at 1 073 USD, that is to say:

Rwanda : 0,18 ha X 5 628 USD = 1 013 USD

Uganda : 0,02 ha X 3 000 USD = 60 USD

The costs associated with the compensation for lost crops during the construction works may vary according to the fact that the peasant has had time to harvest or not. The compensation for implementation on basis of the market value including the cost for the restoration of crops

For the project requirement, the crop losses are considered for the whole construction year, that is to say 182 530 USD en Uganda et 21 751 USD au Rwanda, pour un total de 204 281 USD.

**Tableau N° 50. RWANDA – COMPENSATION COST FOR LOSS OF ANNUAL CROPS**

Type of culture	Areas	Compensation cost m2 (RFW)	Cost RFW	Total RFW	Total USD
Maïs	3 189	7	22 961		
Banana	232 321	40	9 376 476		
Manioc	54 496	32	1 765 670		
Potatoe	3 588	29	104 949		
Sweet potatoe	1 794	18	32 292		
Sorgho	27 709	7	182 879		
Beans	20 811	5	109 258	11 594 485	21 751

**Tableau N° 51. UGANDA/UGANDA – COMPENSATION COST FOR LOSS OF ANNUAL CROPS**

Type of culture	Areas	Compensation cost m2 (UGX)	Cost UGX	Total UGX	Total USD
Cassava	4 447	618	2 748 139		
Coffee	1 447	939	1 358 733		
Banana trees	329 994	741	244 525 332		
Beans	123 897	100	12 389 654		
Grazing land	86 128	124	10 679 878		
Others	58 691	554	32 514 550	304 216 287	182 530

#### 8.12.4. COMPENSATIONS FOR TREE PLANTATIONS

A lot of families have plots of land on which they grow trees, generally eucalyptus that are used either as timber or as firewood, and whose part may also be sold.

A lot of households also grow fruit trees in the way leave. Those trees will have to be cut and may not be planted again; so, it is a permanent loss. From the results of the surveys

that have been carried out, it has been possible to estimate the total number of trees by household.

The loss of these trees owing to the complete deforestation of the way leave may have a significant impact for the families. The corresponding compensation is a complex procedure because it depends of the size of the tree.

The estimated cost is 40 429 USD, i.e. 17 095 USD in Uganda and 23 333 USD au Rwanda.

**Tableau N° 52. RWANDA - COMPENSATION COSTS FOR TREES**

Type of tree	Number of trees	Compensation cost (RWF)	Cost
Goyava	24	2 670	64 080
Papayer	72	345	24 840
Eucalyptus (5-10 ans)	9 273	1 200	11 127 600
Mango	28	1 000	28 000
Cyprus	36	1 000	36 000
Cedrela	12	1 000	12 000
Umusave	4	1 000	4 000
Gravella	52	1 000	52 000
Avocado (2-3 ans)	239	4 340	1 037 260
Imivumu	44	1 000	44 000
Acacia (5-10 ans)	8	1 000	8 000
Sub-total Rwanda (RWF)			12 437 780
Total (USD)			23 333

**Tableau N° 53. UGANDA/UGANDA - COMPENSATION COSTS FOR TREES**

Type of tree	Number of trees	Compensation cost (UGX)	Cost
Fruit trees	30	2 665	79 950
Goyava	19	2 670	50 730
Eucalyptus	7 000	1 200	8400 000
Cyprus	39	1 000	39 000
Gravella	19	1 000	19 000
Mango	45	1 000	45 000
Avocado	97	4 340	420 980
Pines	13	1 000	13 000
Jack fruit	45	1 000	45 000
Sub-total Rwanda (RWF)			9 112 660
Total (USD)			17 095

#### 8.12.5. COMPENSATIONS FOR INDUSTRY CROPS

Same business or companies are going to be affected by the line construction. Taking account the linear aspect of the project, the relocalization of business will generally be possible in the immediate vicinity of the interruption of activities during the period of works. Whatever may be the company and business income losses shall be evaluated case by case.

The compensation basis that will be established will be an amount equivalent to six months of turnover after deduction of taxes and fees as declared to the authorities.

#### 8.12.6. COMPENSATIONS FOR MOVING COSTS

Every household and company that shall move will be granted a fixed amount to cover for moving expenses. That amount will be established taking into account the particularities of each case and the number of persons to get moved. So, it is more expensive to get a family of 12 persons moved than 2 persons, with or without goats, cows, chickens, etc. In the same way, according to the quantity of furniture and other possessions to carry, the compensation costs vary. The same principles are applied to companies including their equipment, their stock as indicated in the stocklist, etc.

#### 8.12.7. UNEXPECTED EVENTS AND CONTINGENCIES

Unexpected damages, perturbations and nuisances may happen during the relocalization process. They may be quite variable such as the loss of needed furniture that cannot be moved to another place, the obligation to move at a fixed date, the need to pack up house and business things and others.

The compensation relating to contingencies and drawbacks is found by adding a percentage at the end of the compensation calculations. According to the Ugandan law, a 15% rate in addition to the expropriation value is to be added if the expropriation is done 6 months after the notification and of 30 % if the expropriation is done before 6 month. In Rwanda, no specific provision is made by the expropriation law for that. It is suggested that 15% of the calculated compensation value should be given for drawbacks.

#### 8.12.8. SETTLEMENT OF DISPUTES

In order to avoid misunderstandings during the process of evaluating the possessions, community representatives should be present in addition to the PIU members. All the documents should be signed by those present parties. A witness from a local NGO may also participate in this procedure.

Furthermore, a unit for settling conflicts shall be set up before the beginning of acquisitions by the PIU. That unit will comprise a local community representative (district) and a local NGO representative.

The PIU shall do everything possible to find common ground of agreement within that unit, including the nomination of a mediation accepted by the parties, or by a second evaluation of compensations independent of that one carried out by the PIU. In case of minder standing, the PAP keeps his/her rights to take a case in court. In the case of Uganda, it is a question of District land Tribunals and Land District Boards, and in the case of in Rwanda, the plaintiff will first be able to go and see the local authorities, then if need be, the civil tribunals.

In Rwanda the expropriate people for Public conveniences can ask within 30 days a revision of the decided compensation at the Compensation Commission just overhead

the one which has taken the first decision. In case of disagreement, the case will go to court.

#### 8.12.9. COSTS

The estimated budget for the compensation and the relocalization of the PAP is presented in the following table. It presents the overall costs required for compensating and relocalizing the PAP in addition to the needs for a realization of a detailed inventory, the surveillance and the assistance to vulnerable persons. To this sum it may be added an amount equivalent to 10% for contingencies.

**Tableau N° 54. COMPENSATION COST (USD)**

ITEM	Mbarara-Birembo	
	Uganda	Rwanda
Houses replacement cost	985 650	1 868 398
Private structures replacement cost	34 206	351 669
Public buildings replacement cost	220 200	250 446
Cost of trees	17 095	23 333
Permanent loss of cultivation	60	10 13
Temporary loss of cultivation (1 year)	182 530	21 751
Sub-Total by country	1 439 741	2 516 610
6 months or more quit notice 15%	215 961	
Administrative cost (2%)	28 795	50 332
Contingencies (10%)	165 570	251 661
Sub-Total by country	1 850 067	2 818 603
TOTAL (USD)		4 668 670

#### 8.12.10. FOLLOW-UP AND EVALUATION

The follow-up and evaluation program of the relocalization implementation plan shall be set up by UETCL and Electrogaz.

It is recommended that this follow-up program should be under the responsibility of the Independent Follow-up Unit (IFU). This unit must be highly independent of the local influential authorities. To this end it is recommended that it should comprise the representatives of KPLC and Electrogaz, of an organization financing the project (the World Bank or other) and of a NGO representing the PAP, and finally an expert in relocalization and compensation from a University or an international organization.

The committee will have to examine the PAP'S situation and report to KPLC and Electrogaz and to competent government authorities.

More specifically, the IFU will have to:

- examine the PIU reports and related documents that have to do with compensations and relocalisations;
- evaluate how the PRC objectives have been attained, particularly the restoration of household crops and income;
- assess the PAP'S satisfaction regarding given compensations and solutions given to complaints;
- determine the efficiency of taken measures and draw lessons from that PRC application.





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**APPENDIX 2: SOCIO-ECONOMIC QUESTIONNAIRE FOR THE COMMUNITIES**



## QUESTIONNAIRE SOCIOECONOMIQUE A L'INTENTION DES COMMUNAUTES

Province :		Questionnaire No. :	
District :		Commune/village :	
Fonction du répondant :			
Nom de famille du répondant :		Prénom du répondant :	
Nom de l'interviewer :		Date :	

### SECTION A: DONNÉES SOCIOÉCONOMIQUES

#### I. Population du village

Tous les ménages									
Nombre de ménages		Population						Taille des ménages	
		Hommes		Femmes		Total			
1		2		3		4		5	

Ménages ruraux									
Nombre de ménages		Population						Taille des ménages	
		Hommes		Femmes		Total			
6		7		8		9		10	

#### II. Ethnie et religion

1	Ethnie majoritaire :	2	Pourcentage % :
3	Ethnie minoritaire :	4	Pourcentage % :
5	Autre ethnie :	6	Pourcentage % :
7	Principale religion :	8	Pourcentage % :
9	Seconde religion :	10	Pourcentage % :
11	Autre religion :	12	Pourcentage % :
13	Fête religieuse principale :	14	Date :
15	Autre fête religieuse :	16	Date :



### III. Personnes réfugiées, femmes et enfants chefs de ménage

1	Est-ce que le village compte des personnes réfugiées, si oui combien ?	
2	D'où proviennent ces personnes réfugiées ?	
3	Combien de ménages ont à leur tête des femmes ?	
4	Combien de ménages ont à leur tête des enfants ?	

### IV. Infrastructures socioéducatives

	Principales infrastructures socioéducatives	Nombre
1	École primaire	
2	École secondaire/lycée	
3	Centre de santé/dispensaire	
4	Hôpital	
5	Église	
6	Mosquée	
7	Centre communautaire	
8	Poste de radio	
9	Associations :	
9	Autre :	
10	Nombre d'enseignants	
11	Nombre d'infirmières	
12	Nombre de médecins	

### V. Activités socio-économiques

	Principales activités	Oui	Non	%
1	Agriculture			
2	Élevage			
3	Industrie de transformation			
4	Tourisme			
5	Secteur tertiaire			
6	Artisanat (spécifiez) :			
7	Autre (spécifiez) :			



	Commerces et industries	Nombre
8	Marché	
9	Moulin/atelier de conditionnement	
10	Boucherie	
11	Station d'essence	
12	Bar	
13	Boutiques/magasins/épiceries	
14	Atelier	
15	Café Internet	
16	Autre :	
17	Autre :	

#### VI. Accès à l'eau potable

		Oui	Non	Ménages desservis %
1	Robinet dans la maison			
2	Robinet à l'extérieur de la maison			
3	Puits à la maison			
4	Puits communautaire			
5	Rivière ou source			
6	Autre (spécifiez) :			

### SECTION B : ÉLECTRIFICATION RURALE

#### VII. Accès à l'électricité

	O/N	Utilisation(s)
1	Y a-t-il l'électricité au village ?	
2	Si OUI, à quel usage(s) est-elle employée ?	

		OUI	NON
D'où provient cette électricité ?	3	Réseau électrique :	
	4	Génératrice :	
	5	Solaire :	
	6	Éolien :	





**VIII. Demande pour l'électricité - village non relié au réseau de distribution**

	O/N	Utilisation(s)
1		Est-ce que le village pourrait bénéficier de l'accès à l'électricité ?
2		Si OUI, à quel usage(s) serait-elle employée ?

**IX. Sources d'énergie utilisées par les ménages**

	Source d'énergie	Éclairage	Cuisine	Chauffage
1	Bois			
2	Chandelles			
3	Kérosène			
4	Gaz de pétrole liquéfiés (butane, propane, etc.)			
5	Électricité			
6	Autre (spécifiez):			

**SECTION C : MAIN-D'OEUVRE ET SERVICES**

**X. Main-d'œuvre**

Est-ce qu'il y a dans le village des ouvriers qualifiés ? Si OUI, quels métiers sont représentés ?

	Métiers représentés	OUI/NON	Nombre de personnes
1	Monteur d'acier		
2	Menuisier		
3	Soudeur		
4	Électricien		
5	Chauffeur de camion		
6	Opérateur de machinerie lourde		
7	Mécanicien		
8	Maçon		
9	Peintre		
10	Autre :		



## XI. Services

Est-ce qu'il y a dans le village des entreprises en mesure de fournir des services durant la construction de la ligne ? Si OUI, quels services peuvent être fournis ?

	Services représentés	OUI/NON	Nombre de personnes
1	Transport		
2	Mécanique		
3	Essence/produits pétroliers		
4	Machinerie lourde		
5	Matériaux (bois, pierre, sable, etc.)		
6	Cantine		
7	Autre :		

## SECTION D : IMPACTS LIÉS À L'EMPRISE DE LA LIGNE ÉLECTRIQUE

### XII. Structures et bâtiments principaux

Quels bâtiments municipaux sont situés à l'intérieur de l'emprise et qui seront entièrement ou partiellement affectés? Fournissez le meilleur estimé possible des superficies affectées à l'intérieur de l'emprise.

Bâtiment	Utilisation (École, centre de santé, autre (spécifiez))	Type de construction (Indiquez les matériaux principalement utilisés pour les murs et le toit)	Superficie (m <sup>2</sup> )	
			Totale	À l'intérieur de l'emprise
1				
2				
3				

4 Avez-vous un terrain à l'extérieur de l'emprise sur lequel reconstruire le bâtiment ? (O/N)

5 À quelle distance du bâtiment actuel ce terrain est-il situé? (km)




**XIII. Préoccupations sur les impacts de l'établissement de l'emprise**

Avez-vous des préoccupations à formuler entourant l'établissement de l'emprise de la ligne électrique et comment cela pourrait affecter le village ? Si OUI, quelles sont-elles?

		O/N
1	Avez-vous des préoccupations?	
	Si OUI, quelles sont-elles?	
2		
3		
4		
5		
6		

Signature de l'interviewé.....No de carte d'identité.....

Signature de l'enquêteur... ..Date.....

**APPENDIX 3: REPORT OF UGANDA CONSULTATIONS**

**NELSAP- FEASIBILITY STUDY FOR MBARARA –RWANDA  
BORDER TRANSMISSION LINE.**

**ENVIRONMENT AND SOCIAL ASSESSMENT**

**COMMUNITY CONSULTATION - DRAFT REPORT**

**February 2007**

**NELSAP- Feasibility Study for Mbarara – Rwanda  
Border Transmission Line. Environment and Social Assessment**

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## **1.0 INTRODUCTION**

### **1.1 Overview**

The stakeholder consultations for the feasibility study on interconnection of the electricity networks of the Nile Equatorial Lakes Countries were carried out at two different levels; namely district level and community level. At the district level, both the civic and political leadership were met and these included the Chief Administrative Officer, the District Environment Officer, District Planner, Head of Community Based Services and the District Production Officer. Districts met included Mbarara and Ntungamo districts. (Details of officials consulted are in **Appendix B**).

The sub county leadership both political and civic was also consulted. A cross section of community members together with the village leadership were also met in planned community meetings at major trading centers. The general approach in invitation was placed on village residents who are likely to be affected by the proposed line in whatever way (Details of meeting schedules and participants are as shown in **Appendix A and C** respectively).

### **1.2 Methodology**

At the districts, one-on-one meetings were held and in other cases group discussions with Councilors were held.

In the communities, meetings were mobilized for by the LC 1 chairpersons and other local leaders after making prior appointments with them.

In the meetings, communities were briefed by way of presentations and illustrations where possible. The presentations included; project background, objectives of the project, expected on coming activities, schedule of the future activities and purpose of the meeting, after the presentations, a chance was given to the community members to give their views, comments and ask questions.

All the views, comments and recommendations were documented. The questions raised by the community were responded to.

### **1.3 Objectives of the Consultation Meetings**

1. To consult with stakeholders at Districts and lower local governments both politicians and technocrats to enlist their cooperation and support.
2. To create awareness about the intended Project among communities in the pre-identified trading centers.
3. To get a feedback from the people met of their views and issues of concern regarding the Project.

### **1.4 Areas Covered.**

Consultation meetings were held for the Mbarara – Birembo line that traverse Mbarara and Ntungamo districts. Villages/Trading centers where community consultative meetings took place in the various districts are as shown in the table below. Most meetings were attended by members from more than one village.

District	Villages/communities
Mbarara	Ishanyu, Stock farm, Nyakakoni, Katojo, Nyakayojo- Nyamiyaga, Kagaga, Nyamotojo, Ibare, Kashekure, Rukandagye, Bugamba, Ekikoona-Kanyangogi, Nyabibale
Ntungamo	Nyakigufu, Rwoho, Rukoni, Kitwe, Kafunjo, Kicheche

## 2.0 SUMMARY OF THE ISSUES/ CONCERN

Issues arising out of the district and community consultations are indicated below:

### 2.1 Mbarara-Birembo issues/concerns

#### 2.1.1 Issues raised by the District and Sub-county Officials

##### Load shedding

In Mbarara, Councilors wondered whether this Project will result in the reduction or even complete elimination of load shedding currently experienced in the district.

##### Valuation of property affected

Officials consulted were concerned about compensation for their people, they requested that their people's property be valued fairly, compensation to be given promptly and be given time to resettle before they destroy their houses if necessary.

##### Employment

The leadership in Mbarara District requested that the Project as much as possible uses local labour to enable the people in the villages earn some income from it.

##### Ways of minimizing Resettlement

In Ntungamo district the Councilors at district level indicated that there is a high population between Rwoho and Rukoni and the same area has many bare hills while the Kitwe-Mirama area has a very low population. They advised that issues of population distribution and soil fertility along the corridor be put into consideration during line route alignment to minimize displacement of settlements.

##### Support

District leaders appreciated and welcomed the Project, they pledged to support it in their capacity as leaders and help in mobilization of the community. They thanked the Project for informing them first before going down to start implementation.

##### Community consultation



Leaders of Ntungamo District advised that continuous consultation of the communities throughout the life of the project, should be undertaken to get the actual feelings of the people.

*Insecurity*

Leaders in Ntungamo pointed out that there is a security threat in the area caused by the people from Tanzania who crosses the border to graze their animals in Uganda however, he was skeptical of their ability to affect the Project

*Agricultural practices*

The district production department was concerned about the effects of the project on agriculture productivity in the area. It is a concern because communities in the proposed Project area are mainly dependent on agriculture for their livelihood. They grow bananas the major staple crop in Uganda and these plantations are in every community along corridor. They also grow coffee, annual crops like maize, beans, millet, Irish potatoes and vegetables in the swampy areas. Other agricultural activities that are carried out are dairy farming, goat keeping, and fish farming. Whether the transmission line passes through swamps, valleys or hills, these agricultural activities may be disrupted in one way or the other.

*Economic use*

It was pointed out that with the introduction of power in the Rwoho-Bugamba area, people may be able to set up saw mills especially in places like Kitwe where forest plantations exist.

*Environmental concerns*

There was a concern about the environment. Environmental officers advised that before construction environmental impact assessments should be done. In case of wetland use, the nuclear areas of the wetlands should be avoided.

They encouraged the project implementers to be mindful of the ecosystem, nuclear settlements, compensation, health hazards of high voltage transmission, They also noted that the corridor area is heavily cultivated, so there is need to value land and compensation for affected assets be given to those affected.

They advised that before and during construction, an environment management plan should be prepared to facilitate environmental monitoring by stakeholders.

*Power supply*

The leaders requested that the power be stepped down for purposes of distribution in the areas where the line passes. It is expected that with the introduction of power, undeveloped areas will develop and there will be a boost economically. It was pointed out that the sub-county communities have many activities that could spring up or be boosted by power including; HIV testing machines, laboratory and theaters in health centers, lighting for the health centers, schools, trading centers and sub-county headquarters. People could start up saw mills, maize mills, metal works, milk processing, etc.

*Non Governmental Organizations*

They identified the following as the active NGOs/CBOs in their areas that could help in the mobilization and training in the future project activities;

- ACTS, a religious NGO that is providing gravity flow water in Bugamba.

- Nyakayojo Aids Alleviation Front (NAAF) carrying out AIDS support and sensitization activities in Nyakayojo.

### **2.1.2 Issues raised during the Community Meetings**

#### Commencement date for construction activities

The people requested that they should be given prior notice on the commencement dates for construction, so that they plan for the utilization of their properties within and along the wayleave to avoid wastage of time and resources.

Others were simply eager to have this Project commence because this to them meant that they would soon be able to access electricity and offer any other service as may be required by the project.

#### Demarcation of the Way Leaves

Community members were anxious to know the exact line route alignment and the extent on ground of the way leaves; for purposes of estimating effect to their property/assets, and facilitation of preparations for resettlement.

#### Participation in line route alignment

The community members also requested to have a say in where the way leaves pass so that they ensure minimal destruction. They expressed the need to have community facilities like schools, health centers spared. They wanted to know whom to inform if there are such specific places where they would not like the line to pass.

#### Sensitive/valuable areas

In Kagaga village, the community was concerned that their hills (Itega Hills) which are rumoured to have precious stones may be exploited by the contractors of this Project if they fall within the way leaves and yet they would have been a good economic resource to benefit the community. In Nyamatojo they had a fear that this Project may affect stone quarrying in their hills.

There was a fear that the 20 m wayleave on either side is too big and could easily take up someone's whole garden and house.

#### Benefits of the Project to community.

This was a cross cutting issue in all the trading centres/villages, we visited. Communities wondered how it was possible that they would simply have power lines pass over their heads while they had no electricity in their homes, shops, health centres etc. They requested the programme to incorporate a component of distributing transformers to step down the power so that they are able to use it. As a matter of seriousness, some communities such as Katojo went as far as insisting that before work commences an agreement be signed between the programme and the community to ensure that they benefit from this line otherwise they would refuse to cooperate.

Some communities were skeptical about getting power. In Kashekure, Ibare, Nyamatojo and others communities were disgusted by the fact that power lines have existed for the last 30years in their areas but they had never benefited from it. They also feared that electricity is so expensive to the extent that even if it was to be stepped down many households may not be able connect it their houses let alone pay the monthly bill.

Some people were interested in knowing whether the Project would have any employment opportunities.

#### Uses for power

In all the trading centres they expressed a need for power which they said they had many uses for and these include the following; domestic use, use in schools, health centres, sub county headquarters and battery charging. They said they would be able to set up small scale industries such as maize mills, coffee and wine processing factories, saw mills, they would be able to buy fridges for their shops as well as milk coolers since a lot of milk is produced in the region. They also said barber shops, hair saloons, and welding activities need it.

#### Compensation

- In every community there were concerns about compensation for the power transmission way leaves. They informed the team that some people have land titles and others don't have. They wondered whether even those without land titles would be compensated. Some people wanted to know how much money would be given, whether there was a flat rate to be given to everyone affected and how much it would be.
- The issue of whether people affected by project would be compensated the worth of their property strongly came out. There were fears that their property may be undervalued and that they would have no where to run to complain to since this is a regional project.
- They were also worried that even if they are given money to establish other gardens, certain crops like bananas, coffee, take long to mature, if most of their plot is taken by the way leaves their families may starve before they can harvest from these new gardens.
- Some people were worried that if land without any activity would be taken free of charge.
- In case the project was to be implemented community, requested to be given ample time to look for other places to resettle in since it is not very easy to find good plots.
- In a particular village called Nyakakoni, it came out that land taken by the power transmission way leaves should go on a leasehold basis where by ownership is renewed after a specified period of time. They felt that giving up their land is such a big sacrifice especially since they are not going to benefit directly from the power.

- They were also interested in knowing what the procedure of compensation would be, where, when and by whom.

Health and Safety Concerns

In some villages they had concerns about their health. There were rumors that one can contract cancers a result of living near such power lines. They also feared that their animals and plants would also be affected. They had heard that their animals could die and the coffee plants and banana plantations could wilt. They wanted to know if direct contact with the poles posed a specific danger to people and their animals.

Acceptance

Many community members asked that having heard all about the Project, if individuals or a whole community refused to cooperate and hand over their land to the Project after it has been demarcated as part of the way leaves what would happen?

Government Land/ Stock Farm

It was established that the National Agricultural Research Organization (NARO)/Government of Uganda and Uganda Land Commission has overall authority over the land. It was pointed out that being a research institution; the Project will definitely disrupt their experiments and other activities. They recommended that if possible, the Project could use the boundaries and not the center of the farm.

Communication

- Communities requested to be consulted when major decisions affecting them are to be made for purposes of incorporating their opinions. They also requested for the participation of their leaders (LC V and LC 111) so that there are sure that their leaders are aware of what is going on and can pass on relevant information. They therefore appreciated the steps taken by NELSAP

They also said that it would be important for the surveyors and any other group to inform the community before they start with their work.

**APPENDIX 4: REPORT OF RWANDA CONSULTATIONS**

## MESURES DES CONSULTATIONS EFFECTUEES

### Introduction.

Les consultations du public ont été faites à trois niveaux respectifs :

- Au niveau central, auprès des personnes ressources ayant une expertise dans l'un ou l'autre domaine concerné par l'étude (système foncier, domaine forestier, environnement, énergie, etc.) ;
- Au niveau des structures décentralisées, les autorités administratives locales ont été consultées depuis le niveau de la province, du district jusqu'aux secteurs des zones qui seront affectées par l'emprise de la ligne électrique ;
- Les consultations avec les communautés ont été faites à travers différentes réunions avec la population dans leurs villages « *Umudugudu* ». La plupart des réunions ont été tenues dans les centres commerciaux ou dans les écoles primaires selon les recommandations du Chef du Village.

La méthode d'entretien a été utilisée lors de la consultation des experts des différentes institutions au niveau central ainsi qu'avec les autorités locales des provinces, des districts et des secteurs. A cette occasion, une lettre d'introduction préparée par le Ministre ayant l'énergie dans ses attributions avait été préalablement transmise à toutes les autorités administratives nationales et locales (provinces et districts). Au moment de la consultation, un rendez-vous était d'abord acquis auprès de chaque autorité et au moment de l'entretien on présentait la copie de la lettre d'introduction ainsi qu'une fiche de présentation du résumé du projet.

La méthode des Assemblées Publiques a été utilisée pour les séances de consultation avec la population au niveau des villages. Une rencontre était organisée préalablement avec le chef du village « *Umudugudu* ». Lors de l'entretien avec le Chef du village, un consensus était obtenu sur le lieu et le temps de la réunion. L'invitation par affichage était adressée à la population par le Chef du village et annonçait l'objet et le lieu où se tiendrait la réunion.

### Objectifs des consultations :

- Informer le public sur le projet et particulièrement les personnes qui seraient potentiellement affectées par le projet;
  - Recueillir les besoins, les priorités de la population riveraine au site d'implantation du projet et leurs réactions sur le projet ;
  - Identifier les préoccupations de la population et leur acceptabilité du projet ;
  - Promouvoir la coopération du public et des communautés riveraines aux différentes phases de réalisation du projet.
-

## Consultation des communautés

Lors des consultations avec les communautés, la réunion débutait par un mot de bienvenue du Chef du village et une brève introduction des enquêteurs. Ensuite, on présentait aux participants l'ordre du jour ainsi que les objectifs de la réunion, et enfin un bref résumé du projet d'interconnexion du réseau électrique des pays des lacs équatoriaux. Après cette présentation, la parole était donnée à la population pour demander des questions sur le projet ou exprimer leurs préoccupations. A la fin de chaque réunion, on complétait un formulaire de collecte d'informations sur la présence et les préoccupations exprimées par la population.

Au total, une audience de 371 personnes a répondu aux consultations des communautés, dont 25,5 % de femmes. L'importance de l'audience par district dépendait du nombre de villages traversés par l'emprise de la ligne électrique dans chaque district. La majorité de l'audience était composée des agriculteurs et des éleveurs. D'autres métiers étaient représentés : maçons, menuisiers, enseignants, etc. Les détails de l'audience par district se trouvent dans le tableau ci-dessous. La liste des personnes consultées se trouve en annexe 1.

**Tableau 1. Répartition des personnes consultées par village et district**

Province	District	Villages "Umudugudu"	Audience	% femmes
Ville de Kigali	Gasabo	Nyakabingo, Gisagara, Gasharu, Nkona, Mirambo, Nyamigina, Kaduha	74	33,8
Nord	Gicumbi	Rurama, Gasharu, Miyange, Baliza, Gatare, Gasharu, Musenyi, Rugerero, Kirwa, Rugarama, Gasharara, Rusumo, Kabuga, Nyarurama, Karengo, Mwanza, Gatare	87	17,2
Est	Gatsibo	Rweza, Rwagakara, Ruziranyenzi, Kamuri, Rugarama, Kinyinya, Kanyinya, Munanira	52	28,8
Est	Nyagatare	Mirama, Ikorosi, Rurimbi, Kiboga, Gakirage, Isangano, Bihinga, Cyonyo, Kajevuba, Burumba, Akamonyi, Kibuye, Ryinkuyu	158	22,2
<b>Total</b>			<b>371</b>	<b>25,5</b>

### Les consultations des leaders locaux.

A la suite d'une lettre adressée à tous les districts concernés, des consultations sous forme d'entretien ou en *focus group* ont été conduites dans tous les districts et les secteurs. Ces consultations ont précédées des enquêtes proprement dites effectuées dans les ménages et les communautés. D'autres consultations complémentaires ont été conduites auprès des différents experts des départements ministériels et des établissements paraétatiques selon les domaines d'expertise et relatifs au projet.

Les autorités et les experts consultés occupent des services diverses notamment : les Maires (districts), les Secrétaires Exécutifs (provinces, districts, secteurs), planification, affaires sociales, agricultures et élevage, développement des infrastructures, conservation des titres fonciers, bonne gouvernance, énergie, ressources humaines, affaires économiques et développement). Les détails sur les consultations des leaders communautaires sont en annexe 2.

### **Les enquêtes dans les ménages.**

Des enquêtes dans les ménages se trouvant à l'intérieur de l'emprise de la ligne de transport électrique ont été conduites sur un échantillon de ménages pour les trois corridors. Les informations collectées étaient relatives à l'identification administratives, spatiales et les membres de chaque ménage. D'autres informations collectées étaient relatives au mode de vie, les revenus et les types de production, l'utilisation et la demande en énergie ainsi que l'impact de la ligne électrique sur leur mode de vie.

Pour chaque ménage, un questionnaire était complété par les enquêteurs après une introduction de l'interviewé. Les méthodes d'échantillonnages et le questionnaire sont repris en annexe. Le total des ménages et les ménages échantillonnés sont représentés dans le tableau suivant.

**Tableau 2. Nombre de ménages de l'emprise et ménages échantillonnés**

<b>District</b>	<b>Ménages</b>	<b>Echantillons</b>
Gasabo	63	12
Gicumbi	69	26
Gatsibo	84	15
Nyagatare	87	21
<b>Total</b>	<b>303</b>	<b>74</b>

### **Les préoccupations du public.**

Les consultations faites au niveau des autorités locales et auprès des communautés ont montré des similitudes. Le grand problème est lié à l'insuffisance des terres dans presque toutes les entités administratives visitées. Les litiges liés aux questions foncières sont les plus dominants parmi les litiges reçus par l'administration locale. Les préoccupations notées lors de cette consultation sont décrites en détail dans le tableau suivant.

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**Tableau 3. Préoccupations et questions soulevées lors des consultations du public**

Composantes environnementales	Questions majeures et préoccupations exprimées
Le cadre légal pour l'expropriation et indemnisation.	<p>Cette préoccupation de référence légale a été exprimée par les autorités du <u>Ministère ayant les terres dans ses attributions, les autorités des provinces et des districts</u>. Le récent document juridique date de 1996. Il s'agit d'un arrêté ministériel n° <b>1808/1185 du 22/04/1996</b> qui fixait le tarif du taux d'indemnisation à l'expropriation pour cause d'utilité publique. Il était prévu que cet arrêté devait être mis à jour tous les 18 mois et au cours de la consultation, il était caduc.</p> <p>Comme alternative, on se réfère à cet arrêté en appliquant le double du tarif pour la location et 10 fois pour la vente. En outre spécifiquement pour le milieu rural et en attendant qu'une loi sur l'expropriation soit promulguée, une lettre du 27 octobre 2005 n°2494/16.03/01.03 adressée au district, villes et Ville de Kigali propose de procéder à l'entente entre l'exproprié et l'expropriant selon les prix actuels du marché. La plupart des autorités consultées ne sont pas au courant de cette lettre.</p>
Expropriation et indemnisation	<p>a) <b><u>Pour les autorités de la Province de l'Est surtout le Maire du District de Gatsibo</u></b>, c'est une grande préoccupation. On doit impliquer préalablement les autorités pour préparer la population à l'expropriation. Il y a de mauvais souvenirs pour la population où pour des projets similaires d'électrification, les indemnités d'expropriation n'ont pas été versés à la population. C'est le cas de la ligne de Kayonza-Nyagatare où certaines personnes n'ont pas encore perçu leurs indemnités et cela fait plus de 5 ans. Les retards d'indemnisation entraînent des mécontentements de la population.</p> <p>b) <b><u>Les communautés</u></b> ont beaucoup de préoccupations sur cette question. Elles ont exprimé que les terres sont petites, rares et chères. Elles se demandent où elles vont trouver encore des terres. Elles ont émis le souhait d'être indemnisés le plutôt possible et à des taux satisfaisants afin de leur permettre d'acheter les terres et de reconstruire. Si les indemnités vont prendre du temps, on dénombre encore leurs biens car la valeur des terres et des biens changent d'une année à une autre. La population se demande aussi, si on va indemniser les bananiers et les arbres coupés par les arpenteurs lors du marquage du tracé. Souvent il peut se poser des problèmes lors du versement des indemnités, la population a souhaité que les indemnités soient versées aux ayant droit directs.</p>
Déplacement de la population	<p>b) <b><u>Les autorités locales et les Leaders des communautés</u></b>. Ce groupe a exprimé que la politique du Gouvernement est de la promotion de l'habitat regroupé dit « <i>Umudugudu</i> ». Les autorités devraient être impliquées pour trouver un endroit de relocalisation de la population affectée. En concertation avec cette population, il serait préférable de leur verser la différence des indemnités d'expropriation après avoir construit leurs nouvelles maisons ou leurs trouver des parcelles.</p> <p>b. Les communautés. Leurs principales préoccupations relatives à la relocalisation sont notamment :</p> <ul style="list-style-type: none"> <li>- Etre déplacé vers un autre endroit auquel ils ne sont pas habitués, probablement avec des risques d'être installés dans une zone improprie près des marais ou zones inondées.</li> <li>- Les terres ne sont pas encore fertiles et on doit apporter régulièrement du fumier. En cas de réinstallation loin de leurs terres, il sera difficile de fumer leurs champs restants et risques de vol des cultures dans les champs.</li> <li>- Ils sont fatigués de construire à nouveau particulièrement les anciens réfugiés nouvellement réinstallés. Ils ont besoin de beaucoup d'explication et des facilités.</li> <li>- Certaines personnes ont exprimé qu'elles ne supporteront pas voir physiquement la démolition de leurs maisons si le cas arrive.</li> <li>- Si on leur construit des maisons, il faudra les construire non loin de la route et de la nouvelle ligne électrique afin de bénéficier au nouveau développement qui arrive dans leur région.</li> <li>- D'autres personnes se disent que les câbles électriques sont aériens et se demandent pourquoi on va les exproprier et les déplacer pour un autre endroit.</li> </ul>

Acceptabilité du projet	<p><b>Les autorités locales.</b> Les autorités locales consultées trouvent une issue dans ce projet pour résoudre les problèmes de délestage fréquente suite à l'insuffisance du courant électrique. C'est également un espoir pour rendre opérationnelle les projets planifiés relatifs à la transformation agricole et d'honorer leurs promesses données à la population des habitats regroupés.</p> <p>Les communautés. La population consultée a manifestée leur soutien entier au projet dans le cas où il y aura des raccordements ruraux. A ce moment, le projet leur permettra de sortir de l'enclavement et de l'obscurité.</p>
Opportunités pour l'emploi	<p>- <b>Les autorités locales.</b> Dans le cadre de la réduction de la pauvreté, le Gouvernement soutient les initiatives et projet à haute intensité de main d'oeuvre. Toutes les autorités avaient souhaité que ce projet puisse contribuer à créer des emplois en milieu rural et ce augmenter le pouvoir d'achat de la population et alléger les effets de la pauvreté.</p> <p>- Les communautés. Toute la population rencontrée a manifesté une attente d'emplois à partir de ce projet. Les hommes de métiers qui ont plus manifesté une attente d'emplois sont particulièrement les maçons, les soudeurs, les menuisiers. Ils ont manifesté une hostilité à d'autres projets qui ne recrutent pas la main d'oeuvre localement et par conséquent la population affectée ne bénéficie en rien de ce projet.</p>
Désintégration sociale	<p>La désintégration sociale a été évoquée par les <u>communautés</u>. Certaines personnes rencontrées ont manifesté leur regret au déplacement de certains ménages voisins qui se sont retrouver dans l'emprise alors qu'ils cohabiter bien depuis de longues années. Elles ont noté en outre, la désintégration des membres de certaines familles qui seront obligés à être déplacées loin de leur famille élargie.</p>
Accès à l'électricité	<p><b>Les autorités locales.</b> L'accès à l'énergie suffisante et aux nouveaux raccordements a été largement évoquée par toutes les autorités rencontrées.</p> <p>- L'électrification des usines à thé qui ont des difficultés à trouver le bois de chauffage. Il s'agit de l'usine à thé de Mulindi. Les autres usines de transformations des produits agricoles sont : MINOTERIE de Byumba. D'autres projets de transformations agricoles et des produits d'élevage sont en projet et le grand risque noté était la disponibilité de l'énergie : Unité de collecte de lait, unités de transformation de la tomate, de la banane (Gatsibo), du maracouja et d'autres fruits de haute altitude (Gicumbi), unité de décorticage du maïs (Gatsibo, Nyagatare) et du riz (Nyagatare), Abattoir (Nyagatare), développement de l'hôtellerie et de l'habitat (Nyagatare).</p> <p>- Les autres infrastructures qui vont bénéficier du projet sont les bureaux des secteurs et de certains districts, les marchés, les habitats agglomérés, les prisons, les casernes militaires. La politique de l'habitat en milieu rural est de passer de l'habitat dispersé à un habitat aggloméré. La disponibilité de l'électricité est l'un des facteurs d'attrait de la population à rejoindre les agglomérations qui seront les pôles de développement en milieu rural.</p> <p>- <b>Les communautés.</b> La population a exprimé un vif besoin en électricité en vue de faciliter la conservation des produits agricoles périssables et les produits laitiers. Un accent particulier a été mis aux marchés et d'autres centres de négoce surtout pour refroidir les boissons de vente. Cependant, les prix d'électricité sont élevés et ils ont demandé une réduction des prix de consommation d'électricité adaptés à leur pouvoir d'achat. L'accès à l'électricité leur permettra à se développer comme les citadins, sortir de l'enclavement et de l'obscurité. Cependant, la population se demande si tout le monde pourra accéder à l'électricité</p>
Intégration à d'autres projets planifiés	<p><b>Les autorités locales.</b> Les autorités des provinces et des districts ont fortement exprimé l'intégration du projet avec d'autres projets de développement des infrastructures planifiés. Les infrastructures d'attraction de la population à habiter les villages sont particulièrement l'électricité, les routes, les adductions d'eau, les écoles et les facilités sanitaires. Pour faciliter le transport, une route Rukomo (Kinyami)-Nyagahanga-Ruvune et Ngarama seront réhabilitées avec du latérite compacté. Un autre axe va relier Rukomo-Rutare-Giti et Rwesero (District Gicumbi et Gatsibo). Un autre axe de 40 km de Ngarama à Nyagatare sera également réhabilité. Ces trois axes pourront être des axes de raccordement électrique et des pôles de développement de la région. Cela permettra de les désenclaver.</p>

La santé et la sécurité	<p><b>Les autorités locales.</b> Les autorités ont exprimé leurs préoccupations sur les risques d'accidents d'électrocution une fois que la population n'est pas éduquée sur les risques et les dangers que représente le courant électrique.</p> <p><b>Les communautés.</b> La population consultée a manifesté un besoin d'être protégée contre les courts circuits et les surtensions. Elle a demandé une éducation et une large sensibilisation à se protéger contre les accidents éventuels liés à l'électricité. Elle se demande que si en cas d'accidents éventuels tant pour les bien que pour les personnes, qui assumera la responsabilité ? Il y aura t-il une assurance ? Un exemple peut être lié à une forte pluie qui peut faire tomber les pylônes et les câbles et en conséquences entraîner les dégâts.</p>
Morcellement des terres	<p><b>Les communautés</b> qui n'ont pas de terres suffisantes sont préoccupées par le morcellement de leurs terres. Les terres morcelées perdent leur valeur et à ce moment, ils souhaiteraient tenir en considération toutes les terres d'un ménage dont la superficie des terres qui tombent dans l'emprise et supérieur aux terres résiduelles.</p>
Sensibilisation de la population	<p>Les autorités consultées ont montré leur satisfaction du projet au niveau de la sensibilisation. Ce projet sera un grand atout pour sensibiliser la population aux programmes d'habitat regroupé. Ils sont rassurés que le taux d'habitat regroupé va augmenter au niveau des axes de raccordement en électricité. Les autres programmes qui seront facilités pour la sensibilisation sont les objectifs du développement durable, la vision 2020 et la stratégie de réduction de la pauvreté, les programmes de décentralisation en raccordant tous les secteurs et d'autres programmes de développement d'organisations à base communautaire.</p>
Amélioration de l'éducation	<p>Le Rwanda a lancé un programme dit « un ordinateur laptop pour un écolier » et un autre programme d'enseignement à distance. L'approvisionnement en électricité pour les écoles secondaires et primaires va contribuer à l'application effective de ces programmes surtout dans les zones qui étaient enclavés en électricité. En conséquence, la qualité de l'enseignement, le développement de l'ICT (<i>Information Communication and Technology</i>), l'enseignement à distance et l'éducation pour tous seront améliorés.</p>

**APPENDIX 5: LIST PEOPLE MET DURING THE COMMUNITY CONSULTATIONS  
IN UGANDA**

NILE BASIN INITIATIVE  
NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAMME  
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REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: <b>NIUNGAMO</b>
Division: <b>RUKONI</b>		Village: <b>KI TWE</b>
Interviewer name:		Date: <b>02/02/09</b>
List of participants		
Family name:	First name:	Position:
Tumwebaze W family	Tumwebaze W. Bwale	NRM. Gen Sec. Le I Kitwe
Twahaika		
KAHAMUKARI Family	Nuwamanyera Frank	KITWE
MULHINDA	JOHNSON BASHEKWE	HEADTEACHER
Hakiki Swahibu	Hakiki Swahibu	
Rwaboona Sini	Rwaboona Sini	Kitwe T/C
Wagaba Yusufu	-	Kitwe T.C.
Taye Gasa	Ishevanh	Poola Boda & raider.
Gumisiriza P	KAPO	basigal
Mutetina	Barry	Kitwe T/C
BAKYARO	G.	Kitwe
Tindye bwa	AUSE	Kitwe T/C
PSANKWERI	JOHN SEM	Kitwe T/C
Kasande	UORONIKA	Kitwe T/C
Senga w	William	Kitwe T/C
SABITI	MANKERI	Kitwe T/C

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REPORT ON COMMUNITIES CONSULTATION

Interconnection: <i>Mbarara - Birambo</i>		Province/District: <i>MBARARA</i>
Division: <i>Mbarara Municipal Council</i>		Village: <i>ISHANYU</i>
Interviewer name: <i>Norman Kwizira</i>		Date: <i>02/02/07</i>
List of participants		
Family name:	First name:	Position:
<i>Kacururu meda</i>	<i>Kacururu</i>	<i>citizen</i>
<i>nyamizi</i>	<i>Colob</i>	<i>clman Ishanyu</i>
<i>Kotto</i>	<i>Dolo</i>	<i>Dircc. LC I</i>
<i>SABIJI</i>	<i>TROPHY</i>	<i>citizen OF THE AREA</i>
<i>Kagimba N. B.</i>	<i>Kagimba Kilberforce</i>	<i>Sec for Security LC II Nyamizi</i>
<i>MWIATUNGA</i>	<i>EDDAD</i>	<i>clman w cll Nyamizi</i>
<i>MRS HAMBU KATTA</i>	<i>KALIMA</i>	<i>CITIZEN</i>
<i>MR TUGUME</i>	<i>LAWRENCE</i>	<i>SITIZEN</i>
<i>MR RUESIGA</i>	<i>DAVID</i>	<i>SITIZEN</i>
<i>TUAMIRWA</i>	<i>Edward</i>	<i>youth clman</i>

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REPORT ON COMMUNITIES CONSULTATION

Interconnection: <i>Mbarara - Bitamba</i>		Province/District: <i>MBARARA</i>
Division: <i>BUGAMBA COUNTY</i>		Village: <i>BUGAMBA</i>
Interviewer name: <i>Nontongo Justine</i>		Date: <i>01/02/07</i>
List of participants		
Family name:	First name:	Position:
<i>Rucumbekwa</i>	<i>FRANCIS</i>	<i>Viceman LCI</i>
<i>Befanga</i>	<i>publick</i>	<i>informaion youth</i>
<i>MUGABI</i>	<i>SIMON</i>	
<i>NIMWESIGA</i>	<i>JUSTUS</i>	
<i>Tumwine</i>	<i>Damon</i>	<i>Peasant</i>
<i>MUHWEZI</i>	<i>EASON</i>	<i>Peasants</i>
<i>Nkwamanga</i>	<i>JOHN</i>	<i>Peasant</i>
<i>BOONA</i>	<i>FRANCIS</i>	<i>PEASANT</i>
<i>Kezimridde</i>	<i>Alex</i>	<i>carpenter</i>
<i>Melyamba</i>	<i>Jeseph</i>	<i>computer</i>
<i>MWESIGWE NABOTH</i>	<i>NABOTH</i>	<i>L.P.F commander</i>
<i>BANKUNDA</i>	<i>GAM</i>	<i>COUNCILLOR LCI</i>
<i>Nimwesiga</i>	<i>Dodgers</i>	<i>Dodgers</i>
<i>Muume</i>	<i>HANNINGTON</i>	<i>Viceman Kwibogo LCI</i>
<i>Atamba</i>	<i>Dennis</i>	<i>Sec for youth</i>
<i>BEGUMISA</i>	<i>VICENT</i>	<i>Te.</i>

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REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: MBARARA
Division: BUGAMBA S/COUNTY		Village: BUGAMBA
Interviewer name:		Date: 1/02/07
List of participants		
Family name:	First name:	Position:
MWESIGWA	NABOTHE	MAKANIKA -
KATO	JULIUS	omuhigi
TURYAHABWE	COLLENS	Omuhigi
Rucamba	Nychoffe	Shop Keeper
MBABAZI	Alice	<del>FARMER</del> omuhigi
Mubangizi	Nelson	D.J
Ndebanoho	ALEX	omuhigi
Rusibika	FRANK	makanika
Atebazibwe	Edison	<del>Agro</del> Engineer
Afukunda	Dorothy	omuhigi
ARVITO	ABEAT	Foot BALL
Mugizi	Patrick	omuhigi
Mwesigye	BOAS	omuhigi



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REPORT ON COMMUNITIES CONSULTATION

Interconnection: <i>Mbarara - Birembo</i>		Province/District: <i>MBARARA</i>
Division: <i>BUGAMBA S/COUNTY</i>		Village: <i>KASHEKURE</i>
Interviewer name: <i>Norman Kwohkiriza</i>		Date: <i>1/02/07</i>
List of participants		
Family name:	First name:	Position:
<i>RAKUNU</i>	<i>WILIGORI</i>	<i>KASHEKURE</i>
<i>MATOVU</i>	<i>PAUL</i>	<i>KASHEKURE T/C</i>
<i>TUHAMI</i>	<i>LONARD</i>	<i>KASHEKURE</i>
<i>Bampenzi</i>	<i>Shinzuri</i>	<i>Kashekure Young.</i>
<i>Nwabame</i>	<i>Mezeba</i>	<i>Kashekure T.C</i>
<i>POSIAKO</i>	<i>Asimwe</i>	<i>Kashekure T.C</i>
<i>Bampya</i>	<i>Rubani</i>	<i>Kashekure T.C</i>
<i>Bongore</i>	<i>Bankoro</i>	<i>Kashekure T.C</i>
<i>Tindiba</i>	<i>Phibat</i>	<i>Kashekure T/C</i>
<i>TUMUHEKI NETTO</i>	<i>ALFREDS</i>	<i>Kashekure T/C</i>
<i>ATHAMISIBWE</i>	<i>MILTON</i>	<i>Kashekure T/C</i>
<i>TUSHAMERIRWE</i>	<i>RHOAA</i>	<i>Kashekure T/C</i>
<i>BAINE</i>	<i>JULIUS</i>	<i>KASHEKURE T/C</i>
<i>NYESIGAMUKAMA</i>	<i>ALEX</i>	<i>KASHEKURE T/C</i>
<i>Kabagambire</i>	<i>Fabiyano</i>	<i>Kashekure T/C</i>
<i>Ayesiga</i>	<i>Norman</i>	<i>Kashekure T/C</i>

NILE BASIN INITIATIVE  
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REPORT ON COMMUNITIES CONSULTATION

Interconnection: <i>Mbarara - Biremba</i>		Province/District: <i>MBARARA.</i>
Division: <i>BUGAMBA</i>		Village: <i>KIKOONA - KANYANGONGI LC-7</i>
Interviewer name: <i>Nantongo - Justin</i>		Date: <i>01/02/07.</i>
List of participants		
Family name:	First name:	Position:
<i>MUTABAZI</i>	<i>WILSON</i>	<i>Chairman LCI 075286190</i>
<i>NIYAMUKESHA</i>	<i>ENOCK</i>	<i>Traitor</i>
<i>Byamukama</i>	<i>JAMES</i>	<i>member.</i>
<i>TUMUSIIME</i>	<i>ALEX</i>	<i>beber.</i>
<i>BARAGAMBA</i>	<i>MOSES</i>	<i>student.</i>
<i>Mugisha</i>	<i>PHILIP</i>	
<i>Tuguna</i>	<i>Robert</i>	<i>Member</i>
<i>Kabinda</i>	<i>ONEZIMU</i>	<i>Member</i>
<i>TUMWEBAZE</i>	<i>MOSES</i>	<i>Student.</i>
<i>Zwango</i>	<i>Zubacii</i>	<i>omubizi</i>
<i>Kexumap</i>	<i>Edward</i>	<i>Member LCI</i>
<i>magara</i>	<i>genesis</i>	<i>member</i>
<i>EBangira</i>	<i>Edward.</i>	<i>Elder call Kanyangong.</i>
<i>Kansime Rosette.</i>	<i>R</i>	<i>member.</i>
<i>ARHO</i>	<i>LASTO</i>	<i>member.</i>
<i>MUCS: 44E</i>	<i>LIVINGSTONE</i>	

NILE BASIN INITIATIVE  
**NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAMME  
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REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: <i>MBARARA</i>
Division: <i>BUGAMBA</i>		Village: <i>KIKOONA-KANYANGO GI L.C.T</i>
Interviewer name:		Date: <i>1/02/07</i>
List of participants		
Family name:	First name:	Position:
<i>Rwabukungu</i>	<i>AK</i>	<i>amukungu</i>
<i>Byambamuzi</i>	<i>Abaine</i>	<i>shopma</i>
<i>VAKURU</i>	<i>JOHN</i>	<i>IRAT MEMBER</i>
<i>TUCUMISIRIZE</i>	<i>GRACE</i>	<i>PEASANT</i>
<i>HARUNA Bui</i>	<i>Budeba</i>	<i>amu saaba Jai</i>
<i>Basima mpanga</i>	<i>stephan</i>	<i>peasant</i>
<i>Johnesi</i>	<i>Stephano</i>	<i>Mkulima</i>
<i>NAREEBA</i>	<i>MELON</i>	<i>• Seuderie</i>

NILE BASIN INITIATIVE  
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REPORT ON COMMUNITIES CONSULTATION

Interconnection: <i>Mbarara - Biombo</i>		Province/District: <i>MBARARA</i>
Division: <i>Nyankayojo</i>		Village: <i>IBARE</i>
Interviewer name: <i>Nomongo Justin</i>		Date: <i>31/01/07</i>
List of participants		
Family name:	First name:	Position:
<i>Mpora</i>	<i>BOSCO</i>	<i>clperson UCI</i>
<i>MUTASINDA</i>	<i>JOSEPH</i>	<i>PASTOR</i>
<i>Mwabeza</i>	<i>h.</i>	
<i>ASHABE</i>	<i>EUGEN.</i>	
<i>BYARUKABA</i>	<i>PAUL</i>	
<i>Twakira</i>	<i>Eliab</i>	
<i>Tamwesigye</i>	<i>Charles</i>	
<i>Taramwa</i>	<i>Ronald</i>	
<i>Tibemanyira</i>	<i>stephen</i>	
<i>Ndyababika</i>	<i>Joseph.</i>	
<i>MS Belumisa</i>	<i>Kyavusima.</i>	
<i>Burghinka</i>	<i>C.</i>	
<i>Mulund</i>	<i>MOSES</i>	
<i>mugale</i>	<i>Jelen</i>	
<i>Timinwibusa</i>	<i>Henri</i>	
<i>Twimukye</i>	<i>Jacques</i>	
<i>Mulebi</i>	<i>Stephen</i>	

NILE BASIN INITIATIVE  
**NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAMME  
 (NELSAP)**



REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: <i>MBARARA</i>
Division: <i>NYAKAYOJO</i>		Village: <i>IBARE</i>
Interviewer name:		Date: <i>30/01/07</i>
List of participants		
Family name:	First name:	Position:
<i>Kyakuhire</i>	<i>JOWIA</i>	<i>RHOP KEEPER</i>
<i>Kasasa</i>	<i>NELB</i>	
<i>Mugyeyi</i>	<i>Tran...</i>	
<i>Tw...</i>	<i>IV</i>	

NILE BASIN INITIATIVE  
 NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAMME  
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REPORT ON COMMUNITIES CONSULTATION

Interconnection: Mbarara-Birumbi		Province/District: MBARARA
Division: Bugambwa		Village: KAGAGA-MACURO LCI
Interviewer name: Nansonge Justice		Date: 30/01/07
List of participants		
Family name:	First name:	Position:
AGABA	PATRIC	C/man LCI macuro-Kagaga
Bugambwensi	Godfrey	
Mzee	William	Farm
Bwathika	Martin	C/man LCI kabingo
Ahione	Trene	
BARIGYE	DAVID	RESIDENT
KITAWARACURU	ALEX	
Kiteka	Tadeho	Acad. Aids.
NOWAGIRA	VICENT	RESIDENT
RWEMBARA J	JOHN A.P. Bakiriza	C/man Kiringu Kagaga Primary School
Mwesigwa	Julius	Resident
Mwesigwa Wilson	Wilson	KAGAGA I-MACURO
E. Tugumeza	EZRA	
Rukaga	Gaburayi	MACURO
Matsiko	Denis	MACURO
Kareuzi	Charles	MACURO

NILE BASIN INITIATIVE  
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REPORT ON COMMUNITIES CONSULTATION

Interconnection: Mbarara - Birambo		Province/District: MBARARA
Division: BUGAMBA SPOUNTY		Village: NYARUHANDAGAZI RUKANDAGAZI
Interviewer name: Nantongo Justine		Date: 1/02/07
List of participants		
Family name:	First name:	Position:
1. KAKURU	JORDAN	Teacher.
2. MUSUME.	HAPPY	C/MA LCI
3. NDYAMUBA	JOHN.	CHP. LCI
4. KASHUKU	STEVEN	
5. TUKAMUKA	RAM	Teacher /
6. NABAASA	NICHOLAS	Teacher
7. MUYINGI D	CHRISTOPHER	MITSIBIKA CELL
8. KIRITARI A. MAMU	ARTHUR	C/PERSON LCI Mpankanga
9. TUSUME CAISI	CAISI	peasant
10. RUBARE,	Jordan	peasant.
11. TURUKWAGA	patrick	Resident.
12. MUKISA	JORDON	MUSICIANS.
13. BAGA-TWAH	HENRY.	PEASANT.
14. KUGA	Bonetaci	MUSICIANS
15. ARINDA EZEKIEL.	KAMWANGA	DUGOROGORO.
16. MUWANGA	GORDON	Committee Member LCI MITSIBIKA
17. MUKUNDA	RODGERS	MEMBER

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REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: MBARARA
Division: BUGAMBA		Village: <del>NYARUKANDA GATE</del> RUKARABAGIE
Interviewer name:		Date: 01/02/07
List of participants		
Family name: n	First name:	Position:
Akoti	Mwagizi	
Bernard	Kakutsi	
perezi	Komunda	
Mwise	Dennis	
Mwesigye	ALEX	PEASANT
Tuhame	keneth	
Kareema	Didas	
Kabera Sam		
Alkyba	A	
Bogose	Francis	
Hindya	semusi	
MBANGIRWA	ISIRH	
Kitulea	Libian	
Nyakato	Jvdith	
BYAMUKAMA	Dennis	



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REPORT ON COMMUNITIES CONSULTATION

Interconnection: <i>Mbarara - Bwamba</i>	Province/District: <i>MBARARA</i>
Division: <i>NYAKAYOJO COUNTY</i>	Village: <i>NYAKAYOJO - NYAMIYAGA LC I</i>
Interviewer name: <i>Nantongo Justine</i>	Date: <i>31/01/09</i>

List of participants

Family name:	First name:	Position:
<i>Nyamwiza AA</i>	<i>Mackhine</i>	<i>Officer LC I</i>
<i>ANDREW NYUBA</i>	<i>SEE NYAREBURE</i>	<i>Sec KISAGAYA LC I</i>
<i>TURYSIMBA BENON</i>	<i>—</i>	<i>LC I ADVISER</i>
<i>Mbangira</i>	<i>Gordon</i>	<i>Farmer</i>
<i>Buneebo</i>	<i>Raven</i>	<i>Farmer</i>
<i>BESHUNBU</i>	<i>HERBERT</i>	<i>Farmer</i>
<i>Kyosimire</i>	<i>Julian</i>	<i>Farmer</i>
<i>Katamba</i>	<i>Elias</i>	<i>Farmer</i>
<i>Oyayi</i>	<i>APOLLONIA</i>	<i>Farmer</i>
<i>SAKWA</i>	<i>ADAM</i>	<i>Farmer</i>
<i>Mworozi</i>	<i>BOGLO</i>	<i>MWIZI</i>
	<i>BT Guin</i>	
<i>Julius</i>	<i>Uwuto</i>	
<i>John I</i>	<i>Bishangy</i>	<i>F</i>
<i>MUSINGUZI</i>	<i>J</i>	<i>FARMER</i>
<i>Kataratamba TC</i>	<i>Councillor</i>	<i>Heulisia</i>

*Birungyi Anthony Farmer*  
*MUSINGUZI STUDENT*  
*TIBESATIRA DEMS. FARMER*

*Birungyi*  
*Baronye*

*M. Kakumwe*  
*Kasukuma Joseph*

*MKK*

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REPORT ON COMMUNITIES CONSULTATION

Interconnection: Mbonera - Brantso		Province/District: MBARARA
Division: BUGAMBA		Village: NYABIBALE
Interviewer name: Nantongo - Justin		Date: 1/02/07
List of participants		
Family name:	First name:	Position:
Twinomujuni	Simoni	Omuhigi
Kumbareba	Dominic	Peasant
Agnes	mbabazi	Omuhingi
Baguma	Nicholas	" "
Kyohangirwe	AGNES	" "
Kyaroki	Sarvestini	" "
Racconconi	maria	Duriva
Kanyamshutya	Edward	Emwombeki
DIABAZI	COO	OMUNTO CI
Muyambi	Nicholas	Omuhingi

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REPORT ON COMMUNITIES CONSULTATION

Interconnection: <i>Mbonera - birambo</i>		Province/District: <i>MBARARA</i>
Division: <i>NYAKAYOJO S/COUNTY</i>		Village: <i>NYAKAKONI</i>
Interviewer name: <i>Namirago - Justine</i>		Date: <i>31/01/07</i>
List of participants		
Family name:	First name:	Position:
<i>Tumusiime</i>	<i>Patrick</i>	<i>C/man LC1</i>
<i>Kaggwa</i>	<i>Stephen</i>	
<i>Rwakibingi</i>	<i>Petero</i>	
<i>Byamuhangi</i>	<i>Paskali</i>	
<i>Carandi</i>	<i>Mulindwa</i>	
<i>Kutamba</i>	<i>Denis</i>	
<i>BEGUMISA</i>	<i>RAPHAEL A.</i>	
<i>GANYANA</i>	<i>SAFIINA</i>	
<i>Ndinimwe</i>	<i>JOHN R</i>	
<i>Komuhangi J</i>		
<i>Muwonge E.</i>	<i>Evarest</i>	<i>C/man LC1</i>
<i>Nsamba</i>	<i>Gerald</i>	
<i>Nyigara</i>	<del>---</del>	
<i>Ruragina</i>	<i>Sitiniini'</i>	
<i>MUTUNU</i>	<i>ELVIS</i>	
<i>TIBASIMWA</i>	<i>HARRY</i>	

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REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: <i>MBARARA</i>
Division: <i>NYAKAYOJO S/COUNTY</i>		Village: <i>NYAKAKONI</i>
Interviewer name:		Date: <i>31/01/07</i>
List of participants		
Family name:	First name:	Position:
<i>MUTAMBA</i>	<i>CAROLINE</i>	
<i>MRS KALAGYE</i>	<i>JANE</i>	
<i>KETANGI</i>	<i>IMAFI</i>	
<i>KOINTARO</i>	<i>MARIA</i>	
<i>NYABUKYE</i>	<i>ROBINA</i>	
<i>KINKUBIRA</i>	<i>EDIDA</i>	
<i>SAMBA RUCANDEKWE</i>	<i>TUMUKUSE</i>	

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REPORT ON COMMUNITIES CONSULTATION

Interconnection: <i>Mbarara - Bwamba</i>		Province/District: <i>MBARARA</i>
Division: <i>NYAKAYOJO S/COUNTY</i>		Village: <i>KATOJO</i>
Interviewer name: <i>Namwaga Justine</i>		Date: <i>31/01/07</i>
List of participants		
Family name:	First name:	Position:
<i>Lutwama</i>	<i>leo</i>	<i>clman LCI</i>
<i>Rutarema</i>	<i>Godfrey</i>	<i>clman Movement. (NRM.)</i>
<i>MUCAZE</i>	<i>Dazaro</i>	<i>OMUTAKA</i>
<i>KYEMBE</i>	<i>James</i>	<i>OMUTAKA</i>
<i>Mutyaba</i>	<i>Charles</i>	<i>Omutaka.</i>
<i>PICKARD</i>	<i>Keigo</i>	<i>"</i>
<i>Tibanagwa</i>	<i>Norali</i>	<i>"</i>
<i>Kwatakanwa</i>	<i>Aloysio</i>	<i>OMUTAKA</i>
<i>Katanyiri</i>	<i>Sebastien</i>	<i>OMUTAKA</i>
<i>KAMANYIRO S.E</i>	<i>STANSLAUS</i>	<i>clm root.</i>
<i>Tibamanya</i>	<i>Rosemary</i>	<i>Omutaka.</i>
<i>KITOMBO</i>	<i>JOSEPH</i>	<i>L.B.F. KATOJO cell.</i>
<i>Medini</i>	<i>Benson</i>	<i>Omutaka</i>
<i>Kajura</i>	<i>Paulo</i>	<i>"</i>
<i>Mugisha</i>	<i>Adrian</i>	<i>"</i>
<i>Mwagaba Julius</i>	<i>Ssalongo</i>	<i>Mutaka.</i>
<i>Ashaba Elizabeth</i>		<i>Mutaka.</i>
<i>Baremba</i>	<i>Robert</i>	<i>omutaka</i>



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REPORT ON COMMUNITIES CONSULTATION

Interconnection: <i>Mbarara-Birambo</i>		Province/District: <i>MBARARA</i>
Division: <i>Nyaka yojo</i>		Village: <i>NYAMATOJO</i>
Interviewer name: <i>Horner Kwikira</i>		Date: <i>30/01/07</i>
List of participants		
Family name:	First name:	Position:
<i>BAMWESIGYE</i>	<i>HERBERT</i>	<i>Lcd/mand</i>
<i>MACWANTE</i>	<i>CECILIA</i>	<i>MEMBER</i>
<i>TUMUSIIMU</i>	<i>Richard</i>	<i>L.D.U</i>
<i>KASOONI JADRESS</i>	<i>MWESIGYE</i>	<i>SECRETARY LCI</i>
<i>NIMYESIGA</i>	<i>GRACE</i>	<i>MEMBER</i>
<i>NYIBAZIBWE</i>	<i>JOLET</i>	<i>MEMBER</i>
<i>KEKIRUNGA</i>	<i>JOVURIN</i>	<i>MEMBER</i>
<i>KEKIKOMERA</i>	<i>JANE</i>	<i>MEMBER</i>
<i>Peace</i>	<i>Mbumwire</i>	<i>MEMBER</i>
<i>Naturinda</i>	<i>Dorion</i>	<i>MEMBER</i>
<i>ASUMIRE</i>	<i>EVALYNE</i>	<i>MEMBER</i>
<i>ASASIRA</i>	<i>CAROLYNE</i>	<i>MEMBER</i>
<i>BAGAROKAYO</i>	<i>JOLLY</i>	<i>MEMBER</i>
<i>Ado Kiteuka</i>	<i>Andoma</i>	<i>" "</i>
<i>MUCUNGUZI</i>	<i>ALEX</i>	<i>MEMBER</i>
<i>Emmanuel</i>	<i>GAVUMU</i>	

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REPORT ON COMMUNITIES CONSULTATION

Interconnection: <i>Mbarara- Biremba</i>		Province/District: <i>WTUGAMO</i>
Division: <i>RUKONI S/COUNTY.</i>		Village: <i>RWORO</i>
Interviewer name: <i>Nansingo Justin</i>		Date: <i>01/08/07</i>
List of participants		
Family name:	First name:	Position:
<i>Simoni</i>	<i>Simoni</i>	
<i>AMANYIRE DED</i>	<i>DED</i>	<i>Opinion Leader</i>
<i>BANGIRANA PLIMUS</i>	<i>PLIMUS</i>	<i>TEACHER</i>
<i>Kyakumumpa</i>	<i>christopher</i>	<i>omuhugi</i>
<i>GAKIBATO A</i>	<i>ATANAZIO</i>	<i>C/PERSON L.C.I KANDIYAMA</i>
<i>Mrs Rakuba</i>	<i>Provia</i>	<i>VkPerson T/C</i>
<i>Mrs Katabikira</i>	<i>George</i>	<i>umulaka</i>
<i>Mrs Bakamweze</i>	<i>Innid</i>	<i>Peasant</i>
<i>Ngabirano</i>	<i>Venansio</i>	<i>umulaka</i>
<i>BAGYE VICKI</i>	<i>FRANCE</i>	<i>umulaka</i>
<i>Gumisiriza</i>	<i>Elicard</i>	<i>Teacher</i>
<i>Gumushabe</i>	<i>Edward</i>	
<i>Gumushimwe</i>	<i>Johnson</i>	<i>Peasant</i>
<i>Bimungi</i>	<i>Laban</i>	<i>Peasant</i>
<i>Tayebeza</i>	<i>Rosert</i>	<i>Peasant</i>
<i>Niwagira</i>	<i>Stephen</i>	<i>Peasant</i>



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REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: NIUNGAMO
Division: RUKONI SPOUNTY		Village: RWOTO
Interviewer name:		Date: 01/02/07
List of participants		
Family name:	First name:	Position:
Rukomberwa	JOHN	Councillor
Waisobya	Nzumwa Eric	Community Health worker
Begumisa E	EUAPISIO	Business man
Ngabirano	JAVENS	Business Trig
Twinawatsiko	MORGES	Rwoto Parish
Kasajja	ATANAZIO	Rwoto Omukingi
FUREDI	TUMUHIRWE	
Kamugabimwe	ATANAZIYO	EX. Bub. Parish
Rushabura	Ferenderiko	omukamusa
Kashengye	Donato	omukingi
Baremire	WILLSON	omukingi
Muvira	Edmond	member
KAKUBA	BENON	Trader
<del>Okubany</del> Theresa	Theresa	omukingi
Kakuru	Jamario	omukingi
Abinawe	Abert	omukingi

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REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: NTUNGAMO
Division: RUKONI		Village: RWOHO
Interviewer name:		Date: 01/02/07
List of participants		
Family name:	First name:	Position:
TINKAMANYI	S.	omushubuzi
NDYAMUNDA	E	omuhingyi
Berhineyo	S.	omuhingyi
Byamukama	John	Ukusho
KAMELE	K	omuhingyi
Pumukama	P.	carpenter
Eritini	A.	omushubuzi
AMANYIRE	S	Tr.
Baguma	S	peasant.
Nyamulizi	F	"
Iwajabwa	F	peasant

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REPORT ON COMMUNITIES CONSULTATION

Interconnection: <i>Mbonera - Bimbe</i>		Province/District: <i>NYUNYAMO</i>
Division: <i>RUKONI B/COUNTY</i>		Village: <i>RUKONI</i>
Interviewer name: <i>Nantongo Justine</i>		Date: <i>01/02/07</i>
List of participants		
Family name:	First name:	Position:
<i>TUSHABOMWE</i>	<i>LABAN</i>	<i>TEACHER</i>
<i>Banturazi</i>	<i>chi</i>	<i>C/man. G.C.</i>
<i>Katabarwa</i>	<i>banor</i>	<i>CHIEF OF LG</i>
<i>Kyaruzi</i>	<i>AISON</i>	
<i>Bekwabuse</i>	<i>Edward</i>	<i>CPIC</i>
<i>TWERASAASA</i>	<i>ARNEL</i>	<i>STUDENT</i>
<i>KAMUGISHA</i>	<i>JOHANSON</i>	<i>STUDENT</i>
<i>Tumusime</i>	<i>John</i>	<i>Student</i>
<i>Byamgaba</i>	<i>Shim</i>	<i>makanka</i>
<i>Edooy Kishaka</i>	<i>J. Kamul</i>	<i>Peasant</i>
<i>TURAKEMBA</i>	<i>SURAI</i>	<i>Madaboda</i>
<i>Kakwengi</i>	<i>Godfrey</i>	<i>CPIC</i>
<i>ASIMWE</i>	<i>ALEX</i>	
<i>Kamugisha B</i>	<i>Ben</i>	<i>Peasant</i>
<i>Joseline Rugamba</i>	<i>Joseline</i>	<i>akujubuzi</i>
<i>Noreah Ahimbizwe</i>		<i>Alarmer</i>

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REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: <b>NTUNGAMO</b>
Division: <b>RUKONI S/COUNTY</b>		Village: <b>RUKONI</b>
Interviewer name:		Date: <b>01/02/07</b>
List of participants		
Family name:	First name:	Position:
Mugisha	Alice	A farmer
Night mushabe	Nigh	A farmer
<del>Jeneba seruwaka</del>		A farmer
Twi Jweya	Godfrey	makamika
Aine labily	Mugisha	Teacher
Kanu Hwa Sa	laliliam	Teacher
Shampira	Elly George	Commercial Artist
KATIO	EMMANUEL	HEAD TEACHER
Jusufu	Willy ROY	epurse L.C.I
Kunurajie	Didas	A farmer
KWEYUNGA	HARRIET	TEACHER



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REPORT ON COMMUNITIES CONSULTATION

Interconnection: <i>Mbarara - Bisimba</i>		Province/District: <i>NTUNGAMO</i>
Division: <i>RUKONI</i>		Village: <i>NYAKIGUFU</i>
Interviewer name: <i>Nantongo Justine</i>		Date: <i>01/02/07</i>
List of participants		
Family name:	First name:	Position:
<i>Kiiza</i>	<i>TADEO</i>	<i>NYAKIGUFU</i>
<i>MUMBEZI</i>	<i>HAWIRAJCE</i>	<i>NYAKIGUFU</i>
<i>Turyahabwe</i>	<i>James</i>	<i>Nyakigufu</i>
<i>Kijungo</i>		<i>Nyakigufu</i>
<i>Kobusabo</i>	<i>Francis</i>	<i>Nyakigufu</i>
<i>ms. Abaine</i>	<i>Patience</i>	<i>Nyakigufu</i>
<i>A. Tooto</i>	<i>Patemee</i>	<i>Nyakigufu</i>
<i>Rashya F. M.</i>	<i>Rashya</i>	<i>A trader Nyakigufu</i>
<i>bindibanda</i>	<i>Fohat</i>	<i>Nyakigufu</i>
<i>Tishakusa</i>	<i>George</i>	<i>Nyakigufu</i>
<i>Ahimbilove</i>	<i>Burairi ypanonke</i>	<i>Nyakigufu</i>
<i>sentongo</i>	<i>BENISON</i>	<i>Nyakigufu</i>
<i>Tumusimel</i>	<i>peasant</i>	<i>Nyakigufu</i>
<i>AMPUREVS</i>	<i>Suwedi</i>	
<i>Zebukine</i>	<i>George</i>	<i>Nyakigufu</i>
<i>Kaimamwa</i>	<i>Jefeene</i>	<i>Nyakigufu</i>

NILE BASIN INITIATIVE  
**NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAMME  
 (NELSAP)**



REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: (ABARARA) NTUNGAMO
Division: RUKONI S/COUNTY.		Village: NYAKIGUFU
Interviewer name:		Date: 01/02/07
List of participants		
Family name:	First name:	Position:
Sekemanda	Gaburayesi	Nyakigufu
IMUHIMBISE	MARK	Nyakigufu
BESAASA	YORAMU	NYAKIGUFU
Kaihangwa	JOHN	Nyakigufu.
BUHANGA	STEPHEN	NYAKIGUFU
TUHAMIRE	MAKILEANG	NYAKIGUFU
KIBETENGA	SIKOLA	NYAKIGUFU
FEBO	NYACONIA	NYAKIGUFU
Mungura Julius		Nyakigufu
Emmanuel	TOURE	Nyakigufu
Gumisiiza	Georrey	Nyakigufu
Mupuka	Innocent F.D.C	Nyakigufu.
Twanzana	A	
Mrs Buhanga A.	L.	Nyakigufu
Kanyeyeka		Nyakigufu.
Mrs Kashaya	Flora	Nyakigufu
Mrs Kansiima	Koylah	nyakigufu

NILE BASIN INITIATIVE  
**NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAMME  
 (NELSAP)**



REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: NTUNGAMO
Division: RUKONI S/COUNTY		Village: NYAKIGUFU LC-I
Interviewer name:		Date: 01/02/07
List of participants		
Family name:	First name:	Position:
MUHAMMAD	NTEGHERIZE	
Karinda A.	Omuhingi	Nyakigufu
Twekeyo Perez	Teacher	Nyakigufu
Twcoigye Dano	Fundu/Abusider	Nyakigufu
Kanyabamwa W	Omuhingi	Nyakigufu
Athwere Dano	David	
Tumwshabe	Bonauto	Nyakigufu
Munyira	Lawelcsi	Nyakigufu
Ahuru e	J	
BAR-EMUKO	S	
Mugisha F	Francis	
Muhumuza	Innocent	Nyakigufu
AHUBISIBWE	CHRISTOPHER	Nyakigufu
Buizaline	Edward	Nyakigufu
Mugisha	Saadi	Nyakigufu
Kamuhangire	Muhamudu	Nyakigufu



NILE BASIN INITIATIVE  
**NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAMME  
 (NELSAP)**



REPORT ON COMMUNITIES CONSULTATION

Interconnection: Mbarara - Bwamba		Province/District: NTUNGAMO
Division: RUKONI		Village: KICHECHE
Interviewer name: Norman Kwizira		Date: 02/02/07
List of participants		
Family name:	First name:	Position:
Muhwezi	Andresso	KIICCECE
Tibinimpwaho	Sarapio	KICECE
Bagisa	Augustino	KICECE
Ndyahabwira	Elias	KICECE
Byamukama	Dennis	KICECE
NATUKWASA	Edward	KICECE
MUSINGUZI	EDWARD	
FUKEDI MUGINGA		
TWINAMUSIHO	Alex	
TIBIRINYEBA	ASERFE	
TUMUNYAKARE	BA TORAT	
Alungaba	Maiya	Kicece cell.
Mogara F.	Francis	Kicece call
Rutandaso	Uwirabwisi	Kicece call
TUKOMUNSI	Yoramu	KICECE CELL
KASHAJIWA	Lawrence	KICECE CELL
KALEZI	JEFUPE	KICECE CELL
Buzane	ADRIAN	KICECE CELL 1/1
Nzobwa	Mubwira	Kicece cell
Kamusime	Solya	KICECE

NILE BASIN INITIATIVE  
 NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAMME  
 (NELSAP)



REPORT ON COMMUNITIES CONSULTATION

Interconnection: Mbarara - Bwamba		Province/District: NTUNGAMO
Division: RUKONI		Village: KAFUNJO
Interviewer name: Norman Kwizira		Date: 02/02/07
List of participants		
Family name:	First name:	Position:
Murwenda	Muhamad.	Vic/Presu Keli Bafyo Parish.
Kwalampora	Hilary	Hf/mastr/teacher.
Kasule	George	H/Chief.
Byempu	John	Head.
Kamunyu	Rasid	KAFUNJO
mpamizo	Justas	Kafunjo
Kigundu	Samuel	Farmer
Mukagacinye	Felesta	Farmer
Gabasya	Benson	Farmer
Kamanyirwe	Geoffrey	Kibeho
Robert	Turubeki	V/C/mastr Kafunjo cell
Nyinobucwizi	Leah	Farmer.
Mande	Willy	presant Kafunjo
Rubazora	Richard	Head mastr, nice Hill Academy
Rumaza	John	Sec. for security
Bensinger	Paulo	Kafunjo
Jessy	Patricia	secretary

NILE BASIN INITIATIVE  
**NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAMME  
 (NELSAP)**



REPORT ON COMMUNITIES CONSULTATION

Interconnection: <i>Mbarara - Bwamba G.C.E.C B</i>		Province/District: <i>NIUNGAMO</i>
Division: <i>RUKONI</i>		Village: <i>KITWE</i>
Interviewer name: <i>Norman Kwitanga</i>		Date: <i>02/02/07</i>
List of participants		
Family name:	First name:	Position:
<i>Asimura</i>	<i>Vorokamu</i>	<i>Director Kitwe Town P/S</i>
<i>Mbabazi B.</i>	<i>Mitumba</i>	<i>Councillor Kitwe P/S</i>
<i>Karyasa</i>	<i>Elias</i>	<i>Kitwe Town</i>
<i>Tackwa Kamhaya</i>	<i>Jackson</i>	<i>Kitwe</i>
<i>Mungira</i>	<i>Sosamu</i>	<i>Kitwe</i>
<i>Muganda</i>	<i>Jed</i>	<i>Kitwe</i>
<i>Munsine</i>	<i>Munsine</i>	<i>LDU Comrade Rubonje</i>
<i>NATASWE <del>KIKWA</del></i>		<i>ACB TRUST CO. Cashier</i>
<i>MUMMANIA</i>	<i>EDISON</i>	<i>TECH INSURANCE</i>
<i>KASHAIDA</i>	<i>ASIRIKANO</i>	
<i>Nkurinda</i>	<i>Kereza</i>	<i>Kyamba</i>
<i>MWERETA</i>	<i>MUHAYISI</i>	<i>BANVER</i>
<i>Kisigya</i>	<i>Henry</i>	<i>Bodaboda</i>

NILE BASIN INITIATIVE  
 NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAMME  
 (NELSAP)



REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: <i>NTUNGAMO</i>
Division: <i>RUKONI</i>		Village: <i>KITWE</i>
Interviewer name:		Date: <i>02/02/07</i>
List of participants		
Family name:	First name:	Position:
	<i>Twimomwasha</i>	<i>Treasurer</i>
	<i>Kyemwira G</i>	<i>Peasant</i>
	<i>Ritungire B.</i>	
	<i>Nalongo</i>	<i>Hotel atau Jant</i>
	<i>AKW</i>	<i>Peasant</i>
	<i>T. Iwe shanywa</i>	<i>Peasant</i>
	<i>Kweshyara A</i>	<i>hod hod</i>
	<i>S...</i>	<i>...</i>
	<i>Baitwa</i>	<i>Trader</i>
	<i>Kiiza</i>	<i>emuhugi</i>
	<i>Medard</i>	<i>Boda boda</i>
	<i>Twimomwasha</i>	<i>...</i>
	<i>Abeliamwama Jwi</i>	<i>Produce</i>
	<i>J. M. MANIRABA</i>	
	<i>Mwanda</i>	<i>Richard</i>
	<i>Byamukama</i>	<i>Boda Boda</i>
	<i>KAKIMA</i>	<i>K</i>

**APPENDIX 6: LIST PEOPLE MET DURING THE COMMUNITY CONSULTATIONS  
IN RWANDA**

Date	Province	District	Village	Nom	Prénom	Fonction
2007-03-31	MVK	Gasabo	Mirambi	GAHAMANYI	FIDELE	Agriculteur
				MUKAGASANA	DROCELLA	Agriculteur
				HABUMUGISHA	EMMANUEL	Agriculteur
				NKUBANA		Agriculteur
				BARARUSHYA	VITAL	Agriculteur
				KAYUMBA	VINCENT	Agriculteur
				NTAKIRUTIMANA	FELICIEN	Agriculteur
				GASORE	CELESTIN	Agriculteur
				NDAYIZEYE	THEOGENE	Agriculteur
				TWIZIYIMANA	THEONESTE	Agriculteur
				BIZIYAREMYE	EMMANUEL	Agriculteur
				KANANI	J. PIERRE	Agriculteur
				NGENZI	JANVIER	Agriculteur
NZARORA	BONIFACE	Agriculteur				
2007-02-09	MVK	Gasabo	Nkona	MUGENZI	AUGUSTIN	Agriculteur
				HABYARIMANA	JOSEPH	Agriculteur
				NDAYISENGA	J.DAMASCENE	Agriculteur
				NYIRAMATABARO	MARIE	Agriculteur
				KAMUHANDA	THEOGENE	Agriculteur
				RURANGWA	VIATEUR	Agriculteur
				HAGENIMANA	J.BAPTISTE	Agriculteur
				NSENGIYUNVA	INNOCENT	Agriculteur
2007-03-30	MVK	Gasabo	Gasharu	RUKARA	MICHEL	Agriculteur
				HARERIMANA	THEOGENE	Agriculteur
				MUJAWAMALIYA	MADELENE	Agriculteur
				NYIRABAGENZI	GAUDENCE	Agriculteur
				RUKARA	FRANCOIS	Agriculteur
				KALISA		Agriculteur
				KAMARABA	ANASTASIE	Agriculteur
				NYIRABITORWA	DOMINE	Agriculteur
				NDIRABATWARE	FRANCOIS	Agriculteur

				MUHIGI	DOMINIQUE	Agriculteur
				UZABAKIRIHO	THEONESTE	Agriculteur
				MUGENZI	CHARLES	Agriculteur
				MURENGERANTWARI	STANISLES	Agriculteur
				NYIRAHABINEZA	EPIPHANIE	Agriculteur
				KAYIHURA	NARCISSE	Ingénieur électricien
				MAKUZA	DESIRE	Directeur E.S
				UWIMANA	CLEMENCE	Agriculteur
				HABIMANA	MARTIN	Agriculteur
				KANKUNDIYE	ANONCIATHE	Agriculteur
				NYIRAHITIMANA	ZENABIA	Agriculteur
2007-02-08	MVK	Gasabo	Gasasa	MUJAWAMALIYA	EMILIENNE	Agriculteur
				NCOGOZA	CLAUDE	Agriculteur
				MUKASONGA	VILGINIE	Agriculteur
				MUTUNGIREHE	SERAPHINE	Agriculteur
				KAMARABA	IMMACULEE	Agriculteur
				HABIMANA	CLAUDE	Agriculteur
				KAMASHARA	EUPHRASIE	Agriculteur
				MUREREHE	J.BOSCO	Agriculteur
				KALISA	VINCENT	Agriculteur
				KAMANZI	GASPARD	Agriculteur
2007-03-30	MVK	Gasabo	Kaduha	MUKAMUYUMBU	ANASTASIE	Agriculteur
				MUKAMUZUNGU	STEPHANIE	Agriculteur
				NGEJEJAHO		Agriculteur
				UWIMANA	THEONESTE	Agriculteur
				BARANYANGA	J.DAMASCENE	Agriculteur
				KASINE	JEANNE D'ARC	Agriculteur
				MUKAGATARE	CATHERINE	Agriculteur
				GAHONGA		Agriculteur
2007-03-20	MVK	Gasabo	Nyamigina	GASASIRA		Agriculteur
				UWIZEYIMANA	VEDASTE	Agriculteur

				MUKANDAYISABA	DONATHA	Agriculteur
				NYIRANDIKUBAHIZI	EURELIE	Agriculteur
				SAGAHUTU	FAUSTIN	Agriculteur
				KARAHANYUZE	GILBERT	Agriculteur
				NZAMUHABWANIMANA	GAUDENCE	Agriculteur
				UWIMPAYE	JACQUELINE	Agriculteur
				UWIMANA	CLAUDINE	Agriculteur
				NTAMUGABUMWE		Agriculteur
				NYIRAKAMANA	BERTHILDE	Agriculteur
				BAZIRAKE	DAMIEN	Agriculteur
				HAKORIMANA	J.DAMASCENE	Agriculteur
				MUKANTABANA	ALVERE	Agriculteur
2007-03-02	EST	Nyagatare	Mirama II	MBARUSHIMANA	JEAN	Maçon
				NAHIMANA	JACQUE	Agriculteur
				NGIRIMANA	THEOGENE	Agriculteur
				HABANABAKIZE	THOMAS	Agriculteur
				UWAMUREMYE	EZILA	Agriculteur
				MURENZI	J.BOSCO	Menuisier-mécanicien
				MUKAMUHIRWA	ANNONCIATE	Agriculteur
				KARANGALI	OLIVANCE	Agriculteur
				RUKUNDO	J.DELA PAIX	Agriculteur
				UWAMUNGU	LAURENT	Agriculteur
2007-02-27	EST	Nyagatare	Ikorosi	BIZIYAREMYE	PIERRE	Agriculteur
				MPANGUHE	DOMINIQUE	Agriculteur
				MIHIGO	J.BOSCO	Agriculteur
				MIVUMBI	VENANT	Commerçant
				NTAMUKUNZI	J.DE DIEUX	Agriculteur
				UWITONZE	CHRISTOPHE	Agriculteur
				BIZUMUREMYI		Agriculteur
				HAVUNINGOMA	DAMIEN	Agriculteur
				NZAMWITA	PIERRE	Agriculteur



2007-03-03	EST	Nyagatare	Nsheke	NKUBANA	TITO	Eleveur
				MUKANDEKEZI	XAVERINE	Agriculteur
				BUTARE	AUGUSTIN	Eleveur
				KANAKUZE	THERESE	Eleveur
				MUGABO	JOHN	Eleveur
				RAFIKI	FREDY	Fonctionnaire
				KARANGWA	EMILE	Eleveur
2007-03-02	EST	Nyagatare	Ryinkuyu	TAYI	ALEX	Eleveur
				RUTHUNZA	ALPHONSE	Eleveur
				NKERAMIHIGO	THELESPHORE	Agri-éleveur
				KARURU	PIERRE	Agri-éleveur
				BAHATI	J.PIERRE	Agri-éleveur
				MUNYARUPANGU	DECIDELI	Agri-éleveur
				KARASI	EDUARD	Agri-éleveur
				MUNGWANEZA	JOSEPHINE	Agri-éleveur
				MUNGWANEZA	LEHEMA	Agri-éleveur
				UWANYIRIGIRA	ANETTE	Agri-éleveur
2007-03-03	EST	Nyagatare	Rurimbi	KANTENGWA	BEATRICE	Agri-éleveur
				YEZARAKIZA	ABRAHAM	Agri-éleveur
				NZOJIBWAMI	RACHID	Agri-éleveur
				BIZUMUREMYI	HAMIDU	Agri-éleveur
				NYAKANA	DAVID	Etudiant
				NAHIMANA	J.PIERRE	Agri-éleveur
				HABISHUTI	VIANEY	Agri-éleveur
2007-03-01	EST	Nyagatare	Kiboga	NYIRAROMBA	MARIE	Agri-éleveur
				MUKABAGORO	ROUSSE	Agri-éleveur
				KAMANAYO	J.PAUL	Agronome
				HAKIZABABERA	THEOGENE	Maçon
				MUGARURA	DIEUDONNE	Agri-éleveur
				MUKAFERESI	DAPHROSE	Agri-éleveur
				GAKIRE	BERNARD	Agri-éleveur
				HARERIMANA	DONAT	Agri-éleveur

2007-02-28	EST	Nyagatare	Gakirage	NYIRANKINAMUBANZI	BELLANCILLE	Agri-éleveur
				MURAGIJIMANA	JOSELINE	Agri-éleveur
				KATISHURI	CYPRIEN	Agri-éleveur
				NTIRUGURIRWA	CELESTIN	Eleveur
				RUZIGAMANZI	JOHN	Eleveur
2007-02-27	EST	Nyagatare	Mimuri	NYANVURA	ESPERENCE	Agriculteur
				NDAGIJIMANA	EMMANUEL	Agriculteur
				NTEZIYAREMYE	ILDEPHONSE	Agriculteur
				BARAKAGIRA	CHRISTOPHORE	Agriculteur
				NTABERA	SYLVESTRE	Agriculteur
				NDAYAHOZE	JOSEPH	Agriculteur
				NYIRAZUBA	BEATRICE	Agriculteur
				BARIBANE	ANASTASE	Agriculteur
				NYIRABAMBARI	IMMACULEE	Agriculteur
2007-03-01	EST	Nyagatare	Bihinga	GASHUGI	PASCAL	Agriculteur
				BANZIRIRIKI	JMV	Agriculteur
				NYIRABATEMBEREZI	ESPERENCE	Agriculteur
				TWAGIRAYEZU	J.BOSCO	Agriculteur
				NTABARESHYA	J.PAUL	Agriculteur
				MUKAMANA	J.DE DIEU	Agriculteur
2007-03-02	EST	Nyagatare	Bushoga	MUNYENTWARI ANDRE	J.BOSCO	Agriculteur
				KIMONYI	JOEL	Agriculteur
				NTIYAMIRA	JEAN	Agriculteur
				NKANGA	ALPHONSE	Agriculteur
				KAGISHA	GAETAN	Agriculteur
				NYIRASHYIRAMBERE	FLORIDE	Agriculteur
				NDAYISHIMIYE		Agriculteur
				NYAGAHINGA	THARCISSE	Agriculteur
				GWANEZA	JACQUELINE	Agriculteur
				MPAGAZEHE		Eleveur
				NTAMBARA		Agriculteur
RUTUNGURA	JEAN	Agriculteur				

				GIHANA	AUGUSTIN	Eleveur
				MUVARA		Eleveur
				MUTSINZI		Agriculteur
				BUKEMURA		Eleveur
2007-03-01	EST	Nyagatare	Cyonyo	MURINZI	WILSON	Eleveur
				KANGWANGE		Eleveur
				NKURUNZIZA	STANSLAS	Eleveur
				MUNGANYINKA	ANNONCIATA	Agriculteur
				BITUNGO	ELIAS	Soudeur
				RUKUNDO	EMMANUEL	Soudeur
				HAVUGIMANA	CLAUDE	Soudeur
				RWIVANGA	BENON	Soudeur
				KAYUMBA	VEDASTE	Maçon
				NTUYENABO	ELIYEZELI	Maçon
				BUGINGO	DECIDEUR	Maçon
				MURANGIRA	EMMANUEL	Maçon
				BAHATI	VINCENT	Peinture
				MUGABO	ISAC	Menuiserie
2007-02-27	EST	Nyagatare	Kajevuba	RUZIHITIRA	J.PIERRE	Agriculteur
				NKURUNZIZA	ERIC	Agriculteur
				BICAMUMPAKA	ETIENNE	Agriculteur
				NDINABO	ANSTASE	Agriculteur
				SHIMITI	SAMUEL	Agriculteur
				MBONARUZA	ELIE	Maçon
				HABIMANA	DESIRE	Mécanicien
				HABUMUGISHA	INNOCENT	Maçon
				BIGERO	EZECHIEL	Agriculteur
				BIZIMANA	CHRISTOPHE	Enseignant
				UKAKAMALI	BELLANCILLE	Agriculteur
				KARAGIRWA	EDOUARD	Agriculteur
				MUKANTAGANDA	ANCILLE	Agriculteur
				MUKESHIMANA	ALICE	Agriculteur

				NYIRANGARUKIYINKA	AGATHE	Agriculteur
				BAKUZAKUNDI	DAPHROSE	Agriculteur
2007-03-02	EST	Nyagatare	Burumba	MUKARUSHEMA	BELLANCILLE	Agriculteur
				TUYISENGE	ODETTE	Eleveur
				NSENGIYUNVA	DIDACE	Eleveur
				NSENGIMANA	INNOCENT	Eleveur
				MUNYANSANGA	FELICIEN	Eleveur
				KAMUZINGA	FRANCINE	Eleveur
				KAREGEYA	EMMANUEL	Eleveur
				RINDIRO	PATRIQUE	Agriculteur
				KIBERINKA	JEANNE	Agriculteur
				MUHIMA	FIDELE	Eleveur
2007-02-28	EST	Nyagatare	Akamonyi	MUSHIMIYIMANA	J.BOSCO	Agriculteur
				MUSONI	JAMES	Agriculteur
				MUTUMWINKA	MARIE	Agriculteur
				KABERUKA	JEAN	Agriculteur
				UWIMANA	EMMANUEL	Agriculteur
				MUKANDAYISENGA	SERAPHINE	Agriculteur
				MUKAMUREHE	GAUDENCE	Agriculteur
				MUKANKIMA	SOLINE	Agriculteur
				NDIZIHIWE	XAVIER	Agriculteur
				MUGABO	AUGUSTIN	Agriculteur
				MANIRAGABA	EMMANUEL	Agriculteur
2007-02-27	EST	Nyagatare	Kibuye	MUTEMBEREZI	J.BAPTISTE	Agriculteur
				MURIHANO	PIERRE CELESTIN	Agriculteur
				NSABIMANA	THEONESTE	Agriculteur
				MWISENEZA	VALENS	Agriculteur
				IKITEGESTE	IMMACULLE	Agriculteur
				BYUNVUHORE	EVARISTE	Agriculteur
				HABINEZA	PASCAL	Agriculteur
				NTIZIHERA	J.PIERRE	Agriculteur

				NZABONANTUMA	CLAVER	Agriculteur
				MISIGARO	AUGUSTIN	Agriculteur
				MUNYANGEYO	EVARISTE	Agriculteur
2007-03-06	EST	Nyagatare	Musheri	RUSANGANWA	MODESTE	Agri-éleveur
				GASINGIRWA	MEDIATRICE	Agri-éleveur
				NGABIRE	JEANNE	Agri-éleveur
				KAYIJUKA	SAMUEL	Agri-éleveur
				MUTETERI	PEACE	Agri-éleveur
				NTAGUNGIRA	MODESTE	Agri-éleveur
				NTAGANIARA	IGNACE	Agri-éleveur
				MUTINGIRA	EGIDE	Enseignant
				MUTUMANA	SIMON	Agri-éleveur
2007-03-27	NORD	Gicumbi	Gatare	BIMENYIMANA	ALPHONSE	Agriculteur
				HAKUZIMANA	CELESTN	Agriculteur
				KABIRIGI	ELIAS	Agriculteur
				NIKUZE	BERNADETTE	Agriculteur
				MUKARUKUNDO	SOPHIE	Agriculteur
				BAZUBAGIRA	BEATHE	Agriculteur
				UZARIBARA	ANTOINETTE	Agriculteur
				MUSHUMBA	BOSCO	Agriculteur
				MUKESHIMANA	JACQUELINE	Agriculteur
				HAKORIMANA	CYPRIEN	Agriculteur
				NYIRAHATEGEKA	ESPERENCE	Agriculteur
UHAGAZE	ANASTASIE	Agriculteur				
2007-03-29	NORD	Gicumbi	Baliza	KITEGESTE	SPECIOSE	Agriculteur
				KARARA	DIDACE	Agriculteur
				NIRERE	DAPHROSE	Agriculteur
				NZIGIRA	BONIFACE	Agriculteur
				MUNYAKAZI	AUGUSTIN	Agriculteur
				RUTAGANDA	ATHANASE	Agriculteur
				BARIGIRA	ILDEPHONSE	Agriculteur
				NYAGAHIGI	ATHANASE	Agriculteur

				BARIGIRE	BERNARD	Agriculteur
				NGIRUMUHIRE	J.BAPTISTE	Agriculteur
				SAGAHUTU	SYLVASTRE	Agriculteur
				TURATSINZE	THEOGENE	Agriculteur
2007-03-28	NORD	Gicumbi	Rurama	KABIRIGI	INNOCENT	Maçon
				GATSINZI	JUVENAL	Maçon
				MANIRAGABA	CHRISTOPHE	Maçon
				NIRERE	AUGUSTIN	Maçon
				HABIMANA		Maçon
				UWAYEZU	ANDRE	Maçon
				KUBWIMANA	FAUSTIN	Peintre
				MUNYENGANGO	THEOGENE	Agriculteur
				NSABIMANA	FABIEN	Agriculteur
				GATABARWA	CLAUDIEN	Agriculteur
				BITONDA	DIDACE	Agriculteur
				MAJYAMBERE	NAZER	Agriculteur
				MUNYABUHORU	CESAR	Agriculteur
				NYIRINGO	FABIEN	Agriculteur
MUKUNZI	DANAT	Agriculteur				
MUKAMURRENZI	Imelde	Agriculteur				
2007-03-27	NORD	Gicumbi	Gasharu I	UWIRAGIYE	ALEXIS	Agriculteur
				HATEGEKIMANA	ANDRE	Agriculteur
				NYIRABAHIZI	JACQUELINE	Agriculteur
				HARAGIRIMANA	TACIEN	Agriculteur
				MURWANASHYAKA	THEOPHILE	Agriculteur
				HAKIZIMANA	GASPARD	Agriculteur
				MUTUYEMARIYA	CHANTAL	Agriculteur
				NTARUGERO		Agriculteur
				NSABIMANA	J.D'AMOUR	Agriculteur
				UWIRINGIYIMANA	J.CLAUDE	Agriculteur
				UWAMBAJEMUNGU	J.BAPTISTE	Agriculteur
				NDIMUBANZI	SYLVER	Agriculteur

				HABINEZA	ALPHONSE	Agriculteur
				UWITONZE	VALENS	Agriculteur
				BAJYAHE	APPOLINAIRE	Agriculteur
				MUKESHIMANA	ADELPHINE	Agriculteur
2007-03-28	NORD	Gicumbi	Musenyi	GASASIRA	CELESTIN	Eleveur
				SEBINYONI	PIERRE CELESTIN	Agriculteur
				KAZINDUSTI	GILBERT	Agriculteur
				NYIRAMAFARANGA	PASCASIE	Agriculteur
				NZAVUGA	FELICIEN	Agriculteur
				KALISA	CYPRIEN	Agriculteur
				NAYIGIZIKI		Agriculteur
				KABERUKA		Agriculteur
				RWICANYONI		Agriculteur
				KANYAMUGENGA	MARTIN	Enseignant
				NDAGIJIMANA		Agriculteur
2007-03-29	NORD	Gicumbi	Gasharu II	NGENDAHIMANA	MATHIEU	Maçon
				RUSINIYE	J.DE DIEU	Agriculteur
				UWIRAGIYE	SUDI	Maçon
				MUNYANKUMBURWA	JOUMA	Agriculteur
				NYAMURANGWA	VINCENT	Agriculteur
				NSANZUWERA	ISIDORE	Agriculteur
				NGENZAHUMUREMYI	FAUSTIN	Agriculteur
				AKIMANA	FIDELE	Maçon
				TWIRINGIYIMANA	J.DAMASCENE	Maçon
				BAGIZENKANA	FELICIEN	Maçon
				KIMANA	SYLVESTRE	Agriculteur
				NSABIMANA	ETIENNE	Agriculteur
				NZACAHIMANA	FRANCOIS	Agriculteur
				MUKANDORI	BERANCILLE	Agriculteur
				BICAMUKURI	SILAS	Agriculteur
NKURUNZIZA	FRANCOIS	Agriculteur				

				HABIMANA	BONIFACE	Agriculteur
				HAKORIMANA	ATHANASE	Agriculteur
				ZIGIRIMUGABE	CELEMANI	Agriculteur
				MUKAKAYIBANDA	ELISABETH	Agriculteur
2007-03-09	EST	Gatsibo	Rweza	RWAGAHANDA	SYLVESTRE	Agriculteur
				NYIRAMAYONDE	ESPERENCE	Agriculteur
				HAKIZUMWAMI	ELIAS	Agriculteur
				KAMEGELI	PASCAL	Agriculteur
				BARAHIRA	NICODEM	Agriculteur
				SINDIKUBWABO	ANASTASE	Agriculteur
				TURATSINZE	EMMANUEL	Agriculteur
				NTURAMBIRWE	LADISLAS	Agriculteur
				MUNGWARAKARAMA	EDMOND	Infirmier
2007-02-27	EST	Gatsibo	Rwagakara	NDIZIHIWE	VINCENT	Agriculteur
				MANIRIHO	FAUSTIN	Agriculteur
				BIKORIMANA	EVARISTE	Agriculteur
				MBARARA	AUGUSTIN	Agriculteur
				NYIRARUDODO	VEREDIANE	Agriculteur
				MUTUYIMANA	JEANNETTE	Agriculteur
				HABIMANA	EMMANUEL	Agriculteur
2007-02-24	EST	Gatsibo	Ruziranyenzi	SIBOMANA	J.BOSCO	Agriculteur
				NDENGEYINKA	THOMAS	Agriculteur
				NTAKIRANDE	J.M.V	Agriculteur
				NYIRASONI	LEONIE	Agriculteur
				MUSABYIMANA	SILVANDE	Agriculteur
				MUHAWENIMANA	ANONCIATE	Agriculteur
				MUKAMUGANGA	DONAT	Agriculteur
2007-02-26	EST	Gatsibo	Kamuri	MIHIGO	JEAN	Agriculteur
				MUKAMUJINYA	DONATILLE	Agriculteur
				BWANAKWERI	JEAN	Agriculteur
				NKUNDIZANYE	MARIANNE	Agriculteur
				UBONYABENSHI	AMANI	Agriculteur



				KANKESHA	IRENE	Agriculteur
				NTAMUSHOBORA	FELICIEN	Agriculteur
				RWAMUCYO	SABITI	Agriculteur
				UMUNEZERO	MARIE GAUDENCE	Agriculteur
				MUKARUZIRAGUHUNGA	ANGELLE	Agriculteur
				INGABIRE	MUTUYE	Agriculteur
				UMUGWANEZA	DONAT	Agriculteur
2007-03-09	EST	Gatsibo	Rugarama	NIKOKAZA	MARIE	Agriculteur
				NYIRABIZEYIMANA	DONAT	Agriculteur
				TWIZEYIMANA	ILDEPHONSE	Agriculteur
				BUGAGARA	SHINANI	Agriculteur
				HABAMUNGU	CHRISTOPHE	Agriculteur
				GASIGWA	TITIEN	Agriculteur
				BIZIMUNGU	DAMIEN	Agriculteur
				SAGAHUTU		Agriculteur
				NIRERE	ANGELIQUE	Agriculteur
2007-02-23	EST	Gatsibo	Kinyinya	RUHUMURIZA	THEOGENE	Agriculteur
				GASANA	EMMANUEL	Agriculteur
				KAYIJUKA		Agriculteur
				MUKARITA	ESPERENCE	Agriculteur
				NTAGWABIRA	NDERA	Agriculteur
				NTAWENDERA	DAMASCENE	Agriculteur
				KAREKEZI	CALLIXTE	Agriculteur
				KAMANA	ERIC	Agriculteur

MBARARA DISTRICT		
ITEN	NAME	DESIGNATION
1	Mr. Muhuta Akintore	Asst. Chief Admin. Officer
2	Mr. Muhirwe Grace	Speaker
3	Mr. Kamugisha Herbert	Sec. for Works
4	Ms. Kamugisha Nora	Executive Committee Member
5	Ms. Byarugaba Beatrice	District Agriculture Officer
6	Ms. Komutunga Evelyn	Research Officer/Stock Farm
7		District Environment Officer
8	Mr. Mugabi Jomo	LC 111 Chairman and NRM Chairman/Nyakayojo
9	Ms. Yuhirwe Mbabazi	S/county Chief/ Nyakayojo
10	Ms. Nakintu Sharifa	Sub-county Chief/Bugamba
NTUNGAMO DISTRICT		
11	Mr. Maweje Andrew	Chief Administrative Officer
12	Mr. Atuhairu Elijah	Vice Chairman LC V
13	Mr. Tumusiime Jolly	Sec. for Works
14	Mr. Butera Dan	Sec. for Health
15	Ms. Mbabazi Cotilda	Sec. for Finance
16		Ag. RDC/GISO
17	Mr. Turyahikayo Japheth	Sub-county Accountant

**APPENDIX 7: LIST LEADERS CONSULTED  
IN UGANDA**

MBARARA DISTRICT		
ITEN	NAME	DESIGNATION
1	Mr. Muhuta Akintore	Asst. Chief Admin. Officer
2	Mr. Muhirwe Grace	Speaker
3	Mr. Kamugisha Herbert	Sec. for Works
4	Ms. Kamugisha Nora	Executive Committee Member
5	Ms. Byarugaba Beatrice	District Agriculture Officer
6	Ms. Komutunga Evelyn	Research Officer/Stock Farm
7		District Environment Officer
8	Mr. Mugabi Jomo	LC 111 Chairman and NRM Chairman/Nyakayojo
9	Ms. Yuhirwe Mbabazi	S/county Chief/ Nyakayojo
10	Ms. Nakintu Sharifa	Sub-county Chief/Bugamba
NTUNGAMO DISTRICT		
11	Mr. Maweje Andrew	Chief Administrative Officer
12	Mr. Atuhairu Elijah	Vice Chairman LC V
13	Mr. Tumusiime Jolly	Sec. for Works
14	Mr. Butera Dan	Sec. for Health
15	Ms. Mbabazi Cotilda	Sec. for Finance
16		Ag. RDC/GISO
17	Mr. Turyahikayo Japheth	Sub-county Accountant

**APPENDIX 8: LIST AUTHORITIES CONSULTED  
IN RWANDA**

<b>Dates</b>	<b>Nom</b>	<b>Titre</b>	<b>Institutions</b>
6/2/2007	Mr Eugène RURANGWA	Conservateur National des Titres Fonciers. MINITERE	MINITERE
6/2/2007	Mr Vincent SHYIRAMBERE	Chargé de la gestion foncière	MINITERE
6/2/2007	Mr Donatien	Chargé de l'expropriation	MINITERE
15/02/2007	Mr Charles GASANA	Secrétaire Exécutif de la Province de l'Est	Province de l'Est
15/02/2007	Mr Faustin NDASIMURWA	Chargé de l'Etat Civil et Requête de la Population	Secteur de Kinyinya
16/02/2007	Mr Tharcisse MUTUTSI NZAYIRAMYA	Chef Unité Planification et Développement Economique en Province du Nord	Province du Nord
16/02/2007	Mr Ferdinand MUSHONDA	Chargé de l'Etat Civil et Requête de la Population	Secteur Rukomo
16/02/2007	Mr Dieudonnée KAMUHIRE	Secrétaire Exécutif Secteur de Rutare	Secteur Rutare
16/02/2007	Mr Fred ABAHE	Secrétaire Exécutif Secteur de Nyamiyaga	Secteur Nyamiyaga
19/02/2007	Mme Yvettes DUSENGE	Vice-Maire Chargé des Affaires sociales	District de Gatsibo
19/02/2007	Mr Vianey MUREAGO	Maire du District	District de Gatsibo
19/02/2007	Mr Richard MUREGO	Secrétaire Exécutive du Secteur	Secteur de Ngarama
19/02/2007	Mr Isaïe HABARUREMA	Secrétaire Exécutive du Secteur	Secteur Nyagihanga
20/02/2007	Mr Anastase HABAMENSHI	Chargé de l'Etat Civil et Requête de la Population	Secteur Mimuli
20/02/2007	Mr Innocent GAKWAYA	Directeur Unité Planification et Développement Economique	District Nyagatare
20/02/2007	Mr Robert GASHEMEZA	Maire du District	District de Nyagatare
20/02/2007	Mlle Alice KAYITESI	Projet Bonne Gouvernance, secteur Nyagatare	Secteur Nyagatare
20/02/2007	Mr Emmanuel BANKUNDA	Secrétaire Exécutive du Secteur	Secteur Rwempasha
20/02/2007	Mr Christophe KABANA	Chargé de l'Etat Civil et Requête de la Population	Secteur Musheli
26/02/2007	Mr Maurice KAREBA MULISA	Directeur Unité planification, coordination et suivi-évaluation	District Gicumbi
26/02/2007	Mr John GASARABA	Chargé de la Bonne Gouvernance	District Gicumbi
26/02/2007	Mme Scovia INGABIRE	Secrétaire Exécutive	Secteur Rutunga
26/02/2007	Mr Albert KAMANZI	Chargé des Affaires Sociales	Secteur Nduba

**APPENDIX 9: SOCIO-ECONOMIC QUESTIONNAIRE FOR THE HOUSEHOLDS**



## QUESTIONNAIRE SOCIOECONOMIQUE A L'INTENTION DES MENAGES

Province :		Questionnaire No. :	
District :		Chaînage (donnée du topographe) :	
Secteur :		Localisation GPS :	
Cellule :		Village :	
Nom de famille du répondant :		Prénom du répondant :	
Nom de l'interviewer :		Date :	

Est-ce que ce ménage sera affecté par l'établissement de l'emprise ?	1- Oui	2- Non	3- Ne sait pas
Par exemple :			
a) Besoin d'enlever des bâtiments et/ou des arbres			
b) Accès restreint pour les cultures et le pâturage, etc.			
c) Doit être complètement déplacé de l'emprise			

Si OUI, compléter les sections A à D. Si NON ou NE SAIT PAS, compléter les sections A à C seulement.

### SECTION A: DONNÉES SUR LE MÉNAGE

Les données sur le ménage sont recueillies pour a) le chef de ménage, b) les membres du ménage demeurant actuellement dans la résidence principale du ménage et c) les membres du ménage demeurant la plupart du temps ou de façon permanente à l'extérieur de la résidence principale du ménage.

#### I. Chef de ménage

1	Nom de famille:		Prénom:	
2	Âge		4	État civil
3	Sexe (M/F)		5	Groupe ethnique
6	Occupation : agriculteur <input type="checkbox"/> éleveur <input type="checkbox"/> artisan <input type="checkbox"/> commerçant <input type="checkbox"/> fonctionnaire <input type="checkbox"/> autre <input type="checkbox"/>			
7	Réside actuellement à l'intérieur de la zone du projet ou à l'extérieur (la plupart du temps ou de façon permanente)		a) Intérieur <input type="checkbox"/> permanente <input type="checkbox"/> plupart du temps <input type="checkbox"/> b) Extérieur <input type="checkbox"/> permanente <input type="checkbox"/> plupart du temps <input type="checkbox"/>	
8	Nombre d'années de résidence dans la zone du projet			



II. Membres du ménage résidant actuellement dans la zone du projet

	Groupe d'âge	Nombre de personnes		Travaillant <b>SUR</b> la propriété rurale/ferme familiale		Travaillant <b>AILLEURS</b> que sur la propriété rurale/ferme familiale		Sachant lire et écrire $\geq 15$ ans	
		M	F	M	F	M	F	M	F
1	0-4								
2	5-14								
3	15-24								
4	25-54								
5	55-64								
6	65+								
7	Total par sexe								
8	Total								

9.	Combien de familles résident dans votre ménage?	
----	---	--

III. Membres du ménage résidant la plupart du temps ou de façon permanente à l'extérieur de la zone du projet

	Groupe d'âge	Nombre de personnes		Avec un travail		Sachant lire et écrire	
		M	F	M	F	M	F
1	0-14 ans						
2	15 ans et plus						
3	Total par sexe						
4	Total						

		Oui	Non
5	Ces personnes envoient-elles de l'argent au ménage ?		
6	Si oui, combien par année ?		



## SECTION B: MOYENS DE SUBSISTANCE ET REVENU DU MÉNAGE

### IV. Terres exploitées par le ménage

Compilez toutes les terres utilisées par le ménage pour sa subsistance et son revenu, incluant les terres qui sont la propriété du ménage tout comme les terres louées ou communales, etc. Notez les terres à l'intérieur et à l'extérieur de l'emprise.

Parcelle de terrain			Titre de propriété/Droits d'utilisation	Terres louées: Coût par année	Terres en location: Revenu par année	Utilisation principale (cultures, plantations d'arbres, pâturages, revenus de location, etc.)
Terrain No.	Superficie estimée					
	Unité	Taille	Distance de la résidence (m)			
1						
2						
3						
4						
5						
6						
7						
8						

Nombre total de parcelles

Superficie totale possédée (ha)

Superficie totale utilisée pour l'exploitation agricole (ha)

Incluant les terres louées et communales



**V. Production de l'exploitation agricole et du ménage**

Compilez la production totale de l'exploitation agricole ou de la ferme au cours des 12 derniers mois, selon les estimations du répondant.

Élément	Unité	Production totale	Consommé/ Utilisé par le ménage		Vendu ou troqué		
			Nombre	% Total	Nombre	% Total	Revenu d'argent net
<b>CULTURES COMMERCIALES (thé, café, canne à sucre, pyrèthre, autre)</b>							
1							
2							
3							
4							
5							
6							
Sous-total							
<b>CULTURES DE SUBSISTANCE (maïs, manioc, riz, pomme de terre, patates douces, sorgho, bananes, haricots, petit pois, autre)</b>							
1							
2							
3							
4							
Sous-total							
<b>AUTRE: Artisanat, transformation de produits agricoles, fabrication de charbon de bois, etc.</b>							
1							
2							
3							
4							
5							
Sous-total							
Sous-total bétail (ajouter le montant de la page suivante)							
<b>REVENU TOTAL NET</b>							

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 DU NIL (PAALEI)



V. Production de l'exploitation agricole et du ménage (suite)								
BÉTAIL								
Élément	Nombre total	Produits	Total produit en litres/kg	Consommé/utilisé Par le ménage		Vendu ou troqué		Revenu net en argent
				Montant	Total %	Montant	Total %	
1. Vaches		Lait						
		Viande						
		Peaux						
		Labour						
2. Chèvres		Vente						
		Lait						
		Viande						
		Peaux						
3. Moutons		Vente						
		Lait						
		Viande						
		Peaux						
4. Porc		Vente						
		Viande						
5. Poulets		Vente						
		Viande						
		Oeufs						
6. Autres		Vente						
Sous-Total (ajouter au bas du tableau précédent)								

**NB : Artisans** : Poterie, Sculpture, Forgeron, Couture, Menuiserie, Miniers, Fabrication de tuile et briques



### VI. Revenu salarial du ménage

Compilez tout le travail rémunéré effectué à l'extérieur de la ferme par tous les membres du ménage au cours des 12 derniers mois.

	Type de travail	Durée (heure, jour, semaine, mois)		Salaire			Localisation du travail (Province, district, ville, village)
		Unité	Nombre	Unité	Taux	Montant gagné	
1							
2							
3							
4							
5							
REVENU SALARIAL TOTAL							

## SECTION C: ÉLECTRIFICATION RURALE

### VII. Accès à l'électricité

		O/N	Ne sait pas	Utilisation(s)
1	Avez-vous l'électricité à la maison?			
	Si OUI, quelle utilisation en faites-vous?			
2	Avez-vous l'électricité sur votre lieu de travail?			
	Si OUI, quelles utilisations en faites-vous?			
3	Y a-t-il l'électricité au village ou au centre de commerce?			
	Si OUI, pour quelle(s) raison(s) est-elle utilisée?			



### VIII. Sources d'énergie utilisées par le ménage

Quelles sont les sources d'énergie utilisées par le ménage pour a) l'éclairage, b) la cuisine et c) le chauffage, en ordre d'importance du type d'énergie (1, 2, 3, etc.)?

		Éclairage	Cuisine	Chauffage
1	Bois de chauffage			
2	Bougies			
3	Pétrole			
4	Gaz de pétrole liquéfiés (butane, propane, etc.)			
5	Électricité			
6	Charbon de bois			
7	Autre (spécifiez):			

### IX. Demande pour l'électricité

Si l'électricité était disponible au coût de [insérer prix au kW/heure], seriez-vous en mesure de l'utiliser pour les activités suivantes?

	Utilisation de l'électricité	O/ N	Si NON, indiquez la ou les raisons				
			Trop cher	Ne peut s'offrir l'équipement nécessaire	Non nécessaire	Préfère autres sources d'énergie	Ne peut s'offrir la location d'un espace de travail
<b>À LA MAISON</b>							
1	Éclairage						
2	Cuisine						
3	Conservation des aliments						
4	Chauffage/climatisation						
5	Appareils (ex. : fer à repasser)						
6	Machinerie						
<b>AU VILLAGE/CENTRE DE COMMERCE [Par exemple, si vous louez un espace de travail et/ou de vente]</b>							
7	Éclairage de l'espace de travail/vente						
8	Chauffage de l'espace de travail/vente						
9	Machinerie						
10	Autre (spécifiez):						



## SECTION D: IMPACTS LIÉS À L'EMPRISE DE LA LIGNE ÉLECTRIQUE

**N.B. Rassemblez les informations suivantes seulement pour les ménages qui utilisent des terres à l'intérieur de la future emprise. Certaines informations sont similaires à des données déjà notées ci-dessus, mais l'emphase est ici dirigée vers l'emprise.**

### X. Terres situées dans l'emprise

Quelles terres possédées, louées ou utilisées par vous sont situées en partie ou entièrement à l'intérieur de l'emprise? Offrez le meilleur estimé possible des superficies affectées situées à l'intérieur de l'emprise.

Terrain	Utilisation (Habitation, cultures annuelles, plantations d'arbres, pâturages, etc.)	Superficie estimée (m <sup>2</sup> )		Titres de propriété/Droits d'utilisation			
		Totale	À l'intérieur de l'emprise	Propriété		Location en échange de paiement	Utilisation avec la permission du propriétaire
				Titre enregistré	Tenure coutumière		
1							
2							
3							
4							
5							

### XI. Structures et bâtiments principaux

Quels structures et bâtiments principaux possédez-vous à l'intérieur de l'emprise et qui seront entièrement ou partiellement affectés? Fournissez le meilleur estimé possible des superficies affectées à l'intérieur de l'emprise.

Structure/ bâtiment	Utilisation (Maison, magasin, atelier, autre (spécifiez))	Type de construction			Superficie (m <sup>2</sup> )		Titres de propriété/Droits d'utilisation Propriété (P), Location (L) ou utilisation avec la permission du propriétaire (U)
		Durable Murs : brique cuite (blocs ciment) et ciment Toit : tuiles ou tôle	Semi-durable Murs : pisé, adobe, planches Toit : tuiles ou tôles	Non-durable Murs : Pisé, adobe et autre Toit : chaume et paille	Totale	À l'intérieur de l'emprise	
1							
2							
3							

- 4 Avez-vous un terrain à l'extérieur de l'emprise sur lequel reconstruire votre structure/bâtiment principal ? (O/N)
- 5 Si OUI, possédez-vous ce terrain, le louez-vous ou l'utilisez-vous avec la permission du propriétaire? (P/L/U)
- 6 À quelle distance de votre structure/bâtiment principal actuel ce terrain est-il situé? (km)




## XII. Structures/ et bâtiments secondaires

Quels structures/bâtiments secondaires possédez-vous qui sont entièrement situés à l'intérieur de l'emprise? Les structures/bâtiments secondaires peuvent consister en un abri pour animaux, une cuisine ou toilette séparée, une clôture, un puits, etc.

	Type de structure/bâtiment	Unité (m, m <sup>2</sup> , etc.)	Valeur
1			
2			
3			
4			
5			
6			

## XIII. Cultures/arbres à l'intérieur de l'emprise

Énumérez les arbres et cultures que vous possédez qui sont entièrement situés à l'intérieur de l'emprise? N.B. : SVP fournir l'information séparément pour a) les grands arbres de plus de 4,5 m, b) les arbres plus petits et cultures pérennes (ex.: café, thé) et c) les cultures annuelles. Estimez le total pour chacun.

	Type de cultures/arbres	Unité (m <sup>2</sup> , arbre)	Total estimé
	<b>ARBRES DE PLUS DE 4,5 m DE HAUTEUR</b>		
1			
2			
3			
4			
5			
	<b>PETITS ARBRES (&lt; 4,5 m) &amp; CULTURES PÉRENNES</b>		
6			
7			
8			
9			
10			
	<b>CULTURES ANNUELLES</b>		
11			
12			
13			
14			
15			



#### XIV. Pâturages pour animaux

Faites-vous brouter vos animaux dans l'emprise? Si OUI, SVP fournir l'information suivante.

Type d'animaux		Nombre
<b>ANIMAUX EN PÂTURAGE LIBRE</b>		
1		
2		
3		
4		
5		
<b>ANIMAUX EN ESPACE CLÔTURÉ</b>		
6		
7		
8		
9		

#### XV. Préoccupations sur les impacts de l'établissement de l'emprise

Avez-vous des préoccupations à formuler entourant l'établissement de l'emprise de la ligne électrique et comment cela pourrait affecter votre ménage ? Si OUI, quelles sont-elles?

		O/N
1	Avez-vous des préoccupations?	
	Si OUI, quelles sont-elles?	
2		
3		
4		
5		
6		
7		
8		



## SECTION E: GENRE

### XVI. Problématique du genre

		Mari	Femme	Enfants	Autre
1	Qui du ménage est responsable des besoins en énergie ?				
2	Qui décide du type d'énergie à utiliser ?				
3	Qui est responsable de l'achat ?				
4	Si l'électricité était disponible dans votre village, qui serait celui qui paierait pour le raccordement et les paiements subséquents ?				
5	Pourquoi la réponse ci-dessus, expliquer ?				
Combien dépensez-vous approximativement chaque mois pour les besoins suivants :					
6	Bois				
7	Bougies				
8	Pétrole				
9	Bombones de gas				
10	Électricité				
11	Charbon				
12	Solaire				
13	Biogaz				
14	Restes de récolte : canne à sucre, tiges de maïs et de sorgho, manioc				
15	Autres (specifiez)				

Signature de l'interviewé.....No de carte d'identité.....

Signature de l'enquêteur... ..Date.....

**APPENDIX 10 : ENVIRONMENTAL CLAUSES TO INSERT IN THE FILES OF  
EXECUTION OF THE PROJECT**

Les clauses environnementales spécifiques à intégrer dans les cahiers des charges détaillent les précautions à prendre lors de l'exécution des travaux. Cette liste est indicative, non exhaustive, et devra être éventuellement complétée et figurer dans les prescriptions administratives et techniques des marchés de travaux. L'inscription des clauses environnementales dans les dossiers d'exécution engagera la responsabilité du maître d'oeuvre.

## I - INSTALLATION DU CHANTIER

L'entrepreneur doit prendre les mesures nécessaires afin que tous les employés impliqués à toutes les étapes du projet respectent les lois et les règlements en vigueur ainsi que les exigences environnementales contractuelles. L'entrepreneur se doit donc de diffuser, avant le début des travaux, toutes les exigences relatives au contrat et de s'assurer que tous les employés ont eu accès et ont participé aux séances d'information.

L'entrepreneur doit nommer un agent de liaison permanent sur le terrain pour la durée du contrat, qui est responsable de toutes les questions relatives à l'environnement.

L'entrepreneur doit soumettre pour approbation le plan de toutes les installations temporaires.

L'entrepreneur doit utiliser en priorité les zones d'emprunts existantes ou prévues au contrat et pour lesquelles les autorisations requises ont été obtenues. En cas d'ouverture de nouvelles zones d'emprunt, les limites de l'aire d'exploitation seront délimitées clairement sur le terrain.

L'entrepreneur ne doit pas terrasser ni excaver en milieu agricole ou urbain, ni dans la bande de protection végétale en bordure des rives des lacs, des cours d'eau ou des milieux humides sans les permis nécessaires.

L'entrepreneur doit décaper toute aire d'excavation ou d'entreposage de matériaux de déblais et de remblais ainsi que toute aire où du nivellement est requis. Il doit mettre de côté la couche de sol arable et la remettre en place lors de la remise en état du terrain.

L'entrepreneur doit localiser, délimiter et protéger les éléments sensibles (puits, sources d'alimentation en eau potable, site archéologique, etc.) identifiés au contrat. Si l'entrepreneur découvre un vestige archéologique lors de travaux, il doit suspendre ses activités, informer sans délai le représentant du Promoteur et éviter toute intervention de nature à compromettre l'intégrité du bien ou du site découvert.

L'entrepreneur doit délimiter clairement les aires à déboiser indiquées au contrat, à l'aide de repères, et il doit obtenir les autorisations requises avant d'entreprendre l'abattage des arbres.

L'entrepreneur doit faire un relevé de l'état des ponts ou ponceaux existants qu'il utilisera et établir les points de traversée des éléments de drainage ainsi que les ponts et ponceaux à installer.

L'entrepreneur doit respecter le drainage naturel du milieu et prendre toutes les mesures appropriées pour permettre l'écoulement normal des eaux. Lorsque le drainage de surface risque d'entraîner des sédiments dans des cours d'eau, l'entrepreneur doit appliquer des mesures pour contenir les sédiments ou les détourner afin qu'ils n'atteignent pas les cours d'eau.

L'entrepreneur doit prendre toutes les précautions et appliquer les techniques nécessaires afin de réduire l'érosion due au ruissellement, particulièrement sur les terrains de forte pente, et éviter que les sédiments n'atteignent un lac ou un cours d'eau.

Pour l'installation de ponts et ponceaux, l'entrepreneur veillera à ne pas modifier les conditions hydrologiques, à ne pas entraver la circulation des poissons et à ne pas augmenter la turbidité de l'eau.

L'entrepreneur prendra en tout temps les mesures nécessaires afin d'empêcher la chute de débris solides, dont les débris ligneux, dans le plan d'eau et, le cas échéant, il devra les récupérer et les éliminer conformément aux exigences.

Lors de l'utilisation d'explosifs, l'entrepreneur doit utiliser des méthodes de travail adéquates pour ne pas causer de perturbations sur le milieu naturel et bâti environnant et pour limiter la projection de roc et de débris à l'extérieur de l'aire autorisée pour les travaux et dans les plans d'eau. Pour le sautage en eau ou près de l'eau, l'entrepreneur doit utiliser des procédés mécaniques ou électroniques pour éloigner les poissons et le sautage doit avoir lieu dans les plus brefs délais après cette intervention pour éviter que les poissons ne reviennent sur les lieux.

## II – GESTION DES MATIÈRES RÉSIDUELLES ET DES MATIÈRES DANGEREUSES

L'entrepreneur est responsable de la récupération, de l'entreposage, du transport et de l'élimination de la totalité des différents types de déchets qu'il génère.

Les déchets solides doivent être éliminés par l'entrepreneur et à ses frais dans un lieu autorisé.

Les matières dangereuses résiduelles générées doivent être éliminées par l'entrepreneur et à ses frais dans un lieu autorisé par les autorités et ministères concernés, à l'exception des matières dangereuses résiduelles appartenant au Promoteur qui sont éliminées par celui-ci et à ses frais.

L'entrepreneur ne doit pas mélanger ou diluer des matières dangereuses résiduelles avec d'autres matières (dangereuses ou non dangereuses). Le mélange des matières dangereuses est permis à la condition que les matières soient compatibles entre elles et que le résultat du mélange constitue également des matières dangereuses.

L'entrepreneur installera, à ses frais, des aires bétonnées pour effectuer le stockage et toutes les manipulations des carburants et des huiles (ravitaillement, transvidage, vidanges, etc.). Ces sites doivent permettre le confinement des contaminants en cas de déversement accidentel. Ils devront être situés à une distance de 60 mètres des plans d'eau et éléments sensibles identifiés au contrat.

Les huiles de vidanges ainsi que les filtres à huiles et tout le matériel (eau, chiffons, etc.) de nettoyage souillé par des hydrocarbures seront récupérés et stockés. L'entreprise tiendra un cahier du stock (entrée sortie) comprenant également le stock des hydrocarbures usagés.

Le matériel servant au transport et à la pose du béton doit être lavé dans une aire prévue à cet effet, en s'assurant que cette aire de lavage ne déborde pas durant son utilisation. Il peut s'agir d'un bassin de décantation que l'entrepreneur doit creuser à même le sol. Le cas échéant, l'entrepreneur doit enlever, à la fin des travaux, les résidus solides décantés et les déposer dans un conteneur de matériaux secs. Finalement, il doit remblayer le bassin de décantation avec le sol d'origine, en prenant soin de remettre la couche de matière végétale à la surface.

L'entrepreneur doit présenter un plan d'intervention en cas de déversement accidentel de contaminants. Il doit s'assurer que le plan d'intervention contient, au minimum, un schéma d'intervention et une structure d'alerte, qu'il est placé dans un endroit facile d'accès et à la vue de tous ses employés et que ses employés soient sensibilisés à leurs responsabilités en cas de déversements accidentels, à l'importance d'une intervention rapide, de même qu'à l'application du plan d'intervention.

Lors d'un déversement de contaminants, l'Entrepreneur doit immédiatement appliquer le plan d'intervention en cas de déversement en vigueur.

L'entrepreneur doit avoir au moins une trousse d'intervention sur le site des travaux. Elle doit contenir des produits adaptés aux particularités du lieu de travail et se trouver à proximité des travaux.

Lors d'une découverte imprévue de sols présentant des indices de contamination (odeurs, couleur, etc.), l'entrepreneur doit interrompre ses travaux d'excavation et aviser sans délai le Promoteur.

L'entrepreneur doit éliminer les sols contaminés provenant d'excavation et de forage (carottes, boues, etc.) dans un site autorisé et fournir une preuve d'élimination au représentant du Promoteur.

Les matériaux récupérables appartenant au Promoteur (tel que le fer, cuivre, aluminium, etc.) sont déposés par l'entrepreneur dans les conteneurs fournis par le Promoteur. Ces matériaux sont ensuite éliminés par le Promoteur.

L'entrepreneur doit canaliser et récupérer en totalité les eaux résiduelles découlant des travaux. L'entrepreneur doit filtrer, décanter ses eaux résiduelles ou utiliser toute autre méthode approuvée en vue de satisfaire la réglementation en vigueur. Si les eaux résiduelles sont rejetées dans le réseau hydrographique, l'entrepreneur doit se référer aux clauses contractuelles ou au représentant du Promoteur pour les critères de rejets. Il est interdit de diluer une eau résiduelle avant son rejet dans le milieu récepteur pour satisfaire les critères en vigueur. L'entrepreneur doit démontrer par analyses qu'il respecte les critères de rejets.

## III - CIRCULATION SUR LE CHANTIER

Les véhicules requis pour la réalisation des travaux doivent être choisis en tenant compte des particularités du milieu (type de sol, période de l'année, sensibilité environnementale, etc.) de façon à limiter les impacts sur le milieu.

L'entrepreneur doit limiter la circulation aux chemins et aux aires identifiés au contrat. Il doit sinon obtenir une autorisation avant d'utiliser tout autre chemin ou sentier.

L'entrepreneur doit maintenir en tout temps les voies de circulation qu'il utilise en bon état et prendre les mesures nécessaires afin que celles-ci puissent être utilisées et croisées sans problème par les autres utilisateurs du milieu.

L'entrepreneur doit procéder au comblement des ornières au fur et à mesure de l'avancement des travaux.

L'entrepreneur doit protéger les bordures et la surface de roulement des chemins asphaltés, et il doit les maintenir propres.

L'entrepreneur doit arrêter au besoin toute circulation lourde, par exemple, sur des milieux sensibles à l'érosion, en particulier lors d'une pluie abondante ou sur des milieux de faible capacité portante.

L'entrepreneur est tenu de limiter les émissions de poussière provenant de la circulation de son matériel et de soumettre pour approbation le type d'abat-poussière qu'il entend utiliser.

L'entrepreneur doit maintenir un système de drainage fonctionnel de chaque côté des routes croisées par son chemin de circulation. Il doit installer un ponceau dans les fossés en bordure des voies, afin d'éviter tout blocage de drainage et d'empêcher le lessivage, l'érosion ou toute autre altération des routes.

L'entrepreneur doit utiliser les chemins d'accès seulement durant les heures régulières de travail, à moins d'une autorisation spéciale.

#### IV – TRAVAUX EN MILIEU AGRICOLE

##### **Excavation (fondations des supports)**

Là où doivent avoir lieu des excavations, le sol arable doit être séparé du sol inerte et déposé dans un endroit où il pourra être récupéré. L'épaisseur de la couche de terre arable à enlever est établie en fonction de la pratique agricole et est d'au plus 30 centimètres.

Si les déblais provenant de l'excavation ne servent pas au remblayage, ils sont transportés dans un lieu autorisé ou à un endroit convenu avec le propriétaire, dans le respect des normes environnementales. Par contre, si on prévoit utiliser les déblais pour le remblayage, on doit les entreposer temporairement en prenant soin de ne pas les mélanger avec la terre arable ; pour ce faire, on retirera au préalable la terre arable de surface présente à l'endroit du dépôt et on la déposera sur une membrane.

Si le remblayage nécessite des matériaux granulaires, ceux-ci sont déposés au fur et à mesure dans la fosse d'excavation. S'il est nécessaire d'entreposer des matériaux granulaires sur les lieux des travaux, on doit d'abord retirer la terre arable de surface.

La circulation autour des ouvrages est limitée au minimum. Les travaux sont planifiés de façon à éviter le mélange du sol inerte et du sol arable. Les monticules de sol arable déposé au pied des supports ne doivent pas excéder 15 centimètres de hauteur par rapport au sol environnant, ce qui est suffisant pour pallier le tassement différentiel. Dans le cas où, malgré tous les efforts, le sol inerte est mélangé au sol arable, les premiers 30 centimètres de sol seront remplacés par du sol arable provenant d'un endroit approuvé par le représentant du promoteur, et des mesures seront prises pour rétablir le niveau de fertilité du terrain. On agira de même si du gravier est répandu par accident.

Des précautions doivent être prises pour qu'aucun sédiment provenant du pompage des fosses d'excavation ne se répande dans les cours d'eau ou les fossés avoisinants.

Les eaux pompées sont déversées dans des bassins de sédimentation et les sédiments sont éliminés au fur et à mesure par camion ou par tout autre moyen autorisé par le promoteur (par exemple par l'emploi d'une pompe séparatrice).

Des clôtures sont installées autour des excavations non surveillées. Elles doivent être sécuritaires et répondre aux conditions environnantes.

Le matériau de remblayage est compacté conformément au devis, et la couche de sol arable est rétablie sur la même épaisseur que celle qui a été enlevée.

Si des cailloux font surface à la suite des travaux d'excavation, on effectue un épierreage mécanique ou manuel jusqu'à ce que les conditions soient similaires au milieu environnant. Le matériau recueilli est éliminé dans un lieu autorisé ou à un endroit accepté par les deux parties, dans le respect des normes environnementales.

### **Assemblage et montage des supports**

On doit assembler les supports de façon à nuire le moins possible aux cultures existantes et aux pratiques culturelles. L'aire de travail doit être minimale et ses limites balisées.

Tous les débris métalliques doivent être retirés du terrain.

### **Déroulage des conducteurs**

Des précautions particulières sont prises pour la protection des personnes, des animaux, des cultures et de la végétation durant le déroulage des conducteurs.

L'entrepreneur choisit de préférence les endroits de moindre valeur agricole comme aires de déroulage. L'espace doit être minimal et ses limites balisées.

Les débris de fils ou tout autre débris métallique sont ramassés immédiatement.

Les excavations faites pour les ancrages des conducteurs doivent être asséchées.

L'entrepreneur doit également compacter le matériau de remblai et rétablir 30 centimètres de sol arable de surface aux différents points d'ancrage.

### **Approbaton des travaux**

À la fin des travaux, le représentant de l'entrepreneur et le propriétaire visitent l'emprise et les chemins d'accès afin de s'assurer que tous les débris ont été retirés et que le terrain a été remis en état à la satisfaction du propriétaire.

En cas de différent les parties demandent la médiation de l'Unité d'implantation du projet.

## **V - MESURES DE SANTE, SALUBRITE, ET SECURITE**

L'entrepreneur doit prévoir un plan de communication pour sensibiliser tous les employés aux risques et aux moyens de prévenir les maladies sexuellement transmissibles dont le VIH/SIDA.

L'entrepreneur doit prévoir un plan de communication pour sensibiliser tous les employés aux risques et aux moyens de prévenir les maladies hydriques (diarrhées, dysenterie amibienne, choléra). Il est conseillé de ne boire que de l'eau traitée ou bouillie, de l'eau potable des sources aménagées ou des bornes fontaines.

L'entrepreneur devra s'assurer de la qualité et disponibilité de l'eau potable par le biais de contrôles périodiques effectués par un personnel qualifié ou formé à cette fin. Si l'eau s'avère non potable suite à un contrôle, l'entrepreneur doit tout mettre en œuvre pour aviser le personnel du chantier et remédier rapidement à la situation.

Les employés doivent éviter d'uriner et de faire les selles dans la nature et à plus forte raison à proximité des cours d'eau, lacs et mares. L'entreprise installera à ses frais des latrines améliorées sur la base du chantier.

Les produits pharmaceutiques de premiers soins, convenablement conservés, doivent être disponibles sur la base de l'entreprise et sur les chantiers des travaux.

L'entrepreneur veillera à ce que les conditions de travail ne mettent en danger ni la santé, ni la vie des travailleurs. Il fournira à chaque travailleur une tenue de protection et il veillera à ce qu'aucun travailleur ne soit admis sur le chantier sans ce minimum de protection.

L'entrepreneur prendra toutes les précautions nécessaires lors des travaux tels que constructions en hauteur, manipulation de produits dangereux, émanation de poussière, protection contre les bruits et explosions. Il veillera à ce que toutes les constructions soient faites dans les règles de l'art, notamment en ce qui concerne les échafaudages, les filets de protection, le hissage de charges.

L'entrepreneur veillera à ce que le chantier soit visiblement délimité et que son accès soit strictement réglementé pour limiter les risques d'accidents.

## VI - INTERDICTIONS SUR LE CHANTIER

Toute forme de braconnage est interdite et les armes à feu ne sont pas admises sur le chantier.

Il est interdit de posséder et de consommer de l'alcool ou de la drogue sur le chantier.

Il est interdit de couper des arbres sans autorisation ou d'encourager la coupe et le sciage du bois.

Il est interdit d'émettre, déposer, dégager ou rejeter une matière dangereuse dans l'environnement.

Toute traversée à gué de cours d'eau est interdite à moins d'avoir obtenu les autorisations requises des autorités concernées. Le cas échéant, la machinerie doit être nettoyée dans les aires prévues à cet effet et des mesures appropriées doivent être prises pour restaurer les lieux lorsque la traversée du cours d'eau a perturbé le milieu.

Il est strictement interdit d'enfouir ou de transporter hors du site du déboisement des résidus ligneux, à moins que ce ne soit dans un site autorisé.

Il est interdit de se servir de vieux pneus ou d'huiles usées pour aider à la combustion des résidus de coupe.

## VII - REMISE EN ÉTAT DES LIEUX

L'entrepreneur doit débarrasser le chantier de tous les matériaux, les installations temporaires (ponts, ponceaux, etc.) et les déchets, et ce selon les procédures appropriées et autorisées.

L'entrepreneur doit procéder aux travaux nécessaires pour la réhabilitation des sites endommagés.

L'entrepreneur doit épandre de la terre végétale sur la surface des sites de travail ou d'entreposage.

L'entrepreneur doit niveler le terrain de façon à lui redonner sa forme d'origine ou une forme s'harmonisant avec le milieu environnant.

L'entrepreneur doit abattre les arbres endommagés lors des travaux et en disposer selon leur valeur commerciale ou les remettre à leur propriétaire le cas échéant.

L'entrepreneur doit restaurer le profil d'origine du lit et des berges des cours d'eau.

L'entrepreneur doit restaurer le drainage naturel et creuser au besoin des fossés pour assurer un bon drainage du terrain.

L'entrepreneur doit remettre les chemins dans un état similaire ou supérieur à leur état d'origine.

Si les travaux de forage atteignent la nappe phréatique, l'entrepreneur doit remplir le trou avec du gravier ou du sable propre dans la région de la nappe phréatique et prendre les mesures nécessaires afin de créer un bouchon de matériau imperméable en surface du trou pour empêcher l'infiltration de contaminants dans celui-ci.

L'entrepreneur doit remplir les trous de sondage et reconstituer les conditions géologiques d'origine avec les matériaux excavés.



**APPENDIX 11 : NOISE STANDARDS IN UGANDA**

SCHEDULES

FIRST SCHEDULE  
MAXIMUM PERMISSIBLE NOISE LEVELS

PART 1  
Regulations 6(1)

Maximum Permissible Noise Levels for General Environment

FACILITY	NOISE LIMITS dB (A) (Leq)	
	DAY	NIGHT
Any building used as hospital, convalescence home, home for the aged, sanatorium and institutes of higher learning, conference rooms, public library, environmental or recreational sites.	45	35
Residential buildings	50	35
Mixed residential (with some commercial and entertainment).	55	45
Residential + industry or small scale production + commerce.	60	50
Industrial	70	60

Time Frame: use duration

Day 6.00 a.m. - 10.00p.m  
Night - 10.00 p.m. - 6.00a.m

The time frame takes into consideration human activity.

PART II  
Regulation 6(2)

Maximum Permissible Noise Levels (Continuous or intermittent noise) from a Factory or Workshop

Leq dB (A)	Duration (Daily)	Duration (Weekly)
85	8 hours	40 hours
88	4 hours	20 hours
91	2 hours	10 hours
94	1 hour	5 hours
97	30 minutes	2.5 hours
100	15 minutes	1.25 hours
103	7.5 minutes	37.5 minutes
106	3.75 minutes	18.75 minutes
109	1.875 minutes	9.375 minutes

Noise Levels shall not exceed a Leq of—

Factory/Workshops 85 dB (A)  
Offices 50 dB (A)  
Factory/Workshop Compound 75 dB (A).

PART III  
Regulation 6(3)

Maximum Permissible Noise Levels for Impact or Impulsive Noise

Sound Level dB (A) (Lmax)	Permitted number of Impulses or Impacts per day
140	100
130	1,000
120	10,000

PART IV  
Regulation 6(4)

Maximum Permissible Noise Levels for Construction Site

Facility	Maximum noise level permitted (Leq) in dB (A)	
	Day	Night
Hospital, schools, institutions of higher learning homes for the disabled, etc	60	50
Buildings other than those prescribed in paragraph (i).	75	65

PART V  
Regulation 6 (5)

Maximum Permissible Noise Levels for Public Announcement System or Device

Noise Control Zone	Sound Level db (A) (Leq)	Sound Level dB (A) (Leq)
Residential	60	40
Commercial	75	50
Industrial	85	65

Time Frame:

Day - 6.00 a.m. - 10.00 p.m.  
Night- 10.00 p.m. - 6.00 a.m.

The time frame takes into consideration human activity

PART VI  
Regulation 6(6)

Maximum Permissible Noise Levels for Places or Establishment of Entertainment

Noise Control Zone	Sound Level db (A) (Leq) Day	Sound Level dB (A) (Leq) Night
Residential	60	40
Commercial	75	50
Industrial	85	65

Time Frame:

Day 6.00 a.m. - 10.00 p.m.  
Nigh 10.00 p.m. - 6.00 a.m.

The time frame takes into consideration human activity

PART VII  
Regulations 6(7)

Maximum Permissible Noise Levels for Places or Areas of Worship

Noise Control Zone	Sound Level dB (A) (Leq) Day	Sound Level dB (A) (Leq) Day
Residential	60	40
Commercial	75	50
Industrial	85	65

Time Frame:

Day 6.00 a.m. - 12.00 p.m.

Night 12.00 a.m. - 6.00 a.m.

The time frame takes into consideration human activity.

#### PART VIII

#### Regulations 6(8)

#### Maximum Permissible Noise Levels for Accelerating Vehicles

	VEHICLES CATEGORY	MAXIMUM SOUND LEVEL IN dB (A)
1.	Vehicles intended for carriage of passengers and equipped with not more than nine seats, including the driver's seat	78
2.	Vehicles intended for carriage of passengers, and equipped with not more than nine seats, including the drivers seat and having maximum permissible mass of more than 3.5 tones:-	
a	with an engine power of less than 150KW	80
b	with an engine power of less than 150 KW	83
3.	Vehicles intended for carriage of passengers and equipped with more than nine seats including the drivers seat: vehicles intended for carriage of goods:-	
a	with a maximum permissible mass not exceeding 2 tonnes.	79
b	with a maximum permissible mass exceeding 2 tonnes but not exceeding 3.5 tonnes.	80
4.	Vehicles intended for the carriage of goods and having a maximum permissible mass exceeding 3.5 tonnes.	
a	with an engine power of not less than 75 KW	81
b	with an engine power of not less than 75 KW but less than 1.50 KW.	83
c	with an engine power of not less than 150KW	84