



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

VOLUME 2 B – UGANDA-KENYA INTERCONNECTION ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

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LIST OF ABBREVIATIONS

AfDB	African Development Bank / Banque Africaine de Développement
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora / Convention sur le commerce international des espèces de faune et de flore sauvages menacées d'extinction
DRC / RDC	Democratic Republic of Congo / République Démocratique du Congo
EMCA	Environmental Management and Coordination Act
ERA	Electricity Regulatory Authority (Uganda)
KenGen	Kenya Electricity Generating Company Ltd
KPLC	The Kenya Power and Lighting Co. Ltd
NEMA	National Environmental Management Authority
NEPAD	New Partnership for Africa's Development / Nouveau Partenariat pour le Développement de l'Afrique
NELSAP / PAALEN	Nile Equatorial Lakes Subsidiary Action Programme / Programme Auxiliaire d'Action des pays des Lacs Equatoriaux du Nil
ONU	United Nation Organization / Organisation des Nations Unies
UEDCL	Uganda Electricity Distribution Company Ltd
UETCL	Uganda Electricity Transmission Company Ltd
UWA	Uganda Wildlife Authority
WB	World Bank / Banque mondiale

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1. INTRODUCTION

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, 230 km long, between the substations at Mbarara in Uganda and Kigali 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 109 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 230 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 62 km, 110 kV power line between Goma (DRC) and Mukungwa (Rwanda), closing thereby the loop around Lake Kivu and
- constructing a 15 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, this Volume 2B of the study concerns the Environmental and Social Impact Study of the construction of a new 220 kV transmission line. The purpose of this line is the reinforcement of the existing interconnection between Uganda (Jinja substation) and Kenya (Lessos substation).

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 development of the ESIA for Uganda-Kenya interconnection project, 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 NGO 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 Jinja and Lessos 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. The affected households were the subject of a survey in order to determine the activities and structures present in line route, etc. 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

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 Kenya and Uganda. Today, the rate of access electricity is lower than 15 % for Kenya and 7 % for Uganda. 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. The power availability will develop several economic projects, particularly in developing agro processing activities.

2.2. BENEFIT OF ENERGY ACCESS

Today, energy as main way for development, the increase of electricity access will certainly contribute to millennium development goals achievement as defined by UN, of which particularly the poverty and hunger reduction.

Indeed, energy appears as an essential tool without it a sustainable development is not possible. Thus, the energy access especially electrical power constitutes an essential tool for development thanks to its effects:

A. On poverty and the hunger

The electricity access allows a INGOer working day thanks to the access to light and saving of time and money (easier access to energy and water). Moreover, the use of electrical and energy equipments for the irrigation allows an increase in small-scale and agricultural productivity.

The availability of energy is also a factor of economic development seeing that it allows the development of small and medium-sized undertakings as well as the mechanization of the agro processing activities (refrigeration).

B. On health

The presence of electricity in health centers allows the conservation of medicine (refrigeration) and an increased safety in night during the childbirth. Moreover, the access to the communication technologies (television, radio, Internet) facilitates the transfer of knowledge on basic health matter, like protection against the VIH-AIDS and malaria as well as remote medicine. Lastly, the electricity access, by improving the living and working conditions of nurses, encourages them to stay in the villages.

C. On education

The saving of time thanks to energy and the access to the electrical light allow to children to study in the evening under good conditions. The availability of electricity facilitates access to the Internet and remote education, increasing the access to knowledge. The presence of electricity also encourages the teachers to stay in rural areas and not to go to settle downtown. Moreover, the access to electricity and water at school allows to improve the teaching conditions and organization of the evening courses for adults.

D. On the improvement of the living conditions particularly of the women

In a household, the domestic tasks often fall to the women. The access to water can be improved thanks to the presence of pumps. In addition, the mechanization projects of certain activities (husking, etc) can reduce the time and the effort of work. The projects in food development can enable them to have own incomes which ensure an increased self-sufficiency and a better quality of life to them. Moreover, the access to media (television, radio, Internet) also allows to the woman image to move within the traditional societies.

E. On the limitation of the rural migration

The improvement of living conditions of the rural households and the creation of local jobs thanks to the economic development allow reducing the rural migration incentives.

F. On the environment

The electricity access in household limits the use of cell and batteries, but also to the biomass, often overexploited. The use of the hydro electricity reduces greenhouse gases production such as CO₂ from diesel or gasoline combustion in the existing generators.

2.3. GENERAL CRITERIA OF LOCALIZATION

The transmission line of the interconnection between Uganda and Kenya was planned by KPLC and UETCL as having to follow in parallel the existing 132Kv transmission line: Owen - Tororo – Lessos Falls.

The studied layout follows the existing line Jinja - Lessos. It represents the most direct axis between two points to be connected and is juxtaposed with the existing line. In general, the layout avoids the villages and high density areas, decreases territorial division, benefits from the existing access road, etc.

The only variation compared to the existing line is envisaged starting from the village of Waitambogwe in Uganda, while going towards the east, instead of south-east, along the road, through rice fields with Namiganda and Kiteigalwa and then returning along the existing line close to the zone of Buwanga. This variation is caused by the presence of the old road Jinja - Tororo, which passes very close to the existing line, and the presence of a very dense residential area between the road and the line. The necessary space to the new line is thus not available near the existing line. This variation measures 32 km.

In addition, a local optimization of the layout was carried out, that allows avoiding the most sensitive or restricting elements on the crossed territory such as schools, churches, etc.



Photo 1. Existing transmission line, Nandi escarpment near Kabiyet



Photo 2. Existing TL between Tororo and Malaba, Uganda

2.4. THE HOLD

The prefaisibility study concluded that the maximal width retained for the hold is 30 meters maximum. No permanent structure will be authorized in the hold.

The complete clearing of the hold where the line crosses wooded zones is limited to a band from 5 to 10 meters along the axis of the center to allow the conductor unwinding. Apart from this band, but inside the hold, all vegetation superior to three meters in height will be cleared, including the trees presenting a potential danger out of the hold (see figure 1 in the following page).

Notwithstanding what precedes, certain plantations, in particular the banana trees could be authorized in the hold. In all cases, the cultures of which the height does not exceed three meters will be authorized as well as the breeding or other compatible activities. This kind of agreement thus allows to the user to maintain his activities (e.g. agriculture, breeding, plantations, etc.) provided that they do not harm the network operation.

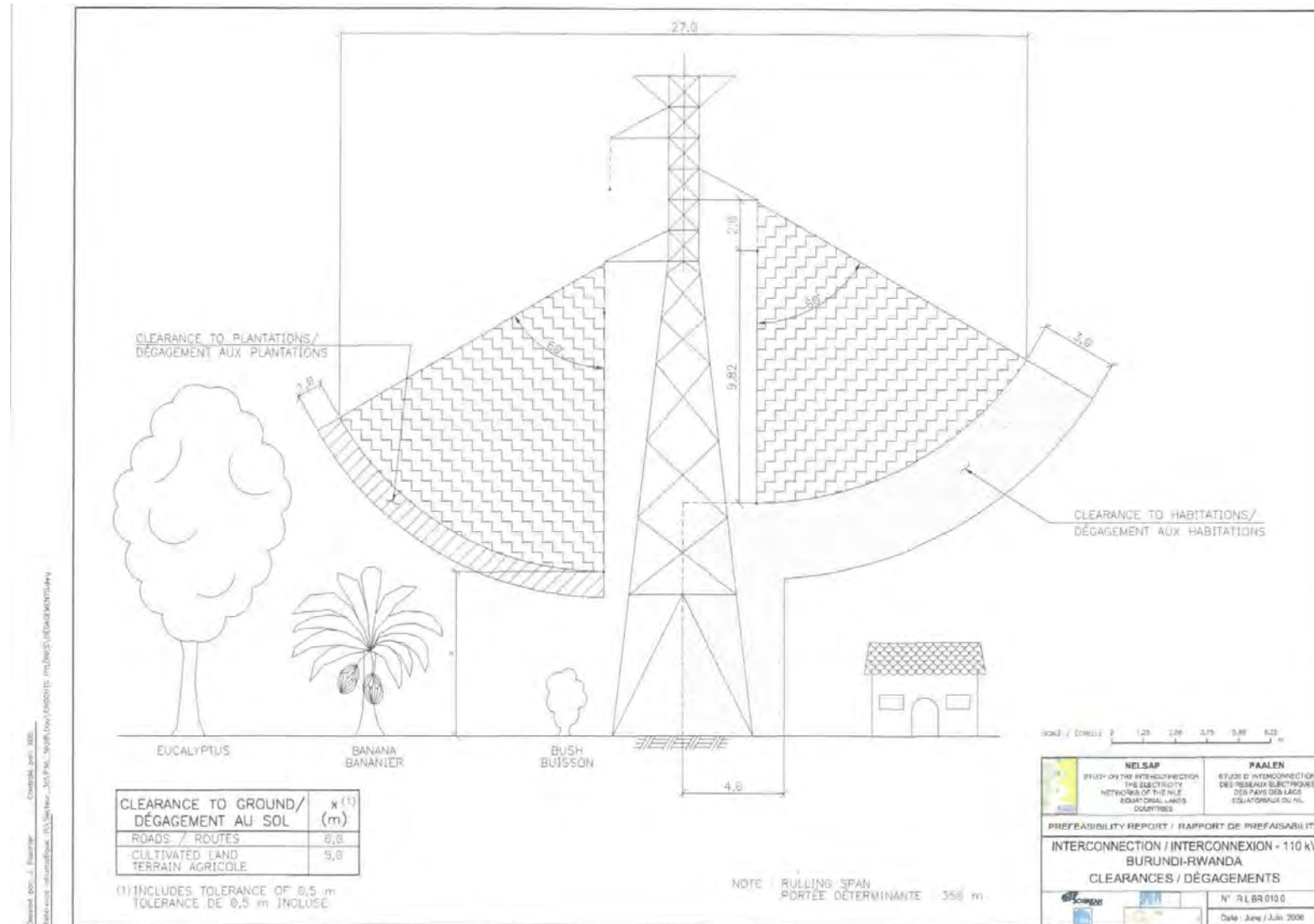
Although this approach can be different from the methods used by the owners, the experiment from other projects in the area and at the international level showed that by engaging the local communities present along the line for the maintenance of the hold and the line monitoring, the operational limits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

Moreover, the final positioning of the pylons, if it is well done, is a factor which could still reduce the needs for clearing.

The land acquisition will be limited to the pylon locations. As agriculture is based on a plantation and a manual harvest, the production losses will be small. Although the surface of the base of the pylons can reach 100 m² (10 X 10 meters), normally lost surface is limited to the 4 columns of concrete base, that means 6.25 m² (2.5 X 2.5 m) in total. On ground of lower bearing capacity, each base can be between 0.5 and 1.0 m wider. In general, the grounds are excavated on a 3.5 m maximum depth.

In addition, the act of skirting the hold of the existing line will facilitate also the access, not only during work, but also during the line maintenance activities in operation phase. Thus, it will not be necessary to arrange a new permanent access road for Jinja-Lessos line. The already existing road will be used during the maintenance and construction work of the new line.

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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 there is a transmission line of 132 KV which connects the Kiira Power Plant to Tororo power station and the border of Kenya. Thus, during the site visit, it has found that the majority of the towns and the commercial centers in the districts of Jinja and Iganga were electrified. This means that the voltage transformation will not be necessary in many places. However some communities of the sub-districts of Jinja, Bugiri and Tororo are not connected to any electric infrastructure. The project will allow, as far as possible, electrification of these centers and in particular of health centers, teaching institutions and administrative centers. We can state particularly the Katerema secondary school, Iyolwa trade center and other commercial centers in the district of Bugiri

In Kenya, there are several programmes of rural electrification in the zone of the project, in particular in North Nandi, North Kakamega and South Bungoma.

Note: Compensation and resettlement cost indicated above includes only estimates for land, individual structures and public health and safety assistance. Figures for crops, community structures and graves could not be established.

2.6. INTERCONNECTION UGANDA-KENYA

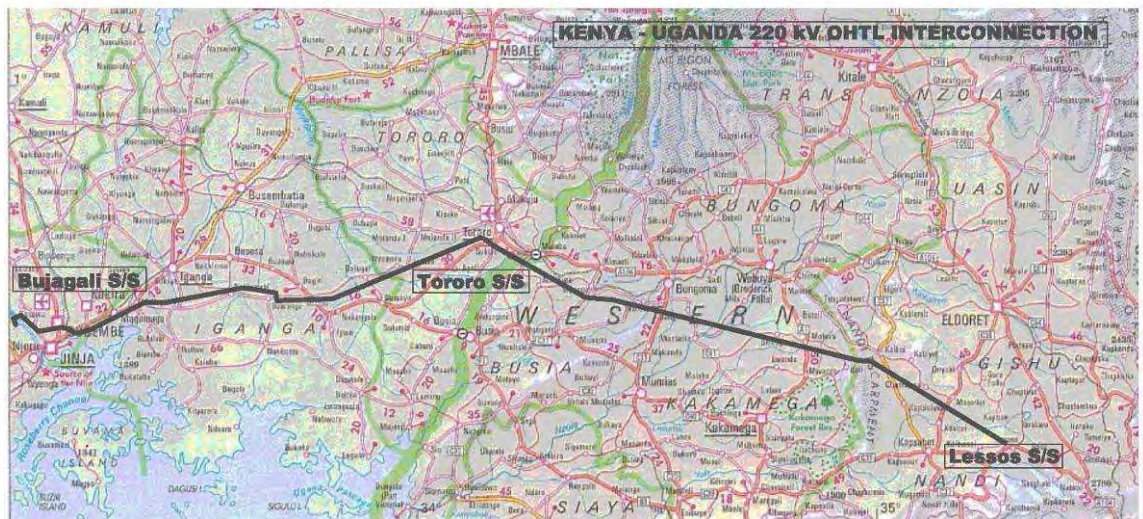
2.6.1. LINE

Bujagali – Tororo – Kenya border

The 220 kV interconnection transmission line Uganda – Kenya starts in Uganda from the planned Bujagali HPP's substation about 10 km northwest of Owen Falls in Jinja and joins the route of the existing Owen Falls – Tororo 132 kV transmission line in Buwenda village. Then the interconnection line runs parallel to the existing line. There is only one deviation from the planned route starting from Waitambogwe village and returning at Buwanga area. The reason for this deviation is the proximity of the old Jinja – Tororo road, which runs too close to the existing line and also due to high density population dwelling between the line and road. For these reasons there is no adequate space for the interconnection line in the vicinity of the existing line within the stated area. The length of diversion stretch is about 32 km. The total length of this stretch of the line is 124 km.

Tororo – Uganda border – Lessos

The interconnection transmission line section in Kenya starts from Ugandan Border, some 10 km East of Tororo substation, and runs alongside the existing Tororo – Lessos 132 kV transmission line. The total length of this section of the line is 132 km.



Line's track between Jinja (Uganda) and Lessos (Kenya)



Photo 3. Existing transmission line coming out from Tororo substation

2.6.2. POSTS

2.6.2.1. JINJA/BUJAGALI

The proposed terminal points of Kenya-Uganda interconnection are at Lessos 220/132 kV substation in Kenya and Bujagali HPP's 220/132 kV substation in Uganda.

Bujagali 220/132 kV substation will be built in connection with the Bujagali 200 MW HPP project, scheduled to be commissioned in 2011. The plant and the associated substation will be located near town of Jinja, ca. 10 km northwest from existing Nalubaale HPP, which currently is the main source of generation in Uganda. The station will be connected to Kampala area, Kawanda substation via 220 kV double circuit line (initially operated at 132 kV) and by two interbus transformers to Ugandan 132 kV transmission system.

The voltage level of the interconnection would be 220 kV ($U_m = 245$ kV) and terminal stations would be Lessos in Kenya and Bujagali in Uganda. Based on n-1 system planning principle, a double circuit transmission line has been recommended.

2.6.2.2. TORORO

As both the terminal stations are located quite far from the border, construction of a new 220 kV substation is recommended in vicinity to the border, roughly in the middle of the Bujagali - Lessos transmission line route in order to bring the point of sales / point of supply (as well as the revenue metering) close to the Uganda-Kenya border.

The obvious choice for location would be next to the existing Tororo 132/33 kV substation in Uganda side ca. 5 km from the border as the proposed line route passes the said station. Furthermore, UETCL has expressed interest to interconnect the 220 kV and 132 kV systems in Tororo station through interbus transformers in near future for supply of the Tororo area load.

Other planned projects related to the interconnection project include construction of 220 kV line(s) between Lessos and Olkaria. This would facilitate higher rate of transmission than presently planned and agreed upon.

2.6.2.3. LESSOS

Lessos is an existing 220/132 kV substation with a radial 220 kV line feeder to Turkwel HPP and with two interbus transformers for interconnection to Kenyan 132 kV transmission system. It has to be upgraded for the new connection.

2.7. PROPOSED LIST OF WORKS

Most of the construction activity during project implementation will involve the erection of the transmission line. The line will use self-supported steel lattice towers with concrete foundations as commonly used in Uganda and Kenya.

- Basic information for the 220 kV Jinja – Lessos transmission line is:
- Total line length: 259 km (127 Km in Uganda and 132 km in Kenya)
- Approximate number of towers: 705 (326 in Uganda and 379 in Kenya)
- Approximate average span length: 380 m;
- Width of line corridor ROW: 30 m
- Acces road is already present in the parallel 132 Kv line

2.8. ANCILLARY FACILITIES AND SERVICES

The following construction and post-construction facilities and services will be required.

Tower erection pads, this follows tower foundation excavation/construction and uses the same area used by civil works.

Access for stringing of conductors is along the line corridor.

Access to tower sites will be via the line corridor whenever possible to reduce the number of temporary access roads required during construction.

A number of permanent access roads will be required for maintenance purposes along the transmission line route.

Other ancillary facilities include: construction camps, borrow pits, material storage pads, etc.

2.9. OPERATION AND MAINTENANCE ACTIVITIES

2.9.1. LINE ROUTE (ROW)

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 is likely to 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 thoroughfare along the line route will be required in the absence of a public road. This road is already present in the existing 132 Kv line and does not have to be cleared except in the 32 km section where the new infrastructure deviate from the existing line. Maintenance is normally carried out twice a year (dependent on site conditions and utilities planning).

2.9.2. SUBSTATION MAINTENANCE

An ongoing maintenance program will be required for the substations. This will involve periodic replacement of coolants/lubricants in the transformers. Both UETCL and KPLC 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.

2.10. 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 259 km in length (an area of 777 ha) from Jinja in Uganda to Lessos in Kenya. 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, scrub and undergrowth above a height of 150 mm 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 5 m x 5 m (25 m²) 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.

2.11. PROJECT IMPLEMENTATION

In line with similar projects implemented in Uganda and Kenya, 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 an updated resettlement action plan, relocation of structures, private (houses, kitchen, latrines, etc.) and public (school, churches, etc.). Actual mobilization for construction work will follow within six months of final design. 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 Kenya.

The project is planned to be completed within 24 months from the date of signing of contracts (no date has been set).

The Project schedule is showed on the next page.

2.12. PROJECT COST 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 81 millions USD. This value includes costs for both Kenya (42) and Uganda (40).

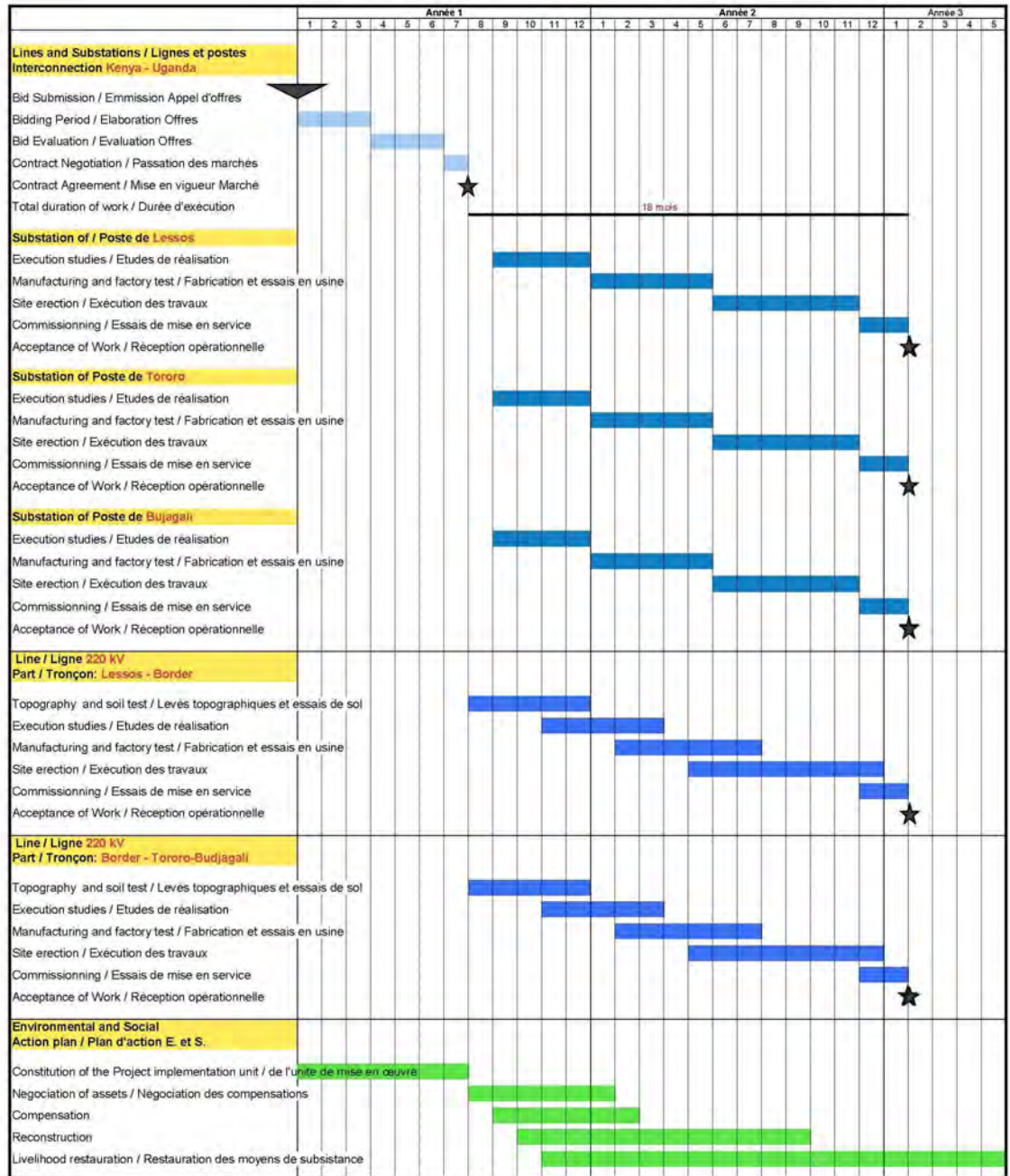
It does includes a cost of 6 180 500 million USD for the mitigation program for environmental and socio-economic impacts of the Project, covering compensation for the loss of permanent and temporary assets (5 784 000) and an Environmental and Social Management Plan (396 500).

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.

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INTERCONNEXION: KENYA - UGANDA
Project Schedule / Programme Prévisionnel de Travaux



3.

INSTITUTIONAL AND LEGAL FRAMEWORK

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 Jinja – Kenya border transmission line (220 kV) 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

In Uganda 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 needs to comply with the environmental and social review requirements of this lender. 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. There are describe here.

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 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 an 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 use of natural resources (Art. 237). The management of environmentally fragile resources such as natural lakes, rivers, wetlands, national parks, game reserves and forest reserves in vested in the state in accordance with the principle under Article 237 (2) (b).

National Environmental 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. EIA 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 (EIA) Regulations, 1998

NEMA has issued guidelines on Environmental Impact Assessment (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 general 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 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 impinge 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 bonafide¹ 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.

¹ Land occupied and utilised for 12 years or more before the 1995 Constitution, unchallenged by the registered owner

3.1.1.2. INTERNATIONAL AGREEMENTS

Uganda is party to several international environmental conventions, as summarized in Table 1. Only these with relevance to the interconnection project are listed.

**Table n° 1 - INTERNATIONAL AGREEMENTS RATIFIED BY UGANDA/
 CONVENTIONS INTERNATIONALES RATIFIÉES PAR L'UGANDA**

International Convention Convention internationale	Ratified by Uganda Ratifiée par l'Ouganda	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 etc.);
- Ministry of Energy and Mineral Development;
- Ministry of Agriculture, Animal Industry and Fisheries.

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 Committee (DEC) should be established as created by the National Environment statute, 1995. The DEC is a subcommittee of the District Council (DC). The DEC consists of Councillors². 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 District Council (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 District Environment Officers (DEO) ;
- Advise and consult DEC, DEO and DPTC on environmental issues; and mobilize members of the public to initiate and participate in environmental activities.

² Councillors are representatives for each of the sub-counties who form the District Council.

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.

Uganda Electricity Transmission Company Limited (UETCL)

UETCL is responsible for the electricity transmission system in Uganda and purchase the power generated by the Bugoye small Hydropower Project.

Uganda Electricity Distribution Company Limited (UEDCL)

All distribution lines in Uganda are under the responsibility of UEDCL. A 10 km 33 kV line will be constructed to evacuate power from the powerhouse to the sub-station at Nkenda. UEDCL will manage this line.

3.2. KENYA

3.2.1. LEGISLATIVE FRAMEWORK

3.2.1.1. NATIONAL LEVEL

The following statutes and regulations have a bearing on the power sub-sector:

- The Constitution of Kenya;
- The Energy Act No. 12 of 2006 of the Laws of Kenya;
- The Environmental Management and Co-ordination Act, Act No. 8 of the Laws of Kenya (EMCA);
- The Water Act, Chapter 372 of the Laws of Kenya;
- The Restrictive Trade Practices, Monopolies and Price Control Act, Chapter 504 of the Laws of Kenya;
- The Petroleum Development Levy Fund, Act No. 4 of 1991;
- The Road Maintenance Levy Fund Act, Act No. 9 of 1993 of the Laws of Kenya;
- The Wildlife (Conservation and Management) Act, Chapter 376 of the Laws of Kenya;
- The State Corporations Act, Chapter 446 of the Laws of Kenya;
- Gazette Notices Establishing Restructuring Task Force and Emergency Electricity Co-ordination Committee;
- Procurement Regulations 2001.

The following Land Acts:

- The Government Land Act (Cap 280)
- The Registration of Titles Act (Cap 281)
- The Land Titles Act (Cap 282)
- The Trust Lands Act (Cap 288)
- The Registered Land Act (Cap 300)
- The Transfer of Property Act and the Land (Compulsory Acquisition) Act 1968
- The Foreign Investments Protection Act (Cap 518);
- The Companies Act (Cap 486);
- The Trade Disputes Act (Cap 234) and the Employment Act (Cap 226).

The whole process of acquiring right of way in private or public land for installation of electric lines is spelt out in the Energy Act, 2006 under Part III, Sections 46 to 56.

- Section 46: Permission to survey and use land to lay electric supply lines
- Section 47: Assent to proposal
- Section 48: Objection to proposal
- Section 49: Procedure before Commission (in the event of seeking arbitration by ERC)
- Section 50: Payment of compensation by Commission
- Section 51: Power of the licensee to enter land to inspect and repair lines
- Section 52: Liability of licensee to make compensation for damage
- Section 53: Laying of electric supply lines along roads, railways, etc
- Section 54: Compulsory acquisition of land
- Section 55: Power to lop trees and hedges
- Section 56: Electric supply lines

The principal law of the electricity sub-sector in Kenya is the Energy Act, 2006, which among other things establishes the Energy Regulatory Commission (ERC) with the objectives and functions of regulating the industry.

Several other statutes complement the Energy Act in the regulation of the power sub-sector. These statutes are listed below:

Environmental Management and Co-ordination Act, Act No. 8 of 1999

The Environmental Management and Co-ordination Act No. 8 of 1999 (EMCA) is an Act of Parliament that provides for the establishment of an appropriate legal and institutional framework for the management of the environment. Prior to its enactment in 1999, there was no framework environmental legislation. Kenya's approach to environmental legislation and administration was highly sectoral and legislation with environmental management components had been formulated largely in line with natural resource sectors as aforementioned.

EMCA was developed as a legal framework and therefore it is the only single piece of legislation that contains the most comprehensive system of environmental management in Kenya. The Act provides for the establishment of appropriate institutional and regulatory frameworks for the management of the environment in Kenya. The Act is based on the recognition that improved legal and administrative co-ordination of the diverse sectoral initiatives is necessary for enforcement of national management of the environment, and is the instrument with which the state enforces the fundamental principle that the environment constitutes the foundation of our national, economic, social, cultural and spiritual advancement.

Section 3 of the Act enunciates the General Principles that will guide the implementation of the Act. Every person in Kenya is entitled to a clean and healthy environment and has the duty to safeguard and enhance the environment.

The Act outlines environmental impact assessment procedures, including environmental audit and monitoring procedures applicable to electrical infrastructure including power generation and transmission, and environmental quality standards.

Kenya is operating under vision 2030 in which it is expected to transform into an industrial state by the year 2030. With the expected increased level of industrialization come the many challenges of environmental management. It is in anticipation of this that the Government of Kenya set up NEMA. Its main task is to make sure industrialists and other developers comply with the laid down provisions of the Act.

EMCA Provisions

The Environment Act (EMCA), being a framework law, has the main focus of coordination and supervision of the cross-cutting issues. The details of these cross-cutting issues are to be found in implementation regulations and guidelines. This Act is expected to contribute to poverty reduction, facilitate increased economic prosperity by enhancing resource productivity, protecting the environment, redressing past environmental mistakes, and empowering the population.

Part six of the Act makes provision for the carrying out of environmental impact assessments (EIA) for upcoming projects. An EIA is a preliminary measure at project planning stage to take into account the likely negative impacts of a project. On the basis of an EIA REPORT, measures to reduce undesirable effects shall be recommended to the project developer. Part seven of the same act deals with environmental auditing and monitoring of all activities that are likely to have significant effects on the environment. The auditing exercise should reveal how the company is operating as per the stated environmental quality standards that are contained in part 8 of the Act. Part 9 and 10 of the Act makes provision for environmental restoration orders, conservation orders and easements and inspection, analysis and records respectively. Part 13 of the Act provides for environmental offences.

The Act is to be implemented through an institutional set up that includes the National Environment Council (NEC), NEMA, the Public Complaints Committee, the National Environment Tribunal and the Board of Trustees for the Environment Trust Fund among others. NEMA enforces the law through its appointed lead agencies.

The Water Act, Chapter 372 of the Laws of Kenya

The Water Act vests water resources in the Government and establishes rules and procedures for use of water. In relation to power projects, water apportionment approval is necessary prior to the construction of pumped-storage schemes. Power generation has to compete with other water uses within the framework of the Water Act.

Local Government Act, Chapter 265 of the Laws of Kenya

The Energy Act requires any applicant for a licence to liaise with Local Authorities within the jurisdiction of the applicant's proposed activities for purposes of obtaining consent for such activities prior to submitting application for a licence to the energy regulator.

The Standards Act, CAP 496 of the Laws of Kenya

The Electricity Regulatory Board (and now its successor, the ERC) is empowered to enforce safety regulations and to ensure that electrical apparatus and works meet the standards set by the Kenya Bureau of Standards (KEBS) or, where no such standards exist, with the relevant international standards approved by the Kenya Bureau of Standards.

3.2.1.2. INTERNATIONAL AGREEMENTS

As there is no central organization to which states can turn and no world government in which enforcement powers are vested, the enforcement of international environmental law prescriptions is largely found operative through the central and local governments' policies and regulations. State parties to international environmental law instruments have to enact Local Government byelaws to give effect to and enforce international environmental law prescriptions. Accordingly, the role of each state in the enforcement of international environmental law becomes crucial to the success of international prescriptions.

In most cases, selected provisions of an international agreement may be transformed into local government bylaw for implementation, quite often even without reference to the agreement itself. For instance, most African wildlife laws have provisions that domesticate the provisions of the 1968 African Convention on the Conservation of Nature and Natural Resources and the 1973 Convention on International Trade in Endangered Species (CITES) of Wild Fauna and Flora without specific reference to the conventions in their objects clauses or titles.

Further, a number of national environmental statutes adopted during the post-Rio era have several provisions that seek to implement the Convention on Biological Diversity without making specific reference to the Convention itself. The objectives of the Convention are to conserve biological diversity, promote the sustainable use of its components, and encourage equitable sharing of the benefits arising out of the utilization of genetic resources. Such equitable sharing includes appropriate access to genetic resources, as well as appropriate transfer of technology, taking into account existing rights over such resources and such technology.

Where the implementation of an international environmental agreement requires the establishment of a new institutional framework in the country's public service structure, the decision makers will have to consider factors such as the relationship of the new institution with the pre-existing ones, the capacity of the new institution to effectively discharge its mandate, the impact of the new institution on the socio-economic and political structure of the country. This will be especially important where the functions and duties of the proposed institution can be discharged by the pre-existing ones.

It should be noted that the procedures and processes of legislative drafting outlined above apply with equal force even in the case of domestication of international environmental agreements. The agreements will provide the draftsman with only the background information to and justification for a new legislative proposal whose final content will be similarly influenced by the diversity of stakeholders or pressure groups.

The East African Community

The treaty unifying the three East African Countries of Kenya, Uganda and Tanzania (and now includes Rwanda and Burundi) was signed in November, 30th 1996 by the presidents of the respective countries. Article 101 on Energy states as follows: "The partner states shall adopt policies and mechanisms to promote the efficient exploitation, development, joint research and utilization of various energy resources available within the region."

For purposes of the above article, the partner states undertook to promote within the community:

- least cost development and transmission of electric power, efficient exploitation of fossil fuels and utilization of new and renewable energy sources;
- joint planning, training and research in, and the exchange of information on the exploration, exploitation, development and utilization of available energy resources;
- development of integrated policy on rural electrification;
- development of inter-partner safe electrical grid inter-connections;
- construction of oil and gas pipelines;

- other measures to supply affordable energy to their people taking cognizance of the protection of the environment as provided for by this treaty.

Therefore the proposed 220 kV dual-circuit transmission line and concerns about rural electrification are in line with the provisions of this treaty of the East African countries.

The Nile Treaty

Many bilateral treaties were made to regulate the utilization of the waters of the Nile River between Egypt, Britain and other powers between 1885 and 1945. A legal regime based on these treaties was thus established over the Nile. Over time these treaties could no longer reflect the priorities, interests and aspirations of the states. Access to the Nile waters is now regarded by these states as a sovereign right and a prerequisite for development. However, Egypt insists on the perpetuity of the treaties.

The 1929 Nile Waters Agreement

This was between the UK acting for Sudan, East African countries and Egypt in regard to the use of the waters of the Nile for irrigation purposes. The agreement became the basis of all water allocations and utilization to the present. The agreement provided that it is only with prior agreement with Egypt that irrigation or power works could be constructed across the Nile but which must not affect the flow of the Nile and its tributaries to the point of reducing the flow reaching Egypt.

Agreements Consolidating and supplementing the 1929 Agreement

The most important component is the Owen Falls agreement. Given the 1959 Agreement for the full utilization of the Nile waters, the Owen Falls Dam was constructed. This was as a result of exchange of notes between Egypt and UK (acting for Uganda). The purpose of this agreement was two-fold:

- the control of the Nile waters;
- the production of hydroelectric power for Uganda.

The two governments agreed that though the construction of the dam was the responsibility of the Uganda Electricity Board, the interests of Egypt will be represented at site by an Egyptian resident engineer. That after construction, Egypt will regulate the discharge of water through the dam. The Owen Falls Dam was completed in 1954.

The fundamental provisions of the 1929 agreement largely remain the same to the present day. However, a new revised treaty is being worked out by the Nile Basin countries to reflect new thinking and to correct the past perceived injustices.

The New Partnership for Africa's Development (NEPAD)

Energy plays a critical role in the development process, first as a domestic necessity but also as a factor of production whose cost directly affect prices of other goods and services, and the competitiveness of enterprises. Given the uneven distribution of these resources on the African continent, it is recommended that the search for abundant and cheap energy should focus on rationalizing the territorial distribution of existing but unevenly allocated energy resources.

3.2.2. INSTITUTIONAL FRAMEWORK

3.2.2.1. INSTITUTIONAL ACTORS IN ENVIRONMENT

The principal institutional actors in environment in Kenya are:

United Nations Environmental Programme (UNEP)

UNEP is the designated authority of the United Nations system in environmental issues at the global and regional level. Its mandate is to coordinate the development of environmental policy consensus by keeping the global environment under review and bringing emerging issues to the attention of governments and the international community for action. The mandate and objectives of UNEP emanate from United Nations General Assembly resolution 2997 (XXVII) of 15 December 1972 and subsequent amendments adopted at UNCED in 1992, the Nairobi Declaration on the Role and Mandate of UNEP, adopted at the Nineteenth Session of the UNEP Governing Council, and the Malmö Ministerial Declaration of 31 May, 2000.

UNEP's responsibilities include:

- Promoting international cooperation in the field of the environment and recommending appropriate policies.
- Catalysing action to address major environmental threats.
- Monitoring the status of the global environment and gathering and disseminating environmental information.
- Facilitating the coordination of United Nations activities on matters concerned with the environment, and ensuring, through cooperation, liaison and participation, that their activities take environmental considerations into account.
- Helping, upon request, environment ministries and other environmental authorities, in particular in developing countries and countries with economies in transition, to formulate and implement environmental policies.
- Helping to develop international environmental law.
- Providing expert advice on the development and use of environmental concepts and instruments.
- Developing regional programmes for the environment.

The major results of UNEP activities should include:

- International arrangements to enhance environmental protection and policy advice to governments, multilateral organisations and others to strengthen environmental protection and incorporate the environment into the sustainable development process.
- Periodic assessments and scientifically sound forecasts to support decision making and international consensus on the main environmental threats and responses to them.
- More effective coordination of environmental matters within the United Nations system.
- Greater public awareness and capacity for environmental management and effective national and international responses to environmental threats (UNEP).

Ministry of Environment and National Resources (MENR)

The Ministry is charged with the responsibility of protecting, conserving and managing the environment and natural resources through sustainable exploitation for the socioeconomic development, aimed at eradicating poverty, improving living standards and ensuring that a clean environment is sustained now and in the future.

The Ministry implements environmental policy, Environmental Impact Assessments and Coordination of Development of Forests, Reforestation and Agro forestry, Conservation of Catchments, regulate Mineral Exploitation and Mining, together with Geological Surveys (GoK).

National Environmental Secretariat

There is established a council to be known as the National Environment Council (hereinafter referred to as the "Council").

The Council shall:

- be responsible for policy formulation and directions for purposes of this Act;
- set national goals and objectives and determine policies and priorities for the protection of the environment;
- promote co-operation among public departments, local authorities, private sector, Non-Governmental Organisations and such other organisations engaged in environmental protection programmes; and
- perform such other functions as are assigned under this Act.

National Environmental Management Authority (NEMA)

The National Environment Management Authority (NEMA) is established under Section 7 of the Environmental Management and Co-ordination Act No. 8 of 1999 (EMCA). NEMA is the institution with the legal authority to exercise general supervision and co-ordination over all matters relating to the environment, and is the principal instrument of the Government charged with the implementation of all policies relating to the environment.

NEMA's functions include:

- Coordinating the various environmental management activities being undertaken by the lead agencies.
- Promote the integration of environmental considerations into development policies, plans, programmes and projects, with a view to ensuring the proper management and rational utilization of environmental resources, on sustainable yield basis, for the improvement of the quality of human life in Kenya.
- To take stock of the natural resources in Kenya and their utilization and conservation.
- To establish and review land use guidelines.
- Examine land use patterns to determine their impact on the quality and quantity of natural resources.
- Carry out surveys, which will assist in the proper management and conservation of the environment.
- Advise the Government on legislative and other measures for the management of the environment or the implementation of relevant international conventions, treaties and agreements.

- Advise the Government on regional and international conventions, treaties and agreements to which Kenya should be a party and follow up the implementation of such agreements.
- Undertake and coordinate research, investigation and surveys, collect, collate and disseminate information on the findings of such research, investigations or surveys.
- Mobilize and monitor the use of financial and human resources for environmental management.
- Identify projects and programmes for which environmental audit or environmental monitoring must be conducted under this Act.
- Initiate and evolve procedures and safeguards for the prevention of accidents, which may cause environmental degradation, and evolve remedial measures where accidents occur (e.g. floods, landslides and oil spills).
- Monitor and assess activities, including activities being carried out by relevant lead agencies, in order to ensure that the environment is not degraded by such activities. Management objectives must be adhered to and adequate early warning on impending environmental emergencies is given.
- Undertake, in cooperation with relevant lead agencies, programmes intended to enhance environmental education and public awareness, about the need for sound environmental management, as well as for enlisting public support and encouraging the effort made by other entities in that regard.
- Publish and disseminate manual codes or guidelines relating to environmental management and prevention or abatement of environmental degradation.
- Render advice and technical support, where possible, to entities engaged in natural resources management and environmental protection, so as to enable them to carry out their responsibilities satisfactorily.
- Prepare and issue an annual report on the State of Environment in Kenya and in this regard, may direct any lead agency to prepare and submit to it a report on the state of the sector of the environment under the administration of that lead agency (NEMA).

NEMA is the body that coordinates and administers the Environmental Impact Assessment (EIA)/ Environmental Audit (EA) on behalf of the Minister for Environment and Natural Resources. EIA/EA is applicable to both public and private sector development projects and programmes. A scheduled activity will not receive the necessary authorization from NEMA to proceed or continue operating, until all EIA/EA requirements have been fulfilled and accepted by NEMA.

EMCA established a number of institutions for the management of the environment in Kenya. At the apex is the parent Ministry. Below this is the National Environment Council established under Section 4 of the EMCA. The Board of Management of the National Environment Council comprises of fourteen members inclusive of the Chairman, the Permanent Secretary of the Ministry of Environment and Natural Resources, seven members each representing the Provinces of Kenya; three directors of NEMA and the Secretary of the Board and the Director General of NEMA. NEMA is made up of the Director General's Office and various departments that perform its day-to-day running. EMCA establishes several statutory committees within NEMA, namely Standards and Enforcement Review Committee, the National Environment Action Plan Committee and the Environmental Impact Assessment – Technical Advisory Committee. In addition, there is also the Provincial and District Environment Committees. EMCA also establishes the National Environment Trust Fund and the National Environment Restoration Fund. The main object of this Fund is to facilitate research intended to further the course of environmental management, capacity building, environmental awards, environmental publications, and scholarships and grants. In addition, the object of the Restoration Fund is to act as supplementary insurance for the mitigation of environmental degradation. It will be used in cases where the perpetrator of the damage is not identifiable or exceptional circumstances force the Authority to intervene in the control or mitigation of environmental degradation.

EMCA provides for establishment of two independent entities namely the Public Complaints Committee and the National Environment Tribunal. The Committee whose functions include the investigation of allegations or complaints against any person or against NEMA in relation to the condition of the environment in Kenya or any suspected cases of environmental degradation. The Tribunal's primary function is to receive and determine disputes of a technical nature on the administration of the Act and appeals against the administrative decision taken by NEMA and other organs responsible for enforcement of the Act and regulations or requirements thereunder.

3.2.2.2. INSTITUTIONAL ACTORS IN ELECTRICITY SUB-SECTOR

The key oversight agencies in the power sub-sector of Kenya are the Ministry of Energy and the Energy Regulatory Commission (ERC).

Ministry of Energy

The Ministry of Energy (MOE) is responsible for policy formulation, coordination of the least cost expansion planning for the sub-sector and the planning and implementation of the rural electrification program.

The Electricity Regulatory Commission (ERC) is responsible for regulation of the power sub-sector. Established under the Energy Act, 2006, the ERC has the mandate to set, review and adjust retail tariffs, approve power purchase agreements, promote competition in the sub-sector, resolve consumer complaints and enforce environmental, health and safety regulations.

The responsibility for electricity generation is shared by Kenya Electricity Generating Company (KenGen) which supplies about 80% of total energy generation, and independent power producers which provide the balance in competition with KenGen. KenGen is a limited liability company registered under the Company Act. The company was incorporated in 1954 as Kenya Power Company and renamed KenGen

after generation was separated from transmission and distribution in 1997. The generation assets were not transferred to KenGen until 1999. Until recently the company was totally government-owned; in accordance with the Government's policy of privatising state-owned companies, 30% of the Government's share in KenGen were divested to the public in May 2006 through an initial public offering (IPO). This will allow KenGen to raise funds for investment through the capital market, but at the same time limits access to Government loans.

Currently there are three licensed Independent Power Producers (IPPs):

- Iberafrica (56 MW thermal power plant),
- OrPower (13 MW geothermal power plant),
- Tsavo (74 MW thermal power plant).

In addition, Mumias Sugar Company provides non-firm energy from its bagasse power plant. During the drought of 2000/01 the Government procured emergency power from Emergency Power Producers (EPPs). In 2005/06 the Government had to revert to emergency generators again.

Transmission and distribution is the responsibility of Kenya Power and Lighting Company (KPLC), which currently is the only licensed public electricity supplier. KPLC is a listed company in the Nairobi Stock Exchange. After the National Social Security Fund (NSSF) disposed part of its shareholding in KPLC, the public sector (NSSF and Ministry of Finance) now owns 48% of KPLC's ordinary shares, while private shareholders hold the majority with 52% of ordinary shares. In addition to the ordinary shares, the Government owns redeemable non-cumulative preference shares in KPLC amounting to KSh 15.9 billion. Therefore, according to the Attorney General, KPLC is still governed by the State Corporations Act. Since July 2006, KPLC has a management contract with Manitoba Hydro International. KPLC is contracted by the MOE to implement the Rural Electrification Program (REP) under separate accounts.

The current electricity market in Kenya is based on the Single Buyer model, with KPLC performing the role of Single Buyer. KPLC purchases power from KenGen under an Interim Power Purchase Agreement (IPPA) and from IPPs under individual power purchase agreements (PPAs). KPLC is also entitled to import around 20 MW of non-firm power from Uganda under an agreement with Uganda Electricity Transmission Company Ltd. (UETC).

Energy Regulatory Commission (ERC)

ERC has been established under Part II of the recently enacted Energy Act, 2006, which also stipulated that it would be independent in the performance of its functions and duties and in the exercise of its powers. The objectives and functions of the Commission are as follows:

- Regulate:
 - o importation, exportation, generation, transmission, distribution, supply and use of electrical energy;
 - o importation, exportation, transportation, refining, storage and sale of petroleum and petroleum products;
 - o production, distribution, supply and use of renewable and other forms of energy.
- Protect the interests of consumer, investor and other stakeholder interests;

- Maintain a list of accredited energy auditors as may be prescribed; The Energy Act, 2006;
- Monitor and ensure implementation of, and the observance of the principles of fair competition in the energy sector, in coordination with other statutory authorities;
- Provide such information and statistics to the Minister as he may from time to time require;
- Collect and maintain energy data;
- Prepare indicative national energy plan;
- Perform any other function that is incidental or consequential to its functions under this Act or any other written law.

3.3. INTERNATIONAL FUNDERS POLICIES, PROCEDURES AND GUIDELINES

3.3.1. AFRICAN DEVELOPMENT BANK

The environmental and social policies of the African Development Bank (AfDB) 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 recognises 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 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 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. According to the AfDB's disclosure policy and the AfDB's Environmental and Social Assessment Procedures (ESAP, 2001) a full resettlement plan and the abbreviated resettlement plan should be posted in the AfDB's Public Information Center and the AfDB's web site for public review and comments.

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. CONSULTATION ACTIVITIES

4.1. COMMUNITY CONSULTATION

A diversity of community stakeholders including chiefs, village elders, village headmen, farmers, teachers, men and women were consulted in pre-arranged meetings held in public institutions including schools, markets and/or identified homesteads within the proposed line route. The stakeholders were mobilized by chiefs, teachers and school management committee members of the affected schools. Teachers sent pupils to inform their parents of the planned meetings. Chiefs deployed their assistants and village headmen to make announcements and post notices at market centres informing the public about planned meetings.

The objectives of consultation meetings were:

- to enlist the support and cooperation of government officials, politicians and other stakeholders;
- to create awareness about the intended project especially to those who may be directly affected and those living near the existing and proposed transmission lines;
- to obtain the stakeholders response, feedback and concerns about the project.

During meetings, communities were informed about the proposed project through presentations with illustrations when possible, and distribution of project information pamphlets. They were also informed about the purpose of the meeting. The presentations highlighted the project background, objectives of the project, expected oncoming activities, schedule of the future activities. 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 and the questions raised by the community were responded to.

Socio-economic data were collected during the meetings at community level with a questionnaire presented in Appendix 1. Consultation reports produced by consultants from Uganda and Kenya are respectively in Appendices 2 and 3.

Uganda

Villages/trading centers where community consultative meetings took place in the various districts of Uganda are as shown in the table 2 below. In total these 30 villages or communities represent 44.7 % of all the communities crossed by the wayleave. Most meetings were attended by members from more than one village.

**Table n° 2 - LIST OF VILLAGES-COMMUNITIES CONSULTED IN UGANDA/
 LISTE DES VILLAGES-COMMUNAUTES CONSULTES EN OUGANDA**

District	Villages/communities Villages/communautés
Jinja	Nakanyonyi, Buwenda-Matala, Kyabirwa, Wakitaka, Namizzi West
Iganga	Nakivumbi, Nawansega, Kabugweri, Namiganda , Businda
Bugiri	Kayandhakato, Nawantokoro, Namatanga Buswiriri, Busolo, Bugodo Buwoto, Kapyanga
Mayuge	Mbaale, Isikiro and Lugolole A
Tororo	Meera Pajabo "A" zone, Pupany zone, Pukach zone, Pimori zones, Pabone "B" cell, Akipenet "B", Pabone "C" Ngelechom, Osukuru village and Kayoro A zone

Details of meeting schedules are in Appendix 4.

Kenya

In Kenya, the stakeholder consultations were carried out at district and community levels. The table 3 shows the list of sub-locations consulted at community level.

**Table n° 3 - LIST OF VILLAGES-COMMUNITIES CONSULTED IN KENYA/
 LISTE DES VILLAGES-COMMUNAUTES CONSULTES AU KENYA**

District	Villages/communities Villages/communautés
North Nandi	Songoliet, Kabeiyo, Ndaptambwa, Septonok, Kibermos
Kakamega North	Murundu, Ikoli
Bungoma South	Kibachenje
Busia	Lupida
Teso	Kotur

In these 10 sub-locations or communities there were 254 persons (40 women and 214 men) who participated in the community meetings. This translated to a ratio of 1:6 (women to men).

Details of meeting schedules and participants for are in Appendix 5.

4.2. CONSULTATION OF LOCAL LEADERS

The relevant district community leaders and/or government officials were also consulted. These included the Chief Administrative Officer, the District Environment Officer, District Planner, Head of Community Based Services and the District Production Officer. One-on-one meetings were held and in other cases group discussions with Councilors were held.

The districts covered in Kenya are: Nandi North, Kakamega North, Bungoma South, Busia and Teso. In Uganda, districts covered are Jinja, Mayuge, Iganga, Bugiri, and Tororo.

Details of leaders and officials consulted for both countries are in Appendices 6 (Uganda) and 7 (Kenya).

4.3. HOUSEHOLDS SURVEY

An extensive household survey was performed to assess socioeconomic information. To this end, a detailed survey questionnaire (Appendix 8) was used. General information was collected about household members, livelihood, income and production, utilisation of energy and demand for electricity, and how the transmission line would affect the household in any ways.

Table n° 4 - NUMBER OF HOUSEHOLDS IN THE WAYLEAVE/NOMBRE DE MÉNAGES DANS L'EMPRISE

District	Total number of households affected by wayleave Nombre total de ménages affectés par l'emprise
UGANDA	
Tororo	141
Bugiri	226
Iganga	74
Mayuge	43
Jinja	320
Total Uganda	804
KENYA	
North Nandi	210
Kakamega North	225
Bungoma South	295
Busia	205
Teso	30
Total Kenya	965



Photo 4. Community meeting, Pimori/Réunion de consultation (Tororo District, Uganda)



**Photo 5. Women of Namatanga that attended meeting/
Femmes de Namatanga lors d'une reunion de consultation (Bugiri District, Uganda)**



**Photo 6. Community meeting/
Réunion de consultation (Nawantokoro, Bugiri District, Uganda)**

4.4. CONCERNS AND ISSUES RAISED

The diversity of issues raised by the communities is shown in table 5.

In Kenya, the general mood during the consultations was initially pensive since many people had not understood or misunderstood the project through rumour. After explanation and specifically on compensation they were agreeable and friendly. However, doubt lingered in their minds if they would be fully compensated given past experiences.

Compensation for loss of properties, land and income was the biggest concern from the community meetings in Kenya and Uganda and people wanted to know how this issue would be handled. It is clear that the affected communities wish to be directly involved in the process without public officials acting as go-between.

**Table n° 5 - CONCERNS AND ISSUES RAISED FROM CONSULTATIONS ACTIVITIES IN UGANDA AND KENYA/
 PREOCCUPATIONS ET ENJEUX SOULEVES LORS DES CONSULTATIONS TENUES EN OUGANDA ET AU KENYA**

Component Composante	Issues and concerns Préoccupations et enjeux
Compensation measures for loss of land, properties, income, etc.	<ul style="list-style-type: none"> ■ Need for compensation for any land and crops that are likely to be taken up. This needs to be handled cautiously because people usually fear being displaced from their land which they have inhabited for years and have inherited from their forefathers.
	<ul style="list-style-type: none"> ■ Fear of land and property being undervalued, especially if public officers or middlemen undertake the valuation or negotiation without the community or the landowner being involved. The compensation process should take place between property owners and the power company without the Government administration department being involved. The Government role should be limited to ascertain the level of compensation and to verify the true owner of the land or property but not to distribute compensation payments.
	<ul style="list-style-type: none"> ■ Valuation of land. Community members are worried that the method used in valuing the land may not use the market rates and as a result the people may get money which might not be enough to buy them land elsewhere. They prefer that they be given a say in determining the value of their land than using government valuers who usually undervalue rural land. They cautioned that land prices are likely to go up because people will be expecting that the affected households have been given a lot of money and are desperate for other pieces of land for resettlement and as a result those selling will hike their prices.
	<ul style="list-style-type: none"> ■ Fear that affected persons would not receive promised compensations, as it occurred for the Turkwel transmission line (Kenya). The community (especially near Lessos) sought to be assured that this situation would not be repeated.
	<ul style="list-style-type: none"> ■ Fear that speculative land buyers and dealers will hijack the process. Communities were wary of the Ministry of Lands officers who are known to falsify documents relating to land ownership. Because of these potential ills the affected farmers expressed their wish to deal directly with the power company.
	<ul style="list-style-type: none"> ■ Communities want to be sensitized in time on the entire compensation policy and procedures that will be used before they begin, mainly how valuation of crops will be done and how payment will be effected.
	<ul style="list-style-type: none"> ■ Need for quick payment of their dues in the case of land and crop compensation because they have a fear that government projects usually have bureaucratic tendencies, which delay payments.
	<ul style="list-style-type: none"> ■ Need to be paid in cash instead of cheques because some people especially the elderly may fear the bank procedures and the time taken going to the banks to wait for payment and some people may be illiterate.
Compensation measures for loss of land, properties, income, etc.	<ul style="list-style-type: none"> ■ The reserve/wayleaves for the new line should be clearly demarcated to avoid cases where the electricity officials come later and claim that it was compensated for.
	<ul style="list-style-type: none"> ■ Involvement of lawyers for both sides and the use of proper agreements were suggested. This was put forward because communities feared that the project would capitalize on the peoples' ignorance in land matters and compensate them properly. They preferred to be given sale agreements on durable paper which they would preserve for the benefit of their children and future generations (materials that do not get spoilt with time. For example made out laminated paper which is water proof).

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Component Composante	Issues and concerns Préoccupations et enjeux
	<ul style="list-style-type: none"> ■ Concern that land valuers may impose a standard price on land thereby benefiting those whose land is at poor locations or far inland while “robbing” those whose owned land at prime locations. The consensus was that market land prices at the time of compensation be applied. Land situated close to main trunk roads, markets or schools be accorded higher value than the land far-removed from such infrastructure.
	<ul style="list-style-type: none"> ■ Deed and verification by the Chief and village headmen should be enough proof of ownership. In the situation where land has been sub-divided among sons and daughters the owner of the affected plot should be the only one to be compensated. This would avoid family conflicts.
	<ul style="list-style-type: none"> ■ The land tenure system is not uniform across the districts affected by the proposed line; therefore the communities are concerned that some people may pose as the true owners. They also cautioned that in some cases, the squatters may claim to be the right owners and the local leaders may not know that these are squatters because they have lived on the land for a long time yet the real owners may be present but living in big cities – a case of absentee landlords. Related to this is the issue of failing to trace the rightful owners and the communities wanted to know how the project would trace them.
	<ul style="list-style-type: none"> ■ In tea growing areas the view of the community was that any compensation for tea crop should not be one-off but be calculated to cover loss of earnings over the entire life of the crop.
	<ul style="list-style-type: none"> ■ Feeling of unfairness between those that use electricity and those that bear the impacts of the infrastructure required to support that use. Some landowners do not regard the payments as sufficient to truly compensate them for the aesthetic impacts and the loss of full rights to their own land; people who live near the line but not on the wayleave may be affected but do not receive any easement payment. Also, the policy of corridor sharing favours the placement of new transmission lines within or next to existing infrastructure, causing some landowners to be burdened by multiple easements.
	<ul style="list-style-type: none"> ■ Some members of the community are of the view that land be hired for a short time after which it reverts to the owner for fresh negotiations. The main reason for this was that land owners would want their children to benefit from the property that once belonged to their families.
Displacement and resettlement of people	<ul style="list-style-type: none"> ■ Certain communities wondered what would happen if they declined to relocate to pave way for the project.
	<ul style="list-style-type: none"> ■ Some communities especially in Kakamega North, Bungoma South, Busia and Teso Districts were of the view that KPLC should identify and procure land that is equivalent to current settlements along the line route and resettle the affected people on it instead of cash payments. The reason for this is mistrust of local government administration officers, artificial inflation of land value and unwillingness to migrate away from ancestral land.
	<ul style="list-style-type: none"> ■ Fear that too much land is being taken up for this project because of the distances as suggested from the centre of the line to the edge of the wayleaves.
	<ul style="list-style-type: none"> ■ Communities requested that ample time should be given for relocation, as looking for resettlement land may take time.
	<ul style="list-style-type: none"> ■ The people have no suggestion for relocation sites as long as compensation money will enable them to buy alternative land within the same area or in areas nearby.

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Component Composante	Issues and concerns Préoccupations et enjeux
Rural electrification	<ul style="list-style-type: none"> ■ All the communities along the project site wanted to know whether there was any connection between the proposed power line and ongoing rural electrification projects. They believed that since the two were somehow linked together, they deserved to benefit from rural electrification. For example, the farmer whose land bordered Lessos sub-station and others like him in the neighbourhood did not have electricity supplies while many transmission lines converged at the sub-station. They wanted to be assured that construction of a new transmission line would coincide with them getting electricity connections.
	<ul style="list-style-type: none"> ■ In Kenya, similar sentiments were expressed at Ndaptabwa on the main Eldoret-Kapsabet road where the existing 132 kV and two 33 kV lines cross the road yet the centre and nearby school and permanent houses have no access to electricity. Similar sentiments were also expressed at Ikoli Primary School and markets in Kakamega North District through which the existing lines traverse but have no access to electricity. Many farmers would benefit by powering their jaggery mills with electricity so as to increase production and reduce cost. Similar sentiments were expressed at Kibachenje, Sibembe and Siera Primary Schools. Communities were apparently pessimistic that their wishes of being connected to electricity supplies would not be granted since many other promises had been made in the past but were not fulfilled.
	<ul style="list-style-type: none"> ■ The districts expressed the need to have the people connected to the grid where the power line will pass. Most villages where the current transmission line passes are not connected to the electricity grid. In Jinja, particular emphasis was placed on in Budondo Sub-county where the electricity will be generated.
	<ul style="list-style-type: none"> ■ All affected villages expressed the need to be connected to electricity supply. Most of the villages met did are not connected to the national grid and hence have no power supply. The few that had power supply requested that their power should be boosted to enable them run their business smoothly especially the grain milling machines. In Uganda, community members and their leaders are bitter that the electricity power line constructed only transmits electricity to Kenya and just passes above without any benefits accrued. There are fears that in the proposed project this may be repeated.
Job opportunities	<ul style="list-style-type: none"> ■ In all districts, the issue of jobs came up and the officials requested that casual jobs during construction and other income generating opportunities should be availed to local residents.
	<ul style="list-style-type: none"> ■ Due to high levels of unemployment in the entire project area, there was fear that local people (skilled and un-skilled) would benefit less from job opportunities than people from other places, since the contractors will bring in their own workers. The communities recommended that jobs be reserved for local people and that fair recruitment practices be put in place. The communities are against the involvement of government officials and politicians in the recruitment of project workforce as they would as usual introduce favouritism and ethnicity in the exercise.
	<ul style="list-style-type: none"> ■ All communities expressed the need for consideration for jobs especially for casual labourers. They asked that special consideration should be extended to both skilled and unskilled youth and women in the area. However, some feared that the project would use high technology, which would not favour use of casual labour, and as a result they would not benefit from this project.

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Component Composante	Issues and concerns Préoccupations et enjeux
Consultation and sensitization activities	<ul style="list-style-type: none"> ■ The members of communities severally inquired why they were not paid sitting allowance since they had missed working in their farms or businesses on the meeting day. This issue persistently came up from community members claiming to have spent their working time in these meetings. ■ Most communities expressed concern that very short notices for meetings were given thereby denying many people the opportunity to attend and contribute. Future meetings should be preceded by adequate notices. ■ The communities expressed wish that answers be provided to the communities' queries before more progress is done on the project so that families can have accurate information. Without accurate information, rumour-mongering is likely to lead to family conflicts especially in relation to land compensation and relocation. This will also show that their concerns were being addressed by the project. ■ Some communities indicated that they have been advised by their leaders that everything concerning the project had already been determined and their opinions did not really matter. ■ Sensitization of the community should precede any future project activities in order to gain wider participation and acceptance. This was a genuine concern since even the research team could not start work at Lessos with the first households from towers 400 to tower 401 until the elder son of the homestead (who was also the village headman) was available and present. The area chief had not informed the homestead about this exercise hence the fear of ambush by the community. But once the village headman appeared and informed the community members that the Chief had granted consent for the study then everything went on without a hitch. ■ Officials from the districts expressed opinion that ample time should be spent on sensitization of affected communities before implementation of the project of this nature. This arose from the fact that people have continued to live under the high voltage line, which is a likely sign that they do not know the effects of continuous exposure to such electromagnetic fields. Without understanding of such impacts and risks associated with power transmission, people affected by the line and may be compensated may refuse to leave the wayleaves. ■ This was requested for by all meetings because members wanted to be informed on progress of the project and to be sure that their views, concerns, and fears are being addressed.
Community infrastructures	<ul style="list-style-type: none"> ■ The communities requested that adequate notice be given to relocate public facilities such as schools which may require more time relocate. They proposed that an initial six month notice period be given with room for extension with a further three month. Communities and parents whose schools would need to be relocated (e.g. Ikoli Primary School in Kakamega North and Kibachenje Primary School in Bungoma South District) requested for advance meetings and assurance of adequate compensation to enable them identify alternative land in good time. ■ For schools that had some semi-permanent building structures in the corridor of the proposed transmission line, the communities recommended that the structures be compensated at the rate for a permanent building as a way of improving learning facilities in the area and to help the community bare with the pain of relocating the school. ■ Communities and parents whose schools are affected did not approve a second line running parallel such that schools would be sandwiched between two transmission lines. Instead, they were in favour of having the schools relocated with full compensation. ■ Recommendations have been made that no new road should be constructed for erection and maintenance of the proposed line. Instead, if the road exists under the existing line it should be utilized as a new road would only take up more land that could be used for farming.

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Component Composante	Issues and concerns Préoccupations et enjeux
Wetlands	<ul style="list-style-type: none"> ■ In the districts of Iganga and Bugiri, the officials cautioned that construction through wetlands should be done carefully because conservation of natural resources particularly is top on their agenda. Secondly, there is a lot of rice growing in the wetlands and people depend on this rice growing for survival.
	<ul style="list-style-type: none"> ■ Communities are scared that in case the proposed line crosses their graveyards, their dead will be disturbed. (The exact location of possible graveyards should be surveyed by the topographers but if the local people have indication they should be invited to collaborate by providing this information)
Project justification and realisation	<ul style="list-style-type: none"> ■ There was concern that much land would be taken up the proposed power line while the existing towers may be able to accommodate additional lines instead of building another one. ■ Most of the communities tended to associate the proposed power line project with the December 2007 elections and viewed the project talk as bait by the government to woo their vote. ■ Affected communities also expressed fear of their activities may be disrupted by anxiety of an on-coming project to benefit them, and then the project is dropped as it occurred with other projects. According to them it has been the trend in the country. The communities wanted assurance that the project will proceed. ■ Communities wished to know when compensation and line construction would take place so that they could adequately prepare themselves.
Health and safety	<ul style="list-style-type: none"> ■ In Kenya, in Kakamega North (Kabras) and Busia (Lupida) it was reported that several people had been electrocuted when climbing on the towers of the existing transmission line. The people wondered whether the proposed and the existing power lines could be fitted with human obstructions to ensure that they cannot be climbed by unauthorized people. For example from the last tower down the Nandi Escarpment at Tabolwa area to Malaba border most towers have their identification number removed which indicates that unauthorized people are able climbed on them. The lack of identification numbers made the work of the research team so difficult that the team sometimes spent four hours trying to locate the nearest adjacent tower number that they could use to count back. ■ There was a fear of having a second high voltage line in the neighbourhood for the case of Jinja – Lessos. In some cases members suggested that this line should completely be diverted to a new route so that other Ugandans should share on this problem. Then there was the fear of the line passing over their grazing land and its affect on their animals and children. A case in point is where the line is in the vicinity of Ngelechom Primary School. There was a fear of that high voltage increase lightening incidents in the area and they wanted their fears dispelled. ■ The effect of power line on people who will stay between old and new power lines also came up and people are scared they may not be compensated as they may not directly be in the way leaves but very close to such lines on either side may be a sure but slow health hazard on to the lives of households harmful to them slowly but surely. ■ In Uganda, the communities as well as the district officials of Bugiri and Tororo districts made mentioned that there plans by government to construct an oil pipeline from Kenya to Uganda via their districts. There are fears that if the oil pipeline uses the way leaves for the proposed transmission line, then in case of accidents entire villages might be affected. This is a result of fearing that oil might catch fire from the high voltage power lines.
Social conflicts due to the venue of non- resident workers	<ul style="list-style-type: none"> ■ All along the entire 132 km length of project site there was concern over the inhuman way land surveyors, soil analysts and electrical technicians carry out their duties. They do so without due regard to property by indiscriminately cutting down trees, crops and everything on their way to accomplish their tasks without reference to property owners. Their behaviour was described as un-African indeed it was perplexing to find some soil analysts digging holes in farms without prior notice. The communities hoped that such behaviour would not be witnessed during the project.

Component Composante	Issues and concerns Préoccupations et enjeux
	<ul style="list-style-type: none"> ■ From the previous projects, the communities are afraid of the rough methods and procedures surveyors use in surveying their land. They claim that surveyors are hostile to community members and do not alert them of impending activities and as a result they loose crops and property.
Planned activities	<ul style="list-style-type: none"> ■ In Uganda, all the districts apart from Bugiri had no development activities planned along the proposed stretch of land. In Bugiri, the Environment office has plans of using Kadoma wetland for irrigation where water will be drawn from the wetland to surrounding arable land. There is need for the power project to liaise with the environment office to ensure harmonization.
	<ul style="list-style-type: none"> ■ In Tororo at Osukuru hills, there is a proposed mining of phosphates and this has made the residents of all villages around Osukuru hills very hostile to any project that intends to use all or part of their land.
	<ul style="list-style-type: none"> ■ In some districts, especially Bugiri and Tororo, a proposed pipeline was mentioned, which is likely to cross both the current power line and the proposed new line. There was fear of fire out break if they are both constructed (this issue to be clarified in the subsequent reports).
Royalties to Busoga kingdom (Uganda)	<ul style="list-style-type: none"> ■ Some members felt that Busoga kingdom, as the custodian of the source of the power should be given some income or a reward for their resource, which is benefiting not only Uganda but also the entire region.

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5. BASELINE CONDITIONS

5.1. PHYSICAL ENVIRONMENT

5.1.1. CLIMATE

Uganda

The five districts traversed by the proposed transmission line lie in the southeast of Uganda whose climate is influenced by the inter-tropical convergence zone as well as the air currents such as the southeast and northeast monsoons. The seasons are fairly well marked as either rainy or dry seasons. Depending on elevation and landscape, precipitation and temperature in these districts show great variation. The climate along the proposed line is described as moderate, except in the districts of Bugiri and Tororo where extreme dry climatic conditions with temperatures reaching as high as 38°C during the dry season can occur.

**Table n° 6 - UGANDA/UGANDA: CLIMATIC CONDITIONS FOR DISTRICTS IN THE PROJECT AREA/
 CONDITIONS CLIMATIQUES PAR DISTRICT DANS LA ZONE DU PROJET**

District	Rainy season Saison des pluies	Mean annual rainfall Moyenne des precipitations annuelles (mm)	Mean annual temperature Moyenne des températures annuelles (°C)
Jinja	<ul style="list-style-type: none"> ■ March to May and September to December ■ Mars à mai et septembre à décembre 	1000 - 1500	19.4 - 27.6
Mayuge	<ul style="list-style-type: none"> ■ April to June and August to November ■ Avril à juin et août à novembre 	1000 - 1500	19.6 - 28
Iganga	<ul style="list-style-type: none"> ■ April to June and August to November ■ Avril à juin et août à novembre 	900 - 1200	25 - 35
Bugiri	<ul style="list-style-type: none"> ■ April to June and August to November ■ Avril à juin et août à novembre 	900 - 1200	16.7 -28.1
Tororo	<ul style="list-style-type: none"> ■ March to June and August to November ■ Mars à juin et août à novembre 	1130 - 1720	16.2 - 28.7

Kenya

The Western part of Kenya has a moderately wet climate. Rainfall is mainly convective in origin and is largely influenced by the movement of the inter-tropical convergence zone and relief rain from the influence of Lake Victoria. Due to the convective origins of rainfall, there is high seasonal variability exhibiting high intra- and inter-seasonal variation in onset, duration and amount of precipitation.

The region receives an average rainfall between 1,200 mm and 2,400 mm per annum. The driest part is found along the lakeshore and receives 760 to 1,015 mm rainfalls annually. About 50% of the annual rainfall falls in the long rains that start in early March and continue up to June with peak in May. The short rains usually fall from mid September to the end of November (25%). A dry spell is normally experienced between December and February, but there is no single month without rainfall. The distribution of this rainfall is governed by the topographical influence of the south - westerly winds from Lake Victoria.

Temperatures are generally high throughout the year. In the western part of the region (Teso District), temperatures are almost homogeneous with annual mean maximum temperature ranging between 26°C and 30°C. In the eastern part of the study area, mean temperatures range between 18°C and 22°C during the rainy seasons while higher temperatures averaging 23°C are recorded during the drier months of December and January. The coolest temperatures, as low as 12°C, are experienced during the cold spell of July and August. The highest temperature averages at 32°C.

The mean annual evaporation ranges from 1,600 mm to 2,400 mm with high humidity and low evaporation rates.

5.1.2. GEOLOGY, TOPOGRAPHY AND SOILS

5.1.2.1. UGANDA

Geology

The geological formations of all the five districts in the project area in Uganda are dominated by the very old rocks formed in the pre-Cambrian era. In some parts of Tororo district are also pre-Elgon volcanics. In Jinja, Mayuge and Iganga districts the main rocks can be identified on the basis of degree of granitization and metamorphosis. These rocks include:

The partly granitized and metamorphosed formations, which appear as the Buganda-Toro system comprising argillite with basal quartzite amphibolites, banded ironstones, and cherty quartzites in the phyllites and schists;

The wholly granitized or high to medium grade metamorphic formations, which appear as the undifferentiated gneiss including elements or metamorphosed formations;

The wholly granitized or high to medium grade metamorphic formations, which appear as the granitoids and highly granitized rocks.

In Bugiri district there are Archean rocks exposed for much of Kapyanga sub-county. These exposed rocks are part of the extensive granite-greenstone terrain of the Tanzania Craton, while in Tororo, the transmission line will pass through an area underlain by intrusive granites which are also dominant along the eastern boundary of Tororo County and the Tertiary pre-Elgon volcanics found at Tororo rock and Sukulu.

Topography

In Jinja, Mayuge and Iganga districts, the proposed transmission line passes through an area with an elevated and dissected plateau consisting of a series of flat-topped hills and intervening valleys. There are remnants of hills in these areas and have an altitude which varies from just over 1,200 to 1,500m. This topography is characterized by many flat areas which have resulted in impeded drainage thus vast wetlands.

In Bugiri, the transmission line generally passes through an area characterized by gentle undulating hills with few higher residual features of intrusive and extrusive volcanic rocks especially in the villages of Bugodo, Buswilili and Buwofu in Kapyanga sub-county. These raised hills are separated by wider valleys with permanent or seasonal wetlands. The permanent wetlands have impeded drainage or drained by sluggish streams.

Much of Tororo where the line passes comprises low-lying lands characterized by permanent and seasonal wetlands, flat plains and raised lands in the Sukulu rings towards the Kenya Border. The average altitude of these plains is 1,128 m.

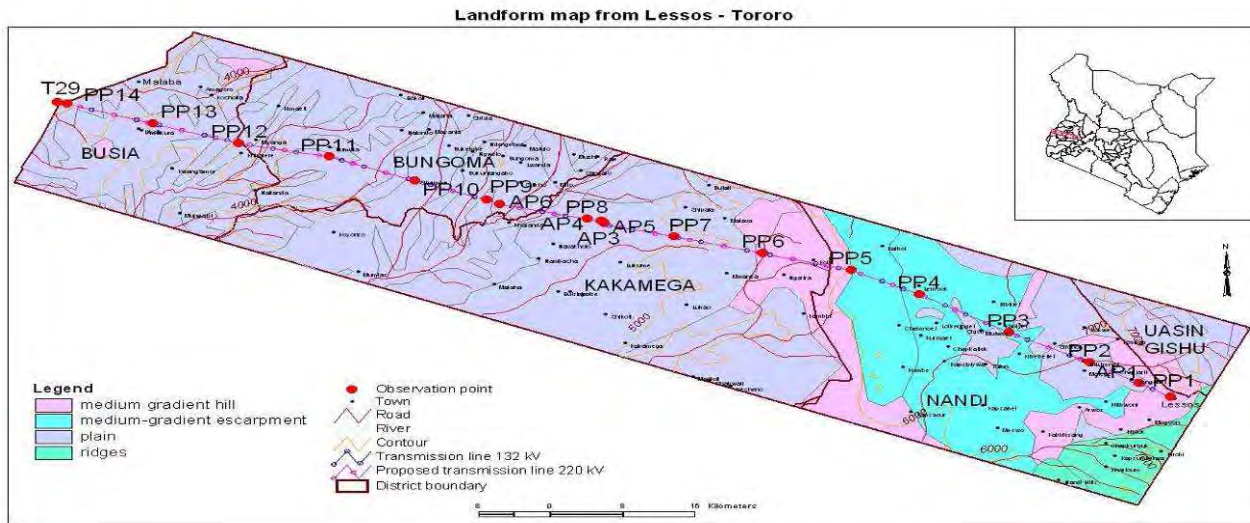
Soils

Most parts of the project area are covered by ferrisols and ferralitic soils which represent almost the final stage in tropical weathering and consist mainly of kaolinite mineral free iron oxides, amorphous gels and sometimes amounts of lattice clays. The valleys have undifferentiated alluvium. In Bugiri and Tororo, these soils are sandy loams and are usually deep with little differentiation into clearly defined horizons and have fine texture with rather loose structure, which are easily eroded and leached. Most soils are slightly acidic and derived from granite, gneissic and sedimentary rocks.

5.1.2.2. KENYA

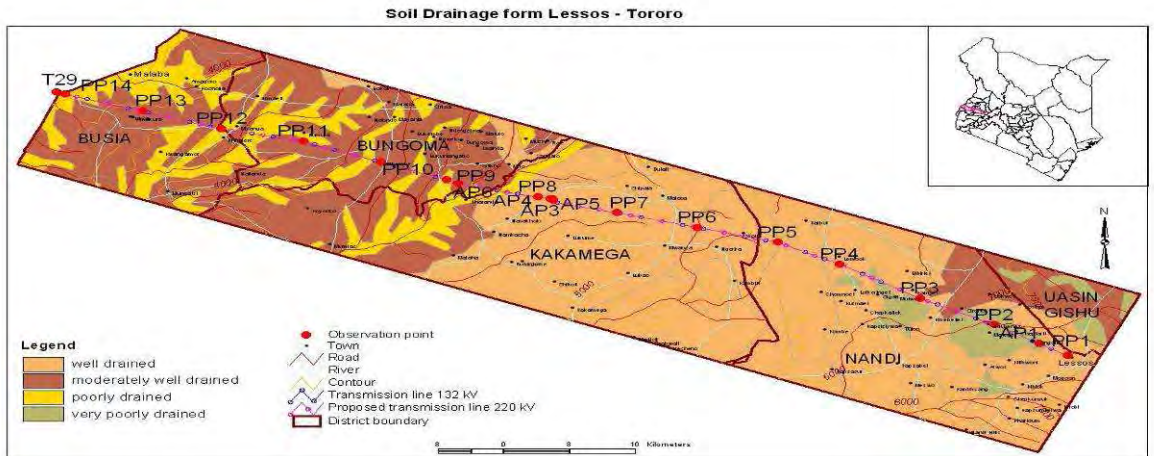
Geology and Soils

The soils occurring on the uplands and ridges are generally very deep, red clay with well developed and stable structure, mainly classified as *Nitisols* and *Andosols*. Those on escarpment are moderately deep to deep and having remarkable textural variations from sandy clay loam to clay, being classified as *Acrisols* and *Lixisols*. The soils of the plain are extremely deep and are mainly heavy clay with imperfectly to poor drainage conditions. The physiography is mainly uplands, with medium gradient hills, escarpment, plains and ridges (Figure 1).



**Figure 1. Kenya: Landform map from Lessos to Tororo/
 Carte du relief entre Lessos et Tororo**

The general trends in soils especially with regards to depth are shown in Figure 2.



**Figure 2. Kenya: Soil drainage map from Lessos to Tororo/
 Carte du drainage entre Lessos et Tororo**

Generally the rock forming the basement of the Teso and Busia Districts is Precambrian age with occasional intrusion of granite. Such rocks are usually associated with the availability of gold, copper pyrites, molybdenites, cronstones, graphite, florite, brytes, manganese, ceramic clay, building stone and limestone. Similarly, Amukura Hills in the north are continuations of Tororo Hills in Uganda in which limestone abound. The Samia Hills represent the basement complex and consists of acid and sub-acid lavas, tufts, and *agglomerates*, banded *quartzites* and ironstones. The Kavirondo series are developed around Busia, Nambale and Butula. The granite dominates.

The Bungoma District has five types of geological formations:

- the tertiary volcanics on Mt Elgon;
- granite of Precambrian age widely spread in Bungoma District especially in the southwest;
- Kavirondo system, which consists of alternating bands of grit stones and mudstones with huge lenses of waterlain conglomerates;
- basement systems, rocks which are mainly sediments, metamorphosised by heat or pressure or by impregnation by prevailing fluids mainly in Kimilili and parts of Tongaren Division;
- Nyanzian system composed of lava flows associated with variable thickness of proclastic rocks and in places with lenses of conglomerate.

In the bottomlands, soils are poorly drained but are mainly of a deep firm and clay type although frequently flooded. Difficult soils in the district are mainly found in the bottomlands and in swamps. The soils in these areas are of a heavy clay type, which are very difficult to cultivate both when it is dry and when it is wet. Through proper drainage this lands could be used to produce rice in the swamps and uplands rice in the bottom.

The Kavirondian Rift System determines the topography of the lowland areas. Tectonic earth movements and erosion of different rock types over long periods have created varied morphology of lowlands bounded by upland areas. Pre-Cambrian volcanic and intrusive rocks, tertiary volcanic rocks and quaternary sedimentary deposits characterize the geology of the lowland area. In general most soils are susceptible to erosion.

In Kakamega North District, the geology consists of igneous rocks of intrusive (granites) and extrusive (basalts, rhyolites and trachytes) origin that differ greatly in age. To the east are volcanic rocks of various ages, while older basement rocks, perhaps of Tertiary times, occur to the west. Soils developed from volcanic rocks are younger, and generally fertile, but dependent on age and chemical composition of parent materials. Soils to the west are poorer.

The soils of the mountains, hills, plateaus and foot slopes are excessively to well drained, very shallow to shallow, dark reddish brown, stony and rocky, sandy clay loam to clay, and in places with acid humic topsoil, and are moderately deep to deep (Phaeozems, Lithosols, Regosols Cambisols). Most protected Natural forests are found in these areas and serve to stabilize the soil and protect the water catchments.

The soils of the uplands are well drained, deep to very deep, and in some places shallow to moderately deep, dark reddish browns to dark brown, friable to firm clay, with thick acid humic topsoil (Acrisols, Nitosols, Ferralsols). These soils therefore may not be easily errodable. Protected plantation forests are found in these areas. Most of the tree species in the plantation forests are exotic and require well-drained deep soils.

Nandi Escarpment is a manifestation of extremely rugged ground containing granite and volcanic rocks. Soils on mountainous and major scarps are developed on various print and parent material. In Songhor granite and the Nandi escarpment, they are developed on undifferentiated basement-system rocks predominantly granite. In Lelmokwo part of the district, soils are shallow, excessively drained, red, friable stony Clay Loam to Sandy Loam. The soils are predominantly Combisols with Regosols and Lithosols.

Soils on plateaus and high level structural plains are on parts of Mutwot and Birbiriet, which are developed on intermediate igneous rocks. They are well-drained moderately deep red friable clays overlaying petroplinthite.

Soils on volcanic footbridge are in Mogabich and parts of Chebaru and Meteitei. They are developed on tertiary basic igneous rocks.

Soils on piedmont plains are found in parts of Chemilil. They are developed on alluvium and from undifferentiated basement system rocks. They are moderate to poor drained dark brown to grey clays and stratified, sodic/Planosols, solonetz, Vertisols and Fluvisols.

Soils on middle-level uplands include soils in western part of the district, which are developed on granite and basement system rocks found in most parts of the district radiating from the center and are developed from, Igneous rocks and Quartets. Those developed from Granite, Igneous rocks and basement-system rocks form Acrisols, while those from granite form Nitisols. The soils are well-drained, very deep dark red to brown friable clay with humic topsoils.

Soils on bottomlands are on the major wetlands on Kingwal and Ndurio River. They are developed on infertile or infinite igneous rocks (Kingwal) and differentiated basement system rocks (Ndurio). These are poorly drained, Very dark red to brown friable clays with thick humic top soils.

Topography

In Kenya, the western part has a varying topography with altitudes ranging from 1,200 m to 2,000 m above mean sea level. It is divided into three main physiographic units namely the peneplain, the southern hilly belt and the Lake Victoria basin.

The southern hilly belt made up of rugged granite rising to 1,950 m. The range of hills, comprising the Samia and Funyula hills, runs from North-East to South-West culminating at Port Victoria on the South-West. The numerous cone-shaped hills and fine scenery in the most parts can provide good features for sightseeing. These hills are not near the corridor for the transmission line.

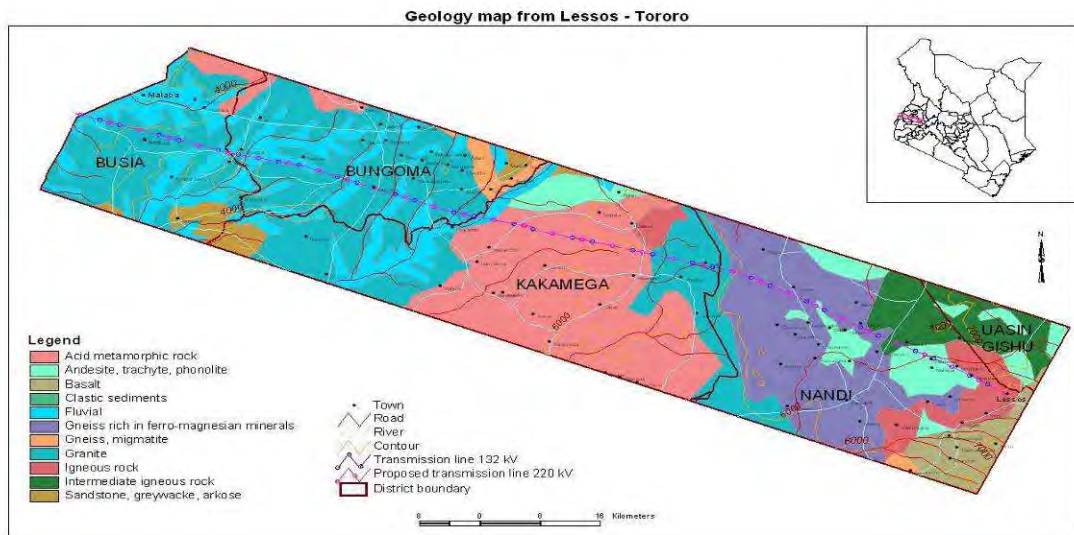
The physiography can be divided into the following:

- the rolling hills to the west;
- the Kapsabet plateau (part of the Uasin Gishu Plateau);
- the weeded highlands foot hills of Tinderet volcanic Mass in the South-East;
- the Kingwal Swamp in the Baraton - Chepterit area;
- the dissected Nandi Escapement area at the southern border.

The hilly topography that characterizes the sector of Lessos is underlain by outcrops of basement rock system, which are distinct to the north, paving way to thick layers of red soils covered anthills to the south. The topography is favourable to growth of natural forest, which serves as watershed of the major rivers and numerous streams that form a good drainage pattern.

The rugged topography of the district limits transportation during wet seasons. The terrain also affects farm mechanization especially in very steep slopes, thus hindering full exploitation of the land.

As is indicated in Figure 3 below, the geological formation varies along the transect line, ranging from acid metamorphic rocks to sandstones.



**Figure 3. Kenya: Geological map from Lessos to Tororo/
 Carte géologique entre Lessos et Tororo**

5.1.3. SURFACE AND GROUNDWATER RESOURCES

5.1.3.1. UGANDA

In Jinja, Mayuge and Iganga, the transmission line passes through parts of the districts with a good network of surface water body sources exemplified by the permanent and seasonal swamps (see wetlands section 5.2.1). However, Bugiri and Tororo districts have inadequate surface water despite the many wetlands with swamps originating from different river systems. These water sources are fed by streams and groundwater during the heavy rains and lose its water during the dry season through evaporation and also to the surrounding unconsolidated sands, silt and gravel. The surface water in Mayuge, Iganga and Bugiri is influenced by the narrow and generally higher accentuated relief that forms the watershed between Lake Victoria drainage and interior drainage. As a result of this, all rivers drain northwards to Lake Kyoga through sluggish streams in the wide valleys occupied by wetlands of impeded drainage. The valleys are characterized by flooding during the rainy season.

On the other hand the surface water in project area in Tororo district is influenced by rivers: Malaba at the border with Bugiri district and the Kenya border and by Katerema, Osio and Akapenet seasonal wetlands. These water systems drain westwards, although there are other minor systems that flow northwards into Namatala swamps and southwards into Lake Victoria and inland drainage.

5.1.3.2. KENYA

Concerning drainage, there are three main rivers in the western region of Kenya: Sio, Nzoia and Yala. The study area totally comes within the scope of the riverside basins of these three rivers. Taking into account the permanent aspect of the drainage of these rivers, water availability for domestic, commercial and industrial use is considerable. The river Sio, situated much more to the north among these three rivers, originates from the sector of Bungoma town. This river flows out to Lake Victoria through the south of Busia town.

The Nzoia River, which originates in the Cheranganyi Hills on the east, runs to Lake Victoria on the south-west. It partly forms the northern boundaries with Bungoma District before it meanders south-westwards through the area North of the town of Mumias.



Photo 7. Nzoia river/Rivière Nzoia

Another large river is the Yala, south of the Nzoia River, which originates in the Nandi Hills east of Kakamega North District. The Nandi escarpment forms the catchment zone for streams such as Kandia, Kabkalei, and Nungo which flow eastwards to form the Isukhu River. This river joins the Lusumu River in Lunza area which drains the area between Kakamega and Malava forests. These two rivers form the larger Lusumu River, which flows westwards to join the Nzoia.

Several small streams form tributaries to rivers Sio, Nzoia and Yala Rivers in Kenya, exhibiting dendritic drainage patterns dissecting the peneplain surface often with the steep erosion valleys. Only the sector to the north of Mumias is swampy due to low gradient and poor drainage flat and swampy soils lead to regular flooding and water logging.

The source of most rivers has been interfered with, and in the recent years, there has been a decline in the flow of water. There is interference by cultivating the swampy areas, destruction of natural vegetation around sources, overuse of rivers, and destruction of riverbanks due to cultivation, which leads to erosion and sedimentation. The surface waters are turbid. This calls for treatment before the waters can be used for human consumption.

Groundwater

Uganda

The transmission line passes through areas with varying underground water sources. In Jinja, Mayuge and Iganga project area has adequate groundwater resources as evidenced by the number of protected springs boreholes and shallow wells. For example Jinja district has about 122 protected springs, 30 are in Budondo sub-county and 29 in Kakira sub-county. In Bugiri and Tororo, the underground water sources do exist in the fissures and aquifers of the rocks as evidenced by the boreholes that have been drilled. These sources dry up in the dry season due to lowering of the water table.

Kenya

In Kenya, there are also boreholes all over the region and protected springs. However, in Budalangi division, the borehole yields are not high and the product is too salty reducing its use for home consumption.

In Nandi district there is the expansive Kingawal Swamp which is a source of so many livers in Western Kenya. These swamps and others along the proposed corridor are indicators of high levels of ground water.

5.2. BIOLOGICAL ENVIRONMENT

5.2.1. VEGETATION

5.2.1.1. UGANDA

There are no major forest areas along the proposed transmission line in Uganda, except for the planted pines on Buwekula hill in Jinja district and the forest mosaic along the banks of Nile River from Bujagali to Buwenda, Matala village. The major vegetation cover in the proposed transmission line alignment is secondary vegetation emerging as result of extensive cultivation. However, there are few natural trees scattered in the arable land in all districts particularly in Jinja, Iganga, Mayuge and some parts of Bugiri. Natural trees are also found around homesteads especially in Tororo.

Wetlands still occupy large areas along the line. Their vegetation has also been altered though rice growing to the extent that most wetlands have lost their original natural vegetation (Photo 8). The wetlands vegetation is dominated by *Cyperus* (papyrus), *Phragmites* (Reeds), *Typha* (Bulrush), *Vossia* (Hippo grass), *Cissampelos mucronata*, *Dissotis rotundifolia* (pinklady), *Dryopteris striata*, *Leersia hexandra* (rice cut-grass) and *Polygonum salicifolium* (knotweed).



Photo 8. Wetland in the project area; Kitembezi wetland between Iganga district and Bugiri district. Typical vegetation is *Papyrus*, *Polygonum salicifolium* and *Phragmites*./Marais dans la zone du projet: Kitembezi entre Iganga et Bugiri. Végétation typique de *Papyrus*, *Polygonum salicifolium* and *Phragmites*.

In some areas, swamp vegetation includes other higher plants or may be interrupted by dense and uniform stands of other species such as the swamp shrubs, *Sesbania*, *Hibiscus* and *Mimosa*, the swamp grass *Miscanthidinum* or ferns and climbers. The vegetation in seasonal wetland and temporary pools is dominated by grasslands and sedges in the wetter areas. These include *Echinochloa*, *Sorghastrum*, *Hyparrhenia* or *Themeda* which are interspersed in most areas by *Phoenix reclinata* and *Acacia polyacanthia*. Notable wetlands crossed by the proposed transmission are indicated below.

Table n° 7 - WETLANDS CROSSED BY THE TRANSMISSION LINE/MARAIS TRAVERSES PAR LA LIGNE DE TRANSMISSION

District	Name of wetland Nom de la zone humide	Characteristic Caractéristiques
Jinja	Kyekinde and Walumbe stream	Modified and cultivated with annual crops
Mayuge	Lumbuye Katago	<i>Cyperus papyrus</i> spp., <i>Acacia</i> spp., <i>Phoenix reclinata</i> spp., <i>Phragmites</i> spp., <i>Sorghastrum</i> spp.
Iganga	Kitumbezi	<i>Phragmites</i> and <i>Cyperus papyrus</i> dominated swamp. Thickets on the fringes
Bugiri	Malaba	Palms (<i>Raphia</i> , <i>Phoenix</i>), <i>Cyperus papyrus</i>
	Hyuye	Seasonal wetlands dominated by <i>Cyperus latifolius</i> interspersed with palm trees with thickets and short grass at the wetland fringes. Located in Namuwombi village, Bulugui Sub-county
	Kibimba	Extensive wetland vegetation (<i>Cyperus papyrus</i> , <i>Typha</i> and <i>Phragmites</i> , thickets and thorny bushes, the biggest section is under rice cultivation (Tilda project).
	Flood plain of Butundula and Bugubo Village (Naitosi seasonal wetland)	Flood plain with thicket and short grass and thorny bushes, <i>Phragmites</i> . Modified through rice growing, cassava and potatoes.
	Natumiramisasa stream (Narrow valley about 450 m between Kapyanga and Buwunga Sub-Counties)	Modified and reclaimed for rice growing
	Kadoma about 100 m	<i>Cyperus papyrus</i> , Palms, <i>Acacia</i> thickets and <i>Lantana camara</i> on the fringes
	Bugumbo	Seasonal wetland with <i>Cyperus latifolius</i> and wetland grasses. Palms dominate the swamp <i>Acacia</i> spp. and thorny bushes on the fringes. Part reclaimed for rice growing
	Bupala	Modified through rice cultivation
Tororo	Kitumbezi - Nakamini about 1.2 km across	<i>Phragmites</i> and <i>papyrus</i> dominated swamp. Palms thickets on the fringes
	Malaba	<i>Phragmites</i> , <i>Typha</i> , <i>Cyperus papyrus</i> and <i>C. latifolius</i> are also found in permanent swamps. At the edges where the wetland is seasonal are grass species such as <i>Echinochloa</i> , <i>Sorghastrum</i> , <i>Hyparrhenia</i> , <i>Leersia hexandra</i> and at the fringes are palms. Other plant species include <i>Cissampelos mucronata</i> , <i>Dissotis rotundifolia</i> , <i>Dryopteris striata</i> , and <i>Polygonum salicifolium</i>
	Akiponet,	<i>Phragmites</i> spp., <i>Cyperus papyrus</i> and <i>C. latifolius</i> , Palms
	Osio	Dominated by grass such as <i>Echinochloa</i> , <i>Sorghastrum</i> , <i>Hyparrhenia</i> <i>Leersia hexandra</i> and at the fringes are palms on termite mounds and other raised parts within the wetland.
	Katerema	Dominated by grass such as <i>Echinochloa</i> , <i>Sorghastrum</i> , <i>Hyparrhenia</i> <i>Leersia hexandra</i> and at the fringes are palms on termite mounds and other raised parts within the wetland. Modified wetland largely with secondary vegetation

Other than wetland vegetation, the area is also dominated by *Albizia-Chlorophora ecclesia* trees as well as undifferentiated semi-deciduous thickets consisting mainly thorny shrubs such as *Capparis erythrocarpos* and *Toddalia* found on poorer areas. Few of the trees commonly found on the project area are timber trees such as *Chlorophora ecclesia* (Mvule), *Markhamia platycalyx*, *Ficus sycomorus* (Mukuni), *F. natalensis*, *Albizia coriaria* (musuemba), fruit trees such as *Mangifera indica* (mango tree) and *Artocarpus heterophyllus* (jackfruit).

**Table n° 8 - WESTLANDS CROSSED BY THE TRANSMISSION LINE/
 MARAIS TRAVERSES PAR LA LIGNE DE TRANSMISSION**

District	Name of westland Nom de la zone humide	Characteristic Caractéristiques
Jinja	Jackfruits, mangoes	Homesteads
	Eucalyptus,	Woodlot
	Pine, <i>Cyprus</i>	Buwekula forest reserve
	<i>Albizia</i> spp, <i>Chlorophora excelsa</i> (Mvule), <i>Markhamia</i> <i>plyatclyx</i> , <i>Ficus</i> <i>natalensis</i>	Around homesteads and crop land
Mayuge	Jackfruits, mangoes, avocadoes, Mvule, <i>Ficus</i> <i>sycomorus</i> (Mukuni), <i>Markhamia plyatclyx</i> , <i>Ficus natalensis</i> (Mugaire), <i>Albizia</i> <i>coriaria</i> (musuemba)	Scattered in gardens and around homesteads
Iganga	Jackfruits, Mangoes, Avocadoes	Around homesteads
	Mvule, <i>Ficus sycomorus</i> (Mukuni), <i>Markhamia</i> <i>plyatcalyx</i> , <i>Ficus</i> <i>natalensis</i> (Mugaire), <i>Albizia coriaria</i> (musuemba)	Scattered in gardens
	Palms	On the fringes of both seasonal and permanent wetlands crossed by the line
Bugiri	Jackfruits, Mangoes, Avocadoes, Jacaranda	around homesteads
	Mvule, <i>Ficus sycomorus</i> (Mukuni), <i>Markhamia</i> <i>plyatclyx</i> , <i>Ficus</i> <i>natalensis</i> (Mugaire), <i>Albizia coriaria</i> (musuemba), <i>Tamarindus indica</i> (Tamarind)	Scattered in arable land with annual crops and some inter planted with coffee and bananas especially in Kapyanga. Others around shade trees and in rock outcrops especially in Igogo, Kayango, Bubofu, Bugodo and Buswili village in Kapyanga Sub-county
	Eucalyptus sp.	Woodlots
	<i>Phoenix reclinata</i> (Palms) <i>Balonus palm</i>	Fringes of Wetlands, rock outcrops
Tororo	<i>Melea</i> spp, <i>Markhamia</i> <i>plyatclyx</i> , <i>Grevillea</i> spp., <i>Albizia coriaria</i> (Etekwe), <i>Cassia</i> spp., <i>Ficus sycomorus</i> , <i>Delonix regia</i> , <i>Tamarindus indica</i> .	Around homesteads as ornamentals and shade
	<i>Acacia</i> spp , Palms	Fringes of both seasonal and permanent wetlands

In other uncultivated parts along the line are vegetation types characterized by the savannah-like community consisting of forest elements and incoming savannah trees and a grass layer dominated by *Pennisetum purpureum* (elephant grass), *Imperata spp.* and *Hyparrhenia rufa*. *H. rufa* mainly forms fire climax. This savannah type covers extensive areas of the line bordering the swamps especially in the districts of Bugiri and Tororo. In Jinja, Mayuge and Iganga, the post-cultivation vegetation is mainly shrubs *Tithonia* and *Lantana camara*.

Other vegetation types in the project area are found in the non uniformed farmland used for the growing of seasonal crops. Beans, maize, sweet potatoes and cassava are common in all the districts. Rice is commonly grown in the seasonal and permanent wetlands in all the districts. Bananas and coffee inter-planted among trees are common in the wetter parts of Bugiri (Tororo-Jinja highway to Kitembezi wetland), Iganga and Jinja districts. Yams, cabbages and other vegetables are also planted along wetland edges in almost all parts of the district. Millet, sorghum, soybeans, groundnuts and simsim are common in the drier parts of Bugiri and most of Tororo district.

Large scale uniformed farming within the transmission corridor characterized by rice and sugarcane. The line traverses 6.5 km of Kakira sugarcane plantation partly in Jinja and Mayuge districts. Elsewhere there are sugarcane out growers in Bukoli, Lugolore, Mbirizi and Magada villages in Mayuge district, Nakivumbi and Bulyansiima village in Iganga district as well as Bupala in Bugiri district. Rice on the other hand is grown on large scale in Kibimba wetland in Bugiri district.

5.2.1.2. KENYA

In Kenya, as one goes higher in altitude the vegetation becomes floristically less diverse. Common trees include *Diospyros abyssinica* (Giant diospyros), *Croton macrostachyus* (Broad-leaved croton), *Syzygium guineense* (Water pear) and *Celtis africana* (Stinkwood), with dense undergrowth of *Acanthus* and *Brillantaisia*.

As the altitude decreases, vegetation varies from mixed shrubs and grass moor lands to dense growth of forest. The Bungoma district's main natural resource forest is found between altitudes 1,800 and 3,500 m, covering an area of approximately 50,866 ha. Out of this, 15,000 ha is under bamboo, 15,000 ha is under moor lands and 866 ha has been cleared and planted with exotic trees, mainly *Pinus cyperus* and *Eucalyptus* species. The remaining 20,000 ha are under natural forest with numerous tree species.

The wetter areas of the lower zones are composed of broad-leaved trees. The drier areas are dominated by leafed evergreen trees, which include *Juniperus procera* (East African juniper) and *Podocarpus*. The middle zones consist mainly of *Arundinaria alpina* (bamboo). In some areas, there is a mixture of forest and grasses which include *Penniselum clandestinum* (Kikuyu grass). In the upper zones, major tree species are *Hagenia abyssinica* (African redwood) and *Rapanea rhododendroides*. Lower down we find the wooded grasslands. The vegetation consists of grass with scattered trees or group of trees.

The type of forests in Teso is plantation forest. There are very few natural forests in the district. Most of these plantations are on private land. Only 578.8 ha are gazetted forest areas. Some of the hills are still bare, namely Odiado, Nangina, Nambuku Ganjala, Genga, Bukiri, Murembe/Nang'oma and Amukura which are programmed for the government to gazette. Apart from lack of gazetted forests areas, re-forestation programs in the district have another serious problem to contend with and that is due to climatic conditions. During the previous plan period, about 58.0 ha of land was planted with trees. With production of about 2,000,000 seedlings currently, it is hoped that more areas will be re-afforested. Currently, Forest production is about 721 m³ of timber. The forests are also used for preservation of water catchments.

The Kakamega and North Nandi forests are two ecosystems that have been preserved and still in a natural state. Concerning the lowland area of Kakamega, the original vegetation was *Acacia-Balanites-Combretum* woodland. This has been degraded over time due to human settlement and agriculture. What remains of the natural vegetation is restricted to some few hilly areas that are rich in biodiversity. These hilly areas are not easily accessible.

On the east, the Lessos sub-station is located on the edge of the Nandi escarpment, above and immediately east of Kakamega forest (Important Bird Area KE058). North Nandi Forest stretches for more than 30 km north to south and is 3 to 5 km wide for most of its length. Biogeographically, North Nandi is transitional between the lowland forests of West and Central Africa (the easternmost outlier of which is Kakamega) and the mountain forests of the Central Kenya highlands.

Endangered species of flora are notably *Croton macrostachys* and *Olea welwitschii*. Very abundant in the past, they have been overexploited for timber since few years. Deforestation and loss of vegetative cover has also resulted in a shortage of plant and tree resources. Over the last 150 years, the most important land cover conversion pathways in the Nyando basin have been characterized by substitutions of vegetation dominated by trees to vegetation dominated by grasses.

Planted *Eucalyptus* and *Euphorbia* (Spurges) species are commonly seen on borders of farms and homesteads. Existing rural activities and poor land management practices have affected biodiversity in two ways:

Increased demand for more agricultural land and therefore altering natural habitats;

Alteration of soil chemical properties and therefore reducing soil and plant diversity. Kakamega forest is an area with unique habitats and biodiversity of local, national and global significance and the environmental impact will continue if this reduction goes unchecked.

5.2.2. WILDLIFE

5.2.2.1. UGANDA

Birds and monkeys are notable wildlife within the project area in Uganda. The birds are mainly associated with wetlands and thickets and the remaining natural trees where they regularly breed, feed and roost in the emergent vegetation. These are either *Cyperus papyrus*, reeds, *Typhus spp.* or reed mace *Phragmites spp.* in extensive swamps or in fringes around water bodies. Papyrus swamps are rich in birds both in terms of variety and numbers of individuals. The common wetland birds in the project area are shoebills, stocks, herons, crowned cranes, flamingos, swamp webler, ducks, and wavers. Most of the birds found in wetlands such as Kibimba Rice Scheme (Tilda) are endemic to wetlands. The common birds found in wetlands such as Rice Scheme are rare and various hence good for tourism. Many other bird species are found in the savannah grassland and woodlands in most parts along the transmission line.

Other animals common in the swamps fringes and thickets are monkeys, baboons, antelopes and pigs. There is no endangered or rare species of fauna reported in the area.

Generally, wildlife populations in areas where transmission line is proposed to pass are low. This is partly due to habitat loss for these animals due to agricultural encroachment. Wildlife is mainly concentrated in the wetlands. There are reported cases of large mammals such as hippos and crocodiles in the thick and permanent wetlands and bushbucks, reedbuck and small numbers of buffalo in less inhabited areas infested with tsetse flies *Glossina pallidipes* and *Glossina fuscipeans*.

5.2.2.2. KENYA

The Kakamega and North Nandi forests in Kenya are a secondary area of endemism, defined by the presence of the globally threatened, restricted-range of a scarce resident bird, the Chapin's flycatcher (*Muscicapa lendu*). The avifauna is similar in those forests, being a mixture of species characteristic of two biomes: the Guinea-Congo Forests and Afrotropical Highlands biomes (34 out of 70 species in this latter biome are present). Around 160 species in all have been recorded.

North Nandi is poorer in species than Kakamega and its bird communities have a larger montane element. There have been no recent surveys here and the present status of North Nandi's rare birds, including *Muscicapa lendu*, is unknown. Regionally-threatened species include the Olive ibis (*Bostrychia olivacea*, possibly locally extinct), the African crowned eagle (*Stephanoaetus coronatus*, resident in small numbers), the Red-chested owl (*Glaucidium tephronotum*, uncommon), the Thick-billed Honeyguide and the Least Honeyguide (*Indicator conirostris* and *I. exilis*, both local and uncommon species), the Grey-Chested Illadopsis (*Kakamega poliothorax*, scarce), the Southern Hyliota (*Hyliota australis*, uncommon) and the Yellow-bellied Wattle-eye (*Dyaphorophya concreta*, uncommon).

Wetlands, notably the Kingwal wetland that is a massive wetland on the catchment of Yala River, are critical biodiversity areas often hosting a large variety of bird life. Of the 1,089 bird species found in Kenya, 255 species from 44 families are associated with water and aquatic systems, implying wetlands support approximately 25% of Kenya's avifauna. Of the 255 species, freshwater bodies support 235 species or slightly over 92%. In total, 170 species are supported by the Lake Victoria's wetlands, and out of this, 82 are dependent on aquatic vegetation and water edge habitats. Wetlands in the area are fairly well stocked with fishing birds like the Gulls, Terns, Pelicans, Kingfishers and Cormorants.

Animals that are dependent on the wetlands include the Sitatunga antelope that feed and breed in wetlands and the Crane birds. Other major fauna include the Otters, which are not entirely wetland mammals but are known to live in wetland areas where there is plenty of fish, which they feed on, as well as crabs, molluscs and amphibians. The Nile crocodile and hippopotamus are also found in the area. Monkeys, monitor lizards and several snakes including python, cobra, and mamba are also found within these wetlands.

There are also several animals that are not associated with wetlands and water bodies like leopards, hyenas, wild pigs, porcupines and antelopes. These are less well represented in the area due to human disturbance and extensive cultivation. Human vs wildlife conflicts occur in the project area. Crop destruction and damage by raiding monkeys, hippopotami, waterbucks and porcupines is one form of conflict. The other form consists of injuries and sometimes death by dangerous wildlife species such as crocodiles, hippopotamus and snakes.

Outside these ecosystems, the diversity and population of wildlife is quite low since their habitats have largely been destroyed by human activities. In addition, introduction of eucalyptus is however lowering the water table, which leads to the following:

Destruction of the natural habitat for wetlands flora and fauna e.g. the rare Sitatunga antelope (*Tragelaphus spekeii*), crane birds (*Balearica pavonina*) and *Syzygium* trees;

Degradation of vulnerable soils organic matter which is stored under water logged conditions;

Reduction in water holding and filtration function of wetlands.

5.2.3. PROTECTED AREAS

5.2.3.1. UGANDA

There are few protected areas in the project zone. One is the Jinja animal and bird sanctuary in Uganda which was gazetted in 1953 and includes some parts of the project along the bank of the Nile River, part of Jinja Town as well as the source of the Nile but has now reduced due to development in the area. Jinja also has the Buwwekula, Kimaka and Mwiri planted forest reserves under the National Forest Authority.

Other protected areas in the project area in Uganda are the numerous wetlands crossed by the proposed transmission line. There are officially gazetted and the law of Uganda does not allow encroachment.

5.2.3.2. KENYA

Kakamega Forest in Kenya covers an area of about 240 km². It was established to protect the only mid altitude tropical rainforest in Kenya, a remnant and eastern limit of rainforests of Zaire and West Africa. This forest is unique in Kenya and contains many species found nowhere else in the country. The forest lies in the Lake Victoria catchment, about 50 km north of Kisumu and just West of the Nandi Escarpment that forms the edge of the central highlands. It was first gazetted as a trust forest in 1933 and two small Nature reserves, Yala and Isecheno were established within the forest in 1967. In 1985, nearly 4,400 ha of the northern portion of the forest together with the adjacent Kisere Forest were gazetted as Kakamega Forest National Reserve. The forest is an important water catchment area with the Isiukhu and Yala Rivers flowing through it. The terrain is undulating with often steep sided river valleys.

Kakamega Forest National Reserve has unique flora and fauna that are highly adapted to the forest ecosystem. The national reserve comprises of both Kisere and Buyangu Reserves for a total of 44,399 km². The Reserve is under strict protection management. Being the only remnant in Kenya of the unique Guineo-Congolian forest ecosystem, the park offers unique wildlife and scenic beauty.

In addition, the protected areas in the Kakamega North District include land under gazetted forest cover, for an area of 28,200 ha. There are six forest stations namely: Lugari, Turbo, Nzoia, Kisere, and Kakamega. The first three have a total of area of 12,171.3 ha mainly composed of exotic tree plantations comprising of pines, cypress and eucalyptus. Kakamega North is covered mainly with indigenous forest with *Croton megalocarpus*, *Celtis durandii* (Stinkwood) and *Anigeria altissima*. Kisere forest is managed by the Kenya Wildlife Service.

In North Nandi district, North Nandi forest was first gazetted in 1936 as a Trust Forest covering 11,850 ha. In 1968 the North Nandi Nature Reserve was established, amounting to 3,434 ha. Since gazettelement, a total of 1,343 ha have been excised, including part of the nature reserve. An additional 410 ha has been converted to Nyayo Tea Zone. Of the present gazetted forest area (10,500 ha), 8,000 ha are indigenous, closed-canopy forest, the remainder consisting of cultivation, scrub, grassland, plantations and tea. All areas outside the nature reserve were originally slated for conversion to plantation forest, but this has not taken place.

5.3. HUMAN ENVIRONMENT

5.3.1. ADMINISTRATIVE FRAMEWORK AND LAND TENURE

5.3.1.1. UGANDA

The proposed route passes through five districts (Jinja, Mayuge, Iganga, Bugiri and Tororo) and 13 sub-counties in total. Details of the sub-counties, through which the line passes, are attached as appendices.

**Table n° 9 - UGANDA/UGANDA: LIST OF DISTRICTS AND SUB-COUNTIES CROSSED BY THE TL/
 LISTE DES DISTRICTS ET SOUS-COMTÉS TRAVERSÉS PAR LA LIGNE DE TRANSMISSION**

District	Sub-county Sous-comté
Jinja	Buwenda, Mafubira, Kakira
Mayuge	Baitambogwe, Imanyiro, Buwaaya
Iganga	Ibulanku
Bugiri	Kapyanga, Buwunga, Bulugui
Tororo	Iyolwa, Rubongi, Osukuru

The common land tenure system in the project area is customary and freehold although leasehold exists to a very limited extent as well as public land. All large firms like Kibimba Rice Scheme and Kakira Sugar plantation have leases. The customary tenure is the most common system. The tenure systems are explained below:

- **Public Land:** land that is owned by the Government. It leases land out to individuals on specific terms and covenants. Land leased to urban authorities under 199 years is, in turn, leased out for lesser terms and specific covenants to individuals. The agency that handles the land matters on behalf of Government is the Uganda Land Commission;
- **Freehold Land:** is land allocated to missions, businesses or eminent persons to own in perpetuity;
- **Leasehold Land:** persons who hold primary interests or titles on land (as in i. and ii. above) may lease it out to individuals. There are comparatively larger scale lease transactions in the public and mailo lands than on freehold lands. Leasing of public lands is greatly encumbered by the presence of customary tenants on such land. In the case of public land, even their consent must be sought first and in both cases adequate compensation has to be paid first;
- **Customary Holdings:** it's the oldest system of land holding in the district. Land under this system is held according to the customary rules of a particular clan. No land title is issued under this system. Ownership simply passes down from father to son or from one generation to another. Here land can not be used as security. Those who hold land under this system are not subject to annual payment of ground rent and observance of development conditions. Although a detailed study has not been conducted, it is safe to assume that the majority (more than 90%) of the people in Uganda own land by customary rights. They carry no titles on such lands and continue to hold it practically as long as the landlords do not want it. The boundaries may be marked by ridges, trenches or trees and grass. For the biggest part of the project area, this is the tenure by which most people own land.

Fixing of the value of land in Uganda depends on whether it is public (Government owned) or privately owned according to land tenure types. For public land, the Chief Government Valuer will fix the rates of compensation. If owned privately, the developer will negotiate with the owner and agree on the amount to pay for the land to be acquired.

5.3.1.2. KENYA

In Kenya, the study covers two provinces: Rift Valley and Western; five Districts: Nandi North, Kakamega North, Bungoma South, Teso and Busia; and 14 divisions including Amagoro, Amukura, Bumula, East Kabras, Kabiyeet, Kabras, Kanduyi, Kilibwoni, Kosirai, Malava, Nambale, Navakholo, Webuye, and West Kabras.

**Table n° 10 - KENYA: LIST OF DISTRICTS, DIVISIONS AND VILLAGES CROSSED BY THE TL/
 LISTE DES DISTRICTS, DIVISION ET VILLAGES TRAVERSES PAR LA LIGNE ELECTRIQUE**

District	Division	Location	Sub Location	Villages
Nandi North	Kabiyeet, Kilibwoni, Kosirai	Kabeiyo, Kabulonik, Kilibwoni, Kokwet, Kosirai, Lolmini, Ngechek, Sang'alo, Tereke, Tulon	Songoliet, Saniak, Rubet, Mateget, Kamoiywa, Kipsamoite, Tulon, Kimngeru, Sang'alo, Kosirai, Kamwega, Lolmini ngai, Kiptendeni, Kiplolok, Kabeiyo, Ndaptabwa, Septonik,	Keburo, Terike, Tabolwa, Teldet, Songoliet, Ndaptabwa, Septonok, Chapchaben, Songio, Kabeiyo, Rongit, Kirini, Sang'alo, Kapserton, Kipkorgot, Kiplolok, Tuyabe, Kiptenden, Tiriini, Chepkiyep, Mateget, Saniak, Kapno, Kamoiywa, Kimolwet, Teltet, Kapkagaon.
Kakamega North	East Kabras, Malava, Kabras, Navakholo, West Kabras	Bunyala, Chesero, East Kabras, Kakunga, Mugai, Navakholo, Sevile, Shiruku, West Kabras	Burundu, Ikoli, Chesero, Kakunga, Namirama, Shibikhwa, Mugai, Malekha, Samitsi, Misingu, Mungakha, Shiliku	Nurekhu, Nangurunya, Ikoli, Mugai, Namirama, Shibikhwa, Mukhenga, Mirere, Nguvuli, Chiteresi, Mujanja, Mukaye, Shikokhwe, Burundu, Musaga, Mungakha, Soi, Chombeli, Kakoi, Mahanga, Kiober, Sivilie, Shikoshe, Konyoro, Luanda, Kalenda, Lutali
Bungoma South	Bumula, Kanduyi, Webuye	Bukusu South, Bukusa West, Bumula, Kimaeti, Lumboka, Lunao, Musikoma, Mateka, Muyanga, Namacha, Sang'alo, Sitikho, Tulienge	Kibachenje, Musikoma, Mwibale, Siombe, Namwaka, Myanga, Namasande, Sibembe, Sitikho, Namacha, Sang'alo, Lumboka, West Mateka, South Kanduyi	Lunao, Kibachenje, Nandingwa, Chemululugi, Sibembe, Namamuka, Bukirimo, Kaya, Wesimikha, Tulienge, Namasanda, Nandigwa, Bumula Sitikho, Siekumalo, Mbomere, Nasianda, Kamba, Kabusi, Namamuka, Lutaso, Namwini
Teso	Amagoro, Amukura	Akoret, Aremet, Kamolu, Kokogi, Kotur	Kotur, Malaba, Onyunyuro, Kokoki, Kodedema, Akoret, Kamolo, Odioi, Kwangamor, Osuret, Amukura	Machakusi, Kotur, Osia, Kodedema, Atera, Amairo, Omanikor, Kamolo, Kokogi, Parater, Omanikoli, Okurara, Ogarui, Ochunde, Okook, Amukura, Ukurala, Kaliwa, Kwangamor, Kokoki, Onyunyuri, Kadakai
Busia	Nambale	Bukhayo North	Lupida	Muyala, Tulienge, Bulibuli, Siera
Total	14	38	55	104

The study area is administered by the Government of Kenya under the provincial administration divided into provinces at the highest level, districts, divisions, locations, sub-location and villages at the lower level. Each province is headed by a Provincial Commissioner; district by District Commissioner; division by Divisional Officer; location by Chief and Sub-location by Assistant Chief.

There are also local authorities that generally deal with local service provision led by elected councillors under the Ministry of Local Government. Some of the services provided by the local authorities include water and sewerage, health, education which are supported by the Central Government through its Ministries of Water, Health and Education respectively.

Land tenure in Kenya falls under two main categories: (i) customary forms that reflect traditional systems of different ethnic groups; and (ii) statutory forms based on systems introduced during the colonial period and later adopted by the national parliament. Statutory tenure includes freehold tenure or ownership of land in perpetuity, and leasehold tenure that grants an interest in land in return for payment of a fee or rent.

Due to the agricultural potential of land in western Kenya (arable land accounts for 80-90% in districts of the project area, compared with the national average of 20%), the original colonial settlers demanded privatization of land rights in return for investment in the development of the region. Therefore, since 1956 there has been a system of statutory tenure with registered land rights throughout most of this region. Most people living in the project districts possess individual freehold title to the land they occupy and/or cultivate.

5.3.2. POPULATION AND DEMOGRAPHIC FEATURES

5.3.2.1. UGANDA

According to the 2002 Population and Housing Census, the Eastern region of Uganda has a total population of 6,204,915 people. Population distribution per affected sub-county is shown below.

The distribution of population by gender in the project area follows the general trend in Uganda with a slight majority of females.

The population is stable and migration is limited except for the influx of people from Kenya. The population density in the eastern region of the country is twice the national level. This is due to the fact that Jinja, one of Uganda's industrial areas, receives influx of people from within and outside the country looking for jobs and is thus one of the most densely populated districts in Uganda. The average household size for both districts is 4.8 persons (Uganda Bureau of Statistics), which is large and can be attributed to the extended family system and polygamy.

Table n° 11 - UGANDA/UGANDA: POPULATION PER SUB-COUNTY AFFECTED BY THE PROJECT/POPULATION AFFECTEE PAR LE PROJET PAR SOUS-COMTE

District	Sub-counties* Sous-comtés	Male Hommes	Male Hommes %	Female Femmes	Female Femmes %	Total
Jinja	Budondo	28,003	52.5	25,372	47.5	53,375
	Mafubira	37,100	49.0	38,492	51.0	75,592
	Kakira	14,713	53.2	12,938	46.8	27,651
Mayuge	Baitambogwe	29,563	49.0	30,930	51.0	60,493
	Buwaaya	16,665	47.8	18,252	52.2	34,917
	Imanyiro	23,906	48.5	25,340	51.5	49,246
Iganga	Ibulanku	18,531	48.5	19,677	51.5	38,208
Bugiri	Buwunga	15,308	47.8	16,725	52.2	32,033
	Buluguyi	9,566	48.0	10,309	52.0	19,875

District	Sub-counties* Sous-comtés	Male Hommes	Male Hommes %	Female Femmes	Female Femmes %	Total
	Kapyanga	20,681	48.6	21,872	51.4	42,553
Tororo	Osukuru	17,921	49.7	18,077	50.3	35,998
	Rubongi	13,701	48.4	14,603	51.6	28,304
	Iyolwa	12,227	48.6	12,919	51.4	25,146
	Total	257,885	49.3	265,506	50.7	523,391

5.3.2.2. KENYA

The population of Kenya is 32 million, with 21% of Kenyans living in the Rift Valley and 10% in the Western region (CBS, 2004). These regions are predominantly rural (more than 85%).

Table n° 12 - KENYA: DEMOGRAPHIC CHARACTERISTICS OF THE RIFT VALLEY AND WESTERN PROVINCES/CARACTERISTIQUES DEMOGRAPHIQUES DE LA VALLEE DU RIFT ET DES PROVINCES DE L'OUEST

Province	Total Pop. Pop. Totale (‘000)	Density Densité (p/km ²)	Rural Pop. Pop. Rurale (%)	Dependenc y Ratio Ratio de dépendance	M/F ratio Ratio n H/F	FHH FCF (%)	HH size Taille ménage s	Annual Growth Taux de croissanc e annuelle (%)
Rift Valley	6,845	38	86.2	108	99	27.6	4.6	3.4
Western	3,341	406	91.6	107	92	37.8	4.6	4.1
Kenya	32,000	49	80.7	88.7	97	31.7	4.4	1.7

Sources: CBS, 2004a, 2004b; MPND, n.d.

Table n° 13 - POPULATION BY DISTRICT AND DIVISION/POPULATION PAR DISTRICT ET DIVISION

District	Division	Male Hommes	Male Hommes %	Female Femmes	Female Femmes %	Total
Nandi North	Kabiyet	21,614	49.840	21,753	50.160	43,367
	Kilibwoni	31,184	49.742	31,508	50.258	62,692
	Kosirai	17,552	49.606	17,831	50.394	35,383
Sub-Total		70,350	49.738	71,092	50.262	141,442
Kakamega North	East Kabras	14,687	48.557	15,560	51.443	30,247
	West Kabras	9,229	48.015	9,992	51.985	19,221
	Malava	11,306	48.119	12,190	51.881	23,496
	Navakholo	31,254	47.835	34,083	52.165	65,337
	Kabras (new under E/ Kabras & W/Kabras)					
Sub-Total		66,476	48.066	71,825	51.934	138,301

District	Division	Male Hommes	Male Hommes %	Female Femmes	Female Femmes %	Total
Bungoma South	Bumula	61,866	47.954	67,145	52.053	129,011
	Kanduyi	80,913	43.467	82,655	50.533	163,568
	Webuye	55,684	48.549	59,013	51.451	114,697
Sub-Total		198,463	48.729	208,813	51.271	407,276
Teso	Amagoro	16,751	49.334	17,203	50.666	33,954
	Amukura	23,183	48.231	24,884	51.770	48,067
Sub-Total		39,934	48.688	42,087	51.312	82,021
Busia	Nambale	32,269	47.775	35,275	52.225	67,544
Sub-Total		32,269	47.777	35,275	52.225	67,544
Total		407,492	48.709	429,092	51.291	836,584

Source: *Republic of Kenya; 1999 Population and Housing census. Vol.I. Central Bureau of Statistics (2001).*

The Rift Valley is a province of net in-migration, while the Western province experiences net out-migration. In the Western province, population pressures on land especially in Bungoma and Kakamega account for the high rate of out-migration. Many of these migrants go to Uasin Gishu and parts of Nandi (Rift Valley) that are sparsely populated and have a high demand for casual labour on large scale plantations.

5.3.3. SOCIAL ORGANISATION AND ETHNIC GROUPS

5.3.3.1. UGANDA

In the project area, the common tribes are Basoga, Baganda and Bagweeri (Jinja, Mayuge, Iganga and Bugiri), Banyole, Itesot, Samia, Japadhola and Luo (Tororo). The major religious sects are Christians with Roman Catholic and Protestants (at 33% each), Muslim (16%) and Traditionalists (18%). The project area is cosmopolitan with a wide range of cultural practices due to the presence of different tribes having each its own culture.

5.3.3.2. KENYA

Ethnic groups' distribution tends to be more or less district based. In Nandi District, the predominant ethnic group is the Nandi who belongs to the larger Highland Nilotes group. In Western Province: Kakamega, Bungoma South and sections of Busia (Nambale), the majority ethnic groups are the Luhya particularly whose sub-tribes include Kabras (Kakamega North), Bukusu (Bungoma South) and Bakhayo (Busia). Other minority sub-tribes are Maragoli, Isukha (Kakamega North), Maragoli, Wanga, Kisa (Bungoma South) who are all under the Luhya tribe which falls under the larger ethnic group of the Bantu. In Busia District the Teso ethnic group is the minority. In Teso District the majority ethnic group is Teso which belongs to the larger ethnic group of River-Lake Nilotes.

All the ethnic groups comprise of communities practicing mixed farming. While the Nandi are traditional livestock keepers they have today taken more to dairy farming. Their traditional leadership in history was provided by the Orkoiyot, the last of whom was killed by the British around 1900. Since then the traditional social organization is modeled around the Chief who is a government employee. The tribe practices right of passage through circumcision of boys and female genital mutilation (FGM) for girls which take place around November and December of each year. During such period external activities are not welcome since they are perceived to be interference.

Among the Luhya who are the predominant occupants of Western Province (including all the sub-tribes) there are sedentary farmers who practice mixed farming. Their traditional leader Nabongo of the Wanga was the only prominent ruler over the whole of Western Kenya including the Teso. Circumcision of boys is a cultural practice undertaken in August of every even year primarily as a right of passage. Hence that period is revered and foreigners are forewarned against stumbling upon such rights as their presence would be associated with bad luck. In December of each even year, new initiates would graduate into adulthood and such a period is critical even for non-indigenous men as they could easily be forcibly initiated through the circumcision if they have not. The Luhya belong to the larger ethnic group of Bantu and are good speakers of Kiswahili.

The Teso who are the predominant occupants of Teso District, and are also found in parts of Busia District and in Uganda, are mixed farmers. They do not practice circumcision but undergo a different type of right of passage in which six incisor teeth are extracted on the lower jaw.

Polygamy occurs in Kenya, and in the Rift Valley and Western provinces the proportions of men with two or more wives are, respectively, 13.8% and 11.5% (CBS, 2004).

5.3.4. HEALTH

5.3.4.1. UGANDA

Life expectancy in Uganda is 47 years, and is slightly higher for women than for men. It is also slightly higher than the Sub-Saharan Africa (SSA) average that is 46.1 years, although it remains well below the average for the UNDP average for medium-development countries (67 years).

The total fertility rate in Uganda is 6.9 children per woman, considerably higher than the average of 5.2 for SSA. The Table 14 below gives the fertility rate per the different districts in the project area.

**Table n° 14 - UGANDA/UGANDA: FERTILITY RATE BY DISTRICT IN PROJECT AREA/
 TAUX DE FERTILITE PAR DISTRICT DANS LA ZONE DU PROJET**

District	Fertility Rate Tau xde fertilité
Jinja	6.2
Iganga	7.3
Mayuge	6.8
Bugiri	7.2
Tororo	7.1

Source: Uganda Bureau of Statistics, 2002

In 2006, the infant mortality rate (IMR) in Uganda was 66.15 deaths per 1,000 live births, with a higher rate in males than females; the under-five mortality rate (U5MR) was 140 deaths per 1,000 live births in 2003.

The major diseases in the project area include: malaria, Africa trypanosomiasis (sleeping sickness), respiratory infections, malnutrition, anemia, trachoma, intestinal worms, neo natal tetanus and other eye conditions.

The majority of Ugandans 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 area.

**Table n° 15 - UGANDA/UGANDA: ACCESSIBILITY OF HEALTH SERVICES IN PROJECT AREA/
 ACCESSIBILITE AUX SERVICES DE SANTE DANS LA ZONE DU PROJET**

District	5 km or less 5 km ou moins (% pop.)	Over 5 km Plus de 5 km (% pop.)
Iganga	85.4	14.5
Mayuge	65.1	30.4
Jinja	96.5	3.5
Tororo	79.0	21.0
Bugiri	72.9	27.0
Eastern	75.3	24.7
Uganda	73.2	26.8

Source: 2002 Housing and Population Census

In Iganga district there are 84 health facilities including three referral hospitals, gazetted public and NGO health facilities in addition to the unknown number of private clinics scattered around the district. Jinja district has a total of 44 Health Centers including two referral hospitals and 42 lower level health facilities. Tororo district is served by four hospitals, numerous government and missionary health centers, sub dispensaries and dispensaries. Bugiri district has a total of 56 operational Health units including 12 owned by NGO and 44 owned by Government.

Within the project area, each sub-county has a health center level III which offers maternity services, outpatient and inpatient departments. At the parish level there is a health centre II, which is basically an outpatients department.

The affected sub-counties are mainly served with health centers owned by both Government and NGO. The common feature in these facilities is that they are over stretched and inadequate in terms of stock of drugs, lack of or no qualified medical personnel, lack of access to power and lack of modern facilities for proper diagnosis.

It was established from the discussions with the local leaders that the very poor resort to other means of treatment like Witchdoctors, Herbal treatment and community health Workers.

The range of health services offered by these health centers are basically limited to outpatient departments, laboratory, maternity for normal delivery and inpatient services for communicable diseases. Dental, eye care clinics and theatres within the project area are not operational. On the whole facilities are overstretched and inadequate. Medicines are also insufficient in many of the centers 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.

In general, availability of health services can be rated as of low value because of their characteristics.

5.3.4.2. KENYA

In Kenya, data for 2003 indicate that life expectancy was 47.2 years, with 46.3 years for women and 48.1 years for men (UNDP, 2005). Life expectancy was 57 years in the period 1989-1999; the decline is largely due to HIV/AIDS.

The national infant mortality rate (IMR) is 78 deaths per 1,000 live births and the under-5 years mortality rate (U5MR) is 114 per 1,000 live births (CBS, 2004). These rates vary by sex and, particularly, income level and region. Moreover, following rapid improvement during the 1970's and 1980's, the IMR and U5MR have both suffered a decline of approximately 30 % since 1990, due to the impact of HIV/AIDS as well as poverty. In Kenya, 20 % of children suffered from chronic malnutrition in 2003, down from a level of 32.5 % the previous year (MPND, 2005).

The national HIV prevalence rate is 6.7 % among people aged 15-49 years (CBS, 2004). However, the rates of HIV infection among women (8.7 %) and people living in rural areas (10 %) are nearly the double of those for, respectively, men (4.5 %) and urban residents (6 %).

The main health threats reported in the project area are HIV/AIDS and malaria. However, Rift Valley and Western provinces have HIV prevalence rates below national averages for women and men.

In Kenya, the main provider of health services in all the districts within the project area is the Government. Within the entire project areas along the existing and proposed transmission lines there is no hospital hence no doctor in the respective sub-locations and locations. Only dispensaries/health centres exist and are manned by nurses, at least three in each facility (table 16). All of them have a Voluntary Counselling and Testing (VCT) Centre due to the impact of HIV/AIDS. The dispensaries/health centres are distributed as follows.

**Table n° 16 - KENYA: DISPENSARIES/HEALTH CENTRES IN PROJECT AREA/
 DISPENSAIRE ET CENTRES DE SANTE DANS LA ZONE DU PROJET**

Province	District	Village/Sub-Location	Health Centre Centre de santé
Rift Valley	Nandi North	Songoliet	1
		Kabeiyo	1
		Ndaptabwa	-
		Kibarmos	3
		Septonok	3
Western	Kakamega North	Burundu	2
		Ikoli	3
	Bungoma South	Kibachenje	1
	Busia	Lupida	1
	Teso	Kotur	-
Total of health centres			15

5.3.5. EDUCATION

5.3.5.1. UGANDA

The adult literacy rate among Ugandans is 68.9 %, including 78.8 % of men and 59.2 % of women (UNDP, 2005). Among young adults (15-24 years), the literacy rate is 86 % for males and 74% for females (UNDP, 2005). The level of literacy in Uganda is considerably higher than SAA averages for adults (61.3 %) and youth (73.7 %).

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 (table 17). The proportion of female household heads with little or no education is higher, including nearly 70 % nationally and 80% of those living in rural areas. On the other hand, in urban areas the proportions are similar for male and female household heads that have completed primary school and received some secondary education.

**Table n° 17 - UGANDA/UGANDA: EDUCATIONAL ACHIEVEMENT FOR MALES AND FEMALES HOUSEHOLD HEADS (MHH AND FHH)/
 NIVEAU D'ÉDUCATION DES HOMMES ET DES FEMMES CHEFS DE MENAGE (HCM ET FCM)**

Educational achievement Niveau d'éducation	Uganda Ouganda			Rural Areas Zones rurales		Urban Areas Zones urbaines	
	All Tous	MHH HCM	FHH FCM	MHH HCM	FHH FCM	MHH HCM	FHH FCM
No schooling Pas d'éducation	17.8	12.4	33.4	12.9	39.9	3.6	12.5
Some primary Primaire partiel	40.0	41.3	36.5	44.4	39.4	23.1	27.3
Primary completed Primaire complet	14.5	16.3	9.4	16.4	7.6	15.7	15.5
Some secondary Secondaire partiel	11.8	12.6	9.6	11.5	6.4	19.1	19.6
Secondary completed Secondaire complet	5.4	6.0	3.4	4.9	2.3	12.7	6.7
Post-secondary Post-secondaire	9.7	10.6	7.1	8.2	3.8	24.6	17.8

Source: WB, 2005

School drop-out is high; for example in Jinja, drop-out rate in urban centers is 40% and increases to 55-60% in the rural areas. It means that the majority of the labour that can be supplied by the people to work on the line project will be in the form of unskilled labour because there are few people with skills and training.

In addition, issues of accessibility and quality of education are still a daunting challenge. This status clearly explains why the population is not skilled and therefore qualifies to be referred to as a poor community. The low levels of literacy in the area implies that any sensitization and awareness programs to be designed for the people in the project area should not be written texts but illustrations, participatory and following a suitable pedagogical approach.

In Uganda, educational facilities for some of the districts through which the proposed line is passing are as follows: according to the District Environment Profile for Iganga district, there are 316 primary schools with only three in Buluguye sub-county, 16 secondary schools and two institutions. Based on the 2004 state of environment reports for Bugiri and Jinja, Bugiri had 297 primary schools, 47 secondary schools and four institutions while Jinja had 145 primary schools, 30 secondary schools, seven institutions and three universities. Most of the primary schools are aided by the Universal Primary Education program.

5.3.5.2. KENYA

Three-quarters or more of Kenyans are literate; among younger people, the rates are 85-90%. However, Kenyan literacy rates for women and rural people are lower than the national averages, as are the rates in the project area.

With the introduction of free primary education in 2003, progress is being made in Kenya towards the goal of universal primary education. In 2004, the net primary enrolment rate in project districts was higher than the national average of 82%: about 86% in the Rift Valley and 98% in the Western province. There is virtually no gender gap in primary schools; the ratio of girls to boys is 0.99.

However, only 54% of Kenyan children who complete primary school continue to the secondary level; the gross secondary enrolment rate is 29.8% with fewer girls than boys. The levels in the Rift Valley and Western provinces are slightly below than national average (29.8%), except for girls in the Western region.

In Kenya, the schools distribution per province and sub-location of the existing and proposed power lines are showed in the table 18 below.

**Table n° 18 - KENYA: SCHOOLS DISTRIBUTION IN PROJECT AREA/
 REPARTITION DES ECOLES DANS LA ZONE DU PROJET**

Province	District	Village/Sub-Location	Number of primary schools Nombre d'écoles primaires	Number of secondary schools Nombre d'écoles secondaire
Rift Valley	Nandi North	Songoliet	3	1
		Kabeiyo	6	2
		Ndaptabwa	5	3
		Kibarmos	26	4
		Septonok	22	5
Western	Kakamega North	Burundu	12	4
		Ikoli	22	7
	Bungoma South	Kibachenje	6	2
	Busia	Lupida	3	1
	Teso	Kotur	2	-
Total			107	29

5.3.6. ECONOMIC ACTIVITIES

5.3.6.1. UGANDA

The project passes in the eastern part of Uganda which is predominantly agricultural and supports a high percentage of the population relying on farming for employment and income.

Although most people are engaged in income generating activities, their monthly incomes are not stable, some are seasonal and still very low and thus fragile. A number of institutions in the district have contributed to employment; major formal employers operating in or close to the project area include Kakira Sugar works, Kibimba Rice Scheme, Schools and Health Centers. However the challenge of employment still remains as exemplified by number of youths loitering around the trading and playing cards.

Economic activities in the project area, other than agriculture et farming activities, include brick making for example in Bubori village near Malaba Wetland in Bugiri district and Katerema in Tororo district, transportation using small motorcycles (boda boda) which is common in almost all villages in Uganda, fishing in Nile River and wetlands as in Kibimba, Kitembezi in Bugiri and Malaba, petty trade like vending in Wakitaka in Jinja and Katerema, murrum mining in Bugubo in Bugiri and stone quarrying in Agoroti and Kayolo villages in Sukulu sub-counties in Tororo as well as fetching water for sale in towns like Bugiri. Other activities include: sewing, handcraft work, casual labour mainly in form of masonry and digging.

Tourism destinations in the project area include the Bujagali falls and the shrines located near the proposed Bujagali Hydro power station and rafting activities on Nile River in Jinja. Tourism is spectacular along the banks of Nile River from the Bujagali falls to Buwenda Matala where several tourism campsites have been established. The proposed transmission passes through these areas

Other tourist destination in the project in Bugiri district is the Kibimba Rice Scheme for bird watching. Elsewhere in Bugiri, the tourist sites include Irimbi rocks with its cultural site (“KAZIMBA KUNGILA”). There are also traditional shrines of the royal clan – Wakooli of Bukooli at Namakooko.



Photo 9. Nile River downstream Jinja/Le Nil en aval de Jinja



Photo 1. Bujagali falls, Nile River, Jinja/Les chutes de Bujagali, Jinja

5.3.6.2. KENYA

The labour force participation rate in Kenya is 77.4 %; in rural areas, the rate is 86.4 % (CBS, 2003d). Women are increasingly involved in the Kenyan labour market: the participation rate of women (72.6 %) is nearly as high as that for men (74.7 %). Child labour is estimated at 1.3 million, with children engaged primarily in commercial agriculture, fishing and domestic services (RoK, 2004).

The levels of unemployment in 2002 were 30-35 % in Bungoma and Nandi; in Kakamega, the level was 4 % and 23 % in Teso (MPND, n.d.). Agriculture employs 48.7 % of working women and 41.8 % of working men. In the Rift Valley and Western provinces, the proportions are higher, namely, 55-65 % of women and 51-53 % of men (CBS, 2004a); in project districts, the proportions vary from 40 % in Nandi to 75 % in Kakamega (MPND, n.d.).

Over 60 % of people who work are self-employed (CBS, 2004), in agriculture (72 %) and in informal sector micro and small enterprises (52 %). Overall, 90 % of people engaged in tourism, trade and manufacturing work in the informal sector (RoK, 2004). Micro and small enterprises (MSE) are often located in rural areas, with strong links to agriculture. In the project area, there are large numbers of informal sector MSE, often exceeding the number of formal sector enterprises. Women constitute a high percentage of MSE owners.

Wage employment is concentrated in the industrial sector where men do most of the work. Women's wage employment is largely in agricultural processing, forestry and manufacturing. Women tend to work outside large-scale industries; they receive lower wages than men; and, often work long hours in unhealthy, unsafe conditions.

Per capita income in Kenya was USD 450 in 2003; this was below per capita incomes in 1990, and reflects the fact that the economy grew at a slower rate than the population (MPND, 2005). Poverty increased in Kenya during the 1990s, from 48.8 % in 1990 to 57 % in 2003 (RoK, 2004)³. It had been projected that if the economic trends prevailing in 2005 persisted, poverty levels would rise to 65.9 % by 2015 (MPND, 2005). Current estimates on well-being in Kenya indicate that poverty levels have recently declined across the country. However, there are pockets of poverty in some regions where majority of the people live below the poverty line (Economic Review, 2007).

5.3.7. AGRICULTURE AND LIVESTOCK FARMING

5.3.7.1. AGRICULTURE

Uganda

Crops grown on a large scale in Uganda include sugarcane, rice, maize and groundnuts. Other crops grown are coffee, cassava, cotton, bananas, vanilla, sorghum, beans, sweet potatoes, yams and millet. Agricultural production is largely subsistence with the majority of the farmers using the hoe. In Bugiri and Tororo, some households use ox plough to cultivate their land. Mechanization is limited to large plantation such as Kakira Sugarcane plantation and Kibimba Rice Scheme. The proposed line crosses Kibimba Rice Scheme for a distance of about 4 km while it crosses Kikira Sugar plantation for about 6.5 km.

³ 2005/06 poverty lines: USD 22 for rural areas and USD 42 for urban areas (Economic Survey, 2007)

**Photo 10. Uganda/Ouganda: Kibimba rice scheme (future transmission line will be on the left side, as shown by the pink arrow)/
Rizière de Kibimba (la position de la future ligne est indiquée par la flèche rose)**



One of the major constraints affecting agricultural production in the project area is soil degradation caused by low input cultivation, crop diseases and permanent cropping due to the population density.

Most local farmers have no capacity to transport their produce to markets. They have limited access to markets for their crops and where these occur on bi-weekly basis farmers sell their farm produce at very low prices. From the discussions with the local authorities, it was established that traders take advantage of the peasants' lack of knowledge of market prices and mechanisms. Return from agricultural produce is thus minimal and creates little surplus for capital investments. However, government is putting in place measures to ensure that farmers increase production. For example government initiated programmes focusing on the agricultural sector in the project area include disease and pest control, promotion of high value crops and soil/water conservation and agro-forestry programmes.

Kenya

The predominant land use in Kenya is subsistence agriculture, using manual tools and producing low yields. Small-scale farms that constitute 95 % of agricultural holdings (WB, 2005) average 2-5 ha in the project districts, although data from Kakamega indicate individual holdings of only 0.7 ha.

The main food crops include maize, beans, sorghum, bananas, millet, cassava, sweet potatoes and Irish potatoes. Sugar plantations are located in Bungoma and Kakamega. Other cash crops include coffee, tea, tobacco, cotton, horticulture and sunflower.

The increasing numbers of people combined with poor farming practices and low investments in agricultural inputs have resulted in intensification of land use, high rates of land degradation and declining agricultural productivity. In addition, poor market and road infrastructures have caused a decline in cash crops like sugarcane and cotton.

5.3.7.2. LIVESTOCK FARMING

Uganda

As per information derived from consultations with Ugandan sub-county officials and general observation, about 40% of the households keep livestock. The common animals kept are cattle for milk production in Jinja, Iganga and Mauage districts and largely for plough in Bugiri and Tororo districts. Cattle herds are not common due to the fact that there is limited grazing land in the area. Other different animals kept in the area are goats and chicken.

There are no animal market in the project area and a few traders move from house to house looking for especially poultry, goats and pigs. Animal husbandry is mainly for domestic consumption and ox plough in the districts of Bugiri and Tororo.

Kenya

Most small-holders in Kenya combine the cultivation of food crops with raising livestock to meet household needs and for sale. The principal livestock include poultry, pigs, goats, sheep and cattle.

The number of fish farmers ranges from 35 in Teso, 117 in Kakemega, 438 in Nandi, and 800 in Bungoma. They raise tilapia, Nile perch and cat fish. The low number of fish farmers is attributed to the proximity of Lake Victoria from where the fish is easily accessed in all parts of Western and many parts of Rift valley.

5.3.8. INFRASTRUCTURES AND SERVICES

5.3.8.1. TRANSPORTATION

Overall, access by road is reasonably good in all the project area for both countries.

Uganda

In Uganda, the road network in the project area comprises of tarmac roads, all-weather murrum roads, low-grade semi-seasonal murrum roads and village tracks known as "bulungi bwansi". The tarmac and all-weather murrum roads are a responsibility of the Central Government while the semi-seasonal roads are under the care of the local district administration. The "bulungi bwansi" are a responsibility of the community. The seasonal roads and village tracks, though motorable, need repair and maintenance.

The main Kampala-Jinja-Tororo highway is an all-weather road for the 72 km stretch (i.e. Jinja-Bugiri) currently under rehabilitation. Otherwise the road network traversing through the project area is good. Most of the roads in Jinja, Bugiri, Iganga and Tororo districts are passable and are not affected in the rainy season, except for the roads crossing through the swamps in Mayuge, Bugir and Tororo districts.

Other means of transport in the project area include the railway network, which traverses the project area at Magamaga, Iganga and Busembatiya. Within the project area there is also an airstrip at Kimaka and Kakira in Jinja district.

Kenya

In Kenya, Nandi District is easily accessed by tarmac road from three different directions: from Kisumu-Kapsabet-Lessos; Nandi Hills-Lessos and Eldoret-Mosoriot-Lessos. All-weather earth roads are well maintained and passable. Besides, there exists a motorable road under the existing power line which KPLC uses for maintenance.

Kakamega District is accessible from three directions on tarmac road: from Eldoret-Webuye-Malava, from Kisumu-Kakamega-Malava and from Kapsabet-Kakamega-Malava. There exists a comprehensive network of all-weather earth roads maintained by the West Kenya Sugar Company and Mumias Sugar Company. They are wide enough for heavy machinery since they are used most by sugarcane ferrying tractors.

Bungoma South District is accessible from two directions: Kakamega-Mumias-Bungoma and Eldoret-Webuye-Bungoma. There exists a good all-weather network of earth roads maintained by the Mumias Sugar Company and Nzoia Sugar Company.

Busia District (at the location of the existing power line) has no tarmac road but the main Eldoret-Bungoma-Malaba tarmac road could be used since it is approximately 10 km away. The district has a good network of all-weather earth roads that are well maintained by Mumias Sugar Company.

Teso District could be accessed from two directions: Kisumu-Busia-Amukura-Malaba which is a combination of tarmac and good all-weather earth road. The other access road is the Eldoret-Bungoma-Malaba tarmac trunk road. The district has a good road network and all the areas are easily accessible.

Because of the good road network in the area of study, public and passenger transportation is available to all areas. In the districts within Western Province, bicycle and motorcycle transportation (locally known as boda boda) is readily available and is used to reach inaccessible places. Boda boda provide an important means of transportation for passengers and smaller load (maximum 50 kg). In places with rivers and swamps without bridges boda boda transportation is especially handy.

The main transportation challenge during proposed line construction will be during descending or ascending of the Nandi escarpment. There is no road linking Tabolwa in Nandi District and Ikoli in Kakamega North District because of the steep ravine on the Nandi Hills. To move from the last tower in Nandi District to the next tower in Kakamega North District around the ravine requires one to cover about 100 km by road.



Photo 11. Nandi escarpment/Escarpement de Nandi

5.3.8.2. WATER

Uganda

On average, safe water coverage in the districts of Uganda is considered low compared to the national average of 61.3%. Details per district are shown in table 19 below.

Table n° 19 - UGANDA/UGANDA: COVERAGE AND FUNCTIONALITY OF WATER FACILITIES IN PROJECT AREA/DISPONIBILITE ET FONCTIONALITE DE LA DISTRIBUTION D'EAU

District	Coverage Couverture (%)	Functionality Fonctionnalité (%)
Jinja	45	98
Iganga	65	92
Mayuge	61	80
Bugiri	27	82
Tororo	48	92

Source: Water and Sanitation sector performance report 2005

In terms of accessibility, it has been noted that a substantial proportion of Ugandans is faced with problems of water accessibility as compared to the national target of having all water facilities within 1.5 km of the users (UBOS, 2002). The main sources of safe water in the districts are boreholes, protected and unprotected springs, gravity flow schemes and rivers. The inadequacy of the existing sewerage lines results into more people opting for pit latrines, leading to the pollution of groundwater sources.

Kenya

In Kenya, at the national level, 49 % of rural households have access to safe water sources, compared with 89 % of urban residents (MPND, 2005). The proportion in project districts ranges from 27 % (Nandi) to 100 % (Bungoma and Kakamega). In all the districts the dominant and most accessible source of drinking water is rivers and springs. Community and household wells are also a common source of drinking water. Piped water is rare, for example, in Western Province only one household surveyed in this project was reported to have running water inside the house. Community wells were drilled by an NGO under the auspices of the Kenya Finland Cooperation (KEFINCO) financed by Finnish aid, FINIDA. These wells are managed by a committee of the local community. Such water points are usually found within public-owned centres.

Household wells are privately owned and are used only by close family members. Nearly all households are within 1 km of a source of potable water. Use of piped water was not reported within all the project districts except in Nandi District in the Rift Valley Province where approximately six households had piped water in the houses and/or within the compounds. The piped water was mechanically pumped from boreholes. Harvesting of rain water from iron sheet roofs is a seasonal source of water for households thatched with corrugated iron roofs which are dominant in the area. Whatever source of water was available, women and children were the ones mainly occupied with the chore using plastic containers.

5.3.8.3. ENERGY AND RURAL ELECTRIFICATION

Uganda

Electricity coverage in Uganda 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 (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.

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.

There is an existing 132kV line in the project area, starting from Kiira Dam to Tororo substation and to Kenya Boarder. There are other medium and low voltage lines in some areas. In Jinja district all areas have electricity except Namizi and Kyabilwa in the areas where the project starts. Buwunga and Kapyanga sub-counties in Bugiri do not have electricity except Kibimba Rice Scheme. Most trading centers in Tororo do not have electricity, but most of them in Mayuge and Iganga (e.g. Nakivumbi) have electricity.

The table 20 below shows the rural electrification plans in the project areas. There is no small hydro potential in the project area.

**Table n° 20 - UGANDA/UGANDA: RURAL ELECTRIFICATION PLANS IN PROJECT AREA/
 PROJETS D'ELECTRIFICATION RURALE DANS LA ZONE DU PROJET**

District	Line Description Description de la ligne	Length Longueur (km)
Bugiri	Nakivumbe – Bugiri	18.1
	Namayemba – Buswale	19.3
	Mayuge – Namayingo	50
	Bugiri – Namatumba	31.4
	Bugiri – Muterere	9
	Naluwerere – Kasokwe	11.3
	Nabukalu – Bugobi	8.7
	Kayango – Buwune	8.2
	Lutolo - Lufudu	18.9
Mayuge	Kaluube - Bugoto	19.3
	Mayuge - Kisenyi	22.1
	Mayuge – Nakalanga –T.dikibuli	27.8
	Lugoli – Bulwaya-Mpugwe	16.3
	Namadi - Bwondha	13.9
	Dhagusi Island	4.9

Kenya

Fire wood is the major source of energy in Kenyan part of 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 neighbouring forests and woodlands or from family woodlots. No firewood is brought from other districts. Most of rural households rely on candle for lighting.

Overall, 16 % of Kenyan households have electricity (CBS, 2004) in the project area, the proportions are 15 % in Kakamega and less than 5 % in other districts (MPND, n.d.).

The Government of Kenya has instituted a Rural Electrification Program to expand rural electrification in Kenya that is closely linked to district development plans. The program targets power connections to markets and trading centers, schools, health centers and dispensaries and water pumps. The goal is to achieve penetration rates of 20 % of the rural population by 2010 and 40 % by 2020 (Communication from Ministry of Energy). Other government initiatives to enhance access to electricity include: increasing the use of alternative energy sources such as solar (for water heating, crop drying, refrigeration and water pumping) and wind (for battery charging, power supply to community centers and health clinics); and, strategies for more efficient electricity connection arrangements to overcome the obstacle of the estimated costs of KShs 180,000 per rural consumer or 8 times per capita income in 2000 (RoK, 2004).

5.3.9. CULTURAL HERITAGE

5.3.9.1. UGANDA

Several cultural rituals are practiced along the Nile River near the proposed power plant at Bujagali in Uganda. On the opposite side of the proposed Bujagali Hydro power site are the Bujagali shrines. It is believed by the locals that within the shrines are powerful spirits and gods have power to control the affairs of their clans. Some of the types of shrines found in the project area are as indicated below.



**Photo 12. Uganda/Ouganda: Types of shrine in the project area/
Types d'autels dans la zone du projet.**

Within the transmission line corridor/wayleave some family/clan burial grounds are present which might be affected by the construction activities. Some of these are cemented while others are not. Photo below indicates an example of cemented grave. The exact numbers of graves to be affected will be assessed in the implementation of the line. Optimisation of the line design will help to reduce to a minimum the number of sites. The implementation team will consult the affected families in order to come up with acceptable mitigation measures.



Photo 13. A cemented grave in the project area/Tombe cimentée dans la zone du projet



Photo 14. Type of shrine - grass thatched/Autel avec toit de chaume.

5.3.9.2. KENYA

In Kenya, there are several gazetted sites that are protected as cultural heritage in project districts, although the closest are at least 5 km from the proposed alignment (table 21).

Table n° 21 - KENYA: GAZETTED CULTURAL SITES IN PROJECT DISTRICTS/LIEUX CULTURELS RECONNUS PAR DISTRICTS

Region	District	Gazetted Site Lieu reconnu	Date
Rift Valley	Nandi	Kapturtay Prehistoric Site	1982
Western	Teso	Kakapeli Rock Shelter	1 January 2004
	Bungoma	Muhanda Fort	4 December 1981
		Chetambe Fort	1981
		Lumboka Fort	Not yet
	Kakamega	Muliro Gardens	9 March 2001
Ikhoga Murwi (weeping stone)		24 December 2003	

Source: National Museums of Kenya, Department of Antiquities, Sites and Monuments.

The Lumboka Fort where the Bukusu ethnic group fought the British in early 1900 is approximately 5 km from the route of the proposed transmission line. Another culturally significant place is the Chetambe Fort on the Western end of the Nandi Escarpments, approximately 20 km away from the proposed transmission line. The Kakapeli Rock Shelter in Teso District is approximately 10 km along the Uganda-Kenya border and approximately 10 km from the proposed transmission line. In all the project districts the ethnic groups have their own unique cultures. There is however no kingdom or special place designated for cultural purposes.

Therefore, no cultural heritage sites fall within route of the proposed transmission line and there would be no major concern by the local communities about infringement of the proposed line on their national heritage.

5.4. ENVIRONMENT CROSSED BY THE WAYLEAVE: 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 wayleaves, and concerns about the impacts of the wayleaves. All the information was recorded as well as names of participants.

5.4.1.1. UGANDA

One-on-one meetings were held at district level, and in other cases group discussions with Councillors were held. In the communities, meetings were mobilized for by the Local Council 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, 30 communities that are impacted by the line were consulted.

The list of people that attended the community meetings is presented in Appendix 4.

5.4.1.2. KENYA

Ten community meetings were held as follows: Nandi North district – 5, Kakamega North district - 2; Bungoma South district - 1, Busia district 1 and Teso district 1. Specifically the meetings were held in the following sub-locations: Songoliet, Kabeiyo, Ndaptambwa,

By communities two things are implied and were applied: (1) people living along the existing and proposed power line, and (2) ethnic groups living in the project area. Administratively the ethnic groups occupy definite districts. Ethnically Nandi, Luhya and Teso participated. They were chosen on the basis of proximity to the power line and in some cases the imminent relocation of community structures. All people in the village were free to attend. In terms of representation, all interest groups attended (e.g. parents, shop owners, religious people, administrators, teachers).

The list of people that attended the community meetings is presented in Appendix 5.

5.4.2. POPULATION AND RELIGION

5.4.2.1. ETHNIC GROUPS

Uganda

In the project area, the common tribes are Basoga, Baganda and Bagweeri (Jinja, Mayuge, Iganga and Bugiri); and, Banyole, Itesot, Samia, Japadhola and Luo (Tororo).

Kenya

Ethnic group's distribution tends to be more or less on the basis of district as the districts were created during the colonial era as tribal homelands. In Nandi North district, the predominant occupants are members of the Nandi tribe who belong to the Highland Nilotes ethnic group. In Western province – Kakamega North, Bungoma South and sections of Busia (Nambale) – the major ethnic groups are the Luhya clans which include Kabras (Kakamega North), Bukusu (Bungoma South) and Bakhayo (Busia). Other minority groups are Maragoli, Isukha (Kakamega North), Maragoli, Wanga and Kisa (Bungoma South) who are all Luhya clans and which belongs to the Bantu ethnic group. In Busia district the Teso tribe is the minority. In Teso district the predominant tribe is Teso who belong to the River-Lake Nilotic ethnic group.

5.4.2.2. RELIGION

Uganda

The major religious sects are Christians with Roman Catholic and protestant at around 40% each, Muslim (15 %) is the other important group. 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.

Table n° 22 - RELIGIOUS GROUPS/GROUPES RELIGIEUX

Protestant	43%
Catholique Catholics	40%
Musulman Muslim	15%
Autres Others	2%

Kenya

In all the project districts, Christianity is the most dominant religion. Over 98 % of the total population is Christian but of different denominations. While the African Inland Church is the dominant denomination in Nandi North District, Friends and Pentecostal churches are dominant in Kakamega North Districts while Roman Catholic and Anglican churches are the commonest in Bungoma South, Busia and Teso Districts. Islam is a minority religion found in some sections of Nandi North, Kakamega North Bungoma South and Busia Districts only. The principal religious holidays are Christmas (December) and Easter (April) for Christians and Idd Mubarak for Muslims (January-February).

5.4.2.3. REFUGEES

Uganda

There is no refugee camp in the project area.

Kenya

There are no refugees in all the project districts apart from Busia District in which ten households were reported to have originated from Mt. Elgon District following tribal clashes that were on-going at the time.

5.4.2.4. WOMEN AND CHILD HEADED HOUSEHOLD

Uganda

In all districts it is possible to find women and child headed households. From the communities consultations it is estimated that 20% of all the households in the village crossed by the wayleave is headed by a woman.

Kenya

In all the project districts there are women and child headed households. The Western province districts have high proportions of female and child headed families. This is mainly attributed to the fact that HIV/AIDS impact stretching from Eastern Uganda along the trade route affected these areas most. On average approximately 16% of all the households, in the villages consulted in this study, are headed by a woman.

5.4.3. ECONOMIC ACTIVITIES

5.4.3.1. UGANDA

The vast majority of affected communities households 80% are headed by a farmer. These 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 reared mainly for the families need.

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

5.4.3.2. KENYA

Agriculture/livestock farming is the principal economic activity in all the project districts. In Nandi North, tea and maize farming are the main cash crops. In Kakamega North, Bungoma South, Busia and Teso districts, sugarcane is the main cash crop. In Teso and Busia, tobacco is the second major cash crop. Maize, sorghum and cassava are the main food crops. In Nandi North, dairy farming is equally dominant. But in the Western province districts, indigenous livestock (mainly cattle and chicken) are reared. The main processing industry is jaggery in the Western province districts of Kakamega North and Bungoma South. Jaggery is made from syrup produced by crushing sugarcane using traditional machines driven by oxen. A small proportion of the villages households are small merchants or qualified workers and offer their services or products.

5.4.4. MANPOWER AND SERVICES

The different communities in Uganda and in Kenya that are crossed by the wayleave offer different type of services or qualified workers that can be employed during construction of the line (mechanics, welder, etc.) or provided services to the workers (canteen, sand and stone etc.).

**Table n° 23 - UGANDA/UGANDA: PERCENTAGE OF VILLAGES CROSSED BY THE WAYLEAVE WERE QUALIFIED WORKERS AND SERVICES ARE PRESENT/
 POURCENTAGE DES VILLAGES OÙ SONT PRÉSENTS LES DIFFÉRENTS CORPS DE MÉTIER ET SERVICES**

Trades Métiers	% of villages crossed where the trade is represented % des villages où ces métiers sont représentés	Services	% of villages where the service is provided % des villages où les services sont offerts
Ironworker/Monteur d'acier	9%	Transportation/Transport	6%
Carpenter/Menuisier	74%	Mechanical/Mécanique	11%
Welder/Soudeur	17%	Gas/petroleum products/Essence et produits pétroliers	0%
Électricien/Electrician	31%	Heavy machinery/Machinerie loured	0%
Chauffeur de camion/Truck driver	18%	Materials (wood, stone, sand, etc.)/Matériaux (bois, pierre, sable, etc.)	40%
Opérateur de machinerie lourde/Heavy machinery operator	3%	Canteen/restaurant	63%
Mécanicien/Mechanic	16%	Hotel/Lodge	3%
Maçon/Mason	27%		
Peintre/Painter	22%		
Sculptor/Sculpteur	1%		
Tailor/Tailleur	1%		

Table n° 24 - KENYA: PERCENTAGE OF VILLAGES CROSSED BY THE WAYLEAVE WERE QUALIFIED WORKERS AND SERVICES ARE PRESENT/POURCENTAGE DES VILLAGES TRAVERSES PAR L'EMPRISE OU LES TRAVAILLEURS ET SERVICES SONT DISPONIBLES

Trades Métiers	% of villages crossed where the trade is represented % des villages où ces métiers sont représentés	Services	% of villages where the service is provided % des villages où les services sont offerts
Ironworker/Monteur d'acier	58.3%	Transportation/Transport	100
Carpenter/Menuisier	100%	Mechanical/Mécanique	66.7%
Welder/Soudeur	75%	Gas/petroleum products/Essence et produits pétroliers	66.7%
Electrician/Électricien	75%	Heavy machinery/Machinerie loured	0
Truck driver/Chauffeur de camion	100%	Materials (wood, stone, sand, etc.)/Matériaux (bois, pierre, sable, etc.)	100%
Heavy machinery operator/ Opérateur de machinerie lourde	100%	Canteen/restaurant	100%
Mechanic/Mécanicien	75%	Hotel/Lodge	N/A
Mason/Maçon	100%	Other/Autre	16.7%
Painter/Peintre	75%		
Sculptor/Sculpteur	N/A		
Tailor/Tailleur	N/A		
Other (brick maker)/Briqueleur	16.7%		

5.4.5. ENERGY SOURCES USED FOR DIFFERENT PURPOSES AND INTEREST FOR ELECTRICITY

5.4.5.1. UGANDA

In the project area there is an existing 132kV Line starting from Kiira Dam to Tororo substation and to Kenya Boarder. There are other medium and low voltage lines in some areas. In Jinja district all areas have electricity except Namizi and Kyabilwa in the areas where the project starts. Buwunga and Kapyanga sub-counties in Bugiri do not have electricity except Kibimba rice scheme. Most trading centres in Tororo are not connected to the grid. Most trading centres in Mayuge and Iganga eg Nakivumbi have electricity.

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 neighbouring forests and woodlands or from family woodlots. No firewood is brought from other districts. Community consultation meetings confirmed that demand for electricity was high. Availability of electricity would stimulate economic activities in all the communities consulted and was asked for lighting in household and school and to watch television.

5.4.5.2. KENYA

In terms of rural electrification, only two villages – Songoliet in Nandi North District (at Lessos Sub-station) and Ikoli in Kakamega North District – had connection to the electricity grid. However, at Lessos, electricity was only concentrated on the lower side of the existing transmission line. At Ikoli, only the secondary school is connected to the electricity, the primary school and nearby Ikoli market are not.

Ongoing rural electrification projects were observed in Nandi North - Kabeiyo Village towards the Eldoret-Kapsabet tarmac road; Sang'alo village as Sang'alo Secondary School and nearby market were earlier connected to electricity. In Kakamega North district there was ongoing rural electrification from Malava town towards Samitsi High School, Samitsi Market and Namirama Girls Secondary School. This project is close to Musaga Sub-station in Bungoma South District. Massive electrification project is in progress around the Nzoia River across from Musaga Sub-station towards Sibembe, Kabula, Mateke and Kibachenje Primary School to Nasianda Market. A 33 kV line under construction runs parallel to the existing 132 kV transmission line and deviates beyond Mateka market.

In Teso District, Amukura High School and the entire education complex is already connected to the electricity grid but no new ongoing project was identified. In Busia district (Lupida Sub-location), rural electrification project was observed in the area.

During community consultation meetings, it was clear that demand for electricity was high. The community was convinced that availability of electricity would stimulate economic activities especially in trades such as metal welding, hair salon, Kinyozi (barbershop), photocopy, powering of jaggery machines, carpenters' wood grooving machines, water pumping, laundries, motor-vehicle, mobile phone battery charging, etc., and also enable them to have lighting in household and school and to watch television.

5.5. CHARACTERISTICS OF THE HOUSEHOLDS AFFECTED BY THE WAYLEAVE

5.5.1. METHODOLOGY

5.5.1.1. UGANDA

An extensive survey of the households affected by the wayleave was done in Uganda and Kenya. The number of households impacted by districts is presented in the tables below.

Table n° 25 - UGANDA/UGANDA: NUMBER HOUSEHOLDS AFFECTED BY THE WAYLEAVE PER DISTRICT /NOMBRE TOTAL DE MÉNAGES AFFECTÉS PAR L'EMPRISE PAR DISTRICT

Districts	Total number of households affected by wayleave Nombre total de ménages affectés par l'emprise
Tororo	141
Bugiri	226
Iganga	74
Mayuge	43
Jinja	320
Total Uganda	804

Table n° 26 - KENYA: NUMBER HOUSEHOLDS AFFECTED BY THE WAYLEAVE PER DISTRICT /NOMBRE TOTAL DE MÉNAGES AFFECTÉS PAR L'EMPRISE PAR DISTRICT

Districts	Total number of households affected by wayleave Nombre total de ménages affectés par l'emprise
North Nandi	210
Kakamega North	225
Bungoma South	295
Busia	205
Teso	30
Total Kenya	965

5.5.2. POPULATION: HEAD OF HOUSEHOLD MARITAL STATUS, SEX, ETHNIC BACKGROUND AND STATUS OF RESIDENCY

5.5.2.1. UGANDA

Male are predominantly head of household 80%. Average age of household head is 46 years. The affected households are predominantly (57%) Basoga. The Itesot 15% and the Japadhola 8% are the two other numerically important ethnic groups. The vast majority of the household heads, 84%, are farmers and a good proportion, 40% also raise livestock for the family needs.

Table n° 27 - NUMBER OF HOUSEHOLDS AFFECTED BY THE WAYLEAVE AND HOUSEHOLD HEADS CHARACTERISTICS/NOMBRE TOTAL DE MÉNAGES AFFECTÉS PAR L'EMPRISE ET CARACTÉRISTIQUES DES CHEFS DE MÉNAGES

	Sex and average age of household head Sexe et âge moyen des chefs de ménage				Ethnic group of household head Groupe ethnique du chef de ménage				Household head occupation Occupation du chef de ménage			
	Total	M	F	Average age Âge moyen	Basoga	Itesot	Japadhola	Others	Farmer/Agriculteur	Livestock Élevage	Craftsman/Artisan	Other/Autre
Number of households and % Nombre total et %	804	80%	20%	46	57%	15%	8%	20%	84%	40%	N/A	16%

5.5.2.2. KENYA

The head of household was predominantly male, 83.9 %, while 16.1 % were female; 87.6 % were married, 3.1 % single and 8.3 % were widowed.

The affected household are Nandis at 20.7 %, Luhya 56 %, Teso 21.2 %, Luos 0.5 % and Kalenjin 0.5 %.

The vast majority 79.8% are farmers.and raise also livestock (71.5%).



Photo 16. Household, Bungoma District, Kenya

Table n° 28 - KENYA: NUMBER OF HOUSEHOLDS AFFECTED BY THE WAYLEAVE AND HOUSEHOLD HEADS CHARACTERISTICS

		Sex and average age of household head Sexe et âge moyen des chefs de ménage			Ethnic group of household head Groupe ethnique du chef de ménage				Household head occupation Occupation du chef de ménage			
	Total	M	F	Average age Âge moyen	Basoga	Itesot	Japadhola	Others	Farmer/Agriculteur	Livestock Élevage	Craftsman/Artisan	Other/Autre
Number of households and % Nombre total et %	965	83.9 %	16.1 %	44.5	21.2%	56.0%	21.2 %	1.6%	79.8 %	71.5 %	N/A	N/A

5.5.3. LAND USED BY THE HOUSEHOLDS

5.5.3.1. UGANDA

In the study area almost all the affected household privately owned their, usually small, piece of land. Cultivation or grazing of the wayleave is predominant with more or less 90% of the households practicing these activities in the wayleave. A third of the household (32%) have their house in the wayleave.

Table n° 29 - UGANDA/UGANDA: USAGE OF LAND IN THE PROJECTED WAYLEAVE BY HOUSEHOLD /UTILISATION DES TERRAINS PAR LES MÉNAGES DANS LA FUTURE EMPRISE

Usage Utilisation	% of household % des ménages
Secondary Structures and/or tree plantation Structures secondaires ou plantation d'arbres	90%
Cultivation grazing, etc. Culture ou pâturage	77%
House Résidence	38%

5.5.3.2. KENYA

Land within the study area is almost entirely privately owned under small holder private land tenure system. Indeed 96.9% of those interviewed lived on privately owned land while only 1.6% indicated they lived on communally owned land. Private owned land is administered by the Ministry of Lands and the respective local authorities in some cases. The land is owned by men who are the custodians as title holders. Women work on the land but in most cases are not the owners of the land.

An insignificant number indicated they had other plots within the proposed transmission line corridor wayleave and elsewhere.

From the study, 95.9% of those interviewed have structures (latrine, fence, etc.) and/or trees in the wayleave and 90.2% use the area for cultivation, grazing and other activities (Table 35).

Up to 32%% of the household have their house located in the wayleave.

**Table n° 30 - KENYA/KENYA: USAGE OF LAND IN THE PROJECTED WAYLEAVE BY HOUSEHOLD/
 UTILISATION DES TERRAINS PAR LES MÉNAGES DANS LA FUTURE EMPRISE**

Usage Utilisation	% of household
Secondary Structures and/or tree plantation Structures secondaires ou plantation d'arbres	95.9
Cultivation grazing, etc. Culture ou pâturage	90.2
House Résidence	32%

5.5.4. HOUSEHOLDS PRODUCTION: COMMERCIAL AND SUBSISTENCE AGRICULTURE, OTHER

5.5.4.1. UGANDA

The economic activities of a predominant number, 84% of the affected household head is farming (crop and livestock). Small scale businesses (shop, barber, etc) is declared by a small minority 7% of the households heads. A very small percentage, 1% as regular salaried employment mainly in the civil service.

Table n° 31 - UGANDA/UGANDA: MAIN OCCUPATION OF HOUSEHOLD HEADS OF THE AFFECTED FAMILIES, /OCCUPATION PRINCIPALE DES CHEFS DE MENAGES DES FAMILLES AFFECTES

Occupation	%
Farmer/Agriculteur	84%
Civil servant/Fonctionnaire	1%
Merchant-Businessman/Commerçant-Entrepreneur	7%
Student/Étudiant	4%
Other (various)/Autre	4%



Photo 17. Farming activities near Waitambogwe, Uganda

The residents whose land is crossed by the wayleave in the study area are farmer that cultivate their plot and raise their animal for the family subsistence. Some cash crops are cultivated as well.

Table n° 32 - UGANDA/UGANDA: TYPE OF CULTURE WITHIN THE WAYLEAVE BY HOUSEHOLDS/ CULTURES PRATIQUEES DANS LA FUTURE EMPRISE PAR LES MENAGES

Types of cash crops % of households Culture commerciale et % des ménages		Types of food crops % of households Culture vivrière et % des ménages		
Sugarcane Canne à sucre	Coffee Café	Banana Banane	Manioc Manioc	Maize Maïs
3 %	23%	26%	28%	11%

**Table n° 33 - UGANDA/UGANDA: NUMBER OF ANIMALS GRAZING IN THE WAYLEAVE
 /NOMBRE TOTAL D'ANIMAUX UTILISANT L'EMPRISE**

Number of households Total number of animals Total des ménages et des animaux	Cattle Vaches	Goats Chèvres	Pig Porcs	Chicken Poulets
	804	833	1 569	49

5.5.4.2. KENYA

In most of the project area, the main economic activities of the affected household head are farming (crop and livestock) and small scale businesses. A small percentage is in regular salaried employment mainly in the civil service and also in the agricultural sector. This is summarized as follows: farming - 79.8 %, business - 2.6 %, regular employment (various miscellaneous) - 2.6 % and employed in the civil service - 5.2 %. Table 39 provides a summary of the main occupations.



Photo 18. Sand extracted on Nzoia riverbanks by women, Bungoma District, Kenya

Table n° 34 - KENYA/ KENYA: MAIN OCCUPATION OF HOUSEHOLD HEADS OF THE AFFECTED FAMILIES, /OCCUPATION PRINCIPALE DES CHEFS DE MENAGES DES FAMILLES AFFECTES

Occupation	%
Farmer/Agriculteur	79.8
Civil servant/Fonctionnaire	5.2
Merchant-Businessman/Commerçant-Entrepreneur	2.6
Employed (various)/Employés divers	2.6
Hotelier/Hôtelier	2.1
Teacher/Enseignant	1.6
Mason/Maçon	1.6
Health Worker/Travailleur de la santé	1.0
Driver, Security, mechanic, tailor, surveyor, etc. Chauffeur, Agent de sécurité, tailleur, surveillant, etc.	2.5
No response Pas répondu	1.0
Total	100

Agriculture and livestock farming constitute the bulk of occupation for the residents whose land is crossed by the wayleave in the study area. These are mainly subsistence and cash crops as well as livestock farming. The main cash crops grown by the families whose land is crossed by the wayleave include tea, sugarcane and maize.

Table n° 35 - KENYA/KENYA KENYA: AREA USED BY HOUSEHOLDS WITHIN THE WAYLEAVE AND TYPES OF USES/ESPACE UTILISÉ DANS L'EMPRISE ET TYPE D'USAGES

Number of households Nombre de ménages	Land parcels owned or rented		Types of cash crops			Types of food crops		
	Average number of parcels used by households Nombre moyen de parcelles des ménages	Average size (acres) of parcels used by households Taille moyenne des parcelles des ménages	Sugarcane Canne à sucre	Tea Thé	Tobacco Tabac	Banana Banane	cassava cassava	Maize Maïs
965	1.2 Plots	6.4 acres	39.4 %	1.6 %	3.1%	8.3%	25.4%	96.4 %

Table n° 36 - KENYA/KENYA KENYA: NUMBER OF ANIMALS GRAZING IN THE WAYLEAVE /NOMBRE TOTAL D'ANIMAUX UTILISANT L'EMPRISE

Number of households Total number of animals Total des ménages et des animaux	Cattle Vache	Goats Chèvre	sheep Mouton	Chicken Poulet	Pig Porc
965	4445	1345	1350	18440	305



Photo 19. Subsistence agriculture, Busia District, Kenya



Photo 20. Agriculture near Nzoia river

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

5.5.5.1. UGANDA

No household among the one affected by the project is connected to the electric grid. Among them 30% would be interested to have electricity for lighting but only 14% for cooking or for machinery. The others usages (refrigerator, climatisation, heating) are even less popular among respondents. The price of electricity and of the cost of appliances are the two reasons most often given to explain the lack of capacity to «hooked up».

5.5.5.2. KENYA

Only one household affected by the wayleave had connection to electricity. In spite of this, 47.2 % of the respondents indicated that there was electricity in vicinity of the villages or trading centres, mainly used for lighting in schools and houses.

A small proportion of the respondents (14 %) indicated that they did not use electricity for lighting in their houses because it was excessively expensive. This was because of the requirement for a deposit of KShs 35,000 (US\$ 500) before one is connected to the mains. This amount is way above the reach of much rural middle-level household income. This partly explains why many households in the villages where electricity is available were not connected.

In spite of the prohibitive cost of electricity, most respondents were willing to use it for lighting in workshops or kiosks, and for powering machinery at local trading centers if it was available and affordable.

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6. ENVIRONMENTAL AND SOCIAL IMPACTS

The project will require extended construction works. Indeed, new pylons and a new line will be constructed to link Jinja and Lessos 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 3 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 will 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 access roads (crop damage);
- Clearance of line corridor between towers (crop damage; removal of trees);
- Earth-moving and tower construction (crop damage; removal of tress);
- 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 affects 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 Kenya 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 Project Affected Persons. The adverse impacts of the Project will be lessened by the fact that the transmission line route will be directed close to existing lines.

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 4.09 Pest Management, OP/BP 4.11 Cultural Property, OD 4.20 Indigenous Peoples, OP/BP 4.12 Involuntary Resettlement, (see Section 2.5);
- International Agreements ratified by the Governments of Uganda and Kenya (see Sections 3.1.1.2 and 3.2.1.2);
- National Environment Management Authority (NEMA), July 1997. *Guidelines for Environmental Impact Assessment in Uganda*;
- National Environment Management Authority (NEMA) Kenya : EMCA Part VI;
- 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 survey 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

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 in the areas with raised terrain that are vulnerable to soil erosion. Areas that are vulnerable in Uganda include Jinja around Bujagali falls and all the section between Bugalali falls and Buwenda as well as in Bugembe and Mwiri area, part of Mayuge in Waitabogwe, Bugiri in Kapyanga and Bulugui sub-counties and in Sukuru sub-county in Tororo district.

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 soils in some of the wetland areas are hydromorphic, always seasonal or permanently water-logged, and mostly clayey and undifferentiated alluvium. These are termed as fragile soils, but also with bad soil conditions making excavation for pylons very difficult. Therefore a depth of 4-5 meters will be required. Along the Jinja – Lessos line there are three major wetlands which will require about 2-3 pylons each. Disturbed wetland soils are not easily repaired. Severe soil disturbances may permanently alter wetland hydrology. In general, therefore, the impact on soils is expected to be high negative for these wetland soils but medium negative for other soils elsewhere.

Oil leaks from machinery during construction are also likely to cause soil contamination.

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.

During construction, a lot of 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. The Nile River, a very important international resource will be susceptible to disposal of spoil material. Equally impacted 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.

Any accidental oils and lubricants spillages occurring during excavations in wetlands will result into pollution of watercourses.

Drainage disruption is also expected during preparation of tower foundations either in the middle of the wetland or in the fringes. Along this transmission line there are three major wetlands (Malaba at the border between Bugiri and Tororo districts, the Kibimba wetland and the Kitembezi wetland at the Iganga – Bugiri district boundary). Thus the impact will be very significant in these wetlands but medium in other wetlands and drainage systems.

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, 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 work force in the near by bushes may result in contamination of the water sources (water pollution) leading to water borne diseases. Construction is expected to be mainly mechanized and thus a work force that will be expected to participate in the construction at any one time will not be large. The impact of the project on waste generation is short term thus expected to be minimal.

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.

6.2.3. AIR 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.

In many places, work will be done in close proximity to residences, farms or businesses located along the rights-of-way and near substations. Traffic as well as the use of construction equipment and machinery will result in temporary noise emissions. Except in urbanized areas, there would have been minimal noise stress in the project areas prior to the construction.

Noise resulting from access road and transmission line construction may disturb neighbouring communities and local fauna. This impact will be of a 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.

Vibrations or humming noise is noticeable most often on older lines. It is usually the result of conductor mounting hardware that has loosened slightly over the years and can be easily repaired by the utility.

The other types of noise are sizzles, crackles, or hissing noises that 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. The existing transmission line does not seem to cause any problem in this regard since no indication were given by the populations consulted.

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 and limited during the day (06:00 to 18:00 hours) to restrict impact on residents.

6.2.4. FLORA

6.2.4.1. WETLANDS

The construction and maintenance of transmission lines and access roads can have impacts on wetlands vegetation which 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 important wetlands some of which have been modified through rice growing but still have high capacity to contain rich biodiversity. Some of these wetlands are 1-4 km 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 30 m maximum width will be cleared.

The Bujagali – Buwenda area along the Banks of river Nile have rich bird diversity. In other areas the project is a threat to hard timber tree such as Mvule and Albizzia.



**Photo 21. Wetlands/swamps common along the proposed corridor/
Zones humides communes le long du corridor proposé**

6.2.4.2. WOODLANDS AND EUCALYPTUS PLANTATIONS

Building a transmission line through woodlands and eucalyptus plantations found along the proposed corridor requires that trees and brush be cleared from the wayleave. This encroachment can have impacts on the number, health, and survival of interior forest species, many of which are rare. For example opening the Nandi forest could introduce undesired or harmful exotic plant species which may be inadvertently brought in by construction activities.

The line passes just north of the Kisere Forest (250 m southward) but crosses the North Nandi Forest on a length of 3.3 km. The proposed line will run parallel with an already existing transmission line. The clearance of the ROW could reach to a loss of 8.25 ha of vegetation in the North Nandi Forest.

A transmission line wayleave is likely to fragment a larger forest block into smaller tracts. Fragmentation makes interior forest species more vulnerable to predators, parasites, competition from edge species, and catastrophic events.

The natural vegetation and crops will be damaged during clearance of access roads, ROW and construction equipment manoeuvring and parking outside demarcated areas, and earthworks in construction phase. Vegetation damage leads to habitat destruction. Habitat destruction for instance shall be trees in the cultivated and not cultivated areas, wetland vegetation, shelter, ornamental and fruit trees around homestead. Other vegetation types will be shrubs, some planted woodlots and National Forestry Authority (NFA) plantation (Bwekula) will be affected the wayleave in pre-construction and construction activities.

Periodic maintenance along the ROW of the transmission line will require clearing of regrowth along and adjacent to the line. This means no vegetation will be allowed to grow above 1.8 m within the wayleave according to Uganda standards. This will be felt more in the areas where the proposed 220 kV will run parallel to the existing 132 kV. The impact is estimated to be medium negative.



**Photo 22. Eucalyptus plantation which lies within the proposed corridor/
Plantation d'eucalyptus dans le corridor proposé**

6.2.5. 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 Kibimba and other wetlands, as well as North Nandi forest, 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.

Endangered/Threatened and Protected Species

Species of special concern have some problems related to their abundance or distribution, although more study is required. The only endangered species is the Sitatunga Antelopes found in the Kingwal wetland. Construction and maintenance of transmission lines may destroy individual animals and may alter their habitat so that it becomes unsuitable for them.

In the North Nandi forest, the impact of vegetation clearing and possible habitat destruction of the rare *Muscicapa lendu*, is unknown. Other regionally-threatened species could also be impacted including the Olive ibis (*Bostrychia olivacea*), the African crowned eagle (*Stephanoaetus coronatus*), the Red-chested owlet (*Glaucidium tephronotum*), the Thick-billed Honeyguide and the Least Honeyguide (*Indicator conirostris* and *I. exilis*), the Grey-Chested Illadopsis (*Kakamega poliothorax*), the Southern Hyliota (*Hyliota australis*) and the Yellow-bellied Wattle-eye (*Dyaphorophya concreta*).

Fish and aquatic life

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. Wetlands with higher populations of birds are spots of concern. These include Kibimba, Malaba and Bujagale areas along the Nile River's banks where the transmission line could potentially cause collisions of water bird species during migration and local movements, especially during the night. Although the number of bird collisions on the existing 132kV line 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.

6.3. HUMAN ENVIRONMENT

6.3.1. HOUSES AND OTHER HOUSEHOLD STRUCTURES

Houses

There are 309 houses in Uganda and the same number in Kenya that are present in the wayleave. These houses must be displaced but many families can relocate their house on their land or to an adjacent plot. (see a photo of a house potentially affected is presented below)

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 in the vicinity of 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.



**Photo 23. Household in Bugoma District (remark the existing TL in the background but house has no access to electricity)/
Maison dans le district de Bugoma (remarquez la ligne électrique en arrière-plan mais la maison n'est pas reliée au réseau)**

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). Bad experiences including the existing 132 kV transmission line, created different fears (lack of or too small compensation, difficulty of payment, bad behaviour of land surveyor, etc.) for many household.

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 should be given before any houses have to be demolished and adequate time to reconstruct them should be given before the start of the project related construction activities. The RAP presented in chapter 8 suggest that the resettlement and compensation program begin 1 year before the actual construction start.

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

Structures

All the affected households in Uganda and in Kenya have some type of secondary structures (kitchen, animal shed, fence, etc) in the wayleave. Some or most of these must be displaced. In general the households have space to reconstruct these structures on their land or an adjacent plot.

The Land Act (1998) requires that any undertaker executing public works on land shall promptly pay compensation to any person having an interest in the land for any damage caused to crops or buildings and for the land and materials taken or used for the works. All persons cultivating or having structures within the Transmission Line corridor are required to be compensated for any perennial crops and structures that will be affected. Any land beyond this corridor that needs to be acquired for the purposes of the Transmission Line construction must be acquired by the Transmission Line owner.

Clearly, both local and international safeguard policies require that people should not be left worse off, by the activities of a development project. It is therefore recommended that for any loss of physical structures, land and agricultural production, compensation should be given to the affected persons and institutions.

Titles of the land in the wayleave will be transferred to UETCL or KPLC following private transactions with the current owners. Compensation will be paid for all land rights whatever the present land regime.

Compensation in Kenya will be undertaken in accordance with the provisions of the Energy Act, 2006. Under Kenyan law the affected land on being compensated, a caviat (due to restricted use) is registered on the owner's title deed.

Rates and procedures for handling compensation claims must follow specific guidelines and must involve careful and detailed approach and must be done in a participatory and transparent manner. The affected Districts of Jinja, Mayuge, Iganga, Bugiri and Tororo have compensation rates which are updated every year and these should be applied as required by both international and local laws. A disturbance allowance depending on the time given to the residents to vacate the area should be paid.

6.3.2. FARMING INFRASTRUCTURES

6.3.3. ARABLE LANDS

Some agricultural activity, namely big trees plantation (for example mangoes, jackfruit) will be forbidden in an estimated area of about 777 ha of land considering the 30 m corridor along the whole stretch of 259 km. The remaining part of the wayleave can be cultivated or used by grazing animals. The farming household can thus pursue most of their activities in the ROW after construction. It is worth nothing that the service road in the ROW is already present because of the existing 132Kv line. Except for a small portion of 32 km of the project were the new line deviate from the existing ROW (see section 2 above) no new access road will be necessary.

The number of household actually cultivating big trees in the wayleave is 26% in Uganda and approximately the same in Kenya. These households will be the most impacted by the project and proper compensation must be given before any clearance of ROW begins.

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). The actual % of household using the wayleave for cultivation is 60% in Kenya and 61% in Uganda.

The large scale agricultural activities such as sugarcane plantation in Kakira and rice growing in Kibimba wetland will suffer temporal disruption during construction of the line as some crops will be removed. About 10 ha of Kibimba rice scheme will be in the wayleave while 2 ha will be in the access road and 19 ha of the kakira sugarcane plantation will be in the wayleave.



Photo 24. Pylon on agricultural land/Pylône sur une terre agricole



**Photo 25. Discussion with a farmer whose farm will be affected by the proposed transmission line/
Discussion avec un agriculteur dont la ferme sera affectée par la ligne de transmission proposée**

6.3.4. 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.

Improved Agricultural Storage and Processing

If the introduction of power in the area results in a better access to electricity for communities and households it can improve storage and processing of agricultural products thus increasing their market value or their selling period. In most cases, for example, when fish is not bought the same day it is wasted. Storage using refrigerators will preserve fish, milk products, fruits and vegetables which can be sold or consumed the following days. Rice mills and other grinding mills can be set up within the villages of producers instead of taking the products to "mills towns" like Bugiri, thus reducing transport costs. These improvements will result, on the long term, to a positive impact of better prices for agricultural products and better incomes to farmers. The same situation will prevail in Kenya.

6.3.5. OTHER ECONOMIC ACTIVITIES

Some economic activities being undertaken by the local communities within the proposed corridor may be affected by the project in the construction period. These mainly include: ecotourism camps along the banks of the Nile from Bujagali falls to Buwenda-Matala village, brick making in Katerema and Bubori and some retail businesses in different areas.

In Kayango village, operations of the maize mill are likely to be disrupted if it has to be relocated. The impact will be felt throughout the area as most of the households are relying on this mill for processing their agricultural produce.

6.3.6. COMMUNITY BUILDINGS WITHIN WAYLEAVE

Uganda

In terms of infrastructure, the wayleave is likely to affect health centres, schools and religious institutions. Katerema Health Center II at Katerema A in Lubongi sub-county in Tororo district is likely to be displaced.

About three schools are likely to be affected including: a students hostel and a canteen for Katerema Secondary school, Deziret Community school in Butiki Matala in Jinja District and a secondary school in Nakivumbi village, Bugiri district.



**Photo 26. Dormitory at Kakamega secondary school affected by the project/
Dortoir de l'école secondaire Kakamega qui sera affecté par le projet**

In Segere Village, Tororo district, a local bar is likely to be displaced.

About five churches of different denominations (Pentecostal/redeemed Church, Single lord Church, Nanzi Baptist Church, Open bible church and Church of Uganda) will be affected. For example, Bubori and Bugubo Baptist church in Namuwombi in Buluguye and Nawampendo Baptist Church in Bugiri district. The others are in Kayolo A and Katarema C.O U, in Tororo district. Some mosques will also be affected, for example mosque in Busolo village, Bugiri district.



**Photo 27. Katerema church located between the existing and the proposed 132 kV
lines/Église de Katerema située entre la ligne existante et la ligne proposée**

During the construction of the transmission line most of the above structures are likely to be demolished and some infrastructure relocated. The communities have no objection to their displacement if proper compensation is offered to do so.

Kenya

The following markets, schools and churches lie in the route of the proposed transmission line and are therefore likely to be partially and/or entirely affected:

In Kenya the following markets, schools and churches lie in the route of the proposed transmission line and are therefore likely to be partially and/or entirely affected. An optimization of the line route can be done at the construction stage and some of these structures can be avoided. All of them can be displaced, without objection from the community, if proper compensation is afforded.

Ndaptabwa Market (Nandi North District)

Much of the market centre is in the way of the proposed transmission line. A total of 18 shops will be affected. The shops are made of clay bricks, wood and iron sheet roofs. The total land area inside the proposed wayleave at the market is approximately 4 acres. The shops could be relocated nearby since land is available. The African Inland Church within the market centre will also be affected. It is constructed from mud and brick walls and iron sheets roof on wooden rafters. Its total land area in the line corridor is about 0.5 acre. The church has adjacent land on which it can be rebuilt.

Ikoli Primary School (Kakamega North District)

The whole school is within the proposed wayleave. The school, which has a pupil population of 755, has 14 classrooms, 24 toilets, one kitchen and one workshop. All of them will be affected. The school is on 2.5 acres of land out of which approximately 1 acre will be affected. Parents and the community are in favour of relocating the entire school. They can find land nearby where the school can be rebuilt.

Ikoli Market

A total of six shops are located within the corridor of the proposed transmission line, but one other shop is already within the wayleave of the existing transmission line.

Friends Church (Ikoli)

The church structure is between Ikoli Primary School and Ikoli Market. At the time of this study, it was under construction but not yet roofed. A portion of the church is within the wayleave of the existing transmission line and a portion of the building lies within the corridor of the proposed transmission line.

Kibachenje Primary School (Bungoma South District)

The school has 14 permanent classrooms constructed with burnt bricks and roofed with iron sheets. The school also has a concrete gate, staffroom and kitchen of similar construction to the main school building. The school has a pupil population of 848 and the other facilities within the compound include 21 toilets and one water hole. The school land is 1.75 acre but 1 acre lies within the corridor of the proposed transmission line in which all the school infrastructures are. The parents were willing to relocate the school to a nearby piece of land so long as they are adequately compensated. The proposed land for relocation to is about 100 m away. The parents concern was that the semi-permanent structures in the school be compensated for at the value of permanent as a gesture of good will for having agreed to relocate.

Siera Primary School (Busia District)

All the tuition buildings are situated outside the corridor of the proposed transmission line. But four toilet blocks and the entire playground are inside the corridor of the proposed transmission line. The school has 463 pupils and occupies 2.5 acres of land out of which 1.5 acre is within the proposed corridor. Parents are willing to identify another parcel of land and flatten it to use as playground if the school is adequately compensated for loss of the existing playground.

Siera Anglican Church

The church is located entirely within the corridor of the proposed transmission line. The church building is constructed from burnt bricks and roofed with iron sheets. The Vicar was willing to have the church relocated to a nearby site if compensated adequately to be able to purchase the plot.

Okook church

This small Church in size have to be relocated out of the wayleave. The community have no objection to this solution provided that it is fairly compensated.

Namamuka dispensary

The land reserved for the dispensary, not yet built, is completely inside the wayleave. The cost of an equivalent piece of land is estimated at 1 750 000 KSH.

6.3.7. INFRASTRUCTURES

Radio and Television Reception

Transmission lines do not usually interfere with normal television and radio reception. In some cases, interference is possible at a location very close to the wayleave due to weak broadcast signals or poor receiving equipment.

Roads and railways

Construction vehicles and equipment will normally be sited away from main traffic rights-of-way and railroads to reduce impacts on traffic flows. However in the event of crossing the road or railway line, provisions of the Energy Act, 2006, Part III, Section 41 will apply. Observations along the transmission route are that there is no railway crossing anywhere between Lessos and Uganda Border but the following major road crossings were recorded in the following Table.

Table/Tableau 1. Kenya: Roads crossed by the line/Routes croisées par la ligne

Major roads crossed Routes principales croisées	Point of crossing Point de croisement
Tarmac road	Ndaptabwa
All weathered road	Kapsabet
All weathered road	kapsabet(Sang'alo)
All weathered road	kapsabet(Sang'alo)
Tarmac road	Bungoma (Sibembe)
All weathered road	Malaba

Power Lines and substation

The proposed transmission line will also cross other power lines which may have to be temporarily switched off during construction.

Table/Tableau 2. Kenya: Transmission lines crossed by the line/Lignes électriques croisées par la ligne

Electric lines crossed Lignes électriques croisées	Point of crossing Point de croisement
33 kV line	Ndaptabwa
33 kV line	Kapsabet(Sang'alo)
Service Line (Low Voltage)	Kapsabet(Sang'alo)
132 kV line	Musaga s/station
33 kV line	Musaga s/station
33 kV line	Sibembe (Bungoma)
11 kV line	Busia - Malaba
11 kV line	Malaba - Amukura

The proposed transmission line will also cross over approximately 50% of Sibembe 33/11 kV substation. This will mean that the two power transformers in the substation and their associated switchgear will have to be moved and thereby prompting a general rearrangement of the substation. The substation land is not adequate for the expected rearrangement hence there will be need to acquire more land.

Cultural properties

In the Kenyan section of the project no cultural significant place were recorded in or near the wayleave. In Uganda there is no significant cultural feature apart from burial grounds. In the part of the country crossed by the wayleave, people have strong attachments to burial grounds. Most of the graves are made of concrete and are found in form of graveyards (one localized area) for most of Jinja, Mayuge and Iganga. However, in Bugiri and Tororo the graves are located within the homestead. During the property and asset survey preceding the construction (see RAP chapter 8) consultations with the affected families need to be carried out in order to come up with acceptable mitigation measures.

6.3.8. HEALTH

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 Tororo and Lessos 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. These may have to be enhanced in line with the anticipated extension. The existing 132 kV line and the proposed 220 kV will have to be fitted with obstruction devices to stop humans and animals climbing on the towers.

Exposure to Electro-magnetic field (EMF) and electrocution risk

Health concerns over exposure to Electro-magnetic field (EMF) are often raised when a new transmission line is proposed. Some bad experience with electrocution of people climbing the pylons has also occurred. (see above section 4 on consultation).

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.

The pylons need to be «climbers protected» to reduce the risk of electrocution.

Diseases

The existing health facilities are mainly health centres of Grade II and III offering services limited to the Out Patient Department (OPD), Laboratory, and Maternity for basically 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, 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, construction workers are expected to be less than 100 at any time of the construction period.

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.

Noise

Vibrations or humming noise is noticeable most often on older lines. It is usually the result of conductor mounting hardware that has loosened slightly over the years and can be easily repaired by the utility.

The other types of noise are sizzles, crackles, or hissing noises that become more noticeable during periods of high humidity and are usually associated with corona discharge from 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. The existing transmission line does not seem to cause any problem in this regard since no indication were given by the populations consulted.

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 and limited during the day (06:00 to 18:00 hours) to restrict impact on residents.

Aesthetic impacts

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.



Photo 28. Existing TL crossing Nile River in Jinja/Line électrique qui traverse le Nil à Jinja

Loss of vegetation and landscaping activities compounded by structures of transmission lines that may not blend with the background may lead to loss of esthetical value especially in the Bugali – Buwenda area, which is regarded as high potential for tourism. Thus, the impact of the project on the landscape can be significant in these areas, but minimal elsewhere.

6.3.9. JOBS OPPORTUNITIES

One of the challenges faced by communities along the Jinja – Lessos line is lack of employment. 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. However, 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 KPLC 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 people⁴. Nevertheless these workers will bring within the project area the much needed additional money to spend.

6.3.10. 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.

⁴ From experience the Contractor may bring his own staff from Nairobi. The locals will expect that most of the workers would be from their locality but a certain minimum experience may be required on site.

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

6.3.11. 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.

For example, several trading centres and community institutions were spotted along the line route and it was evident that they did not have electricity. These included health centers, educational institutions (primary, secondary and vocational schools) and sub-county administration headquarters. For example, Katerema secondary school, Iyolwa trading center and most of the trading centres in Bugiri district are not connected in the grid. If power is connected to these communities institutions and trading centers it will improve services and increase economic activities.

In Kenya some rural electrification schemes targeting trading centres are on-going. Most of those interviewed expressed hope that this project was going to increase the chances of their communities being considered for rural electrification.

6.3.12. 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. Mitigation measures are proposed in the ESMP to this effect.

Camps must be located away from densely populated residential areas and in environmentally sensitive areas (forests, parks, wetlands, etc.).

6.3.13. CUMULATIVE IMPACTS

As already indicated in earlier sections, there is an existing 132kV transmission line passing through some of the areas which is already associated with some impacts of land loss (access road) or restricted cultivation practices (tree cultivation). The new line will increase the size of the wayleave were these cultivation restriction apply. However, the access road already present will permit access to the two lines and therefore the impact is already present except for the small portion of the project (32km) that deviate from the existing wayleave.

Other than transmission lines other projects have also been implemented or being planned and have caused or likely to bring about impacts most of which are viewed as negative. This is because according to the community, what remains in their minds is more of negative than positive.

Uganda

Bujagali hydropower project is being planned to begin construction before this year (2007) ends. It is located at the Bujagali falls exactly where the proposed transmission line is planned to start. It will affect the same communities eg in Kyabilwa and Namizi which the proposed line is likely to affect.

The community of Osukuru village will suffer cumulative impacts of land acquisition as Madhivan group of companies has just acquired land from the villagers for purposes of developing a phosphate mining plant in the area.

Furthermore, it is being proposed that the oil pipe line from Kenya to Kampala will utilize the way leaves of the existing transmission line (132kV) or the road reserve for the Malaba – Jinja road or to the railway line (Jinja – Tororro railway line). These ongoing projects still pass in some parts of the project area.

This will translate into cumulative impacts of different kinds to the communities of this proposed project for the 220 kV transmission line.

Kenya

In Kenya, few projects are going on and some are planned in the project area.

Among the most important projects under completion is the remedying of the perennial destructive Nzoia River flooding. This project, conducted under NELSAP supervision, is in the baseline study stage. The river flows across the line route.

The second ongoing project is the extensive rural electrification schemes within the area in which the line transverses. Two major infrastructures projects are at the planning stage: a 132 kV transmission line between Lessos and Nanyuki and a 220 kV transmission line between Lessos and Ol Karia.

Beside these two electrification project an extension of the oil pipeline from Eldoret, Kenya to Kampala, Uganda is in planning stage. The pipeline runs along the line route.

Cumulative impacts emanating from these projects will affect, in part, the communities living along the proposed 220 kV transmission line or those crossed by it.

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7. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

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

The environment and social 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 Kenya. 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.

NILE BASIN INITIATIVE - NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAM
 STUDY OF THE INTERCONNEXION OF THE ELECTRICITY NETWORKS OF THE NILE EQUATORIAL LAKES COUNTRIES
 ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT - VOLUME 2B - UGANDA-KENYA INTERCONNECTION
MAIN REPORT

Table n° 37 - PROPOSED ENVIRONMENTAL AND SOCIAL MANAGEMENT MEASURES/MESURES DE GESTION DES IMPACTS ENVIRONNEMENTAUX ET SOCIAUX

Environmental concerns Préoccupation environnementale	Mitigation measures Mesure d'atténuation	Location Localisation	Budget (USD \$)	Responsible Responsable
PRECONSTRUCTION				
Social expectations and community consultation	<ul style="list-style-type: none"> ■ Sensitisation of communities. ■ Informing all communities along transmission route of rights to compensation. ■ Provision of sufficient project information. 	All communities along the ROW	Kenya = 30 000 USD Uganda = 30 000 USD	PIU (Project Implementatio n Unit, see RAP in chapter 8)
Job opportunities Construction procurement	<ul style="list-style-type: none"> ■ Development measures: ■ 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. ■ Development measure: ■ 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. ■ Develop specific employment programs for women, young, poor and other vulnerable groups. 	All communities along the ROW	As part of works to be executed by the contractor	PIU Contractor
Land and building acquisition	<ul style="list-style-type: none"> ■ Final survey of all affected assets to update the RAP cost estimates prior to payment of entitlements. ■ Appropriate valuation of the property affected should be done both by property owners and the project implementing body. ■ Based on the valuation reports, appropriate compensation should be done before construction starts within sufficient time for affected household to transfer or reconstruct structures ■ Complete all necessary land and building acquisition in accordance with RAP prior to commencement of any construction works. 	ROW	Kenya = 100 000 USD Uganda = 100 000 USD	PIU
Training	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ Preparation of contractor's environmental management plans. 	All work sites and activities	As part of works to be executed by the contractor	Contractor

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Health and Safety issues	<ul style="list-style-type: none"> ■ 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	<p style="text-align: center;">Kenya = 20 000 USD</p> <p style="text-align: center;">Uganda = 20 000 USD</p>	KPLC, UETCL, Contractor, Health inspectors
Work site survey, pegging and approval	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ 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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Temporary construction camps	<ul style="list-style-type: none"> ■ If the need arises to construct a contractor's camp then the following measures will be taken: ■ 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. ■ 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. ■ The Contractor will need to pay rent to the landowner as agreed prior to construction. ■ In setting up workers' camp, consideration will be given to water availability and fuel supplies. ■ 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. ■ 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. ■ Provide and maintain proper drinking water, worker's health check-up and sewage and waste disposal facilities at the camps. 		As part of works to be executed by the contractor	Contractor, SEO, CES

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CONSTRUCTION				
Vegetation clearance Impacts on woodlands and eucalyptus plantations	<ul style="list-style-type: none"> ■ Vegetation clearing should be minimized. ■ Adjusting tower placements and span length to minimize the need for tree removal and trimming along forest edges. ■ 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. ■ 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. Compensate for all trees and useful plants in the areas affected by the ROW. ■ Instruct all construction workers to restrict clearing to the marked areas and not to harvest any forest products for personal consumption. ■ Stockpile cleared shrub foliage where possible within the ROW for later use as a brush layer. ■ Allow tree and shrub species with limited heights of 4 to 5 m to grow within the ROW. ■ Trees along the right of way should be protected from machinery. ■ A revegetation program should be developed to compensate the loss of 8.25 ha of forest in the North Nandi Forest. This program should be elaborated with the participation of the NEMR 	Through ROW, all ancillary sites The clearance of the ROW could reach to a loss of 8.25 ha of vegetation in the North Nandi Forest.	As part of works to be executed by the contractor Revegetation program to compensate the loss of 8.25 ha in the North Nandi Forest: a budget of 2 000 USD X 8.25 = 16 500 USD	Contractor, SEO, CES Forest Department, Kenya Wildlife Service
Drainage disruption	<ul style="list-style-type: none"> ■ All necessary measures shall be undertaken to prevent earthworks from impending cross drainage at rivers/streams, irrigation canal, etc. ■ In sections along watercourses, earth and construction wastes should be properly disposed of so as not to block rivers and streams. ■ Where it occurred, remove backfill from the swamps/wetlands when tower erection is complete. ■ Install culverts or bridges for temporary and permanent access roads. ■ 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. 	Through ROW	As part of works to be executed by the contractor	Contractor, SEO, CES

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	<ul style="list-style-type: none"> ■ 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. 			
Sedimentation	<ul style="list-style-type: none"> ■ 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. ■ When possible, schedule works requiring large areas of soil disturbance or river crossings to avoid rainy season. 	Through ROW	As part of works to be executed by the contractor	Contractor, SEO, CES
Soil erosion and slope instability	<ul style="list-style-type: none"> ■ Prior to construction install necessary temporary/permanent erosion and sedimentation control structures. ■ Access roads along steep slopes should be avoided; roads can be located perpendicularly or diagonally to the slope. ■ After construction, soil should be levelled off, areas stabilized to facilitate vegetation regeneration. ■ Activities should be carried out in the dry season especially for the wetland areas. ■ Avoid vegetation clearing on steep slopes. ■ Wherever possible avoid locating towers, construction areas, access tracks and construction camps on steep slopes. ■ Construction vehicles should remain in identified access tracks and ROW to avoid damaging soil and vegetation. ■ Ensure topsoil is left in a non-compacted condition following completion of works. Ensure revegetation at the earliest time. ■ 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). 	All project area, specially steep slopes and river crossings	As part of works to be executed by the contractor	Contractor, SEO, CES
Top soil removal and re-use	<ul style="list-style-type: none"> ■ 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. 		As part of works to be executed by the contractor	Contractor, SEO, CES
Impact on waterways and water pollution	<ul style="list-style-type: none"> ■ Avoid the placement of pylons in or immediately adjacent to river banks to reduce the potential for soil erosion into the stream. ■ Regular maintenance should be carried out on all vehicles and other machinery used for construction. ■ Prohibit construction and maintenance vehicles from driving in 		As part of works to be executed by the contractor	Contractor, SEO, CES

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	<p>waterways.</p> <ul style="list-style-type: none"> ■ Ensure that the Contractor submit Emergency Procedures prior to commencing activities on the site. ■ Provide appropriate waste management strategy for soils and liquids to control soil pollution and degradation of the environment ■ Use approved erosion control methods as outlined above. ■ Ensure that potential sources of petro-chemical pollution are handled in such way to reduce possibility of spills and leaks. ■ Vehicle maintenance should be confined to designated areas or in construction camps designed to contain any spill of fuel or lubricant. ■ Waste petroleum products and used oils must be collected, stored and taken to authorised disposal facilities according to NEMA regulations. ■ Ensure that Contractor have a spill kit in his possession at any time. ■ The Contractor shall submit a Waste Management Plan for approval by the CES before commencement of work. ■ As part of this Plan to include: <ul style="list-style-type: none"> ■ 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; ■ 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; ■ Provision for on-site treatment of effluent at long-term work sites; ■ Training of construction employees on project sanitation practices. 			
Impact on wetlands	<ul style="list-style-type: none"> ■ 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. ■ Where it's not possible to completely avoid wetlands, the use of mats and wide-track vehicles when crossing wetlands is preferable. ■ 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. ■ Use existing roads for construction and operational access wherever possible. 	<p>Every wetland but especially:</p> <p>Kenya: Kingwal</p> <p>Uganda: Lumbuye, Katago, Kitumbezi, Malaba, Hyuye, Kibimba, Kadfoma, Bugumbo and Butundala flood plain</p>	As part of works to be executed by the contractor	Contractor, SEO, CES, Wetlands Inspection Division

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	<ul style="list-style-type: none"> ■ 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. ■ Carefully clean construction equipment after working in areas infested by purple loosestrife or other known invasive, exotic species. 			
Impact on wildlife including illegal hunting of bushmeat by workers during construction	<ul style="list-style-type: none"> ■ Noise should be minimized during construction so that animals in the neighbouring areas are not chased away and land in the hands of hunters. ■ Prohibit workers from possessing firearms and other hunting devices. ■ Prohibit wildlife disturbance and poaching. ■ 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. ■ 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. ■ Maintain shaded stream areas for aquatic fauna, where possible. 	Through ROW and camp sites Reflectors : Swamps and riverbanks	As part of works to be executed by the contractor	Contractor, SEO, CES
Endangered/Threatened and Protected Species	<ul style="list-style-type: none"> ■ 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. ■ Before construction the habitats of the rare situngu antelopes should be surveyed in order to identify the exact location of species and elaborate protective measures. ■ In North Nandi Forest, before construction, a comprehensive bird survey of the following species should be undertaken to specify their status and elaborate protective measures: <i>Muscicapa lendu</i>, <i>Bostrychia olivacea</i>, <i>Stephanoaetus coronatus</i>, <i>Glaucidium tephronotum</i>, <i>Indicator conirostris</i> and <i>I. exilis</i>, <i>Kakamega poliothorax</i>, <i>Hyliota australis</i>, <i>Dyaphorophya concreta</i>. ■ In some cases, ROW can be managed to provide habitat for endangered/threatened resources. 	<p>Uganda: all wetlands within the wayleave and the Bujagali – Buwenda area along the Banks of river Nile</p> <p>Kenya: Kingwal Swamps and North Nandi Forest</p>	<p>Kenya = 5 000 USD</p> <p>Uganda = 5 000 USD</p>	UWA, KWS, NEMA
Construction traffic management	<ul style="list-style-type: none"> ■ Contractor and sub-contractors should use appropriate vehicles and comply with legal gross vehicles and axle loads limits. ■ Contractors should repair damages at own expenses. ■ Contractors should minimize road safety hazard and inconvenience to 	Through ROW	As part of works to be executed by the contractor	Contractor, SEO, CES

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	other road users by taking all appropriate measures.			
Access to the proposed corridor	<ul style="list-style-type: none"> ■ 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 (or sale by) local owners. 	Through ROW	As part of works to be executed by the contractor	Contractor, SEO, CES
Dust pollution	<ul style="list-style-type: none"> ■ Spraying of water during the construction work will be done to suppress dust emission at construction sites adjacent villages/house. ■ Vehicles delivering materials shall be covered to reduce spills and dust blowing off the load. ■ Control speed and operation of construction vehicles. 	Through ROW	As part of works to be executed by the contractor	Contractor, SEO, CES
Noise pollution	<ul style="list-style-type: none"> ■ Noise pollution should be reduced to a minimum during construction phase. (Uganda – Noise Standards and Control Regulations, 2003). ■ Workers in vicinity of strong noise will wear earplugs and their working time should be limited according to national guidelines. ■ Construction would be stopped from 21:00 to 06:00 hrs at construction sites located within 300 m of residential areas. ■ Machinery and vehicles will be well maintained to keep noise at a minimum level. ■ The construction period should be made as short as possible. 	Through ROW	As part of works to be executed by the contractor	Contractor, SEO, CES
Landscape and interference with aesthetics along the corridor route	<ul style="list-style-type: none"> ■ 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. ■ Where feasible, the transmission route is positioned immediately adjacent to the existing 132 kV line. This limits visual impact to an already disturbed area, rather than creating a new, distinct second corridor and impact zone. ■ In the Jinja area, the exact location as well as the type, eight and color of towers on each bank of the Nile River must be evaluate correctly to minimize the aesthetical impact of the crossing by transmission line. ■ 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. 	Through ROW Uganda : Jinja area – River Nile crossing	As part of works to be executed by the contractor	UETCL, KPLC, Engineer, Contractor, CES

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	<ul style="list-style-type: none"> ■ Replant indigenous trees in areas where vegetation is unnecessarily removed. Short flora and trees will be retained. ■ Landscaping of all disturbed areas will be undertaken. 			
Risks, hazards, security	<ul style="list-style-type: none"> ■ Erect warning signs to avoid risks from moving vehicles. ■ Erect an appropriate number of lightning arrestors. 	Through ROW	As part of works to be executed by the contractor	Contractor, SEO, CES
Electric and Magnetic Fields (EMF) Lighting strikes	<ul style="list-style-type: none"> ■ 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. ■ To minimise exposure of the general public to EMF, no business, schools or residential building structure will be allowed in the ROW. ■ No building structure (residential or business) should be allowed to be constructed within 12.5 m of the center line of the existing and proposed high voltage transmission lines. ■ 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. 	Through ROW	As part of works to be executed by the contractor	Engineer, Contractor
Working conditions	<ul style="list-style-type: none"> ■ 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, KPLC, Contractor
Public health, occupational health and safety, fire preparedness and response	<ul style="list-style-type: none"> ■ 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. Construction of residential and business building structures shall not be permitted within 12.5 m of the center line. ■ Community and workforce sensitisation on STDs including HIV/Aids and the dangers of construction activities, including free condoms for workers. ■ 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. ■ 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: ■ Protective wear should be provided by the Contractor to the construction crew; 		See budget in preconstruction activities	Contractor, Health and Safety Officers

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	<ul style="list-style-type: none"> ■ Members of the public should not be allowed in the construction area; ■ First Aid facilities should be availed to the workforce; ■ Warning signs will be placed at the pylons and substations to warn intruders of the potential for electrocution. ■ Install and maintain firefighting equipment and machinery. ■ Provide emergency fire assembly points at strategic locations, clearly marked. ■ Provide bill boards at site or entrance to notify motorists about the ongoing activity and turning of construction vehicles. ■ Contractor should avail First Aid Kit at the site. 			
Climbing and Electrocution Risk	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ The Contractor should prepare a Waste Management Plan. This Plan should be approved by the CES before beginning of works. ■ Ensure proper solid waste disposal and collection facilities. ■ As part of the Waste Management Plan to be submitted by the Contractor, the following management measures shall be implemented: ■ Waste management training for all workers; ■ 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; ■ Wood etc. e.g., cable reels, may be sold for a nominal fee to local persons; ■ 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. ■ Hazardous and dangerous wastes should be managed properly. 	Through the ROW and all camp sites and ancillary sites	As part of works to be executed by the contractor	Contractor, SEO, CES
Increased population and workforce management	<ul style="list-style-type: none"> ■ Liaise with local communities regarding proposed construction activities. ■ Residents in the project area should be employed to provide unskilled labour to minimise this impact. ■ Ensure workers act in a responsible and respectable manner to local people and do not harvest or take personal resources, forest products or wildlife. ■ Ensure that no or minimal wood is burnt by any construction worker on or off construction sites. 	All communities along the ROW	As part of works to be executed by the contractor	Contractor

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	<ul style="list-style-type: none"> ■ Provide kerosene or gas for all workforce cooking needs. 			
Cultural Property	<ul style="list-style-type: none"> ■ 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. ■ The cultural or historical sites (e.g. shrines, graves etc) that are likely to be affected by the Transmission Line construction should be compensated and relocated in accordance with the customs and norms of the communities. ■ Affected cultural sites should be compensated. ■ Further investigations about the actual locations and ceremonies associated with the graves and other properties should be carried out before project implementation. 	Uganda: Most of the graves are localized in Jinja, Mayuge, Iganga, Bugiri and Tororo.	Shrines and graves relocation in Uganda : 10 000 USD	Contractor, Ministry of lands (Chief Government Valuer)
Roads and railways obstruction	<ul style="list-style-type: none"> ■ 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 KPLC will be responsible for strictly enforcing construction schedules. 	Roads and railways crossings	As part of works to be executed by the contractor	Contractor, SEO
Disruption of services	<ul style="list-style-type: none"> ■ 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 Section 6.3.7 above Approx. 50% of Sibembe substation is in the ROW. Therefore more land and reorganization of the substation is necessary.	As part of works to be executed by the contractor	Contractor, SEO, Local Authorities
Displacement of people and loss of structures	<ul style="list-style-type: none"> ■ A total of 309 houses in Kenya and 309 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 	Through ROW	Houses: 1 580 773 USD Other private	NELSAP, UETCL and Ministry of

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	<p>acquisition by the electricity producer should be done in favour of the displaced households (see above section 4 on consultation). Details are presented in Chapter 8.</p> <ul style="list-style-type: none"> Some other private structures like kitchens, larines, animal sheds, etc. in Kenya and Uganda will have to be displaced. Details are presented in Chapter 8. 		<p>structures: 135 855 USD</p> <p>Costs are detailed in Chapter 8</p>	<p>Lands, Housing and Urban Development (MoLH&UD), Chief Government Valuer</p>
Community structures	<ul style="list-style-type: none"> Community buildings are to be relocated. Details are presented in Chapter 8. 	Through the ROW	<p>Kenya: 330 344 USD</p> <p>Uganda: 265 920 USD</p> <p>Costs are detailed in Chapter 8</p>	
Agricultural land	<ul style="list-style-type: none"> Compensation for land acquisition is restricted to the towers base (6.25 square meter per towers X 673 towers= 4 206 squared meters or 0.42 ha) Compensation for land acquisition is restricted to the towers base (6.25 square meter per towers X 673 towers= 4,206 squared meters or 0.42 ha 	Through ROW	<p>Approximate price of land base acquisition for towers is</p> <p>3 000 USD/ha in Uganda and 9 880 USD/ha in Kenya.</p> <p>Cost estimate for land acquisition: 27 757 USD</p>	NELSAP, UETCL and MoLH&UD
Loss of crops and trees	<ul style="list-style-type: none"> 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 317 hectare in Uganda and 330 in Kenya it is based on the type of crop and stage of maturity. There are fixed rates that apply. Industrial farming might be disturbed during construction at Kibimba rice scheme and Kakira sugarcane plantation. Compensation should be allocated. 	Through the ROW	<p>Cost estimate for loss of crops for one year is estimate to:</p> <p>Kenya: 1 023 499 USD</p> <p>Uganda: 995 608 USD</p> <p>Costs are detailed in Chapter 8.</p>	NELSAP UETCL and MoLH&UD

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Environmental concerns Préoccupation environnementale	Mitigation measures Mesure d'atténuation	Location Localisation	Budget (USD \$)	Responsible Responsible
	■		Compensations for loss of trees are estimate to: Kenya: 97 410 USD Uganda: 333 246 USD Compensation for industrial agriculture are estimated to: 3 500 USD	
Farming activities	<ul style="list-style-type: none"> ■ To minimize interference with agricultural land, the ROW is reduced to 30 m width instead of 40 m which is normally used in Uganda and Kenya. ■ 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. ■ 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. ■ If a field must be crossed, larger structures with longer spans can be used to span them. ■ The potential for soil compaction and erosion by transmission construction and maintenance activities can be lessened. If compaction has occurred, affected soils can be chisel ploughed over successive seasons as needed to break up compacted layers. ■ A cleaning of all construction debris and leftover should be done at the end of construction of each portion of the line. ■ 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 m² for each pylon) and instead leased with restrictions on cultivations practices (trees over 4-5 m height forbidden). 	Through the ROW	As part of works to be executed by the contractor	UETCL, KPLC, Contractor, SEO

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Environmental concerns Préoccupation environnementale	Mitigation measures Mesure d'atténuation	Location Localisation	Budget (USD \$)	Responsible Responsable
Ancillary sites rehabilitation and re-vegetation	<ul style="list-style-type: none"> ■ Rehabilitate ancillary sites as soon as they are not requested anymore such as borrow pits, temporary access roads, camps sites, material storage piles, etc. ■ Restore sites to their previous state. ■ Progressively sow all disturbed construction and ancillary site surfaces with a cover crop mix immediately following final use of each ancillary site. ■ Regularly monitor the effectiveness of re-vegetation measures. 	All ancillary sites and other disturbed areas.	As part of works to be executed by the contractor	Contractor, SEO, CES
MAINTENANCE AND OPERATION				
Vegetation control in the ROW	<ul style="list-style-type: none"> ■ The ROW will require periodic maintenance to control vegetation growth under conductors and in substations ■ Maintenance activities should be limited to the wayleave and not damaging vegetation outside. ■ Manual or mechanical control of vegetation growth should be encouraged and the use of herbicides should be minimized. 	Through ROW	Operation and maintenance costs	UETCL, KPLC
Environmental protection training	<ul style="list-style-type: none"> ■ Prepare a training program for maintenance personnel 		Operation and maintenance costs	UETCL, KPLC
Public safety	<ul style="list-style-type: none"> ■ 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, KPLC

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 activities as indicated in the Environment and Social Management Plan. The planned mitigation measures whose responsibility is the contractor as indicated in the ESGM 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 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 of the total project costs.

This ESMP shall be carried out as part and parcel 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 Developer/Client is responsible for ensuring that environmental issues are taken care of throughout the project cycle. The Consultant and the Contractor work on behalf of the developer. For this matter, environmental matters of the project could be retained by Contractor's Site Environmental Officer (SEO) and the Consultant's Environment Specialist (CES) to ensure that action is taken on impact mitigation and benefit enhancement. The Contractor will designate an appropriately qualified Site Environmental Officer (SEO) acceptable to KPLC, UETCL and NEMA, who will be responsible for implementation of the measures set out in the ESMP.

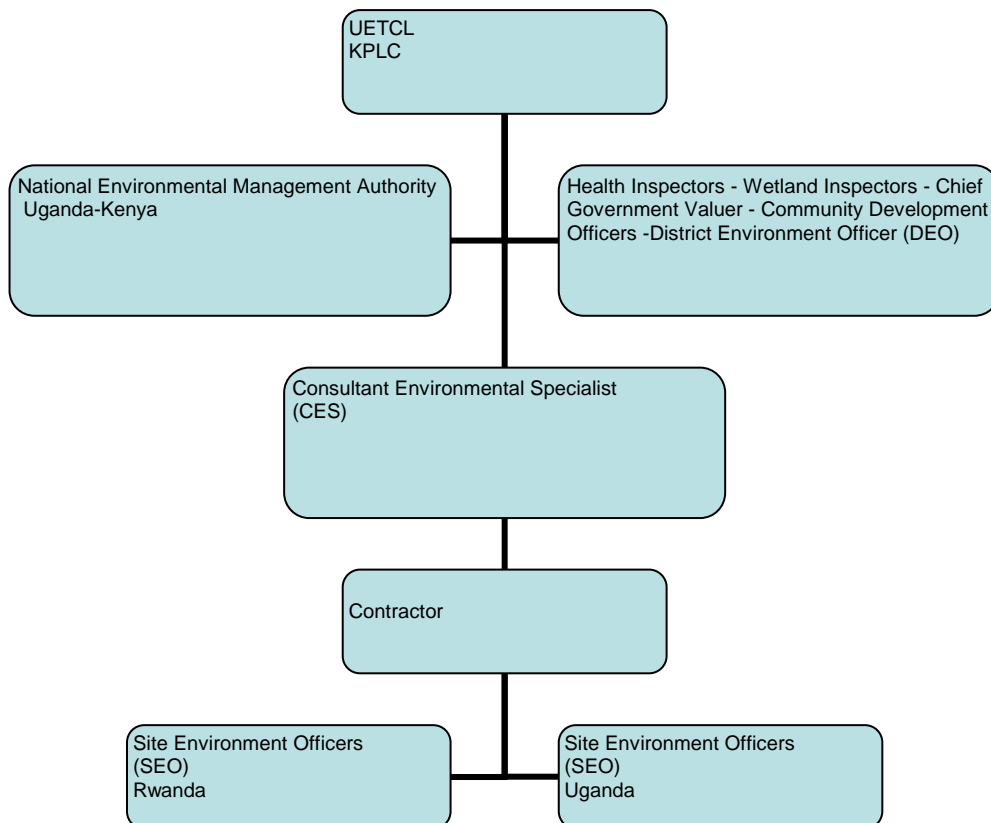
UETCL and KPLC will appoint a Consultant Environmental Specialist (CES) with the responsibility of monitoring the effective implementation of the ESMP. The CES will report on a weekly basis to the Promoter's Project Manager. In the case of an incident which has the potential to cause serious or material 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 represented by District Environment Officer 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.

In Kenya, prior to commencement of the construction, EIA is undertaken in which baseline conditions are recorded. During construction, regular audits are carried out to confirm that the mitigation measures recorded during EIA are closely followed as provided for under EMCA Part VII, Sections 68 and 69. Further, Section 68 provides for annual Environmental Audits for all existing installations. Initial Environmental Audits are to be undertaken by registered Lead Experts and the subsequent annual audits to be done by the project management. The annual environmental audit will therefore be done after the first year of project completion.



7.3. INSTITUTIONAL STRENGTHENING

There is need for strengthening of the institutions involved in environmental management, especially NEMAs, 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 Kenya and only come up after many years. In this respect NEMA 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 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. 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 short-coming will need to be addressed.

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

7.4. 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 is necessary to avoid accidents and enhance safety.

A training program should be implemented as part of the environmental management component of the project, to enhance environmental awareness among key personnel involved with construction and operation of the transmission line. Staff directly engaged in the assessment and monitoring of environmental conditions will be given additional specialized training.

Training on Environmental, Health, Safety and Quality Standards should be provided for all the stakeholders of the project.

7.5. 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 will depend on the type of environment the project is located and the degree to which it is likely to be affected. Monitoring should include regular measurement of parameters such as water flow, levels and quality, sedimentation, air quality, observations of wildlife, fauna, flora, health monitoring, 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 Site Environmental Officer who is responsible for reporting the monitoring to the implementing agencies, KPLC and UETCL. It is not the Contractor's responsibility to monitor land acquisition and compensation issues. 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 Kenya) capable of undertaking the required monitoring or to supervise an external monitoring group (such as a consulting group specialized in environmental evaluation) 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.

KPLC 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. KPLC and UETCL also have the direct responsibility to implement and monitor land acquisition and compensation issues as outlined in the resettlement and compensation issues. Their Project teams should include an environmental monitoring and management specialist as well as a sociologist experienced in land acquisition and compensation issues. A total of 6 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 Kenya have National Environmental Management Authorities 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.

7.5.1. 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, waste water, or rainfall runoff discharged from campsites. This would encourage the Contractor to implement proper wastewater treatment facilities on site through the use of settling and treatment ponds.

The parameters to be analysed should include those in the Table 42.

Table n° 38 - LIMITS FOR PROCESSED WASTEWATER, DOMESTIC SEWAGE AND CONTAMINATED STORMWATER DISCHARGED TO SURFACE WATERS (FOR GENERAL APPLICATION)/RECOMMANDATIONS POUR LES EAUX USES TRAITÉES, LES EGOUTS DOMESTIQUES ET LES EAUX DE PLUIE DEVERSEES DANS LE RESEAU DE DRAINAGE DE SURFACE (POUR USAGE GENERAL)

Pollutant or parameter Polluant ou paramètre	Limit (Milligrams per litre, except for pH, bacteria, and temperature) Limite (Milligrammes par litre, sauf pour le pH, les bactéries et la température)	
	Ugandan standards ⁵ Normes ougandaises	World Bank standards Normes de la Banque mondiale
	pH	6.0 – 8.0
Chemical Oxygen Demand Demande chimique en oxygène	100	250
Oil and grease Huiles et graisses	10	10
Total Suspended Solids Solides suspendus totaux	100	50
Heavy metals, total Métaux lourds totaux	-	10
Arsenic	0.2	0.1
Cadmium	0.1	0.1
Hexavalent chromium Chrome hexavalent	0.05	0.1
Total chromium Chrome total	1.0	0.5
Iron Fer	10	3.5
Lead Plomb	0.1	0.1
Mercury Mercure	0.01	0.01
Nickel	1.0	0.5
Selenium Sélénium	1.0	0.1
Silver Argent	0.5	0.5
Zinc	5.0	2.0
Free cyanide Cyanure libre	0.1	0.1
Total cyanide Cyanure total	-	1.0

⁵ Kenyan Bureau of Standards applies ISO standards but NEMA is currently using WHO guidelines while National guidelines are in the process of development

	Limit (Milligrams per litre, except for pH, bacteria, and temperature)	Limite (Milligrammes par litre, sauf pour le pH, les bactéries et la température)
Ammonia Amoniaque	10	10
Fluoride Fluor	-	20
Chlorine, total residual Résidus totaux de chlore	1.0	0.2
Phenols Phénols	0.2	0.5
Phosphorus Phosphore	-	2.0
Sulphide Sulfure	1.0	1.0
Coliform bacteria Bactéries coliformes	10 000 counts/100 ml	< 400 MPN/100 ml
Temperature increase Augmentation de la température		Maximum 3°C above ambient temperature of receiving waterway Maximum de 3°C au-dessus de la température ambiante du milieu récepteur

Notes:

MPN = Most Probable Number/Nombre le plus probable

- a. The effluent should result in a temperature increase of no more than 30 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.

Source: World Bank Group, 1999.

If the discharged effluent does not meet the Ugandan and Kenyan NEMA standards or WB standards then the Contractor must take further treatment measures or refrain from discharging effluent directly into nearby watercourses.

7.5.2. 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.

Table/Tableau 1. Maximum noise levels for Construction Site/Niveau maximum de bruit sur le chantier

Facility Installation	Maximum noise level permitted (Leq) in dB (A) Niveau maximum d ebruit permis (Leq) en dB (A)	
	Day/Jour	Night/Nuit
Hospital, schools, institutions of higher learning, homes for the disabled, etc Hopitaux, écoles ou institutions d'enseignement supérieur, résidences pour handicapés, etc.	60	50
Buildings other than those prescribed above. Bâtiments autres que ceux décrits ci-dessus.	75	65

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

Table/Tableau 2. Maximum noise levels during Operation Phase/Niveaux de bruit maximum en phase d'exploitation

Zoning/Zonage	Maximum Noise Limits/Niveaux de bruit maximum	
	Night/Nuit (7.00 pm - 7.00 am)	Day/Jour (7.00 am - 7.00 pm)
Habitation, hospital, school Résidence, hospital, école	40 dB (A)	45 dB (A)
Campground, institution, high-density habitation Terrain de camping, institution, habitations de haute densité	45 dB (A)	50 dB (A)
Commerce, parks Commerces, parcs	50 dB (A)	55 dB (A)
Industry, agriculture Industrie, agriculture	70 dB (A)	70 dB (A)

Source: Government of Quebec (2006)

7.5.3. 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. It will therefore 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.

7.5.4. MONITORING OF VEGETATION CLEARING

Removing of vegetation for the establishment if 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 after compensation has been paid to the owner.

7.5.5. 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 KPLC or UETCL environmental staff.

7.5.6. 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.

KPLC and UETCL will have overall responsibility to oversee that all environmental measures are put in place and that regulations are enforced. The Consultant Environmental Specialist should assist KPLC and UETCL in this process in order to make sure that contractors fulfil the environmental requirements.

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.

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Table/Tableau 46. Monitoring plan/Plan de suivi

Environment Component Composante environnementale	Project Stage Étape du projet	Parameter Paramètre	Standard Norme	Location Localisation	Frequency Fréquence	Responsibility Responsabilité	Supervision Contrôle
Land Acquisition and Compensation	Pre-construction	Ensure compensation paid as per RAP	RAP	Along ROW for all PAPs	Monthly until complete	KPLC/UETCL	NELSAP
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 15m from edge of ROW	As directed by the Site Environmental Officer	Contractor	Site Environmental Officer
Soil Erosion	Construction	Turbidity in storm water	EPA guidelines	As identified by UETCL/KOLC	Pre-monsoon and post monsoon seasons	Contractor	Site Environmental Officer
Vegetation Clearing	Construction	Monitor clearing to ensure consistent with EMP	EMP	Along ROW and works areas	As required	Contractor	Site Environmental Officer

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Environment Component Composante environnementale	Project Stage Étape du projet	Parameter Paramètre	Standard Norme	Location Localisation	Frequency Fréquence	Responsibility Responsabilité	Supervision Contrôle
Rehabilitation of Work Sites	Construction	Monitoring to ensure all work sites are progressively rehabilitated	EMP	Work camps, material storage sites, along ROW		Contractor	Site Environmental Officer
Health	Construction	Signs, posters displayed, health awareness lectures, mosquitoes nets in malarial areas for each worker, health checks for workers	EMP	Along ROW, work camps and surrounding areas	Monthly	Contractor	KPLC/UNETCL
Accidents	Construction	Safety training for workers, accident reports, community consultation	EMP	Along ROW	Monthly	Contractor	KPLC/UNETCL
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

7.5.7. 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 productives activities (farming, commercial sale, etc).

7.6. ESMP IMPLEMENTATION SCHEDULE

As observed from the proposed Environmental and Social Management plan, there exist some mitigation measures that 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 for compensating assets affected and resettling households to be displaced will need to be prepared about six months before project implementation; and information disseminated to affected households. In the plan affected assets and property should be measured and valued, relocation sites should be identified and compensation packages clearly defined. 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 (Jinja, Mayuge, Iganga, Bugiri and Tororo) will provide compensation rates for crops and temporary structures respectively.

In Kenya the whole procedure of entering private land, carrying out survey, notification to owner and owner's assent, compensation, objection by owner, payment of compensation, laying of electric lines and maintenance, etc are detailed in the Energy Act, 2006..

7.7. 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 and Kenya, 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.

Table/Tableau 47: ESMP Costs/Coût du PGES

Item	Kenya Cost USD	Uganda Cost 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 \$
North Nandi Forest revegetation programm	16 500 \$	-	16 500 \$
Survey of endangered species	5 000 \$	5 000 \$	10 000 \$
Cultural property	-	10 000 \$	10 000 \$
Total	201 500 \$	195 000 \$	396 500 \$

8.

LOSSES COMPENSATION PROGRAM AND RELOCATION PLAN

INTRODUCTION

This Re-localization and Compensation Plan (RPC) conforms to the OP 4.12 rule of the World Bank. We can specify in particular the objectives and principles that guiding the actions to be carried out, the organization of the compensation plan and the operations time-table to be carried out, the particular legal provisions to be respected in each country, as well as the complaint and call mechanisms to be set up. Basing on surveys carried out in each country and described above (chapter 4) the number of affected households and the estimated budget were drawn up.

8.1. JUSTIFICATION

The construction of an electric transmission line implies, for safety reasons, the release of the influence. All the permanent or temporary structures, such as, buildings, boxes, hangars, agricultural houses, latrines, etc must thus be rebuilt outside the influence. All trees of which the height exceeds 4 to 5 m must also be eliminated from the influence because of the electrocution risks which they pose. On the other hand, the gardening, the market gardenings, the banana trees, the breeding, the pasture or any other activity not harming the exploitation and the maintenance of the line are tolerated. The use of the influence possible, but is thus subjected to limitations and in particular to a right-of-way. The layout of the interconnection line Jinja (Uganda) - Lessos (Kenya) was established in collaboration with UETCL and KPLC at the pre-feasibility stage in 2006. The overall length of the 220 KV line, is of 256 km. The influence has a width of 30 m. The total area of the influence is thus 777 ha. In its greater portion, the new line borders an existing line of 132 KV, 45 year old.

8.2. OBJECTIVES AND ET PRINCIPLES OF THE PRC

The PRC aims to compensate for the people, households and communities affected by the construction of the line and to help them to restore their production and way of life. When necessary, the plan provides an assistance to relocate the private structures (houses and dependences, etc.) or Community (school, church, dispensaries, etc). The affected people, households and communities must find the same or better economic and social situations than before the project.

The operational rule OP 4.12 of the World Bank puts before the following principles in the establishment of a RCP:

To minimize as far as possible the needs for re-localization and compensation by the examination of alternatives and the design of the project;

The people affected by project (PAP) it including all the people who will lose goods or benefit because of the realization of the project, does not matter the extent of the losses. The loss of the goods can include the land loss, structures (houses and other constructions), cultural goods (tombs, furnace bridges, etc) as well as the disturbance of the activities (losses related on the closing or the displacement of trade for example).

All the PAP are eligible some is their social or economic status, gender, etc.

Information and participation measures of the PAP must be provided. These will allow the PAP and the interested parts in particular to know the principles on which the RCP is based, rights of the PAP, the rating scales of the compensations, mechanisms of recourse.

The re-localization or compensation measures to be envisaged are:

- Money compensation or in nature for houses and all other structures at the replacement cost without taking into account of the depreciation of the replaced structures or the possibility of recovery of material of the moved structures;
- Replacement of any agricultural, commercial, residential land affected by another of equal value and/or acceptable productivity by the PAP, or, by obtaining an assent of the PAP, an equivalent amount according to the value of the market;
- Money compensation for the affected cultures and the plantations of destroyed trees or woods;
- An allowance of displacement and assistance for the rehabilitation of the activities;
- The evaluation and the payment of the compensations and re-localization of the structures carried out before the authorities approve the beginning of the building work of the high-voltage transmission line;
- Providing of mechanisms of follow-up, evaluation and diffusion of the results to the concerned authorities;

Eligibility with the re-localization and the compensation will be based on a detailed inventory of the goods of each household, company or organization (church, school) and a negotiation which will be carried out by the unit of implementation of the project (UIP) at least six months before the beginning of construction. Each household, company or organization identified as being affected by the project will have right to a compensation and/or a relocation according to principles' established above and in conformity with the laws of each country.

8.3. ALTERNATIVES TO REDUCE THE REQUIREMENTS IN RELOCATION

During the pre-feasibility study, various options were planned to reduce the impacts on the human environment. Among them, a modification of layout was retained between Waitambogwe and Buwanga over a 32 km length. The reason of this deviation is the presence of the road Jinja - Tororo near the existing 132 KV line in this portion of the layout. The ground between the existing line and the road is highly populated. The construction of the new interconnection at this place would thus have involved the displacement of many households and public infrastructures.

Moreover, in order to reduce to the minimum the impacts of the new line, it was agreed, during the pre-feasibility study, to limit the width of the influence to 30m. While limiting the effects on the area this measure allows to answer the technical criteria and of safety of a line of 220 KV.

8.4. CONSULTATION OF PEOPLE AFFECTED BY PROJECT (PAP)

Dès Form the pre-feasibility phase, and at the feasibility stage, consultations studies were held to the people affected by the project. These consultations were held to several levels:

- With the local and regional authorities;
- With the households located in the influence by the means of socio-economic investigations;
- With the communities of reception by the means of briefings;

As are taken the consultations reports and the number of people having taken part in the various activities of information and consultation, people could freely express their opinions, their waitings and their desires towards this project. The reception of the members of the evaluation team was always cordial and the participation of the positive and constructive population.

The PAP received the project generally well, as it improves the electrification of their region. However, some fears were advanced concerning the procedures of evaluation of the goods and the compensations payment. When the date of implementing the project will be known, the UIP will have to envisage the opening of local offices accessible to the PAP. Here, the UIP will be able there to provide them assistance and to hear the complaints.

Since no date of realization is still fixed for the project it is understood that other consultations will be held by the UIP in phase of realization. These are described further.

The section 4 of the report presents the report of the consultations. The detailed reports are included with appendices 2 and 3.

8.5. SUMMARY OF IMPACTS

8.5.1. GENERALS

The choice of its placement, the linear nature of the project and the limited width of the influence make so that the impacts on the households, communities and on the private and public goods of the project will be limited. However, of the compensations and the relocations are provided where the influence of the transmission line affects the habitations, the public services, agriculture, the trade and other structures or activities.

The characteristics of the communities and households affected are described in chapter 5 of this report while the detailed presentation of the impacts is put in chapter 6. In general the affected communities and households are located in rural zone. Agriculture and the breeding are thus the most widespread occupations.

8.5.2. NEGATIVE IMPACTS

The project will generate impacts mainly during the phase of construction, these dependent on:

- On the displacement of the structures, private and public;
- On the deforestation of the influence (destruction of timbered and plantations of trees);
- On the construction and earthworks of the pylons (damage to the cultures, noise and dust for the residents);
- On the surge of semi-skilled workers in rural medium (problems of health particularly the HIV/aids, requires increased for the local resources such as water, wood and the other natural resources);
- On the construction of the camps of workers (damage to the cultures and the properties, problems related to the management of waste and used water, etc).

The density of the population and the occupation of the territory are very important. The number of households whose ground is crossed by the influence is thus 804 in Uganda and 965 in Kenya. Among these, it is estimated that 309 of residences will have to move in Uganda and 259 in Kenya. The proportion of households indicating that they have a ground to rebuild their residence in the vicinity varies according to the districts and countries.

As the zone of study of the project is linear and that the influence of the line is relatively narrow, no relocation of group is considered. The whole of the affected community structures (school, church) can be rebuilt near their localization of origin. Ten community structures (dispensaries, schools, churches) could have to be moved in Uganda and six in Kenya. However, some light modifications to the layout are still possible and the discussions must continue with the communities in order to identify the best solution in each case. The impact on the moved households and the communities is thus limited.

8.5.3. POSITIVE IMPACTS

The people living in the zone of the project will be able to be offered employment opportunities and businesses mainly during the line construction. Indeed, the investigations within the communities showed the presence, in all the areas crossed by the line, of a basin of important hand-workers. These people are entitled to occupy of employment within the framework of the building site, such as: manual workers, semi-skilled workers, hand workers, drivers of vehicles, etc.

Business opportunities, as well for the suppliers of goods as of services will be also an occasion to make profit the local communities from the positive repercussions of the project. The requirements in food, clothing, tools, etc of migrant worker and the building firms could be satisfied partly by the local companies and private individuals, in particular women (food, laundry, etc).

However, the positive impact most important of the project, if connections are established, will consist in equipping several communities crossed with one access to electricity. It was shown in this study that the new line to 220 KV will make it possible to carry out projects of rural electrification in the zones which do not profit from it yet (section 2.5). The socio-economic investigations carried out (chapter 5) show that the majority of the communities located in the zone of the project under are severely served in terms of services and infrastructures.

These projects of rural electrification are often at the center of the strategies of poverty reduction, as it is the case in many countries of sub-Saharan Africa. The availability of this form of energy encourages in particular the setting-up of projects of developments such as the supply drinking water by means of pumps, the setting-up of mills and other small industries, the enlarging or the improvement of existing installations, etc. The Community consultations, held within the framework of this investigation, made it possible to identify many projects or even existing installations, in particular in the agro-alimentary sector, being able to profit from this electrification. The women will be able to profit from it in particular thanks to an easier access to water, which will reduce time and the effort of transport of this one.

The availability of electricity will support the investment in education and thus the capacity building. The access to electricity for health installations will allow the installation of refrigeration equipment for the storage of vaccines and other vital medicines.

8.6. LEGALE PROVISIONS

The legal laws and provisions applied to the project are described in chapter 3 of this report.

In Uganda there is not specific law of expropriation, however the Act Land specifies the rights of occupation and property and measures of compensation to be distributed in the event of expropriation. It is also specified in the Ugandan law that the written assent of the wife is necessary for any ground transfer or sale contract by the head of family. Expropriation for public ground is under the jurisdiction of the Uganda Land Commission and the local jurisdictions of administration of the territory. The value of the expropriated grounds must be that established on the market whereas the moved structures are evaluated at their replacement cost. An allowance of compensation for the disadvantages of 30% of the value of the expropriated goods must also be versed if expropriation is carried out in less than six months and 15% if the time of expropriation is of more than 6 months.

In Kenya expropriations for public goods are framed by the Transfer of Property Act and the Land Compulsory Acquisition Act 1968. The value of the expropriated grounds must be established by an approved appraiser and the promptly paid compensation. After agreement with the person to be expropriated, a ground of equivalent value can also be given in compensation.

8.7. ORGANISATIONAL RESPONSABILITY

The responsibility for the setting-up and the correct operation of this RCP is for the electricity companies responsible for the implementation of the infrastructures, that is to say KPLC (Kenya) and UETCL (Uganda).

These must thus take care of the setting-up of the Unit of Implementation of Project (UIP). This structure will take care of the implementation of the RCP.

As shown in the consultations carried out within the framework of this study (chapter 4) the households and chiefs of villages are fear of not to be compensated or to be it insufficiently.

These fears result in particular from their last bad experiences.

In order to reduce these fears and to ensure the transparency and the good walk of the process of compensation and re-localization it is proposed that an independent organization of the electricity companies, the Unit of Implementation of Project (UIP), be created. Observers of the governmental authorities, in particular those in charge of districts and grounds and electricity companies will participate in works of this UIP.

At the time of the project approval and at least a year before the beginning of work of release of the influence and construction UIP will have setting-up in each country concerned (Uganda and Kenya).

Under the responsibility for Coordinator, approved by the various parts, this UIP will be responsible:

- of information activities and consultation of the PAP;
- of census of the goods and detailed evaluation of the compensations;
- of payment of these compensations;
- good evolution of work of re-localization;
- reports of follow-up of this RCP to the adapted governmental authorities, the promoter of the network in each country like the person in charge of the construction of the line.

The Coordinator of each UIP must be a person of enough knowledge in legal provisions related with the relevant compensations and the procedures of assent and payment of these. The Coordinator must also take care of the organization and the implementation of measures of information and participation of the PAP and to engage the necessary personnel to this end. This Coordinator must be a neutral person coming from an NGO, or a private consultant in order to reassure the populations.

In addition, a team of approved appraisers able to estimate the value of the grounds, cultures, the woods and plantations and buildings must carry out the evaluation of the goods and compensations in conformity with the legal provisions envisaged in each country.

In all the cases, the women and children interests must be protected. In Uganda, for example, the written assent of the wife is necessary before any real transaction on behalf of her husband.

The compensation amounts and re-localization envisaged will have to be approved and endorsed by the PAP, the competent governmental authorities and by KPLC and UETCL.

Communities and households fears regarding the non-payment of the allowances are important and widespread. These are related to past unhappy experiences which undermined their confidence (see section 4). By respect for the consulted populations, and to reduce their fears, it is strongly recommended that the approval of the first withdrawal for the construction works would be conditional to the submission of the report from the PIU. This report must establish clearly, with the support of evidence, that compensations were paid and rebuilding carried out and that the project can thus go on.

8.8. WORK EVOLUTION OF UIP

A general bill book of work is presented in the document (XXX with the page XX). All the compensations and re-localization works must be completed before the beginning of the construction works.

After the setting-up of the UIP this one must:

Disseminate information on the procedures, methods and criteria of calculation of the compensations and measures of re-localization, mechanisms of complaints and settlement of the disputes to the PAP and to the authorities the crossed communities;

To carry out the evaluation of the goods and the re-localizations necessary and to obtain the assent of the households and the communities or organizations regarding the measures of re-localization and the authorized amounts;

To ensure itself of the payment of the authorized amounts or the acquisition and the transfer of the equivalent grounds, according to case's;

To take care of the good evolution of the re-buildings and the demolitions of the structures and buildings;

To present a detailed report of the versed compensations and work completed at the suitable local national leading authorities like KPLC and UETCL.

The realization of these tasks by the UIP will take approximately 1 year.

8.9. COMMUNITY PARTICIPATION

It is very important that people affected by project (PAP), the chiefs of villages and the persons in charge of the Community structures (schools, churches) which will have to be moved take an active part in planning, the rebuilding and the re-establishment of their way of life.

They must thus be implied in:

- the detailed census and the costing of re-localization;
- the choice of the site of re-localization;
- demolition activities;
- rebuilding activities;
- the removal of the goods and the people.

The necessary workers should initially be selected among the PAP. They should be engaged and trained to rebuild their houses on their new lands. This approach is strongly encouraged by the donors and contributes to ensure the success of programs of re-localization which answer waiting of the PAP.

Taking into account the linear aspect of the Jinja-Lessos line, there exists much of possibilities of re-localization on adjacent sites. Indeed, in the majority of the cases, and according to the wish expressed at the time of the consultations, the affected people should be relocated in the immediate vicinity of the occupied original site. This solution will reduce considerably the disadvantages for the PAP.

Two options are possible:

- The first option consists of a re-localization immediately in edge of the influence.
- The second solution consists in finding in collaboration with the authorities of the community a site for the re-localization.

Whatever the adopted solution, the costs related to the re-localization will be entirely compensated.

The choice of the relocation site will result from a mutual agreement between the PAP and the Unit of Implement of the Project (UIP).

Since the payment of the compensations is a priority for the project, the UIP will take into account the particular requests for each PAP in order to obtain grounds on which they will have either a renewable long lease, or of the documents ownership.

The principles applied to identify, buy and distribute the grounds will be:

- A similar land or having a better potential will be proposed to the PAP on the basis of equivalent surface;
- The land will be selected in consultation with the PAP and the communities of reception.

8.10. ELIGIBILITY

The PAP includes all the people who will lose goods or benefit because of the project, does not matter the extent of the losses. The goods to be compensated include the lands, the cultures and the structures (houses and other constructions) or a combination of both.

All the PAP will not be obliged to be relocated since in the majority of the cases, only a small part of their goods is affected. In this case, they should receive a financial compensation for the undergone losses.

Admissibility on the relocation and the compensation will be based on a detailed inventory of the goods of each household or company which will be carried out by the UIP at least six months before the beginning of construction. Each household, company or organization identified as being affected by the project will have right to a compensation and/or the re-localization, in proportion of the undergone impact.

The PAP include also the people without documents of title or lease (squatter).

The vulnerable people such as the women and the children heads of household as well as the old people or the moved people (refugees or others) will have to receive a detailed attention. Their particular needs must be taken into account and the resources necessary to the re-establishment of their living conditions must be installed during the process of compensation and re-localization. Consultations with members of their local community and NGO have to find means of helping them to improve their living conditions.

8.11. EVALUATION AND COMPENSATION FOR LOSSES

8.11.1. COMPENSATIONS FOR THE HABITATIONS

Dans Within the framework of the interconnection project some 804 households in Uganda and 965 in Kenya will be affected by this new infrastructure. Among these households 309 houses, temporary or permanent in Uganda and the same number in Kenya which have to be moved.

In the houses of the temporary type the walls are built out of dried ground applied to a lattice of branches (cob) the roof is out of thatch. The semi-permanent houses are built out of dried bricks and have a sheet or thatched roof. The permanent houses are built out of concrete or cooked bricks and have a sheet roof.

The affected houses are disseminated on the whole of the corridor of the line and not concentrated. The impact will consist in most of the time rebuilding them with a few meters with the variation of the influence, usually on the same piece of ground. In certain cases however, the residual portion of the piece, apart from the influence, is not sufficient to allow the rebuilding. The residence will have thus to be moved on another piece belonging to the same household or another piece will have to be bought.

Table/Tableau 49: Number of houses to relocate by type/Nombre de maisons à déplacer par type

Line section Section de ligne	Houses/Maison		
	Temporary/Temporaire	Semi-permanent/Semi-Permanente-	Permanent/Permanente
Uganda/Ouganda	164	37	108
Kenya	48	163	98
Total	212	200	156

The total replacement cost of the houses is 1 580 774 USD including 746 937 USD for Kenya and 833 837 USD for Uganda. The replacement cost of the related infrastructures (cattle sheds, latrines, fences, etc.) is 135 855 USD including 33 109 USD for Kenya and of 102 746 USD for Uganda.

8.11.2. COMPENSATION FOR THE PUBLIC INFRASTRUCTURE

Certain public buildings are located in the hold and are affected by the construction project. The line planning in details, including the exact pylon, locations, which are not yet implemented, an optimization of the layout is still possible, and some of these structures could be spared. Those are especially churches or mosques whose symbolic value can be important and several communities will hesitate to move.

The list of affected Communities is below presented thus corresponds to the least optimistic scenario.

All public buildings (schools, health centers, worship places, etc.) have to be rebuilt before undertaking their demolition.

The replacement cost of the public buildings is estimated at 330.344 USD for Kenya and 265.920 USD for Uganda, the total cost is 596.264 USD.

The list of the buildings to be moved and their construction cost are indicated in the below table.

Table/Tableau 50: List of public buildings to relocate/Liste des infrastructures publiques à déplacer

Infrastructure	Reconstruction costs/Coûts de reconstruction
Kenya	
School I, Ikoli Primary, including 14 classrooms, 24 pit latrines, 1 kitchen, 1 gate, 1 fence, 1 workshop, 1 staffroom and 1 store	7 680 000 KES
School II, Siera Primary, including 6 pit latrines and 1 play ground	550 000 KES
School III Kibachenje, including 14 classrooms, 21 pit latrines, 1 kitchen, 1 gate, 1 fence, 1 staffroom and 1 store	7 660 000 KES
School IV, St. Mathews, Septonok Primary including 1 classroom, 6 teachers houses, 2 pit latrines and 1 fence	400 000 KES
Markets (Ndaptabwa and Ikoli), including 18 shops and 8 pit latrines	2 460 000 KES
Religious buildings at Ndaptabwa, Siera, Ikoli, Okook including 4 churches	1 600 000 KES
Namamuka dispensary	1 750 000 KES
Total Kenya (KES)	22 100 000 KES
Total Kenya (USD)	330 344 USD

Ouganda	
1 primary school block	43 800 000 UGS
1 playground	10 000 000 UGS
3 school blocks	131 400 000 UGS
1 student hotel	200 000 000 UGS
1 canteen	1 500 000 UGS
1 local church	1 500 000 UGS
1 health center	25 000 000 UGS
1 mosque	5 000 000 UGS
5 churches	25 000 000 UGS
Total Uganda (UGS)	443 200 000 UGS
Total USD	265 920 USD

Exchange rate :

1 KES = 0,0149477 USD

1 UGS = 0.0005794 US Dollar

8.11.3. COMPENSATION FOR THE AGRICULTURAL PRODUCTION

The total of the necessary surfaces for the project is estimated at 777 ha (256 km X 30 m). From this total, 4,20 ha (673 turns X 6,25 m²) will be lost in a permanently for construction of the pylon bases. This surface is minimum compared to the size of agricultural operations. Moreover, the cultures of which the height will be compatible with the safety of the line and breeding will be authorized in the hold when works are completed.

The compensation costs for permanent cultivated surface losses are estimated at 27 757 USD, that is to say:

- Kenya :2,19 ha X 9 880 USD = 21 673 USD
- Uganda :2,04 ha X 3 000 USD = 6 120 USD

The compensation costs for the harvest losses during the construction works can vary depending on people had time to make harvest or not. The compensations for crop losses will be calculated during the project implementation on basis of commercial value by including the restoration cost of crops.

For the project needs, the harvest losses during all the year of construction is 995.608 USD for Uganda and 1.023.499 USD for Kenya, the total cost is 2.019.107 USD.

Table/Tableau 51: Uganda/Ouganda – Compensation cost for loss of annual crops

Crops within the ROW		Areas	Compensation cost (UGS)/m ²	Cost	Total UGS	Total USD
Annual crops	Pineapple	22 995	4 448	102 281 760		
	Banana	81 216	1 482	120 362 112		
	Cocoa	424	60 000	25 440 000		
	Coton	47 224	600	28 334 400		
	Beans	91	1 000	91 000		
	Green Vegetables	22 905	3 000	68 715 000		
	Maize	79 660	1 038	82 687 080		
	Cassava	206 334	889	183 430 926		
	Millet	11 699	440	5 147 560		
	Sweet Potatoe	3 198	900	2 878 200		
	Peas	22 905	1 200	27 486 000		
	Potatoe	106 888	1 800	41 229 000		
	Sqash	11 376	2 000	213 776 000		
	Rice	5 660	1 200	13 651 200		
	Sorgho	7 952	300	2 385 600		
	Soya	283	600	169 800		
Others	617 734	1 200	741 280 800	1 659 346 438	995 608	

Table/Tableau 52: Kenya – Compensation cost for loss of annual crops

Crops within the ROW		Areas	Compensation cost (UGS)/m ²	Cost	Total UGS	Total USD
Annual crops	Pineapple	23 915	178	4 256 834		
	Banana	84 465	52	4 392 161		
	Cocoa	441	2 400	1 058 304		
	Coton	49 113	24	1 178 711		
	Beans	95	40	3 786		
	Green Vegetables	23 821	120	2 858 544		
	Maize	82 846	41	3 396 702		
	Cassava	214 587	36	7 725 145		
	Millet	12 167	18	219 005		
	Sweet Potatoe	3 326	36	119 733		
	Peas	23 821	48	1 143 418		
	Potatoe	111 164	72	1 715 126		
	Sqash	11 831	80	8 893 082		
	Rice	5 886	48	567 890		
	Sorgho	8 270	12	99 241		
	Soya	294	24	7 064		
Others	642 443	48	30 837 281	68 472 028	1 023 499	

8.11.4. COMPENSATION FOR THE PLANTED TREES

A lot of families have small surfaces they planted with trees, mainly eucalyptus which are used for construction wood and firewood, and a part can also be sold. Several families have also fruit trees. These trees will have to be cut and could not be replanted in the area of the line. This will be a permanent loss over the years. The loss generated by the complete deforestation of the area of the line will have a significant impact for households. The compensation for the loss is a complex procedure since the compensation given to each tree is depending to its size. The evaluation of the numbers of trees for each family has been done from the result of the investigation.

The total cost is estimated at 430.656 US, 333.246 USD in Uganda and 97.410 USD in Kenya.

Table/Tableau 53 : Uganda/Ouganda - Compensation costs for trees/Coûts de compensation pour les arbres

Type of tree	Number of trees	Compensation cost (UGS)	Cost	Total (UGS)	Total (US\$)
Guava	412	12 000	4 944 000		
Muarubaini	-	-	0		
Loguarts	-	-	0		
Eucalyptus	157	20 000	3 140 000		
Umbrella (Tarminalia)	10	52 000	520 000		
Cyprus	-	52 000	0		
Misiola	-	-	0		
Gravella		40 000	0		
Mango	1 599	75 000	119 925 000		
Avocado	598	65 000	38 870 000		
Wattle Tree	-	15 000	0		
Jacaranda	-	15 000	0		
Acacia	-	6 000	0		
Jack fruit	4 059	65 000	263 835 000		
Pawpaw	1 128	2 000	2 256 000		
Orange	294	30 000	8 820 000		
Mvule	176	200 000	35 200 000		
Albizia (musita)	-	150 000	0		
Muwafu	20	40 000	800 000		
Mugayine	20	30 000	600 000		
Nkomamawanga	-	50 000	0		
Musizi	765	100 000	76 500 000		
Mahogany	-	400 000	0		
Moringa	-	20 000	0		
Tamarindus indica (nkoonge)	-	40 000	0	555 410 000	333 246

Table/Tableau 54 : Kenya - Compensation costs for trees/Coûts de compensation pour les arbres

Type of tree	Number of trees	Compensation cost (KES)	Cost	Total (KES)	Total (US\$)
Fruit trees	46	1 000	46 000		
Goyava	28	500	14 000		
Muarubaini	5	700	3 500		
Loguarts	2	250	500		
Eucalyptus	81	500	40 500		
Umbrella	7	400	2 800		
Cyprus	73	550	40150		
Misiola	17	120	2 040		
Gravella	27	640	17 280		
Mango	27	1 200	32 400		
Avocado	21	800	16 800		
Jack Fruit	4221	800	3 376 800		
Wattle Tree	36	150	5 400		
Jacaranda	11	550	6 050		
Acacia	15	100	1 500	6 516 720	97 410

8.11.5. COMPENSATIONS FOR THE INDUSTRIAL CROPS

Within the ROW, there are industrial crops of sugarcane on 19.5 ha and rice on 12 ha. The total number of pylons in these plantations is estimated to 30 the total losses are 195 m².

The total compensation cost related to the permanent loss of cultivation is estimated to 3500 USD.

8.11.6. COMPENSATIONS OF THE TURNOVER

Certain trade or companies will be affected by the line construction. Taking into account the project linear aspect, the trade shifting will be possible in the areas closed by original site. The incomes loss will be caused by the interruption of the activities during the construction work. At all events, the companies and trade incomes losses will be evaluated individually.

An equivalent cost to turnover for six months, will be established as a basis of compensation after taxes deduction as to authorities.

8.11.7. COMPENSATIONS OF SHIFTING COSTS

Each household and company which will have to move will receive a fixed amount to cover its shifting expenses. This amount will be established according to the characteristics of each case and the number of people to be shifted. Thus, it costs more expensive to move a family of 12 people than 2 people with or without goats, cows, hens, etc. In the same way, according to the quantity of equipment and other goods to be transported the costs of compensation vary. The same principles will be applied to the companies with their equipment, their stock which are inventoried, etc.

8.11.8. UNFORESEEN AND CONTINGENCIES

Unforeseen damages, the disturbances and the harmful effects can occur during the relocation process. They can be variable such as: equipment losses, accessories which will not be moved, obligation to move on a fixed date, need for packing the house effects or the equipment commercial equipment or other thinks.

The compensation related to the contingencies or the disadvantages is solved by adding a percentage to of the calculation of the compensation. According to the Ugandan legislation a rate of 15% is added to expropriation value must be envisaged if expropriation is is to be done 6 months after the notification of expropriation and 30% if expropriation was done before this 6 months. In Kenya there is no specific provision envisaged by the expropriation legislation. It is suggested to give a premium for disadvantages of 15% of the calculated compensation value.

8.12. SETTLEMENT OF DISPUTES

In order to avoid the disagreements, during the goods evaluation, the community representatives should be present in addition to the UIP members. All the documents should be signed by these present parts. A witness from a local NGO could participate in this procedure.

In addition, a conflict settlement unit will set up before the beginning of acquisitions by the UIP. That unit will include local community (district) and local NGO representatives. The UIP will implement every think to find an understanding environment within this unit with appointment of a mediator, accepted by all parts, or of a second compensations evaluation independent from that carried out by UIP. In a disagreement case, the PAP preserves its rights to go to law. In case of Uganda, there are land courts (District Tribunals Land) and of the persons in charge for land on the level of the District (District Boards Land) and in case of Kenya complainant should go to County Council and after, if necessary, go to civil courts.

8.13. COSTS

The estimated budget for compensation and the PAP relocation is shown by the following table. It presents the whole necessary costs to compensate and relocate the PAP in addition to the needs for detailed inventory realization, monitoring and assistance to vulnerable people. At this cost, an amount equivalent to 10% is to be added as contingencies.

Table/Tableau 51: Coûts des compensations

ITEM	JINJA - LESSOS	
	Kenya	Uganda
Houses replacement cost	746 937 \$	833 837 \$
Private structures replacement cost	33 109 \$	102 746 \$
Public buildings replacement cost	330 344 \$	265 920 \$
Cost of trees	97 410 \$	333 246 \$
Permanent loss of cultivation	21 637 \$	6 120 \$
Temporary loss of cultivation	1 023 499 \$	995 608 \$
Sub-Total by country	2 252 936 \$	2 537 477 \$
6 months or more quit notice 15%	-	380 622 \$
Administrative cost (2%)	45 059 \$	50 750 \$
Contingencies (10%)	225 294 \$	291 810 \$
Sub-Total by country	2 523 288 \$	3 260 658 \$
TOTAL BY TRANSMISSION LINE	5 783 946 \$	

8.14. MONITORING AND EVALUATION

A relocation monitoring and evaluation plan implementation will be set up by UETCL and KPLC.

It is recommended that this monitoring program be in charge of an Independent Monitoring Unit (USI). This unit must be independent from the existing authorities. For this purpose it is recommended that it must be made by representatives from KPLC and UETCL, project financing organization (the World Bank or other) and from NGO representing the PAP and finally expert in relocation and compensation coming from a University or an international organization.

This committee will have to examine the situation of the PAP and to submit a report to KPLC and UETCL and the qualified governmental authorities.

More specifically the USI will have:

- to examine the UIP reports and the documents related to compensations and the relocations;
- to evaluate the achievement of the PRC objectives, in particular the crops and household incomes restoration;
- to measure the PAP satisfaction relating to the offered compensations and resolution complaints;
- to determine the taken measures effectiveness and to show advices from PRC application.

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APPENDIX 1

COMMUNITY QUESTIONNAIRE

**NILE BASIN INITIATIVE
NILE EQUATORIAL LAKES SUBSIDIARY ACTION
PROGRAM (NELSAP)**



SOCIOECONOMIC QUESTIONNAIRE FOR COMMUNITY LEADERS

Province:		Questionnaire No.:	
District:		Commune/Village:	
Position of respondent:			
Family name of respondent:		First name of respondent:	
Name of interviewer:		Date:	

SECTION A: SOCIOECONOMIC DATA

I. Population of village

All households						
No. of households	Population			Total	Size of households	
	Men	Women				
1	2	3	4	5		

Rural households						
No. of households	Population			Total	Size of households	
	Men	Women				
6	7	8	9	10		

II. Ethnic groups and religion

1	Majority ethnic group:	2	Percentage %:
3	Minority ethnic group:	4	Percentage %:
5	Other ethnic group(s):	6	Percentage %:
7	Principal religion :	8	Percentage %:
9	Second religion:	10	Percentage %:
11	Other religion(s):	12	Percentage %:
13	Principal religious holiday:	14	Date:
15	Other religious holiday(s):	16	Date:

NILE BASIN INITIATIVE
NILE EQUATORIAL LAKES SUBSIDIARY ACTION
PROGRAM (NELSAP)



III. Refugees; women and child heads of household

1	Does the village have refugees? If so, how many?	
2	Where do these refugees come from?	
3	How many heads of household are women?	
4	How many heads of household are children?	

IV. Socioeducational infrastructures

	Principal socioeducational infrastructures	Number
1	Elementary school	
2	Secondary school/vocational school	
3	Health centre/dispensary	
4	Hospital	
5	Church	
6	Mosque	
7	Community centre	
8	Radio station	
9	Associations:	
9	Other:	
10	Teachers	
11	Nurses	
12	Doctors	

V. Socioeconomic activities

	Principal activities	Yes	No	%
1	Farming			
2	Livestock farming			
3	Processing industry			
4	Tourism			
5	Service sector			
6	Crafts (specify):			
7	Other (specify):			

NILE BASIN INITIATIVE
NILE EQUATORIAL LAKES SUBSIDIARY ACTION
PROGRAM (NELSAP)



	Industry and trade	Number
8	Markets	
9	Mill/Conditioning workshop	
10	Butchers	
11	Gas stations	
12	Bars	
13	Boutiques/shops/grocery stores	
14	Workshops	
15	Internet cafés	
16	Other:	
17	Other:	

VI. Access to drinking water

		Yes	No	Households served %
1	Tap inside the house			
2	Tap outside the house			
3	Well for the house			
4	Well for the community			
5	River or spring			
6	Other (specify) :			

SECTION B: RURAL ELECTRIFICATION

VII. Access to electricity

	Y/N	Use(s)
1		
2		

		YESI	NO
What is the source of the electricity?	3	Power grid:	
	4	Generator:	
	5	Solar energy :	
	6	Wind energy:	

**NILE BASIN INITIATIVE
NILE EQUATORIAL LAKES SUBSIDIARY ACTION
PROGRAM (NELSAP)**



VIII. Request for electricity – Village not connected to power grid

	Y/N	Use(s)
1		Could the village benefit from having access to electricity?
2		If YES, what would it be used for?

Sources of energy used by households a) lighting, b) cooking and c) heating, in order of the importance of the type of energy (1, 2, 3, etc.)?

IX.

	Source of energy	Lighting	Cooking	Heating
1	Wood			
2	Candles			
3	Kerosene			
4	Liquefied petroleum gas (butane, propane, etc.)			
5	Electricity			
6	Other (specify):			

SECTION C: MANPOWER AND SERVICES

X. Manpower

Are there qualified workers in the village? If YES, what trades are represented?

	Trades represented	YES/NO	Number of people
1	Ironworker		
2	Carpenter		
3	Welder		
4	Electrician		
5	Truck driver		
6	Heavy machinery operator		
7	Mechanic		
8	Mason		
9	Painter		
10	Other:		

**NILE BASIN INITIATIVE
NILE EQUATORIAL LAKES SUBSIDIARY ACTION
PROGRAM (NELSAP)**



XI. Services

Are there businesses in the village that can provide services during the construction of the line?
If YES, what services can be provided?

	Services represented	YES/NO	Number
1	Transportation		
2	Mechanical		
3	Gas/petroleum products		
4	Heavy machinery		
5	Materials (wood, stone, sand, etc.)		
6	Canteen(s)		
7	Other:		

SECTION D: IMPACTS RELATED TO THE ELECTRICAL TRANSMISSION LINE RIGHT OF WAY

XII. Structures and principal buildings

Which municipal buildings are located inside the right of way and will be partially or totally affected? Give the best possible estimate of the size of the area affected inside the right of way.

Building	Use (School, health centre, other (specify))	Type of construction (Indicate materials principally used for the walls and roof)	Area (m ²)	
			Total	Inside right of way
1				
2				
3				

4 Is there land outside the right of way on which the building could be rebuilt? (Y/N)

5 How far is this land from the current building? (km)

**NILE BASIN INITIATIVE
NILE EQUATORIAL LAKES SUBSIDIARY ACTION
PROGRAM (NELSAP)**



XIII. Concerns about the impacts of creating a right of way

Do you have any concerns about creating a right of way for the electrical transmission line and how it could affect the village? If YES, what are those concerns?

		Y/N
1	Do you have any concerns?	
	If YES, what are they?	
2		
3		
4		
5		
6		
7		
8		

Signature of interviewee No. Of ID card

Signature of interviewer ... Date.....

**NILE BASIN INITIATIVE
 NILE EQUATORIAL LAKES SUBSIDIARY ACTION
 PROGRAM (NELSAP)**



III. Refugees; women and child heads of household

1	Does the village have refugees? If so, how many?	
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9	Associations:	
9	Other:	
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11	Nurses	
12	Doctors	

V. Socioeconomic activities

	Principal activities	Yes	No	%
1	Farming			
2	Livestock farming			
3	Processing industry			
4	Tourism			
5	Service sector			
6	Crafts (specify):			
7	Other (specify):			

**NILE BASIN INITIATIVE
 NILE EQUATORIAL LAKES SUBSIDIARY ACTION
 PROGRAM (NELSAP)**



	Industry and trade	Number
8	Markets	
9	Mill/Conditioning workshop	
10	Butchers	
11	Gas stations	
12	Bars	
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1	Tap inside the house			
2	Tap outside the house			
3	Well for the house			
4	Well for the community			
5	River or spring			
6	Other (specify) :			

SECTION B: RURAL ELECTRIFICATION

VII. Access to electricity

		Y/N	Use(s)
1	Does the village have electricity?		
2	If YES, what is it used for?		

		YESI	NO
What is the source of the electricity?	3	Power grid:	
	4	Generator:	
	5	Solar energy :	
	6	Wind energy:	

**NILE BASIN INITIATIVE
 NILE EQUATORIAL LAKES SUBSIDIARY ACTION
 PROGRAM (NELSAP)**



VIII. Request for electricity – Village not connected to power grid

	Y/N	Use(s)
1		Could the village benefit from having access to electricity?
2		If YES, what would it be used for?

Sources of energy used by households a) lighting, b) cooking and c) heating, in order of the importance of the type of energy (1, 2, 3, etc.)?

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5	Electricity			
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3	Welder		
4	Electrician		
5	Truck driver		
6	Heavy machinery operator		
7	Mechanic		
8	Mason		
9	Painter		
10	Other:		

**NILE BASIN INITIATIVE
 NILE EQUATORIAL LAKES SUBSIDIARY ACTION
 PROGRAM (NELSAP)**



XI. Services

Are there businesses in the village that can provide services during the construction of the line?
 If YES, what services can be provided?

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2	Mechanical		
3	Gas/petroleum products		
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5	Materials (wood, stone, sand, etc.)		
6	Canteen(s)		
7	Other:		

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Which municipal buildings are located inside the right of way and will be partially or totally affected? Give the best possible estimate of the size of the area affected inside the right of way.

Building	Use (School, health centre, other (specify))	Type of construction (Indicate materials principally used for the walls and roof)	Area (m ²)	
			Total	Inside right of way
1				
2				
3				

4 Is there land outside the right of way on which the building could be rebuilt? (Y/N)

5 How far is this land from the current building? (km)



XIII. Concerns about the impacts of creating a right of way

Do you have any concerns about creating a right of way for the electrical transmission line and how it could affect the village? If YES, what are those concerns?

		Y/N
1	Do you have any concerns?	
	If YES, what are they?	
2		
3		
4		
5		
6		
7		
8		

Signature of interviewee No. Of ID card

Signature of interviewer Date.....

APPENDIX 2

COMMUNITY CONSULTATIONS REPORT, UGANDA



**FEASIBILITY STUDY FOR JINJA TO KENYA BORDER
TRANSMISSION LINE, ENVIRONEMENT AND SOCIAL
ASSESSMENT**

**FEASIBILITY STUDY FOR JINJA TO LESSOS
TRANSMISSION LINE**

ENVIRONMENT AND SOCIAL ASSESSMENT

COMMUNITY CONSULTATION

DRAFT REPORT

FEBRUARY 2007

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 Jinja, Mayuge, Iganga, Bugiri, and Tororo for the Jinja –Lessos line (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

To consult with stakeholders at Districts and lower local governments both politicians and technocrats to enlist their cooperation and support.

To create awareness about the intended Project among communities in the pre-identified trading centers.

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 Jinja – Lessos line which passes through the districts of Jinja, Mayuge, Iganga Bugiri and Tororo 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
Jinja	Nakanyonyi, Buwenda-Matala, Kyabirwa, Wakitaka, Namizzi West
Iganga	Nakivumbi, Nawansega, Kabugweri, Namiganda , Businda
Bugiri	Kayandhakato, Nawantokoro, Namatanga Buswiriri, Busolo, Bugodo Buwoto, Kapyanga
Mayuge	Mbaale, Isikiro and Lugolole A
Tororo	Meera Pajabo "A" zone, Pupany zone, Pukach zone, Pimori zones, Pabone "B" cell, Akipenet "B", Pabone "C" Ngelechom, Osukuru village and Kayoro A zone

2.0 SUMMARY OF THE ISSUES/CONCERNS

Issues arising out of the district and community consultations are indicated below:

2.1 JINJA – LESSOS CONCERNS/ISSUES

2.1.1 ISSUES RAISED BY DISTRICT AND SUB-COUNTY OFFICIALS

Compensation

All district officials expressed the need for compensation for any land and crops that are likely to be taken up by the new electricity line. They however, cautioned that this needs to be handled cautiously because people usually fear being displaced from their land which they have inhabited for years and have inherited this from their forefathers.

Planned activities

All the districts apart from Bugiri had no development activities planned along the proposed stretch of land. In Bugiri, the Environment office has plans of using Kadoma wetland for irrigation where water will be drawn from the wetland to surrounding arable land. There is need for the power project to liaise with the environment office to ensure harmonization.

In Tororo at Osukuru hills, there is a proposed mining of phosphates and this has made the residents of all villages around Osukuru hills very hostile to any project that intends to use all or part of their land.

Supply of power

The districts expressed the need to have the people connected to the grid where the power line will pass. Most villages where the current transmission line passes (in the case of Jinja – Lessos) are not connected to the electricity grid. In Jinja, particular emphasis was placed on in Budondo Sub County where the electricity will be generated.

Employment

In all districts, the issue of jobs came up and the officials requested that casual jobs during construction and other income generating opportunities should be availed to local residents.

Sensitization

Officials from the districts expressed opinion that ample time should be spent on sensitization of affected communities before implementation of the project of this nature. This arose from the fact that people have continued to live under the high voltage line, which is a likely sign that they do not know the effects of continuous exposure to such electromagnetic fields. Without understanding of such impacts and risks associated with power transmission, people affected by the line and may be compensated may refuse to leave the way leaves.

Proposed oil pipeline

In the districts along the Jinja – Lessos, especially Bugiri and Tororo, a proposed pipeline was mentioned, which is likely to cross both the current power line and the proposed new line. There was fear of fire out break if they are both constructed. (This issue to be clarified in the subsequent reports).

Wetlands

In the districts of Iganga and Bugiri, the officials cautioned that construction through wetlands should be done carefully because conservation of natural resources particularly is top on their agenda. Secondly, there is a lot of rice growing in the wetlands and people depend on this rice growing for survival.

Issues raised during Community Meetings

Compensation related issue

This was the biggest concern from the community meetings. Members wanted to know how this issue would be handled. The concerns on these issues are highlighted below;

The communities requested that they should be sensitized in time on the entire compensation policy and procedures that will be used.

They also requested to be told in advance how valuation of crops will be done and how payment will be effected.

They expressed fear of middlemen in land negotiating and sale matters, they also requested that the district officials should not be used when negotiating and selling of land. They prefer that the project should deal with the landowners directly in the presence of their local leaders especially the area chairpersons.

The communities requested that ample time should be given for relocation, as looking for resettlement land may take time.

They expressed the need for quick payment of their dues in the case of land and crop compensation because they have a fear that government projects usually have bureaucratic tendencies, which delay payments.

They expressed the need to be paid in cash instead of cheques for mainly two reasons, some people especially the elderly may fear the bank procedures and the time taken going to the banks to wait for payment and some people may be illiterate.

Involvement of lawyers for both sides and the use of proper agreements were suggested. This was put forward because communities feared that the project would capitalize on the peoples' ignorance in land matters and compensate them properly. On sale agreements they preferred to be given agreements that were durable which they would preserve for the benefit of their children and future generations.

Valuation of land

Community members are worried that the method used in valuing the land may not use the market rates and as a result the people may get money which might not be enough to buy them land elsewhere. They prefer that they be given a say in determining the value of their land than using government valuers who usually undervalue rural land. They cautioned that land prices are likely to go up because people will be expecting that the affected households have been given a lot of money and are desperate for other pieces of land for resettlement and as a result those selling will hike their prices.

Verification of landowners

The land tenure system is not uniform across the districts affected by the proposed line; therefore the communities are concerned that some people may pose as the true owners. They also cautioned that in some cases, the squatters may claim to be the right owners and the local leaders may not know that these are squatters because they have lived on the land for a long time yet the real owners may be present but living in big cities – a case of absentee landlords. Related to this is the issue of failing to trace the rightful owners and the communities wanted to know how the project would trace them.

Mode of acquisition of land

Some members of the community are of the view that land be hired for a short time after which it reverts to the owner for fresh negotiations. The main reason for this was that land owners would want their children to benefit from the property that once belonged to their families.

Fear of high voltage lines

There was a fear of having a second high voltage line in the neighborhood for the case of Jinja – Lessos. In some cases members suggested that this line should completely be diverted to a new route so that other Ugandans should share on this problem. Then there was the fear of the line passing over their grazing land and its affect on their animals and children. A case in point is where the line is in the vicinity of Ngelechom Primary School. There was a fear of that high voltage increase lightening incidents in the area and they wanted their fears dispelled.



The effect of power line on people who will stay between old and new power lines also came up and people are scared they may not be compensated as they may not directly be in the way leaves but very close to such lines on either side may be a sure but slow health hazard on to the lives of households harmful to them slowly but surely.

Employment opportunities

All communities expressed the need for consideration for jobs especially for casual laborers. They asked that special consideration should be extended to both skilled and unskilled youth and women in the area. However, some feared that the project would use high technology, which would not favor use of casual labor, and as a result they would not benefit from this project.

Power supply

All affected villages expressed the need to be connected to electricity supply. Most of the villages met are not connected to the national grid and hence have no power supply. The few that had power supply requested that their power should be boosted to enable them run their business smoothly especially the grain milling machines. Community members and their leaders are bitter that the electricity power line constructed only transmits electricity to Kenya and just passes above without any benefits accrued. There are fears that the proposed project this may be repeated.

Proposed Oil pipeline

The communities as well as the district officials of Bugiri and Tororo districts made mention that there are plans by government to construct an oil pipeline from Kenya to Uganda via their districts. There are fears that if the oil pipeline uses the way leaves for the proposed transmission line, then in case of accidents entire villages might be affected. This is a result of fearing that oil might catch fire from the high voltage power lines.

Fear of surveyors

From the previous projects, the communities are afraid of the rough methods and procedures surveyors use in surveying their land. They claim that surveyors are hostile to community members and do not alert them of impending activities and as a result they loose crops and property.

Allowances

This issue persistently came up from community members claiming to have spent their working time in these meetings.

Graveyards

Communities are scared that in case the proposed line crosses their graveyards, their dead will be disturbed.

Existing power line

Communities have some experience from the existing power line and these relate to:

- Access road - should be used for the new line to avoid claiming more land.
- Members want the reserve/way leaves for the new line to be clearly demarcated to avoid cases where the electricity officials come later and claim that it was compensated for.
- The fear that too much land is being taken up for this project because of the distances as suggested from the centre of the line to the edge of the wayleaves.

Royalties to Busoga kingdom

Some members felt that Busoga kingdom, as the custodian of the source of the power should be given some income or a reward for their resource, which is benefiting not only Uganda but also the entire region.

Feedback to community

This was requested for by all meetings because members wanted to be informed on progress of the project and to be sure that their views, concerns, and fears are being addressed.

APPENDIX 3

COMMUNITY CONSULTATIONS REPORT, KENYA

NILE BASIN INITIATIVE - NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAMME
STUDY OF THE INTERCONNECTION OF THE ELECTRICITY NETWORKS OF THE NILE EQUATORIAL LAKES COUNTRIES
ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT - VOLUME 2B - UGANDA-KENYA INTERCONNECTION
MAIN REPORT

1. INTRODUCTION

The stakeholder consultations during the feasibility study of the Lessos- Malaba border (Kenya) were carried out at district and community levels. At district level, the relevant district community leaders were consulted. The districts covered in these consultations were: Nandi North, Kakamega North, Bungoma South, Busia and Teso.

At community level a diversity of community stakeholders including chiefs, village elders, village headmen, farmers, teachers, men and women were consulted in pre-arranged meetings held at schools, homesteads and markets. Consultations were based on sub locations were within the project area and especially homesteads, schools and markets through which the proposed transmission line traversed.

2. METHODOLOGY

At district level, interviews were held with the identified stakeholders and/or government officials. In the communities, discussions with focus group and community meetings were held in public institutions including schools, markets and/or identified homesteads within the proposed line route. The stakeholders were mobilized by chiefs, teachers and school management committee members of the affected schools. Teachers sent pupils to inform their parents of the planned meetings. Chiefs deployed their assistants and village headmen to make announcements and post notices at market centres informing the public about planned meetings.

During meetings communities were informed about the proposed project through presentations and distribution of project information pamphlets. The presentations highlighted the project background, objectives of the project, expected oncoming activities, who are involved and expected date of commencement of line construction. The following data was collected during the meetings: 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 wayleaves and concerns about the impacts of the wayleaves were recorded. Names of participants were recorded. After the presentation, group members in their diversity asked questions, sought clarification, raised opinions and comments which were recorded. Some questions were answered by the team but those that were beyond their knowledge were not answered. The unanswered 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 questions and concerns that were not adequately responded to would be addressed at later dates.

Objectives of consultation meetings

To enlist the support and cooperation of government officials, politicians and other stakeholders

To create awareness about the intended project especially to those who may be directly affected and those living near the existing and proposed transmission lines.

To obtain the stakeholders' response, feedback and concerns about the project.

3. SOCIO ECONOMIC DATA

Ethnic Groups

Ethnic groups' distribution tends to be more or less on the basis of district as the districts were created during the colonial era as tribal homelands. In Nandi North District, the predominant occupants are members of the Nandi tribe who belong to the highland Nilotes ethnic group. Western province – Kakamega North, Bungoma South and sections of Busia (Nambale); the majority ethnic groups are the Luhya clans which include: Kabras (Kakamega North), Bukusu (Bungoma South) and Bakhayo (Busia). Other minority groups are Maragoli, Isukha (Kakamega North), Maragoli, Wanga, Kisa (Bungoma South) who are all Luhya clans and which belongs to the Bantu ethnic group. In Busia District the Teso tribe is the minority. In Teso District the predominant tribe is Teso who belongs to the river lake Nilotic ethnic group.

3.2 RELIGION

In all the project districts, Christianity is the most dominant religion. Over 98% of the total population is Christian but of different denominations. While the African Inland Church is the dominant denomination in Nandi North District, Friends and Pentecostal churches are dominant in Kakamega North Districts while Roman Catholic and Anglican churches are the commonest in Bungoma South, Busia and Teso Districts. Islam is a minority religion found in some sections of Nandi North, Kakamega North, Bungoma South and Busia Districts only. The principal religious holidays are Christmas (December) and Easter (April) for Christians and Idd Mubarak for Muslims (January-February).

Refugees

There are no refugees in all the project districts apart from Busia District in which ten were reported to have originated from Mt. Elgon District following tribal clashes that were on-going at the time.

3.4 WOMEN AND CHILD HEADED HOUSEHOLD

In all the project districts there are women and child headed households. The table below shows the distributions.

Table 1: Distribution of women and child headed households by districts

Province	Rift Valley		Western							
District	Nandi North		Kakamega North		Bungoma South		Busia		Teso	
	Women	Child	Women	Child	Women	Child	Women	Child	Women	Child
	472	28	1,000	18	800	200	100	15	2000	1500

The western province districts have higher proportions of female and child headed families. This is mainly attributed to the fact that HIV/AIDS impact stretching from Eastern Uganda along the trade route affected these areas most.

Socio Economic Activities

Farming is the principal economic activity in all the project districts. In Nandi North tea and maize farming are the main cash crops. In Kakamega North, Bungoma South, Busia and Teso Districts sugarcane is the main cash crop. In Teso and Busia tobacco is the second major cash crop. Maize, sorghum and cassava are the main food crops. In Nandi North dairy farming is equally dominant. But in the Western province districts, indigenous livestock (mainly cattle and chicken) are reared. The main processing industry is jaggery⁶ in the Western province districts of Kakamega North and Bungoma South. Jaggery is made from syrup produced by crushing sugarcane using traditional machines driven by oxen.

⁶ Traditional unrefined sugar.

Table 2: Socio Educational infrastructures, trade and industry

Province	Rift Valley					Western				
District	Nandi North					Kakamega North	Bungoma South	Busia	Teso	
Sub-location/ village	Songoliet	Ndaptabwa	Kibarmos	Septonok	Kabeiyo	Burundu	Ikoli	Kibachenje	Lupida	Kotur
Primary schools	3	5	26	22	6	12	22	6	3	2
Secondary schools	1	3	4	5	2	4	7	2	1	-
Dispensary/health centres	1	-	3	3	1	2	3	1	1	-
Hospitals	-	-	1	-	-	-	-	-	-	-
Churches	5	19	30	30	7	150	60	200	50	20
Mosques	-	1	1	1	-	3	-	1	1	-
Radio stations	-	-	-	-	-	-	-	-	-	-
Associations	15	12	40	100	10	12	58	100	3	30
Teachers	34	45	300	160	72	160	300	100	19	20
Nurses	2	-	20	10	2	10	8	3	2	-
Doctors	-	-	-	-	-	-	-	-	-	-
Markets/trading centres	4	3	20	15	5	5	15	5	1	3
Workshops/mill conditioning	-	3	20	-	-	1	5	-	-	-
Butcheries	2	3	20	15	4	4	15	2	4	3
Gas stations	-	-	-	-	-	-	3	-	-	-
Retail shops	10	7	60	70	30	45	45	40	7	20
Internet café	-	-	-	0	-	-	-	-	-	-
Crafts (basketry)	-	-	-	1	3	1	7	20	5	20
Community centres	-	1	-	-	-	-	-	-	-	-
Liquor bars	2	1	10	4	1	5	11	5	1	1

Table 3: Manpower and Services

Province	Rift Valley					Western				
District	Nandi North					Kakamega North	Bungoma South	Busia	Teso	
Sub-location/ village	Songoliet	Ndaptabwa	Kibarmos	Septonok	Kabeiyo	Burundu	Ikoli	Kibachenje	Lupida	Kotur
Iron Workers	5	-	4	200	-	4	10	10	-	45
Carpenters	3	20	20	300	20	400	60	300	20	100
Welders	-	8	30	100	8	120	11	200	4	100

Electricians	3	16	40	100	2	60	20	20	-	50
Truck drivers	5	15	100	300	10	60	13	15	4	50
Heavy machinery operators	10	6	100	1000	20	100	5	20	1	40
Mechanics	3	12	50	50	5	60	30	50	-	25
Masons	10	25	100	100	10	500	70	300	20	50
Painters	3	5	150	150	-	20	15	100	6	70
Others (Brick makers)	-	100	-	-	-	-	-	-	-	-
Transportations	10	10	50	100	12	5	10	15	2	30
Mechanical	-	6	20	10	2	10	2	10	-	20
Gas/petroleum	10	2	5	10	1	1	6	-	-	3
Heavy machinery	-	-	-	-	-	-	-	-	-	-
Wood, sand, stone	30	15	10	100	10	20	10	15	2	100
Canteens	10	20	100	300	15	20	20	20	5	100
Other (power saw operators)	-	-	-	-	-	10	3	-	-	-

Access to Drinking Water

In all the districts the dominant and most accessible sources of drinking water are rivers and springs. Community and household wells are also a common source of drinking water. Piped water is the rare, for example, only one household was reported to have running water inside the house. Community wells were drilled by a NGO under the auspices of the Kenya Finland Cooperation (KEFINCO) financed by Finnish aid, FINIDA. These wells are managed by a committee of the local community. Such water points are usually found within public-owned centres. Household wells are privately owned and are used only by close family members.

Rural Electrification

Only two village,- Songoliet in Nandi North (near Lessos Sub-Station) and Ikoli in Kakamega North have access to electricity supply. However, most households in these villages are not connected to electricity. At Lessos electricity is only connected to households on the lower side of the existing power line. At Ikoli, only the secondary school is connected to electricity. The primary school and nearby Ikoli market are not..There are however on-going rural electrification programmes in parts of Nandi North especially from Kabeiyo village towards the Eldoret-Kapsabet tarmac road and in parts of Sang'alo linking up to Sang'alo Secondary School and Sang'alo market.

In Kakamega North there is on-going rural electrification to connect Samitsi High School and Namirama Girls High School which are close to Musaga Sub-station. In Bungoma South District, there is on-going rural electrification across Nzoia River with the line running along the existing 132 kV power line where it crosses Bungoma - Webuye road to supply Kibachenje and Bumula Villages. In Busia District no rural electrification project was noted. In Teso District, Amukura High School and the entire educational complex are already connected to electricity. The project route is approximately three kilometers from the complex. However no on-going rural electrification scheme was noted.

At all the community meetings it was observed that connection to the electricity grid would be advantageous as it would help stimulate small industrial activities and thus improve lifestyles at household and community levels. It would enable them to have lighting in household and school, start businesses such as welding, carpentry, saloon, photocopy, cold milk and beverage, mobile phone charging, batteries charging etc and also enable them to watch television.

Impacts Related to the Electrical Transmission Line Right-of-Way

Structures and Principal Buildings

The following markets, schools and churches lie in the route of the proposed transmission line and are therefore likely to be partially and/or entirely affected:

Ndaptabwa Market (Nandi North District)

Much of the market centre is in the way of the proposed transmission line. A total of 18 shops will be affected. The shops are made of clay bricks, wood and iron sheet roofs. The total land area inside the proposed wayleave at the market is approximately 4 acres. The shops could be relocated nearby since land is available. The African Inland Church within the market centre will also be affected. It is constructed from mud and brick walls and iron sheets roof on wooden rafters. Its total land area in the line corridor is about 0.5 acres. The church has adjacent land on which it can be rebuilt.

Ikoli Primary School (Kakamega North District)

The whole school is within the proposed wayleave. The school which has a pupil population of 755 has 14 classrooms, 24 toilets, one kitchen and one workshop. All of them will be affected. The school is on 2.5 acres of land out of which approximately 1 acre will be affected. Parents and the community are against the possibility of two transmission lines running parallel on two sides of the school and are in favour of relocating the entire school. They can find land nearby where the school can be rebuilt.

4.1.3 IKOLI MARKET

A total of six shops are located within the corridor of the proposed transmission line but one other shop is already within the wayleave of the existing transmission line.

4.1.4 FRIENDS CHURCH (IKOLI)

The church structure is between Ikoli Primary School and Ikoli Market. At the time of this study, it was under construction but not yet roofed. A portion of the church is within the wayleave of the existing transmission line and a portion of the building lies within the corridor of the proposed transmission line

Kibachenje Primary School (Bungoma South District)

The school has 14 permanent classrooms constructed by burnt bricks and roofed with iron sheets. The school also has a concrete gate, staffroom and kitchen of similar construction to the main school building. The school has a pupil population of 848 and the other facilities within the compound include 21 toilets and one water hole. The school land is 1.75 acres but 1 acre lies within the corridor of the proposed transmission line in which all the school infrastructures are. The parents were willing to relocate the school to a nearby piece of land so long as they are adequately compensated. The proposed land for relocation to is about 100 m away. The parents concern was that the semi-permanent structures in the school be compensated for at the value of permanent as a gesture of good will for having agreed to relocate.

4.1.6 SIERA PRIMARY SCHOOL (BUSIA DISTRICT)

All the tuition buildings are situated outside the corridor of the proposed transmission line. But four toilet blocks and the entire playground are inside the corridor of the proposed transmission line. The school has 463 pupils and occupies 2.5 acres of land out of which 1.5 acres is within the proposed line's corridor. Parents are willing to identify another parcel of land and flatten it for use as playground if the school is adequately compensated for loss of the existing playground.

Siera Anglican Church

The church is located entirely within the corridor of the proposed transmission line. The church building is constructed from burnt bricks and roofed with iron sheets. The Vicar was willing to have the church relocated to a nearby site if compensated adequately to be able to purchase the plot.

4.2 CONCERNS AND ISSUES RAISED

A diversity of issues were raised by the communities. Some of these were community-specific while others were related to public infrastructures. Some issues were linked to past experiences with the existing transmission line. Others touch on employment opportunities during the project and mistrust of government/public officials on matters of compensation. It is clear that the affected communities wish to be directly involved in the process without public officials acting as go betweens.

Compensation

All the communities expressed fear of their land and property being undervalued, especially if public officers undertook the process on their own without the community being involved. They recommended that the compensation process should take place between property owners and the power company without the Government administration department being involved. The Chief, Assistant Chief, village headmen should be available only to ascertain the level of compensation and to verify the true owner of the land or property but not to distribute compensation payments. The procedures to be followed in the exercise should be explained to the affected persons before its commencement.

4.2.2 CONNECTION TO THE POWER GRID

The communities have no guarantee that they will benefit from their hosting of a second transmission line yet their schools, markets and homesteads remain without electricity. They strongly expressed their wish that this time round they should benefit from electricity connection through the project.

4.2.3 FEAR THAT THE PROJECT MAY NOT PROCEED

The affected communities also expressed fear that their activities may be disrupted by anxiety of an on-coming project to benefit them and then the project fails to take off as has been the case with other projects and according to them it has been the trend in the country. The communities wanted assurance that the project will proceed.

4.2.4 LAND AGENTS

The community feared that speculative land buyers and dealers will hijack the process. They were weary of the Ministry of Lands officers who are known to falsify documents relating to land ownership. Because of these potential ills the affected farmers expressed their wish to deal directly with the power company.

4.2.5 FEAR OF REPEATED HISTORY

There was a fear among the communities (especially near Lessos) that during construction of the Turkwel transmission line the affected persons were promised compensation but did not receive it. The community sought to be assured that the situation would not recur under the proposed project.

4.2.6 PERIOD OF NOTICE

The communities requested that adequate notice be given to relocate public facilities such as schools which may require more time relocate. They proposed that an initial six month notice period be given with room for extension with a further three month.

4.2.7 AFFECTED PRIMARY SCHOOLS

Communities and parents whose schools would need to be relocated (e.g. Ikoli Primary School in Kakamega North and Kibachenje Primary School in Bungoma South District) requested for advance meetings and assurance of adequate compensation to enable them identify alternative land in good time.

4.2.8 FEAR OF POWER LINES THAT ARE CLOSE TO SCHOOLS

Communities and parents whose schools are affected did not approve a second line running parallel on the other side of the schools such that the schools were sandwiched between two transmission lines. Instead, they were in favour of having the schools relocated but with full compensation.

4.2.9 SCHOOLS WITH SEMI-PERMANENT BUILDING STRUCTURES

For schools that had some semi-permanent building structures in the corridor of the proposed transmission line, the communities recommended that the structures be compensated at the rate for a permanent building as a way of improving learning facilities in the area and to help the community bare with the pain of relocating the school.

Land Valuation

There was concern that land valuers may impose a standard price on land thereby benefiting those whose land is at poor locations or far inland while “robbing” those whose owned land at prime locations. The consensus was that market land prices at the time of compensation be applied. Land situated close to main trunk roads, markets or schools be accorded higher value than the land far removed from such infrastructure.

Land Ownership

The communities expressed a wish that title deed and verification by the Chief and village headmen should be enough proof of ownership. In the situation where land has been sub-divided among sons and daughters the owner of the affected plot should be the only one to be compensated. This would avoid family conflicts.

Tea Crop

In tea growing areas the view of the community was that any compensation for tea crop should not be one-off but be calculated to cover loss of earnings over the entire life of the crop.

Full Utilization of Existing Line Towers

There was concern that much land would be taken up the proposed power line while the existing towers may be able to accommodate additional lines instead of building another one.

4.2.14 EMPLOYMENT

Due to high levels of unemployment in the entire project area, there was fear that local people (skilled and un-skilled) would not benefit from employed and instead people from other places will benefit since the contractors will bring in their own workers. The communities recommended that employment slots be reserved for local people and that fair recruitment practices be put in place. The communities are against the involvement of government officials and politicians in the recruitment of project workforce as they would as usual introduce favoritism and ethnicity in the exercise.

4.2.15 LAND SURVEYORS, SOILS ANALYSTS AND ELECTRICAL TECHNICIANS

All along the entire 132 km length of project site there was concern over the inhuman way land surveyors, soil analysts and electrical technicians carry out their duties. They do so without due regard to property by indiscriminately cutting down trees, crops and everything on their way to accomplish their tasks without reference to property owners. Their behaviour was described as un-African indeed it was perplexing to find some soil analysts digging holes in farms without prior notice. The communities hoped that such behaviour would not be witnessed during the project.

Payment of Sitting Allowances

The members of communities severally inquired why they were not paid sitting allowance since they had missed working in their farms or businesses on the meeting day.

Construction of New Road

There recommendations that no new roads should be constructed for erection and maintenance of the proposed line. Instead, the road under the existing line be utilized as a new road would only take up more land that could be used for farming.

Many people had bought or been sold land within the existing power line wayleaves. The communities expressed that effort be made to sensitize the people to exercise caution when buying land close to power lines.

Unanswered Questions and Inquires

The communities expressed wish that answers be provided to the communities' queries before more progress is done on the project so that families can have accurate information. Without accurate information, rumour-mongering is likely to lead to family conflicts especially in relation to land compensation and relocation. This will also show that their concerns were being addressed by the project.

4.2.19 NEED FOR ADEQUATE NOTICE OF MEETINGS

Most communities expressed concern that very short notices for meetings were given thereby denying many people the opportunity to attend and contribute. Future meetings should be preceded by adequate notices.

Commencement of Construction

All the communities wished to know when compensation and line construction, would take place so that they could adequately prepare themselves.

Alternative Land Vs Cash Compensation

Some communities especially in Kakamega North, Bungoma South, Busia and Teso Districts were of the view that KPLC should identify and procure land that is equivalent to current settlements along the project site and resettle the affected people on it instead of cash payments.

4.2.22 RURAL ELECTRIFICATION AND PROPOSED POWER LINE

All the communities along the project site wanted to know whether there was any connection between the proposed power line and on-going rural electrification projects. They believed that since the two were somehow linked together, they deserved to benefit from rural electrification. For example, the farmer whose land bordered Lessos sub-station and others like him in the neighbourhood did not have electricity supplies while many transmission lines converged at the sub-station. They wanted to be assured that construction of a new transmission line would coincide with them getting electricity connections.

Similar sentiments were expressed at Nadaptabwa on the main Eldoret-Kapsabet road where the existing 132 kV and two 33 kV lines cross the road yet the centre and nearby school and permanent houses have no access to electricity. Similar sentiments were also expressed at Ikoli Primary School and markets in Kakamega North District through which the existing 132 kV and 33 kV traverse but have no access to electricity. This being sugarcane growing zone, many farmers would benefit by powering their jaggery mills with electricity so as to increase production and reduce cost. Similar sentiments were expressed at Kibachenje, Sibembe and Siera Primary Schools. Communities were apparently pessimistic that their wishes of being connected to electricity supplies would not be granted since many other promises had been made in the past but were not fulfilled.

The proposed Power line and the National Elections in December 2007

Most of the communities tended to associate the proposed power line project with the December 2007 general elections and viewed the project talk as bait by the government to woo their vote.

Safety Concerns

In Kakamega North (Kabras) and Busia (Lupida) it was reported that several people had been electrocuted when climbing on the towers of the existing 132 kV transmission line. The people wondered whether the proposed and the existing power lines could be fitted with human obstructions to ensure that they cannot be climbed by unauthorized people. For example from the last tower down the Nandi Escarpment at Tabolwa area to Malaba border most towers have their identification number removed which indicates that unauthorized people are able climbed on them. The lack of identification numbers made the work of the research team so difficult that the team sometimes spent four hours trying to locate the nearest adjacent tower number that they could use to count back.

Refusal to relocate

Certain communities wondered what would happen if they declined to relocate to pave way for the project.

Community Involvement

Some communities indicated that they were ambushed since in their view for they should have been notified in advance prior to conception of a project of such magnitude, They seem to have been advised by their leaders that everything including where the proposed line was to be constructed had already been determined and their opinions did not matter.

Future Community Sensitization

Sensitization of the community should precede any future project activities in order to gain wider participation and acceptance. This was a genuine concern since even the research team could not start work at Lessos with the first households from towers 400 to tower 401 until the elder son of the homestead (who was also the village headman) was available and present. The area chief had not informed the homestead about this exercise hence the fear of ambush by the community. But once the village headman appeared and informed the community members that the Chief had granted consent for the study then everything went on without a hitch.

APPENDIX 4

LIST OF COMMUNITY CONSULTATIONS, UGANDA

NILE BASIN INITIATIVE - NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAMME
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ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT - VOLUME 2B - UGANDA-KENYA INTERCONNECTION
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NILE BASIN INITIATIVE
 NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAMME
 (NELSAP)



REPORT ON COMMUNITIES CONSULTATION

Interconnection: Jinja-Lessos	Province/District: JIMFA.
Division: BUDUNDO	Village: NAMIZI KESI
Interviewer name: Sarah Nyiram usisha	Date: 31 th - 01 - 2007

List of participants

	Family name:	First name:	Position:
1	Kanaguthau	Bob	owner
2	Kubaisare	Muhammed	Veterinary
3	Okumu	Robert	Farmer
4	Omkada	Tone	Peasant
5	BAROCC	Tennisevo	peasant
6	owoko	JOHN	Dukeiva
7	TENYWA	DAN.	Peasant.
8	kokoza	YUSUF	peasant
9	Nalugonda	JUSTINE	farmer
10	Muwalamasa	Mariam	member
11	NANSUBUJA	Hagina	Peasant
12	Namulondo	Betty	Peasant
13	Nabinge	Sarah	owner
14	Kledista wandend		farmer
15	AIDA	Kimbugwe	farmer
16	WANTAGATA	KAMU	peasant
17	Kangwa	Sudani	person

NILE BASIN INITIATIVE
NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAMME
(NELSAP)



REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: <i>Tororo</i>
Division:		Village: <i>Pabone B Ulu</i>
Interviewer name:		Date: <i>10/2/07</i>
List of participants		
Family name:	First name:	Position:
52 <i>AKIOR</i>	<i>JOEY</i>	<i>AKIPENET 'B'</i>
53 <i>NYAFWAMBA</i>	<i>JULIET</i>	<i>AKIPENET 'B'</i>
54 <i>AMELA</i>	<i>TEREZA</i>	<i>" "</i>
55 <i>OKERE</i>	<i>BORNEFANCE</i>	<i>" "</i>
56 <i>AWERE</i>	<i>MARGIET</i>	<i>" "</i>
57 <i>OMOLLO</i>	<i>KAMUKUS</i>	<i>" "</i>
58 <i>OKADAPAU</i>	<i>JOHN</i>	<i>PABONE 'C'</i>
59 <i>OKECHO</i>	<i>DUNATIO</i>	<i>AKIPENET 'B'</i>
60 <i>OLWENYI</i>	<i>DASAN</i>	<i>AKIPENET 'A'</i>
61 <i>OKOTH</i>	<i>TOWANAH</i>	<i>AKIPENET 'B'</i>
62 <i>Rwere</i>	<i>Moses</i>	<i>AKIPENET 'A'</i>
63 <i>Oketahi</i>	<i>Richard</i>	<i>Pabone 'C'</i>
64 <i>Olwoso</i>	<i>Julius</i>	<i>Pabone 'C'</i>
65 <i>Amusiam - S.</i>	<i>Silyanus</i>	<i>Pabone 'B'</i>
66 <i>Kugee</i>	<i>Oburu</i>	<i>Pabone 'B'</i>
67 <i>Ofwomo Clemens</i>		<i>AKIPent. (B)</i>

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NILE BASIN INITIATIVE
NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAMME
(NELSAP)



REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: TORORO
Division:		Village: Pabone B, Pabone C, Akipereti
Interviewer name:		Date: 10/2/07
List of participants		
Family name:	First name:	Position:
35 OKOPILU	KANZIMIR	PABONE B
36 OKAPURIE	ANDREW	PABONE B & C
37 Oboyo	Benedict	pabone B
38 Vekungano	Olumy	POTI B
39 Owere	Vigilio	NGEDA B
40 OBOIN JOHN P	JOHN PETER	'POTI B'
41 OKIRA JOHN	Julius YOKIM	AKIPENET
42 OWAYI	Peter	Pabone B
43 OBRINE	Emmanuel	Pabone B
44 OKETCHO	Julius	Pabone B
45 OSMIDE	luben	Pabone - C
46 OBENDA	APOLLO	MUYO B
47 TOMMY	OMAL	Pabone B
48 OKAYA	willbrode	Pabone A
49 VIDENT	OKETCHO	Pabone B
50 BENEDETO	OPINDI	POTI B
51 OAKAM	MOSES	AKIPENET A

NILE BASIN INITIATIVE
NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAMME
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REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: TORORO
Division:		Village: Pabone B cell, Pabone C, Akipeket B
Interviewer name:		Date: 10/2/07
List of participants		
Family name:	First name:	Position:
18 yokini	Ogagara	Akipeket B'
19 Visaurio	Angatoyi	Akipeket B'
20 Ogapa	Eadwa	PABONE B
21 Ekyang	Gritoro	PABONE C
22 Okalosa	yoverino	PABONE C
23 Onyangw	peter	Akipeket B''
24 Rosa Wata	Adikini	Akipeket B
25 Aketchi	Rodiya	Akipeket B
26 Akothi	Terera	Akipeket B
27 Jonita	Alouso	Akipeket B
28 Ross Mary	Nyapendu	Akipeket B
29 Otengey	sanny son	Pabone A''
30 DIABONG	S. MARTIN	PABONE 'A''
31 Aketchi	Emilida	Akipeket B'
32 Grace	Oketcho	Akipeket B'
33 Okwoye	keneth	pabone B'
34 Charles	Ngaywa	Akipeket A

NILE BASIN INITIATIVE
NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAMME
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REPORT ON COMMUNITIES CONSULTATION

Interconnection: JINJA - KENYA		Province/District: TORORO
Division: IYOLWA		Village: Pabone B cell, Pabone C,
Interviewer name: Irene Makuwu		Date: 10/2/07 Akipenet B
List of participants		
Family name:	First name:	Position:
1 Okwawe	ENOKA	Pabone B.
2 OBEYO	DONATO	AKIPENET "B"
3 ALFRED	OKEICHO OIALI	PABONE "C"
4 OBBO MARTIN	MARTIN AJABU	AKIPENET 'B'
5 Omitta J	Valentino	Pabone C
6 OSANYA	JULIUS	Pabone B
7 CHEMUKO	JULIUS KIRO	AKIPENET (A)
8 OMYRAGO	JOHN	AKIPENET (A)
9 OMUTA	M. MIKA	AKIPENET (B)
10 OKWARAS	Maurice	Pabone 'C'
11 Ouyango	VINCENT	AKIPENET (B)
12 OKOLA	VINCENT	PABONE 'B'
13 OKALASA	JOHN	PABONE 'B'
14 OKAPURIE	KIZITO	PABONE B
15 COSTANT	OBBO	AKIPENET 'B'
16 ONAGA	SAMULE	AKIPENET 'B'
17 OKUMU	VEGILLO	PABONE "B"

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REPORT ON COMMUNITIES CONSULTATION

Interconnection: JINJA KENTA		Province/District: TORORO
Division:		Village: NGELECHOM
Interviewer name:		Date: 9/2/07
List of participants		
Family name:	First name:	Position:
ONYANGO, ABNER		LIBRARIAN
OSWE GLOCH		SEC Youth / VHI EXP/Panel
BUSIKY JAMES	JAMES	PEASANT FARMER.
ALOKATI	MARGARET	PEASANT FARMER
BJORE	PATRICK	PEASANT FARMER
EKEYA	BISAPATI	PEASANT
EKISA	REMECUO	PEASANT.
Okoni	Simon O.	PEASANT.
DAFAIK	SATAA	FARMER.
OKITWI	CORNELIUS	FARMER
OKEKE	MOSES	PEASANT.
WILSON CONSTIANI	GLOR CONSTIANI	CLERK
OKWANE	P.	P.P.
ROFELY	OSNORU	PEASANT
AKOLE	DDRITA	Orito
KAKAI	CHRISTINE	FF

NILE BASIN INITIATIVE
**NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAMME
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REPORT ON COMMUNITIES CONSULTATION

Interconnection: JINJA - KENYA		Province/District: TORORO
Division:		Village: NGELECTOM
Interviewer name:		Date: 9/2/07
List of participants		
Family name:	First name:	Position:
SEBASTIAN	ENGWALI	HHM
MWENYA	ISAAC	HHM
Wasike	Yokiyasi	Kayoro (A)
FKWARO	FRNCISI	ACOLOIO B - HHM
Abuneri	Nabulangi	Kayoro A.
SONGORO KYOBI	CHARLES	NGELECTOM
OBAYO	LEONARD	NGELECTOM
Kelsanga	Amanda	NGELECTOM
KLASIKE	BENARD	NGELECTOM
OMUSUGU	DELLS	NGELECTOM
KWIMBATI	STEPHEN	NGELECTOM
NDWA PETER	KABOI	TENANT
JOSEPH WE APOST		Women Councilor
OKICA JOHN		C/m LAI Ngelectom 0752500274

NILE BASIN INITIATIVE
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REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: TOROKO
Division:		Village: Ngelechom
Interviewer name:		Date: 9/2/07
List of participants		
Family name:	First name:	Position:
GONGO	JOHN	Dist Env. Officer - TOROKO
osillo	Remalo	A Goloto B, zone
Okwene Lalapio	Mwanget	Okwene
B.	Ogut	Kayoro (A), zone
C. U. W.	Okwene	Kayoro A, zone
SIMUMA W. B.	Bonofance	Kayoro A' zone
ASANGAI	FRUSTINO	Abwanget
MWONGO	DAVID	Kayoro - A
omelu DIFASI	DIFASI	Ngelechom
Elyang	SEMOR	Ngelechom
OBELO	G	Okwene
Valimwa	George	Ngelechom B
Okim	BOZ	Kayoro A'
Saita	Andrew	Ngelechom
WAMAKHU	BAND	Kayoro A
JOBATH NDIWA	FURUKA JOSEPH	resident of Ngelechom

NILE BASIN INITIATIVE
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REPORT ON COMMUNITIES CONSULTATION

Interconnection: Jinja Lesso 5 -		Province/District: TORORO
Division: USUKULU		Village: Ngelechom
Interviewer name: Irene Nakiumu		Date: 9/2/07
List of participants		
Family name:	First name:	Position:
1 Joseph MURONI	Joseph	L/A
2 SILVAST OKINYA		Researcher
3 Friday	WABUSERA	"
4 Olunga John	Angoro "A"	ally
1 Enoit John	Ngelechom	ally
Alex Okiring	Abwanyat	ally
KIBET	God	ally
2 OKENYA JOSEPH	Abwanyat	
WANDERE	CHEPKEMEI	
AHHEI MABONGA	IMELA	ally
CHEJULINA	MUNIBO	"
ATENAG	MAGANING	"
ROSEMARY	AHARO	"
Rose	ABOKOLEI	"
Okich	Stephen	ally
Ocadapan	Stephen	ally

ATTENDANCE LIST

District Mayuge.....

Sub-county Baitamboque.....

Parish Lugolole.....

Date 7/2/07.....

Village Lugolole A.....

NO.	NAME	DESIGNATION	SIGNATURE
1	WAISWA DAVID	waitamboque	<i>[Signature]</i>
2	MULOU DA MUHAMMAD	Lugolole A.	<i>[Signature]</i>
3	XIKOBA JUMA	LUGOLOLE A.	
4	Mgolohe Robert	waitamboque	<i>[Signature]</i>
5	Omungo Jude Jaramba	waitamboque	<i>[Signature]</i>
6	Kisige Alex	present	<i>[Signature]</i>
7	EMUCHENYO EMMANUEL	present	<i>[Signature]</i>
8	Mwanga Kizito	present	<i>[Signature]</i>
9	KAPITA M.	present	<i>[Signature]</i>
10	KAPITA SUSA	LUGOLOLE	<i>[Signature]</i>
11	Maria M. Luke	present	<i>[Signature]</i>
12	Peter Othman	present	<i>[Signature]</i>
13	BUKWE Fred	present	<i>[Signature]</i>
14	ABU MUSA	present	<i>[Signature]</i>
15	Emilio Gifunah	Omuhigangi	<i>[Signature]</i>
16	MENJA SAMUEL	present	
17	Bukwe M. M. M.	present	
18	KASOBA PETER	present	<i>[Signature]</i>
19	ATCHA MURRAY	Farmer	
20	DARRELL DITH	present	
21	MURUKWANA MARGIE	Farmer	<i>[Signature]</i>
22	HTAMBA JAMES	Farmer	
23	Mwanga M. M.	present	<i>[Signature]</i>

NILE BASIN INITIATIVE
 NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAMME
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REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: <i>MATUGE DIST</i>
Division:		Village: <i>MSAPIC</i>
Interviewer name:		Date: <i>2/2/007</i>
List of participants		
Family name:	First name:	Position:
49 <i>Waiswa</i>	<i>Peter</i>	<i>LCI Secretary</i> ^{<i>Mbasale</i>}
50 <i>Kyakumaire</i>	<i>Zamu</i>	<i>Muttaka</i>
51 <i>Werema</i>	<i>Yoweli</i>	<i>Muttaka</i>
52 <i>Kigamira</i>	<i>Kishga Amuzo</i>	<i>Muttaka</i>
53 <i>Mbooli</i>	<i>Moses</i>	<i>Muttaka</i>
54 <i>Kagoolo</i>	<i>Christopher</i>	<i>Muttaka</i>
55 <i>Mu. Siboi</i>	<i>Junna</i>	<i>Muttaka</i>
56 <i>Magumbwa</i>	<i>Musa</i>	<i>Muttaka</i>
57 <i>Mwame</i>	<i>Aoblamu</i>	<i>LCI Implementation NRM</i>
58 <i>Kiilya</i>	<i>Balaki</i>	<i>Muttaka</i>
59 <i>Kyuka</i>	<i>Abuddu</i>	<i>Muttaka</i>
60 <i>Bukasi</i>	<i>Moses</i>	<i>Muttaka</i>
61 <i>Shack Kizikia</i>	<i>Abuddu</i>	<i>Muttaka-Muwalimu</i>
62 <i>Nyekengerere</i>	<i>Moses</i>	<i>Muttaka</i>
63 <i>Mwambui</i>	<i>Daniel</i>	<i>Muttaka</i>
64 <i>Igulu</i>	<i>Kantu</i>	<i>Muttaka</i>
65 <i>Kamuyuka</i>	<i>Anusi</i>	<i>Muttaka</i>

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REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: MAYUGE DIST
Division:		Village: MIRAAC
Interviewer name:		Date: 7/2/007
List of participants		
Family name:	First name:	Position:
33 Mugabimungu	Adam	Mutaka
34 Kiziki	Balimu	Mutaka
35 Mochika	Moses	Mutaka
36 Mateesi	Mwobula	Mutaka
37 Kuru	Moses	Mutaka
38 Gucalairo	Christopher	Mutaka
39 Kitanda	Moses	Mutaka
40 Mugabi	Moses	Mutaka
41 Kerkusu	Henry	Jc. Mbaraka. P. Post.
42 Katundi	Robert	Mutaka
43 Christopher	Inwabula	c/man LCI Mbaraka
44 Bodini	Mwizungu	vice LCI II
45 Basini	Mwalubo	Byenee LCI II
46 Bakaki	Paulo	Mutaka
47 Talyalea	Patrick	Battako
48 Tihawungu	Anina	Battako

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REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: <i>MAYUCE DIST</i>
Division:		Village: <i>MEARLE</i>
Interviewer name:		Date: <i>7/2/07</i>
List of participants		
Family name:	First name:	Position:
17 <i>Baligeya</i>	<i>Moses</i>	<i>Muttaka</i>
18 <i>edhuluma</i>	<i>Godfrey</i>	<i>Muttaka</i>
19 <i>Zimmuda</i>	<i>Godfrey</i>	<i>Muttaka</i>
20 <i>Melage</i>	<i>Asodi</i>	<i>Muttaka</i>
21 <i>Kanga</i>	<i>Abdalah</i>	<i>Muttaka</i>
22 <i>Maggola</i>	<i>Theiri</i>	<i>Muttaka</i>
23 <i>Nabirye</i>	<i>Bumali</i>	<i>Muttaka</i>
24 <i>wambwa</i>	<i>Joweri</i>	<i>Muttaka</i>
25 <i>Mazanda</i>	<i>elwasa</i>	<i>Muttaka</i>
26 <i>Kakagolo</i>	<i>Faluma</i>	<i>Muttaka</i>
27 <i>Nabirye</i>	<i>Saunda</i>	<i>Muttaka</i>
28 <i>Kumadhira</i>	<i>Salama</i>	<i>Muttaka</i>
29 <i>Wakajungo</i>	<i>Kosim</i>	<i>Muttaka</i>
30 <i>Minyanya</i>	<i>Mawazi</i>	<i>Muttaka</i>
31 <i>Kodwa</i>	<i>Ali</i>	<i>Muttaka</i>
32 <i>Magoloto</i>	<i>Isima</i>	<i>Muttaka</i>

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REPORT ON COMMUNITIES CONSULTATION

Interconnection: JINJA - LESSOS		Province/District: MAYUGE
Division: BUWAYO		Village: MBAALE
Interviewer name: Irene Nalumu		Date: 7/2/07
List of participants		
Family name:	First name:	Position:
1. Jemja Difasi	Difasi	Muttaka
2. Kicungo	Somwala	Muttaka
3. Peli	Sitwini	Muttaka
4. Amuzza	Saddi	Muttaka
5. Kitandu	Ibulamu	Muttaka
6. Saaoli	Yazidi	Muttaka
7. Lubanga	Anansi	Muttaka
8. Ndikilaba	Sowasi	Muttaka
9. Mto Shikasoka	Maliya	Muttaka
10. Othemo	Sohn	Muttaka
11. Mataka	Fred	Muttaka
12. Manuel	Samuel	Muttaka
13. Sempa	Moses	Muttaka
14. Waiswa	Loumanzi	Muttaka
15. Salikwa	Sulika	Muttaka
16. Waiswa	Sowed	Muttaka

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REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: DTS IGANGA
Division:		Village: NAKIUMBI
Interviewer name:		Date: 8/2/07
List of participants		
Family name:	First name:	Position:
ANYANGO	ELIBWA	NAKIUMBI
YAKOBO	OKECHI	NAMIGANDA
MANAE	KILLY	NAMIGANDA
Omongi	James	Namiganda
Oduori	James	Namiganda
Bogere	Tadewo	Namiganda
Luwembo	Dusan	Namiganda
MUBALAKA	MULONDO	Namiganda
Kibile	Fred	Namiganda
Okyenyi	William	Namiganda
Balikona	Cristoph	Namiganda
Mudago	Zeluba	Namiganda
Fadumala	Alusa	Kabugwari
Basalira	Pule	Kabugwari
OKECHO	LAWRENCE	NAMIGANDA
IRKOMERA	VINCENT	NAWANEGA

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REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: IGANDA
Division:		Village: NAKIVUMBI
Interviewer name:		Date: 8/2/07
List of participants		
Family name:	First name:	Position:
Namukubembe	Siri	Kabugweri
Namwaya	Salama	"
Mulondo	Makulu	Kabugweri
Mwasa	Ntalo	Kabugweri
DUYANGO	FRANCIS	NAKIVUMBI
WAISWAJ	JAMES ODUI	EASTERN OV
Bandese	Georg	NAKIVUMBI
Mrs. Makaya	Kubeca	Nakivumbi T/C
Isigga	ROVISA	Nakivumbi T/C
Nabulumba	ROVISA	Nakivumbi
KAYOYA	KAYIDA	Nakivumbi
Babirye	Jowelya	Nakivumbi
Byansi	Gedion	Busindha
Nankwango	Charles	Busindha
Mudoola	James	Busindha
Dakaba	Kassam	Busindha
Ntalo	Abachi	Namiganda

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REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: UGANDA
Division:		Village: NAKIVUMBI
Interviewer name:		Date: 8/2/07
List of participants		
Family name:	First name:	Position:
Balaza	Jackson	Namiganda
ASS)	Fanasi	Kabugweri
Nyasanga	ANA	Kabugweri
webake nusa	Aband	KIKASHU
Kigenyi	Buseu	Businda
Kimva MUZAZI	Alan BISSO MULISHA	Buzinza KABUGWERI
Seyechi Kunwa	Burimari Nasau	KABUGWERI Kabugweri
Inamusanga	Musa	Namiganda
Poloto	Sitwin	Kabugweri
TOGA	BALIDAWA	NAMGUSA
MANDE	Besithi	Businda
Mukosa	antwalezi	Kabugweri
Dabuhwo	Godfrey	Businda
Dunyua Katerina	Nidaw Subanti	Kabugweri Kabugweri

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REPORT ON COMMUNITIES CONSULTATION

Interconnection: JINJA-LESSOS		Province/District: LGANGA
Division:		Village: NAKIVUMBI
Interviewer name:		Date: 8/2/07
List of participants		
Family name:	First name:	Position:
NABAGE GA	NORAH	BUSIDA
Akyeni	ALI SI	BUSIDA
Wahwo	Fred	Businda
Oduro	Joseph	Namuganda
Kyakatuka	Jajari	Bu'ooli
Ahamada	Funa	Nawansega
OLVIA	AFFUMI	KP. Kabugweri
Obango	John	Namuganda
Mawazi	Tenywa	Kabugweri
Muzale	Musirima	Kabugweri
Isobkib	ALIMBIZI	Businda
Mutoto	patrick	Kabugweri
Zwa	Kutegama	Businda
John	John	Kabugweri
WASWA	KARAINI	NAKIVUMBI
Musina	Daudi	Kabugweri
Muzale	Kulimu	Kabugweri

NILE BASIN INITIATIVE
NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAMME
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REPORT ON COMMUNITIES CONSULTATION

Interconnection: JINJA-LESSOS		Province/District: IGANGA
Division: IBULANKU		Village: NAKIVUMBI
Interviewer name: Irene Nalumu		Date: 8/2/07
List of participants		
Family name:	First name:	Position:
OGoola	JAMES	vice c/man LC II Ibulanku
ISABIRYE Johi	MARTIN Mwendu	c/man LC I Kabugweri Kabugweri
Kleisioo	Kerim	Mubaka
Bakigya kaunda Wamunilo	Frank Patrick	Mubaka Kabugweri Nawansoga
Ndolega	Silagi	Nawansoga
Wekisadha	Idemia	Nawansoga
Mogamba	Mutwalibi	Nawansoga
Wafula George Kakaire	John	Nakivumbi Kabugweri
Balikowa Mugoya	Sowali	Nakivumbi T. centre Nakivumbi
Aisa Enaaga	Enaaga	Namiganda
MURUTA	A FANI	BUSINDA
KATEMA	ERYASA	BUSINDA
Hambudani	Mugolga	Bubinga

NILE BASIN INITIATIVE
 NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAMME
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REPORT ON COMMUNITIES CONSULTATION

Interconnection: JINJA-LESSOS		Province/District: MATUGE
Division:		Village: JIJKIRO
Interviewer name:		Date: 7/2/07
List of participants		
Family name:	First name:	Position:
Ikoba	moses	clan youth
Maqumba	Paul	Bataka
MUGAYA	moses	Bataka
Baba Landu	MAAYA	Bataka
Byekwaso	Abdal	Bataka
Ziraba	Jemusi	Bataka
Sabirya	Paulo	Bataka
Musimami	Joseph	Bataka
Majanda	Akim	Bataka
Sabirya	Amuza	Bataka
Magadha	Isimu	Bataka
JABIRYE	EDIRISA	Bataka
Bazibu	James	

NILE BASIN INITIATIVE
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REPORT ON COMMUNITIES CONSULTATION

Interconnection: <i>Sinja-Lessos</i>		Province/District: <i>MAYUGE DISTRICT</i>
Division: <i>Isikiro</i>		Village: <i>Isikiro</i>
Interviewer name: <i>Irene Nakumu</i>		Date: <i>12/107</i>
List of participants		
Family name:	First name:	Position:
<i>DHABANCI</i>	<i>CHRISTOPHER</i>	<i>C/man h.c.i</i>
<i>BABI</i>	<i>PATRICIA</i>	<i>CITIVEN</i>
<i>MUGABA</i>	<i>MARTIN</i>	<i>Member KUKYALO</i>
<i>Nakibuka</i>	<i>Sarah</i>	<i>Member KUKYALO</i>
<i>NakaSanga</i>	<i>Rabiah</i>	<i>Mutaka KUKYALO</i>
<i>KILWAMU</i>	<i>KIZATUKU</i>	<i>Mutaka KUKYALO</i>
<i>Tibasima</i>	<i>MAGRET</i>	<i>Mutaka KUKYALO</i>
<i>Kirunda</i>	<i>Asadi</i>	<i>Omudage KUKYALO</i>
<i>Ti Babanwagane</i>	<i>dan</i>	<i>Mutaka WAKYALO</i>
<i>Makumbi</i>	<i>Yakubi</i>	<i>Mutaka WAKYALO</i>
<i>Kisambila</i>	<i>Zaidi</i>	<i>Mutaka WAKYALO</i>

ATTENDANCE LIST

District Bugima Sub-county Kusinyana
Parish Buwuma Date 6/02/07
Village Buwuma

NO.	NAME	DESIGNATION	SIGNATURE
	SANYA	JULIUS	BUSOLO
	OJIMBO	Wilsons	BUSOLO
	EIYANGA	ALUBINO	BUSOLO
	Okupira	simya	BUSOLO
	ODWORI	James	BUSOLO
	Ogway	Lawrence	BUSOLO
	Ochieng	Albat	BUSOLO
	Amusanga	Nikolas	BUSWIRI
	Besule	Stephen	BUSOLO
	MUKWANA	Uenate	BUSOLO
	Kundu	Protale	BUSOLO
	AKISE	Felex	BUSOLO
	Adebere	Marguel	BUSOLO
	Kwajula	Celefasi	BUSOLO
	Scinda	Frankis	BUSOLO
	MURIA	ayege	BUSWIRI
	Omokola	Oterge	BUSOLO
	ENGWALASI	FATAIWO	BUSOLO
	OPIO	Silwino	BUSOLO
	OKURU	FRANCIS	BUSOLO
	ITABWIRE	SHADRACK	BUSOLO
	ETIYANG	MICHAEL	BUSOLO
	MALINDA	STEPHAN	BUSOLO
	EMUSONG	MICHAEL	BUSOLO
	BADEYA	JOHN	BUGOBO
	MUKWANA	JAMES	BUDIBYA

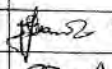
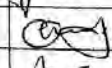
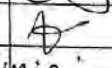
ATTENDANCE LIST


District Bugiri..... Sub-county.....
 Parish Date 6/2/07.....
 Village Buswiriri.....

NO.	NAME	DESIGNATION	SIGNATURE
	Exa Micheal	Buswiriri	
	Egal Joseph	bugaya	
	ATHAMADAH et al	Buswiriri	
	Baraza Joseph	Buswiriri	
	Amos Ouma	Buswa	
	Nalastino Okomo	Buswiriri	
	Sauyas Francis	bugado	
	Amido Mohamed	Buswa	
	Richard Musaga	Buswiriri	
	Ogola Delet	Buswa	
	Kate Moses	bugado	
	John Richard	Buswa	
	Osilo Lawrence	Buswiriri	
	Wandera George	Buswa	
	O Jamba benjamin	Buswiriri	
	Mugoya hamisi	Buswiriri	
	WANKAU MOSES	BUSWIRIRI	
	Omwikaga Ben	BUSWIRIRI	
	ORAMIS Godfrey	BUSWIRIRI	
	O SIRA Joseph	Buswiriri	
	Busansio Olupot	bugado	
	Bacho Kasabira Mugoya Salongo Namokoge		
	Keloma Rudolf	bugado	

ATTENDANCE LIST

District Bugri Sub-county.....
Parish..... Date.....
Village Buswiri.....

NO.	NAME	DESIGNATION	SIGNATURE
	OPAMA S.	Buswiri	
	Buraii Bimalei	Ligoto	
	Amador Jacob	Buswiri	
	Emokole Bui	Buswiri	
	Chabango Samuel	Bugobo	
	Mjagala Anos	Buswiri	
	Mugys Sola	Buswiri	
	Kitumbuka Edward	Buswiri	
	Ephraim Ochi	Buswiri	
	Saga Martini	Buswiri	
	Ochieng	Bugobo	
	Sam Simyo	Buswiri	
	Ojije Stephen	Bugobo	
	Ejeka Joseph	Bugobo	
	Mwami Samuel	Buswiri	
	Sanya Richard	Bugobo	
	Martin Osele	Buswiri	
	EKISA LICHARO	Buswiri	
	OMONG JOHN	Buswiri	
	Oyido Lawrence	Buswiri	
	OMEDO Geoffrey	Geoffrey Buswiri	
	Etyanga	Buswiri	
	Etyanga Joseph	Jgogo	

Wafoti Peter Buswiri
LEWISIAN RAMPINE Buswiri 
Ex. Beti Bugobo
Olyawanz Wilson Buswiri

NILE BASIN INITIATIVE
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REPORT ON COMMUNITIES CONSULTATION

Interconnection: Jirya-LESSOS		Province/District: Bugiri
Division:		Village: Buswira
Interviewer name:		Date: 6/2/07
List of participants		
Family name:	First name:	Position:
OLUNA	PEREN	Busolo
ORONI	TEDEO	I GOGO
DN GAMBIA	MOSES	BUSOLO
PATRICK	OBOTH	BUSOLOFU
OMASETE	JOHN	BUSOLOFU
OMASETE	IVIASI LOSI	BUSOLO
OKITOI	JOSEPH	BUSOLOFU
OKWARE	JOHN DSIKOL	BUSOLO
OKELLO	ROGERS OGOLA	BUSOLOFU
OFONO	STEPHEN	BUSOLO
John	Ochieng	BUSOLOFU
Tenneseaso	Barasa	Busolo
Busolo	Juma	PATRICK
Silefesele	Wandera	Busolo
Matayo	Kadampawa	BUSOLOFU
Kalituano	Enoiti	BUSOLOFU
ET		

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REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: Bupini
Division:		Village: Buswini
Interviewer name:		Date: 6/2/07
List of participants		
Family name:	First name:	Position:
Mogita	James	- - -
Etyang	Wycliff	
BOGEKE MOSES	MOSES	BUSWUMIRI VILLAGE
BWIRE MAYINJA	DANIEL	BUSWUMIRI VILLAGE
OPRONG	GEORGE	BUSWUMIRI VILLAGE
@dongo	COSINTANT	BUGORO VILLAGE
@KAMA	MAIKOLI	BUGOD VILLAGE
WAMALWA	MALLO	Resident Village
chuma	FRANCIS	Buguba "
AKUKU	CHRISTINE	BUKONDE "
ETUBI	MICHAEL	BUKONDE.
AMUSE	FULUMBA	BUKONDE-
AKELO	POLINA	BUSIRI,
AKIRU	TERESA	BUSIRI,
Mikioni	Nyende	Buguba
Okwale	Benjamin	Buswiri,

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REPORT ON COMMUNITIES CONSULTATION

Interconnection: JINJA - LESSOS		Province/District: JINJA BUGIRI
Division:		Village: Buswini
Interviewer name:		Date: 6/2/07
List of participants		
Family name:	First name:	Position:
OKOLO PHILIP	OKOLO	soni kanyamba Dandak Namokonge paushi
Dwigo Stephen	Dwigo	Dandak Bwoto Bogong paushi
Nyongeza Festo	Nyongeza	Dandak Gwofu
Otiama Paul	MAKINA	"
AREPAI LINDISSION	AREPAI	C'C
FRANCIS	mekakha	Bugodo Caloliki
Obumi	Paul	Bugodo Dandak
Bilali	Dado	Buswini Village
Mkauri	Mwale	Bwoto Dandak
Kintai Venias		Kayungo
Opendi	John	Bugodo
Elyangi	FARANSO	Bugodo
Frank	Francis	Dusolo
Panyolo	Olina	Buswini
IPADA	EREMIAS	BUSWINI

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REPORT ON COMMUNITIES CONSULTATION

Interconnection: Jinya-Lessos		Province/District: Bugiri
Division: Kaa Kapyanga		Village: Buswiriri
Interviewer name: Irene Makumu		Date: 6/2/07
List of participants		
Family name:	First name:	Position:
OSELUO JOSEPH	JOSEPH G/M	Buswiriri Wakulu
MUCIOTA	MOSES C/M	Bukage Zone
OWIRO M	JOSEPH C/M	BUSOHU ZONE Wakulu
LIIM	JOSEPH V/Chairman L/C	BUSOHU ZONE Wakulu
Frasisi	Suma	Busolo
JWUKIT	FERNAND V/C	BUGIJO ZONE
USUWA	JOSEPH	BUSOLO
O.BWANA	MICHAEL	BUSOLO
AMURATA	Lomues	Bugondo
PETEPA	OBURAS	BUSWIRIRI
W/okela	George Masha	General Direct UFFCA P.O. Box 198 Buswiriri
OTAMBO	DANIEL	BUSOL V/C
ISA	musaya	Bugodo
AWJO	MANY	BUSWIRIRI
SEMGEPE	DARID	BUSWIRIRI Wakulu
Lazaro Baraza	Baraza	Busolo
Apambo Grace	Apambo	Busolo

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REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: JORORO
Division:		Village: PULACH, PUPANY, PIMOU, Mella - Pajabo A
Interviewer name:		Date: 9th 10/2/07
List of participants		
Family name:	First name:	Position:
Kateany 'A' Alexander Okongo	Okongo Alexander	Secretary L.C.I KATA
Okhony Goffy		
Okhony Goffy	Pimou	chair Man LCI
Mella Pajabo A	Okhony CHARLES	10 L.C.I.
Pokachi cell	Okachi Richard	CM LCI
)	Sam Okoro	Member
)	Okhony Oyo	member
OBOI MASAN	PIMOU CELL	Information Sec.
Okhony Karimi	Pupany	member
OWIN & TUKONIA	PAJABO 'A'	DEFENCE SEC.
Okhony John	Pokachi	Member
Oyo David	Pokachi	
Okoi Michael	Pokachi	
MULEMBE CHARLES	KATEREMA	0752979454

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REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: TOROKO
Division:		Village: PAJABO A
Interviewer name:		Date: 10/2/07
List of participants		
Family name:	First name:	Position:
San osude	OWOR SAMUEL	
James	OWOR JAMES	
Nyamusaya O'DOI	Hillary George	Pokachi
Othman	Owona	Pimori
Okwenji Oino	Geoffrey	Pokachi
ODURU SHARIF	SIMAR	Pimori
Okwenji OKREICH	LAMU ERIFU	Pimori PAJABO A
OKIANGO	GASTIER	PAJABBO 'A'
OLOKA	VINCENT	PA JABBO 'A'
OLOKA		PAJABBO 'A'
OKINO	STEPHEN	PAJABBO 'A'
OWOI	Richard	PAJABBO 'A'
Emiel	JOHN	PAJABBO A
OKELLO	MORISA	PAJABBO (A)

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REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: TORORO
Division:		Village: PAJABO'A
Interviewer name:		Date: 10/2/07
List of participants		
Family name:	First name:	Position:
Adesi Silver	Adesi Silver	Peasant Pajabbo'A
	Aderia Osonde)) Po Kachi
Opendi	Opendi Godfrey	VOL/MAN Le-I POKACH Zone
Sam	OSinde Samirri	Peasant Pokach zone
Kagwela	Kagwela Peter	Peasant Zone
CHARLES	CHARLES	Peasant Pajabbo'A
Okach	Okach Samuel	poKachi zone
Obonyo	Obonyo Samuel	poKachi zone
OWOR	Michael	pajabbo zone
OCHIENG	ABENEGO	POPANYI Zone
Othieno Ngasa	Ngasa	POPANYI Zone
OW DE	LAURENCE	POKACHI ZONE
Mary Nyadai	Mary Nyadai	Mella Pajabbo'A
Margret Nyadai	Margret Nyadai))
	CHRISTINA	Po Kachi
	OWORI GERTRY	PAJABBO

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REPORT ON COMMUNITIES CONSULTATION

Interconnection: Jinja-Lessos		Province/District: TOROKO
Division: IYOLWA		Village: PAJABO, PIMORI, PUKACH, RUPANY
Interviewer, name: Irene Nakimu		Date: 10/2/07
List of participants		
Family name:	First name:	Position:
AKISPERO	OKETH	PAJABBO (A)
OLWEMU	PATIC	(A)
Olwem - S.	patic	Kaleema (A-S)
ALEX	OCHIENG	PAJABBO "A"
OFWONO	DANIEL	PAJABBO "A"
OFWO	STEPHEN	POPAZIJI (A)
Ochieng	SMKIU	(A)
Betty OSINDE	Betty	PAJABBO 'A'
DWOR	ROSE	PAJABBO 'A'
Janipher	OCHWO	PAJABBO 'A'
EUNCE	OTHENO	PAJABBO 'A'
SUSAN	OCHWO	PAJABBO A
CHRISTINE	OLOKA	PAJABBO A
DWORI	FRED	PAJABBO A
ANDERA	AGEIS	KATERAM A
AWOR	YOLLIANA	PAJABBO 'A'

ATTENDANCE LIST

District Bugiri

Sub-county Buwunga

Parish

Date 6/2/07

Village Namatanga

NO.	NAME	DESIGNATION	SIGNATURE
	Mulwasiya Habib	C/ward Lei	<i>[Signature]</i>
	KIDOOO S.	D.F.C	<i>[Signature]</i>
	Magala Amisi	Information	<i>[Signature]</i>
	Ephigazi Obeya	Info & mobilize	<i>[Signature]</i>
	Bazale udago	Mulimi	<i>[Signature]</i>
	BATUUKA CHARLES	SEC/L.C.T	<i>[Signature]</i>
	Kunde Jimmy	Mudhubi	<i>[Signature]</i>
	Bahagala Samuel	Mutaka	<i>[Signature]</i>
	Musema Mutaka	OPINION LEADER	<i>[Signature]</i>
	Groowa Bulukani	Namatanga	<i>[Signature]</i>
	SADAMU HUGANI KAKARE	NAMATANGA D.F.C	<i>[Signature]</i>
	BALIBYERI RIRAU	member	<i>[Signature]</i>
	MUGODI GODFREY	member	<i>[Signature]</i>
	Mabaala Stanley	member	<i>[Signature]</i>
	Kakure Ismail	Member	<i>[Signature]</i>
	Sulayi mukama	mutanze	<i>[Signature]</i>
	Munyizi Iwari	mutanze	<i>[Signature]</i>
	Kisakye Amulamu	peasant	<i>[Signature]</i>
	KASOKO ABULMAJIB	Resident	<i>[Signature]</i>
	ISMAEL INEMULI	-do-	<i>[Signature]</i>
	Louisa Kadama	C/P for Women	<i>[Signature]</i>
	Meetes Kideado	Mulimi	<i>[Signature]</i>

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REPORT ON COMMUNITIES CONSULTATION

Interconnection: Jinya - LESJOS		Province/District: Jinya Bugri
Division: Kapyanga		Village: Kapyanga
Interviewer name: Sarah Nyiramugisha		Date: 5/2/07
List of participants		
Family name:	First name:	Position:
1 KAGOTA	AIEET	C/Person L.C. I KAPYANGA
2 Wandera Ab	ALEX	Peasant - Kapyanga
3 Gema	MOSA	Peasant Kapyanga
4 MAMENDE	GEORGE	Sec for Information L.C.
5 WANDERA MURRAY	AGREY	Sec for Involvement
6 BULUMA LUBENZI	LEUBENZI	Citizen
7 MERY	TALEA	P.K.C.D
8 HASEMENEYE	JOHN	Citizen
9 Beatrice	Maganda	Treasurer L.C.I
10 LWANGA	KALOLI	PEASANT - KAPYANGA.
11 SARAH	TIBEMDA	PEASANT KAPYANGA.
12 MAYENDE	DAN.	C/P YOUTH NRM.
13 Wandera Tom	TOM	Resident.
14 WANDERA	ROSE	RESIDENT
15 WANDERA	NALUBANGA	RESIDENT
16 NDEKERA SH	Sosipeter	PEASANT

NILE BASIN INITIATIVE
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REPORT ON COMMUNITIES CONSULTATION

Interconnection: Jinya-Lessos		Province/District: JINJA
Division: Matubia Subcounty		Village: Nakanyonyi
Interviewer name: Sarah Nyiramugisha		Date: 4 Feb 07
List of participants		
Family name:	First name:	Position:
KISAMBIRA	DAUDA	CHAIRMAN LCI
MUWEGUYA	JUMA	RESIDENT
KIRUNDA	DEWAC	RESIDENT
NAMWEBYA	AIDAH	RESIDENT
NABIRYE	FLORENCE	RESIDENT
BWETE NULU	HARUNA	RESIDENT
MUBIRU	NASAABU	RESIDENT

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REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District:
Division:		Village:
Interviewer name:		Date:
List of participants		
Family name:	First name:	Position:
Kirikumuino	Josephine	Kayandhakato
Kapuko	Sarah	Kayandhakato
NAWIEDHE	NUBUWATI	NAWANTOKORO
NAKIDODO	Sarah	NAWANTOKORO
TIBESIGWA	NAWUMI	NAWANTOKORO
BATULI	Christine	NAWANTOKORO
NAMULINDA	Sarah	Kayandhakato
NABADHA	Saniya	Kayandhakato

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REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: Bupin
Division:		Village: Kayandha Kato
Interviewer name:		Date: 5/2/07
List of participants		
Family name:	First name:	Position:
Igutu	Twaha	Kayandhakato
Mutanda	Matiki	Kayandhakato
Sefu	Balidawa	Nawatakato
Bagaga George	George	Kayandhakato
Isabinge Abanada	Ahanada	Kayandhakato
Maganda Balimus	Balimus	Kayandhakato
Sowedi	AZadi	Kayandhakato
KASENSEDE AKA	ALLI	KAYANDHAKATO
TABBU	JOHN	KAYANDHAKATO
ABDALA	KALINAKI	KAYADAKATO
MUSOGA	ALIYI	KAYADAKATO
KALENDE AKA	JOHN	CHAMAN LCI KAYANDHAKATO
BIRABWA	ELIZABETH	KAYANDHAKATO
BASALRWA	JANET	KAYANDHAKATO
MAGE	MOSES	KAYANDHAKATO
BALIDAWA	MUZEYI	KAYANDHAKATO

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REPORT ON COMMUNITIES CONSULTATION

Interconnection: Jija-Lessos		Province/District: Bugri
Division:		Village: Kayandha Kato
Interviewer name: Sarah Nyramugisha		Date: 5/2/07
List of participants		
Family name:	First name:	Position:
MUSOGA	ADAM	KAYANDHAKATO YICU (MAN)
KASOLO	SIDI	KAYANDHAKATO
MUSOGA	MALINZI	KAYANDHAKATO
KASUNGU	Paul	
MUSOBYA	SAID	Kayandhakato
Waiswa	Safalati	Kayandha Kato
Musoga	Horuna	Kayandha Kato
Gahigai	Hamaza	↓
Kasole	mufwalibi	
Wandakalo	Samuel	Kayandhakato
Isabirye	Yazidi	
Lukungu	Minsi	
Dalansi	Takomera	
Mwanika	Gawembe	Kayandhakato
EdiriSa	Isabirye	Kayandhakato
Nandhobu	Isa	Nawatakato

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REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: JUNJA
Division: BUNDOBO		Village: KYABIRWA
Interviewer name:		Date: 31 st - 01 - 2007
List of participants		
Family name:	First name:	Position:
AKELLO	MAGIADON	Kyabirwa
KAPALA	AHAMED	"
Duran	fito	"
KCHMA	Nakigudde	"
Babigumira	Madina	"
Namukasa	mary	"
Kozgala	Sarah	"
Kalenda Bwiti	Simon	BDCC "
Kabale moso		Budhoga
Babinye Hans	HASSAM	Kyabirwa
MUSTAFA	kakaire	"
Nsaine	Patrick	" Kyabirwa
Kakaire	Ahmadu	" Kyabirwa
MUKBEZI	Abdallah	Kyabirwa
MUGANZA	LIVINGSTONE	Kyabirwa.
Balamin	steph	"

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REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: JINTA
Division: BUDWA	Village: KYABIRWA	
Interviewer name:	Date: 31 st - 01 - 2007	
List of participants		
Family name:	First name:	Position:
FAGA	MATIA	Kyabirwa
Kabaire	Joseph	Kyabirwa
Dyango	G. Kison	Kyabirwa
AD-KAMUS	Wabwaza	Kyabirwa
WANDERA	HAMIMU	KYABIRWA
MURAGWE	STEPHENE	Bugagale
Yaaba	Ziraba	Namizi
BALIROWA	MARTIN	KYABIRWA
WAGWA	DENIS	KYABIRWA
MUGABI	SSALONGO	KYABIRWA
Mumunguzi	Willy	KYABIRWA
WADADA	HABERT	Kyabirwa
Edmana	patrice	Budugali
Swaqa	Saspatel	Kyabirwa
Kawawa	RASINA	Kyabirwa
Mugabe	Wadhwa	Kyabirwa
ALRWIA BENTRICE	BENTRICE	PARRISH CHIEF NAMIZI

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REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: JIMJA.
Division: BUNDA		Village: KYABIRWA
Interviewer name:		Date: 31 st 01 2007
List of participants		
Family name:	First name:	Position:
Mugenji	PAUL	KYABIRWA
MUYOMBI	Abel	KYABIRWA
Muganda	Zolisa	Kyabirwa
Lukoma	Patrick	Kyabirwa
Nyondo	Isaac	Kyabirwa
Musitura	Hassari	Kyabirwa
Kiigo	Sulaimani	Kyabirwa
Semakula	Fidiampi	Kyabirwa
Wihoma	Bagapir	Kyabirwa
Bagooba	Stephen	Kyabirwa
Munya	Grasa	Kyabirwa
MARUBA	LAKKI	Kyabirwa
Bagoole	Rehema	Kyabirwa
Nakafero	Saida	Kyabirwa
Mwamadi	alima	Kyabirwa
Jamuhro	Lamula	Kyabirwa

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REPORT ON COMMUNITIES CONSULTATION

Interconnection: Jinja - Kesson	Province/District: JIMBA
Division: Bwamba	Village: KYABIRWA
Interviewer name: Sarah Nyiramugisha	Date: 31 st - 01 - 2007

List of participants

	Family name:	First name:	Position:
1	IKOMIYA	KISAMBIRA	Citizen
2	IMAI	ALEX	KYABIRWA
3	NSUBUGAGA	SAM	"
4	MUBIRU	HAKIMU	"
5		ELI	"
6	MPAMUGO SULE	SULAIMAN	B.D.C.C
7	BALIKOUBA	JAMES	B.D.C.C
8	NKANDA	IBBI	BURUNDI DAM CONSULTATIVE COMMITTEE
9	NYAMUCAI	GEORGIE	do. Kyabirwa
10	IEMYWA	SULAIMAN	C/PERSON - NAMBI
11	KINHARA FELIX	FELIX	C/PERSON Kyabirwa
12	ISIRIYE NAGES	FRASOLE	C/PERSON INYAMBA
13	Nanyonga Rhoda	Rhoda	Kyabirwa
14	Nesifa	Jane	"
15	BATELLE		
16	KASUBI	JOSEPH	(/ /)
17	NAMAGANDA	EDITH	WOMAN CHOR NAMBI, B.D.C.C Member 12

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REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: JIMSA
Division: MATUBIRA		Village: WAKIATOT
Interviewer name:		Date: 31/07/11/07
List of participants		
Family name:	First name:	Position:
WAISWA	ERIZEFANIA	Residence Residence
BABIRYE	FLORENCE	Residence Residence
ADONIYA	DAUDI	RESIDANCE
BANAMWITA AYUBU		11
GIBWA	John	11
HANYURWA	CHARLES	11
IGAGA	AGREY	11
BEYONA	ZIRABAMUZALI	11
MUUKANGA	DAVID	11
QANAMUKUYITA	EMRISA	C/MAND, L.C. II & mukelwa
KAZIBA	NATUBU	Citizen
WAISWA	MKEE	RESIDENT

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REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: <i>Jinja</i>
Division: <i>MATUBIRA</i>		Village: <i>WAKIWARA</i>
Interviewer name:		Date: <i>31st / 1 / 07</i>
List of participants		
Family name:	First name:	Position:
<i>Wampalu</i>	<i>Keth</i>	<i>Residence</i>
<i>Ssali</i>	<i>Ahmada</i>	<i>"</i>
<i>Kagaya</i>	<i>Ssabirya</i>	<i>"</i>
<i>Mufumboiro</i>	<i>George</i>	<i>"</i>
<i>Nabirya</i>	<i>Zaituna</i>	<i>"</i>
<i>Gwitsabirya</i>	<i>Jayiro</i>	<i>"</i>
<i>Mulobole</i>	<i>Agrey</i>	<i>"</i>
<i>SSebalamu</i>	<i>Fred</i>	<i>"</i>
<i>Klabya</i>	<i>Faruk</i>	<i>"</i>
<i>Kakulu</i>	<i>Abrah</i>	<i>"</i>
<i>Kange</i>	<i>Bireli</i>	<i>"</i>
<i>Muji Shi</i>	<i>Francis</i>	<i>"</i>
<i>Ngobi</i>	<i>Bakar</i>	<i>"</i>
<i>Kisambira</i>	<i>Musa</i>	<i>"</i>
<i>Bujekwasa</i>	<i>Abasi</i>	<i>"</i>
<i>Arilabawaga</i>	<i>Samuel</i>	<i>"</i>

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REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: SIMSA
Division: MARIKATA		Village: WAKIMBA
Interviewer name:		Date: 31 st /1/07
List of participants		
Family name:	First name:	Position:
ZINDA	Abudala	RESIDANCE
KABIBE	KASIMU	RESIDANCE
TAMUZA		RESIDANCE
BATESA	SANE	R II
KIDERA	NGASAKI	"
BALINA	BASSIRI	"
NGOMBI	ATONI	"
MUGAMBE	AMUZA	"
WAKO	MILLY	"
BATABUNZI	Ayubu	"
BALABA	ALBERTY	"
NIAMBI	FRED	"
MUKISA	Toffa	"
KIMBA	Perusi	"
Namwabya	Hanfa	"
KIIZA	LAWRENCE	"

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REPORT ON COMMUNITIES CONSULTATION

Interconnection: Inya Lessa		Province/District: JIMB
Division: MATRUH		Village: WAKHARA
Interviewer name: Sarah Nyiramugisha		Date: 31 st /11/07
List of participants		
Family name:	First name:	Position:
Kayindi	Sedulaki	Resident
SAKWA	JESCA	Resident
Kalule	Badilu	Resident
madoobi	POUL	"
Badra	Balikawa-k.	"
Lokgwa	FATUMA	" "
KIRARIA	DADI	"
Mukaga	George	"
Babirge	Joy	Residence
Sabirge		"
Kavine	Paul	"
Ketek	William	"
Semugabi	Semei	"
Manga	Ivan	"
Kibwira	Kadija	"
Muzale	Paul	"

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NILE BASIN INITIATIVE
NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAMME
(NELSAP)



REPORT ON COMMUNITIES CONSULTATION

Interconnection:	Province/District: JIMBA
Division: BONDORO	Village: → NAMIZI WEST
Interviewer name:	Date: 31 st - 01 - 2007

List of participants

Family name:	First name:	Position:
67 MAYANJA	JALIRU	SELF EMPLOYMENT
68 MUTEBE	BAKALI	PEASANT
69 KIRIKIRIMUNDA	ISMAN	STUDENT
70 MUKAWIKA	ASUMAN	SELF EMPLOYMENT
71 BALABIA	JAMES	Peasant
72 WAISWA	STEPHEN	SELF EMPLOYMENT
73 ABUSABA AZA	WITAKA	SELF EMPLOYMENT
74 NAKASANGO	AISHA	SELF EMPLOYMENT
75 Medal	Kito	Peasant
76 ASANIANI	Namoyande	Peasant
77 KADAYA	Mukoda	Peasant
78 NYABURU	Debra	Peasant
79 Kulaba	Thomas	Peasant
80 DONGOYI	MALIDU	SECRETARY for Information LCI
81 Munwanguzi	Willy	Peasant
82 Mugabi	MOSES	Peasant

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NILE BASIN INITIATIVE
NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAMME
(NELSAP)



REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: JINJA.
Division: BUNDUGO		Village: NAMIZI WEST
Interviewer name:		Date: 31 st 01 - 2007
List of participants		
Family name:	First name:	Position:
51 DKUMU	JOHN	Peasant
52 MUTEBE CHARLES RUK		- do -
53 BYANUSI MUTEBE		peasant (Resident)
54 KASOLO KILWIAM		peasant (Resident)
55 NKANDA	IBBI	- do -
56 Katenda Gaidu	Simon	- " -
57 MPANGO SULAIMAN	SULAIMAN	- " -
58 Bageye	SOSI	- " -
59 Wegulo	JOHN	Peasant
60 NABUZALO	Florence	"
61 KIMBUQUE	BENARD	peasant (Resident)
62 BISUBU	John	fisher man
63 Akello	BOSCO	fisher man
64 Waisuna	MUSEE	fisher man
65 WACOBI	Bashiri	Fisher man
66 Azeel	MUSABIAM	peasant

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NILE BASIN INITIATIVE
NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAMME
(NELSAP)



REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: JIMJA.
Division: BUBAARU		Village: NAMIZI WEST
Interviewer name:		Date: 31-01-2007
List of participants		
Family name:	First name:	Position:
35 KIKOMBO	Eriasa	-
36 Muliya	Ronalden	Coatci
37 NYONGESA	PATRICK	-
38 ASUMANI	Suma	farmer
39 Ekeya	Gini Samu	farmer
40 WAKHOLI	SWABU	farmer
41 MUGWELI	SAMU	farmer
42 Muliya	paul	farmer
43 Lubwa	YOKANA	farmer
44 Boger	Ali	Driver
45 Samale	Robert	Builder
46 Owan	moses	farmer
47 Mayanja	Zubairi	Farmer
48 Kuniya	Mosel	Driver
49 Mugemba	DAVID	-
50 Mugema	STEPHEN	-

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NILE BASIN INITIATIVE
NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAMME
(NELSAP)



REPORT ON COMMUNITIES CONSULTATION

Interconnection:		Province/District: JINJA.
Division: BUNDOMO	Village: NAMIZI WEST	
Interviewer name:	Date: 31-01-2007	
List of participants		
Family name:	First name:	Position:
18 KASO	ISAAC	FARMER
19 Binywara	Edward	farmer
20 Ntambi	Ibrahimu	DRIVER
21 Kisambira	Joshua	Farmer
22 Godfrey	Ochwo	
23 WAFULA	JOSEPH	PEASANT
24 Byarica	Siraje	Farmer
25 Nyongesoo	Solun	farmer.
26 Sabirya	Asadi	Farmer
27 YAZID	MUSA	farmer
28 DOMU	MOSES	
29 Mutebe	Patrice	P. farmer.
30 Warsua	Abubakar	Farmer
31 Kitaka	Adi	
32 Mubogo	SAMUEL	DISGNER
33 Angungu	Timus	Jobless
34 KINARIYA	FELIX	K C, Kyabirwa

List of people who attended community consultations meetings, Uganda

District	Village	Family Name	First Name
Mayuge	Katukuru	Bandije	Steven
Mayuge	Katukuru	Bongole	Dodoviiko
Mayuge	Mweya	Kalakuhayo	Doniya
Mayuge	Kigando	Kahiire	Nicholous
Mayuge	Kakarogoto	Bakwatnisa	
Mayuge	Kashekule	Bongole	Dodoviiko
Mayuge	Bwibogo	Batwaza	Ronald
Mayuge	Isanyu mariro ia/kauuzo cell	Mutahunga	Elidad
Mayuge	Musibika	Tindyebwa	Disan
Mayuge	Kanyo	Tindyebwa	Disan
Mayuge	Butumba	Tiribuza	Patrick
Mayuge	Buwekulu	Balaba	Aggrey
Mayuge	Abur B	Ben	Okapa
Mayuge	Butumba	Tiribuza	Patrick
Mayuge	Kabugweli	Isabirye	Matins
Mayuge	Kyabirwa	Kinara	Feleix
Mayuge	Lugolole	Mulondo	Muhamed
Mayuge	Bulyansime	Mulinda	Deleus
Mayuge	Kyabirwa	Maganda	Matayo
Mayuge	Buwenda Mutaava	Sebowa	Samuel
Mayuge	Ngelechom	Okeke	John
Mayuge	Businda	Awali	Batwawula
Mayuge	Bogodo	Tanya	
Mayuge	Bukwoki	Mangeni	Bulasio
Mayuge	Buwofu	Ekanya	Friday
Mayuge	Namuwombi A	Ruhaire	Peter
Mayuge	Kayango	Etyang	Namukombe
Mayuge	Butundula	Okumu	Antony
Mayuge	Kanyogoga	Isoba	Ruth
Mayuge	Namizi west	Tenywa	Sulaiman
Mayuge	Butikimatala	Kalele	Moses
Mayuge	Ngelechom	Wakitaka	Livingtone
Mayuge	Mbaale	Swabula	Cristopher
Mayuge	Katarema	Odudi	James
Mayuge	Kyabowa	Owino	Yekoniya
Mayuge	Kapyanga	Manyendi	George
Mayuge	Isiko	Dhabangi	Christopher
Mayuge		Natukunda	Johnson

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**FESIBILITY STUDY FOR JINJA TO KENYA BORDER TRANSMISSION LINE
ENVIRONMENT AND SOCIAL ASSESSMENT**

District	Village	Family Name	First Name
Mayuge	Katerema A	Akongo	Alexander
Mayuge	Wakitiko	Zikulabe	Ruth
Mayuge	Meera-Pajobo	Owori Obwana	Richard

List of community meetings

JINJA - LESSOS			
Date of meeting	Village	Sub-County	District
31-1-07	Wakitaka	Mafubira	Jinja
	Buwenda- Mataala	Mafubira	Jinja
	Namizi West	Budondo	Jinja
	Kyabirwa	Budondo	Jinja
3-2-07	Lugolole	Baitambogwe	Mayuge
4-2-07	Nakanyonyi	Kakira	Jinja
5-2-07	Kapyanga	Kapyanga	Bugiri
	Kayandhakato	Kapyanga	Bugiri
6-2-07	Buswilili	Kapyanga	Bugiri
	Namatanga	Buwunga	Bugiri
7-2-07	Isikiro	Isikiro	Mayuge
	Mbaale	Buwayo	Mayuge
8-2-07	Nakivumbi	Ibulanku	Iganga
9-2-07	Ngelenchom, Abul B, Agolot B & Kayolo A	Usukulu	Tororo
10-2-07	Pobone B&C, Akipeneti	Iyolwa	Tororo
	Pokach, Kopanyi & Meera Pajabo	Iyolwa	Tororo

APPENDIX 5

LIST OF COMMUNITY CONSULTATIONS, KENYA

NILE BASIN INITIATIVE - NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAMME
STUDY OF THE INTERCONNECTION OF THE ELECTRICITY NETWORKS OF THE NILE EQUATORIAL LAKES COUNTRIES
ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT - VOLUME 2B - UGANDA-KENYA INTERCONNECTION
MAIN REPORT

List of community consultations, Kenya

Province: Rift Valley District: Nandi North	
Division: Kilibwoni Location: Songoliet Sub-location: Songoliet Date: 2007-02-10	
Nom	Désignation
Erick Songok	Assistant chief
John Maswaji	Villager
Sosten Chepsiror Chemey	Villager
Nicholas Kirwa	Villager
Richard Sirma	Villager
Maurice Kisorio	Villager
Paul Kisarai	Villager
William Meli	Villager
John Tanui	Villager
Elias Kibet	Villager
Joyce Morei	Villager
Charles Sum	Villager
Joseph Kili	Villager
Thomas Arap Sang	Villager
Eliud Keino	Villager
Benjamin Mutai	Villager
Eliud Boin	Villager
Simeon Song'oei	Villager
Nicholas Kiptoo	Villager
Patrick Chebos	Villager
Charles Kirui	Villager
Daniel Sang	Villager
David Bisem	Villager
Eliud Cheworn	Villager
Stephen Birgen	Villager

Division: Kilibwoni Location: Kabeiyo Sub-location: Kabeiyo Date: 2007-02-20	
Nom	Désignation
Geoffrey Kipyego Rono	
Wilson Talam	
Martin Kimutai	
Noah Bor	
Eliud Langat	
Daniel Sanga	
Simeon Tikinen	
Richard Sungut	
Rommy Rungut	
Too Bor	
Daniel Businei	
Isaac Sanga	
Peter Koech	
Sosten Koko	
Barnabus Serem	
Erastus Kemboi	
David Mulei	
Jacob Bor	
Victor Misoï	
David Tanui	
Abraham Churwai	
Christopher Serem	
Richard Kosgei	
Nicholas Tanui	

Robert Yego	
Arnest Rono	
Bernard Murei	
Patrick Mugn	
Stephen Korir	
Gaudenzia Chepkolon	
Stephen Keter	
Division: Kosirai Location: Kosirai Sub-location: Ndaptabwa Date: 2007-02-20	
Nom	Désignation
David Talam	Assistant Chief
John Nyokose	Assistant Chief
Richard Ngetich	Chief
Florece Chumba	Villager
Bethwel Sang	Villager
David Kosgei	Villager
Jacob Tokom	Villager
Thomas Koech	Villager
Keneth Langat	Villager
Joseph Koech	Villager
Marceline Ngelo	Villager
Division: Kibiyet Location: Kabulonik Sub-location: Sang'alo Date: 2007-02-21	
Nom	Désignation
Nicholas Maiyo	Villager Farmer
Mark Ngetich	Villager Farmer
Peter Bowen	Villager Farmer
Josphat Limo	Villager Farmer
Josephat Kosgei	Villager Farmer
Julius Chumba	Villager Farmer
Stephen Kokei	Villager Farmer
Samuael Kemboi	Villager Farmer
Timon Kipkoech	Villager Farmer
Stanely Kibei	Villager Farmer

Boniface Kigen	Villager Farmer
Edwin Kipkemboi	Villager Farmer
Daniel Kipchonge	Villager Farmer
Elias Yego	Villager Farmer
David Tum	Villager Farmer
Division: Kibiyet Location: Sang'alo Sub-location: Septonok Date: 2007-02-22	
Nom	Désignation
Daniel Kibandarduwae	Chairman
Albert lagat	Treasurer
Tirap Arap	School employer
Rono Kiptoos	Community member
Nireen Teigong	School employee
Joseph mutai	Committee member
John Saina	Community member
Christopher Biwott	Committee member
Timon Kimbua	Community member

Province: Western	
District: Kakamega North	
Division: Kabras	
Location: West Kabras	
Sub-location: Burundu	
Date: 2007-02-24	
Nom	Désignation
Edith Musee	Villager
Abel Mukhusa	Villager
Francis Shaka	Villager
William Shikanya	Villager
Polycarp Shikuku	Villager
Evans Kuriane	Villager
Kennedy Mulunda	Villager
Elly Watanya	Villager
Absalaom Mulupi	Villager
Sasaka Kapuonya	Villager
Samuel Jamba	Villager
Mukhutu Kisudia	Villager
Janet Kupar	Villager
Grace Shikuku	Villager
Jane Burudi	Villager
Leonida Mukhonyore	Assistant chief
Grospm Kinani Barasa	Health officer
Natembea K. Kisaka	Village headman
Zephania Masinde	Village headman
Elid Mukonyore	Villager
Edward Munundi Lut a	Villager
Chrispus Kaseti	Villager
Simon Mukwyi	Villager
Joseph Munyole	Villager
Andrew Omalaha	Villager
Jeremiah Mukangai	Villager
Fredrick Amunga	Villager
Simon Maleli Mbeyi	Villager
Nakhulo Muruga	Villager
Justo Kawere	Villager
Josephat Namasaka	Villager
Shirandula Namaswa	Villager
Christopher Barasa	Villager
Gladys Maina	Villager

Anne Simiyu	Villager
Benson Khayisie	
Mary Nameswa	
Jackline Mwanje	
Alfred Muira	
Wangolo Shimwenyi	
Beatrice Mulupi	
Augustine Barasa	
Division: Kabras Location: East Kabras Sub-location: Ikoli Date: 2007-02-26	
Nom	Désignation
Nebert Wafula	Headteachers Ikoli Pr. School
Nathan Kutoto	Assistant Chief
Elijah Shamala	Education Officer
Harrison Ndochi	Committee member
Zablon Ndochi	Member of PTA
Joel Nandi	Committee member
Kenyatta Kulecho	Villager headman
Zakayo Alusiola	Member of PTA
Hezron Chisonde	Ikoli Pri. sSchool Treasurer
Kimbo Shitanda	Member of PTA
Jane Webo	Deputy headteacher Ikoli Pri. School
Jackson Mandila	Member of PTA
George Wasilwa	Member of PTA
Jacob Katela	Sponsor School Management committee
John Festus	Sponsor School Management committee
Fred Okwili	Sponsor School Management committee

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**FESIBILITY STUDY FOR JINJA TO KENYA BORDER TRANSMISSION LINE
ENVIRONMENT AND SOCIAL ASSESSMENT**

Division: Bumula Location: Mateka Sub-location: Kibachenje Date: 2007-02-28	
Nom	Désignation
Stella Wesonga	Headteacher – Kibachenje Primary School
Johnson Wanyonya	Charimarn – SMC
William wanonyi	Vice Chairman - SMC
Emily Wekesa	Teacher
Edith Wafula	Teacher
Rose Wanyonyi	Teacher
Asha Wabwile	ECD teacher
Wilfrida Wabomba	Teacher
Jentrix Wanyama	Teacher
Tobias Wamalwa	Teacher
Christine Khakhina	Teacher
Victoria Wamono	ECD teacher
Judith Munyasia	Deputy Headteacher
John Makhali	School parent
Ramadhan Mangoli	School parent
James Wepukhulu	School parent
Justus Juma	School parent
Julius Wafungwa	School parent
Henry Makonga	School parent
Robert Waswa	School parent
Patrick Juma	School parent
Kasim Sakwa	School parent
Denis Luchemo	School parent
Zainabu Omar	Parent/SMC member
Augustine Simiyu	Parent/SMC member
Alfred Machine	Parent/SMC member
Peter Mage	Parent/SMC member
Augustine Mulongo	Parent/SMC member
Albert Wasura	Parent/SMC member
Jesicca Nekesa	Parent
Dorcas Atieno	
Elda Khisa	
Everline Mulongo	
Hellen Omumamu	
Conjesta Nambagala	
Margaret munyekenya	

Petronila Makolo	
Jane Simiyu	
Everlyne Wanyama	
Ruth Barasa	
Rosebella Waswa	
James Wenegwe	
George sirengo	
Richard Wesibga	
Justus Juma	
David Masinde	
Meshack Wanyama	
Evans Wamalwa	
Consolata Juma	
Hilam Wekesa	
Francis Wanjala	
Edward Wafula	
Dismus Matanda	
Ibrahim Onyimbo	
Fred Muidni	
John Obora	
Gladys Wafula	

Division: Amukura Location: Kotur Sub-location: Kotur Date: 2007-02-28	
Nom	Désignation
Dennis Ipete	Chief
Philiph Osangir	Headteacher
Charles Kokonyo	Villager
Moris Omete	Villager
Peter Isair	Villager
Charles Omukaga	Villager
Charles Makoko	Villager
Dogwin Etyang	Villager
Fransescu Namuku	Villager
Rasmo Angesu	Villager
Enjelika Etyang	Villager
David Omete	Villager
Vincent Okasiba	Villager
Patrick Emoto	Villager
Mary Asegere	Villager
Stephen Bonere	Villager

Province: Western	
District: Busia	
Division: Nambele	
Location: Bukhayo North	
Sub-location: Lupida	
Date: 2007-03-01	
Nom	Désignation
John Onyango	Headteacher Siera Pr. School
Cyrus Okurutu	Parent
Richard Ojula	Parent
Dismas Aleri	Parent
Peter Omukule	School Management committee (SMC)
George Obwana	Parent
Quinto Oundo	Parent
Moses Were	Parent
Jual Ouma	Parent
Peter Obwana	Pastor
Joseph Musungu	Parent
Tom Obwana	Parent
Daniel Musungu	Parent
Samuel Wanjala	Parent
Redempta Ndeke	Teacher, Siera Pri. School
Richard Wanyonyi	Parent
Fred Juma	Parent
Vincent Ikramas	Parent
Maurice Abungana	Parent
Frederick Okaro	Parent
Simon Ekesa	Parent
Joseph Makhoha	Parent
Aaron Manga	Teacher
Stephen Alachu	Teacher
Everlyne Chimwani	Parent
Richard Etyang	Parent
Kashimir Omulana	Parent
Philip Wanyonyi	Parent
Donald Buluna	Parent
Leonido Emojong	Parent
Clare Alachu	Parent

APPENDIX 6

LIST OF OFFICIALS CONSULTED, UGANDA

NILE BASIN INITIATIVE - NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAMME
STUDY OF THE INTERCONNECTION OF THE ELECTRICITY NETWORKS OF THE NILE EQUATORIAL LAKES COUNTRIES
ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT - VOLUME 2B - UGANDA-KENYA INTERCONNECTION
MAIN REPORT

List of officials consulted, Uganda

JINJA		
No.	NAME	DESIGNATION
1.	Mr. Daniel Mugulusu	Assistant CAO
2.	Ms. Annet Musika	Councillor - Budondo
3.	Mr. Juma Muyita	Secretary for Production
4.	Dr. Stephen Kiwemba	Production Coordinator
5.	Mr. Alex Ddibya	Ag. Community Based Services (CBS)
6.	Mr. Nathan Mubiru	District Planner
7.	Mr. Livingstone Wakitaka	LC I Chairman
8.	Mr. John Kamau	LC III Chairman – Kakira subcounty
9.	Mr. Ivan Godfrey Tibenkana	LC III Chairman - Budondo
10.	Mr. James Walumbe	Subcounty chief - Kakira
11.	Mr. Sulayimani Tenywa	LC I Chairman – Namizi West
12.	Ms. Joy Taweka	Asst. Devt. Officer for Budondo
13.	Mr. Felix Kinara	LC I Chairman - Kyabirwa
14.	Mr. Moses Funga	Health Asst – Mafubira S/C
15.	Mr. Musa Kisambira	Sec. for Defence – Mafubira S/C
16.	Mr. Edirisa Gavamukulya	LC II Chairman Buwekula Parish
17.	Ms. Ruth Zikulabe	Secretary for Women – Wakitaka village
18.	Mr. Moses Kakete	LC I Chairman – Butikimatala
19.	Mr. Samwiri Sebowo	LC I chairman – Buwendamatala
20.	Ms. Rebecca Kanya	LC I General Secretary
MAYUGE		
1.	Mr. Michael Nandala	Chief Administrative Officer (CAO)
2.	Mr. Baker Tigawalana Ikoba	LC V Chairman
3.	Mr. Patrick Mudungu	Secretary for Education
4.	Mr. Fred Wajokerena	Speaker
5.	Ms Annette Nasubo	Sec. Finance & Planning
6.	Ms. Sarah Nalubango	Chairperson – Finance Committee
7.	Mr. Godfrey Kasirye	LC III Chairperson – Baitambogwe Subcounty
8.	Mr. Wandera	LC III Chairperson – Buwaya subcounty
9.	Mr. Muhamade	LCI Chairperson – Lugolole
10.	Mr. Christopher Swabula	LC I Chairman – Mbaale
11.	Mr. Christopher Dhabangi	Chairman LC I - Isikiro

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**FESIBILITY STUDY FOR JINJA TO KENYA BORDER TRANSMISSION LINE
ENVIRONMENT AND SOCIAL ASSESSMENT**

IGANGA		
1.	Mr. Katamba Perez	RDC
2.	Mr. Nelson Kirenda	CAO
3.	Mr. Jotham Wamala	ACAO
4.	Mr. Samuel Batuka	Head CBS
5.	Mr. Nathan Mununuzi	District Environment Officer
6.	Ms. Sarah Mutumba	Secretary for Production
7.	Mr. Idd Bateganya	Subcounty Chief - Ibulanku
8.	Mr. James Ogoola	Vice Chairman - Ibulanku
BUGIRI		
1.	Mr. Zubayiri Bakali	RDC
2.	Mr. Wilson Kabweru	ACAO
3.	Dr. Jackson Mangeni	District Production Officer
4.	Mr. Moses Basoma	District Environment Officer
5.	Mr. Muhamood Kyondha	Ag. District Planner
6.	Ms. Betty Mubiita	Senior Community Devt. Officer
7.	Mr. George Mayende	LC I Chairman - Kapyanga
8.	Mr. David Maganda	Secretary for Information – Buswiriri
9.	Mr. Sam Odongo	Parish Councillor – Buwunga Subcounty
10.	Mr. John Kalende	LC I Chairman - Kayandhakato
TORORO		
1.	Mr. Felix Esoku	Chief Administrative Officer
2.	Mr. Emmanuel Osuna	Chairperson LC V
3.	Mr. John Gongo	District Environment Officer
4.	Mr. Onyango Odoi	Senior Land Officer
5.	Mr. Kadoketch	Cader – RDC’s office
6.	Mr. Jasper Okongo Akotol	Member District Land Board
7.	Mr. David Okurut	LC III Chairman – Osukuru subcounty
8.	Mr. Geoffrey Opendi Ochwo	Subcounty Chief – Iyolwa
9.	Mr. James Raymond Owori	LC III Chairman – Iyolwa Subcounty
10.	Mr. Denis Olupot	District Councillor - Osukuru
11.	Mr. John Okeke	Chairman Ngelechom village
12.	Mr. James Odudi	Vice Chairman Katerema A
13.	Mr. Richard Owori Obwang	Secretary for sub defence – Meera Pajabo A
14.	Mr. Yekoniya Owino	Secretary for defence - Meera Pajabo A

APPENDIX 7

LIST OF OFFICIALS CONSULTED, KENYA

List of officials consulted, Kenya

LESSOS - UGANDA BORDER

NANDI NORTH DISTRICT		
ITEN	NAME	DESIGNATION
1	Mr. Volenzo Tom	Ag. District Environmental Officer/NEMA officer
2	Mr. Lawrence O. Andati	Ass. District Forest Officer
3	Eng. J.W. Wanyama	District Works officer
4	Mr. Wilfred A. Omari	District Development officer
5.	Ms. E Cherop	Ranger Corprol, Kenya Wildlife Service
6	Ms. Janeffer A.N. Polo	District Agricultural officer
KAKAMEGA NORTH DISTRICT		
7	Mr. Anthony Saisi Aura	District Environment Officer
8	Mr. J.I. Orahle	Warden, Kenya Wildlife Society
9	Mr. Andrew Njogu	District Development Officer
10	Mr. Alice A. Ingutya	Ass. District Forestry Officer
11	Mr. Musa C. Sang	District Environment and Land Development Officer
BUNGOMA SOUTH DISTRICT		
12	Mr. Duncan O. Osale	District Environment Officer/NEMA
13	Mr. D.M. Kitaka	Deputy District Agricultural Officer
14	Ms. Koki Mwavia	District Forest Officer
15	Mr. Agoro, B.O	District Development Officer
16	Mr. H.R. Khator	District Officer I
TESO DISTRICT and BUSIA DISTRICT		
17	Mr. Morris Wambua K	District Agricultural Officer
18	Mr. Thomas Owiti Mwandu	District Development Officer
19	Ms. Joyce Oliver Imende	District Environment Officer

APPENDIX 8
HOUSEHOLD SURVEY QUESTIONNAIRE



HOUSEHOLD SURVEY QUESTIONNAIRE

Country		District:		Survey No.:	
Division: County		Sub county (Location☺)	Parish (Sub- location:)		Chainage (data from the topographer):
Village:			GPS location:		
Respondent family name :		Respondent middle name:		Respondent first name:	
Interviewer name:			Date:		

Will this household be affected by the establishment of the wayleave? For example,	1-Yes	2-No	3-Unknown
a) Need to remove structures and/or trees			
b) Restricted access for cultivation, grazing, etc.			
c) Remove entirely from wayleave			

If YES, complete sections A-D. If NO or UNKNOWN, complete sections A-C, but not section D.

SECTION A: HOUSEHOLD DATA

Household data is collected for a) the household head, b) members currently resident in the principal home of the household and c) members living permanently or mostly away from the principal home.

I. Household Head

1	Family name:	Middle name:	First name:
2	Age	4	Marital status
3	Sex (M/F)	5	Ethnic group
6	Occupation		
7	Currently resident in project area or permanently/mostly away		
8	Number of years resident in this area		

NILE BASIN INITIATIVE
NILE EQUATORIAL LAKES SUBSIDIARY ACTION PROGRAMME
(NELSAP)



II. Members of household currently resident in project area

	Age Group	Number of Persons		Working <u>ON</u> Homestead or Farm		Working <u>OUTSIDE</u> Homestead or Farm		Literate	
		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 by sex								
8	Total								

9. How many families live in your homestead?

III. Members of household permanently or mostly away from project area

	Age Group	Number of Persons		Working		Literate	
		M	F	M	F	M	F
1	0-14 years						
2	15 years and over						
3	Total by sex						
4	Total						

	Yes	No
5 Do they send money home?		
6 If yes, how much per month?		

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SECTION B: HOUSEHOLD LIVELIHOODS AND INCOME

IV. Fields and Gardens

Record all land used by household to support their livelihood, including land owned, land rented, use of common/ community land, etc. All land includes land within and outside the wayleave.

Plot No.	Land Parcels		Distance from house (m)	Ownership/Use rights Owned (O), Rented (R), Common land (C) or other (specify)	<u>Rent In Land:</u> Cost per year	<u>Rent Out Land:</u> Income per year	<u>Primary use of field</u> (crops, tree plantation, animal grazing, rental income, etc.)
	Unit Feet, metres	Size.					
1							
2							
3							
4							
5							
6							
7							
8							

Total number of fields
 Total area owned (ha)
 Total area used for farming (ha)
 including rented and common land

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V. Farm and Household Production

Record all production in last 12 months carried out on the household homestead or farm, based on best estimates of respondent.

Item	Unit Tonn Kgs, g	Total Produced	Consumed/Used by Household		Sold or Bartered		
			Amount	% Total	Amount	% Total	Net cash income
CASH CROPS							
1							
2							
3							
4							
5							
6							
7							
						Sub-total	
FOOD CROPS							
1							
2							
3							
4							
5							
						Sub-total	
OTHER: Handicrafts, agro-processing, making charcoal, etc.							
1							
2							
3							
4							
5							
6							
						Sub-total	
						Sub-total livestock (add the amount on next page)	
						TOTAL NET INCOME	



V. Farm and Household Production (continuation)

LIVESTOCK Item	Total number	Products	Total produced in litres/Kg	Consumed/used by household		Sold or bartered		Net cash income
				Amount	Total %	Amount	Total %	
1. Cattle		Milk						
		Meat						
		Hides						
		Ploughing						
2. Goats		Selling						
		Milk						
		Meat						
		Hides						
3. Sheep		Selling						
		Milk						
		Meat						
		Hides						
4. Pig		Selling						
		Meat						
5. Chicken		Meat						
		Eggs						
		Selling						
6. Others								
Sub-Total (add to the previous table)								

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VI. Household Wage Income

Record all off-farm work done for wages by all household members in last 12 months.

	Type of Work	Duration (day, week, month)		Wages			Place of Work (Province = or Country* ¹ , district, city, town)
		Unit	Amount (Number)	Unit	Rate	Amount Earned	
1							
2							
3							
4							
5							
TOTAL WAGE INCOME							

SECTION C: RURAL ELECTRIFICATION

VII. Access to Electricity

		Y/N	Don't know	Use(s)
1	Do you have electricity in your house?			
	If YES, what do you use it for?			
2	Do you have electricity in your business place?			
	If YES, what do you use it for?			
3	Is there electricity in local village/trading center?			
	If YES, what is electricity used for?			

*¹ Country may mean Kenya, Uganda or Rwanda whatever applies

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VIII. Sources of Energy for Household

What are the sources of energy used in your household for a) lighting, b) cooking and c) heating, in order of the importance of the type of energy (1, 2, 3, etc.)?

		Lighting	Cooking	Heating
1	Firewood			
2	Candles			
3	Kerosene			
4	Bottled gas			
5	Electricity			
6	Charcoal			
7	Solar			
8	Biogas			
9	Sugarcane husks, maize stock etc			
10	Others (specify)			

IX. Demand for Electricity

If electricity were available and cost [insert rate per kW/hour], would you be able to use it for the following activities?

	Use of Electricity	Y/N	If NO, check all reasons				
			Too expensive	Cannot afford equipment	Not necessary	Prefer other energy sources	Cannot afford to rent workshop space
AT MY HOUSE							
1	Lighting						
2	Cooking						
3	Food storage						
4	Heating/cooling						
5	Running appliances (e.g., iron)						
6	Running machinery						
AT LOCAL VILLAGE/TRADING CENTER [For example, if you rented a workshop and/or sale space]							
7	Lighting workshop/sale space						
8	Heating workshop/sale space						
9	Running machinery						
10	Other (specify):						

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SECTION D: IMPACTS RELATED TO WAYLEAVE

N.B. Collect the following information only for households that use land in the wayleave. Some information is similar to that collected above, but here the focus is the wayleave.

X. Land in Wayleave

What land do you own, rent or use that is located partly or entirely within the wayleave? Provide best estimate of affected areas within wayleave/emprise.

Plot	Use (House plot, annual crops, tree plantation, animal grazing, etc.)	Estimated area (m ²)		Ownership/use rights			
		Total plot	Within wayleave	Own		Rent with payment	Use with permission of owner
				Registered title	Customary title		
1							
2							
3							
4							
5							

XI. Principal Structures

What principal structures do you have that are partly or entirely affected within the wayleave? Provide best estimate of affected areas within wayleave.

Structure	Use (House, shop, house/shop, other (specify))	Type/construction (Temporary, semi-permanent, permanent OR main materials for walls and roof)	Area (m ²)		Ownership/ use rights Own (O), rent (R) or use with permission of owner (P)
			Total structure	Within wayleave	
1					
2					
3					

4 Do you have land outside the wayleave to rebuild your principal structure? (Y/N)

5 If YES, do you own the land, rent it or have permission to use it? (O/R/P)

6 How far is it from the present location of your principal structure? (km)

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XII. Secondary Structures

What secondary structures do you have that are located entirely within the wayleave? Secondary structures may be an animal shed, separate kitchen or toilet, fence, well, etc.

	Type of Structure	Unit (m, m ² , etc.)	Amount
1			
2			
3			
4			
5			
6			
7			
8			

XIII. Crops/Trees in the Wayleave

What trees and crops do you have located entirely in the wayleave? N.B. Please provide separate information for a) tall trees that are over 4.5 m, b) smaller trees and perennial crops (e.g. coffee, tea) and c) annual crops. Estimate the amount of each.

	Type of Crops/Trees	Unit (m ² , tree)	Estimated Amount	Code
TREES OVER 4.5 m TALL				
1				
2				
3				
4				
5				
SMALL TREES (< 4.5 m) & PERENNIAL CROPS				
6				
7				
8				
9				
10				
ANNUAL CROPS				
11				
12				
13				
14				
15				

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XIV. Animal Grazing

Do you graze animals in the wayleave? If YES, please provide the following information.

	Type of Animal	Number
	FREE-RANGING ANIMALS	
1		
2		
3		
4		
5		
	ANIMALS IN FENCED AREA	
6		
7		
8		
9		
10		

XV. Concerns about Impacts of Establishing the Wayleave

Do you have concerns about the establishment of the wayleave and how that may affect your household? If YES, what are they?

	Y/N
1 Do you have concerns?	
If YES, what are they?	
2	
3	
4	
5	
6	
7	
8	

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SECTION E: GENDER

XVI. Gender concerns

	Husband	Wife	Children	Other
Who is responsible for the household energy needs?				
Who makes decisions on the type of energy to be used?				
Who is responsible for the acquisition?				
If electricity was brought to your village who would be the one to pay for its connection and subsequent payments.				
Why the answer above, explain				
Approximately how much do you spent on each of the following per month (in shillings):				
• Firewood				
• Candles				
• Kerosene				
• Bottled gas				
• Electricity				
• Charcoal				
• Solar				
• Biogas				
• Sugarcane husks, maize stock, etc				
• Others (specify)				

Signature of Respondent : ID No.

Checked by: Date:

APPENDIX 9

ENVIRONMENTAL CLAUSES TO BE INSERTED IN THE EXECUTION PROJECT DOCUMENT

ENVIRONMENTAL CLAUSES TO BE INSERTED IN THE EXECUTION PROJECT DOCUMENT

The specific environmental clauses to be integrated in the tender document detail the precautions to be taken when executing the project. This list is indicative, non exhaustive, and will have to be possibly completed when detailing preliminary draft and will form part of the administrative and technical regulations of the construction works contracts.

The inscription of the environmental clauses in the files of execution will engage the responsibility for the project superintendent.

I- INSTALLATION OF THE BUILDING SITE

The contractor must take necessary measures so that all the employees implied in all the stages of the project respect the laws and the regulations relating to the contracted environmental requirements. The contractor must thus diffuse, before the beginning of work, all the requirements relating to the contract and make sure that all the employees had access and took part in the meetings of information.

The contractor must name a permanent officer on the field for the duration of the contract, who is responsible for all the questions relating to the environment.

The contractor must subject for approval the plan of all the temporary installations.

The contractor must use in priority the zones of loans existing or envisaged with the contract and for which the necessary authorizations were obtained. In the event of opening of new zones of loan, the limits of the surface of exploitation will be delimited clearly on the field.

The contractor should embank neither to excavate in agricultural or urban medium, nor in the vegetable protective strip in edge of banks of the lakes, the rivers or the wet mediums without the necessary permission.

The contractor must pickle any surface of fill and excavated material excavation or storage as any surface where leveling is necessary. He must put side the arable soil horizon and position it back at the time of the repairing of the ground.

The contractor must locate, delimit and protect the sensitive elements (well, sources of supply drinking water, archeological site, etc.) identified with the contract. If the contractor discovers an archaeological vestige at the time of work, he must suspend his activities, inform without delay the representative of the Promoter and avoid any intervention likely to compromise the integrity of the good or the site discovered.

The contractor must delimit the surfaces clearly to be deforested indicated to the contract, using reference mark, and he must obtain the necessary authorizations before undertaking the demolition of the trees.

The contractor must make a statement of the state of the bridges or culverts existing that it will use and draw up the points of crossing of the elements of drainage as well as the bridges and culverts to be installed.

The contractor must respect the natural drainage of the area and take all suitable measurements to allow the normal flow of water. When the drainage of surface is likely to involve sediments in rivers, the contractor must apply measures to contain the sediments or to divert them so that they do not reach the rivers.

The contractor must take all the precautions and apply the necessary techniques in order to reduce erosion due to the streaming, particularly to the fields of high slope, and to prevent that the sediments do not reach a lake or a river.

For the installation of a coffer dam, the contractor will use not contaminated materials.

He will ensure himself to capture and relocate out of interstitial water alive fish imprisoned in the drained zone.

For the installation of bridges and culverts, the contractor will take care not to modify the hydrological conditions, not to block the circulation of fish and not to increase the turbidity of water.

The contractor will take every time necessary measures in order to prevent the solid remains fall, whose woody remains, in the water level and, if necessary, he will have to recover them and eliminate them in accordance with the requirements.

When using of explosives, the contractor must use adequate working methods not to cause disturbances on the natural environment and frame surrounding and to limit projection of rock and remains outside the surface authorized for work and in the water levels. For the explosion out of water or close to water, the contractor must use mechanical processes or electronic to move away fish and the explosion must take place as soon as possible after this intervention to prevent that the fish do not reconsider the spot.

II – MANAGEMENT OF RESIDUAL AND DANGEROUS MATTER

The contractor is responsible for recovery, storage, the transport and the elimination of the totality of the various types of waste which he generates.

Solid waste must be eliminated by the contractor and with his own expenses in an authorized place.

The generated residual dangerous matters must be eliminated by the contractor and with his expenses in a place authorized by the authorities and ministries concerned, except for the dangerous residual matters belonging to the Promoter which are eliminated by this one and with his expenses.

The contractor should not mix or dilute dangerous residual matters with other matters (dangerous or not dangerous). The mixture of the dangerous matters is allowed only when the matters are compatible between them and the result of the mixture also constitutes of the dangerous matters.

The contractor will install, with his expenses, concreted surfaces to carry out the storage and all handling of the fuels and oils (supply, discharge, draining, etc). These sites must allow the containment of the contaminants in the case of accidental discharge. They will have to be located at a distance of 60 meters of the sensitive elements and water levels identified in the contract.

The draining oils as well as the all material and oil filters (water, rags, etc.) of cleaning soiled by hydrocarbons will be recovered and stored.

The company will hold a stock book (entry and exit) also including the hydrocarbons stock.

The material being used for transport and the installation of the concrete must be washed in a surface envisaged for this purpose, by ensuring that this washing area does not overflow during its use. It can be a mud tank which the contractor must dig in the ground. If necessary, the contractor must remove, at the end of work, the elutriated solid residues and deposit them in a dry material container. Finally, he must embank the mud tank with the ground of origin, by taking care to give the layer of vegetable matter to surface.

The contractor must present a plan of intervention in the event of accidental discharge of contaminants. He must make sure that the plan of intervention contains, at least, a diagram of intervention and a structure of alarm, that he is placed in an easy place of access and with the sight of all his employees and that his employees are sensitized with their responsibilities in the event of accidental discharges, with the importance of a fast intervention, just as with the application of the plan of intervention.

At the time of a discharge of contaminants, the Contractor must immediately apply the plan of intervention in the event of discharge.

The contractor must have at least a case of intervention on the building site. It must contain products adapted to the characteristics of the place of work and be near work.

At the time of an unforeseen discovery of grounds presenting of the indices of contamination (odors, color, etc), the contractor must stop his work of excavation and warn without delay the Promoter.

The contractor must eliminate the contaminated soil coming from excavation and drilling (carrots, mud, etc.) in an authorized site and to provide a proof of elimination to the representative of the Promoter.

Recoverable materials belonging to the Promoter (such as iron, coppers, aluminium, etc.) are deposited by the contractor in the containers provided by the Promoter. These materials are then eliminated by the Promoter.

The contractor must channel and recover waste water entirely rising from work.

The contractor must filter, elutriate his waste water or use any other method approved in order to satisfy the regulation. If the waste water is rejected into the hydrographic network, the contractor must refer to the contractual clauses or to the Promoter representative for the criteria of rejections. It is interdicted to dilute waste water before his rejection in the receiving area to satisfy the envisaged criteria. The contractor must show by analyses that he respects the criteria of rejections.

III - CIRCULATION ON THE BUILDING SITE

The vehicles necessary for the realization of work must be selected by taking into account of the characteristics of the site (standard of ground, period of the year, environmental sensitivity, etc.) in order to limit the impacts on the site.

The contractor must limit circulation to the ways and the surfaces identified with the contract. He must if not to obtain an authorization before using any other way or path.

The contractor must maintain in good condition every time the paths that he and other users are using take necessary measures so that these paths can be used and crossed without problem.

The contractor must carry out progressively the filling of the ruts with the progress of the work.

The contractor must protect the edges and the riding surface of the asphalted ways, and it must maintain them clean.

The contractor must stop any heavy circulation, for example, sensitive site to erosion, in particular at the time of an abundant rain or on mediums of low bearing capacity.

The contractor is held to limit the emissions of dust coming from the circulation of his material and to subject for approval the type of cut down-dust which it intends to use.

The contractor must maintain a system of functional drainage on each side of the roads crossed by his way of circulation. He must install a culvert in the ditches in edge of the ways, in order to avoid any blocking of drainage and to prevent scrubbing, the erosion or any other deterioration of the roads.

The contractor must use the access paths only during the regular hours of work, with special permit.

IV - SALUBRITY, AND SAFETY HEALTH MEASURES,

The contractor must envisage a plan of communication to sensitize all the employees with the risks and the means of preventing the sexually transmitted diseases of which the HIV.

The contractor must envisage a plan of communication to sensitize all the employees with the risks and the means of preventing the hydrous diseases (diarrheas, amoebic dysentery, and cholera). It is advised to drink only treated water or pulp, drinking water of the arranged sources or terminals fountains.

The contractor will have to ensure himself of the quality and availability of drinking water by the means of periodic controls carried out by qualified personnel or trained for this purpose.

If water proves being non drinkable after a control, the contractor must warn the personnel of the building site and to cure the situation quickly.

The employees must avoid urinating and making the saddles in or near the lake, river and pond. The company will install with its expenses of the latrines improved on the basis of the building site.

The pharmaceutical products of first aid, suitably preserved, must be available on the basis of company and the building sites of work.

The contractor will take care that the working conditions endanger neither health, nor life of the workers. He will provide a protection clothes to each worker and he will take care that no worker is allowed on the building site without a minimum of protection.

The contractor will take all the necessary precautions on the building site such as constructions in height, handling of dangerous products, emanation of dust, protection against the noises and explosions. He will take care that all constructions are made in the code of practice, in particular with regard to the scaffolding, the nets of protection, the hoisting of loads.

The contractor will take care that the building site is obviously delimited and that its access is strictly regulated to limit the risks of accidents.

V - PROHIBITIONS ON THE BUILDING SITE

Any form of poaching is prohibited and the weapons are not allowed on the building site.

It is interdicted to have and consume alcohol or drug on the building site.

It is interdicted to cut trees without authorization or to encourage the cut and the sawing of wood.

It is interdicted to emit, deposit, give off or reject a dangerous matter in the environment.

Any crossed to ford of river is prohibited unless having obtained the necessary authorizations of the authorities concerned. If necessary, the machinery must be cleaned in the surfaces envisaged for this purpose and of suitable measures must be taken to restore the places when the crossing of the river disturbed the region.

It is strictly interdicted to hide or transport out of the site of the deforestation of the woody residues, unless it is not in an authorized site.

It is interdicted to be useful itself of old tires or oils spent to help with the combustion of the residues of cut.

VI - REPAIRING OF THE PLACES

The contractor must disencumber the site of all materials, the temporary installations (bridges, culverts, etc.) and waste, and this according to suitable and authorized procedures'.

The contractor must carry out necessary work for the rehabilitation of the damaged sites.

The contractor must put the topsoil on the surface of the working or storing sites.

The contractor must level the ground in order to give to him his form of origin or a form harmonizing itself with the surrounding area.

The contractor must cut down damaged trees at the time of work and lay out about it according to their commercial value.

The contractor must restore the profile of origin of the bed and the banks of the rivers.

The contractor must restore the natural drainage and dig with the need for the ditches to ensure a good drainage of the area.

The contractor must give the ways in a similar state or higher compared with their state of origin.

If work of drilling reaches the ground water, the contractor must fill the hole with gravel or clean sand in the area of the ground water and take necessary measures in order to create an impervious material stopper on the surface of the hole to prevent the infiltration of contaminants in this one.

The contractor must fill the bore holes and reconstitute the geological conditions of origin with excavated materials.

APPENDIX 10

NOISE STANDARDS IN UGANDA

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

Nigh- 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

Leq dB (A)	Duration (Daily)	Duration (Weekly)
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 <i>per day</i>
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.

Nigh- 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)	Sound Level dB (A) (Leq)
	Day	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)	Sound Level dB (A) (Leq)
	Day	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 b) with an engine power of less than 150 KW	80 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. b) with a maximum permissible mass exceeding 2 tonnes but not exceeding 3.5 tonnes.	79 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 b) with an engine power of not less than 75 KW but less than 1.50 KW. c) with an engine power of not less than 150KW	81 83 84

PART IX

Regulation 6(9)

Maximum Permissible Noise Levels for Mines and Quarries

	FACILITY	LIMIT VALUE IN Db (C)
1.	For any buildings used as a hospital, school, convalescent home, old age, home or residential building.	109dB (C)
2.	For any building in an area used for residential and one or more of the following purposes. Commerce, small-scale production, entertainment, or any residential apartment in an area that is used for purposes of industry, commerce or small-scale production or any building used for the purpose of industry commerce or small-scale production.	114 dB (C)