UGANDA: PROPOSED TORORO-OPUYO-LIRA 132 KV TRANSMISSION LINE

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) SUMMARY
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SUMMARY

Project Name: Proposed Tororo-Opuyo-Lira 132 kV Transmission Line
Country: Uganda
Project Number: P-UG-FAO-004

1. Introduction

The Uganda Electricity Transmission Co. Ltd (UETCL) intends to rehabilitate the existing 132 kV Tororo – Lira transmission (Northern) line. The existing 132 kV transmission line is 260 km long and was constructed in 1965 on wooden structures. UETCL is incurring high maintenance costs in a bid to replace rotten structures and those burnt by wild bush fires during the dry season.

The existing transmission line has proved unreliable due to frequent outages from lightning strikes. In order to provide shielding from lightning strikes in an area of extreme weather conditions the feasibility study proposes to provide appropriate shielding to the phase conductors.

In order to improve the reliability and availability of power to the Eastern and Northern regions of Uganda, UETCL proposes to rehabilitate the existing line by replacing it with a 132 kV single circuit line on steel structures or other reliable alternatives like concrete poles from Tororo to Lira via Opuyo (Soroti) substations. The planned 132 kV transmission line will be constructed in the north-east of Uganda between the towns of Tororo and Lira. It involves the 6 districts of Tororo, Mbale, Kumi, Soroti, Katakwi and Lira.

UETCL commissioned Acres to conduct a feasibility study and FICHTNER GmbH & Co. KG to undertake an Environmental and Social Impact Assessment (ESIA) and a Resettlement Action Plan (RAP) for the projected rehabilitation of the Tororo-Opuyo-Lira transmission line.

The objective of the ESIA study was to assess the positive and negative environmental effects (biophysical/socio-economic and cultural) of the intended transmission line rehabilitation project, and to propose measures for mitigating negative impacts and enhancing positive ones.

The study addressed the proposed alignment of the transmission line and a number of proposed options in terms of certain strategic alternative routes for proposed transmission line. The proposed overhead line (OHL) will be constructed within the Right of Way (ROW) and Way leaves of the existing line corridor. The actual routing will be slightly to the Right Hand Side (RHS) or slightly to the Left Hand Side (LHS) to ensure a shorter period of electricity outage in the areas supplied by the network. The assessment of the two alternatives indicates that the LHS is the least cost option in terms of cost and environmental sustainability.

Study Approach

The ESIA of the project were predicted in relation to environmental and social receptors of people (e.g. residents of villages and settlements, and land-use, etc), and natural resources. This was accomplished by comparing baseline conditions (i.e. the situation without the project) with situations that would ensue when the project is implemented.

2. Project Description

The feasibility study proposed the following technical design of the 132 kV line:

- Length: 260 km
• Single circuit transmission line with steel pole structures
• Height of the steel poles about 22.8 m
• Composite insulators with silicone rubber sheds and housing bonded
• Phase conductor: All Aluminum Alloy (AAAC)
• Two shield wires made of aluminum clad steel as a protection against lightning strikes
• Access track suitable for 4-WD vehicles for line inspection and maintenance purposes
• Routing parallel and adjacent to the existing line
• The optimal average spans for steel poles are 275 m and the foundation consists of 1 concrete block per structure.
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The 3 existing 132/33 kV substations (Tororo-Opuyo-Lira) along the existing power line were rehabilitated as reported in the feasibility study report. The feasibility study also indicates no requirement to upgrade any substation.

According to the Feasibility Study, from the technical point of view, the route from the existing transmission line is generally the optimal alignment also for the new transmission line. The ROW for the existing line extends to a distance of 15 m from external conductors. This results in a total ROW width of about 40 m. The construction of the new line on exactly the same alignment would be expensive and entail extensive line outages. The Feasibility Study therefore recommends constructing the new line generally parallel and adjacent to the existing line. This will result in the width of the ROW for the new line being partly within and partly outside the ROW of the existing line.

3. Policy, Legal and Administrative Framework

The proposed rehabilitation project will comply with all Ugandan legal requirements. As a result of different laws and legal instruments which apply to energy-related environmental and social issues, a number of players are involved at various stages on an environmental impact assessment and social impact assessment.

The National Environment Management Authority (NEMA) is mandated to be the “principal agency in Uganda for the management of the environment” (National Environment Act Cap. 153). At district level, the responsibility of the management of environmental issues lies with the District Environment Committees.

While NEMA is entirely responsible for the coordination of sectoral environmental issues, UETCL will comply with country environmental impacts assessment regulations and will obtain a licence from NEMA. In addition, UETCL must ensure that environmental and social impact assessments for the electric transmission projects are adequately carried out, that mitigation is incorporated as appropriate, and that the construction process is environmentally and legally compliant. Furthermore, UETCL will be responsible for monitoring the environmental and social repercussions of the project during and after construction. Other institutions that will be involved in the monitoring of the project include the Wetlands Inspection Division, the National Forest Authority (NFA) and Non-Governmental Organisations (NGOs) notably Nature Uganda that is very active in the project area.

In carrying out the assignment, observation was made to be consistent and comply with Bank policies and regulations, notably the following:

Existing laws applicable to environmental and social management with respect to the rehabilitation of the Tororo-Opuyo-Lira 132 kV transmission line are:

- The Constitution of Uganda, 1995
- The National Environment Act, Cap 153
- The National Environment Management Policy, 1994
- The Electricity Act, 1999.
- The Environmental Impact Assessment Guidelines, 1997
- The Environmental Impact Assessment Regulations, 1998
- The Environmental Audit Guidelines, 1999
- The Environmental Audit Regulations, 2006
- The National Environment (Wetlands, River Banks and Lake Shores Management) Regulations, 2000
- The Land Act Cap. 227
- The Local Governments’ Act 1997
- The National Forestry and Tree Planting Act, 2003
- The Water Act, Cap 152
- The Uganda Wildlife Act Cap 200
- Workers’ Compensation Act, 2000
- The Occupational safety and Health Act, 2006
- The Employment Act, 2006

With regard to the compensation and resettlement issues, the main pieces of legislation are the Constitution of Uganda and the Land Act. In this regard, the main prime participants are the Ministry of Lands, Housing and Urban Development (compensation and valuation) and UETCL (the Lead Agency). Therefore, UETCL must take responsibility for displacement compensation, and identification and coordination of other players. In addition, the Uganda Land Commission, District Land Boards, Land Tribunal and Local Councils will be involved.

UETCL Resettlement/Land Acquisition Framework requires that:

i. Relocation and compensation arrangements will be designed to limit social disruption and assist those who have lost assets as a result of the project to maintain their livelihoods. In accordance with Ugandan laws and standards, a disturbance allowance is to be provided to assist the project affected individual or family to cover costs of moving and relocating to a new holding.

ii. Detailed consultation and disclosure process has to be carried out to ensure that all stakeholders are involved in the RAP process.

Within the Tororo-Opuyo-Lira zone, all four land tenure systems in the country may be found. These are the Customary (Bona fide Occupant), Freehold, and Public Land /Leasehold tenure systems. Customary/Bona fide Occupant land is the most dominant tenure system along the project alignment.

4. Description of the Project Environment

The routing of the transmission line can be roughly divided into two sections:

- Tororo – Soroti
- Soroti – Lira

The section Tororo – Soroti is densely populated and mostly consists of cultivated land. The section Soroti – Lira is except of some towns and settlements less populated and besides cultivated land there occurs savanna grassland and wetlands. In order to evaluate the impacts on the environment generally a corridor with a width of 100 m following the existing transmission line was investigated. In sensitive areas like wetlands and forests the corridor was widened to consider all impacts and to identify options for alternative routings.
Landscape: The terrain traversed by the transmission line is generally flat to gently rolling savannah type with scattered shrubs or trees and minor forested sections. Furthermore, four big swamps and seasonal wetlands respectively are crossed by the line.

The section Tororo – Mbale is dominated by cultivated land. Small agriculture lots with crops like maize, cassava, millet, potatoes and banana, big trees, shrubs and some hats are irregular scattered. In the surrounding of Tororo, Tororo rock forms visual centre of attraction. The section Mbale – Lira is less populated. The transmission line crosses through open savanna grassland with scattered trees and some larger wetlands with open water. The landscape is vulnerable against the erection of large technical facilities like transmission lines because the flat topography enables views over large distances.

Climate: Uganda has an equatorial climate with temperatures moderated by altitude. The climate is sub-humid with bi-modal rainfall and dry seasons. In the southern investigation area including Tororo and Mbale district the peaks of the bi-modal rainfall are during the months of May and October, the dry season is from December – February. The annual rainfall lies between 1,100 – 1,700 mm and the temperature varies between 16 – 28 °C. The relative humidity ranges between 52 – 89% with moderate rainfall and high temperature. The hottest months start from November to March while relatively cool months are July to September. In the middle and northern investigation area including Kumi, Soroti and Lira district generally the temperatures are higher and the annual rainfall is lower. The mean annual maximum temperature is 30 °C and the mean annual minimum is between 15 °C to 17 °C. The average temperature is 30 °C. The maximum is as high as 36 °C while the lowest is 13 °C. Rainfall ranges between 900-1500 mm. The peak of the rainfall is in April-May and July-August with a dry season from December – February.

Water resources: 13% of Tororo district is covered by water bodies. Generally, the district does not have adequate surface water resources. However, the district is crisis-crossed with swamps originating from different river systems for River Malaba and others. It is believed that water reserves exist in the fissure and aquifers of the rocks as evidenced by the boreholes that have been drilled into them.

Water resources in Mbale district comprise of surface water (river and streams), ground water (shallow and deep wells, springs). Catchment for surface water is dominantly occurring on Mt. Elgon forest reserve and peaks, so that is continuous hydrological cycle. Grand water comes from springs and it moves slowly down hill. In some places the ground water is near the surface of the ground and water comes out as a spring. The existing 132 kV transmission line crosses River Manafwa.

Kumi district does not have adequate water resources; it has many small springs and streams plus Lake Kyoga in the extreme south. The current transmission line crosses river Lwere. At the border to Soroti district, the current transmission line crosses Awoja wetland which connects Lake Bisina and Lake Kyoga.

About 25 % of the total area of the Soroti district is covered by open water. Open waters are mainly Lake Kyoga, Bisina, Nyaguo, Amoite and Nyasala and River Amoja-aguo. The current transmission line crosses Awoja wetland at the boarder with Kumi.

Lira district has about 14 % of its total area under open water. Major water bodies are Lake Kyoga and Kwania in the southwest and River Moroto in the north. In addition, there are perennial streams namely River Okole which drains into Kwania and River Enget. Water is also obtained from permanent swamps (the lake Kwania wetland system), which cover about 4 % of the total district area.

Flora and Fauna: Deforestation is a big problem in the project area. It took place 30 years back due to population pressure. This was aimed at increasing cultivation land. The few large natural trees that persisted are recently often cut down for lime burning.
The different ecosystems in Tororo district have given rise to various types of vegetation. These range from medium altitude forests through swamps to savannah. The medium altitude forests found in Tororo district, is the moist semi deciduous type. The natural forest is located in Busitema Sub County. A section of the forest occupies part of the Malaba river valley and is surrounded by swamps. The southern part of Samia Bugwe and Bunyole County is covered by elephant grass with isolated forest and savannah trees. The rest of the district in various parts is covered by wooded savannah or swamps. Natural forests in Tororo have been cleared to create fields for crops and livestock production and currently only 3 hectares is covered by forest in the district. None of them are affected by the proposed line.

The vegetation in Mbale District includes bamboo forests and some giant Afro alpine groundsel and lobelias on mountain Elgon. The nature vegetation is mainly forest and savannah. Forest covers 25 hectares. Many of the forest have remained as patches due to population pressure resulting in increased agricultural activities and settlement. The current transmission line crosses Mbale Centeral Forest reserve. Forest reserves are protected under the Uganda Forestry Policy. The Mbale forest reserve is a Eucalyptus plantation and belongs to The National Forest Authority (NFA). Eucalyptus is not an indigenous tree species and is cultivated all over the world. The Mbale forest reserve does not represent a sensitive are in respect to fauna and flora. There are a few indigenous tree species such as “the Nandi flame”, Markaemia ssp, Maeszopsis eminii, Albizzia coriaria outside the protected area that are scattered and are threatened by the high demand for fuel wood-charcoal and timber for construction. Most of the woodlots are dominated by eucalyptus species. The flora for which the community express fear of extinction are Markaenia lutea, Mangifera india, Pronos africana (shirumatitti), Fagare sp, and Albizia sp. Some of the fauna in the district include Blue Monkey, African elephant, Sitatunga, Mt. Elgon mole rat, leopard, bush pig and squirrels. Endangered fauna species in the district include: Colobus Monkey, Bush pig and Buffalos.

The vegetation of Kumi district is mainly savanna species, thicket, some forest plantations and riparian vegetation. Forest covers 8 hectares of the district. The vegetation includes Butyosperinun savanna associated with Hyparrhena spp; mixed savanna associated with hyporrhthenia; dry acacia associated with themeda; and grass savanna associated with Hyparrhena. Kumi district has a total of 350 hectares of forest reserves. The forest resources in the district have been overexploited. The district has some endangered and threatened species like Shoebill, Papyrus Gonolek and the Fox weaver (the only endemic bird for Uganda) in Awoja wetland. The Awoja wetland is crossed by the existing transmission line and represents one of the most sensitive parts of the corridor.

The vegetation in Soroti district mainly comprises wooded savanna, grass savanna, forest and riparian vegetation. There are no natural forests in Soroti. Most of Soroti district is covered by wooded savanna (Acacia, Teminalia, Combretum spp) and savanna grasslands. During the dry season between November and March when there is rampant bushing burning a sizeable number of animals migrate from the neighbouring districts of Karamoja. Soroti therefore offers dry season grazing grounds for animals such as buffaloes, waterbucks, oribi, hartebeest and bushbuck. There is no protected wildlife area in the district. There are varieties of birds in the district. Birds and Wildlife species include the Papyrus yellow Warber which is vulnerable and found in swamps. Shoebill is common in swamps but highly persecuted by the local people for food and for sale, Papyrus Gonolek and the Fox weaver. Other wildlife include Crocodiles (Crocodylus niloticus) in the swamp, but people harass them and hence are rarely seen. However, they are reported to be in all parts of the swamp, Hippos (Hippopotamus amphibious) and Sitatunga are also present. The wetlands crossed by the TL are the most sensitive areas affected by the transmission line corridor.

Lira district is mainly covered by woodland, wooded savanna, thicket and riparian vegetation. Woodlands are mainly found in the southeast of Lake Kwania and dominated by the Albizia combretum continuum. Thicket is found in the south of the district. Riparian vegetation is found along the lakeshores and is made up of aquatic grassland and herb swamp. Gazetted forest reserves cover an area of 9.8 ha of which 5.6 ha is savanna woodland, 0.6 ha fuel wood plantation and 3.5 ha industrial softwood plantation. The forest reserves are degraded consist mainly of bush vegetation and shrubs. There are no areas of specific ecological value crossed by the line.
Wetlands in project area: In Tororo and West Budama counties, most of the shallow wetlands have been converted to arable land. Major wetlands are still in existence in the counties of Bunyole and West Budama. However, the reclamation and rice cultivation continue to reduce the remaining wetlands. Most of the wetlands are located to the south west of Tororo District far away from the transmission line.

Soroti district has an area of 623 km² covered with wetlands with various activities such as grazing, hunting, fishing, and agriculture. Wetlands are reclamated for rice cultivation. Most of the wetlands crossed by the proposed transmission line are cultivated for rice production. Important wetlands crossed by the transmission line corridor are Ocula wetland Barobia wetland and Awoja wetland. Awoja wetland connects Lakes Kyoga and Bisina and is an important source for the water supply for Soroti town. The current transmission line crosses the wetland about 1.5 km to east the main road to Soroti. Ocula wetland lies north-west of Soroti close to Lake Kowidi. Barobia wetland lies south-east of Lira.

Forest reserve: There is one forest reserve within the project area in Mbale district. The Mbale Central Forest reserve is a eucalyptus plantation and belongs to The National Forest Authority (NFA). It lies adjacent to the existing transmission line.

Land-use socio-economic conditions: The main land use in the project area is crop farming and livestock rearing, fishing, and agro forestry. Others include quarrying activities with respect to sand, stones and phosphate/vermiculite, bee keeping, mushroom growing, physical settlements, woodlots and quarrying activities with respect to sand, stones and phosphate/vermiculite.

There are four types of land tenure, freehold, customary, and leasehold with customary ownership being predominant although freehold is on the increase in the rural areas while urban areas are basically leasehold.

HIV/AIDS is prevalent in the district especially among the sexually active groups. The high-risk population includes commercial sex workers, truck drivers, and youths, cross border traders, factory workers and barmaids.

Historical and cultural sites: There are no historical or cultural sites known along the corridor of the proposed transmission line.

5. Project Alternatives

The proposed routing of the new transmission line was subject of inspections by the ESIA team and environmental and resettlement hot spots were identified and prevention and mitigation measures discussed. Generally the environmental point of view goes in line with the technical design. In most cases the routing of the new transmission line along the existing line minimizes the impacts on the environment. The area is already affected by the existing transmission line, so in most cases, the impacts of the new line are expected to be low. Like mentioned above the construction of the new line will not be located on exactly the same alignment of the existing one. Using exact the same routing of the existing line would minimize the environmental impacts the most. But this alternative is according to the feasibility study economical and technical not feasible.

Line Route Selection: The field analysis has selected the Left Hand Side (LHS) of the existing line routing as the least cost option and environmentally better option. The LHS is the side to your left when you are standing at Tororo substation and facing Lira. The reasons for the selection of the LHS are:

- The current line route is more encumbered by institution buildings to the Right Hand Side (RHS) than to the LHS.
- There are more rocky outcrops on RHS which would compromise on clearance
• There more ecologically sensitive ecological sites like wetlands, forests to the RHS
• The RHS has more developed areas such as trading centres that the LHS and would increase the cost of compensation

6. Potential Impacts and Mitigation/Enhancement Measures

When an electrical overhead transmission line is erected, the main environmental impacts are on the landscape appearance, on land utilization and on bird habitats. As a consequence, alongside the technical parameters (like types of mast and insulators) and economic aspects (such as transmission line length), the consideration of environmental factors is of prime interest when planning a line route. Broadly, key impacts of the development during are likely to include:

**Land-use:** The area which will be permanently used for tower foundations is quite low. The cultivated land within the construction corridor that will be affected will have compensation paid for crop damages. The landscape is already burdened by the existing transmission line. The additional impact is low.

**Noise:** Due to the limited time of the construction period the annoyance of the population by generated noise during construction activities will be low. The noise and emissions caused by the corona effect are concerning time and emission within acceptable limits.

**Electric and Magnetic Fields:** Many studies have indicated that occupational exposure to Electro-Magnetic fields (EMF) have exhibited a number of inconsistencies and no clear, convincing evidence exists to show that residential exposures to electric and magnetic fields are a threat to human health. However, the EMF decrease very rapidly with distance from source and there should be no potential health risks for people living outside the 30 m wide way leave corridor.

**Air quality:** Due to the limited time of the construction period the impacts on ambient air quality will be low.

**Water Resources:** The groundwater pollution risk can be effectively reduced by a proper construction management. Negative impacts on surface water resources can be reduced by the proposed mitigation measures.

**Flora and Fauna:** The cutting of several hundred trees within the construction corridor can not be avoided by mitigation measures. The construction activities cause destruction and disturbance of wildlife habitats through cutting of trees and shrubs and surface sealing. The vegetation within the ROW and way leaves will be cleared on a regular basis. The existing line has already parcelled the bird habitats. The new line will not lead to further habitat fragmentation.

**Wetlands:** Most of the wetlands crossed by the proposed line are cultivated for rice production. Important wetlands crossed by the transmission line corridor are Oucia wetland Barobia wetland and Awoja wetland. Awoja wetland connects Lakes Kyoga and Bisina and is an important source for the water supply for Soroti town. The current transmission line crosses the wetland about 1.5 km to east the main road to Soroti. Oucia wetland lies north-west of Soroti close to Lake Kowidi. Barobia wetland lies south -east of Lira. It is a very small area of the wetlands that is affected by the line and thus is considered to be a minimal in terms of habitat loss. The fine-tuning of tower locations during construction includes avoidance of flow channels, which will minimise the hydrological impact of the project.

**Socio-economic aspects:** The rehabilitation of the line improves the reliability of the energy supply and supports the local economy. Negative impacts related to resettlement activities will be minimised by preparation of a Resettlement Action Plan outlining proper compensation measures. The exposure of residents living close to the transmission line to electric and magnetic fields is significantly be low international thresholds.
**HIV/AIDS:** The spread of HIV/AIDS was identified as a key potential public health issue in the project area and has been exacerbated by the 20-year war in the region. The already high prevalence of HIV in the region could be exacerbated through spread of the disease by construction workers and prostitutes attracted to worker camps.

The project sponsor will, as part of each worker’s initial orientation and ongoing education, provide public education information about HIV/AIDS transmission and preventative measures.

**Compensation and Mitigation**

The construction phase is the period where most disturbances to the social and the physical environment will occur. This will be in the form of land uptake, vegetation clearing, construction of access roads, base camps and construction sites. Local authorities and affected persons have been consulted. More information will be given well ahead of construction.

**7. Environmental Management Planning**

In order to implement the ESMP responsibilities have been assigned to various parties within the project framework. The recommended mitigation measures will be outlined in the detailed design drawings and detailed in the technical specifications. These mitigation measures will form part of the contract documentation for the transmission line construction.

The ESIA and ESMP are to be availed to prospective bidders in order to ensure that normal environmental mitigation costs are factored into construction costs. The Contractor is expected to prepare work plans for environmental management in line with the ESMP presented in the ESIA. The costs of incorporating the recommended mitigation measures, including compensation for property and crops and relocation activities, as well as costs for unforeseen/additional mitigation and environmental and social monitoring are presented below and subject to confirmation at appraisal. UETCL will be responsible to implement environmental management measures associated with operation of the interconnection system.

UETCL has identified all project affected persons and developed a Resettlement Action Plan (RAP) framework to address economic losses, physical resettlement and loss of land or land rights. The framework allows for land for land compensation, or cash, depending on the individual situation and preference of the project affected persons. The framework provides for additional assistance to vulnerable persons.

UETCL will be responsible for reviewing civil works contracts in accordance with the ESIA report; coordinating the implementation of the ESMP among the contractors, local environmental authorities (e.g., District Councils and Village Development Committees); monitoring the implementation of the ESMP and the civil works contracts in collaboration with NEMA; and, preparing annual environmental progress reports.

UETCL or Contractor will have a role in the consultation and disclosure process during construction, particularly with regard to disclosure of information in relation to construction scheduling, traffic management, public health and safety, and the results of environmental monitoring. Any changes to environmental management procedures arising from the consultation process will be incorporated into the Project Sponsor’s and/or the Contractor’s Action Plan, as appropriate.
The cost of standard construction mitigation measures will be integrated into the Project’s Bills of Quantities. The total project cost for environmental mitigation and monitoring, community development, health (including the HIV/AIDS) campaign and compensation and resettlement is currently estimated at US$ 3,200,000 and this is summarized as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Land acquisition and Resettlement</td>
<td>2,500,000 USD</td>
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<tr>
<td>Health Campaign (incl. HIV/AIDS)</td>
<td>150,000 USD</td>
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<tr>
<td>Community Development</td>
<td>200,000 USD</td>
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<tr>
<td>Biophysical Impacts mitigation</td>
<td>150,000 USD</td>
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<tr>
<td>ESMP Management and Monitoring</td>
<td>200,000 USD</td>
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<tr>
<td><strong>Provisional ESMP Mitigation Total</strong></td>
<td><strong>3,200,000 USD</strong></td>
</tr>
</tbody>
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8. Monitoring Programme

The overall objective of environmental and social monitoring is to ensure that mitigation measures are implemented and that they are effective. Environmental and social monitoring will also enable response to new and developing issues of concern. The activities and indicators that have been recommended for monitoring are presented in the ESMP.

Environmental monitoring will be carried out to ensure that all construction activities comply and adhere to environmental provisions and standard specifications, so that all mitigation measures are implemented. The contractor shall employ an officer responsible for implementation of social/environmental requirements. This person will maintain regular contact with the Owner’s own Principal Environmental Officer and the local District Environmental Officers. The contractor and UETCL have responsibility to ensure that the proposed mitigation measures are properly implemented during the construction phase.

The environmental monitoring program will operate through the preconstruction, construction, and operation phases. It will consist of a number of activities, each with a specific purpose with key indicators and criteria for significance assessment. The following three steps ensure the realisation of the mitigation measures and the environmental monitoring plan:

**Contractor agreement**: The compliance with the defined environmental mitigating measures through the contractor should be agreed in the construction contract. The construction contractor shall be responsible for implementing mitigation measures during construction phase.

**Environmental site supervision**: The compliance with the defined environmental mitigation measures through the construction contractor shall be monitored by environmental site supervision. The site supervision manager shall check at least twice a month the construction site and inform UETCL and the contractor about violations.

**Environmental Audit**: According to the Ugandan Environment Impact Assessment Regulations, Part VIII—“Post Assessment Environmental Audits” 12 to 36 months after completion of a project an Environmental Audit of the project is required. The environmental audit shall examine whether the proposed environmental mitigation measures as stipulated for design, construction and operation have been realized. The National (Environmental Audit) Regulations (2006) detail procedures for carrying out environmental audits in Uganda.

The responsibility for mitigation monitoring during the operation phase will lie with the Environmental Section in UETCL.
UETCL will provide NEMA with reports on environmental compliance during implementation as part of their annual progress reports and annual environmental auditing reports. Depending on the implementation status of environmentally sensitive project activities, NEMA will perform annual environmental reviews in which environmental concerns raised by the project will be reviewed alongside project implementation.


Community participation and consultation has been undertaken among people living along the proposed transmission line corridor and area of influence (AOI). A synopsis of the views of the project affected people as well as representatives of the Local Councils in the districts through which the project traverses; who have been interviewed during the ESIA has been presented. The specific offices consulted included NEMA, District Environmental Officers, Wetlands Inspection Division, Nature Uganda and local communities. Sector specific information elicited during these discussions has been included in the identification of impacts and potential mitigation measures. There will be more consultation and sensitization during revision of detailed Resettlement Action Plan (RAP). Potentially affected parties in local communities will therefore have further opportunity to be appraised of detailed implementation arrangements and therefore to understand their rights and report grievances. A comprehensive Grievance Mechanism will be part of the detailed RAP being developed.

10. Resettlement/Compensation (RAP)

Estimates for compensation are based on engineering and PAP surveys conducted by the Study Team. A total of some 368 structures are affected along the construction corridor. The compensation and implementation/monitoring cost for the RAP is estimated at US$ 2,500,000 (actual figure from RAP study is USD 2,514,981). UETCL is committed to implementing the RAP after approval of the compensation rates by the Chief Government Valuer (CGV).

11. Conclusion

It has been established that almost all potentially negative impacts of the proposed project can be minimised by implementing recommended mitigation measures. Generally, the proposed line will result in appreciable benefits to the people in the project area of influence and bring opportunities for development to eastern part of the country. The main social impact management issues revolve around relocation of people along the transmission line corridor and acquisition of the right of way and way leave of the transmission line.
References and Contacts

ACRES (2005): Feasibility Study for the Rehabilitation of Tororo-Opuyo-Lira 132 kV Transmission Line


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ESIA SUMMARY ANNEX

SUMMARY RESETTLEMENT ACTION PLAN (RAP)
FOR COMPENSATION AND RELOCATION

<table>
<thead>
<tr>
<th>Project Name:</th>
<th>Proposed Tororo-Opuyo-Lira 132 kV Transmission Line</th>
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<tr>
<td>Country:</td>
<td>Uganda</td>
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<td>Project Number:</td>
<td>P-UG-FAO-004</td>
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1. Description of Project and Project Area

1.1 The Uganda Electricity Transmission Company Limited (UETCL) proposes to rehabilitate the 132 kV transmission line from Tororo-Opuyo-Lira. The line is approximately 260 Km and was constructed in 1965 on wooden poles. At present UETCL is incurring high maintenance costs due to the frequent replacement of rotten and damaged structures such as poles and other infrastructure. The cause of the damages to the line is usually wild fires during the dry season. Therefore in order to improve the availability and reliability of electricity in the Eastern and Northern districts served by this line UETCL proposes to replace the existing line with a 132kV single circuit line on steel structures.

1.2 Along the route of the proposed line, a corridor will be encumbered to allow for the construction as well as for operation and maintenance (O&M) of the line. Land acquisition from land owners is therefore required for the purpose. As a result, present land owners and sharecroppers within the 40 m corridor will be affected. The Resettlement Action Plan (RAP) has therefore been developed to mitigate the impact associated with the proposed project, in accordance with Ugandan Law and African Development Bank safeguard policies. Any changes in the scale of the project works or implementing agency will undergo environmental and social impact assessments to still ensure compliance.

1.3 The status of the districts traversed by the line indicates that agriculture is the main economic activity. The stretch between Tororo and Lira is composed mainly of Savannah vegetation with a few sparsely scattered shrubs and short trees. There are four big wetlands through which the power corridor traverses. Agriculture and pastoralism are the most common socio-economic activities of this region with cotton, millet, cassava, potatoes, maize, rice, and sorghum as the main crops grown. Generally, the literacy levels, health and sanitation, water infrastructure, income levels, in these districts are lower than the Ugandan average. Hence poverty is rampant in these areas. The poverty was aggravated recently by the Northern War and Karamojong cattle rustling, into the districts of Kumi, Soroti, from the neighbouring Karamoja districts.

2. Resettlement Action Plan Objectives

2.1 The aim of the RAP was to assess the potential social impacts (positive and negative) of the proposed rehabilitation of the Tororo-Lira 132kV transmission line and the associated works such as the opening of access roads, the provision of storage facilities, and the labour camps. Resettlement Action Plan (RAP) deals with social issues related to land acquisition, such as loss of economic activities and livelihoods or resettlement due to project implementation.
2.2 The central focus of the resettlement action plan revolves around mitigation and participation. Mitigation is required to ensure that relevant issues arising from the project implementation are addressed. While participation is aimed at involving all stakeholders so that they can give their views and suggestions on the likely negative social impacts of the project, including suggestions towards solving the identified impacts amicably prior to the commencement of the works. The specific objectives were:

- To raise awareness of the affected communities in particular and the public in general within the project area regarding the project and its potential consequences;
- To identify people affected both directly and indirectly especially households;
- To estimate the costs for resettlement, compensation and land acquisition;
- To prepare a Resettlement Action Plan (RAP) setting out strategies and schedules to mitigate adverse impacts on the people. The RAP aimed at setting out parameters and establishing entitlements for those directly affected, the institutional framework mechanisms for consultation and grievance resolution, the time schedule and budget, as well as monitoring and evaluation system;
- To ensure that the agreed entitlements package includes both compensation and measures to restore the economic and social base for those likely to be affected;
- To ensure that the requirements of the Government of Uganda and those of International Financial Institutions (IFIs) for land acquisition and resettlement are fulfilled; and
- To develop capacity at the appropriate level to enable participation, resolve conflict, permit service delivery, and carry out mitigation measures as required.

2.3 Methodology and Approach: To conduct the socio-economic studies and resettlement action plan for the proposed rehabilitation of the Toro-Opuyo-Lira Transmission line, the study team used methodological triangulation; the integration of various methods. Such methods were:

- Desk studies/Literature that involved the review of published literature and administrative frameworks as well as policies of the Uganda Government and the World Bank on resettlement and compensation requirements and mechanisms.
- Before field study, the RAP team conducted site inspection using observation method. This was to define the likely coverage of those to be impacted by project activities.
- A Baseline survey involving the field study of the socio-economic profile of the communities in the wider project area in the districts of Tororo, Mbale, Kumi, Soroti, and Lira. The baseline study involved a complete census of all households in each of the affected local council divisions in each of the above districts. Using Rapid Rural Appraisals (PRAs) the community livelihoods were assessed based on observation and focused group interviews with the PAPs or with their leaders. The data collected was corroborated with district local authorities whose opinions were collected during interviews with the study team.
- Further Focussed Group Discussions were carried out with opinion leaders in the community in order to collect information on the community. A typical village meeting was attended by 35 Projected Affected Persons (PAPs) on average. In all the interviews records of persons met, Projected Affected Persons (PAPs) interviewed, and district officials consulted was documented including names, signature and designation. PAPs were defined as persons whose land was traversed by the existing 132kV transmission line. However, in some cases any interested persons in the village were allowed to attend the meeting and contribute in the proceedings. In all more than 10,000 PAPs were consulted throughout the proposed line routing corridor.
- The census data was analysed, interpreted which lead to the compilation of the report.
3. Potential Impacts

3.1 The negative impacts identified are:
- Permanent land take of 5 m within the 40 m corridor for the construction of the tower and an operation and maintenance track
- Temporary land take of 35 m for use during construction; the land however reverts to the owners after construction
- Loss of property including buildings, perennial crops, and cultural sites within the 40m corridor
- Land take for construction of access roads leading to the transmission line
- Minor noise, pollution, traffic accidents, and influx of infectious diseases from construction workers new in the community

3.2 Nevertheless, upgrading of the electricity transmission line will enhance the standard of life and socio-economic welfare within the zone of influence. It is anticipated that the upgrading of the line will lead to a more reliable supply of power to project area. This will have a positive impact on the economy in general as business will substantially increase in the area especially after the devastating war in the region during the past 20 years.

3.3 It is expected that during construction, many people will benefit from direct labour during the construction of the line and will be engaged in various economic activities such as catering and hospitality that will be demanded by construction workers.

4. Organizational Responsibility and Implementation of the RAP

4.1 In terms of compensation and resettlement, the overall responsibility, just like in the ESMP, lies with the project sponsor, UETCL. The Ministry of Lands, Housing and Urban Development, notably the Chief Government Valuer, is a key player whose responsibilities will be guiding the valuation and ascertaining the compensation rates. The Uganda Land Commission in collaboration with the District Land Boards, Land Tribunal and Local Councils will closely participate in the RAP process and ensure timely execution of the whole process.

4.2 Following determination and characteristics of all project affected persons (PAPs), the valuation of assets to be compensated and preparation of the complete list, the onus of executing the RAP falls on UETCL. UETCL has acquired enormous experience during the RAP implementation of the Bujagali Interconnection Project and this will be very useful during the RAP implementation of the Tororo-Opuyo-Lira transmission line project.

4.3 Compensation will be made to the land owners, at replacement cost for the 5m land that will be acquired permanently within the ROW corridor. Outside the 5m strip of land, the Project Affected Persons (PAPs) will be paid a disturbance allowance for the 17.5 m on either side of the 5 m strip. The disturbance allowance is to compensate for the time the owners will not use the land, approximately 1 year, during construction when the contractor will require a 40 m corridor. Whereas the 5m strip is acquired permanently, the 17.5 m on either side reverts to the community for cultivation of short annual crops but with restriction to exclude trees and houses. The PAPs will also be compensated for perennial crops and trees they have cultivated on the land using district rates of compensation.

5. Consultations with the Public and Local Authorities

5.1 A field census of the Project Affected Persons (PAPs) was implemented in order to determine the assets and value. The assets include land, structures, crops, cultural sites. The PAPs have been identified whatever the tenure regime under which they hold land. The majority of the land tenure
within the transmission line corridor is customary. Other tenure systems include leasehold around towns.

5.2 Among the PAPs, vulnerable groups such as widows/widowers, single mothers, disabled persons, orphans, were identified across the project area. The vulnerable groups will be handled with care during the compensation exercise in order to ensure that their livelihoods are not worsened further. It was also agreed that an independent compensation committee to spearhead the grievance and verification exercise for each village should be formed.

5.3 The general concern of delayed compensation and undervaluing of the structures, land and crops was aired by the PAPs. This can lead to a proposed grievance mechanism and possible compulsory acquisition of the land by the government.

6. Institutional and Legal Framework

6.1 The main pieces of legislation regarding compensation and resettlement issues, are the Constitution of Uganda (1995) and the Land Act, Cap. 227. Article 237(1) of the Constitution vests all land in Uganda in the citizens of Uganda, however, under Article 237(1)(a), the Government or Local Government may acquire land in the public interest. The Constitution prescribes various tenure regimes in accordance with which rights and interests over land may be held. It provides procedures to follow in acquiring land in the public interest and provides for the “prompt payment of fair and adequate compensation” prior to taking possession of land.

6.2 The Land Act is the principal legislation on land tenure in Uganda which emphasizes adequate, fair and prompt compensation by the developer of the occupier or owner of land. The Act creates a series of land administration institutions consisting of Uganda Land Commission (ULC), District Land Boards (DLB), Parish Land Committees (PLC) and Land Tribunals. Section 78 of the Act gives valuation principles for compensation i.e. compensation rates to be yearly approved by DLBs. There are four land tenure systems in Uganda namely: customary (bona fide occupant), freehold, public land and leasehold tenure. The entire stretch of the project corridor is composed of a combination of these four land tenure systems with the customary/bona fide occupant land being the most dominant tenure system. Acquisition for customary land is subject to the provisions of Article 26 of the Constitution, which gives every person in Uganda a right to own property.

6.3 The following legal instruments provide the legal framework for compensation and resettlement for electricity transmission line projects in Uganda:

- The Uganda Constitution (1995)
- The Land Act Cap. 227
- Valuation Act 1965
- The Local Governments’ Act 1997
- The Town and Country Planning Act Cap. 30
- The Electricity Act, 1999
- Local By laws

6.4 Preparation of the RAP has taken into consideration all the relevant laws and by-laws in Uganda and is consistent with safeguard policies if International Financial Institutions such as African Development Bank (AfDB) and the World Bank. These require that (i) involuntary resettlement should be avoided or minimized where feasible; (ii) if feasible, resettlement activities should be conceived and executed as sustainable development programs where the Project Affected Persons (PAPs) share in project benefits; (iii) displaced persons should be fully consulted and have opportunities to participate in planning and implementing resettlement programs; and (iv) displaced persons should be assisted in their efforts to improve their livelihoods and standards of living or at least to restore them, in real terms,
to pre-displacement levels or levels prevailing prior to beginning of project implementation whichever is higher.

6.5 During the preparation of the RAP, UETCL has adequately addressed the prevailing legislation and policy considerations in that compensation should be aimed at minimizing social disruption and assist those who have lost assets as a result of the transmission line project to maintain their livelihoods. In accordance with Ugandan laws and standards, a disturbance allowance is to be provided to assist the project affected individual or family to cover costs of moving and locating to a new holding.

7. Grievance Redress Mechanism

7.1 Since compensation is the main area of focus, there is need to set up an independent compensation committee to spearhead the grievance and verification exercise for each village. It was agreed the committee for each village will comprise of representatives of the project affected persons, Local Council officials of the village, and opinion leaders in the village. The third party committee will independently receive complaints and advise the developer on the best ways to resolve the compensation grievances. The third party is essential in conflict resolution because both sides of the conflict may not respect the decisions taken by the developer or grievances from the persons affected by the project. During consultation meetings the issue of a third party involvement in the matters of disagreement was raised and discussed.

7.2 In case of disagreement over value the of property like land is unsatisfactory to the land owner, the issue will be raised to the developer by the owner of the land. The developer will review the complaint and revise the value accordingly. This is the first stage of a dispute resolution. If the developer thinks the value is adequate the owner is notified accordingly. The matter is then forwarded to the third party for review. This is the second stage of resolution of the disagreement. The third party reviews the issue and if in agreement with the developer the matter is dismissed and the issue closed. If the third party thinks there is under valuation he revises the value upwards and both the developer and owner are notified accordingly. If one of the parties is still in disagreement, the matter is forwarded to the Land Tribunal, the Land Court established according to the Land Act Cap. 227. This is third stage of resolution of the dispute.

8. Valuation of Assets and Losses

8.1 Section 78 of the Land Act (1988) stipulates valuation principles for compensation including compensation rates which are approved by District Land Boards and are updated on yearly basis. Other requirements for assessment of compensation of assets are provided under the Valuation Act 1965. A Survey of affected persons and potential loss to assets was conducted in 2006 by Valuation Teams who collaborated with Local Councils, especially those at LC1 of the affected villages. The Teams verified the register of affected persons, ownership of properties, enumeration of physical assets including land sizes, crops, trees, buildings and any other assets requiring compensation. Property owners were issued with return forms, which they were required to fill, sign and return to the Valuers, for recording.

8.2 In this valuation the following has been adopted as the methodology to be applied:

- Values were established on improvements of permanent assets such as buildings and structural works, fences-including chain link fences (with or without Cypress hedges), block walls, gates, etc. estimated on the basis of current depreciated replacement costs of comparable structures.
- Buildings and other improvements of a non permanent nature including huts, drinking sheds, drying racks, graves as approved or indicated in the District Land Board compensation rates to be subjected to the relevant legal compensation rates there-in.
- Perennial Crops and trees were enumerated, categorized and valued in accordance with compensation rates provided by relevant District Land Boards.
While efforts will be made to allow farmers to harvest seasonal crops, compensation will be paid in unavoidable circumstances (where such crops will be damaged) in accordance with compensation rates provided by relevant District Land Boards.

Where land within the Right of Way and the way leave is held on a registered title, UETCL will apply for easements.

Disturbance allowance is set at 15% since notice of up to six months will have to be given or 30% if the PAPs are to vacate within 6 months.

9. Compensation Characteristics

9.1 During compensation, the two main options for land compensation are either to provide alternative land or to pay cash for land takes. The World Bank guidelines emphasise land for land compensation rather than cash for land in order not to worsen the affected person’s livelihoods. The option is however associated with delays and extra costs like looking for land, negotiating for it, and purchasing from willing sellers. In order to avoid the delays associated with this procedure, the issue was discussed thoroughly with the affected persons and it was agreed that cash payments would be made for land at replacement cost (market rates). Market rates however imply that negotiations are carried out between the owners of land until an agreed price is reached. This was also found to be associated with delays and further discussions were made with the affected persons in the consultation meetings. Negotiations would involve meeting and agreeing on prices with more than 2000 persons who own land along the transmission line corridor. It was therefore agreed that the developer uses a professional valuer to value the land at market rates using the established district rates in accordance with the Land Act Cap. 227. The project affected persons will however the option to appeal in case the price attached the land is low. The land owners have a second option to appeal to an independent land tribunal at the parish as well as a neutral third party as described in section….

9.2 In order to implement an efficient payment system the affected persons will be required to open bank accounts to enable the cheque deposits to be made into these accounts. The payment by cheque in the bank will be preceded by forms, representing sale contracts, between the seller and the developer. The forms will be signed by a local council or tribunal member as a witness to the transfer of land and other property therein from the seller to the developer. Opening bank accounts are associated with cash a requirement which is an additional cost to the seller and the developer. The issue was raised at the consultation meetings and it was agreed that the cost should be absorbed by a third party, micro finance institutions operating in the areas. The micro finance institutions are involved in micro lending in the community and they agreed to accept deposits and open accounts without the requirement for the initial deposit. The issue was discussed and agreed with all the three parties involved in the disbursement of funds for compensation.

9.3 In addition, it is proposed that compensation will be made for all land acquired whether temporarily or permanently and that all current rights on this land are thus extinguished after the payment. Where plots are bisected by the land acquisition boundary, it is the view of the majority of owners that they prefer to retain the unaffected portion of the plot.

9.4 Institutional and technical arrangements for identifying and preparing relocation sites have been established. UETCL (through the Project Implementation Unit) in collaboration with Local Councils and village leaders will be responsible for ensuring that vulnerable households have received adequate compensation during the process. Packages for compensation for the affected persons will be developed and an implementation schedule for compensation and relocation drawn up.
10. Costs and Budget

10.1 All compensation activities and those related to other forms of assistance including disturbance allowance, and any other associated activities that may be necessary have been costed. The compensation and implementation/monitoring cost for the RAP (September 2006) are summarised in the table below.

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>UG.SHS</th>
<th>USD</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ROW (5 m)</td>
<td>464,825,600</td>
<td>251,257</td>
<td>10%</td>
</tr>
<tr>
<td>2</td>
<td>Disturbance Allowance for ROW (17.5 M)</td>
<td>294,066,900</td>
<td>158,955</td>
<td>6%</td>
</tr>
<tr>
<td>3</td>
<td>Crops Compensation</td>
<td>37,195,000</td>
<td>20,105</td>
<td>1%</td>
</tr>
<tr>
<td>4</td>
<td>Buildings/Structures</td>
<td>2,575,445,000</td>
<td>1,392,132</td>
<td>55%</td>
</tr>
<tr>
<td>5</td>
<td>Contingency allowance of 20% to cater for the effect of probable increases in property values</td>
<td>674,306,500</td>
<td>364,490</td>
<td>14%</td>
</tr>
<tr>
<td>6</td>
<td>Statutory Disturbance Allowance 15% (on notice)</td>
<td>606,875,850</td>
<td>328,041</td>
<td>13%</td>
</tr>
</tbody>
</table>

ESTIMATED TOTAL 4,652,714,850 2,514,981 100%

During the compensation process, PAPS are given different alternatives as compensation packages. The alternatives include in-kind land and resettlement house or building materials for physically displaced persons (PDPs), land only or cash. This options are clearly explained to the PAPs during a detailed disclosure process.

11. Monitoring and Evaluation

11.1 The purpose of monitoring and evaluation is to report on the effectiveness of the implementation of the RAP, covering physical resettlement, disbursement of compensation and effectiveness of public consultation, amongst others. The Ministry of Energy and Mineral Development will ensure that all aspects of RAP have been adequately and expeditiously executed according to the implementation plan. The monitoring will cover the review of survey results, formation of relevant committees (including the Grievance Committee), the identification of alternative land for resettlement and farming, adherence to compensation payment schedule, movement and support of project affected persons including the vulnerable households.

11.2 A plan for monitoring and evaluation of the compensation package has been drawn up with indicators for measuring implementation performance, impacts and outcomes. A review of regular progress reports produced by UETCL will be carried out by all stakeholders both at national and local levels including the AfDB. In addition to the Ministry of Energy and Mineral Development will be the Ministry of Lands, Housing and Urban Development, the Uganda Land Commission, the District Land Boards, Parish Committees, and representatives of local government and local leaders in the localities of the PAP will also monitor and evaluate the RAP implementation. The Witness NGO will play a crucial in implementing the RAP.