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ESIA – Environmental and Social Impact Assessment for the Implementation of the Missing Links on the National Data Transmission Backbone Infrastructure [NBI] UNDER THE REGIONAL COMMUNICATIONS INFRASTRUCTURE PROJECT (RCIP)

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

FOR THE PROPOSED IMPLEMENTATION OF THE MISSING LINKS ON THE NATIONAL DATA TRANSMISSION BACKBONE INFRASTRUCTURE (NBI) UNDER THE REGIONAL COMMUNICATIONS INFRASTRUCTURE PROJECT (RCIP)

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October 2016

Acknowledgement

As a team, we wish to extend our sincere thanks to NITA-U management for the facilitation that enabled us to execute this noble exercise in all the project areas in the shortest time possible.

We conducted several consultative meetings with different stakeholders as a preparatory measure before embarking on the field excursion. The team therefore hereby acknowledges support from such stakeholders including:- The World Bank Group for the Environmental Clinic, KCCA technical team for sharing with us their experiences on KDAP, NEMA for the continued guidance especially on the law and regulatory requirements and NITA-U leadership for the timely preparatory meetings that paved way for guided consultations for this team.

The team is also thankful to the following Local Governments and partners who relentlessly attend to us; Moroto DLG and Post office, Gulu DLG, Adjumani DLG, Moyo UNRA station, Oraba and Avura Customs posts, Arua and Nebbi DLGs.

Special thanks go to our driver Mr. Ayebare who exhibited professional driving skills during this filed excursion especially in terms of safety, respect, diplomacy, time keeping and support to the team.

1. Table of Contents

List of Figures and Tables

List Of Acronyms And Abbreviations

EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMMP	Environmental Management and Monitoring Plan
LC	Local Council
OHS	Occupational Health and Safety
PPE	Personal Protective Equipment
UBOS	Uganda Bureau of Statistics
ESIA	Environment and Social Impact Assessment
ESMP	Environmental and Social Monitoring Plan
NBI	National Data Transmission Backbone Infrastructure
ICT	Information and Communications Technology
NEMP	National Environmental Management Policy
UCC	Uganda Communications Commission
NEMA	National Environment Management Authority
RCIP	Regional Communications Infrastructure Project
MoICT	Ministry of Information and Communication Technology and National Guidance
MoES	Ministry of Education and Sports, Science and Technology
EMP	Environmental Monitoring Plan
NITA-U	National Information Technology Authority-Uganda

Executive Summary

Under the Regional Communications Infrastructure Project (RCIP 5), Government of Uganda borrowed USD 75 million from International Development Association (IDA) and spend it over a five year period to: (i) improve coverage for IT infrastructure in the country; (ii) improve the delivery of public services by improving efficiency through government cloud infrastructure; (iii) building capacity in management of IT programs and projects; and (iv) improve policy and regulatory environment for ICT in country. The project will also entail a technical assistance component to finance advisory, technical and project management support in order to achieve project objectives.

According to the proposed project components, implementation of some sub-projects activities especially the laying of optical cable infrastructure may pose some environmental and social impacts and thus trigger some of World Bank's safeguards policies and country requirements for environmental assessment. Hence, implementation of such project activities calls for development of this Environmental and Social Impact Assessment Report [ESIA] to address specific environmental and social impacts. An ESIA report is an analytical process that systematically examines the possible environmental and social consequences of the implementation of projects, programmes and policies.

The proposed project is expected to cover a total road distance of 842km covering twelve (12) towns of Soroti, Kasese, Moroto, Katakwi, Karuma, Pakwach, Nebbi, Arua, Koboko, Yumbe, Moyo and Adjumani including three (3) border points of Mpondwe, Vurra and Oraba. However it is important to note that Soroti and Kasese towns are starting points for the fibre links."

The Project is estimated to cost USD 18 million. This ESIA has thus been prepared to guide the developer to proceed with project activities without causing significant harm to the environment and community social livelihood.

During installation aerial pole erection will be the mode of implementation within the game reserves and national parks according to the approved designs and trenching in urban areas. Bird flight path impact is being mitigated by project design default which involves use of bird reflectors. There will not be any impact on the poles by elephants as no known elephant corridor was as identified during the screening process and consultations with district environmental officers within the project route.

A total of 7 (seven) transmission station will be erected in Mpondwe at the URA office, Moroto Post Office, Moyo at UWA offices, Koboko District Local Government Offices, Arua Post Bank, Nebbi Municipal Headquarters, Karuma at UWA. These are Government owned properties and thus are not occupied or used as a source of livelihood. Therefore OP.4.12 will not be triggered. In the event land acquisition emerges during continuous assessment [though unlikely], RPF will be applied to guide development of an action plan

Just like any other development projects, laying of optical fiber cables are normally associated with negative environmental and social impacts especially during the construction and operation phases as well as positive impacts on the socio-economic environment.

In this ESIA, a number of environmental impacts associated with the construction process, both positive and negative have been highlighted. Mitigation measures to minimize the negative impacts have been identified and recommendations made for their implementation by NITA-U.

There are anticipated positive impacts associated with the proposed project especially during the construction and operation phases. They include the following; Provision of employment opportunities, Provision of market for construction materials during the construction phase, Improved delivery of public services by improving efficiency through government cloud infrastructure, Building capacity in management of IT programs and projects and the project will fast track and back stop the post conflict recovery programs by providing affordable connectivity to the region along with the benefits of the project.

The major predicted negative impacts include the following: Increase in susceptibility to soil erosion during rainy days as construction activities will be undertaken, Dust pollution in case of project implementation during dry season, Temporal business disruptions due to trenches in urban centers, Construction noise and vibrations, Water pollution, Improper construction waste management, Potential Child Abuse, Promiscuity leading to spread of diseases, Non – Compliance on Labour laws, Impact on cultural heritage /archeological interest, Occupational health and safety risks and Construction traffic related accidents and traffic interference.

The proposed mitigation measures include the following; Restrict vegetation loss is minimal because of on-spot pole location and clearance as per mode of implementation thus minimal project footprint and soil erosion, Use water sprinkler where dust levels are likely to cause community discomfort, Works should be planned to ensure trenches are covered within a day, Provision of personal protective equipment to the workers, Training of workers and community members on safety precautions, incorporation of clauses in procurement process, community Awareness for both the workers and the community on the dangers of promiscuity and child abuse, installing signposts on zero tolerance of child abuse/GBV and promotion of child protection, enforce labor laws and incorporate compliance in the contracts, Proper waste management and good housekeeping, No garbage/refuse, oily wastes, fuels/waste oils should be discharged into drains or onto site grounds, Maintenance and cleaning of vehicles, trucks and equipment should take place offsite, Where road use is restricted signage and alternatives should be provided to the public and Install equipment of high quality and proper standard as guided by Uganda National Brea of Standards (UNBS).

Conclusion

The study carried out has established that the negative impacts associated with the proposed project are largely temporary and can be mitigated to a reasonable degree, yet the project will have appreciable benefits to the people in its area of influence.

In regard to the mitigation measures suggested in this ESIA, the consultancy team recommends that the project be approved for implementation on condition that the developer implements the suggested mitigation measures and puts in place a procedure and mechanism to implement and monitor all the key areas outlined in this ESIA during project implementation and operation.

A Summary of Impacts associated with the proposed establishment of the Environmental and Social Safe Guards for missing links for RCIP

Note: Positive Impacts in the table have not been color coded

Project Phase	Impact No.	Impact	Significance	
			Without Mitigation	With Mitigation
Construction Phase		*Direct Impacts*		
	1.	Increase susceptibility to soil erosion and land slides	MEDIUM-	LOW-
	2.	Impacts on protected/ sensitive areas	MEDIUM-	LOW-
	3.	Employment opportunities	LOW+	MEDIUM +
	4.	Construction noise and vibration	MEDIUM-	LOW-
	5.	Water pollution	MEDIUM-	LOW-
	6.	Improper construction waste management	MEDIUM-	LOW-
	7.	Impact on cultural heritage/ archeological interest	LOW+	MEDIUM +
	8.	Occupational health and safety risks	HIGH -	LOW -
	9.	Construction traffic related accidents and traffic interference	HIGH -	LOW -
	10.	Impact on forests and wildlife	LOW+	LOW +
		Indirect Impacts		
	1.	Air Emissions	MEDIUM -	LOW -
	2.	Theft of construction materials	MEDIUM -	LOW -
	3.	Social order disruption	MEDIUM -	LOW -
	4.	Market for construction materials	LOW+	MEDIUM +
	5.	Impact on vulnerable groups	MEDIUM -	LOW -
	6.	Change in land use	MEDIUM -	LOW -
		Cumulative Impacts		
		NONE OF SIGNIFICANCE		
Operation Phase		Direct Impacts		
	1.	Improper E-waste management	HIGH -	LOW-

1. Introduction

1.1 Background to the Study

1.1.2 The proposed RCIP 5 Project

Under the Regional Communications Infrastructure Project (RCIP 5), Government of Uganda borrowed USD 75 million from International Development Association (IDA) and is to spend it over a five year period to: (i) improve coverage for IT infrastructure in the country; (ii) improve the delivery of public services by improving efficiency through government cloud infrastructure; (iii) building capacity in management of IT programs and projects; and (iv) improve policy and regulatory environment for ICT in the country. The project will also entail a technical assistance component to finance advisory, technical and project management support in order to achieve project objectives.

As part of the preparation for implementation of the RCIP-UG, National Information Technology Authority-Uganda (NITA-U) has commissioned an Environmental and Social Management Framework (ESMF) and Resettlement Policy Framework (RPF) to guide identification, assessment, mitigation, implementation, monitoring and reporting environmental and social aspects of the project.

The proposed project is expected to cover a total road distance of 842km covering twelve (12) towns of Soroti, Kasese, Moroto, Katakwi, Karuma, Pakwach, Nebbi, Arua, Koboko, Yumbe, Moyo and Adjumani including three (3) border points of Mpondwe, Vurra and Oraba. Soroti and Kasese towns are starting points for the links.

According to the proposed project components, implementation of some sub-projects activities especially the laying of optical cable infrastructure may pose some environmental and social impacts and thus trigger some of World Bank's safeguards policies and country requirements for environmental assessment. Hence, implementation of some sub-project components may require ESIAs and Environmental and Social Impact Assessments [ESIAs] to be developed to address specific environmental and social impacts.

The EIA regulations of 1998 hold for all projects/activities listed under the third schedule of the National Environment Act of 1995. The regulations state in part III, section 10 that environmental impact studies shall be conducted in accordance with terms of reference developed by the developer in consultation with the Authority and the lead agency and that the study shall be conducted in accordance with the guidelines adopted by the Authority in consultation with the lead agency under subsection (8) of section 19 of the National Environment Act. Section 12 of these regulations also requires that the public participate in the Environmental Impact Assessment process.

Due to the nature of the development it requires the developer to undertake an EIA. This Environmental Impact Assessment (EIA) process will confirm if there are any fundamental issues to preclude the proposed development from proceeding along the broad, conceptual basis as outlined in the framework and will also deal with the assessment of the detailed, specific issues and impacts on a micro level.

1.2 Purpose of this ESIA

Section 19 (3) National Environment Act CAP 153 made an Environmental Impact Statement mandatory for all projects or policies that may, are likely to or will have significant impacts on the environment so that adverse impacts can be identified, eliminated or mitigated. This project falls under three sections in the Third schedule

of the National Environment Act. It involves *major changes in land use* as stated in Category 1 subsection (c) of the National Environment Act.

This ESIA has been prepared in compliance with environmental legal and regulatory statutory requirements, and will provide NITA-U with practical advice on the mitigation of any potentially adverse environmental impacts of the project. This Assessment covered the Physical, Biological and Socio-cultural environment within the project area.

1.3 Objectives of the ESIA Study

The main objective of the assignment was to ascertain the level of environmental and social analysis required for the missing links project under RCIP.

The specific objective of this assignment was to conduct the following;

- ✓ Identify and exploit environmental and social opportunities and benefits of the missing link project under RCIP
- ✓ Identify and incorporate the Environment and Social risks associated with the missing link project under RCIP
- ✓ Meet the legal and regulatory requirements for NITA-U as the project owner

1.4 Methodology

The study was conducted in accordance with the National Environment (Impact Assessment) Regulations of 1998, the NEMA Guidelines for Environment Impact Assessment in Uganda of 1997. In order to undertake the study effectively and prepare the subsequent reports, a number of methods were used. They included but were not limited to:

- ✓ Scoping: Scoping is the initial step in the Environment Impact Study and it is undertaken when according to the relevant guidelines, the project falls under those for which EIA is mandatory. The purpose of scoping was to determine the scope of work to be undertaken in assessing the environmental impacts of the proposed project and define the key issues and critical environmental impacts to be covered by the EIA.
- ✓ Stakeholder consultation: Consultative one on one interviews were held with various stakeholders and community members to ensure public participation in the Assessment process as recommended by the National Environment Act, Cap 153, EIA Regulations (1998), and Guidelines for EIA in Uganda. The aim of these meetings was to identify and take note of environmental concerns and views of all the stakeholders at an early stage so that their proposed mitigation measures are incorporated in the final implementation plan of the project.
- ✓ Desk research/ review of related literature: Literature was reviewed to obtain background and baseline information on the proposed project and the site, the regulatory and institutional background relevant to the project, the environmental legal requirements and investment policy in Uganda. This also included an intensive review of environmental policies, regulations and standards related to the proposed development as well as review of documents submitted by the developer like the architectural drawings.

- ✓ Site visit: A site study exercise was undertaken to establish the current environmental baseline conditions of the proposed construction site including the biophysical, socio-economic and cultural attributes. Site reconnaissance and inventories assisted in establishing benchmarks that will be used in monitoring compliance to mitigation measures.

1.5 Developer's contact

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1.6 Project Cost

The total project cost calculated value is estimated to USD $ 18 Million

1.7 Structure of the ESIA Report

This report is divided into the following principal sections that flow in a chronological order:

Section 1: Background information and introduction to the project, objectives, purpose and methodology for undertaking this EIA study

Section 2: A review of relevant environmental policies, laws, regulations and standards, and required compliance for the project.

Section 3: A general description of area baseline bio-physical and socio-economic information, area infrastructure and activities in relation to the project

Section 4: A detailed description of the proposed project characteristics and the main activities during the project phases.

Section 5: Public and Stakeholder consultations and disclosure, outlining stakeholder concerns.

Section 6: Presents analysis of project alternatives

Section 7: Evaluation of identified and predicted impacts on the environment and the proposed mitigation measures for all significant negative impacts.

Section 8: Environmental impacts and the proposed mitigation measures for all significant negative impacts.

Section 9: Presents an Environmental Management Plan and monitoring plan.

Section 10: Conclusion and recommendations.

2 Project Description

This chapter provides information on the physical location and the description of the proposed development as well as the associated infrastructure and services within the vicinity of the proposed development.

2.1 Location and Site Description of the proposed development

The proposed project is expected to cover a total road distance of 842km covering twelve (12) towns of Soroti, Kasese, Moroto, Katakwi, Karuma, Pakwach, Nebbi, Arua, Koboko, Yumbe, Moyo and Adjumani including three (3) border points of Mpondwe, Vurra and Oraba. However it is important to note that Soroti and Kasese towns are starting points for the fibre links as indicated on the map in figure 2.1

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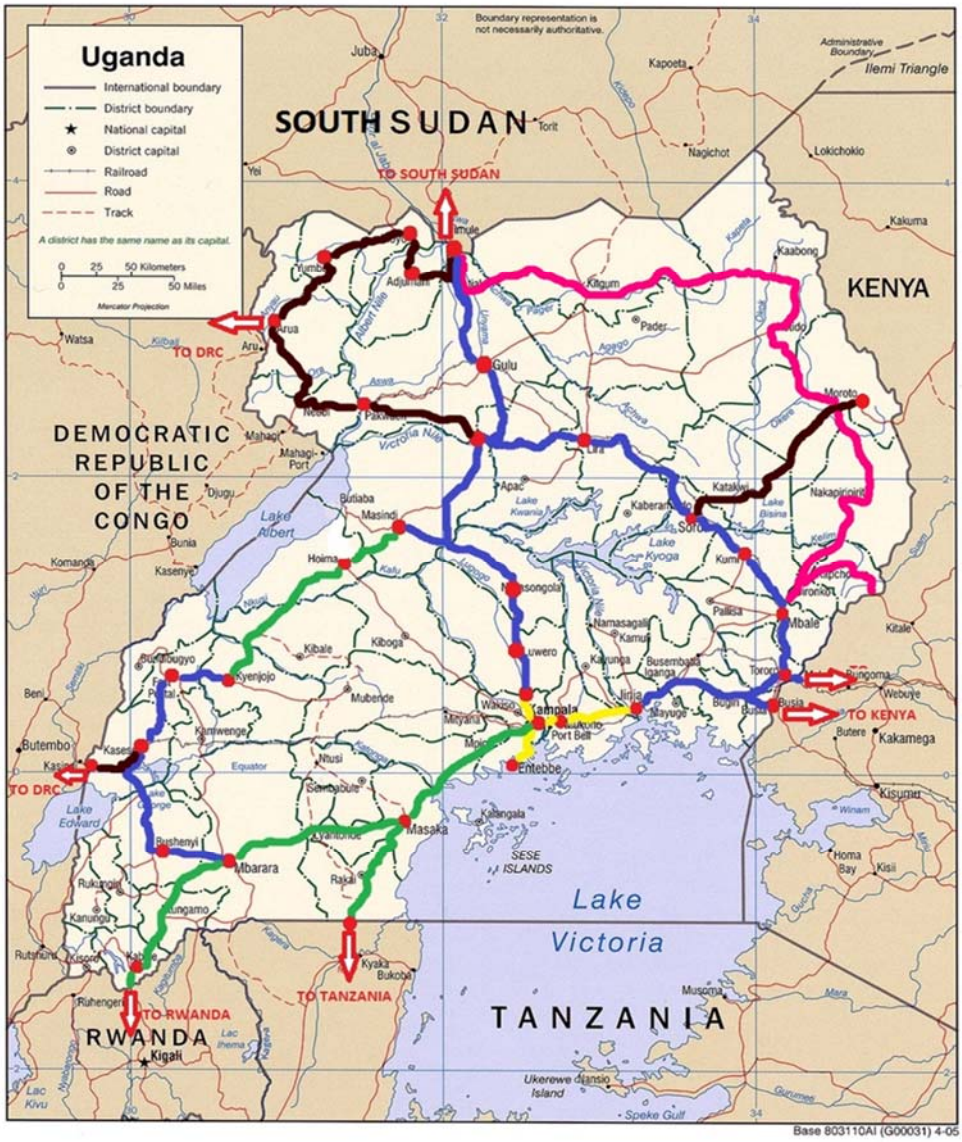
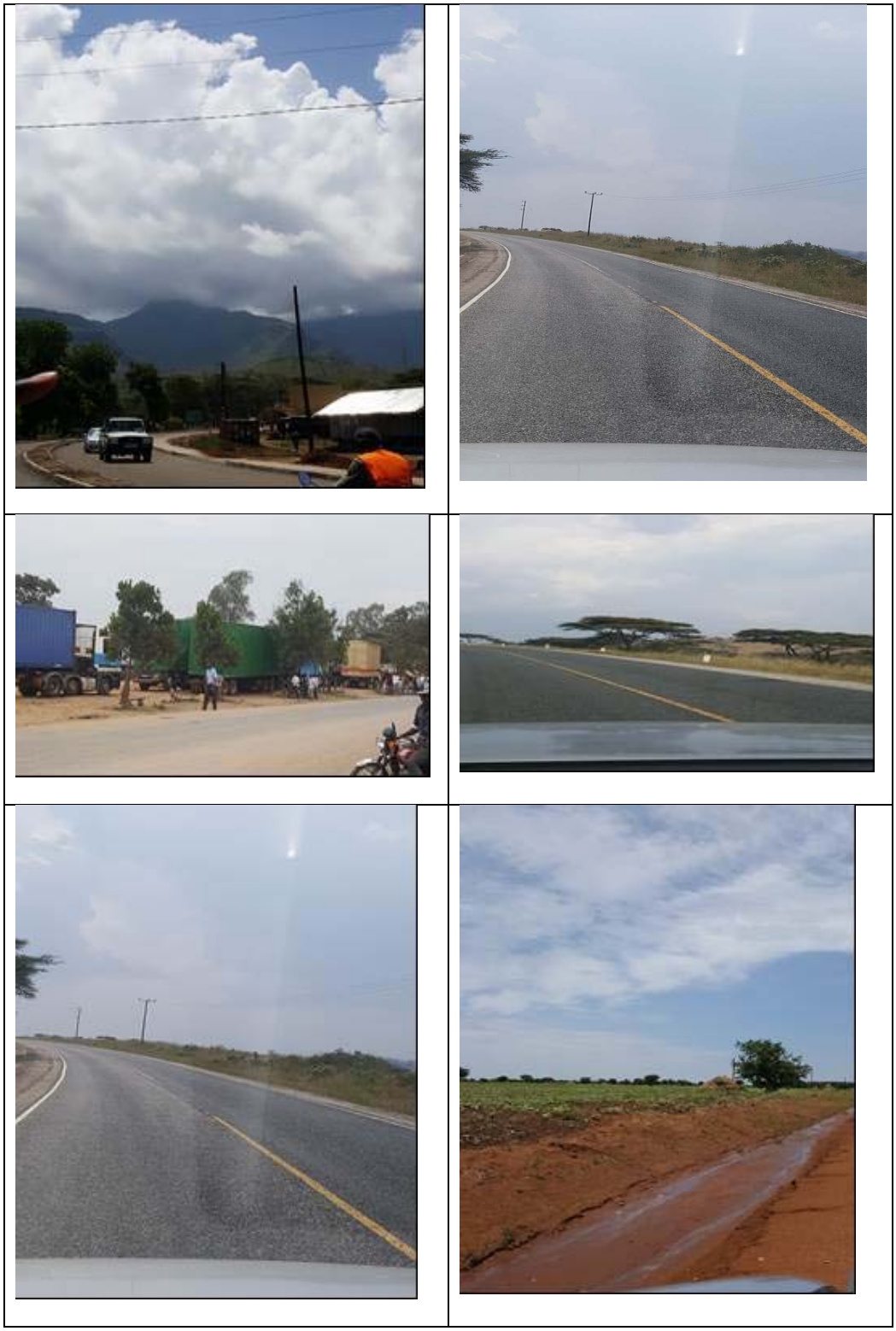


Implementation Roadmap: Phase1 (Yellow); Phase2 (Blue); Phase 3 (Green); RCIP UG - Missing Links (Brown); Phase 4 Planned (Pink)

Figure 2.1: Map showing the locations of the proposed project




KOBOKO DISTRICT LOCAL
GOVERNMENT OFFICES

Figure 2.2: Some of the areas where the proposed optical fiber cables will traverse

2.2 Implementation Schedule summary

A summary of the implementation schedule is presented as below to indicate the anticipated period in the different districts and sections of the Optical Fibre Cable Implementation routes:

		NUMBER OF DAYS		
NO	SECTION/ DISTRICT	DETAILED DESIGN	OFC IMPLEMENTATION	EQUIPMENT INSTALLATION
1.	Karuma - Pakwach	12	30	-
2.	Karuma Town	1	-	30
3.	Pakwach - Nebbi	12	30	-
4.	Nebbi Town	1	-	30
5.	Nebbi - Arua	12	30	-
6.	Arua Town	1	-	30
7.	Arua – Yumbe	12	30	-
8.	Arua - Vurra	3	-	15
9.	Koboko Town	1	-	30
10	Yumbe – Moyo	12	30	-
11	Moyo Town	1	-	30
12.	Moyo – Adjumani	12	30	-
13.	Adjumani – Elegu	12	30	-
14.	Soroti – Katakwi	12	30	-
15.	Katakwi – Moroto	12	30	-
16.	Moroto Town	1	-	30
17.	Kasese - Mpondwe	12	30	-
18.	Mpondwe Town	1	-	30

2.3 Project description

The Government of Uganda recognizes the importance of ICT for National development and transformation into an electronic economy and has put emphasis on transforming the delivery of Government services through the use of Information Technology. RCIP project aims to promote the use of technology as an enabler in achieving development goals as outlined in the government vision 2040. There is huge opportunity in the country today provided by the growing information age society and the demand for electronic services delivery that creates the need for government to improve its IT infrastructure, service delivery processes and capacity building in government using ICT as enabler.

The proposed RCIP-5 Uganda five-year World Bank financed project, will support the Government of Uganda in improving: (i) coverage for IT infrastructure in the country; (ii) the delivery of public services by improving efficiency through government cloud infrastructure (iii) building capacity in management of IT programs and projects; (iv) improve policy and regulatory environment for ICT in country.

The development objectives of the proposed RCIP Uganda Programme are to: (i) lower prices for international capacity and extend the geographic reach of broadband networks (the connectivity development objective); and (ii) improve the Government's efficiency and transparency in delivery of services to its citizens through e-Government applications (the transparency development objective).

Through RCIP, transformation of public service and governance is expected by using modern ICT platforms and enhancing connectivity. The impact will be realized through creating an environment for citizens and private sector to interact with government through use of ICT technologies for efficiency, providing the legal and regulatory framework and changing the mindsets of public servants and citizens through awareness activities and capacity building in government. The proposed RCIP-U project would consist of the following four components:

- Enabling Environment;
- Connectivity;
- E-Government Application; And
- Project Management Support.

2.4 Project components

2.4.2 Component 1: Enabling Environment

While the Government of Uganda has taken positive steps in recent years toward improving the enabling environment for the ICT sector, substantial work remains if the sector is to thrive. A conducive enabling environment would translate into increased sector investment and competitiveness, and improved access to and quality of ICT services for citizens, businesses, and government. This in turn would enable job creation and improved productivity and service delivery across all sectors, both public and private. The benefits of a conducive enabling environment will also spillover to neighboring countries which rely on Uganda for competitive, reliable and high quality international data transit.

This component aims to support the capacity of NITA-U (implementation agency), the Ministry of ICT and other stakeholders to review, develop and implement relevant ICT policies, strategies, laws and technical regulatory frameworks to support a modern and vibrant ICT sector. The objectives include maximizing the coverage, quality, affordability, and security of ICT infrastructure and enabling the delivery of e-Services by both Government and the private sector. It will also seek to promote alignment of Uganda with regional regulatory and policy harmonization efforts among the countries of the East African Community (EAC) and the findings and recommendations of the forthcoming EAC Digital Agenda Specifically, this component will finance the following activities: (i) gap analysis of the existing policy and regulatory framework; (ii) revision of outdated and development of missing ICT polices and sector strategies; and (iii) development and/or revision of ICT legislation, regulatory frameworks, and technical standards. This includes, but is not limited to, development of standards for ICT infrastructure, legislation and regulation to enable use of electronic services and applications, and establishing security requirements for integration and rationalization of all government IT systems. The component will also support change management and capacity building activities such as (i) conducting an ICT skills gap assessment for Government and development of a capacity building program to address deficiencies; and (ii) execution of the skills development program including training and certification for officials at all levels of the Government including critical IT staff. Finally, the component will support the development and execution of robust awareness and partnerships building programs and communication strategies.

2.4.3 Component 2 – Connectivity

In addition to improving the enabling environment, complimentary infrastructure investments are also needed to ensure greater access to affordable, high quality ICT services, both within Uganda and in neighboring countries. Recognizing this, the Government of Uganda has already developed the first two phases of a national fiber optic backbone network – the National Backbone Infrastructure (NBI). However, its capacity is currently underutilized due to a lack of links to neighboring countries other than Kenya and South Sudan (the latter with no complimentary fiber yet in place), limiting the diversity of routes for connection to undersea cables and curbing potential growth of regional traffic. In addition, there are significant challenges in terms of quality and reliability due to the fact that many of the branches of the network are not part of self-healing loops. Moreover, significant portions of the country, particularly in rural areas, currently have no access to fiber optic connectivity, either through NBI or the networks of the private operators.

To address these challenges, the Government of Uganda intends to connect major regions of the country to NBI and create additional links to neighboring countries, which is expected to improve the reliability and capacity utilization of NBI and ensure improved connectivity to neighboring countries and in a region as a whole. The extension of NBI will help to boost the use of ICTs, enable connectivity to Government offices and public institutions in the regions, and lower the cost of international bandwidth by ensuring a diversity of options for access to submarine cables. The cost of international bandwidth will be further lowered by pre-purchasing bandwidth in bulk for Government and priority target user groups to achieve greater economies of scale.

Specifically, this component will finance the following activities: (i) pre-purchase of international bandwidth for Government and priority target user groups; (ii) implementation of missing links to improve regional connectivity and the reach, availability and resiliency of NBI; and (iii) extension of the Government Network (GovNet), providing broadband connectivity to Ministries, Departments and Agencies (MDAs), schools, hospitals, universities, research institutions, and NGOs. This component will also finance technical assistance related to implementation of these sub-components, including looking into possible PPP options for GovNet, and implementation of recommendations stemming from the relevant safeguard studies. Where possible, existing infrastructure will be utilized and direct public financing will only be employed to the extent necessary to reach areas where private sector interest is not sufficient to provide connectivity without additional intervention or incentives.

2.4.4 Component 3: e-Government Applications

A key goal of this component is increased access to affordable, high quality connectivity and a conducive enabling environment offer the opportunity to transform public service delivery through use of ICTs to improve the lives of ordinary Ugandans. To achieve this goal, the Government intends to install a range of enabling e-Government foundations, i.e., shared infrastructure and services, in order to simplify implementation of sector specific e-Services by MDAs. The establishment of a *Shared Public Service Delivery Platform* can significantly reduce the cost and time taken by key sectors to develop and maintain new electronic services. For example, a Ministry wishing to offer a service electronically could significantly speed up the deployment and cut costs by leveraging the shared platform for data storage and hosting, security, data sharing with other MDAs, citizen authentication mechanisms, payment services, etc., and focus on sector specific aspects of the service and the specific citizen interface. This would be a relatively light and inexpensive undertaking in comparison to developing a stand-alone service and providing ongoing management and operations support. With the Shared Public Service Delivery Platform in place, all MDAs in Uganda would be well positioned to accelerate

the rollout of e-Services and to increase overall efficiency and transparency. While this component will primarily focus on the implementation of the Shared Public Service Delivery Platform, selected citizen centric e-Services from pre-identified priority sectors will be implemented to demonstrate the effectiveness of this approach and impact on service delivery to ordinary citizens.

Specifically, this component will finance the following activities: (i) development of ICT standards and frameworks; (ii) a cloud based national datacenter (Infrastructure as a Service); (iii) a shared platform to improve Government ability to deploy e-Services (Platform as a Service); (iv) Information Security as a Service; (v) a whole-of-Government data integration and sharing program; (vi) shared IT services to improve Government efficiency (Software as a Service); (vii) e-Procurement; and (viii) citizen centric e-Services. The project will finance the required hardware and software as well as technical assistance and consulting services related to the implementation of these sub-components.

It is also noted that the project will provide solar-battery system for reliable power supply at twenty sites to be on property of government institutions.

2.4.5 Component 4: Project Management

This component will finance project management related costs including project coordination, procurement, financial management, monitoring & evaluation, and environmental and social safeguards. This will include funding for consultancy support for the successful implementation of the project, logistics, consumables, office equipment, as well as incremental operating costs and audits. This component will also fund technical assistance (TA) to support monitoring and evaluation (M&E).

2.5 Project Areas

The project location is national-wide involving all;

- Districts of Uganda,
- Government Ministries, Departments and Agencies (MDAs),
- Targeted User Groups (hospitals, Schools, Universities and research Institutes)

2.6 Project Phase Activities

The project phase activities could be put into the following:

a) Construction Phase
   - Pre-installation activities
   - Installation activities

b) Operation Phase
   - Repair/recovery activities

c) Decommissioning Phase

2.6.2 Construction Phase

Pre-Installation Activities: Pre-installation activities will include a detailed cable route survey to investigate the safest possible route for optic fibre cables and prepare engineering designs.

Installation Activities: During installation, trench excavation within urban areas and aerial pole erection within National Parks will be done along the determined route. The cable will be buried to protect it against damage from vehicles, weather and human activities.

For transmission stations, a small land parcel measuring 20x20 meters will be fenced and a telecommunication mast erected. On site will also be installed an energy source to run the transmission station, most likely a diesel powered generator set.

2.6.3 Operation Phase

Once in place and connected, the cable system requires no intervention. Power is provided to the system through electrical connection in the cable. Cable repair and maintenance may be required as a result of damage, failure, age /redundancy. To carry out repairs, the damaged cable is exhumed and brought to the surface whereupon a new section is spliced in. The repaired cable is longer than the original, so the excess is deliberately laid in a 'U' shape in the trench.

2.6.4 Decommissioning Phase

When cables reach the end of their design life or become redundant due to technological advances, their removal or decommissioning may be considered. In the case of a buried cable, its removal may result in some disturbance or impact.

To ensure that due consideration is given to all the relevant issues it is recommended that a detailed evaluation of facility decommissioning options (options to include leaving the cable in-sit) is carried out. The evaluation should consider environmental issues in conjunction with technical, safety and cost implications to establish the best practicable environmental options (BPEO) for the decommissioning of the cable.

The World Bank's environmental and social safeguards policies require that the recipient country prepare an Environmental and Social Management Framework (ESMF) consistent with relevant laws of Uganda, such as the National Environment Act, institutional arrangements and the World Bank operational procedure, OP 4.01, on environmental Assessment) and a Resettlement Policy Framework (RPF) (consistent with national laws, World Bank Operational Procedures, OP on Involuntary Resettlement) for lateral cables and any associated equipment that will be laid from the junction with the main cable to provide guidance in the event that land needs to be acquired and people need to be resettled or compensated.

3 Institution, Policy and Legal Framework

3.1 Introduction

This section provides the policy, institution, and regulatory framework to which the proposed Regional Communication Infrastructure Program for Uganda (RCIP UG) and Telecommunication transmission should comply. National regulations are discussed along with World Bank Safeguards Policies, international conventions to which Uganda is a party. In Uganda key legislations governing the conduct of EIA are the National Environmental Act (Cap 153) and the Environmental Impact Assessment Regulations (1998). The National Environmental Act established National Environment Management Authority (NEMA), and entrusts it with responsibility to ensure compliance with the EIA process in planning and execution of infrastructural projects.

3.2 Policy Framework

3.2.1 The National Environment Management Policy, 1994

The overall goal of this policy is promotion of sustainable economic and social development mindful of the needs of future generations and EIA is one of the vital tools it considers necessary to ensure environmental quality and resource productivity on long-term basis. The policy calls for integration of environmental concerns into development policies, plans and projects at national, district and local levels. Hence, the policy requires that projects likely to have significant adverse ecological or social impacts undertake an EIA before their implementation. This is also reaffirmed in the National Environment Act (Cap 153) that makes EIA a legal requirement for "Third Schedule" projects; according to Uganda's National Environment Act Cap 153.

Interpretation: This policy is relevant to the Project as it requires that an EIA is conducted prior to project implementation.

3.2.2 Information Management Services Policy Draft V.8 2011

The overall goal of the policy is to guide effective use of Information Management Services (IMS) in all Ministries, Departments and Agencies. Its specific objectives include the need to develop an enabling legal framework for IMS to harness the value of information and knowledge held by Government; to build information management and knowledge-sharing culture with Government; to provide for use of common information management standards and secure access, storage and archival within Government; to develop a security framework for IMS; to put in place requisite infrastructure for IMS; to transform Uganda's public service to attain world-class standards in IMS; to provide leadership with modern IMS tools for improved and quicker decision making; to increase budgetary allocations to ICT Initiatives in all MDAs under which IMS will be catered for; to improve the country's global competitiveness; to attract Business Process Outsourcing (BPO) investment into the country; to engage leadership to manage transformation of attitudes and behavior of personnel; and to put in place an effective communication strategy among others.

Interpretation: This policy is relevant to the Project since it is in support of all its objectives.

3.2.3 Electronic Waste (E-Waste) Management Policy, 2012

The overall goal of the policy is to guide, promote and ensure the safe management of e-waste in Uganda and contribute to reduction of environmental degradation by mitigating pollution arising from use of electric and electronic equipment.

Interpretation: This policy is relevant to the Project in as far as its proposed ICT equipment will generate e-wastes at end of their useful life. In spite of this policy, it is noted that Uganda has little or no technical capability or facilities for management of e-waste.

Note also that NITA-U should be aware of need for environmental standards/guidelines and legislation for e-waste management. Support to develop these standards and regulations should be part of this project, and if not so planned, long-term arrangements for management of e-waste that the project may generate should be included in budget of this project.

3.2.4 National ICT Policy, 2012

The policy's broad goals are to build knowledge-based human capital; promote innovation in economic and social systems; expand ICT infrastructure and its integration throughout the country; deepen utilization of ICT services by government, private sector, not for profit organization and citizenry; enhance research and innovation in ICT products, applications and services; and improve ICT governance and environment in Uganda. The policy recognizes the need to minimal negative environmental and social impacts associated with construction, operation and disposal/de-commissioning activities of ICT infrastructure.

Interpretation: The Project fulfils the broad goals of the policy including expansion of ICT infrastructure throughout the country and increasing utilization of ICT services by government, private sector and citizenry.

3.2.5 Telecommunications Policy, 1996

Uganda's Telecommunications Policy was enacted in 1996 with main objective of increasing penetration of telecommunication services in the country through private sector investment rather than government intervention.

Interpretation: The project will spread opportunities throughout the country for private sector investment in ICT services.

3.2.6 The National Culture Policy, 2006

The National Culture Policy, 2006 complements, promotes and strengthens overall development goals of the country. Its specific objectives include the need to promote and strengthen Uganda's diverse cultural identities and to conserve, protect and promote Uganda's tangible and intangible cultural heritage.

Interpretation: Physical cultural resources may be encountered during project activities such as laying optical fiber cables. This ESIA has provided a Chance Finds Procedure (Annex 5) to ensure protection and conservation of physical cultural resources (PCRs) when encountered during project implementation.

3.2.7 The National Land Use Policy, 2007

The overall policy goal is to achieve sustainable and equitable socio-economic development through optimal land management and utilization in Uganda. The policy recognizes amongst others, the need for protection of minority groups and, ethnic groups on matters of land which are beneficiaries in the RCIP UG.

Interpretation: This policy is relevant to the Project since land use changes may occur in some areas.

3.2.8 Wetlands Policy, 1995

The national policy on conservation and management of wetlands aims at curtailing loss of these resources and ensuring that their benefits are equitably distributed to all people of Uganda. The wetlands policy requires:

- Sustainable use to ensure that benefits of wetlands are maintained for the foreseeable future;
- Environmentally sound management of wetlands to ensure that other aspects of the environment are not adversely affected;
- Equitable distribution of wetland benefits;
- Application of environmental impact assessment procedures on all activities to be carried out in a wetland to ensure that wetland development is well planned and managed.

In order to operationalize the policy and to provide a legal framework for its implementation, wetland related issues have been adequately incorporated into the National Environmental Act, Cap 153.

Interpretation: This policy is relevant to the Project since in several places along major highways, optical fiber cables will be laid in road reserves adjoining wetlands of international ecological importance.

3.2.9 National Water Policy, 1999

The goal of this policy is to provide guidance on development and management of the water resources of Uganda in an integrated and sustainable manner, so as to secure and provide water of adequate quantity and quality for all social and economic needs, with full participation of all stakeholders and mindful of the needs of future generations. The policy aims to:

- Promote rational use of water.
- Control pollution and promote safe storage, treatment and disposal of waste, which could pollute water and impact public health.

Interpretation: This policy will be relevant to the Project for cases where ICT infrastructure will cross watercourses (swamps and rivers) or be constructed in road reserves adjacent to wetlands and due care required to avoid contamination.

3.2.10 Wildlife Policy, 1999

This policy aims to conserve in perpetuity the rich biological diversity and natural habitats of Uganda in a manner that accommodates national development needs, well-being of its people and the global community. It also recognizes poaching as a major challenge to conserving wildlife in Uganda.

Interpretation: This policy is relevant if construction workers carry out illegal activities such as poaching in conservation areas along highways where optical fibre cables will be laid.

3.2.11 The Forestry Policy, 2001

The forestry policy puts an emphasis on ecological and socio-economic importance of protecting the country's forest resources. Implementation of the Policy is a responsibility of the National Forestry Authority (NFA), which also provides guidelines for management of forest reserves, community forests and private forests. The Forest Policy entails provisions for safeguard and conservation of forests so as to ensure sufficient supplies of forest products, protect water resources in watersheds, soils, fauna and flora. The policy also mandates government with responsibility to control unsustainable forest exploitation practices.

Interpretation: Some major highways along which ICT infrastructure (optical fibre cables) will be laid pass through major forests.

3.2.12 National Gender Policy, 1997

The overall goal of this policy is to mainstream gender issues in the national development process in order to improve the social, legal/civic, political, economic and cultural conditions of the people of Uganda, particularly women. Thus, in the context of infrastructure development, this policy aims to redress imbalances which arise from existing gender inequalities and promotes participation of both women and men in all stages of the project cycle, equal access to, and control over significant economic resources and benefits.

Interpretation: This policy would especially apply to recruitment of construction labour for RCIP UG activities where women should ideally have equal opportunity as men for available jobs. It is also noted that women predominate or are significantly involved in roadside markets selling fruits, vegetables, art and craft along most highways in Uganda. Disruption of their businesses when laying optical fiber cables would notably affect incomes of women traders.

3.2.13 HIV/AIDS Policy, 1992

In Uganda current effort to combat HIV/AIDS is characterized by a policy of openness by Government and this has, to a large extent, been emulated by civil society, political and social institutions, and workplaces. HIV/AIDS is recognized by Ministry of Health as a considerable risk in construction of infrastructure projects and it (together with the ministry responsible for labour) encourages employers to develop in-house HIV/AIDS policies, provide awareness and prevention measures to workers and avoid discriminating against workers or living with or affected by HIV/AIDS. To ensure HIV/AIDS is addressed in the workplace, the policy encourages employee awareness and education on HIV/AIDS. It is anticipated that during construction phase, interactions among workforce and between local communities may result into sexual fraternization and a risk of HIV/AIDS spread. The policy also guides about HIV/AIDS management including awareness and provision of condoms in workplaces.

Interpretation: The requirements of this policy are expected to be fulfilled by the RCIP UG construction contractors, especially in regard to having an in-house HIV Policy, worker sensitization and provision of free condoms and controlling prostitution and irresponsible sexual fraternization during construction.

3.2.14 Occupational Health and Safety (OHS) Policy

This policy seeks to:

- Provide and maintain a healthy working environment
- Institutionalize OHS in the power-sector policies, programs and plans
- Contribute towards safeguarding the physical environment

The OHS Policy Statement is guided by the Constitution of the Republic of Uganda and other global, national and sectorial regulations and policies. The OHS Policy also takes into recognition of the Energy Policy and the Health Sector Strategic Plan, all of which aim to improve the quality of life for all Ugandans in their living and working environment.

Interpretation: This policy will be relevant for OHS of RCIP UG construction crews and subsequently, maintenance personnel. The policy will also have relevance in mitigation measures that protect the public from health and safety impacts as a result of project construction, subsequent operation and maintenance activities.

3.2.15 National Development Plan, 2010

In 2010, Government of Uganda finalized a new five-year National Development Plan (NDP) spanning FY2011-2015 and this took from achievements of the *Poverty Eradication Action Plan* (PEAP) that was being implemented up to 2008. The NDP's main theme is "Growth, Employment and Socio-Economic Transformation for Prosperity," marking a broadening of the country's development strategy from poverty reduction to structural transformation with the aim to raise growth and living standards. The NDP 2010/11-2014/15 is the first in a series of six plans intended to transform Uganda over 30 years into a modern and prosperous nation.

The NDP recognizes ICT as one of the Primary Growth Sectors, therefore included ICT among the investment priorities and national core projects *(see NDP Sec, 152 p 50);* suggested improving the ICT infrastructure through extension of the national optical fibre cable to cover most of the districts with emphasis placed on promotion and operationalization of Business Process Outsourcing (BPO), e-government and e-procurement services. However, development of the ICT sector is constrained by;

a. Infrastructure gaps in the delivery of broadband;
b. High dependence on satellite bandwidth for provision of internet service;
c. High cost of IT equipment and software;
d. Limited access to the electricity grid in most parts of the country;
e. High usage taxes in ICT sector ;
f. General low income levels especially in the rural areas;
g. Low ICT integration in Government as well as business processes resulting in low demand for internet due to lack of sufficient IT skills at managerial level;
h. Large illiterate consumer mass unaware of its rights, benefits and opportunities;
i. Expensive internet connectivity costs due to limited connectivity to submarine cable system;

j. Low levels of awareness by the public on the role IT can play in social and economic transformation;

k. Lack of IT skills and knowledge by the population especially in rural area;

l. Increase in cybercrime (electronic fraud, computer misuse and growing insecurity in the use of IT equipment and software;

m. Insufficient local content;

n. Lack of relevant IT business-driven applications;

o. Lack of appropriate legal and regulatory framework for the IT sub-sector; and

p. Lack of standards in hardware manufacturing and software development.

To improve and develop ICT sector, NDP devised five strategies below:

Strategy 1 *(see NDP Sec 327, p128):* Develop ICT infrastructure;

i) Roll out national fiber optic cables to cover all districts;

ii) Construct Information Technology (IT) Business Parks; and

iii) Support Public Private Partnership (PPP) arrangements to extend fiber optic cable to production centers and institutions

Strategy 2 *(see NDP Sec 328, p128):* Promote the use of ICT in business and service operations (e-commerce and e-government);

i) Enact and operationalize cyber laws;

ii) Popularize Tele-Business Information centers and payphone services;

iii) Increase the computerization of service delivery functions in Government;

iv) Develop relevant local internet content and translation in local languages for business, and science and technology; and

v) Collect, preserve and disseminate documented for present and future use.

Strategy 3 *(see NDP Sec 328, p128):* Build competent human resource capacity in the sector;

i) Provide requisite ICT skills;

ii) Accredit ICT courses and training institutions; and

iii) Incorporate ICT into education curricula.

Strategy 4 *(see NDP Sec 328, p129)*: Develop and implement a policy, legal and regulatory framework for systematic sector development;

i) Make operational cyber laws to facilitate e-commerce

Strategy 5 *(see NDP Sec 328, p129)*: Promote utilization of ICT as a business

i) Support Business Process Outsourcing (BPO) services;

ii) Support the initial operations of the Information Technology (IT) Business Parks; and

iii) Promote hardware assemble and software development as an investment opportunity to potential local and foreign investors

Interpretation: Implementation of the RCIP UG is in line with the ICT sector development strategies of the NDP 2010/11- 2014/15.

3.2.16 Uganda's Vision 2040

In 'Vision 2040' Ugandan sets goals to achieve by the year 2040 ranging from political, economic, social, energy, and environment. With respect to environmental goals, Ugandans aspired to have a green economy and clean environment where the ecosystem is sustainably managed and the livability of the urban systems greatly improved (*16 f)*, world class infrastructure and services, and modern technology to improve productivity and production. Ugandans also aspire to have access to clean, affordable and reliable energy sources to facilitate industrialization (*16 e.)* and to be resourceful and prosperous nationals contributing to national development through gainful employment, savings and investments.

Vision 2040 recognizes strengthening of ICT and ICT Enabled Services (ITES) industry as one of the opportunities that will harness faster socio-economic transformation from a peasantry to an innovative and competitive society through job creation, accelerated economic growth and significantly increased productivity.

Interpretation: The Vision 2040 recognizes the importance of ICT in national economic development. The proposed RCIP UG is in line with aspirations of Vision 2040.

3.2.17 National Policy on Disability in Uganda, 2006

Government through the Ministry of Gender, Labour and Social Development has a mandate to promote and protect the rights of persons with disabilities (PWDs). The Government is mandated to promote and protect the rights of persons with disabilities and the Constitution of the Republic of Uganda stipulates the need to empower and provide equal opportunities to PWDs. Government has focused on provision of health services, community based rehabilitation, vocational training, Universal Primary Education as key measures to empower PWDs. This policy on disability will contribute to the improvement of the quality of life of People with Disabilities (PWDs) through expanding the scope of interventions. The interventions will necessitate PWDs themselves to participate in designing, managing, monitoring and evaluating initiatives that are meant to improve their well-being. It will also ensure that the central government, local authorities, provide for needs of PWDs.

Interpretation: The proposed RCIP UG should provide for needs of persons with disabilities in terms of access and use of ICT facilities.

3.2.18 World Bank Safeguards Policies

The World Bank requires environmental assessment (EA) of projects proposed for Bank financing to help ensure that they are environmentally sound and sustainable, and thus to improve decision making. Environmental Assessment is one of the 10 environmental and social Safeguard Policies that WBG uses to examine potential environmental risks and benefits associated with Bank lending operations. The Bank's Environmental Assessment policy and procedures are described in Operational Policy/Bank Procedures - OP/BP 4.01.

Other World Bank Safeguard policies include;

i) Natural Habitats;

ii) Forests;

iii) Pest Management;

iv) Physical Cultural Resources;

v) Indigenous Peoples;

vi) Involuntary Resettlement;

vii) Safety of Dams;

viii) Projects on International Waters;

ix) Projects in Disputed Areas.

From the nature of proposed project, policies likely to be affected by the project are discussed in table below.

Table 3-1: World Bank policies showing their trigger status by the project

Safeguard Policies	Triggered?		Reason
	Yes	No	
OP 4.01 Environmental Assessment	♦		OP/BP 4.01 is triggered because the project will entail civil works (e.g. construction of transmission stations and trenches for optical fibre cables). In all districts of Uganda (project Area) trenching for the cables and for selected districts construction of transmission stations is planned. Construction of transmission stations will require materials such as sand, aggregates, cement and timber among others and use of water. Project construction and operation phases will generate waste. RCIP 5 is assigned to Environmental Assessment category B due to the

Safeguard Policies	Triggered?		Reason
	Yes	No	
			project's site specific and easily manageable impacts. This ESIA clearly identifies all the potential impacts of the project and defines the mitigation measures to address them.
OP 4.04 Natural Habitats	♦		The project may cross natural habitats such as forests, wetlands, rivers and wildlife conservation areas. Assessment and mitigation of any likely impacts on natural habitats has been covered under this ESIA.
OP 4.09 Pest Management		♦	Not to be triggered because the project will not involve procurement and/or use of pesticides.
OP 4.10 Indigenous People		♦	This policy has not been triggered because the small sect of Ik in Moroto hills are 5km far away from the project influence which is Moroto Central Business District. Although, the project covers Moroto in Karamoja region, recognized as historically disadvantaged/marginalized region.
OP 4.11 Physical Cultural Resources	♦		This is triggered because project investments involve civil works and may encounter known or chance finds (unknown Physical Cultural Resources). The ESIA has included a chance finds management procedure (Annex 5)
OP 4.12 Involuntary Resettlement		♦	OP 4.12 is not triggered in regard to the National Road reserve thus there will be no land uptake only minimal temporary livelihood disruption may be experienced. An additional, a list of any potential livelihood along the project corridor has been included in the report. In addition, the implementation design of the project caters for aerial pole erection were poles are fixed in the

Safeguard Policies	Triggered?		Reason
	Yes	No	
			most appropriate location without causing any social economic distract as was implemented under the NBI Phase III project. Installation of cables underground will be done in specific sections of the project.
OP 4.36 Forests		♦	Aerial poles are to be erected along the highways, and there are some major roads that pass through forest reserves. However, vegetation loss/clearance is minimal because of on spot pole location and clearance as per mode of implementation thus Op 4.36 will not be triggered.
OP 4.37 Safety of Dams		♦	The project will not support or depend on dams.
OP 7.50 Projects on International Waterways		♦	The project does not depend or support developments related to International Waterways.
OP 7.60 Projects in Disputed Areas.		♦	Since the project is being implemented within the road reserve there is no anticipated disputes in regards to ownership.

3.3 Legal Framework

3.3.1 Constitution of the Republic of Uganda, 1995

The constitution of Uganda provides for the right to a clean and healthy environment in Article 39 of the Constitution of Uganda, 1995.

Interpretation: Relevance of the Constitution to the project is in the fact that the PB is to ensure socio-environmental responsibility of the client during project development and implementation.

3.3.2 The Electronic Signatures Act, 2011

The Electronic Signatures Act makes provision for regulating the use of electronic signatures. Section 18 stipulates that use of electronic signature requires a certificate issued by a licensed certification service provider as an acknowledgement of a digital signature verified by reference to the public key listed in the certificate, regardless of whether words of an express acknowledgement appear with the digital signature and

regardless of whether the signer physically appeared before the licensed certification service provider when the digital signature was created.
The Act gives NITA-U the mandate to issue license to certification service providers and monitor and oversee their activities. Section 21 Controller (NITA-U) (1) The Controller shall, in particular be responsible for monitoring and overseeing the activities of certification service providers and shall perform the functions conferred on the Controller under this Act. (2) The Controller shall exercise its functions under this Act subject to such directions as to the general policy guidelines as may be given by the Minister. (3) The Controller shall maintain a publicly accessible database containing a certification service provider disclosure record for each certification service provider, which shall contain all the particulars required under regulations made under this Act. (4) The Controller shall publish the contents of the database in at least one recognized repository.

Interpretation: This Act will be especially relevant for development of Shared Public Service Delivery Platform infrastructure.

3.3.3 Computer Misuse Act, 2010

The Computer Misuse Act makes provision for the safety and security of electronic transactions and information systems. The Act prevents unlawful access, abuse or misuse of information systems by including computers (and electronic devices like mobile phones) and makes provision for securing the conduct of electronic transactions in a trustworthy electronic environment and to provide for other related matters.

Interpretation: This Act will be especially relevant for development of e-Government Applications infrastructure.

3.3.4 The Electronic Transaction Act 2011

The Electronic Transactions Act provides for the use, security, facilitation and regulation of electronic communications and transactions and encourages the use of e-Government services. It facilitates the development of e-commerce in Uganda by broadly removing existing legal impediments that may prevent a person from transacting electronically because of omission in the traditional laws and encouraging investment and innovation in information communications and technology.

Interpretation: This Act will be especially relevant for development of e-Government Applications infrastructure.

3.3.5 Copyright and Neighboring Rights Act, 2006

The Act provides that no person of any kind shall produce, reproduce, distribute, broadcast, make available to the public, sale or offer for sale, lease or rent out or make public performances or import for distribution of audio visual recordings in Uganda except under a license issued by the owner of the neighboring rights or a Collecting society.

Interpretation: This Act will be especially relevant for development of Shared Public Service Delivery Platform and E-Government Applications infrastructure.

3.3.6 The Children's Act, Cap. 59

The Act provides that children shall not be subjected to social or customary practices which are harmful to their health or employed or engaged in activities which may endanger their health, education, mental, physical or moral development.

Interpretation: This Act will be especially relevant during development and operation of RCIP supported facilities. Infrastructure should be put in place to censure information content accessible to children.

3.3.7 The Uganda Communications Act, Cap 106

The main objective of this Act is to develop a modern communications sector and infrastructure.

Section 43: Power of operator to use land; (3) An operator shall do as little damage as possible to the land and to the environment and shall pay fair and adequate compensation to all interested persons for any damage or loss sustained by reason of the exercise of the powers under this section.

Interpretation: This Act is relevant for development of modern communication infrastructure and compensation of owners / entities for any damage or loss sustained by reason of exercise of the powers provided under this Act.

3.3.8 National Environment Act, Cap 153

The specific legislation that deals with environmental impact assessments (EIA) in Uganda is the National Environment Act (NEA), Cap 153. NEMA was created under NEA and mandated with the responsibility to oversee, coordinate and supervise environmental management activities in Uganda. Third Schedule of the National Environment Act, Cap 153, 1 *general (a), (b), (c)* requires the under listed project categories to undertake an EIA (Annex 1 A).

The Act provides for various strategies and tools for environment management, which also include EIA (Section 19) for projects likely to have significant impacts on the environment. NEMA sets multimedia environmental standards (Sections 24-32) to prevent contamination of air, water and soil resources. Section 36 entrusts NEMA, lead agencies and the district environment committee with powers to protect quality of watercourses, permanent or seasonal from human activities that could adversely affect them. Section 56 prohibits discharge of hazardous substances like chemicals, oil, etc into the environment except in accordance with guidelines prescribed by NEMA. NEMA will also be responsible for approval of the project EIA and prescribing compliance conditions during project implementation.

Interpretation: This Act requires an EIA to be conducted for any Third Schedule Project.

3.3.9 Environmental Impact Assessment Regulations, 1998

The regulations require a detailed study to determine possible environmental impacts and mitigation measures. The guidelines require that the EIA process should be participatory engaging the general public and stakeholders in consultations or to inform them and obtain their views about the proposed development during the EIA.

Interpretation: There regulations will guide conduct of EIAs for any ICT facilities to be developed under this project in line with requirements of the National Environment Act.

3.3.10 National Environment (Wetlands, River Banks and Lakeshores management) Regulations, 2000

These regulations provide principles for sustainable use and conservation of wetlands, riverbanks and lakeshores. Relevance of these regulations to the ESIA study is embedded in the following requirements:

- EIA is mandatory for all major activities on riverbanks and lakeshores,
- Measures should be put in place for protection of riverbanks and lakeshores such as prevention of soil erosion, siltation and water pollution.

Interpretation: These regulations will be relevant to the project since optical fibre cables may be laid across a wetland or seasonal streams and marshes hence potential for construction activities to cause soil erosion and sedimentation.

3.3.11 National Environment (Hilly and Mountainous Areas management) Regulations, 2000

Regulation 16(5) requires protection of soil against erosion. Erosion can occur as result of trenching to enable burial installation of optical fibre cables and construction of site stations.

Interpretation: These regulations are relevant to the Project as implementation may require construction activities on slopes prone to soil erosion due to unstable slopes (slopes > 10%).

3.3.12 National Environment (Minimum Standards for Management of Soil Quality) Regulations, 2001

Section 12 of this Act requires compliance with prescribed measures and guidelines for soil conservation for the particular topography, drainage and farming systems, contravention of which constitutes an offence.

Interpretation: The regulations will be relevant in regard to prevention of contamination during construction, operation and decommissioning of project infrastructure. The regulations will apply to construction waste disposal during construction, operation repair and maintenance.

3.3.13 National Environment (Noise Standards and Control) Regulations, 2003

Section 7 of these regulations requires that no person shall emit noise in excess of permissible noise levels, unless permitted by a license issued under these Regulations. Section 8 imparts responsibility onto noise generators to use the best practicable means to ensure that noise does not exceed permissible noise levels. At construction sites corresponding limits are 75 dBA and 65 dBA for day and night time levels respectively.

Table 3-2: Regulatory noise limits

Facility	Noise limits dB (A) (Leq)	
	Day*	Night*
Construction sites	75	65
Residential areas	55	45
**Time frame: Day 6.00 a.m -10.00 p.m; Night 10.00 p.m. - 6.00 a.m.*		

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

Interpretation: These regulations are relevant to the Project if construction activities generate noise above permitted levels. Also relevant in situations where diesel-powered generators may be used as source of electricity to power ICT equipment, especially when the sites are in or near residential areas.

3.3.14 National Environment (Waste Management) Regulations, 1999

These regulations require waste disposal in a way that would not contaminate water, soil, and air or impact public health. According to the regulations, waste haulage and disposal should be done by licensed entities. These Regulations will apply to:

- All categories of hazardous and non-hazardous waste;
- Storage and disposal of construction waste.

Interpretation: The regulations will relate to overall waste management of the project as wastes will be generated by both construction and operation (maintenance activities).

3.3.15 National Environment (Standards for Discharge of Effluent into Water or on Land) Regulations, 1999

Section 6 (2) details maximum permissible limits for 54 regulated contaminants, which must not be exceeded before effluent is discharged into water or on land. A few commonly regulated parameters in sewage and wash / oily effluent from a construction site are indicated in table below.

Table 3-3: National discharge standards for selected pollutants

Parameter	National discharge standards
BOD_5 (mg/l)	50
Suspended solids (mg/l)	100
Faucal coliforms	10,000 counts/ 100ml
Chlorine residual (mg/l)	1 mg/l
Ph	6-8
Phenols (µg/l)	0.2 mg/l
Oil and grease (mg/l)	10 mg/l
Total Phosphorus (mg/l)	10 mg/l
Temperature	20-35^{o}C

Source: The National Environment (Standards for Discharge of Effluent into Water or on Land) Regulations, 1999.

Interpretation: These regulations are particularly important for disposal of effluent and equipment cleaning at construction site.

3.3.16 Draft National Air Quality Standards, 2013

Construction activities will generate dust and exhaust emissions, mainly from motorized equipment. The draft national air quality standards provide the following regulatory limits for various emissions as presented in table below.

Table 3-4: Draft regulatory air quality limits

Pollutant	Averaging time for ambient air	Standard for ambient air
Carbon dioxide (CO_2)	8 hrs	9.0 ppm
Carbon monoxide (CO)	8 hrs	9.0 ppm
Hydrocarbons	24 hrs	5 mgm^{-3}
Nitrogen oxides (NO_x)	24 hrs 1 year arithmetic mean	0.10 ppm
Smoke	Not to exceed 5 minutes in any one hour	Ringlemann Scale No.2 or 40% observed at 6m or more
Soot	24 hrs	500 µg/Nm-3
Sulphur dioxide (SO_2)	24 hrs	0.15 ppm
Sulphur trioxide (SO_3)	24 hrs	200 µg/Nm-3

Source: Draft National air quality standards, 2013.

Note: ppm=parts per million, "N' in µg/Nm^{-3} connotes normal atmospheric conditions of pressure and temperature (25^{0}C and 1 atmosphere).

Interpretation: These standards are relevant considering that project construction will require motorized machinery powered by diesel engines hence generating pollutants such as CO_2, NO_x, SO_x and particulates are expected to be emitted. Dust will also be generated during both trenching and Site station construction and material/ equipment transport.

3.3.17 Uganda Wildlife Act, Cap 200

This Act defines wildlife as any wild plant or animal of a species native to Uganda. The Act entrusts ownership of wild animals and plants with the government for the benefit of Ugandan people, a responsibility executed by Uganda Wildlife Authority (UWA). Sections of the Act specifically dealing with the project development activities include:

> Section 15. Environmental impact assessment; (1) Any developer desiring to undertake any project which may have a significant effect on any wildlife species or community shall undertake an environmental impact assessment in accordance with the National Environment Act, (2) The authority shall perform all the functions required of a lead agency for purposes of an environmental impact

assessment under the National Environment Act, and any regulations made under the National Environment Act.

Section 21. General offences in wildlife conservation areas: Unless provided for by this Act, any person who in any wildlife conservation area unlawfully; (a) hunts, takes, kills, injures or disturbs any wild plant or animal or any domestic animal; (b) takes, destroys, damages or defaces any object of geomorphological, archaeological, historical, cultural or scientific interest, or any structure lawfully placed or constructed; (c) starts or maintains a fire without lawful authority; commits an offence.

Interpretation: This Act is relevant to the Project as development activities will take place in areas where infrastructure and workers may affect wildlife. A notable requirement of this Act is avoidance of any hunting and poaching either during project construction or its operation (e.g. maintenance of optical fiber cables built through wildlife conservation areas).

3.3.18 The Physical Planning Act, 2011

This Act replaced the Town and Country Planning Act, Cap 246 which was enacted in 1951 and revised in 1964 but is now inconsistent with contemporary government system in Uganda. The 1951 Act was enacted to regulate and operate in a centralized system of governance where physical planning was carried out at national level through the Town and Country Planning Board. Implementation of the Act was supervised by local governments, especially the urban local governments.

Uganda has since gone through many social, political and economic changes. For example, promulgation of the 1995 Constitution established a decentralized system of governance which divulged powers and functions including physical planning, finance and execution of projects from the central government to local governments. This therefore created a need to enact a physical planning legislation which is consistent with this Constitutional requirement. The Physical Planning Act, 2011 establishes district and urban physical planning committees, provides for making and approval of physical development plans and applications for development.

Section 37 of The Physical Planning Act, 2011 requires an EIA permit for developments before they are implemented, stating:

> *"Where a development application related to matters that require an environmental impact assessment, the approving authority may grant preliminary approval subject to the applicant obtaining an EIA certificate in accordance with the National Environment Act".*

Interpretation: Implementation of RCIP UG and associated site station infrastructure e.g. signal booster stations will consider requirement of this Act when prescribed by respective local governments. Local Governments have jurisdiction over areas covered by the project and therefore have regulatory control to ensure that this project conforms to local physical planning requirements.

3.3.19 Public Health Act, Cap 281

This Act provides local authorities with administrative powers to take all *lawful*, *necessary* and *reasonable* measures to prevent the occurrence or deal with any outbreak or prevalence of any infectious communicable

or preventable disease and to safeguard and promote the public health. The Act mandates local authorities (Section 103) to prevent pollution of watercourses in interest of public good.

Interpretation: This Act is applicable to onsite management of waste, sewage and domestic waste during construction and or operation of the optical fibre cables and site stations to prevent environmental contamination leading to public health impacts.

3.3.20 Occupational Safety and Health Act, 2006

The Act requires employers to provide and maintain safe working conditions, and to protect workers and the public from risks and dangers of their works, at his or her own cost (Section 13). If an employer has more than 20 workers he should have a written policy with respect to safety and health of workers (Section 14). The act includes as well regulations for clean workplaces and requirements regarding treatment of workers (Section 46). The contractor therefore is obliged to provide employers with washing facilities, First Aid, facilities for meals and safe access to workplaces.

Interpretation: This Act is relevant to the Project as a labour force will be employed during the construction phase. Equally a large number of workers may be employed for operation and maintenance of the communication center, optical fiber cables and site stations during the operational phase. Occupational safety of all such workers is guided by this Act.

3.3.21 Employment Act, 2006

Employment Act, 2006 (which repeals Employment Act Cap 219 enacted in 2000) is the relevant legislation that harmonizes relationships between employees and employers protect workers interests and welfare and safeguard their occupational health and safety through:

- Prohibiting forced labor, discrimination and sexual harassment at workplaces (Part II; Part IV).
- Providing for labor inspection by the relevant ministry (Part III).
- Stipulating rights and duties in employment including weekly rest, working hours, annual leave, maternity and paternity leaves, sick pay, etc. (Part VI).
- Continuity of employment i.e. continuous service, seasonal employment, etc (Part VIII).

Interpretation: Project construction (and subsequent operation and maintenance), this Act will govern management of labor hired by the contractor (during construction) and the site station (operation phase) in regard to their occupational safety.

3.3.22 Workers' Compensation Act (2000)

Section 28 of The Workers' Compensation Act (2000) states that:

- Where a medical practitioner grants a certificate that a worker is suffering from a scheduled disease causing disablement or that the death of a workman was caused by any scheduled disease; and,
- The disease was due to the nature of the worker's employment and was contracted within 24 months immediately previous to the date of such disablement or death, the worker or, if he or she is deceased, his or her dependents shall be entitled to claim and to receive compensation under this

Act as if such disablement or death had been caused by an accident arising out of and in the course of his or her employment.

Interpretation: This Act is relevant to the Project in respect to labour-force will be employed for construction and Operation/Maintenance activities. Any personnel injured on job must be compensated as required by this Act.

3.3.23 Local Governments Act, Cap 243

This Act provides for decentralized governance and devolution of central government functions, powers and services to local governments that have own political and administrative structures. Districts have powers to oversee implementation of development activities under supervision of their relevant departments such as environment, lands and water resources. According to Section 9 of the Act, a local government is the highest political and administrative authority in its area of jurisdiction and shall exercise both legislative and executive powers in accordance with the Constitution.

Interpretation: This Act is relevant to the Project as all District Local Governments covered by the project infrastructure will be beneficiaries and therefore stakeholders with jurisdiction over implementation of the Project. Accordingly, respective District Local Governments will have key responsibilities for environmental monitoring during construction of the project. Specifically the District Environment Officers and District Community Development Officers shall be involved in monitoring implementation of environmental and social aspects of the project.

3.3.24 National Forestry and Tree Planting Act, 2003

This legislation regulates access and use of forest resources in Uganda. Section 38 provides that a person intending to undertake a project or an activity which may, or is likely to have significant impact on forests shall undertake an EIA.

Interpretation: This Act has relevance to the Project if there is impact on forest resources adjoin roads along which optical fiber cables are laid during the construction phase

3.3.25 Petroleum Supply Act, 2003

Over the construction period, the contractor will require considerable fuel (petrol and diesel) supplies for use by motorized equipment and power generators. The Petroleum Supply Act of 2003 provides for supervision and monitoring transportation, supply, storage and distribution of petroleum products. Among other provisions, the Act provides for safety and protection of public health and the environment in petroleum supply operations. According to the Act, fuel storage for construction projects must be licensed.

Interpretation: This Act has relevance to the Project as it requires consideration for safety and protection of public health and the environment in petroleum storage and transfer operations. If contractor retained to construction this project will store fuel on site, they would require a license as required by this Act.

3.3.26 Road Act, Cap 358

The Road Act (Cap 358 of the Laws of Uganda) provides for maintenance of roads by empowering the Minister of Works and Transport and respective local governments. The need for Government to maintain basic control over developments along the road is to ensure that basic necessities of maintaining road geometry and

engineering needs such as sight lines, horizontal curvatures, sight distances and road safety considerations are in place. Consequently, town council would have authority over town roads while district roads are governed by district local governments.

Interpretation: Laying of optical fibre cables along and/ or across roads necessitates conformity to requirements of this Act.

3.3.27 Historical and Monuments Act, 1967

This Act provides for preservation and protection of historical monuments and objects of archaeological, palaeontological, ethnographical and traditional interest. The Act prohibits any person from carrying out activities on or in relation to any object declared to be preserved or protected. Section 10 of this Act spells out procedures and requirement to declare "chance finds" that may have archaeological, palaeontological, ethnographical, historical and traditional significance for preservation.

Interpretation: This Act requires that any chance finds encountered during project construction shall be preserved by the Department of Monuments and Museum in the Ministry of Tourism, Wildlife and Antiquities.

3.3.28 World Bank Group General EHS Guidelines

The EHS Guidelines contain the performance levels and measures that are generally considered to be achievable in new facilities by existing technology at reasonable costs. Application of the EHS Guidelines to existing facilities may involve the establishment of site-specific targets, with an appropriate timetable for achieving them. The applicability of the EHS Guidelines should be tailored to the hazards and risks established for each project on the basis of the results of an environmental assessment2 in which site-specific variables, such as host country context, assimilative capacity of the environment, and other project factors, are taken into account.

3.3.29 International Agreements

Uganda is party to several global and regional environment and conventions and agreements as described below:

- *The Convention on Biological Diversity (CBD):*

A major objective of which is *in-situ* and *ex-situ* conservation of biological diversity. Parties to this convention are required to undertake ESIA for projects likely to have significant adverse effects on biodiversity and are required to develop national plans and programs for the conservation and sustainable use of biodiversity.

- *The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES):*

This convention seeks to ensure that international trade in species of wild fauna and flora does not threaten their survival in wilderness. Species on the CITES lists are considered of conservation concern. This Convention would be relevant to prevention of poaching of Wildlife in Wildlife Conservation areas imprinted by project activities.

- *Convention on Wetlands (Ramsar, Iran, 1971):*

The Convention on Wetlands of International Importance, called the Ramsar Convention, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. The Convention uses a broad definition of the types of wetlands covered in its mission, including lakes and rivers, swamps and marshes, wet grasslands and peat lands, oases, estuaries, deltas and tidal flats, near-shore marine areas, mangroves and coral reefs, and human-made sites such as fish ponds, rice paddies, reservoirs, and salt pans.

Article 3.2: Each Contracting Party shall arrange to be informed at the earliest possible time if the ecological character of any wetland in its territory and included in the List has changed, is changing or is likely to change as the result of technological developments, pollution or other human interference. Information on such changes shall be passed without delay to the organization or government responsible for the continuing bureau duties specified in Article 8.

Article 4.1: Each Contracting Party shall promote the conservation of wetlands and waterfowl by establishing nature reserves on wetlands, whether they are included in the List or not, and provide adequately for their protection.

- *Protocol Agreement on Conservation of Common Natural Resources (1982):*

Uganda also signed the Protocol Agreement on Conservation of Common Natural Resources (1982). Lake Albert is a common watercourse shared between Uganda and Democratic Republic of Congo (DRC) therefore its protection from contamination during construction of boarder to boarder communication infrastructure between DRC and Uganda.

Interpretation: The laying of optical fiber cables connecting Uganda to neighboring countries will have an obligation to avoid impacts that may violate above conventions in respect to protection of shared resources.

3.4 Institutional Framework

3.4.1 National Environment Management Authority, NEMA

The National Environment Act provides for establishment of NEMA as the principal agency responsible for coordination, monitoring and supervision of environmental conservation activities. NEMA is under the Ministry of Water and Environment (MoWE) but has a cross-sectoral mandate to oversee the conduct of EIA through issuance of EIA guidelines, regulations and registration of practitioners. It reviews and approves environmental impact statements (EIS) in consultation with any relevant lead agencies.

NEMA's enforcement branch is the department of Monitoring and Compliance. They are responsible for ensuring that enterprises comply with the various environmental regulations and standards. NEMA has appointed environmental inspectors whose powers and duties are spelled out in Section 81 of the National Environment Act and can include stopping any activity which pollutes the environment. The environmental inspector may also issue an improvement notice requiring an operator of any activity to cease any activities deleterious to the environment which are contrary to the Act. NEMA has power; to prosecute environmental offenders and offences committed under the National Environment Act and may earn the offender fines and prison sentences. NEMA works with District Environment Offices and Local Environment Committees at local government level, which undertake inspection, monitoring and compliance enforcement on its behalf.

NEMA has adequate capacity to oversee socio-environmental safeguards requirements for this project.

Interpretation: NEMA will review and approve this ESIA, environment management plans and ESIA reports subsequently prepared for the Project.

3.4.2 Ministry of Information, Communication and Technology [MoICT] and National Guidance,

The Ministry is responsible for the ICT sector, dealing specially with policy formulation, implementation and coordination, and monitoring. Following the field survey and Privatization Strategy the National Information Technology Authority-Uganda (NITA-U) was established to regulate the ICT sector. Thus, while the MoICT and National Guidance formulate policy, NITA-U is charged with the mandate of regulating the ICT sector, independent of the Ministry.

MICT and National Guidance currently has no adequate capacity to oversee socio-environmental safeguards requirements for this project.

Interpretation: Project implementation will be coordinated, promoted and monitored by MICT through its agency (NITA-U).

3.4.3 National Information Technology Authority-Uganda (NITA-U)

The National Information Technology Authority-Uganda (NITA-U) is an autonomous statutory body established in accordance with the NITA-U Act 2009 as an agency of the Ministry of Information and Communication Technology (MoICT) and National Guidance. The mandate of the NITA-U is "To coordinate, promote and monitor Information Technology (IT) developments in Uganda within the context of National Social and Economic development". The main functions of NITA-U include:

i) To provide first level technical support and advice for critical Government information technology systems including managing the utilization of the resources and infrastructure for centralized data center facilities for large systems through the provision of specialized technical skills;

ii) To identify and advise Government on all matters of information technology development, utilization, usability, accessibility and deployment including networking, systems development, information technology security, training and support;

iii) To co-ordinate, supervise and monitor the utilization of information technology in the public and private sectors.

iv) To regulate and enforce standards for information technology hardware and software equipment procurement in all Government Ministries, departments, agencies and parastatals.

v) To create and manage the national databank, its inputs and outputs.

vi) To set, monitor and regulate standards for information technology planning, acquisition, implementation, delivery, support, organization, sustenance, disposal, risk management, data protection, security and contingency planning.

vii) To regulate the electronic signature infrastructure and other related matters as used in electronic transactions in Uganda.

viii) To promote and provide technical guidance for the establishment of e-Government, e-Commerce and other e-Transactions in Uganda.

ix) In liaison with other relevant institutions, to regulate the information technology profession in Uganda in order to ensure its effective utilization promotion and development.

x) To act as an authentication center for information technology training in Uganda in conjunction with the Ministry responsible for Education.

xi) To provide advice on information technology project management services to Government.

xii) To provide for information management service through acting as a records management facility and an information depository.

xiii) To provide guidance on the establishment of an infrastructure for information sharing by Government and related stakeholders.

xiv) To provide guidance in information technology audit services to Government.

xv) To undertake and commission research as may be necessary to promote the objects of the Authority.

xvi) To arbitrate disputes arising between suppliers of information technology solutions and consumers.

xvii) To protect and promote the interests of consumers or users of information technology services or solutions.

xviii) To undertake any other activity necessary for the implementation of the objects of the Authority

Without in-house social or environmental staff, NITA currently has no adequate capacity to oversee socio-environmental safeguards requirements for this project. The project should therefore consider hiring a Socio-Environmental Safeguards Officer to guide the institution on social, environmental aspects associated with its functions as well as e-waste practices, policies and regulatory requirements.

Interpretation: Implementation of the Project will be by NITA-U which is overseen by MICT. NITA will ensure any subsequent ESIA studies are conducted, obtain required permits, supervise contractors, manage grievances and monitor socio-environmental impacts of the project from construction through operation and decommissioning (when it comes).

3.4.4 Local Government Administration Structures

The Local Governments Act, Cap 243 provides for decentralized governance and devolution of central government functions, powers and services to local governments that have their own political and administrative structures. Districts have powers to oversee implementation of development activities under supervision of their relevant departments such as environment, lands and roads. District and Local Council administration of project districts would be vital in implementation of the project by mobilizing political goodwill and sensitizing local communities. Local administration leaders e.g. District Environmental Officers (DEO) will also play role in environmental monitoring associated with project construction and operation

At every district administration in Uganda is found an Environment Officer (DEO) who functions as a NEMA staff for purposes of overseeing regulatory compliance to Uganda's environmental laws. Many DEOs however lack training and adequate capacity in World Bank safeguards policies. Training to DEOs in World Bank safeguards policies would therefore be necessary for this project.

Interpretation: District and Local Council administrations are stakeholders in the Project and will have input in to the ESIA process as well as subsequent monitoring. For example DEOs will review the project ESIA and provide guidance about local conditions to the National Environment Management Authority (NEMA) prior to approval decision.

3.4.5 The Ministry of Gender, Labor & Social Development, MGLSD

The Ministry of Gender, Labor & Social Development (MGLSD) is responsible for coordinating social development in Uganda. In collaboration with other stakeholders, MGLSD is responsible for inspecting state of occupational safety, labor relations, community empowerment, protection and promotion of rights and obligations of vulnerable groups for social protection and gender-responsive development.

MGLSD has in-house socio-environmental staff and therefore capacity to oversee safeguards requirements associated with this project.

Interpretation: MGLSD is a stakeholder in the Project and will be responsible for inspecting the project for compliance with occupational health and safety regulations, national labour laws and gender equity.

3.4.6 National Forestry Authority, NFA

The National Forestry and Tree Planting Act of 2003 created NFA as semi-autonomous body responsible for management of central forest reserves. NFA divided the country into sectors and manages forest reserves through its sector managers. This institution is responsible for protection of forests reserves in Uganda, with the stated goals of maintaining an integrated forest sector that achieves sustainable increases in the economic, social, and environmental benefits from forests and trees by all the people of Uganda especially the poor and vulnerable. The NFA provides direction and guidance on all aspects of a Project that potentially impact on Uganda's forest resources.

NFA has in-house socio-environmental staff and therefore capacity to oversee safeguards requirements associated with this project.

Interpretation: NFA is a stakeholder in the Project and will have input in to the EIA process, especially in regard to management of natural forests through which project infrastructure will be constructed. NFA will issue approval for any infrastructure that may be installed or erected in a central forest reserves.

3.4.7 Uganda Wildlife Authority (UWA)

The Uganda Wildlife Authority (UWA) was established under the Uganda Wildlife Act, Cap. 200. The main function of the UWA is to ensure sustainable management of wildlife in conservation areas by coordinating, monitoring and supervising wildlife management issues. UWA can manage wildlife (wild plant and wild animals native to Uganda) in both protected and unprotected areas. The UWA provides direction and guidance on all aspects of a project that potentially impact Uganda's wildlife.

NFA has in-house socio-environmental staff and capacity to oversee safeguards requirements associated with this project.

Interpretation: UWA is an important stakeholder in the Project especially for protection of wildlife in conservation areas through which project infrastructure will be built. UWA will issue approval for any ICT infrastructure works that may happen in protected areas.

3.4.8 Ministry of Tourism, Wildlife and Antiquities

In this ministry is found the Department of Monuments and Museums mandated to protect, promote and present the cultural and natural heritage of Uganda through collection, conservation, study and information dissemination for enjoyment and education.

The department's key functions are;

a) Research about natural and cultural heritage

b) Conservation and maintenance of important physical cultural Resources or Heritage Collections.

c) Provision of professional knowledge and information on the archaeology and palaeontology of Uganda

d) Publication of research findings in appropriate publications

e) Exhibition and interpretation of specimens for public study and enjoyment

f) Monitoring implementation policies and strategies of historical and cultural heritage conservation and development.

g) Development of strategies for community participation in cultural heritage.

h) Promote public awareness about cultural and natural heritage through formal and informal education.

i) Provide technical guidelines to the private investors

In this ministry, semi-autonomous agencies like UWA are responsible for management of wildlife protected areas. As earlier indicated, UWA has in-house socio-environmental staff and capacity to oversee safeguards requirements associated with this project.

Interpretation: This Ministry will be responsible for preservation of any chance finds encountered during project implementation.

3.4.9 Ministry of Water and Environment

The Ministry of Water and Environment (MWE) has the responsibility for setting national policies and standards, managing and regulating water resources and determining priorities for water development and management.

MWE has three directorates:

a) Directorate of Water Resources Management (DWRM),

b) Directorate of Water Development (DWD) and

c) Directorate of Environmental Affairs (DEA).

The Directorate of Water Resource Management (DWRM) is responsible for water resources panning and regulation; monitoring and assessment and water quality management. DWRM has the following key functions:

i) Water Quality Management in all Uganda's water bodies

ii) Management of international and transboundary water resource management promote transboundary regional cooperation for equitable and reasonable utilisation of shared water resources. Specific roles are:

- Transboundary water resources management policy formulation, reviews, implementation and advice,
- Regional coordination of transboundary projects and programmes,
- Transboundary water resources management MIS and monitoring, and evaluation of transboundary projects and programmes, and
- Raising awareness, capacity and confidence-building as well as capacity-building on transboundary water resources management issues.

iii) Regulation and use of water resources in Uganda

Anybody abstracting water from a lake, river or underground using a motorized pump; discharging wastewater into the environment; involved in drilling for water; or construction of dams and other structures on water bodies is required to apply for a water permit according to the Water Act. The permits is issued by DWRM.

The Directorate of Water Development (DWD) is responsible for urban water supply, water for production, rural water supply and urban water regulation.

The Directorate of Environmental Affairs (DEA) comprises:

- *Climate Change Unit (CCU),* whose main objective is to strengthen Uganda's implementation of the United Nations Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol (KP).
- Environment Support Services (ESS);
- *Forest Sector Support Department (FSSD*) that promotes efficient and effective governance of the forestry sector.
- *Metrology Department* that monitors weather and climate, exchange data/information and products and issue advisories to the nation.
- *Wetlands Management Department (WMD)* which protects wetland resources in Uganda.

MWE also oversees autonomous agencies namely NFA and NEMA all of which have adequate technical capacity to oversee socio-environmental safeguards requirements associated with this project.

Interpretation: The Ministry is responsible for environmental and water resources management in Uganda. Directorate of Water Resources Management controls water quality and is responsible for permitting construction activities across watercourses.

3.5 Implementation Arrangements

Institutional responsibility of implementing the ESMP will rest with the Project Coordination Unit, PCU (or Task Team) at NITA-U. A key role of the unit would be among others, to review consultants' reports for compliance with the ESMP. Other roles will be:

- Monitoring implementation of mitigation actions by contractors
- Coordinating training and capacity building where planned
- Periodically report to NITA-U, MICT and IDA about implementation of the ESMP

Oversight to ensure mitigation actions are implemented will rest with NITA-U but ICT personnel at MDA and LG level will have similar responsibility.

'Prior to the commencement of construction works the contractor will be required to prepare their own ESMP (CESMP) based on this ESMP and taking into account the specific measures recommended in WBG General EHS guidelines.' NITA-U shall require contractors to comply with the ESMP and where a contractor has an Environmental Officer she/he will undertake environmental supervision during construction. Therefore, a contactor should have an Environmental Officer to guide implementation of mitigation measures that may be suggested during environmental and social screening and/or assessment. The supervising engineer or site manager/ contract manager should be given environmental orientation relevant to the ESMP so as to execute required environmental supervision roles. This might not be necessary if the supervising engineer has working environmental knowledge (most civil engineers do). Additionally a "Clerk of Works" should be employed to represent client's environmental objectives and interests during construction phase. As a hiring criterion, such a person should have a background in environmental issues, particularly associated with construction projects.

In each District is found a District Environment Officer (DEO) responsible for overseeing environmental protection. However in town councils and municipalities, this role is undertaken by Town- and Municipal Environment Officers respectively. These will have implementation and monitoring roles during execution of the ESMP. Usually, these officials lack adequate facilitation so the project will need to provide auxiliary financial assistance for them to have effective participation in this project. Based on their professional knowledge or recommendations in this ESIA, local environmental officers may have role in project design as advisors to engineering consultants on aspects such as location of onsite incineration units.

b) Monitoring and reporting arrangements

Monitoring will verify if predicted impacts have actually occurred and check that mitigation actions recommended in the ESIA are implemented and their effectiveness. Monitoring will also identify any unforeseen impacts that might arise from project implementation. The CESMP should include monitoring and reporting guidelines, environmental parameters and key performance indicators, and also guidance on how to identify and manage identified non compliances.

Who monitors and how: Monitoring will be undertaken by NITA-U (PCU), MGLSD, MICT&NG and relevant District Local Government staff. Monitoring by NEMA in this case can be considered "third party monitoring" but this is its regulatory mandate according to Sections 6 and 7 of the National Environment Act (Cap 135).

Another government agency that may undertake "third party monitoring" is the Occupational Health & Safety Department in Ministry of Gender, Labor & Social Development (MGLSD). This unit has authority to inspect any facility for compliance with national requirements on safety in workplaces. The project shall make no funding to MGLSD since this is provided for in its annual budget.

Monitoring will be done through site inspection, review of grievances logged by stakeholders and *ad hoc* discussions with potentially affected persons. At each monitoring, a discussion with a chairperson of environment committee of the area's local council (LC) could provide insight into views and grievances community has about the project.

Frequency: Monitoring will be undertaken monthly over the construction period.

Audits: Environmental and social audits will be necessary both during construction and project operation. While construction audits will aim to verify compliance to impact mitigation requirements, post-construction audits are a regulatory requirement within 12 months and not more than 36 months after completion of construction, according to national EIA Regulations, 1998 Section 31(2).

Both construction and post-construction audits can be conducted internally (by NITA-U) or by a consultant hired by NITA-U in consultation with NEMA and MoGLSD.

Reporting: Concise monthly monitoring reports should be compiled by NITA-U's Project Coordination Unit (PCU) and shared with IDA or other interested stakeholder.

Construction- and post-construction phase auditing should culminate in reports that NITA-U shall share with IDA, NEMA, MoGLSD or other interested stakeholders. Note that while NITA-U is under no obligation to disclose construction phase audits, annual post-construction audits must be submitted to NEMA as a regulatory requirement as per Section 31(2) of National EIA Regulations, 1998.

3.6 Permits required

Due to the nature of this project and its activities, several permits shown in Table 3-5 will be required before commencing project implementation.

Construction activities will include extensive trenching necessary to lay fiber optic cables, working along banks of wetlands/ watercourses, in protected areas or in some cases land acquisition. Construction will therefore require an ESIA/ESIA to be reviewed by NEMA and issue a Certificate of Approval when the project is approved for implementation.

Construction of transmission stations will also require either a ESIA or full ESIA either of which is approved by NEMA through issuance of a Certificate of Approval.

During operation, management of e-waste would require a dedicated waste processing facility or disposal site both of which would require an ESIA and subsequently NEMA approval.

Table 3-5: Permits that may be applicable to the project for review

Activity	Certificate of Approval	Wastewater Discharge Permit from WRMD	Land Acquisition Agreement from land owners
Fibre optic cable lying	♦ - UNRA		
Construction of transmission station	♦ - MoU with host Government Institutions	♦	
e-waste management	♦ - NEMA		

4 Description Of The Affected Environment

Existing environmental and socio-economic conditions in Uganda are discussed in sections below and will, in many cases, provide a basis for predicting impacts of the project.

4.1 Location and Size

Uganda (located in East Africa) has an area of 241,500 km² and is bordered by Sudan to the North, the Democratic Republic of the Congo to the west, Tanzania and Rwanda to the South and Kenya to the East. 15.3% of its land area is covered by water. Uganda contains and shares some of the world's most important eco-systems with its neighbours and beyond and notably Lakes Victoria, Albert, Edward, the Nile Basin, its mountain systems such as the Rwenzori, Elgon and Virunga series as well as several parks. It has a crucial role to play in the conservation of biodiversity in the sub-region and the world at large administratively; Uganda is divided into 132 districts located in four regions of Northern, Central, Eastern and Western.

4.2 Climate

Climatic conditions in Uganda are discussed below.

a) Uganda is characterized by equatorial climate with plenty of rain and sunshine moderated by the relatively high altitude. In most parts of the country, the mean annual temperatures range from 16^0C to 30^0C. Nevertheless, the Northern and Eastern regions sometimes experience relatively high temperatures exceeding 30^0C and the South Western region sometimes has temperatures below 16^0C. The Central, Western and Eastern regions have two rainy seasons, from March to May for the first rains, and the second rains from September to November. The Northern region receives one rainy season from April to October, and the period from November to March has minimal rain. Most of the country receives between 750 mm and 2100 mm of rain annually.

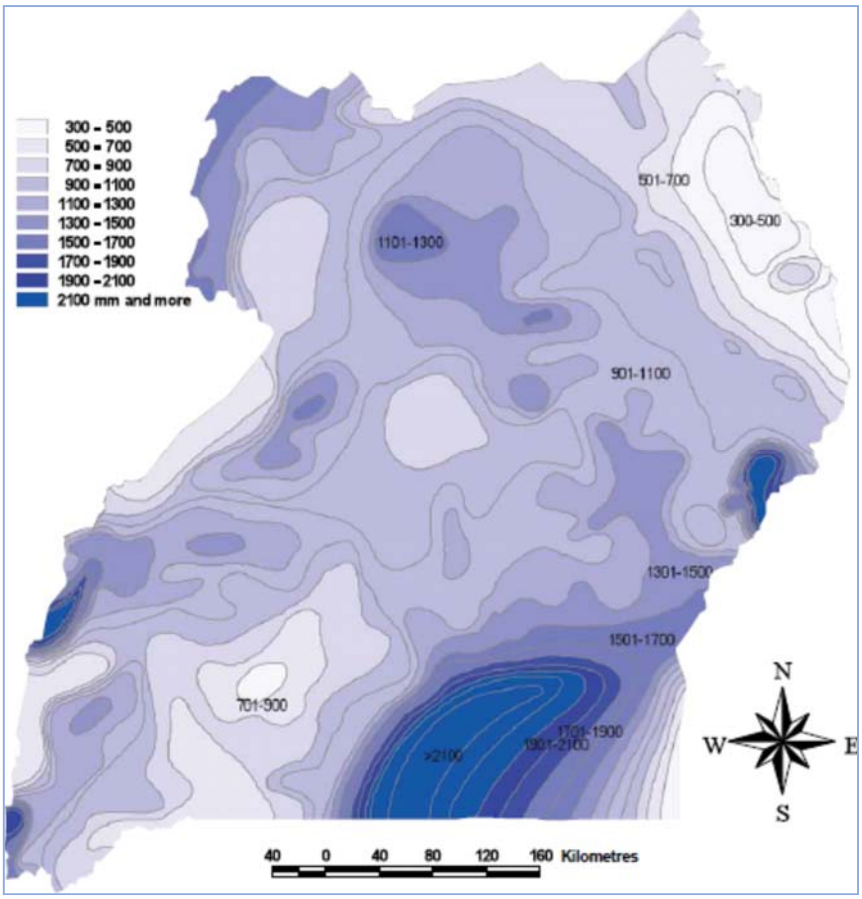
b) Uganda's climate is naturally variable and susceptible to flood and drought events which have had negative socio-economic impacts in the past. Human induced climate change is likely to increase average temperatures in Uganda by up to 1.5 ºC in the next 20 years and by up to 4.3 ºC by the 2080s. Such rates of increase are unprecedented. Changes in rainfall patterns and total annual rainfall amounts are also expected but these are less certain than changes in temperature.

c) The Inter-Tropical Convergence Zone (ITCZ) and the air currents such as the southeast and northeast monsoons influence the climate in Uganda. In most parts of the country, the seasons are fairly well marked- as rainy and dry seasons. Depending on the elevation and landscape, the mean temperature over the whole country show great variations. However, in areas adjacent to water bodies such as Lake Victoria, maritime conditions tend to modify the temperatures. The variation in mean monthly and annual evaporation rates are much smaller than corresponding variations in rainfall, which respectively, are 10-20% and 20-40% in the southern and northern parts of the country. The movement of the ITCZ is to a great extent responsible for the variations in meteorological factors that determine evaporation.

Source: UBOS, 2012

Figure 4.1: Regions in Uganda

d) Uganda may become wetter on average and the increase in rainfall may be unevenly distributed and occur as more extreme or more frequent periods of intense rainfall. Regardless of changes in rainfall, changes in temperature are likely to have significant implications for water resources, food security, natural resource management, human health, settlements and infrastructure. In Uganda, as for the rest of the world, there are likely to be changes in the frequency or severity of extreme climate events, such as heat waves, droughts and floods.



Source: NEMA, 2009

Figure 4.2: Uganda rainfall map

e) Uganda's economy and wellbeing of its people are tightly bound to climate hence are highly vulnerable to climate change and variability. In particular, climate change is likely to mean increased food insecurity, rising trends in spread of diseases like malaria, soil erosion and land degradation, flood damage to infrastructure and settlements and shifts in the productivity of agricultural and natural resources. It will be the poor and vulnerable who feel these impacts the hardest, and the likely implication scenario is increasingly higher chances for businesses failing to seek means of survival.

Relation to the project: *Climatic conditions can influence rain received in a given project area, sunshine hours, flood levels and winds all of which could affect, in various ways, the proposed project such as construction schedules, or inability to deliver project equipment to sites when, for example, roads are cut off by floods.*

4.3 People and Population Dynamics in Uganda

4.3.1 The People

Between 2002 and 2014, the population increased from 24.2 million to 34.9 million. This gives an average annual growth rate of 3.03 percent. At this rate of growth, the population of Uganda is projected to increase to 35.0 million in 2015 and further to 47.4 million in the year 2025

The Uganda constitution 1995 recognizes 46 tribes (GoU 1995) with varying production and consumption patterns. Modes of production and the rural livelihood coping strategies range from mainly cultivators (e.g. Baganda, Bakiga, Bagisu and Basoga) to pastoralists (e.g. the Karamojong and the Bahima) the rest of the people derive their livelihoods from a mix of livestock keeping and cultivation or agro- pastoralism. In addition, Uganda has been and still is, home to several thousand refugees from neighbouring countries. There are also other non-citizens residing in Uganda as a preferred place for home or where they are engaged in various economic activities. This mosaic provides Uganda with a rich cultural base and opportunities for modernization. However, there are also challenges the people of Uganda face, among others are: (i) rapid population growth and the ensuing pressures on the country's natural capital; (ii) inadequate provision of, and demand for, social services and infrastructure; and (iii) poor environmental conditions.

Relation to the project: *Infrastructure, income and literacy levels and proximity to urban centers have a significant influence on information technology acceptance and utilization. The project will increase investment in ICT sector leading to jobs creation and efficient government service delivery, improved productivity in all sectors and better governance. These will be long-term benefits to the Uganda people. This project will fast track and back stop the post conflict recovery programs by providing affordable connectivity to the region along with the benefits of the project.*

4.3.2 Population Dynamics

In Uganda, the 20th century marked an unprecedented population growth and economic development as well as environmental change. The Census report of 2002 put the country's population at 24.7 million people in 2003. The current growth rate of 3.4% per year is higher than the 2.9% that was envisaged for the period 1991 – 2002. Currently standing at 34.9 million, population of Uganda is likely to hit 50 million by 2025. Population is a key determinant of economic and social wellbeing and environmental degradation.

Considering the size of Uganda and comparing this with cities such as Mexico and Lagos whose populations are in excess of 20 and 13 million people respectively, it can easily be concluded that Uganda does not have a problem with its population size. While absolute numbers may suggest Uganda is relatively under-populated, the concern is the inability to provide for these relatively few people. In the absence of adequate social services, even a small population becomes a constraint. In addition, a poor population however small, needs attending to otherwise its people may engage in activities detrimental to the environment especially where alternative livelihood options are limited.

The urban population in Uganda has increased rapidly from less than 0.8 million persons in 1980 to 6.64 million persons in 2014, an 8-fold increase in 34 years. This increase is mainly attributed to the creation of new urban administrative units, natural growth, demographic factors (excess of fertility over mortality) and Rural-Urban Migration (UBOS, 2012). Kampala City has by far the highest population density. The population growth rate of Kampala City is above the national average even though the population growth rate of Central region, in which Kampala City is located, is the lowest among the four regions (North, Eastern, Western and Central) in the country. The lowest population density by region is 65 people per square kilometers for the Northern region.

Table 4-1: Population characteristics of Uganda

Region	1991 population	2002 population	2014 population
Central	4,843,594	6,575,425	

Eastern	4,128,469	6,204,915	
Northern	3,151,955	5,363,669	
Western	4,547,687	6,298,075	
Total	16,671,705	20,442,084	34,856,813

Source: UBOS, 2014 Census Results

Error! Reference source not found..3 below shows population distribution in Uganda.

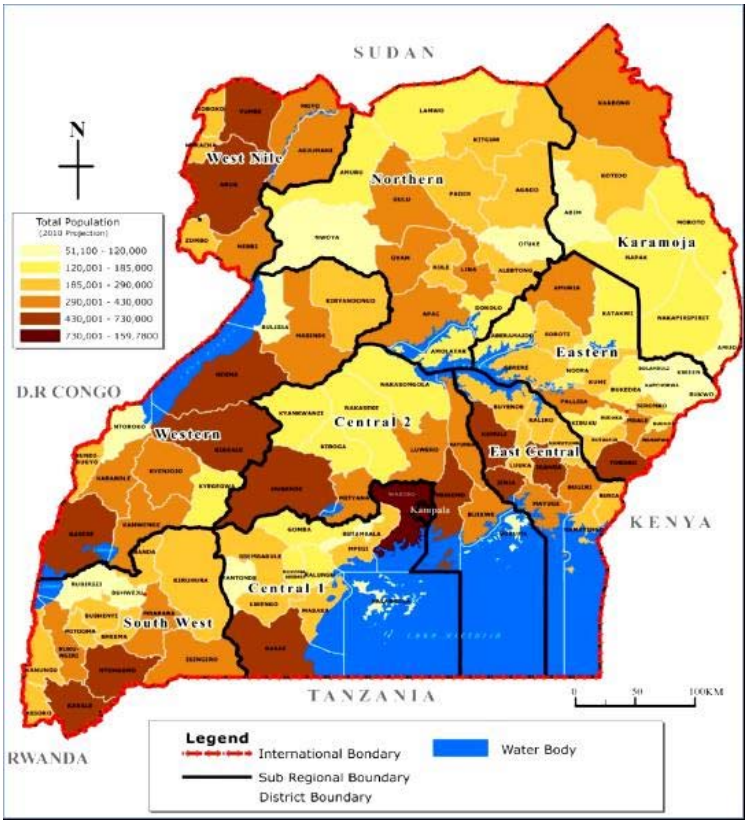


Figure 4.3: Population distribution in Uganda

Relation to the project: *The high rate of population growth may affect Uganda's efforts to provide and sustain timely basic services, information and employment opportunities. However ICT will stimulate entrepreneurship creating job opportunities in internet services, cellular telephony, information security, storage and management. In addition the project will enhance administrative functions improving governance and service delivery.*

4.4 Morphology, Relief and Drainage

4.4.1 Morphology and Relief

Most of Uganda forms part of the interior plateau of the African continent and its landforms are characterized by flat-topped hills in the central, western and eastern parts of the country. The rise of the plateau in the eastern and western part of the country is represented by spectacular mountain topography located along the

borders as, for example, the Rwenzori Mountains and Mufumbira volcanoes in the west and Mt. Elgon, Mt. Moroto, Mt. Murungole and Mt. Timu and Mt. Kadam in the East (NEMA 2002).

4.4.2 Drainage

Most of the rivers in the southern part of the country drain into Lake Victoria. Waters flows out of the lake along Victoria Nile into Lake Kyoga into Lake Albert (Lake Albert also receives water from DRC mainly through river Semliki), the Albert Nile or White Nile in Sudan, down to the Mediterranean Sea through Egypt. The lakes in Uganda cover almost one-fifth of the total area of the country. Lake Victoria, shared with Kenya and Tanzania is the biggest tropical fresh water body and the second largest fresh water lake in the world. Other lakes of interest are the crater lakes on the western part of the country associated with the western rift valley. It is not likely that any lakes or major rivers will be affected by this project.

4.4.3 Geology and Soils

The geological formations of Uganda indicate rocks formed between 3,000 and 6,000 million years ago (pre-Cambrian era) which makes them very old. The younger rocks are either sediments or of volcanic origin, formed from about 135 million years ago (Cretaceous period) to the present. Hence there is a gap in the geological history of Uganda of about 460 million years. The soils of Uganda are defined by a number of parameters including parent rock, age of soil and climate (NEMA 2008). The most dominant soil type is ferralitic soil which accounts for about two-thirds of the soils found in the country. Based on studies carried out in the past (NEMA 1996), Uganda's soils are divided into six categories according to productivity: (a) very high to high productivity, (b) moderate productivity, (c) fair productivity, (e) low productivity (e) negligible productivity and (f) zero productivity. The high productivity soils cover only 8% of the area of Uganda. Considering the country's size, this is indeed a small area and it may therefore be most likely to encounter short-term arrangements, especially in urban areas, where almost every inch of land is developed either for residence and commercial purpose. Conversion of such land for project facilities would call for some sort of compensation.

Relation to the project: *At locations where RCIP facilities will be constructed, landform is an important aspect to consider since it influences access, site drainage, erosion (or foundation damage/ undercutting) and risk of landslides. For example soils influence safety and speed of trenching when laying fiber optic cables.*

4.5 Natural Resources

4.5.1 Climatic variability

In Ugandan climate change and climate variability impose adverse impacts on livelihoods, especially of the rural poor. The country is a net sink for greenhouse gases but global climate has no physical borders, hence Uganda is also impacted by increase and fluctuation in the earth's temperature. Increased frequencies of floods and droughts are manifestations of climate change.

Relation to the project: *Climate change effects are associated with flooding and landslides. These have in the recent past caused immense destruction to infrastructure especially in Eastern and South-Western Uganda, as exemplified by Bududa landslides and flooding in Teso and Kasese. In such incidents, ICT infrastructure, power lines poles and roads are either damaged or washed away by flood and landslides.*

4.5.2 Terrestrial Resources and relation to the project

a) Land resources

Availability and access to land is increasingly becoming difficult in Uganda, especially for the poor. This is an increasingly big challenge for infrastructure development due to rising compensation costs when acquiring right of way. While optical cables will, to extent possible, be laid in road reserves, there could be instances where project infrastructure requires new land or damage private property hence necessitating compensation.

b) Forestry Resources

As earlier noted, project infrastructure will be built in road reserves and therefore no forests will be affected by this project. Therefore forestry resources are here discussed only for the reason that timber and poles (scaffoldings) would be necessary for construction of station sites in this project.

Generally due to tightened controls, loss of forest cover in protected forests has been reducing and total cover is stabilizing. Unfortunately, forests in protected areas make up only 30% of the national forest cover. The remaining 70% are on private and customary land where deforestation rates are high as a result of conversion of forest areas into agricultural and pastoral land. Furthermore, the country's harvestable timber resources are almost exhausted. Hence, to increase forest cover and ensure increased supply of timber, the Sawlog Production Grant Scheme (SPGS) and other licensing measures including charging economic rents for timber were introduced. SPGS funded by European Union supports private sector development of large forest plantations.

c) Rangeland resources and livestock production

Rangelands, mostly found in the 'cattle corridor' occupy 107,000 km^2 or 44% of the country's land area. In some places, the conditions of the rangelands are deplorably over- grazed or, and through wind and soil erosion, bare. The rangelands are also located in arid and semi-arid areas, themselves fragile ecosystems. In the extreme, pasture and water scarcities are contributing to frequent conflicts between cultivators and pastoralist in the first place, and among pastoralists themselves. The number of cattle, goats and sheep is on the increase and hence there is need to pay attention to the carrying capacity of Uganda's rangelands.

d) Wildlife resources

There cases where ICT infrastructure may be laid or erected in Protected Areas either to serve these locations or because they are along way routes of the infrastructure. Wildlife constitutes an important resource base for the country as a source of recreation/ tourism revenue, nature studies and scientific research. By 1994, wildlife populations whether inside or outside protected areas represented a small fraction of what they were in the 1960s, with some species such as both the black and the white rhino becoming extinct. By 2004, the populations of wildlife in protected areas had stabilized, and some even increased, although marginally. Outside protected areas, the decline in wildlife population continues as a result of increased hunting, blocking migratory routes and habitat conversions, among others. The Uganda Wildlife Authority is piloting the conservation of wildlife populations outside protected areas through measures such as the operationalization of the different classes of wildlife use right provided for in the Wildlife Act.
This project will not impact on habitats or mobility of wildlife as aerial pole erection will be the mode of construction implemented.

Aquatic Resources

a) Wetlands

Wetlands cover about 13% of the area of Uganda and provide direct and indirect values. Up to late 1980s, wetlands were generally considered 'wastelands' to be reclaimed for agriculture in rural areas, 'drained' as anti-malaria measures or industrial areas in urban settings. By 1994, the need for conservation was realized and the process of formulating an appropriate policy on wetlands was initiated. By 2001, wetlands came to be regarded as 'granaries of water'. From being a program in 1994, wetlands had by 2005 obtained an institutional home within government structure. Wetlands are now better known with detailed information up to the district level. The 56 districts then existing by 2004 all had District Wetland Action Plans and some communities in a few districts have gone ahead and prepared Community Wetlands Action Plans. Despite such an impressive achievement, the implementation of the various action plans is constrained by lack of resources. Furthermore, despite a wide array of achievements, wetlands, degradation is still evident- some for basic survival needs of the poor, others as a saving measure where land purchase prices are high, and yet others are the result of ignorance about ownership and legal boundaries of wetlands.

There are presently 12 sites designated as Wetlands of International Importance, with a surface area of 454,303 ha (Table 4-2). Much as the sites are well known for their bird life, they are also vital habitat for other threatened plants and animals. Construction through such sites cold temporary affect visitor experience of tourists.

Table 4-2: Ramsar Sites in Uganda

Ramsar site name	Major features
Lake Bisina wetland system	This wetland is an important Bird area, located in Kumi, Katakwi and Soroti districts. The wetland is a shallow freshwater lake with a thin strip of fringing papyrus swamp. The shallow areas are dominated by water lilies which is important for its diversity of macrophytes. It is used as a feeding ground by wading birds, including the globally vulnerable Shoebill (*Balaeniceps rex*). The system is also important as a refuge for fish species that have gone extinct in the main Ugandan lakes. The lake is very important for the surrounding communities in terms of fishing, transport, and supply of water for domestic use and livestock.
Lake Mburo Nakivali wetland system	This is a system of open and wooded savanna, seasonal and permanent wetlands, and five lakes, of which Lake Mburo is a part. It is a unique habitat, lying at the convergence of two biological zones, giving it very high biodiversity. It supports globally threatened species of birds such as the Papyrus Yellow Warbler and Shoebill, and provides refuge to 22 species of Palaearctic and Afrotropical migrant birds during adverse conditions. It supports two of the endangered cichlid fish species which have gone extinct in the main lakes, and it is the only area in Uganda in which the Impala is found.

Ramsar site name	Major features
Lake Nakuwa wetland system	A permanent wetland associated with a number of satellite lakes and a swamp system dominated by dense papyrus, broken in parts by pools of water forming sudds (clumps of floating papyrus). In addition to supporting the Sitatunga and the Nile Crocodile, the system and its satellite lakes contain the most diverse cichlid species assemblage and are a haven for a number of noncichlid species no longer found in the large lakes of Kyoga and Victoria. The wetland also plays an important role in flood prevention, water purification and groundwater recharge. It is probably one of the remaining pristine wetland areas in Uganda due to its remoteness and sparse population in the immediate catchment, and it offers employment to a number of fishermen.
Lake Opeta wetland system	This Ramsar site is found in eastern Uganda, It is an important bird area and one of the remaining intact and probably most important wetland marshes in Uganda. It is predominantly an extensive swamp of Vossia cuspidata to the east and south graduating into dry Hyparrhenia grassland savannas. The wetland is of great importance for the conservation of birds, and Fox's weaver, Uganda's only endemic bird has been recorded in the swamp breeding. The site is also important as a refuge for fish species that have gone extinct in the main lakes, including Lakes Victoria and Kyoga.
Lutembe Bay wetland system	Lutembe Bay is an Important Bird Area. Situated at the mouth of Lake Victoria's Murchison Bay, this shallow area is almost completely cut off from the main body of Lake Victoria by a *C.papyrus* island. The site supports globally threatened species of birds, endangered Cichlid fish, and over 100 butterfly species, including three rare ones. It is a breeding ground for Clarias and lungfish, and regularly supports more than 52% of the Whitewinged Black Terns (*Chlidonias leucopterus*) population.
Mabamba Bay wetland system	Mabamba is an extensive marsh stretching through a narrow and long bay fringed with papyrus towards the main body of Lake Victoria the only swamp close to Kampala where one can easily find the globally threatened Shoebill (*Balaeniceps rex*). The site supports an average of close to 190,000 birds and is part of the wetland system which hosts approximately 38% of the global population of the Blue Swallow (*Hirundo atrocaerulea*), as well as the globally threatened Papyrus Yellow Warbler and other birds of global conservation concern.
Murchison Falls Albert Delta wetland system	The site stretches from the top of Murchison Falls, where the River Nile flows through a rock cleft some 6m wide, to the delta at its confluence with Lake Albert. The convergence between Lake Albert and the delta forms a shallow area that is important for water birds, especially the Shoebill, Pelicans, Darters and various heron species. The delta is an important spawning and breeding ground for Lake Albert fisheries, containing indigenous fish species; the rest of the site is dominated by rolling savannas and tall grass with increasingly thick bush, woodlands and forest

Ramsar site name	Major features
	patches in the higher and wetter areas to the south and east. It forms a feeding and watering refuge for wildlife in the Murchison falls National Park during dry seasons.
Nabajjuzi wetland system	Nabajjuzi is a long narrow stretch of swamp from the periphery of Masaka to Katonga River system. It provides a spawning ground for mudfish and lungfish, and supports globally threatened bird species and the endangered Sitatunga. The site lies in traditional Buddu county of Buganda Kingdom, and some of the flora and fauna are closely associated with cultural norms and traditions, especially the totems. There is thus considerable cultural attachment of the surrounding areas to the wetland, which also plays an important role in stabilizing the banks of River Nabajjuzi, groundwater recharge, and flood control and as a natural filter for silt and sediments in the runoff.
Sango Bay Musambwa Island Kagera wetland system (SAMUKA)	A mosaic of wetland types including the biggest tract of swamp forest in Uganda, papyrus swamps, herbaceous swamps interspersed with palms and seasonally flooded grasslands, sandy, rocky and forest shores, and three rocky islets about 3 km offshore in the Sango Bay. The area lies in the transition between the East and West African vegetation zones and this bio-geographical ecotone makes it biodiversity rich. The system supports huge congregations of waterbirds, hosting an average of 16.5% of the population of Grey headed Gulls (Larus cirrocephalus), and hosts globally endangered mammals such as Elephant, Black and White Colobus Monkey and a subspecies of the Blue Monkey.
Rwenzori Mountains Ramsar Site	This site covers 99,500 ha; and it is Within Mt. Rwenzori protected area which is World Heritage Site. The entire Afro-alpine ecosystem (between 1,600 and 5,100 masl) is unique with the contribution of high rainfall and the melting of snow from the peaks, various wetland types are present such as peatlands, freshwater lakes, and tundra, amongst others. The mountains are known to support 21 species of small mammals, including the endemic and vulnerable Rwenzori Shrew. Other species of global conservation concern include L'Hoest's monkey, Horseshoe bat, and Rockefeller's Sunbird. With the distribution of fish varying with altitude, several indigenous fish species are found within the site, with the most common Cyprinid species including Varicorhinus rwenzorii.
Lake George	This site has a complex of river systems emanating from the Rwenzori Mountains supplying a system of permanent swamps located on Lake George, in the Rift Valley. Vegetation consists of grassland, woodland, and three major swamp types. The site supports large mammals, including elephants, hippopotamus, and antelope, and is important for numerous species of wintering Palearctic water birds and various notable resident birds.
Lake Nabugabo wetland system	The site is located in Masaka district and it is approximately 22,000 ha. It is shallow freshwater lake 8.2km long by 5km wide, with three smaller lakes, separated from Lake Victoria by a sand bar. The lakes are an important migratory stopover-

Ramsar site name	Major features
	destination for migratory bird species - at times during the year, the site (listed as an Important Bird Area) holds more than 15% of the world's population of the Blue Swallow and support five globally threatened and near-threatened birds: Blue Swallow Hirundo atrocaerulea, Shoe Bill *Balaeniceps rex*, Great Snipe Gallinago media, Pallied Harrier Circus macrourus, and the Papyrus Gonolek Laniarius mufumbi. The system supports a high diversity of plant species, including insectivores of the family Droseraceae.

It was noted from stakeholder consultations that Wetlands management Department (WMD) has developed a policy that required infrastructure to be erected on bridges to avoid filling swamps wherever such infrastructure is to be constructed across a wetland. Construction will be on poles that do not utilize oil based preservative treatment (as approved by NEMA). In addition, bird flight path impact is being mitigated by project design default which involves use of bird reflectors.

b) Water

Water is life, and Uganda has significant quantities of the resource. From both hydrological and social water scarcity considerations at the moment, Uganda is not water stressed. However, by 2025, indications are that there will be reason to worry as a result of increasing demands for human, livestock, wildlife, irrigation and industrial water. Uganda is ranked in a group of countries that must plan to secure more than twice the amount of water they used in 1998 in order to meet reasonable future requirements. The quality of the water from available sources is another area of concern principally as a result of pollution – residential, industrial and agricultural land discharges into the open water bodies. To some extent the buffering capacity of wetlands is making a contribution towards reductions in pollution, but this will continue only if the integrity of the wetlands can be sustained.

Water resources are under increasing threat of degradation as exhibited in reduced quality and quantity in the major freshwater bodies. Soil erosion and industrial pollution have reduced surface water quality. Watershed degradation and climate change also reduce surface and ground water quantities. The major drivers of reduced water quality and quantity are encroachment on water catchments, increased water abstraction for domestic, industrial, infrastructure development and production, discharge of effluent into the environment and inadequate sanitation facilities especially among fishing communities (NEMA, 2012).

Relation to the project: *While the proposed ICT infrastructure such as optical fibre cables will be mainly along road reserves, it may pass through or along natural resources such as forests, swamps and wildlife conservation areas. Construction of the infrastructure could therefore pose impacts on these resources in absence of control measures. Construction of project facilities is expected to take small quantities of water and for only the short duration of construction activities.*

4.5.3 Cross-Sectoral Resources

a) Energy

The dominant source of energy in Uganda is biomass and this is expected to remain so in the foreseeable future in spite of plans to increase hydropower energy production. However, the share of clean energy in total consumption is gradually increasing, in part as a result of programs like the Energy for Rural Transformation. Production of energy is being liberalized, attracting an increasing interest among private investors. The adverse environmental effects of clean production are mitigated through the EIA guidelines for Uganda 1997 and the EIA guidelines for the Energy Sector.

Energy is an essential resource for every economy. The Human Development Report (UNDP 2011) considers energy as central to a range of services supporting human development, ranging from modern medical care, transportation, information and communications, to lighting, heating, cooking and mechanical power for agriculture. At a grid electrification rate of 15%, Uganda has one of the lowest electrification rates in Sub-Saharan Africa. Inadequate access to electricity is a big deterrent to development. It hinders the startup of certain poverty alleviating activities, makes it hard for students to study at night, limits the services health centres can offer, to mention but a few.

Grid coverage is important factor determining access to electricity. Grid densification/extension projects, under Rural Electrification Agency, are ongoing in the districts of Masaka, Kiboga, Apac and Soroti, connecting communities and individual institutions on a cost sharing basis. The Rural Electrification component mainly supports institutions and communities located close to high voltage electricity grids.

This low coverage and slow advancement of the national electricity grid can be attributed to, among others, high costs of grid extension, sparse settlement in some areas, low ability of potential consumers to pay and remoteness of most rural villages. There are some efforts to promote clean energy sources such as solar and biogas. Another estimated 1 % of the population uses fuel gensets, car batteries and solar PV systems to achieve a minimum level of electricity supply. Unfortunately, capital investment required is not yet afforded by the rural poor.

Relation to the project: While availability and reliability of power supply will not be a critical need during implementation of the RCIP project, it will be essential for operation of the installed ICT systems.

b) Biodiversity

Uganda is endowed with a very rich and varied biodiversity due to its bio geographical setting, varied altitudinal range and extensive drainage systems. This biodiversity is a national asset supporting rural livelihoods and contributing to commercial economic activities. The contribution of Uganda's biodiversity resources, organisms or parts there-of, population or other biotic components of ecosystems with actual or potential value for humanity has been estimated at $1000 million per year, balanced against economic costs of $ 202 million plus loses to other economic activities of about US$49 million per year. While Uganda continues to lose some of its rich biodiversity, the rate of loss has been reduced somewhat. Reflected in terms of living Uganda's Index, the country out-performs Planet Earth as a whole when Living Planet Index is considered. The loss of biodiversity in protected areas has to a great extent been stopped and the trend reversed between 1990 and 2005. Outside protected areas biodiversity loss was still continuing as of 2005. The loss of biodiversity is largely the result of habitat conversion and introduction of exotic species. Current knowledge of the species present is confined to the more known taxa such as birds, mammals, butterflies, higher plants,

reptiles, amphibians and fish because of their relative conspicuousness and economic importance. Table 4-3 shows numbers of species known so far and how much they cover on the global scale.

Table 4-3: Species known to occur in Uganda

Taxon	No. of species	% of global species	No. of globally threatened species
Amphibians	86	1.7	10
Birds	1,012	10.2	15
Butterflies	1,242	6.8	-
Dragon flies	249	4.6	-
Ferns	389	3.2	-
Fish	501	2.0	49
Flowering plants	4,500	1.1	40
Fungi	420	16	-
Liverworts	275	46	-
Mammals	345	7.5	25
Mollusca	257	0.6	10
Mosses	445	3.5	-
Reptiles	142	1.9	1
Termites	93	3.4	-
Other invertebrates	-	-	17

Source: NEMA 2009

Figure 4.4: Baboons along the project area

Issues:

Several Ugandan species have qualified to be included on the IUCN Red Data list due to threats such as:

i) Habitat destruction as a result of conversion of forests to agriculture land, expansion of urban and industrial centers, and fragmentation;

ii) Encroachment on wetlands, forests and water body shores and banks driven by industrial expansion and infrastructure development; and

Pollution from the use of agrochemicals, polythene bags, and release of municipal and industrial effluents

a) Tourism

According to Uganda Tourism Board (UTB), Uganda's tourism earnings have doubled in the last five years from US$440m to $800 m in 2012. Uganda is now ranked top in tourism industry growth in Africa. According to the 2011 tourism review in Africa, Uganda's tourism sector grew by 25% in 2011 while that of South Africa and Tanzania realized growth of 21% and 13.4% respectively. Uganda's tourism growth is attributed to its top tourist destination hubs like Murchison Falls National Park, Queen Elizabeth national park, Bwindi Impenetrable Forest renowned for its Mountain Gorilla Safari activities. Laying optical fibre cables along major tourist roads could disrupt tourist traffic if proper controls are not incorporated in constitution plans. Error! Reference source not found. Priority tourism roads in Uganda

Figure4.5: shows major tourist areas in Uganda

Figure4.6: shows major tourist areas in Uganda

Note: It is the proposed project infrastructure will be constructed along some of these priority tourism roads.

Relation to the project: Biodiversity aspects would apply to the project only in rare situations that optical fibre cables are constructed in or near ecologically-sensitive areas in a way that damages them or endangers wildlife therein. These include forest reserves, wildlife conservation areas and wetlands (some of which may be Ramsar sites). Construction along major tourist roads could disrupt tourist traffic if proper road safety controls are not instituted.

Figure 4.5 shows ICT infrastructure will be developed along the following main tourism roads:

- Kasese – Mpondwe
- Masindi-Pakwach (through Murchison Falls National Park)
Soroti – Moroto [[Pian Upe Game Reserve and Bokora Wildlife Reserve)

4.6 Socio-Economic and Cultural Environment

4.6.1 Urbanization

Although Uganda is one of the least urbanized countries in the world in absolute terms, the urban population is growing. Urban population in Uganda increased from less than one million persons in 1980 to about three million in 2002, representing a nearly fourfold increase. However, between 2002 and 2014, the urban population rapidly increased to 6.64 million.

Relation to the project: Due to land scarcity in urban areas it's increasingly becoming costly to compensate landowners to acquire land for project facilities. This will be reflected in resettlement cost of the project where proposed ICT infrastructure would be constructed on private property. However this is very unlikely since the project will ONLY be implemented within the road reserve. Nevertheless, the project is likely to have limited temporal disruptions on some community livelihood options that may be operating within the road reserve (project area) such as open markets on specific days for the rural areas while kiosks, and garages might also be temporarily disrupted within the urban areas thus necessitating participatory mitigation measures like limiting of works at non-market days and at night (9:00pm-2:00am) respectively to avert such disruptions.

It is also noted that urban dwellers are major users of ICT services ranging from telephony, telephone-based banking and money transfers to internet. These would therefore benefit from the proposed project greatly.

4.6.2 Employment

Unemployment Rate in Uganda increased to 4.20 percent in 2010 from 1.90 percent in 2007 (UBOS 2011) Unemployment remained predominantly an urban problem as the unemployment rate in urban areas is more than three times that of their rural counterparts. The unemployment rate was highest in Kampala (11%) and lowest in Western and Eastern regions (2%) respectively. About 83% of young people have no formal employment (MFPED 2012). Youth unemployment in Uganda is the highest in Sub Saharan Africa. Employment is expected to remain a challenge in the years ahead. Generally, the high youth unemployment rate in Uganda is largely attributed to high population growth rate, slow growth in industrial development, and small formal labour markets, lack of sufficient experience and skills, rural-urban migration, and youth's limited access to resources like capital and land. In addition, the overall existing policies continue focusing on creating job seekers rather than job creators. However, growing sectors of agro processing, tourism and services offer opportunities for youth employment (NEMA, 2012).

Relation to the project: Uganda is positioning herself to exploit the growing demand for worldwide Business Process Outsourcing (BPO) industry to address the challenge of youth unemployment and this would be enhanced by reliable and widespread ICT infrastructure.

4.6.3 Safe water and sanitation

Access to safe water and sanitation in both urban and rural areas has increased compared to the situation 10 years ago. For example in 1991, only 11 towns had the services of the National Water and Sewage Cooperation (NWSC) but now the corporation covers 19 towns. By 2004, rural access to safe drinking water had increased to 57% while the urban one was at 67%. If current trends continue, and incremental investment funds are procured, Uganda should meet its Millennium Development Goal on water supply. While safe water access per se has improved, functionality of water points is another key issue.

Relation to the project: Availability of safe water and sanitation will be important for construction contractors. It is noted safe water availability may be more difficult in the northern, western, eastern regions compared to the central region.

4.6.4 Environmental pollution: e-waste management

In spite of a national policy on electronic waste, e-waste generated from use of ICT equipment is a growing challenge in Uganda because:

- Enormous increase in ICT usage – high demand of used/second hand products due to prohibitive prices for the new products,
- Little comprehensive data on e-waste
- Lack of e-waste recycling/treatment and disposal facilities,
- Lack of comprehensive awareness on e-waste management,
- Lack of skilled personnel in e-waste.

Currently around 10 computers per 1,000 inhabitants are installed in Uganda of a population of about 34 million people. About 30,000 new and used computers are imported into the country, about 10-20% of which are used. Typically Government and large enterprises replace computers after 3-5 years and often auction them to second-hand use, where a computer is used for another 5-8 years. Imported second-hand computers through professional refurbishment centres have a life span of about 5 years. Based on this numbers it is estimated that over 60,000 computer units reach end of their useful life per year. It is expected that only around 10% of those computers reach the waste stream, whereas the rest of the waste is kept in storage. The 10% in the waste stream get collected by people who salvage parts for second-hand sale and the rest gets dumped informally. It is estimated that Uganda currently has well in excess of 2,000 tons of computer waste. Environmental impact of the processing of different electronic waste components

Table 4-4: Socio-environmental and health impacts of e-Waste

E-Waste component	Process used	Potential socio-environmental impact
Cathode ray tubes (used in TVs, computer monitors, ATM, video cameras, and more)	Breaking and removal of yoke, then dumping	Lead, barium and other heavy metals leaching into and contamination of groundwater.
Printed circuit boards	De-soldering and removal of computer chips; open burning and acid baths to remove final metals after chips are removed.	Air emissions as well as discharge into rivers of glass dust, tin, lead, brominated dioxin, beryllium cadmium, and mercury. This results into water contamination and thus leading to serious health consequences.
Chips and other gold plated components	Chemical stripping using nitric and hydrochloric acid and burning of chips	Hydrocarbons, heavy metals, brominated substances discharged directly into rivers acidifying fish and flora. Tin and lead contamination of surface and groundwater. Air

		emissions of brominated dioxins, heavy metals and hydrocarbons. Contamination of water sources has socio-economic and health impacts in especially poor communities relying on untreated water.
Plastics from printers, keyboards, monitors, etc.	Shredding and low temp melting to be reused	Emissions of brominated dioxins, heavy metals and hydrocarbons
Computer wires	Open burning and stripping to remove copper	Hydrocarbon ashes released into air, water and soil. This results into soil, water and air contamination.

Relation to the project: *Absence of formal e-waste management services and facilities mean that the proposed project may in 5 years add a considerable amount of electronic waste to the nation's stock. Since no component will support e-waste management, this challenge will only escalate after project implementation.*

Note: In regard to standards and regulations, NITA-U should be aware of need for environmental standards/guidelines and legislation for e-waste management. Emphasis should be made on implementation of the existing e-waste management policy.

It was also noted from national stakeholder consultations (31 March 2015) that the East African Community member states can jointly access financing from a European Union Fund of €70 million to develop infrastructure for managing e-Waste. It was also revealed that Uganda Communications Commission (UCC) and MICT through a consultant are leading lead in developing e-Waste Guidelines and Regulations for Uganda.

Note: In regard to standards and regulations, NITA-U should be aware of need for environmental standards/guidelines and legislation for e-waste management. Support

4.6.5 Poverty

A May 2013 Poverty Status Report released by Uganda's Ministry of Finance Planning and Economic Development (MFPED) indicates that poverty levels among Ugandans have continued to decline, a trend that gives hope that the country's economy will continue to grow. According to the study report, the country's poverty levels have been on the downward trend since 1992 except in 2002/03 when a survey indicated that poverty levels had gone up. The number of people who are absolutely poor was 9.9 million (56.4%) in 1992/93 and reduced to 7.4 million (33.8%). In 1999/2000, the number however went up slightly to 9.3 million (38.8%) in 2002/03 but it reduced to 8.5 million (31%) in 2005/06 and to 7.5 million (24.5%) in 2009/10. MFPED attributes the reduction in poverty levels to the reduction in the number of households relying mainly on subsistence agriculture.

Relation to the project: ICT services will enhance information access and this will benefit producers, traders and consumer with the overall effect of poverty reduction in the country. The project will employ approximately 90% of the labor force from within the local community for specific works especially in the northern part of the country where poverty levels are higher than other regions. *Please refer to Section 8.1.3*

4.6.6 Health

Key health statistics in Uganda are outlined below:

- In 2011, Uganda Government owned the highest percentage (46%) of hospitals in the country followed by private Not-For-Profit entities at 43% while private For-Profit organizations owned 11%.
- In 2011, polio immunization coverage was 95 % among the children below 5 years of age.
- In 2010/11, there were 34.9 million Out Patients Department (OPD) visits as compared to 36.8 million visits in 2009/10 in government and private Not-For-Profit healthcare facilities.
- Latrine coverage at national level has continued to improve for the last five years, standing at 71 % in 2010/11 from 69 percent in 2009/10.
- Malaria remains the highest cause of both morbidity and mortality among the children below 5 years of age. This is the age at the bottom of the primary school-going children and prevalence is higher in rural areas.

Relation to the project: ICT in healthcare facilities will improve delivery of medical services, management of medical resources (drugs, vaccines etc) and healthcare records in Uganda. Quick information exchange will enable medical personnel in different regions to take part in certain medical procedures. ICT will improve safety of healthcare services: a common citizen can check licensure of a given drug shop, medical staff or verify prescriptions online.

4.6.7 Cultural heritage

Cultural heritage is part of humanity's link with the world and its past, its achievements and discoveries. The National Environmental Act provides for protection of the country's cultural heritage. About 187 known physical, cultural, historical and para-archaeological sites have been identified and their specific locations recorded in Uganda.

Relation to the project: This will only be relevant to the proposed project in the unlikely event that construction of ICT infrastructure affects known physical cultural resources or when chance finds encountered are damaged. A protocol to manage chance finds if encountered at any site during project implementation and known PCRs shall be assessed as part of the specific ESIA and managed in accordance with Management Plans that may be developed.

4.6.8 Education

Uganda's education system is formal and informal, public and private at all levels. The Universal Primary Education (UPE) was introduced in 1997 and Universal Secondary Education (USE) in 2007 to offer free education at the primary and secondary levels respectively. Education is obtained under two schemes; cost sharing in public institutions and private sponsorship in both public and private institutions at levels. Literacy rates stand at 73% in 2009/2010 (UBOS 2012b) at national level; male literacy rate (79%) and females 66%; Urban areas 88% and rural areas 69%; Kampala 92%, Central region 83% while the Northern region had the

lowest (64%) (UBOS, 2011). Technical training institutions lack laboratory equipment to impact practical skills to students.

Relation to the project: The education sector will greatly benefit from access to ICT services. Technical schools could be able to provide practical on line even if they lack physical laboratory/ workshop equipment.

4.6.9 ICT access

The total number of internet subscribers increased by 33.6 percent in 2013 and this was due to a 5.1 percent increase in the fixed internet subscribers and a 34.6 percent increase in the mobile internet subscribers. The internet penetration rose from 8.2 percent in 2012 to 20.7 percent in 2013 and this was as a result of an increase in accessibility to the internet which has been brought about by the ease of mobile phones to access the internet.

Other key statistics are:

- Telephone subscribers increased by 10 percent from 16.7 million in 2012 to 18.3 million in 2013.
- The average on-net domestic call rate increased by 38.9 percent from 216 shillings in 2012 to 300 shillings in 2013.
- The total number of mobile money registered customers increased by 151.5 percent from 5.7 million customers in 2012 to 14.2 million customers in 2013.

Relation to the project: The proposed project will enable faster increase in access to ICT services in the country. The project will also enable improved information management, records storage and security as opposed to current prevalent inadequate safety, low security and limited longevity of records storage as shown in photographs below. E-Procurement is largely non-existent in Uganda so far and the paper-based process is commonly riddled with undue delays, corruption and high cost to bidders. Bidders have to travel long distances to collect requests for proposals, deliver bids and view evaluation results pinned on noticeboards.

5 Stakeholder Engagement Process

5.1 Introduction

Section 12 of Part 3 of the Environmental Impact Assessment Regulations for Uganda (1998) makes recommendations on Public participation during EIA studies.

The regulations specifically advise developers to take all measures necessary to seek the views of the people in the communities which may be affected by the project during the process of conducting the study.

As such, Stakeholder Consultation and Engagement for the proposed project was undertaken in accordance with the NEMA guidelines so as to gather opinions and views on the environmental aspects of the proposed project.

- ✓ Stakeholder consultative meetings; Site Visits and
- ✓ Concerns and views entered in a data base.

A stakeholder analysis exercise was conducted to identify the potential interests of different stakeholders (excluding the project proponent) as well as the opportunities, threats and possible linkages they may have with regards to the proposed project.

The stakeholder analysis matrix is provided in Table 5.1.

5.2 Approach and methodology

The major objective of the public and stakeholder consultation process was to provide insights in to the views and concerns of the key stakeholders with regard to the proposed project. The consultations were conducted within a qualitative approach framework. The flexibility of the qualitative approach enabled the consultant to gain deep insights in to the views, concerns and feelings of the various stakeholders. All the stakeholders were selected purposively. The main modes of data collection that were employed during the process were key informant interviews, informal conversational interviews and a community meeting (Burke and Larry, 2000; Neuman, 2004).

Table 5.1: Stakeholder analysis matrix for the proposed Environmental and Social Safeguards for the Missing Links for RCIP

KEY:

Central government entities = Uganda Investment Authority (UIA); Ministry of Information and Communication Technology, Ministry of Education and Sports, Science and Technology, The Ministry of Trade, Industry and cooperative (MTIC); National Environment Management Authority (NEMA), Ministry of Lands, Housing and Urban Development (MoLHUD); Districts (Moroto, Katakwi, Karuma, Pakwach, Nebbi, Arua, Koboko, Yumbe, Moyo and Adjumani),

- Local government entities = District Environment Officers (DEOs); District Engineers, District Physical Planners, Community Development Officers and Labour Officers (Moroto, Katakwi, Karuma, Pakwach, Nebbi, Arua, Koboko, Yumbe, Moyo and Adjumani),
- Local communities =Local Council Chair Persons

Stakeholder	Interests	Opportunities	Threats	Linkages/Involvement with the proposed project
Central Government entities	• Sectoral guidance and policies • Input to environment management plans • Monitoring of environmental and social issues	• Institutional support and coordination	• Limited resources for monitoring • Bureaucracy that may delay progress of operations thus costing the project more time and money	• Give guiding policies and government regulations • Monitoring of works • Technical support to District staff for restoration activities • Issue approvals/permits/certificates to the project
Local Government entities	• Responsible for the planning and development of	• Can provide information about population trends and	Political interference Lack of resources to participate fully	• Share information on compensation modalities

Stakeholder	Interests	Opportunities	Threats	Linkages/Involvement with the proposed project
	infrastructure (roads, water supply) • Representing project affected persons • Technical guidance during data collection • Accountability for development in their areas of jurisdiction	their dynamics in the project area • Political support and mobilization • Can be utilized as the contact persons in the project area • Can help in spreading information from sensitization meetings		• Witness the land acquisition and compensation process • For purposes of facilitating the process of information among the stakeholders, district officials can participate in project progress and site meetings • Can take up the role of liaising with the local communities since they are on the ground – through the Environmental Officer, the district can take on the role of environmental monitoring in collaboration with consultants
Local communities	• How will they be affected by the project? • Good source of information on the trends and dynamics within the project area • In some cases particularly the land owners, their livelihood might be affected by the proposed project	• Assistance in information transfer • Labour supply (Unskilled)	Misinterpret project intentions and therefore sabotage which eventually results in project delays If not sensitized, they might disrupt project activities	• Good channel for information transfer and sharing • Need for compensation • Supply chain linkages

Stakeholder	Interests	Opportunities	Threats	Linkages/Involvement with the proposed project
	• Can provide casual labour for the project			

5.3 Stakeholder consultation Meetings

Separate stakeholder consultation meetings were held with the key stakeholders identified among those included are; technical persons such as the District Environment Officers, Community Development Officers, Planners, District Engineers Labor Officers and some Health Assistants (Moroto, Katakwi, Karuma, Pakwach, Nebbi, Arua, Koboko, Yumbe, Moyo and Adjumani), and Area LCI Chairmen and the area residents as well as the neighbours to the proposed project area. The No objection letters for the proposed development.

5.4 Site Visits

These visits to the proposed development sites were done to establish what legitimately exists at the proposed project site and get a feel of state of the existing sensitive ecosystems including the nearby water points within the project vicinity.

5.5 Comments Register

A record of all comments and observations made during the EIA has been maintained and table 5.2 below provides a summary of the key issues and concerns raised during the consultation and engagement process held during the EIA prior to the preparation of this ESIA.

Table 5-2: Stakeholder consulted

Name	Position	District	Contact	Comment
Zachary Angella	Environmental Officer	Moroto		• I don't anticipate much negative impacts since the project is within the road reserve. However, there is need to harmonize with other road reserve users to avoid conflicts
Lotyang John	Senior Environmental Officer	Moroto	0782740147	• Erosion from trenching and temporal interruption of community businesses could be among the concerns that call for mitigation/ reduction to minimal levels.
Andiandu Joaskin	Environmental Officer	Arua		• The project is quite welcome. However, there is need to take precautionary measures to avoid removal of trees planted especially in the municipality.
Moini Fred	District Planner	Adjumani		• The project is a major boost to the District's drive towards achieving a middle income level of the residents as it clearly complements many programs within the District Development Plan.
Fualing Doreen	District Environmental Officer	Nebbi	0782878098	• Issues of Occupational Health and Safety for workers and other road users should be taken serious.

				• Consideration should be made to minimize tree removal especially for Atwera local forest reserve. • Warning signage especially while in the urban centers to avoid accidents
Busisa Stephen	URA officer	Vurra Boarder Post		• The project is welcome since it will complement our communication effort thus improving business
Giyaya Charles	District Environment Officer	Adjumani	0772543284	• The district has made strides in conserving and planting of trees. Therefore, the project should be designed I such a way that as many trees as possible are protected
Jane Atyi	District Community Development Officer	Koboko	0772550211	• Likelihood of child abuse by workers who entrench the local communities with money and thus tempt the gild children from poor families • Increased alcoholism due to project works earnings thus leading to social disruptions of working hours
Oryema Jakor	Health Assistant	Moroto		• Possibility of spread of STIs such as HIV/AIDs among community members arising from workers potential spending capabilities • Improper human waste disposal by workers can lead to disease outbreaks
Awadri Ramadhan	District Community Development Officer	Adjumani	0772841354	• Potential of family conflicts that may result into break down due to promiscuity • Introduction of some habits among community members by the workers such as theft of properties • However, the project will bring more money to community members due to increased sales from workers' earnings
Richard Diedone	Labor Officer	Koboko	0774360259	• Workers should be given written appointments to avoid unjust dismissals • Inhuman treatment of works while at work from supervisors such as beating should be avoided • Resting times should be observed

Kisa Nickson	District Engineer	Moroto		• Respect/care for other properties within the road reserve to avoid collisions • Implementation should follow the approved designs and where changes are inevitable, stakeholders should be notified
Okiria Peter	DCDO	Nebbi	0772683449	• Potential of school going children dropping out to participate in the project works due to demand for labour. • Contractor should guard against recruitment of Children on the project
Nyango Ernest	Senior Community Development Officer	Moyo	0772538808	• Labor Laws should strictly be followed such as avoid employing of children • Indigenous culture should be respected by project workers

6 Project Need and Alternatives

6.1 Introduction

This section considers other practicable strategies that will promote the elimination of any negative environmental impacts identified during the course of the project assessment. It is a requirement to have alternatives to the proposed project in an effort to have an ideal development with minimal environmental disturbance.

The following alternatives were taken into consideration as a means of reducing environmental effects.

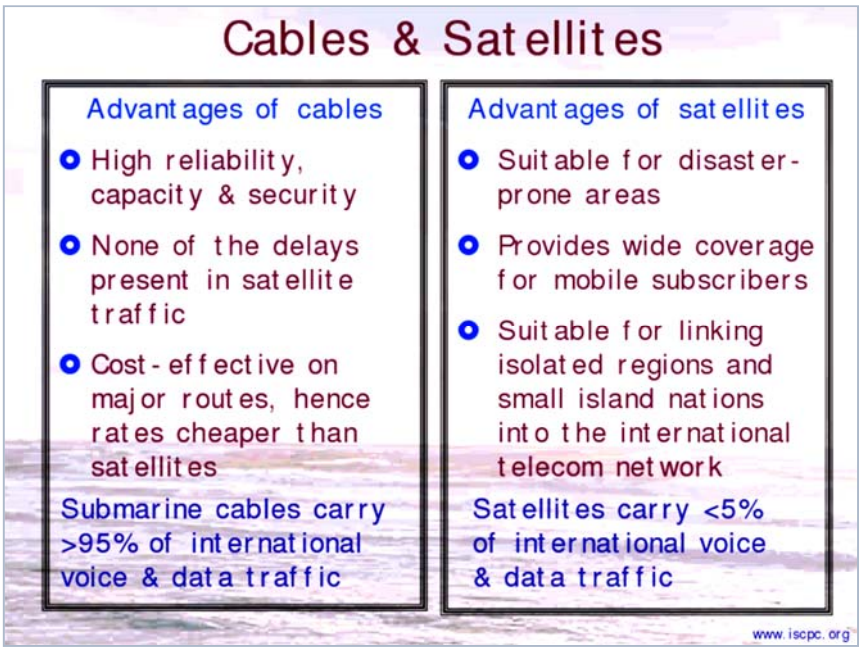
- The project Need
- The "No – Action" Alternative; and
- The proposed development as described in the ESIA.

6.2 Project need

The Government of Uganda recognizes the importance of ICT for National development and transformation into an electronic economy and has put emphasis on transforming the delivery of Government services through the use of Information Technology. RCIP project aims to promote the use of technology as an enabler in achieving development goals as outlined in the government vision 2040. There is huge opportunity in the country today provided by the growing information age society and the demand for electronic services delivery that creates the need for government to improve its IT infrastructure, service delivery processes and capacity building in government using ICT as enabler.

6.3 Technology Alternatives

The use of optical fiber cables networks has greater advantages over satellite, microwave and radio transmissions. Radio has largely been phased out due to restricted bandwidth and poor data transmission. Compared to ground-based communication (optical fiber cables), all geostationary satellite communications experience high latency due to the signal having to travel 35,786 km (22,236 mi) to a satellite in geostationary orbit and back to Earth again. In addition, Satellite communications are affected by moisture and various forms of precipitation (such as rain or snow) in the signal path between end users or ground stations and the satellite being utilized. Modern optical fiber networks transmit high volumes of voice and data traffic with higher security and reliability and at a lower cost than satellite systems. Besides fiber optic networks offering a number of security advantages over satellite communications, they are thought to be much harder to "eavesdrop" on than satellites and have more dependable installation and repair practices. (See Error! Reference source not found..1). Furthermore, over the past decade there is increased demand for bandwidth driven by the use of Internet, as well as continuing international trend of privatization of national telecommunications industries, that have outstripped by far the resources offered by satellite transmission of voice and data



Source: www.iscpc.org

Figure 6.1: A comparison between cables and satellites

6.4 Routing Alternatives

Optical fiber cables are an alternative for national backbone infrastructure and to be linked to the submarine system. In this alternative, the cable would be routed underground, generally along the roads and electricity transmission lines where there is existing Right Of Way (ROW) and also where telecommunications use is concentrated. The cable would need to be installed below ground and given the lack of existing infrastructure; this would require extensive trenching. In practice it has been found that underground/ buried cable installation costs are higher than overhead cable due to trenching, land ownership and land use issues however, it presents less repair and maintenance requirements compared to overhead cable systems where, besides

effects of weather conditions, cable or pole damages are known to be frequent. There are other practical and security/safety issues as well as greater potential for environmental and social impacts associated with overhead cable for a system of several kilometers.

Table 6-1: Comparison between buried and overhead cable installation

Buried cable	Overhead cable
Requires trenching which is tedious and may trigger land ownership and land use issues, poses health risk to some vulnerable groups.	May require wood poles, in addition to existing electricity transmission lines, would cause cable crowd along and across roads, and deplete forest resources.
Requires longer time and more labor to excavate a continuous trench for several kilometers over the project area.	It requires less time and labor to erect poles at intervals over the project area.
Cable fault/ damage is not common and protected against weather conditions.	Cable fault/damage due to hash weather conditions, pole fall, etc.
Cable has passive influence on the environment.	Cable crowding would cause visual blight.
Repair/ maintenance is occasional, usually due to aging of cable and accessories.	Repair/ maintenance is frequent due to cable damage pole, fall or cable or pole aging

For cost effectiveness coupled with environmental impacts posed by buried cable system and overhead cable system, buried cable system currently offers better option.

Placing project infrastructure in road reserves along highways or existing power lines avoids the need to acquire new land/ corridors. For this option there is no logical, socio-environmentally more amenable alternative.

6.5 No Project Scenario

If the proposed project is not implemented, development of the country will continue to be constrained by lack of fast internet and telecommunications capacity, especially in the sectors of data transfer, banking and education. The demand for capacity will continue to grow along with economic growth. The cost of data transfer will increase as private investors exploit the situation. Environmental and social impacts associated with the proposed project will not arise. New and international businesses may not develop in a very poor telecommunication service environment. Existing businesses will not grow and unemployment will prevail. In addition cost of doing business will remain high.

7 Approach To Environmental and social Impact Assessment

This chapter of the ESIA details the approach to the ESIA phase of the proposed installation of the missing links for RCIP with particular focus on the main aspects of the methodology such as impact significance evaluation.

7.1 General Approach

The study was based on literature reviews, stakeholder consultations, site visits/observations, and the integration and assessment of this information.

7.1.1 Literature Review

A number of key documents were reviewed in order to address the various aspects of the assignment. Some of these documents included; The National Environment Management Policy for Uganda; Environmental Legislation of Uganda Handbook; Environmental Impact Assessment Regulations for Uganda; Documents such as land acquisition documents provided by the developer and other documents deemed as being of fundamental importance to the assignment were also reviewed.

7.1.2 Stakeholder Consultations

Several stakeholders were consulted as part of the '*Public Disclosure and Engagement Process*'. The details of these were described in Chapter 5 above and will therefore not be repeated here.

7.1.3 Site Visit and Physical Inspections

Site visits and physical inspections were key aspects of the study. The proposed project area was visited as part of the EIA process and the relevant baseline surveys conducted and data collection undertaken.

7.2 Methodology for Impact Evaluation

This section assesses the level of potential negative impacts based on various criteria including severity of impacts, duration, geographical scope, and the existence of readily identifiable cost-effective mitigations. The assessment also takes into account the impacts identified during the stakeholder consultation process.

7.3 Impact Significance Criteria

Potential and apparent impacts have been identified based on proposed activities to be undertaken, through specialist studies on site and through a consultative process with key stakeholders as discussed above and in Chapter 6.

The initial impact identification presented in Table 7.1 specifically targets issues identified within the First schedule of the EIA regulations for Uganda of 1998.

Within this Impact identification phase, the project in general is evaluated against the possibility of resulting into a stated impact on Ecology, Social considerations, landscape or Land use.

The anticipated probability of causation of impact is rated as:

- ✓ Not possible (No)
- ✓ May impact

✓ Likely to impact

✓ Will Impact

7.1: Impact Screening based on anticipated activities from the Proposed Environmental and Social Safe Guards for missing links for RCIP

Recommended Considerations	Will the Project Directly or indirectly impact on?	No	May	Is likely	Will impact	Activities/ stage of Project implementation
Ecological						
Biological diversity	Number, diversity, breeding habits, etc. of wild animals and vegetation.	X				Construction will be on poles that do not utilize oil based preservative treatment (as approved by NEMA). In addition, bird flight path impact is being mitigated by project design default which involves use of bird reflectors
	Gene pool of domesticated plants and animals e.g. monoculture as opposed to wild types.	X				
Sustainable use	Soil fertility	X				Soil to be moved, and replaced in site restoration
	Breeding populations of fish and game or wild animals.	X				No breeding site observed.
	Natural regeneration of woodland and sustainable yield	X				
	Wetland resource degradation or wise use of wetlands	X				
Ecosystem maintenance	Food chains.	X				

Recommended Considerations	Will the Project Directly or indirectly impact on?	No	May	Is likely	Will impact	Activities/ stage of Project implementation
	Nutrient cycles.		X			
	Aquifer recharge, water run-off rates etc.		X			Site clearance for laying of cables and the related infrastructure will involve on spot clearance of vegetation along the highway in rural areas and trenching in urban areas as per project implementation mode thus limited run-off and vegetation loss. No trees shall be cut during project implementation.
	Areal extent of habitats.	X				
	Fragile ecosystems	X				
Social considerations	Generation or reduction of employment in the area				X	Employment opportunities during construction
	Social cohesion or disruption		X			Cohesion possible with a higher concentration of people in one area, noise whereas disruption may be due to increased alcoholism, promiscuity and lack of cultural indifferences
	Effect on human health.		X			Non direct impact from the project. Crowding and promiscuity does have an impact in exacerbating communicable disease spread, impacts on Occupational and public safety possible during construction and if human waste is not properly handled
	Immigration or emigration.	X				
	Communication roads opened up, closed, re-routed.	X				
	Local economy				X	Increased revenue and improving coverage for IT infrastructure in the country.

Recommended Considerations	Will the Project Directly or indirectly impact on?	No	May	Is likely	Will impact	Activities/ stage of Project implementation
	Culture and objects of cultural value.	X				No major elements of cultural disruptions observed in this area apart from the indifferences in culture between the workers and community members.
Landscape	Views opened up or closed			X		
	Visual impacts (features, removal of vegetation, etc.)				X	
	Compatibility with surrounding area.	X				
Land Uses	Current land uses and land use potentials in the project area.	X				
	Possibility of multiple use	X				
	Surrounding land uses and land use potentials			X		Trenching within the urban areas will be undertaken during the out of office hours to reduce the disruption of businesses and livelihoods.

7.4 Evaluation of Impact Significance

Impacts likely to occur at different phases are categorically defined as High, Medium or Low and these have been determined based on the spatial extent of the impact, persistence of the impact, Probability that the impact will occur and the Intensity of the impact. Impact evaluation was undertaken using an Impacts rating matrix which is presented in Table 7.1. The Table 7.2 summarizes the methodology for rating significance of an impact.

The following impact Rating Criteria was adapted:

High level Impacts

- Causing severe alterations of natural properties, functions or processes, which are of – long term duration and large spatial extent, or – long-term duration and medium spatial extent, or – medium-term duration and large spatial extent.
- Notable alterations of natural properties, functions or processes, which are of long term duration and large spatial extent.

Medium level Impacts

- Causing notable alterations of natural properties, functions or processes, which are of – medium term duration and medium spatial extent, or – long-term duration and local spatial extent.
- Notable alterations of natural properties, functions or processes, which are of short term duration and medium spatial extent.

Low level Impacts

- Negligible alterations of natural properties, functions or processes of – short term duration and localized, or – short term duration and medium spatial extent, or – medium term duration and localized.
- Notable alterations of natural properties, functions or processes, which are of short term duration and localized.

Table 7.2: Methodology for rating significance of an Impact

Impact Rating	Definition	Significance	Colour Code
Intensity	Severe	Severe alteration of natural properties, functions, processes	High
	Notable	Notable alteration of natural properties, functions, processes	Medium
	Negligible	Negligible alteration of natural properties, functions, processes	Low

Persistence	Long term	Continuously or regularly (once per day) over project life, permanent or irreversible effects (including aftermath effects)	High
	Medium term	Several years (< 5) of duration, (including aftermath effects) reversible, periodic events (several times per year)	Medium
	Short term	Less than one year or restricted to construction stage, reversible	Low
Spatial Extent	Large Extent	Effects beyond project site and nearby areas beyond 1,000 m distance of origin	High
	Medium Extent	Within the project site and nearby areas within 1,000 m distance of origin	Medium
	Localized	Within the area of the project site within 100 m distance of origin	Low
Probability	Definite	Highly probable (> 80%) or will definitely occur	High
	Possible	Fair chance of occurrence	Medium
	Un likely	Little or no chance of occurring (< 20%)	Low

8 Environmental Impact Identification Analysis and Mitigation Measures

In respect to Regulation 14(1) of the EIA Regulations (1998), the environmental impact statement shall provide a description of;

i. Environmental effects of the project and possible alternatives;

ii. Mitigation measures for the adverse impacts identified;

iii. Indications whether the environment of any other state is likely to be affected and the available alternatives and mitigation measures

In line with the above legislative requirements, this chapter of the EIS presents the identified impacts that may result from the proposed development and provides mitigation measures to minimise the negative impacts as well as enhancing/ optimising the positive impacts.

8.1 Construction Phase Impacts (Direct Impacts)

8.1.1 Impact 1: Increased susceptibility to soil erosion and landslides

Cause of Impact

During site excavation activities, excessive vegetation clearing, excavation coupled with poor drainage can result in soil erosion and landslides on steep slopes. This may be likely in the Northern Uganda regions where soils are loosened making them highly susceptible to erosion agents.

Overall assessment without mitigation: Negative and Medium

Mitigation measures

- ✓ Restrict vegetation stripping to project sites to minimize project footprint and soil erosion.
- ✓ Avoid ground and vegetation stripping in steep sloping areas to minimize soil erosion and risk of landslips.
- ✓ Use above ground/aerial pole to pole transmission in such prone areas

Overall assessment with mitigation: Negative and Low

8.1.2 Impact 2: Impacts on Protected/ Sensitive Areas

Cause of Impact

Some fibre optic cables maybe located in wetland, forest ecosystems and protected areas. However, the impact is anticipated to be minimal. . This project will however limit construction to existing road reserve using aerial pole erection, thus not impacting wildlife.

Overall assessment without mitigation: Negative and Low

Mitigation Measures

- ✓ Vegetation clearance for aerial pole erection shall be limited to pole spots, minimizing vegetation loss. Tree shall not be cut down in parks or forests.

- ✓ Waste bins should be provided for construction workers to avoid littering of waste in the sensitive areas.
- ✓ Laws governing such sensitive ecosystems will be strictly adhered to such as poaching will be strictly prohibited.

Overall assessment with mitigation: Negative and Low

8.1.3 Impact 3: Employment Opportunities

Cause of Impact

The work that will be done at the site during this phase of the project will largely require labour - both skilled and unskilled workers to undertake the construction work at the site and as such employment opportunities will be created. Approximately 90% of the labor force will be from within the local community spread across the project. No labor influx or workers camps is expected as the local labor force will be used and daily transport will be provided to and from their homes. In addition, NITA-U has included compliance with labor laws in the bidding document and the contract for Contractor. The 10% will be spread across the project including the headquarters in Kampala. It should be noted that during this phase the employment opportunities will be temporary given the short-term duration of the construction activities. However the search and provision of job opportunities by the project can be a source of promiscuity, family conflicts, Gender Based Violence including child abuse and abuse of labour laws by the contractor.

Overall assessment without mitigation: Positive and Low

Mitigation measures

- ✓ Project will promote local procurement where technically and commercially reasonable and feasible;
- ✓ Contractor will avail local communities with information leaflets in their local languages to create awareness about the proposed project activities;
- ✓ Unskilled labor will be recruited exclusively from local community, and semi-skilled labor will be recruited preferentially from such communities, provided that they have the requisite qualification, competence and desired experience;
- ✓ Workers and the community will be sensitized about the dangers of child abuse, gender based violence plus their rights to employment.
- ✓ Contractors will be encouraged to pay a “living wage” to all workers;
- ✓ Contractors’ employment activities on a monthly basis, including number of jobs created by employment type (skilled / semi-skilled / unskilled); number of jobs by gender, employment type and geographical area; total man hours and wages paid, by employment type, gender and geographical area; and rate of employee turnover by gender and area.
- ✓ The Contractor shall comply with all the relevant labor Laws applicable to the Contractor’s Personnel, including Laws relating to their employment, health, safety, welfare, immigration and emigration, and shall allow them all their legal rights.

- ✓ The Contractor shall develop: (i) Gender Based Violence (GBV) and Child Abuse/Exploitation (CAE) Codes of Conduct; and, (ii) an Action Plan to mitigate and respond to GBV and CAE within the company and the community.
- ✓ The Codes of Conduct will outline the responsibilities of: (i) the company to create a positive culture for its workplace and employees; (ii) managers to ensure that culture is implemented; and, (iii) individuals to adhere to the principles of that culture and not to engage in GBV and/or CAE.

- ✓ All employees (including managers) will be required to attend training prior to commencing work to reinforce the understanding of HIV/AIDS, GBV and CAE. Subsequently, employees must attend a mandatory training course at least once a month for the duration of mobilization.

Overall assessment with mitigation: Positive and Medium

8.1.4 Impact 4: Construction Noise and vibrations

Cause of Impact

Use of earth-moving equipment and heavy vehicles will generate noise and vibration. Excessive noise can be a nuisance to local residents and businesses. Noise and vibration may generate unacceptable disturbance to wildlife where fiber optic cables are to be laid through wildlife parks and game reserves.

Vibration from compacting trenches can crack walls of structures adjoining work sites

Overall assessment without mitigation: Negative and Medium

Mitigation measures

- ✓ The Project should require contractors to use equipment and vehicles that are in good working order, well maintained.

- ✓ Contractors will be required to implement best driving practices when approaching and leaving the site (speed limit of ≤30 km/hr) to minimize noise generation created through activities such as unnecessary acceleration and breaking.

- ✓ Engines of vehicles/trucks and earth-moving equipment should be switched off when not in use.

Overall assessment with mitigation: Negative and Low

8.1.5 Impact 5: Water Pollution

Cause of Impact

During site preparation and construction, trenching will create exposed sites. Sediment-laden runoff from cleared areas could impact water quality of downstream watercourses.

Overall assessment without mitigation: Negative and Medium

Mitigation Measures

- ✓ Toilet facilities should be provided for construction workers to avoid indiscriminate defecation in nearby bush or shores

Overall assessment with mitigation: Negative and Low

8.1.6 Impact 6: Improper Construction Waste Management

Cause of Impact

Trenching in urban areas will create exposed sites. at various sites will generate *Overall assessment without mitigation: Negative and Medium*

Mitigation Measures

- ✓ Trenching wastes shall be used for backfill
- ✓ All wastes shall be collected in gazetted areas and sorted
- ✓ Contractor shall seek guidance of local environmental officers to identify acceptable disposal sites
- ✓ Contractors shall induct their drivers and sensitise them on safe transportation of the rubble and cut-to-spoil materials to the final disposal site
- ✓ Adequate waste reception facilities should be provided at the project sites.
- ✓ Final disposal should be at dump sites approved by NEMA.

Overall assessment with mitigation: Negative and Low

8.1.7 Impact 7: Impact on Cultural Heritage/ Archaeological interest

Cause of Impact

Construction operations may encounter cultural and archaeological resources or chance finds. Construction can also reveal these buried resources, necessitating "salvage archaeology" for their recovery and protection. Once first stages of earthworks show signs of likely presence of archaeological resources, salvage entails quick excavation to remove artifacts or other traces of human settlement before extensive earth-moving continues. As a general construction principle, any archaeological “chance finds” should be handed to the Department of Museums and Monuments in the Ministry of Tourism, Trade & Industry (MITI).

Overall assessment without mitigation: Negative and High

Mitigation measures

- ✓ The contractor shall not perform excavation, demolition, alteration or any works that may harm resources of cultural importance without authorization of the Engineering Assistant or officials from the Department responsible for museums and monuments.
- ✓ In case of chance finds, the Contractor shall mark, cordon and secure the subject site(s) to avoid damage in the course of road construction and immediately notify the Department responsible for museums and monuments.
- ✓ Opening of a new borrow or quarry site shall be witnessed and inspected by official(s) from the Department responsible for museums and monuments for the first 2 days of site opening. The

official(s) shall maintain watching briefs during works, with clear procedures for protection and documentation of any "chance finds" encountered.

- ✓ The contractor is obliged to provide for and ensure archaeological intervention in case they come across new finds. This involves immediate discontinuation of works and notifying the Department responsible for museums and monuments about any discoveries.
- ✓ "Chance finds" encountered in presence of official(s) from the Department of Museums and Monuments shall be handed to them for transfer to the national museum.
- ✓ "Chance finds" encountered in absence of these official shall be handed over to supervising Engineering Assistant, Environmental Officer or District Engineer who would immediately notify officials of the Department of Museums and Monuments.
- ✓ The Contractor and supervising engineer shall maintain contact details of the Department of Museums and Monuments to quickly notify it in case chance finds are encountered.

Overall assessment with mitigation: Negative and Low

8.1.8 Impact 8: Occupational health and safety risks

Cause of impact

The construction activities on site could pose several occupational health and safety risks key among might include legs and arm breakages, cuts, spread of sexually transmitted diseases and many other accidents.

Overall assessment without mitigation: Negative and High

Mitigation measures

- ✓ Trucks carrying construction materials such as sand, quarry dust, laterite etc. will be covered with tarpaulin or appropriate polythene material from or to project site
- ✓ Only experienced drivers/operators should be employed to man project vehicles/trucks
- ✓ All manual equipment such as pickaxe, Pick Mattock, Cutter Mattock, etc. should be sturdy and firmly fixed
- ✓ Except for areas secured by fencing, all active construction areas should be marked with high-visibility tape to reduce the risk of accidents involving pedestrians and vehicles.
- ✓ All open trenches and excavated areas should be backfilled as soon as possible after cable laying and construction has been completed.
- ✓ Construction workers should be provided with and enforced to wear suitable Personal Protective Equipment (PPE) including hard hats, overalls, high-visibility vests, safety boots, earplugs, gloves etc.
- ✓ Clear signage should be used near project sites
- ✓ First Aid kits will be provided at each site
- ✓ Awareness creation and training on health and safety will be integrated all through

- ✓ Documentation and record keeping for all accidents will be a must.

Overall assessment with mitigation: Negative and Low

8.1.9 Impact 9: Construction Traffic related accidents and traffic interference

Cause of Impact

During this phase, there will be an increase in vehicular traffic due to the transportation of the required construction equipment and materials to the proposed project sites. This increase in traffic to and from the sites may increase the potential for accidents since the sites are located along road reserves and interruption of traffic.

Overall assessment without mitigation: Negative and High

Mitigation Measures

- ✓ Trenching across roads and project vehicles and trucks movement should be scheduled during general traffic off-peak hours to avoid traffic sluggish due to project activities
- ✓ Employ safe traffic control measures, including temporary road signs and flag persons to warn of dangerous conditions and children crossings
- ✓ Where road use is restricted signage and alternatives should be provided to the public

Overall assessment with mitigation: Negative and Low

8.2 Construction Phase (Indirect Impacts)

8.2.1 Impact 1: Air Emissions

Cause of Impact

It is expected that project vehicular traffic will emit exhaust emissions, chiefly oxides of sulphur (SOx), nitrogen (NOx) and those of carbon (CO_2 and carbonmonoxide- CO). Others are particulates, unburned fuel (VOC) and ground-level ozone. Emissions quantities generated will depend on volume of traffic, travel distances, type and age of vehicles/ equipment, fuel type and quantities, and type of road. Impact on air quality will be short-term only manifesting during the construction phase.

Overall assessment without mitigation: Negative and High

Mitigation Measures

- ✓ The Project should require that construction contractors operate only well maintained vehicles and trucks; routine maintenance program for all vehicles and trucks should be in place.
- ✓ Whenever dust at the project/construction site becomes a problem, water spraying to suppress dust should be undertaken;

- ✓ Truck drivers should be sensitized on and ensure they observe speed limits on roads especially at business centers The project area will be cordoned off to minimize on dust and emission migration to nearby facilities by wind;
- ✓ Engines of vehicles/trucks and earth-moving equipment should be switched off when not in use.
- ✓ The project area will be cordoned off to minimize on dust and emission migration to nearby facilities by wind;

Overall assessment with mitigation: Negative and Low

8.2.2 Impact 2: Theft of construction materials

Cause of Impact

With construction activities on going at the sites, a lot of construction materials will be required for these activities which if not properly handled could attract wrong elements who steal some of these items. If this is not adequately addressed, it could sabotage the smooth running of these activities.

Overall assessment without mitigation: Negative and Medium

Mitigation measures

- ✓ The casual labourers hired at the site shall be screened with the help of the local leaders so as to screen the wrong elements;
- ✓ The developer in collaboration with the local leadership shall hire people from the project area so as to benefit from a neighbourhood watch scheme.
- ✓ Contractor to provide identification tags/cards to the work force for easy and proper identification.

Overall assessment with mitigation: Negative and Low

8.2.3 Impact 3: Social Order Disruption

Cause of Impact

The proposed development may cause some social order disruption through emitting noise and dust pollution to the immediate neighborhood and possibility of excavation works assuming that all sections of the works is implemented underground. This will be as a result of trucks delivering materials in addition to the workforce and minimal machinery that will be on site. Additionally, the influence of the workers yet earning better than many community members cannot be under estimated in causing gender based conflicts among the host community causing family break downs. There is also a potential of increased alcohol consumption thus leading to higher chances of confrontations among the host community members thus disrupting their peace.

Overall assessment without mitigation: Negative and High

Mitigation Measures

- ✓ The implementation design of the project caters for aerial pole erection were poles are fixed in the most appropriate location without causing any social economic disruption as was implemented under the NBI Phase III project.

- ✓ The construction activities will as much as possible be restricted to daytime only (7.00am-6.00pm) when noise pollution is least felt to avoid disruption to the residents.
- ✓ A code of conduct will be put in place to be followed by the workforce and avoid causing unnecessary inconvenience to the neighbourhood.
- ✓ Most of the work will be manually done with few machines likely to be used and low noise equipment will be the ones to be used on site.
- ✓ The workforce operating equipment that generates noise will be accorded with protective gear and management will observe and put to use the new developed noise regulation.
- ✓ Sprinkling of water or wetting of dust source points during sunny days will be undertaken to do away with dust pollution.

Overall assessment with mitigation: Negative and Low

8.2.4 Impact 3:Community Livelihood Disruptions

Cause of Impact

The proposed development may cause some temporal community business disruptions through the need for temporary removal of their business premises such as Kiosks, sign posts, pavements, temporal garage structures possibly due to excavation works to pave way for transmission lines underground as designed within the urban areas. Similarly the project may cause temporary disruptions in rural areas on open markets where businesses are also done within road reserves. Examples for such open markets include; Dzaipi and Laropi in Dzaipi Sub County, Adjumani District and Laropi Sub County, Moyo Districts operating on Thursday of the month while the later operates on the first Sunday of the month respectively along Atiak – Arua section, Nyadri open market in Maracha operating every Wednesday and Saturdays plus Muhokya, Kikorongo and Makunianai open markets alongo Kasese – Mpondwe section operating on Saturdays, Mondays and Thursdays respectively. However, if implementation in such areas is done in consultation with the local authorities such disruptions may be averted to the negligible minimal as outlined in the mitigation measures below.

Overall assessment without mitigation: Negative and High

Mitigation Measures

- ✓ Implementation design of the project for sections of open markets will strictly be done on non-open market days after prior consultations with local authorities to avoid any envisaged impacts.
- ✓ Construction activities within urban areas in such specific sections of potential economic disruptions will be designed for night time (9.00pm-2.00pm). This will be done in consultation with the respective urban authorities and the business owners.
- ✓ Arrangements will be made to ensure participation of business owners and representatives of the urban authorities during implementing hours to guarantee security and safety of their businesses,

Overall assessment with mitigation: Negative and Low

8.2.5 Impact 4: Market for construction materials

Cause of Impact

Some of the construction materials will be procured locally and this will provide revenue to the local economy. The proceeds from the sale of the raw materials to the construction activities at the proposed project will boost the local economy in form of increased earnings.

Overall assessment without mitigation: *Positive and Low*

Mitigation Measures

- ✓ The management of the building together with their appointed contractor shall work closely with the local leadership to ensure that local communities or businesses that are capable of supplying some of the construction materials benefit from the procurement process.

Overall assessment with mitigation: *Positive and Medium*

8.2.6 Impact 6: Impacts on vulnerable groups

Cause of Impact

While the contactor is carrying out the construction activities, she/he has to take into consideration of the vulnerable groups such as the elder and children to avoid causing accidents/harm or inconveniences to them.

Overall assessment without mitigation: Negative *and Medium*

Mitigation Measures

- ✓ All open trenches should be marked with high-visibility tape to reduce the risk of accidents involving children, women, disabled and elderly persons.
- ✓ All open trenches and excavated areas should be backfilled as soon as possible after cable laying and construction has been completed.
- ✓ Access to open trenches and excavated areas will be restricted to prevent children from falling in.

Overall assessment with mitigation: Negative and low

8.3 Operation Phase (Direct Impacts)

8.3.1 Impact 1: Improper e-waste management

Cause of impact

Project operation activities of repair and maintenance will generate e-waste. Currently Uganda has no facilities and has only limited technical expertise to manage electronic waste.

NITA-U should be aware of need for environmental standards/guidelines and legislation for e-waste management. Therefore long-term arrangements for management of e-waste that the project may generate should be included in this project.

Overall assessment without mitigation: Negative and High

Mitigation Measures

- ✓ Install equipment of high quality and proper standard as guided by Uganda National Brea of Standards (UNBS);
- ✓ Sort and label waste at site of generation;
- ✓ NEMA should collaborate with MICT and NITA to develop regulations for e-Waste. At a policy level, incentives should be developed to stimulate public- private sector investment in e-waste recycling, treatment and disposal.
- ✓ Waste should be handled and transported to place of disposal by a licensed waste handlers

Overall assessment with mitigation: Negative and low

8.4 Positive Impacts

8.4.1 Impact 1: Reduction in human movement

Use of ICT will reduce the need for movement of people from one location to another for:

- Meetings (because video/ teleconference is possible)
- Bid collection and submission (because electronic submissions are possible)
- Collection of examination results from schools (because they can automatically be sent as a short message to a student's cellular phone)
- Document pick up (because can be emailed)

Reduced movement minimizes traffic-borne air and noise emissions.

8.4.2 Impact 2: Dematerialization

This refers to replacement of physical production and distribution of music, video, books, and software, etc. by the delivery of digital information over the network. Dematerialization reduces resource consumption and waste generation.

8.4.3 Impact 3: Reduction of resource needs in records storage

Storage of records in electronic form will reduce paper needs and building space in all beneficially entities, mainly school, hospitals and government agencies.

8.4.4 Impact 4: Enhanced environmental training

Enhancement of environmental awareness and environmental education in schools.

8.4.5 Impact 5: Market for raw materials

Some of the construction materials will be procured locally and this will provide revenue to the local economy. Some of the materials that will be procured locally will include: sand, bricks, and aggregate stones. The

proceeds from the sale of the raw materials to the construction activities at the proposed project will boost the local economy in form of increased earnings.

8.4.6 Impact 6: Access to information

Possibly the greatest effect of ICT on individuals is the huge increase in access to information and services that has accompanied the growth of the Internet. Some of the positive aspects of this increased access are better, and often cheaper, communications, such as VoIP phone and Instant Messaging. In addition, use of ICT to access information has brought new opportunities for leisure and entertainment, make contacts and form relationships with people around the world, and the ability to undertake online transactions and obtain goods and services (e.g. online courses) from a wider range of suppliers outside Uganda without use of middlemen.

8.4.7 Impact 7: Improved access to education, e.g. distance learning and on-line tutorials.

New ways of learning, e.g. interactive multi-media and virtual reality which could mean schools would be able to undertake practical lessons in virtual laboratories, or even share virtual laboratories with training institutions overseas. ICT also provides new job and working opportunities, e.g. flexible and mobile working, virtual offices and jobs in the communications industry.

a) Improved access to healthcare services With ICT, a doctor in Uganda would easily consult a specialist colleague overseas when executing a complex medical procedure/ operation.

b) New tools, new opportunities: The second big effect of ICT is that it gives access to new tools that did not previously exist. A lot of these are tied into the access to information mentioned above, but there are many examples of stand-alone ICT systems as well:

   I. ICT can and will be used for processes that had previously been out of reach of most individuals, e.g. photography, where digital cameras, photo-editing software and high quality printers have enabled people to produce results that previously required a photographic studio.

   II. ICT can be used to help people overcome disabilities. e.g. screen magnification or screen reading software enables partially sighted or blind people to work with ordinary text rather than Braille.

8.5 Cumulative Impacts

8.5.1 Impact 1: Decommissioning / Demobilization Phase Impacts

Cause of Impact

Although the developer does not envisage this aspect of the project lifecycle in its long-term plans, it's nevertheless worth noting that there are a number of impacts associated with this phase. Key among these being:

- ✓ Decommissioning e-waste;
- ✓ Decommissioning accidents; and

Therefore, the above factors will have to take into account as part of any future decommissioning plan.

Table 8-1 below is a matrix for evaluation of all the impacts associated with the proposed establishment of the Environmental and Social Safe Guards for missing links for RCIP (with and without mitigation) following the criteria described earlier in section 7.1.

Table 8.1: A Summary of Impacts associated with the proposed establishment of the Environmental and Social Safe Guards for missing links for RCIP

Note: Positive Impacts in the table have not been colour coded

Project Phase	Impact No.	Impact	Significance	
			Without Mitigation	With Mitigation
Construction Phase		*Direct Impacts*		
	11.	Increase susceptibility to soil erosion and land slides	MEDIUM-	LOW-
	12.	Impacts on protected/ sensitive areas	LOW+	LOW+
	13.	Employment opportunities	LOW+	MEDIUM +
	14.	Construction noise and vibration	MEDIUM-	LOW-
	15.	Water pollution	MEDIUM-	LOW-
	16.	Improper construction waste management	MEDIUM-	LOW-
	17.	Impact on cultural heritage/ archeological interest	LOW+	MEDIUM +
	18.	Occupational health and safety risks	HIGH -	LOW -
	19.	Construction traffic related accidents and traffic interference	HIGH -	LOW -
		Indirect Impacts		
	7.	Air Emissions	MEDIUM -	LOW -
	8.	Theft of construction materials	MEDIUM -	LOW -
	9.	Social order disruption	MEDIUM -	LOW -
	10.	Market for construction materials	LOW+	MEDIUM +
	11.	Impact on vulnerable groups	MEDIUM -	LOW -
		Cumulative Impacts		
		NONE OF SIGNIFICANCE		
Operation Phase		Direct Impacts		
	2.	Improper E-waste management	HIGH -	LOW-

9 Environmental and Social Management And Monitoring Plan (ESMMP)

9.1 Introduction

The goal of the Environmental and Social Management and Monitoring Plan (EMMP) is to ensure that environmental and socio-economic issues continue to be fully integrated into the decisions of the developer while promoting resource allocation efficiency throughout the lifetime of the project. This section provides a framework for managing and monitoring impacts for the life of the project. It is designed to ensure that the commitments/mitigation measures in this ESIA, and in any subsequent assessment reports, together with any license approval or similar conditions as well as required coordination and collaboration with relevant government agencies are implemented. In executing the project, the developer (NITA-U) shall take all practicable measures to ensure that the requirements of the report are complied with in a timely manner. The purpose of environmental management and social management planning is to consider and develop proper measures and controls to decrease the potential for environmental and social degradation during all phases of the Project, and to provide clearly defined action plans and emergency response procedures to account for environmental and social health and safety.

9.2 The Environmental and Social Management and Monitoring Plan

The mitigation plan below is proposed for the project to ensure its effective implementation in an environmentally sound manner. It is a summary of the impacts that were identified, their indicators, remedial/mitigation measures, and the parties responsible for implementation. Regular inspections by the districts and NEMA are highly encouraged in order to continue monitoring the project operation activities and to ensure that they are implemented in an environmentally sound manner. NEMA will accordingly advise where the project does meet the expected environmental safeguards.

A monitoring process will be established to check/assess the implementation progress and effectiveness of the mitigation measures suggested and the resulting effects of the proposed project on the environment and people. The process will begin during the construction stage and continue throughout the operation phase. It should also include regular reviews of the impacts that cannot be adequately assessed before the beginning of the project, or which arise unexpectedly. In such cases, appropriate new actions to mitigate any adverse effects will be undertaken.

9.3 Roles and Responsibilities

In order to enhance the potential for integrating sustainability concerns in the proposed development, it is important to assign clear roles and responsibilities to relevant professionals including in partner agencies, contractors and/or sub-contractors so as to ensure that environmental and social plans are implemented effectively and in a coordinated manner.

9.3.1 The Role of NEMA and Lead Agencies

NEMA will, in consultation with all the Districts where the project is located, monitor all environmental phenomena with a view of making an assessment of any possible changes in the environment and their possible impacts; the operation of any industry, project or activity with a view of determining its immediate and

long-term effects on the environment. An environmental inspector appointed by the authority will enter any premises for the purpose of monitoring the effects on the environment of any activities carried out on that land or premises.

9.3.2 Role of Ministry of Gender, Labour and Social Development

The Ministry will be responsible for ensuring compliance for occupational and health policies, children rights, gender and labour laws.

9.3.3 The Role of Local Government

The custody and implementation of development policies directly falls in the hands of local governments through decentralization frameworks. The continuous need to mitigate environment impacts must be well conceptualized and understood by main actors within the Local Government setting. This includes the Town Clerks/Sub County Chiefs, the Town Council/Sub County Executives.

Appropriate training manuals need to be developed and Trainers of Trainers for future capacity building be identified and trained on the modules in the manuals. This is important especially given that there are some categories of elected leaders in the decentralization system whose term of office easily expires with the onset of fresh elections. Sustainable capacity for enhancing knowledge and skills of these statutory bodies must be generated even beyond the project life cycle.

While local government officers such as Districts environmental officers (DEOs), Municipal environmental officers (MEOs) and Community Development Officers (CDOs) should be involved in roles such as monitoring and grievance management, they largely lack technical competency in requirements of World Bank safeguard policies. Training relevant local government staff in World Bank policies is therefore important before the project commences.

9.3.4 The Role of the Developer

Although the contractor will have the primary role in delivering on the measures set out in the ESMMP, the developer (NITA-U) will have the ultimate responsibility for ensuring that the measures are delivered. In this respect, the developer will review and approve contractor plans for delivery of the actions contained in the ESMMP and subsequently during project operation, review contractor performance through monitoring, audits and inspection to ensure that all proposed mitigation measures are implemented as well as ensuring regulatory compliance.

The Developer/Client (NITA -U) is responsible for ensuring relevant stakeholder government agency coordination and collaboration for effective and timely implementation of the ESMMP. NITA-U is also responsible for ensure appropriate process are followed in implementing safeguards and preparation of any separate (environmental and) social action plan are where required as may have been identified through the impacts assessment and defined in the ESMMP.

9.3.5 The Role of the contractor

Prior to the commencement of construction works the contractors will be required to prepare their own ESMPs (CESMP) and ensure their implementation. NITA-U will review these CESMMPs and ensure that the mitigation measures are complied with. The contractors' organizations must have sufficient, adequate and

competently resourced to fulfil the environmental and social requirements established in this ESMMP and supporting documentation. Clearance of the Contractor should consider the adequacy of the environment and social competencies. During site preparation and construction, the contractor will be responsible for ensuring compliance with all relevant legislation as well as adherence to all environmental and socio-economic mitigation measures specified in the Environment Management and Monitoring Plan The contractor is also responsible for managing the potential environmental, socio-economic, safety and health impacts of all contract activities whether these are undertaken by themselves or by their subcontractors.

9.3.6 The Role of the Ministry of ICT and National Guidancer

This Ministry is in the fore-front in steering the management of the activities and projects of RCIP. It may be beyond this PB to suggest staffing needs of the key entities of this Ministry and its agencies with regard to RCIP. However, coupled with the need to cope with the requirements of this PB, the following actions need to be undertaken to build capacities of such bodies:

- Conduct an orientation training that will provide additional knowledge on integration of ESMF into their supervisory and monitoring roles; and
- With emerging technologies it would be advisable to run introductory courses on some computer packages to be used in the management of RCIP.

More importantly, NITA-U's safeguards technical capacity should be raised this agency will be directly responsible for implementation of the project. Currently NITA has recruited an in house socio-environmental staff to spearhead implementation of environmental and social aspects of the project.

9.3.7 The Local Communities

Recipient local communities need to appreciate the PB as part of their RCIP management tools. One of the most immense tasks in the project is to mobilize community support for the project as well as provide communities with commensurate education on consuming and using water in an environmentally friendly manner.

The faster way of doing this is to ensure that community leaders understand the whole concept of RCIP and the PB in order to be able to translate the role of the community in implementing the PB. The Local community leaders must ensure active and effective consultation and participation of the affected persons in the preparation and implementation of the Resettlement action plans.

Particular attention will need to be taken to drive home the principles of managing resettlement and the application of the Entitlement matrix and Inventories.

The importance of this lie in the fact that Community leaders are expected to guide in the implementation of the Resettlement Policy Framework, mentor the implementation of the PB as well as arrange to sensitize the recipient communities on the components of the project

Proposed Stakeholder Engagement and Communication Plan

Partner	Subject (s) for Engagement	Frequency	Mode of engagement
World Bank	Capacity Building	Quarterly	Clinic Training workshops
	Project Reviews & Reporting	Monthly	Meetings
NITA-U	Capacity Building & skills transfer	Quarterly	Stakeholder Workshops
		Quarterly	Field Tours
		Quarterly	Radio Talk shows
MoICT& NG	Policy guidance	Monthly	Consultative meetings
	Review of progress	Quarterly	Project Status
MoGLSD	Occupational Health and Safety	Quarterly	Consultative meetings
	Labour rights/ Law	Quarterly	Field Tours Monitoring
NEMA	Review and Technical backstopping on Environmental issues	Monthly	Project Monitoring and Mentoring
	Capacity Building	Quarterly	Training workshops
Local Governments	Resource Mobilization	Monthly	Consultative meetings
	Conflicts and other social issues resolutions	Monthly	Stakeholder engagements
	Safety precautions	Quarterly	Awareness meetings

9.4 The Monitoring Team

It is recommended that a core team of people preferably headed by the District Environment Officers and composed of other officials from health, building and planning department, NEMA, management of the proposed facility and respective local environment committees should carry out the monitoring process. The monitoring team will start its work during the construction process and continue throughout the operation phase and should ensure that the proposed mitigation measures are implemented as suggested in this report.

The monitoring team will most particularly check for the following issues among others;

- ✓ Collaboration of the developer with the District Officials (Moroto, Katakwi, Karuma, Pakwach, Nebbi, Arua, Koboko, Yumbe, Moyo and Adjumani) and other relevant authorities to ensure that operations of his structure meet regulatory requirements.
- ✓ Proper storage, handling and final disposal of any solid waste produced at the premises.
- ✓ General cleanliness and good housekeeping along the roads.
- ✓ Constant acquisition of appropriate permits and/or licenses from respective institutions and compliance with the regulatory framework.
- ✓ Supervise implementation of all the proposed mitigation measures.
- ✓ Compile a monitoring report indicating all non-conformances and mitigation measures.
- ✓ Regular inspection of the structure by the relevant districts and NEMA authorities to ascertain that the building is fit for human occupancy.
- ✓ Conduction of regular environmental audits for the structure at least once every year and reports submitted to the National Environment Management Authority (NEMA) for review to ascertain compliance with the environmental regulations and suggested mitigation measures as required by the National Environment Act Cap 153.
- ✓ Include the social checklist.

9.5 Reporting Arrangements

The Project shall institute a team for monitoring of environment and social safeguards that will comprise but not limited to project recruited staff,, the contractor, the independent supervisor, NEMA and MoGLSD that shall report to the steering committee of the Project.

The Environmental and Social Management plan (Impact - Mitigation- Responsibility Matrix)

Environmental/Social Impact	Mitigation/Enhancement Measures	Desired Outcome	Monitoring Indicators	Source of Data (MoVs)	Frequency	Responsibility	Report Recipients
	Pre-Construction Phase						
	Impact on the Socio-economic Environment						
	Positive Impacts						
Creation of employment and business (livelihood) opportunities especially, for vulnerable and marginal groups (VMGs) in the project area such as the women, youth, poor, orphans, PHAs, PWDs in the project area	Vulnerable and marginal groups in the project area shall be the preferred source of unskilled and semi-skilled labor provided they have the requisite qualification, competence & experience	Optimize participation and livelihood opportunities for project communities	Proportion of the un/skilled women, youth, poor, orphans, PHAs, PWDs etc with qualification from the PA employed	Contractor employment records Quarterly monitoring reports Contractor compliance reports	Monthly	Contractor, NITA	• NEMA • WB • NITA-U • MGLSD • DLGs
	The project will promote procurement of materials from local suppliers where it is technically, qualitatively and commercially reasonable and feasible.	Local communities and businesses benefit from procurement process	Number of local businesses benefiting from construction related procurement	Contractor Procurement records Contractor compliance reports	Monthly	NITA-U and Contractor	
	Regular business dealers especially food vendors will be registered	For identity records & effective GRMs	Proportion of regular business dealers by category registered	Contractor inventory for regular business dealers by category	Monthly	NITA-U and Contractor	

	Ensure that nationals benefit from employment opportunities and observe the national labor laws	Optimize participation and livelihood opportunities for project communities	Proportion of nationals in the project labor force	Contractor employment records	Monthly	NITA-U and Contractor	
Environmental/Social Impact	**Mitigation/Enhancement Measures**	**Desired Outcome**	**Monitoring Indicators**	**Source of Data (MoVs)**	**Frequency**	**Responsibility**	**Report Recipients**
	Potentially Negative Impact						
Potential disruption of livelihood in project areas	Project Implementation for sections of open markets will strictly be done on non-open market days after prior consultations with local authorities to avoid any envisaged impacts.	Minimal or no disruption of livelihoods	Record of community complaints Number of community engagement reports Contractor's implementation schedules	• Document reviews • Stakeholder engagement meetings • Field inspections	Monthly	• Contractor • LG - CDOs • NITA-U	• NEMA • WB • NITA-U • MGLSD • DLGs • Police
	Construction activities within urban areas in such specific sections of potential economic disruptions will be designed for night time, (9.00pm-2.00pm). This will be done in consultation with the respective urban	Well managed construction schedule and effective consultation ensuring that affected communities are informed of the	Record of community complaints Number of community engagement reports	• Document reviews • Stakeholder engagement meetings • Field inspections	Monthly	• Contractor • LG – CDOs • NITA-U	

	authorities and the business owners.	project schedule and impacts	Contractor's implementation schedules				
	Arrangements will be made to ensure participation of business owners and representatives of the urban authorities during implementing hours to guarantee security and safety of their businesses,	Well managed construction schedule and effective consultation ensuring that affected communities are informed of the project schedule and impacts	Record of community complaints Number of community engagement reports Contractor's implementation schedules	• Document reviews • Stakeholder engagement meetings • Field inspections	Monthly	• Contractor • LG – CDOs • NITA-U	• NEMA • WB • NITA-U • MGLSD • DLGs • Police
	The project will use road reserves, free public lands, aerial poles, linear stretches and work during non-market days and nights to avoid livelihood disruption and destruction of property at all costs	Implement the project with minimal livelihood disruption in project areas	No. of incidents reported	ESIA/ESMMP implementation reports, field stakeholder engagements	Monthly/ annual E&S audit reports	NITA-U and Contractor	
	Continuous social risk assessments on potential livelihood disruptions. In the event that land acquisition emerges during	Timely identification of risks and impacts for quick mitigation	No of emerging risks and impacts identified and mitigation measures developed	ESMMP implementation reports; field stakeholder engagements	Monthly/ annual E&S audit reports	NITA-U and Contractor	

	continuous assessment [though unlikely], the RPF will be applied in the development of an action plan.						
	Continuous engagement of community and stakeholders on the potential impacts and mitigation measures	Up to date and clear information to and from affected communities to inform the management of the project	No of community concerns raised and responses	ESMMP implementation reports; field stakeholder engagements	Monthly/ annual E&S audit reports	NITA-U and Contractor	• NEMA • WB • NITA-U • MGLSD • DLGs • Police
	Establish grievance management committees	All grievances adequately managed	Number of grievances related to livelihood disruption identified and managed	ESMMP implementation reports Grievance management reports, Annual audit reports	Monthly/annual E&S audit reports	NITA-U, Contractor, LC, District and NITA grievance committees	
Environmental/Social Impact	**Mitigation/Enhancement Measures**	**Desired Outcome**	**Monitoring Indicators**	**Source of Data (MoVs)**	**Frequency**	**Responsibility**	**Report Recipients**
Occupational and community health and safety hazards	Stakeholder consultations shall precede project implementation to brief project communities, address possible concerns, promote transparency and increase participation	Participation and cooperation of project communities	Stakeholder consultation site specific attendance registers and minutes	Stakeholder Engagement reports Annual ESIA audit reports	Monthly	NITA-U, Contractor	• NEMA • WB • NITA-U • MGLSD • DLGs • MoH

	Only trained and professional drivers and operators shall be allowed to man construction vehicles and machinery or vehicles	Safety from traffic offences and work hazards	Proportion of drivers and operators with requisite training and professional documents	Contractor employment records, Contract compliance reports, field visits	Monthly	NITA-U and Contractor	• Police
	First Aid kits shall be carried around by the Project teams	No life is lost due to injury incidents triggered by project related work	Proportion of injury incidents receiving first aid	Injury and illness incident reports	Monthly	NITA-U and Contractor	
	Project workers and communities inducted & sensitized on protection of children, gender and criminal effects of sexual engagement with children in the project sites	Promote respect for rights of local communities and workers especially, VMGs. No local community - contractor staff conflicts. No STI, HIV/AIDS, sex abuse and family breakups triggered by the project	% of sites with workers and communities inducted and sensitized on child, gender and criminal effects of sexual engagement with children in the project sites	Contractor sensitisation records, Field visits and observations	Monthly	NITA-U and Contractor	
	Coordinate with MoGLSD and develop protocols on responding to labor and child protection issues.	All cases of labor and child rights infringed by contractor staff on site handled according to the laws of Uganda	Status of protocol development with MoGLSD on responding to labor &child protection issues.	Project inventory review	Monthly	NITA-U Contractor, MoGLSD	

	Construction Phase						
	Impact on the Socio-economic environment						
	Positive Impacts						
Environmental/Social Impact	**Mitigation/Enhancement Measures**	**Desired Outcome**	**Monitoring Indicators**	**Source of Data (MoVs)**	**Frequency**	**Responsibility**	**Report Recipients**
	Positive Impacts						
Creation of employment and business (livelihood) opportunities especially, for VMGs in the project area like the women, youth, poor, orphans, PHAs, PWDs in the project area	VMGs in the project area shall be the preferred source of unskilled and semi-skilled labor provided they have the requisite qualification, competence & experience	Optimize participation and livelihood opportunities for project communities	Proportion of the un/skilled women, youth, poor, orphans, PHAs, PWDs etc. employed	Contractor employment records Contractor compliance reports	Monthly	Contractor, NITA-U	• NEMA • WB • NITA-U • MGLSD • DLGs
	The project will promote procurement of materials from local suppliers where it is technically, qualitatively and commercially reasonable and feasible.	Local communities and businesses benefit from the procurement process and earn income	Number of local businesses benefiting from construction related procurement	Contractor Procurement records Contractor compliance reports	Monthly	NITA-U and Contractor	
	Ensure regular business dealers especially food vendors are registered for identity & effective GRMs	For identity records & effective GRMs	Proportion of regular business dealers by category registered	Contractor inventory for regular business dealers by category	Monthly	NITA-U and Contractor	

	Ensure that nationals benefit from employment opportunities and observe the national labor laws	Optimize participation and livelihood opportunities	Proportion of nationals in the project labor force	Contractor employment records	Monthly	NITA-U and Contractor	
Environmental/Social Impact	**Mitigation/Enhancement Measures**	**Desired Outcome**	**Monitoring Indicators**	**Source of Data (MoVs)**	**Frequency**	**Responsibility**	**Report Recipients**
	Potentially Negative Impact						
Temporal business disruptions due to trenching in urban centers and markets in rural areas	Trenching shall be done during business off-peak hours (night) and days (weekends) to minimize disruption	Implement the project with as less disruptions on the project communities as possible	Number of community complaints lodged over disruptions	Field Visits and reports	Monthly	Contractor NITA-U District Commercial Officer	• NEMA • WB • NITA-U • MGLSD • DLGs
Construction noise, vibration and air quality	Only equipment and vehicles in good working order will be used	Management of noise, dust and vibration nuisance	Complaints of DMC equipment and vehicles in use	Field consultations with District Engineer, Complains from the operators and community	Monthly	District Engineer DEO NITA-U Contractor	• NEMA • WB • NITA-U • MGLSD • DLGs • Police
	Only trained and professional drivers (operators) shall be allowed to drive construction vehicles and to operate machinery.	Management of noise, dust and vibration nuisance	Proportion of drivers (operators) with requisite training and professional documents	Contractor employment records Contractor compliance reports inventories	Monthly	NITAU and Contractor	
	Implement best driving (operator) practices to minimize noise /dust created through	Management of noise, dust and vibration nuisance	Complaints on bad driving/machine operations. Evidence of best fleet management	Contractor compliance reports , field consultations with OC traffic	Monthly	OC Traffic, NITA-U and Contractor	

	unnecessary acceleration and breaking		policy for example: Proportion of machines/vehicles with a call number for bad driving/operation Proportion of bad driving/operation reports acted on by the contractor				
	Regular inspection of vehicles, machinery and equipment used in the operation according to manufacturer inspections to ensure that they are in good working condition	Management of construction noise, dust and vibration nuisance	Proportion of vehicles, machinery and equipment inspection and serviced according to manufacturer specifications	Inspection records of vehicles, machinery and equipment field consultations with OC Traffic and District Engineer	Monthly	OC Traffic, District Engineer NITA-U and Contractor	
	Noise generating sources shall be located away from residential areas, schools, hospitals and other sensitive receptors to meet the noise emission levels provided in IFC's General EHS Guidelines	To keep noise emission at levels provided in IFC's General EHS Guidelines especially, in noise sensitive receptors	Complaints of noise generating sources located in residential areas, schools, hospitals and other sensitive receptors	Community observations Contractor compliance reports Field visit consultations with DEOs	Monthly	DEOs, NITA-U and Contractor	
	Use of noise suppression shields and mufflers	To keep noise emission levels low	% of machines generating beyond 50dBA with noise suppression shields and mufflers	Field observations and consultations with DEOs	Monthly	DEOs, NITA-U, Contractor	

	Observe the 75 dBA and 50 dBA NEMA regulation limits for day and night time noise levels respectively	To comply with the NEMA regulation limits for day and night time noise levels respectively	Complaints of noise levels beyond the 75 dBA and 50 dBA NEMA regulation limits for day and night time noise levels respectively	Field visit consultations with the DEOs	Monthly	DEOs, NEMA, NITA-U, Contractor	
	Engines of vehicles/trucks and earth-moving equipment shall be switched off when not in use.	To keep noise emission levels low	Complaints on engines of vehicles/trucks and earth-moving equipment running when not in use.	Field visit consultations with the district Engineer and OC traffic	Monthly	District Engineer ,OC traffic NITA-U, Contractor	
	Installing suitable mufflers on engine exhausts and compressor components to reduce vibration levels	To keep vibration nuisance levels low	% of machines generating vibration nuisance with mufflers	Field visit consultations with the DEO	Monthly	DEOs, NITA-U, Contractor	• NEMA • WB • NITA-U • MGLSD • DLGs • Police
	Sprinkling water regularly during dusty conditions	To suppress dust emissions, improve visibility and minimize the health impact of dust pollution to both workers & the general public.	Public recognition of contractors attempts to manage dust particles through water sprinkling	Field visits	Monthly	NITA-U DEO, Contractor NEMA	
Environmental/Social Impact	**Mitigation/Enhancement Measures**	**Desired Outcome**	**Monitoring Indicators**	**Source of Data (MoVs)**	**Frequency**	**Responsibility**	**Report Recipients**
Impact on cultural heritage/ archeological interests/Chance finds in OP 4.11 safeguards	Locations of Cultural Heritage/ Archaeological interest shall be avoided by project activities	To keep Cultural Heritage/ Archaeological sites in tact	No. of Cultural Heritage/ Archaeological interest interfered	Field visits, Chance finds reports	Monthly	Contractor Cultural leaders, NITA U,	• NEMA • WB • NITA-U

			with by the project activities			Department of Antiquities	• UWA • MGLSD • MoTA • DLGs
	Work must immediately stop along an affected section, and the Supervising Engineer, Dep't of Museums and Antiquities and the competent authority under NEMA immediately informed to take a decision on the way forward	To save and protect chance finds in OP 4.11 safeguards	Incidents where work continued in sections of chance finds in OP 4.11 safeguards	Chance finds reports, field visits	Monthly	Contractor NITA-U LG, Dep't of Museums and Antiquities and the competent authority under NEMA	
	In case of chance finds, the Contractor shall mark, cordon and secure the subject site(s) to avoid damage in the course of road construction and immediately notify the Department responsible for museums and monuments.	To save and protect chance finds in OP 4.11 safeguards	Incidents where work continued in sections of chance finds in OP 4.11 safeguards	Chance finds reports, field visits	Monthly	Contractor NITA-U LG, Dep't of Museums and Antiquities and the competent authority under NEMA	
	Opening of a new borrow or quarry site shall be witnessed and inspected by official(s) from the Department responsible for museums and monuments for the first 2 days of site opening. The official(s) shall maintain watching briefs during works, with clear	To save and protect chance finds in OP 4.11 safeguards	Incidents where work continued in sections of chance finds in OP 4.11 safeguards	Chance finds reports, field visits	Monthly	Contractor NITA-U LG, Dep't of Museums and Antiquities and the competent authority under NEMA	

	procedures for protection and documentation of any "chance finds" encountered.						
	The Contractor and supervising engineer shall maintain contact details of the Department of Museums and Monuments to quickly notify it in case chance finds are encountered	To save and protect chance finds in OP 4.11 safeguards	Incidents where work continued in sections of chance finds in OP 4.11 safeguards	Chance finds reports, field visits	Monthly	Contractor NITA-U LG, Dep't of Museums and Antiquities and the competent authority under NEMA	
	"Chance finds" encountered in absence of these official shall be handed over to supervising Engineering Assistant, Environmental Officer or District Engineer who would immediately notify officials of the Department of Museums and Monuments.	To save and protect chance finds in OP 4.11 safeguards	Number of Chance finds handed over to supervising Engineering Assistant, Environmental Officer or District Engineer	Chance finds reports, field visits	Monthly	Contractor NITA-U LG, Dep't of Museums and Antiquities and the competent authority under NEMA	
	"Chance finds" encountered in presence of official(s) from the Department of Museums and Monuments shall be handed to them for	To save and protect chance finds in OP 4.11 safeguards	Number of Chance finds handed over to the Department of Museums and Monuments	Chance finds reports, field visits	Monthly	Contractor NITA-U LG, Dep't of Museums and Antiquities and the competent	

	transfer to the national museum.					authority under NEMA	
Occupational and community health and safety risks	All manual equipment such as pickaxe, Pick Mattock, Cutter Mattock, etc. shall be sturdy and firmly fixed	Promote occupational health and safety	Complaints of workers sheared by falling off pick, mattock, hoe etc.	Occupational health and safety risk incidence inventories	Monthly	MGLSD NEMA Contractor District labour officer	• NEMA • WB • NITA-U • MGLSD • MoH • Police • DLGs
	Only trained and professional drivers and operators shall be allowed to man construction vehicles and machinery.	Management of traffic accidents	Proportion of drivers and operators with requisite training and professional documents	Contractor employment records Contractor compliance reports inventories	Monthly	District Engineer, NITAU and Contractor	
	Except for areas secured by fencing, all active construction areas shall be marked with high-visibility tape	To reduce the risk of accidents involving pedestrians and vehicles.	Reports of pedestrians and vehicles falling into trenches	Site visits, complaints filed in Police, Field visits	Monthly	NITA-U MGLSD NEMA Contractor District Labour Officer	
	All open trenches should be marked with high-visibility tape to reduce the risk of accidents involving children, women, disabled and elderly persons.	To reduce the risk of accidents involving pedestrians and vehicles.	Reports of pedestrians and vehicles falling into trenches	Field visits, complaints filed in Police	Monthly	NITA-U MGLSD NEMA Contractor District Labour Officer	
	All open trenches and excavated areas should be backfilled as soon as possible after cable laying	To reduce the risk of accidents involving	Reports of pedestrians and vehicles falling into trenches	Field visits, complaints filed in Police	Monthly	NITA-U MGLSD NEMA Contractor	

	and construction has been completed.	pedestrians and vehicles.				District Labour Officer	
	Construction workers shall be provided with and enforced to wear suitable Personal Protective Equipment (PPE) including hard hats, overalls, high-visibility vests, safety boots, gloves	Promote occupational health and safety	Proportion of workers provided with and enforced to wear suitable Personal Protective Equipment (PPE)	Field visits	Monthly	NITA-U MGLSD NEMA Contractor District Labour Officer	
	Clear signage shall be used near project sites	To reduce traffic accidents	Public & worker complaints on lack of signage	Field visits	Monthly	NITA-U MGLSD Contractor	
	Training of workers and community members on safety precautions.	To reduce accidents	Training reports	Field visits	Monthly	NITA-U MGLSD Contractor OC Traffic	
	Community and workers training on potential of disease transmission such as HIV/AIDs, Hepatitis, Gender Based Violence and Child abuse	Prevent potential transmission of diseases such as HIV/AIDs, Hepatitis, Gender Based Violence Child abuse	Training reports	Field visits, documentary review	Monthly	NITA-U MGLSD Contractor NEMA DHO	
	Documentation of Accidents and actions taken	For assess and improve safety mechanisms	Evidence of accidents documentation	Field visits	Monthly	NITA-U MGLSD Contractor NEMA DHO	

	Awareness on potential risks associated with sexual interactions and notification	Zero Tolerance to child abuse and sexual harassment	Evidence of documentation on child abuse and sexual harassment	Police Reports Field visits	Monthly	NITA-U MGLSD Contractor DHO Police	
	Ensuring labor conditions compliance	Zero Tolerance for labor rights abuse	Evidence of labor related complaints registered	Number of labor related complaints registered	Monthly	Contractor NITA-U DLO	
	The Contractor shall develop: (i) Gender Based Violence (GBV) and Child Abuse/Exploitation (CAE) Codes of Conduct; and, (ii) an Action Plan to mitigate and respond to GBV and CAE within the company and the community.	Zero Tolerance for Child Abuse and Gender based violence	Status of codes developed and implementation	Number of child abuse and gender based violence cases reported	Monthly	NITA-U MGLSD Contractor DHO Police	
	Ensure latrine, bathroom and accommodation facilities are separate according to gender	To protect VMGs from abuse of sexual, gender and privacy rights	Evidence of separate latrine, bathroom and accommodation facilities by gender	Field visits	Monthly	NITA-U MGLSD Contractor NEMA DHO	
Environmental/Social Impact	**Mitigation/Enhancement Measures**	**Desired Outcome**	**Monitoring Indicators**	**Source of Data (MoVs)**	**Frequency**	**Responsibility**	**Report Recipients**
Construction traffic related accidents and traffic interference	Trenching across roads and project vehicles and trucks movement shall be scheduled during general traffic off-peak hours	To avoid traffic jam due to project activities	Evidence of trenching across roads and project trucks moving during traffic peak hours	Reports from traffic wardens and field visits	Monthly	NITA-U MGLSD Contractor NEMA DHO	• NEMA • WB • NITA-U • MoH • MGLSD

	Employ safe traffic control measures, including temporary road signs and flag persons to warn of dangerous conditions and on-going road construction works or diversions	Minimize traffic accidents	Evidence of traffic control measures	Field visits	Monthly	NITA-U MGLSD Contractor District OC Traffic	• Police • DLGs
	Trucks carrying construction materials will be covered with tarpaulin or appropriate polythene material from or to project site	Prevent injuries caused by flying objects from project trucks hauling construction materials	complaints of people being hit by objects from moving project truck	Field visits	Monthly	MGLSD NEMA Contractor District labour officer and OC Traffic	
	Attach speed limits to vehicles that will use the Road	To reduce human error associated with accidents due to over speeding	complaints of over speeding by project vehicles	Field visit consultations	Monthly	NITA Contractor NEMA OC Traffic	
	Documentation of Accidents and actions taken	To ascertain the impact of the project and take timely corrective action	Evidence of accident documentation	Field visits	Monthly	NITA-U MGLSD Contractor District OC Traffic	
Risk of assault/ Attack/ intimidation	Report all the criminal cases to police and seek police protection in affected sites	To prevent risk of assault/ Attack/ intimidation	Cases reported to police	Incident reports in Police	Monthly	NITA-U MGLSD Contractor DPC	
Potential disruption to livelihood (crops, market stalls, kiosks)	Refer to the mitigation measures in the construction phase for Potential disruption to livelihood (crops, market stalls, kiosks)					NITA-U and Contractor	

	Impact on the Biophysical environment						
	Potentially Negative Impact						
Susceptibility to soil erosion during rainy days	On spot clearance of vegetation shall be restricted the road reserves	To minimize project footprint and soil erosion	Evidence of eroded soil mass from the road reserve	Field visits and consultations with the DEOs	Monthly	NITA Contractor DEOs, NEMA	• NEMA • WB • NITA-U • MoWE
	Use aerial poles in erosion prone spots	To minimize project footprint and soil erosion	Evidence of eroded mass from project sites	Field visits and consultations with the DEOs	Monthly	NITA Contractor DEOs, NEMA	
	The Contractor will preferably deal with local borrow material suppliers certified by NEMA	To promote best practices in project footprint and soil erosion management	The legal status of local borrow material suppliers	Field visits and consultations with the DEOs, audit of supplier documentation	Monthly	NITA Contractor DEOs, NEMA	
Environmental/Social Impact	**Mitigation/Enhancement Measures**	**Desired Outcome**	**Monitoring Indicators**	**Source of Data (MoVs)**	**Frequency**	**Responsibility**	**Report Recipients**
Impact on natural habitats and protected areas	Bird flight path impact is being mitigated by project design default which involves use of bird reflectors	To avoid/protect critical habitats e.g. nesting grounds, bird flying spaces, foraging corridors, and migration corridors	The layout of the OFC implemented in conservation areas	Field visits and consultations with the DEOs	Monthly	NITA Contractor DEOs, NEMA	• NEMA • WB • NITA-U • MoWE • MoTA
	Avoidance of construction activities during the breeding season and other sensitive seasons or times of day in collaboration with conservation teams	To avoid interference with the breeding seasons and habits of endangered species in conservations	The timing of construction in conservation areas	Field visits and consultations with the DEOs	Monthly	Contractor, DEOs, NITA–U, NEMA	

	Laws governing such sensitive ecosystems will be strictly adhered to such as poaching will be strictly prohibited.	Protection of the ecosystem	Number of awareness sessions conducted Number of poaching incidents reported	Field visits and consultations with the DEOs	Monthly	NITA Contractor DEOs, NEMA	
	Refer also to mitigation measures under construction phase for increased susceptibility to soil erosion during rainy days						
Construction waste generation	Trenching wastes shall be used for backfill	To avoid waste hazards	Records of backfill with trench wastes	Field visits and consultations with the DEOs	Monthly	NITA Contractor DEOs, NEMA	• NEMA • WB • NITA-U • MoH • MoWE • MoTA
	All wastes shall be collected in gazetted areas and sorted	To separate hazardous and non-hazardous wastes for proper disposal.	Records for wastes generated and disposal practice	Field visits and consultations with the DEOs	Monthly	NITA Contractor DEOs, NEMA	
	Contractor shall seek guidance of local environmental officers to identify acceptable disposal sites for oily/ fuel waste	To avoid pollution of the ecosystem	Reports of illegal waste dumping in non-designated areas	Field visits and consultations with the DEOs	Monthly	NITA Contractor DEOs, NEMA	
	Where it does not exist for hazardous wastes, a NEMA certified waste handler shall be contracted	To transport and dispose of wastes to a known NEMA approved waste disposal facility.	Reports of illegal handling of hazardous waste by not NEMA approved companies	Field visits and consultations with the DEOs	Monthly	NITA Contractor DEOs, NEMA	
	Contractors shall induct their drivers and sensitise them on safe transportation of the rubble and cut-to-spoil	To avoid littering of project communities with wastes	Induction and sensitisation reports for drivers	Field visits and consultations with the DEOs	Monthly	NITA Contractor DEOs, NEMA, OC Traffic	

	materials to the final disposal site						
	Implementing fuel delivery procedures and spill prevention and control plans applicable to the delivery and storage of fuel for backup electric power systems, preferably providing secondary containment and overfill prevention for fuel storage tanks	To prevent contamination of the eco-system with fuels	Evidence of fuel delivery procedures and spill prevention and control plans	Field visits and consultations with the DEOs	Monthly	NITA Contractor DEOs, NEMA, OC Traffic	
Environmental/Social Impact	**Mitigation/Enhancement Measures**	**Desired Outcome**	**Monitoring Indicators**	**Source of Data (MoVs)**	**Frequency**	**Responsibility**	**Report Recipients**
E-Wastes	Contractors shall undertake waste segregation to separate e-waste waste from non-e-waste waste and follow the NEMA guidelines including using a NEMA certified service providers for safe disposal	To restore excavations	Waste segregation practice reports, Labeled waste bins, Documentation of formal engagement of refuse handlers	Field visits and consultations with the DEOs/NEMA	Monthly	Contractor NITA-U DEOs/NEMA	• NEMA • WB • NITA-U • MoH • MoWE • MoTA
	Ensuring that new support equipment does not contain PCBs or ODSs. PCBs from old equipment shall be managed as a hazardous waste	To avoid hazard wastes	Manufacturer equipment specifications	Field visits and consultations with the DEOs/NEMA	Monthly	Contractor NITA-U DEOs/NEMA	

	Purchasing electronic equipment that meet international phase out requirements for hazardous materials contents and implementing procedures for the management of waste from existing equipment according to the hazardous waste guidance in the General EHS Guidelines.	Durable and genuine equipment installed	Manufacturers' Specification records	Field visits and consultations with the DEOs/NEMA	Monthly	Contractor NITA-U DEOs/NEMA	• NEMA • WB • NITA-U • MoH • MoWE • MoTA
	Considering the implementation of a take-back program for consumer equipment such as cellular telephones and their batteries.	To avoid accumulation of hazard wastes	Equipment purchase agreements	Field visits and consultations with the DEOs/NEMA	Daily	Contractor NITA-U DEOs/NEMA	
	Refer also to mitigation measures under construction phase for construction waste generation where applicable						
Environmental/Social Impact	**Mitigation/Enhancement Measures**	**Desired Outcome**	**Monitoring Indicators**	**Source of Data (MoVs)**	**Frequency**	**Responsibility**	**Report Recipients**
Water pollution	Maintenance and cleaning of vehicles, trucks and equipment shall take place offsite and away from water sources and conservation areas	To avoid any contact with water	Project vehicles cleaning and maintenance records	Field visits and consultations with the DEOs/NEMA	Monthly	Contractor NITA-U DEOs/NEMA	• NEMA • WB • NITA-U • MoH • MoWE • MoTA
	All wastes shall be collected in areas separate from the surface water bodies such	To avoid any contact with water	Records for water sample analysis Evidence of	Field visits and consultations with the DEOs/NEMA	Quarterly	Contractor NITA DEOs/NEMA	

	as streams by authorised handlers		garbage/refuse, oily/ fuel waste in drains				
	Packing of contaminated and worn plastic sheeting into drums prior to proper disposal	To avoid any contact with water	Contaminated and worn plastic sheeting Disposal records	Field visits and consultations with the DEOs/NEMA	Quarterly	Contractor NITA DEOs/NEMA	
	Recycle and proper disposal of all waste	To avoid any contact with water	Waste recycling and or disposal records	Field visits and consultations with the DEOs/NEMA	Quarterly	Contractor NITA DEOs/NEMA	
	Constructor shall provide latrine facilities for construction workers	To avoid indiscriminate defecation in nearby bush or shores	Evidence of latrine facilities on site	Field visits and consultations with the DEOs/NEMA	Quarterly	Contractor NITA DEOs/NEMA	
Environmental/Social Impact	**Mitigation/Enhancement Measures**	**Desired Outcome**	**Monitoring Indicators**	**Source of Data (MoVs)**	**Frequency**	**Responsibility**	**Report Recipients**
Visual and Aesthetic Impacts i.e. Alteration of visual and aesthetic quality of sites	Taking into account public perception about aesthetic issues by consulting with the local community during the siting process of antenna towers and site selection.	To review site, material and technology alternatives with the visual interests of project communities	Concerns with aesthetic changes and consideration of public input	Field visits and consultations with the DEOs	Prior to erection and in the design process	Contractor, LG DEOs, NITA–U, NEMA	• NEMA • WB • NITA-U • MoGLSD • MoWE • MoTA
	On spot vegetation clearance limited to the road reserve	To minimize interference with	The extent of the project foot prints in conservation	Field visits and consultations with the DEOs	Monthly	Contractor, LG DEOs, NITA–U, NEMA	

		sceneries in project communities	areas. Evidence of re-vegetation				
	Any areas that were cleared of vegetation but are not paved shall be planted with grass indigenous to those areas.	To restore the vegetation to its indigenous state	The extent of the project foot prints in conservation areas.	Field visits and consultations with the DEOs	Monthly	Contractor, LG DEOs, NITA–U, NEMA	
	Buying materials from only suppliers with evidence of compliance with Statutory requirements for commercial sources in place.	To promote compliance with Statutory requirements for Commercial sources in place.	Evidence of compliance with Statutory requirements for Commercial sources in place.	Field visits and consultations with the DEOs	Monthly	Contractor, LG DEOs, NITA–U, NEMA	
	Proper storing and disposal of all wastes generated to appropriate gazetted areas with the help of NEMA certified service providers	To protect integrity of the ecosystem	Waste storing and disposal records	Field visits and consultations with the DEOs	Monthly	Contractor, DEOs, NITA–U, NEMA	
Environmental/Social Impact	**Mitigation/Enhancement Measures**	**Desired Outcome**	**Monitoring Indicators**	**Source of Data (MoVs)**	**Frequency**	**Responsibility**	**Report Recipients**
	Post-Construction Phase						
	Potential impacts on the socio-economic environment						
	Potentially Negative Impact						
Visual and Aesthetic Impacts i.e. Alteration of visual and aesthetic quality of sites	Demobilization and restoration of sites hosting support construction facilities for the project at project closure	To restore the site to its original aesthetics	Demobilization and restoration status of sites hosting support construction facilities	Field visits and consultations with the DEOs	Quarterly	Contractor, DEOs, NITA–U, NEMA	• NEMA • WB • NITA-U • MoGLSD • MoTA

	Refer also to mitigation measures under construction phase for construction waste generation visual and Aesthetic Impacts i.e. alteration of visual and aesthetic quality of sites for general mitigation mechanisms						
	Operational Phase						
	Impact on Socio-Economic Environment						
	Potentially Negative Impact						
Occupational and Community Health and Safety Risk	Only qualified and certified workers shall be employed to install, maintain, or repair any equipment onsite	To prevent skills related accidents and errors	Qualifications of workers employed to install, maintain, or repair any equipment onsite	Documentary review, stakeholder engagements	Bi-annually	MoGLSD, MoFPED, UBOS, NITA	• NEMA • WB • NITA-U • MoGLSD • MoWE • MoTA
	Maintenance workers will be provided with adequate PPE to limit their risks to works accidents. Such PPE will include gloves, helmets, safety belts for working in heights, and any other as deemed necessary.	To prevent accidents and severe injuries to operation staff.	Proportion of maintenance workers with adequate PPE. Such PPE will	Documentary review, stakeholder engagements	Bi-annually	Contractor, MoH, NITA–U, MoGLSD	
	A first Aid kit will be kept onsite whenever there are maintenance activities.	To prevent loss of life due to injury operation staff.	Reports of injuries during maintenance	Documentary review, stakeholder engagements	Bi-annually	Contractor, MoH, NITA–U, MoGLSD	
	Refer also to mitigation measures under the construction phase for Occupational Health and Safety Risk						
	Bio-Physical Environment Impact						
	Potentially Negative Impact						
Environmental/Social Impact	**Mitigation/Enhancement Measures**	**Desired Outcome**	**Monitoring Indicators**	**Source of Data (MoVs)**	**Frequency**	**Responsibility**	**Report Recipients**
Lightning risks and associated impacts	Lightning arrestors with appropriate earthlings will	To safeguard against lightning.	Record of lightning strikes	Installation during construction and	Bi-annually	Contractor, DEOs, NITA–U, NEMA	• NEMA • WB

	be incorporated in the project design.			maintenance during operation			• NITA-U • MoWE
e-Waste generation	Contractor shall undertake waste segregation onset to separate e-waste waste from non-e-waste waste and use NEMA certified service providers for safe disposal Refer also to the mitigation measures in the construction phase for e-waste management						

Grievance Redress Mechanism

The developer shall implement a Grievance Redress Mechanism to ensure that the communities, workers and public are able to present their grievances to both the National Information Technology Authority – Uganda and the World Bank. For the communities and workers, contacts of the NITA – U office shall be shared during the stakeholder engagements and communication drives to ensure that the Authority can be contacted incase a breach takes places.

Grievances recorded to ensure that a grievance log is developed that will indicate the complaints received, responses to the grievances and a report shared with the project steering committee.

Complaints should be logged in writing and maintained in a database by Contractor and NITA-U either a simple Excel file or a publicly accessible web site. Complaints received will be assigned a number that will help the complainant track progress via the online system or database. Complainants will be handed a receipt and a flyer that describes the GRM procedures and timelines. The grievance log will capture complaints being made via informal or traditional systems, such as village councils or elders.

The database will track and report publicly on the following metrics:

1. complaints received
2. complaints resolved
3. complaints that have gone to mediation
4. Issues raised and location of complaint circles for instance age groups, gender

Grievances will be categorized according to the type of issue raised and the effect on the environment/claimant if the impacts raised in the complaint were to occur. Based on this categorization, the complaint will be prioritized based on risk and assigned for appropriate follow up. Where an agreement has not been reached, the complainant will be offered an appeals process.

Where there is an agreement between the complainant and the contractor on how the it will be resolved, a minute will be drafted and signed by both parties. After due implementation of it, a new minute will be signed stating that the complaint has been resolved. All supporting documents of meetings needed to achieve resolution will be part of the file related to the complaint. This will include meetings that have been escalated to an appeals level or are handled by a third party.

The contractor will provide monthly reports to NITA-U and other stakeholders that track the number of complaints received, resolved, not resolved, and referred to third party.

The Client shall define a clear mechanism for grievance appeal ensuring effective benefit of the lowest community and highest stakeholders. The mechanism shall include the steps taken for the aggrieved party to lodge a complaint; where to lodge and process of handling the complaint until disposal; define staff to manage the mechanism; and tracking of the mechanism management including evaluation of its effectiveness. Appropriate committees and their membership shall be defined, put in place and trained prior to start of any civil works. Compliance will be cleared by the World Bank prior to civil works.

GRIEVANCE REDRESS MECHANISM MATRIX

	Potential Conflict	Concerned Stakeholder	Choice of stakeholder for redress1	Action [s] for redress	Responsible Party	Indicator	Means of Verification
1.	Bush Clearing [cutting of some tree branches]	1. Tree Owner 2. Local Leaders2 3. UNRA 4. Contractor 5. NITA-U	1. Owner 2. Contractor 3. Local leaders	1. Awareness before bush clearing 2. Negotiation 3. Mediation	1. Contractor 2. NITA-U	Signed Minutes/agreements	Review of reports
2.	Sexual related offences	1. Local Leaders 2. Police 3. Workers 4. Contractors 5. District Health Department	1. Local Leaders 2. Contractor 3. Police	1. Prior Awareness 2. Prosecution 3. Mediated negotiations	1. Contractor 2. Community Development Officer	Signed Minutes/agreements	1. Review of minutes/agreements 2. Review of reports
3.	Wages/Pay related conflicts	1. Contractor 2. District Labour Officers 3. NITA-U	1. Contractor 2. District Labour Officers	1. Mediation 2. Agreed/Signed Terms of employment	Contractor	Signed Minutes/agreements	1. Review of minutes/agreements 2. Review of reports
4.	Mistreatment of workers	1. Contractor 2. Labour Officers	District Labour Officer	1. Mediation 2. Compensation 3. Observe work code of conduct	Contractor	Signed Minutes/agreements	Review of reports Review of minutes/agreements
5.	Water Contamination by silt from trenching works	1. Community water sources 2. Contractor 3. Local Leaders	Local Leaders Contractor	Compensation Clean up	Contractor	Signed agreements Water color change	Observation of water color
6.	Interference with cultural norms and practices	1. Cultural leaders 2. Local Leaders 3. Workers 4. Contractor 5. NITA-U	1. Local Leaders 2. Contractor 3. NITA-U	1. Prior stakeholder engagement and consultations 2. Mediated dialogue	Contractor NITA-U	Minutes for dialogues and meetings	1. Consultative meetings with Cultural Leaders 2. Review of minutes/agreements
7.	Temporary interference with	1. UWA	1. UWA 2. NITA-U	Temporary halt in project work	Contractor	Reports on wildlife	Review of reports/agreements

[1] Choice of stakeholders for redress means the stakeholders chosen on the basis of legitimacy, accessibility, integrity, transparency, dependability and capability.
[2] Local Leaders include; Local Councils [I, II, III & IV] and technical Staff within the Districts.

	wildlife migration patterns	2. Local Government 3. Contractor				related accidents	/minutes
8.	Work related accidents	1. Workers 2. Contractor 3. Local Leaders	Contractor Labour Office NITA-U EHS officers	Dialogue Compensation	Contractor Labour Office	Meeting Minutes Certificates for compensation	Review of minutes/agreements

9.6 Impact Mitigation Plan (ESMP)

The mitigation plan below is proposed for the proposed project to ensure its effective implementation in an environmentally sound manner. It is a summary of the impacts that were identified, their indicators, remedial/mitigation measures, and the responsible parties for implementation. Regular inspections by the districts and NEMA are highly encouraged to continue monitoring the project operation activities to ensure that they are implemented in an environmentally sound manner and where it is to the contrary, NEMA should advise accordingly.

Table 9.1: Environment and Social Management and Monitoring Plan for the Construction Phase of the proposed installation of the missing links for RCIP

#	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
	Installation of Mpondwe Transmission Site Location: URA Customs GPS Locations: 0.0431389 North 29.722944 East	Human Beings	No human settlements affected	Stakeholder Engagements conducted	Project ownership encouraged by attending stakeholder engagement meetings	Participate in stakeholder engagements conducted
		Land	Possible conflicts in acquisition of land	• Site installed on Gov't property • Sign MOU with the hosting agencies		• Must install site in assigned location
	Implementation of Kasese-Mpondwe OFC Link	Human Beings	• Scattered business population along the fiber route Contamination from Waste	• Conduct Stakeholder engagements Ensure that the contractor adheres to the Public Health Act and other regulations	• Project ownership encouraged by attending stakeholder engagement meetings • Provision of labour resource • Maximum cooperation and support to the project	• Participate in Stakeholder engagements conducted • Observe community social and cultural policies • Observe project related regulations and guidelines • Conduct HIV/AIDS awareness campaigns for the workers • Conduct Project orientation of workers in work environment, health and safety precautions • Provide Personal

#	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
			Business disruption in open markets including Muhokya, on Saturdays, Kikorongo on Mondays and Makumianai in Bugoye	Ensure contractor's implementation schedule avoids such open market day in that section	▪ Guide contractor in scheduling of implementation plan ▪ Report to NITA-U if contractor doesn't abide by the schedule	Protective Equipment [PPE] • Immediate re-instatement to minimize dust pollution • Ensure workers are provided with Personal Protective Gear • Must adhere to the Public Health Act • Provide mobilets for workers • Provide waste collection containers
		Land	Possible conflict • Destabilization of some other activities within the road reserve such as Truck parking yard	• Overall supervision of compliance to ESMF • Obtain Right of Way from relevant Authorities • Prior engagement with the concerned authorities	Project Ownership • Abide and cooperate by agreed strategies	• Ensure that implementation is within RoW obtained by Project Owner. • Seek clearance from Project Owner in case of any deviations • Fasten the project activities to allow business back as fast as possible

#	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
		Wildlife	Interference with wildlife patterns by the presence of workers in the Queen Elizabeth National Park, Murchison Falls National Park, Pian Upe Game Reserve and/or Bokora Wildlife Reserve	• Conduct consultative meetings with relevant Authorities [UWA] • Conduct stakeholder workshops in relation to information received from UWA	Project Ownership	• Participate in consultative meetings with UWA
		Vegetation Cover	Removal by trenching • Damaging of crops/plantation by workers • Cutting trees within the road reserve	• Ensure that consultant complies with RoW terms and conditions • Conduct Stakeholder Engagements • Use LG compensations guidelines and rates • Ensure that the contractor redesigns the Optical Fiber cable Route within the road reserve	Project Ownership	• Comply with Right of Way terms and conditions • Participate in stakeholder engagements and implement resolutions • Conduct workers awareness on work ethics and social responsibilities • Ensure that designed Optical Fiber Cable route is in accordance with the agreed redesigned plans to avoid cutting trees
		Water Bodies	• Siltation and contamination	• Ensure that the contractor adheres to the agreed upon	• Report any anomalies or delays	• Backfilling is done as soon as possible

#	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
				backfilling time limits		
		Equipment management	• Security of equipment • Injuries to workers	• Theft of equipment by workers and resident community • Supervise and monitor the Contractors adherence to health and safety safeguards	• Report acts of theft and vandalism to the contractor	• Storage of equipment in secure facilities like Police Stations • Must use mechanized equipment for loading, offloading and installation of equipment • Provide protective gear for the workers
	Installation of Moroto Transmission Site Location: Posta UgandaGPS Locations: 2.532397° North 34.659894° East	Human Beings	• No Human settlements affected	• Stakeholder Engagements conducted		• Participate in stakeholder engagements conducted
		Land	• Possible conflicts in acquisition of land	• Site installed on Gov't property • Sign MOU with the hosting agencies		• Must install site in assigned location
	Implementation of Soroti-Katakwi OFC Link	Human Beings	• Contamination from Waste	• Stakeholder engagements conducted • Ensure that the contractor adheres to	• Project ownership encouraged by attending stakeholder engagement meetings • Provision of labour resource	• Participate in stakeholder engagements • Observe community social and cultural policies • Observe project related regulations and guidelines • Conduct HIV/AIDS awareness

#	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
			• Business disruptions on Katakwi open market day	the Public Health Act and other regulations • Ensure contractor's implementation schedule avoids such open market day in that section	• Guide contractor in scheduling of implementation plan • Report to NITA-U if contractor doesn't abide by the schedule	campaigns for the workers • Conduct Project orientation of workers in work environment, health and safety precautions • Provide Personal Protective Equipment [PPE] • Provide mobilets for workers • Provide waste collection containers
		Land	Possible conflict	• Overall supervision of compliance to ESMF • Obtain Right of Way from relevant Authorities	Project Ownership	• Ensure that implementation is within RoW obtained by Project Owner. • Seek clearance from Project Owner in case of any deviations

#	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
		Climate	• Strong winds and lightening • Bush Fires • Termites	• Ensure that Contractor adheres to approved pole designs and specifications • Approve OFC route designs for areas prone to bush fires Ensure that contractor complies with agreed specifications and standards for Poles	Project Ownership	• All poles installed must have lightening arrestors • Provide appropriate installation plans for areas prone to bush fires • Must compile with set standards for pole treatment
		Vegetation Cover	• Damaging of crops/plantation by workers • Cutting trees within the road reserve	• Conduct Stakeholder Engagements • Use Local Government compensations guidelines • Ensure that the contractor redesigns the Optical Fibre cable route within the road reserve but taking care of the cherished tree species there including *Tamarindus indica*		• Participate in stakeholder engagements and implement resolutions • Conduct workers awareness on work ethics and social responsibilities • Ensure that designed Optical Fibre Cable route is in accordance with the agreed redesigned plans to avoid cutting trees

#	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
		Swampy Areas	Pole Stability	• Ensure Contractor adhere to agreed implementation designs for swamp areas	Remain vigilant and report any suspicious practices by contractor	• Adhere to approved swamp areas agreed designs
		Equipment management	Security of equipment Injuries to workers	• Approve safety plans for the contractor • Supervise and monitor the Contractors adherence to health and safety safeguards	• Report acts of theft and vandalism to the contractor	• Storage of equipment in secure facilities like Police Stations • Must use mechanised equipment for loading, off loading and installation of equipment • Provide protective gear for the workers
	Implementation of Katakwi-Moroto OFC Link	Human Beings	• Contamination from Waste	• Stakeholder engagements conducted • Ensure that the contractor adheres to the Public Health Act and other regulations	• Project ownership encouraged by attending stakeholder engagement meetings • Provision of labour resource	• Conduct stakeholder engagements • Observe community social and cultural policies • Observe project related regulations and guidelines • Conduct HIV/AIDS awareness campaigns for the workers • Conduct Project orientation of workers in work environment, health and

#	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
						safety precautions • Provide Personal Protective Equipment [PPE] • Provide mobilets for workers • Provide waste collection containers
		Land	Possible conflict	• Overall supervision of compliance to ESMF • Obtain Right of Way from relevant Authorities	Project Ownership	• Ensure that implementation is within RoW obtained by Project Owner. • Seek clearance from Project Owner in case of any deviations
		Climate	• Strong winds and lightening • Bush Fires	• Ensure that Contractor adheres to approved pole designs and specifications • Approve OFC route designs for areas prone to bush fires	Project Ownership	• All poles installed must have lightening arrestors • Provide appropriate installation plans for areas prone to bush fires
		Vegetation Cover	• Termites • Damaging of crops/plan	• Ensure that contractor complies with agreed specifications and treatment standards for poles	Project Ownership	• Must compile with set standards for pole treatment

#	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
			tation by workers • Cutting trees within the road reserve	• Conduct Stakeholder Engagements • Use Local Government compensations guidelines • Ensure that the contractor redesigns the Optical Fibre cable route within the road reserve		• Participate in stakeholder engagements and implement resolutions • Conduct workers awareness on work ethics and social responsibilities • Ensure that designed Optical Fibre Cable route is in accordance with the agreed redesigned plans to avoid cutting trees
		Swampy Areas	Pole Stability	• Ensure Contractor adhere to agreed implementation designs for swamp areas		• Adhere to approved swamp solution designs
		Equipment management	Security of equipment Injuries to workers	• Approve safety plans for the contractor • Supervise and monitor the Contractors adherence to health and safety safeguards	• Report acts of theft and vandalism to the contractor	• Storage of equipment in secure facilities like Police Stations • Must use mechanized equipment for loading, off-loading and installation of equipment • Provide protective gear for the workers
	Implementation of Adjumani-	Human Beings	Social distortions	• Stakeholder engagements conducted	• Project ownership encouraged by attending	• Stakeholder engagements conducted

#	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
	Moyo OFC Link				stakeholder engagement meetings • Provision of labour resource	• Observe community social and cultural policies • Observe project related regulations and guidelines • Conduct HIV/AIDS awareness campaigns for the workers • Conduct Project orientation of workers in work environment, health and safety precautions • Provide Personal Protective Equipment [PPE] • Liaise and seek consent of Local Authorities in identifying and designating of workers camps • Provide mobilets for workers • Provide waste collection containers
			• Contamination from Waste Business disruptions on open market days at Dzaipi, Laropi and Nyadri Markets in Adjumani, Moyo and Maracha Districts respectively	• Ensure that the contractor adheres to the Public Health Act and other regulations • Ensure contractor's implementation schedule avoids such open market day in that section	• Guide contractor in scheduling of implementation plan • Report to NITA-U if contractor doesn't abide by the schedule	
		Land	Possible conflict	• Overall supervision of compliance to ESMF	Project Ownership	• Ensure that implementation is within RoW obtained by Project Owner.

#	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
				• Obtain Right of Way from relevant Authorities		• Seek clearance from Project Owner in case of any deviations
		Vegetation Cover	Damaging of crops/plantation by workers Cutting trees within the road reserve	• Ensure that consultant complies with RoW terms and conditions • Conduct Stakeholder Engagements • Use Local Government compensations guidelines • Ensure that the contractor redesign the Optical Fibre cable Route within the road reserve taking care of the planted Tick tree or where possible go underneath UMEME lines where trees were already compensated for	Project Ownership	• Compile with Right of Way terms and conditions • Participate in stakeholder engagements and implement resolutions • Conduct workers awareness on work ethics and social responsibilities • Ensure that designed Optical Fibre Cable route is in accordance with the agreed redesigned plans to avoid cutting trees

#	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
		Equipment management	• Security of equipment • Injuries to workers	• Approve safety plans for the contractor • Supervise and monitor the Contractors adherence to health and safety safeguards	• Report acts of theft and vandalism to the contractor	• Storage of equipment in secure facilities like Police Stations • Must use mechanised equipment for loading, off loading and installation of equipment • Provide adequate Personal protective Equipment to workers
	Installation of Moyo Transmission Site Location: UWA GSP Location: 3.653315° North 31.727096° East	Human Beings	• No Human settlements affected	• Conduct Stakeholder Engagements	• Project Ownership	• Participate in stakeholder engagements conducted
		Land	• Possible conflicts in acquisition of land	• Site installed on Gov't property • Sign MOU with the hosting agencies		• Must install site in assigned location
	Implementation of Moyo - Yumbe OFC Link	Human Beings		• Conduct Stakeholder engagements prior and during project implementation	• Project ownership encouraged by attending stakeholder engagement meetings • Provision of labour resource	• Stakeholder engagements conducted • Observe community social and cultural policies • Observe project related regulations and guidelines

#	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
			• Contamination from Waste	• Ensure that the contractor adheres to the Public Health Act and other regulations		• Conduct HIV/AIDS awareness campaigns for the workers • Conduct Project orientation of workers in work environment, health and safety precautions • Provide Personal Protective Equipment [PPE] • Provide mobilets for workers • Provide waste collection containers
		Land	Possible conflict Soil Erosion due to the hilly nature of the terrain	• Overall supervision of compliance to ESMF • Obtain Right of Way from relevant Authorities • Ensure the contractor's approved mitigation measures are complied with	Project Ownership	• Ensure that implementation is within RoW obtained by Project Owner. • Seek clearance from Project Owner in case of any deviations • Measures such as implementing this section in dry season can negate soil erosion
		Vegetation Cover	Damaging of crops/plantation by workers	• Ensure that consultant complies with RoW terms	Project Ownership	• Comply with Right of Way terms and conditions

#	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
			Cutting trees within the road reserve	and conditions • Conduct Stakeholder Engagements • Use Local Government compensations guidelines • Ensure that the contractor redesign the Optical Fibre cable Route within the road reserve but with due consideration of the Shea Nut trees that are densely preserved in this section of the project		• Participate in stakeholder engagements and implement resolutions • Conduct workers awareness on work ethics and social responsibilities • Ensure that designed Optical Fibre Cable route is in accordance with the agreed redesigned plans to avoid cutting trees
		Equipment management	• Security of equipment • Injuries to workers	• Approve safety plans for the contractor • Supervise and monitor the Contractors adherence to health and safety safeguards	• Report acts of theft and vandalism to the contractor	• Storage of equipment in secure facilities like Police Stations • Must use mechanised equipment for loading, off loading and installation of equipment • Provide protective gear
	Implementation of Yumbe-Koboko OFC Link	Human Beings		• Stakeholder engagements conducted	• Project ownership encouraged by attending stakeholder engagement meetings	• Stakeholder engagements conducted • Observe community social and

#	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
			• Contamination from Waste	• Ensure that the contractor adheres to the Public Health Act and other regulations	• Provision of labour resource	cultural policies • Observe project related regulations and guidelines • Conduct HIV/AIDS awareness campaigns for the workers • Conduct Project orientation of workers in work environment, health and safety precautions • Provide Personal Protective Equipment [PPE] • Provide mobilets for workers • Provide waste collection containers
		Land	Possible conflict	• Overall supervision of compliance to ESMF • Obtain Right of Way from relevant Authorities	Project Ownership	• Ensure that implementation is within RoW obtained by Project Owner. • Seek clearance from Project Owner in case of any deviations
		Vegetation Cover	• Damaging of crops/plantation by workers	• Ensure that consultant complies with RoW terms and conditions	Project Ownership	• Comply with Right of Way terms and conditions

#	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
			• Cutting trees within the road reserve	• Conduct Stakeholder Engagements • Use Local Government compensations guidelines • Ensure that the contractor redesign the Optical Fibre cable Route within the road reserve		• Participate in stakeholder engagements and implement resolutions • Conduct workers awareness on work ethics and social responsibilities • Ensure that designed Optical Fibre Cable route is in accordance with the agreed redesigned plans to avoid cutting trees
		Equipment management	• Security of equipment • Injuries to workers	• Approve safety plans for the contractor • Supervise and monitor the Contractors adherence to health and safety safeguards	Report acts of theft and vandalism to the contractor	• Storage of equipment in secure facilities like Police Stations • Must use mechanised equipment for loading, off loading and installation of equipment • Provide protective gears
	Installation of Koboko Transmission Site Location: District Local Government Offices GSP Location:	Human Beings	• No Human settlements affected	• Conduct Stakeholder Engagements	Project Ownership	• Participate in stakeholder engagements conducted
		Land	• Possible conflicts in acquisition of land	• Site installed on Gov't property • Sign MOU with the hosting agencies		

#	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
	3.405806 North 30.96006 East					
	Implementation of Koboko-Oraba OFC Link	Human Beings	Possible conflicts, crime and promiscuity • Contamination from Waste	• Stakeholder engagements conducted • Ensure that the contractor adheres to the Public Health Act and other regulations	• Project ownership encouraged by attending stakeholder engagement meetings • Provision of labour resource	• Stakeholder engagements conducted • Observe community social and cultural policies • Observe project related regulations and guidelines • Conduct HIV/AIDS awareness campaigns for the workers • Conduct Project orientation of workers in work environment, health and safety precautions • Provide Personal Protective Equipment [PPE] • Provide mobilets for workers • Provide waste collection containers
		Land	Possible conflict	• Overall supervision of compliance to ESMF • Obtain Right of Way from	Project Ownership	• Ensure that implementation is within RoW obtained by Project Owner. • Seek clearance from

#	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
				relevant Authorities		Project Owner in case of any deviations
		Vegetation Cover	Damaging of crops/plantation by workers Cutting trees within the road reserve	• Ensure that consultant complies with RoW terms and conditions • Conduct Stakeholder Engagements • Use Local Government compensations guidelines • Ensure that the contractor redesign the Optical Fibre cable Route within the road reserve	Project Ownership	• Compile with Right of Way terms and conditions • Participate in stakeholder engagements and implement resolutions • Conduct workers awareness on work ethics and social responsibilities • Ensure that designed Optical Fibre Cable route is in accordance with the agreed redesigned plans to avoid cutting trees
		Equipment management	• Security of equipment • Injuries to workers	Approve safety plans for the contractor • Supervise and monitor the Contractors adherence to health and safety safeguards	Report acts of theft and vandalism to the contractor	• Storage of equipment in secure facilities like Police Stations • Must use mechanised equipment for loading, off loading and installation of equipment • Provide protective gear

#	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
	Implementation of Koboko - Arua OFC Link	Human Beings	• Contamination from Waste	• Stakeholder engagements conducted • Ensure that the contractor adheres to the Public Health Act and other regulations	• Project ownership encouraged by attending stakeholder engagement meetings • Provision of labour resource	• Stakeholder engagements conducted • Observe community social and cultural policies • Observe project related regulations and guidelines • Conduct HIV/AIDS awareness campaigns for the workers • Conduct Project orientation of workers in work environment, health and safety precautions • Provide Personal Protective Equipment [PPE] • Provide mobilets for workers • Provide waste collection containers
		Land	Possible conflict	• Overall supervision of compliance to ESMF • Obtain Right of Way from relevant Authorities	Project Ownership	• Ensure that implementation is within RoW obtained by Project Owner. • Seek clearance from Project Owner in case of any deviations

#	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
		Vegetation Cover	Damaging of crops/plantation by workers Cutting trees within the road reserve	• Ensure that consultant complies with RoW terms and conditions • Conduct Stakeholder Engagements • Use Local Government compensations guidelines • Ensure that the contractor redesign the Optical Fibre cable Route within the road reserve	Project Ownership	• Comply with Right of Way terms and conditions • Participate in stakeholder engagements and implement resolutions • Conduct workers awareness on work ethics and social responsibilities • Ensure that designed Optical Fibre Cable route is in accordance with the agreed redesigned plans to avoid cutting trees
		Equipment management	• Security of equipment • Injuries to workers	Approve safety plans for the contractor • Supervise and monitor the Contractors adherence to health and safety safeguards	Report acts of theft and vandalism to the contractor	• Storage of equipment in secure facilities like Police Stations • Must use mechanised equipment for loading, offloading and installation of equipment • Provide protective gear
	Installation of Arua Transmission Site	Human Beings	• No Human settlements affected	• Conduct Stakeholder Engagements	Project Ownership	• Participate in stakeholder engagements conducted
		Land	• Possible conflicts in	• Site installed on Gov't property		

#	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
	Location: Post Bank GSP Location: 3.017139 North 30.91353 East		acquisition of land	• Sign MOU with the hosting agencies		
	Implementation of Arua-Vurra OFC Link	Human Beings	• Contamination from Waste	• Stakeholder engagements conducted • Ensure that the contractor adheres to the Public Health Act and other regulations	• Project ownership encouraged by attending stakeholder engagement meetings • Provision of labour resource	• Stakeholder engagements conducted • Observe community social and cultural policies • Observe project related regulations and guidelines • Conduct HIV/AIDS awareness campaigns for the workers • Conduct Project orientation of workers in work environment, health and safety precautions • Provide Personal Protective Equipment [PPE] • Provide mobilets for workers • Provide waste collection containers

#	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
		Land	Possible conflict	• Overall supervision of compliance to ESMF • Obtain Right of Way from relevant Authorities	Project Ownership	• Ensure that implementation is within RoW obtained by Project Owner. • Seek clearance from Project Owner in case of any deviations
		Equipment management	• Security of equipment • Injuries to workers	Approve safety plans for the contractor • Supervise and monitor the Contractors adherence to health and safety safeguards	Report acts of theft and vandalism to the contractor	• Storage of equipment in secure facilities like Police Stations • Must clearly label all project equipment installed • Must use mechanised equipment for loading, off loading and installation of equipment • Provide protective gear
	Implementation of Arua-Nebbi OFC Link	Human Beings		• Stakeholder engagements conducted • Ensure that the	• Project ownership encouraged by attending stakeholder engagement meetings • Provision of labour resource	• Stakeholder engagements conducted • Observe community social and cultural policies • Observe project related regulations and guidelines • Conduct HIV/AIDS awareness campaigns for the workers

#	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
			• Contamination from Waste	contractor adheres to the Public Health Act and other regulations		• Conduct Project orientation of workers in work environment, health and safety precautions • Provide Personal Protective Equipment [PPE] • Provide mobilets for workers • Provide waste collection containers
		Land	Possible conflict	• Overall supervision of compliance to ESMF • Obtain Right of Way from relevant Authorities	Project Ownership	• Ensure that implementation is within RoW obtained by Project Owner. • Seek clearance from Project Owner in case of any deviations
		Equipment management	• Security of equipment • Injuries to workers	Approve safety plans for the contractor • Supervise and monitor the Contractors adherence to health and safety safeguards	Report acts of theft and vandalism to the contractor	• Storage of equipment in secure facilities like Police Stations • Must clearly label all project equipment installed • Must use mechanised equipment for loading, off loading and installation of equipment

#	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
						• Provide protective gear
	Installation of Nebbi Transmission Site Location: Nebbi Municipality Headquarters GSP Location: 2.4785 North 31.08914 East	Human Beings	• No Human settlements affected	• Conduct Stakeholder Engagements	Project Ownership	• Participate in stakeholder engagements conducted
		Land	• Possible conflicts in acquisition of land	• Site installed on Gov't property • Sign MOU with the hosting agencies		
	Implementation of Nebbi - Pakwach OFC Link	Human Beings	• Contamination from Waste	• Stakeholder engagements conducted • Ensure that the contractor adheres to the Public Health Act and other regulations	• Project ownership encouraged by attending stakeholder engagement meetings • Provision of labour resource	• Stakeholder engagements conducted • Observe community social and cultural policies • Observe project related regulations and guidelines • Conduct HIV/AIDS awareness campaigns for the workers • Conduct Project orientation of workers in work environment, health and safety precautions • Provide Personal Protective

#	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
						Equipment [PPE] • Provide mobilets for workers • Provide waste collection containers
		Land	Possible conflict	• Overall supervision of compliance to ESMF • Obtain Right of Way from relevant Authorities	Project Ownership	• Ensure that implementation is within RoW obtained by Project Owner. • Seek clearance from Project Owner in case of any deviations
		Vegetation Cover	Damaging of crops/plantation by workers Cutting trees within the road reserve	• Ensure that consultant complies with RoW terms and conditions • Conduct Stakeholder Engagements • Use Local Government compensations guidelines • Ensure that the contractor redesign the Optical Fibre cable Route within the road reserve	Project Ownership	• Compile with Right of Way terms and conditions • Participate in stakeholder engagements and implement resolutions • Conduct workers awareness on work ethics and social responsibilities • Ensure that designed Optical Fibre Cable route is in accordance with the agreed redesigned plans to avoid cutting trees

#	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
		Equipment management	• Security of equipment • Injuries to workers	Approve safety plans for the contractor • Supervise and monitor the Contractors adherence to health and safety safeguards	Report acts of theft and vandalism to the contractor	• Storage of equipment in secure facilities like Police Stations • Must use mechanised equipment for loading, off loading and installation of equipment • Provide protective gear
	Implementation of Pakwach-Karuma OFC Link	Human Beings	• Contamination from Waste	• Stakeholder engagements conducted • Ensure that the contractor adheres to the Public Health Act and other regulations	• Project ownership encouraged by attending stakeholder engagement meetings • Provision of labour resource	• Stakeholder engagements conducted • Observe community social and cultural policies • Observe project related regulations and guidelines • Conduct HIV/AIDS awareness campaigns for the workers • Conduct Project orientation of workers in work environment, health and safety precautions • Provide Personal Protective Equipment [PPE]

#	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
						• Provide mobilets for workers • Provide waste collection containers
		Land	Possible conflict	• Overall supervision of compliance to ESMF • Obtain Right of Way from relevant Authorities	Project Ownership	• Ensure that implementation is within RoW obtained by Project Owner. • Seek clearance from Project Owner in case of any deviations
		Wildlife	Interference with wildlife patterns by the presence of workers in the National Park	• Conduct consultative meetings with relevant Authorities [UWA] • Conduct stakeholder workshops in relation to information received from UWA	Project Ownership	• Participate in consultative meetings with UWA • Conduct worker safety awareness workshops
		Equipment management	• Security of equipment • Injuries to workers	• Consult with Local Authorities on camp site location • Supervise and monitor the Contractors adherence to health and safety safeguards	Report acts of theft and vandalism to the contractor	• Storage of equipment in secure facilities like Police Stations • Must use mechanised equipment for loading, off loading and installation of equipment • Provide protective gear
	Installation of Karuma	Human Beings	• No Human settlements affected	• Conduct Stakeholder	Project Ownership	• Participate in stakeholder

#	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
	Transmission Site Location: UWA gate Karuma GSP Location: 2.255069° North 32.241759° East			Engagements		engagements conducted
		Land	• Possible conflicts in acquisition of land	• Site installed on Gov't property • Sign MOU with the hosting agencies		

Table 9.2: Environment Management and Monitoring Plan for the Operation Phase of the proposed installation of the missing links for RCIP

	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
	Management of Transmission Sites	Human beings	Noise pollution Workers Safety	Regular monitoring and measurement for compliance to set standards	Report any signs of noise discomfort to owner	Provide quarterly reports on compliance with set standards Provide PPEs for workers
		Land/Water	Contamination from used oils after service	Supervise and monitor the contractor operations	Report any contamination to project owner	Strict adherence to National laws, standards and regulations

	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
		Equipment management and infrastructure sustainability	Security of equipment Waste Management	Regular monitoring of sites Ensure that the Contractor adheres to the set waste management standards and procedures	Report acts of theft and vandalism to project owner	• Maintain wall fence around transmission site • Ensure operation of CCTV and access controls • Adhere to set waste management standards and procedures
	Maintenance of OFC links	Human Beings	Workers Safety	Regular monitoring and measurement for compliance to set standards	Report acts of theft and vandalism to project owner	▪ Provide PPEs for workers
		Equipment Maintenance and sustainability	• Strong winds and lightening • Bush Fires • Termite attack	• Obtain and ensure compliance to warranty terms and conditions	Report any project equipment affected to project owner	Monitor and replace/maintain all equipment

Table 9.3: Environment Management and Monitoring Plan for the Decommissioning Phase of the proposed establishment of the Environmental and Social Safe Guards for missing links for RCIP

	Project Activity	Environmental & Social Receptors	Nature of Environmental/Social concern	Required action by Project Owner	Required action by Community	Required action by Contractor
	Transmission Sites	• No negative environment and social impact is envisaged during this phase •				
	Maintenance of OFC links	• Human Beings	• Waste Management	• Ensure that the	• Report any noncompliance	• Must contract a

				Contractor disposes of all the waste generated during contraction to gazetted disposal areas	of the contractor to the Project Owner	licensed waste management transporter. • Dispose all waste to gazetted disposal areas

Table 9.4 Summary of Environment Management and Monitoring Plan for the Operation Phase of the proposed installation of the missing links for RCIP

Environmental/ Social Impact	Mitigation/Enhancement Measures	Monitoring Indicators	Timing/ Project Phase	Responsibility	Monitoring Frequency	Estimated Cost
1. Construction Phase						
Positive Impacts						
Provision of employment opportunities	Survey for both semi-skilled and unskilled employment opportunities to locals	Number of locals employed in the project	Pre and during construction	Project coordinator and Contractor	Continuous	UGX 6,000,000
Provision of market for construction materials	Source materials from local suppliers where possible	Percentage of material cost acquired locally	Preparation phase	Project coordinator and Contractor	Quarterly	
Improved delivery of public services by improving efficiency through government cloud infrastructure	Connectivity to as many Government, Private and Cultural Institutions as possible	Number of entities connected Percentage reduction in time delays in service delivery	Design and construction phases	Project coordinator and Contractor	Quarterly	
Building capacity in management of IT programs and projects	Design training programs for effective use of the infrastructure by beneficiaries as part of the project	Number of entities connected and effectively using the project services	Operational phase	NITA-U	Annually	
Improved policy and regulatory environment for ICT in country	Formulate and review policies and regulations based on project performance	Number of policies and regulations reviewed based on home grown experience	Operational phase	NITA-U MICT&NG	Annually	
Negative Impacts						

Increased susceptibility to soil erosion during rainy days	Restrict on spot vegetation clearance to project sites to minimize project footprint and soil erosion Use aerial transmission poles in erosion prone spots	No of erosion incidences at project sites	Construction phase	Project Coordinator Contractor LG staff		
Dust pollution in case of project implementation during dry season	Use water sprinkler where dust levels are likely to cause community discomfort	Number of complaints about dust emissions lodged	Construction phase	Contractor Safe guard Staff LG staff	Monthly	
Temporal business disruptions due to trenches in urban centers	Works should be planned for out of business peak hours (night) and days (weekends) to minimize inconveniences to businesses	Number of community complaints lodged over disruptions	Construction phase	Contractor LG leaders	Monthly	
Construction noise and vibrations	This will be restricted to only where there is had pan and such activities will be planned for day time Use modern machines that produced minimal noise and vibrations as approved by UNBS	Records for noise levels as per each complaint UNBS certification of	Construction phase		Monthly	

		equipment				
Improper management of construction wastes	Wastes will be collected, documented and stored then disposed of according to waste management regulations	Records for wastes generated and disposal plan	Construction phase	Contractor Project Coordinator LG Staff	Quarterly	
Water pollution	No garbage/refuse, oily wastes, fuels/waste oils should be discharged into drains or onto site grounds Maintenance and cleaning of vehicles, trucks and equipment should take place offsite	Records for water samples analysis	Construction phase	Contractor NEMA LG water sectors		
Impact on cultural heritage/ archeological interest	Stakeholder engagement to consider such sites in the design	Records of stakeholder engagements	Construction and operational phases	Project coordinator Cultural leaders	Quarterly / annually	
Occupational health and safety risks	Provision of personal protective equipment to the workers. Training of workers and community members on safety precautions. Community and workers training on potential of disease transmission such as HIV/AIDs, Hepatitis, Gender Based Violence and Child abuse	Distribution list Reports from safe guard staff Training reports Police or local council records of	Construction phase	MGLSD NEMA Contractor LG technical staff	Monthly and/ or quarterly	

		reported cases of GBV and Child abuse First Aid kits				
Construction traffic related accidents and traffic interference	Where road use is restricted signage and alternatives should be provided to the public Employ flag girls/boys	Records of diversions Cases of reported accidents	Construction phase	Contractor	Monthly	
Nature/ vegetation clearance/disturbance	The design will be for using aerial transmission and only in urban centers where trenching will apply Design will be adjusted to avoid tree cutting especially along Adjumani – Koboko stretch and across River Nile at Laropi bridge	Record of trees cut along project site Record of design adjustments with their locations	Construction phase	Contractor	Quarterly	
Operational phase						

Maintenance of Transmission stations	Improper management of oils and replaced parts Vandalism of property	Records for waste from maintenance of each of the stations Security is guaranteed by host Government institutions	Periodic	NITA-U	Quarterly	
Maintenance of OFC links	Improper management of replaced parts	Records for waste from maintenance of OFC	Periodic	NITA-U	Annually	
Occupational Health and Safety impacts	Only qualified and certified workers shall be employed to install, maintain, or repair any equipment onsite Maintenance workers will be provided with adequate PPE to limit their risks to works accidents. Such PPE will include gloves, helmets, safety belts for working in heights, and any other as deemed necessary.	Reports of injuries during maintenance	Continuous throughout the operation phase	NITA-U	Bi-annually	

	A first Aid kit will be kept onsite whenever there are maintenance activities. This will help in administering the first help in an event of injury of any operation staff.					
Lightning risks and associated impacts	Lightning arrestors will be incorporated in the project design. The appropriate earthlings will be provided to safeguard against lightning. This installation shall be supervised by a qualified person.	Record of lightning strikes	Installation during construction and maintenance during operation	NITA-U	Bi-annually	
Decommissioning Phase						

9.7 Environmental monitoring

Environmental monitoring programs for the proposed project should be implemented to address all activities that have been identified to have potentially significant impacts on the environment during normal operations and upset conditions.

Environmental monitoring activities should be based on direct or indirect indicators of waste management, emissions, Noise and resource use during operation.

Monitoring frequency should be sufficient to provide representative data for the parameter being monitored.

Monitoring should be conducted by trained individuals following monitoring and record-keeping procedures and using properly calibrated and maintained equipment. Monitoring data should be analyzed and reviewed at regular intervals and compared with the operating standards so that any necessary corrective actions can be taken.

9.8 The monitoring team

It is recommended that a team of people preferably headed by NITA-U M&E person, NEMA staff, MICT&NG and other officials from health department, Local Government relevant sector heads and respective local environment committees should carry out the monitoring process. The monitoring team should start its work during the construction process and continue throughout the operation phase and should ensure that the proposed mitigation measures are implemented as suggested in this report.

The monitoring team should most particularly check for the following issues among others;

- Proper installation of Lightning arrestors
- Proper storage, handling and final disposal of the waste generated at the premises.
- Personal protective equipment of the workforce during construction and operation.
- Accident preparedness capacity.
- Carrying out of regular environmental audits for the project at least once every year and reports submitted to NEMA for review to ascertain compliance with the environmental regulations and suggested mitigation measures.

10 Conclusion and Recommendations

10.1 Conclusion

The proposed development does not have any significant impacts that cannot be mitigated. Most of the likely impacts attributed to the project are mainly in the construction and have been taken into consideration and mitigation measures to these have been proposed so as to ensure that they are implemented in an environmentally friendly manner.

- ✓ During the construction phase, the most substantial impacts identified include: - susceptibility to soil erosion, impacts on protected/ sensitive areas, improper construction waste management, occupational health and safety risks, construction traffic related accidents, construction noise and water pollution on sites. However, these impacts will be short lived given the temporary duration of this phase.
- ✓ Some positive impacts will also result from the construction phase key among these will include: Market for construction materials and employment opportunities as the most notable. These shall be enhanced to maximise the benefits accruing from these impacts.
- ✓ The major impact of a long term nature which will occur during the operation phase of the development and the most substantial negative impact identified is Poor E-waste management which involves repairs of the cables.

Mitigation measures for these negative impacts have been proposed and an Environmental Management and Monitoring Plan devised for the proposed project.

10.2 Recommendations

- The developer (NITA-U) shall implement the mitigation measures stipulated in the EMMP (see Chapter 9). The same shall be extended or included in the contracts entered with any contractors or other specialists.
- NITA-U together with District Environment Officers, officials from NEMA, and other relevant lead agencies and departments should carryout monitoring to ensure that the recommended mitigation measures are complied with.
- Proper E-Waste management facilities and emergency response measures must be in place.
- It was noted that 20km along Moyo-Koboko route and 20km long Moyo-Adjumani route, trenching would be more appropriately based on the observed incidence of dense and cherished tree species coverage
- At the Laropi crossing of the Nile River, the Project Owner should evaluate a feasible method to cross the Nile River after consultation with key stakeholders including UEDTL and/or UMEME.
- The Contractor must submit OFC route design plans for swampy, bush fire and termite prone areas to the Project Owner for approval
- Cultural institutions be considered in the connection rollout plan

- Post EIA audits of the building shall be carried out to ascertain compliance of the project with the EMMP and the environmental legal frame work as well as other related requirements.

11. ESIA Public Disclosure

The ESIA prepared by the NITA Uganda will be reviewed and cleared by the World Bank. Once cleared, the NITA-U will disclose the report in-country, emphasizing the impacts and mitigation measures to the affected communities, through NITA-U websites, hard copies to the affected districts, undertake community engagement and a disclosure note presented through the daily newspapers. The report will also be disclosed in the World Bank infoshop having been disclosed in-country

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Appendices

NITA-U Request for Right of Way for the Project from UNRA

NITA UGANDA
- Driving the IT Revolution -

Ref: NITA/TS/001

17th October, 2016

The Executive Director,
Uganda National Roads Authority,
Kampala.

REQUEST FOR RIGHT OF WAY FOR THE IMPLELEMENTATION OF MISSING LINKS PROJECT UNDER RCIP

The Government of Uganda through National Information Technology Authority - Uganda [NITA-U] has received funding from International Development Association [IDA] under RCIP to:

1. Improve coverage for IT infrastructure in the country under the Missing Links project;
2. Improve the delivery of public services by improving efficiency through government cloud infrastructure;
3. Build capacity in management of IT programs and projects; and
4. Improve policy and regulatory environment for ICT in country

Under the component of the Missing Links, NITA-U will extend connectivity through the NBI to ten (10) districts i.e. Moroto, Katakwi, Karuma, Pakwach, Nebbi, Arua, Koboko, Yumbe, Moyo and Adjumani including three (3) border points of Mpondwe, Vurra and Oraba as indicated on the map attached. A total of 842km of optic fibre cable connecting these districts and border points will be implemented.

The purpose of this letter therefore, is to request for right of way approval to install aerial Optical Fibre Cable in the National road reserves along these routes.

Thank you for your continued support.

Alibateese
Stella Alibateese
AG EXECUTIVE DIRECTOR

National Information Technology Authority Uganda (NITA) Palm Courts, Plot 7A Rotary Avenue (Lugogo Bypass) P.O. Box 33151, Kampala—Uganda Office: +256 417 801 049 Fax: +256 417 801 050 Email: info@nita.go.ug Website: www.nita.go.ug

Resolution of Parliament to Borrow Funds for the Project from International Development Association

PARLIAMENT OF UGANDA
OFFICE OF THE CLERK TO PARLIAMENT

Parliament House, P.O. Box 7178, Kampala Uganda.
Telephone: 0414-377000/377150/377152 Facsimile: 0414-346826 E-mail: clerk@parliament.go.ug
Plot Nos. 16 - 18 Parliament Avenue

In any correspondence this subject please quote No. **AB: 263/493/01**

26th November 2015

Hon. Minister of Finance,
Planning and Economic Development
KAMPALA

RESOLUTION OF PARLIAMENT

Please find attached herewith a Resolution of Parliament Authorizing Government to borrow up to SDR 54,400,000 (Special Drawing Rights Fifty Four Million Four Hundred Thousand) from the International Development Association (IDA) to support the Regional Communications Infrastructure Program (RCIP) Phase V.

This Resolution was passed on 25th November 2015.

Jane L. Kibirige (Mrs.)
CLERK TO PARLIAMENT

c.c. Rt. Hon. Speaker of Parliament
c.c. Rt. Hon. Deputy Speaker of Parliament
c.c. Rt. Hon. Prime Minister/Leader of Government Business
c.c. The Leader of the Opposition in Parliament
c.c. The Government Chief Whip
c.c. The Chief Opposition Whip
c.c. Hon. Minister of Information, Communication and Technology
c.c. Permanent Secretary, Ministry of Information, Communication and Technology

THE REPUBLIC OF UGANDA

RESOLUTION OF PARLIAMENT

TO AUTHORISE GOVERNMENT TO BORROW UP TO SDR 54.4 MILLION (US $75.0 MILLION) FROM THE INTERNATIONAL DEVELOPMENT ASSOCIATION (IDA) TO SUPPORT THE REGIONAL COMMUNICATIONS INFRASTRUCTURE PROGRAM (RCIP) PHASE V

WHEREAS a Financing Agreement for Special Drawing Rights Fifty Four Million Four Hundred Thousand (SDR 54,400,000), is to be concluded between the International Development Association (IDA) of the World Bank Group, and the Government of the Republic of Uganda, for purposes of financing the Regional Communications Infrastructure Program (RCIP) Phase V.

AND WHEREAS under Article 159 (1) of the Constitution of the Republic of Uganda, Government is authorised to borrow money from any source, subject to other constitutional provisions.

AND WHEREAS under Article 159 (2) of the said Constitution, borrowing by Government has to be authorised by or under an Act of Parliament.

AND WHEREAS in line with the above stated Constitutional requirements, Government has laid before Parliament the terms and conditions of the stated loans/facilities for their approval and authorization;

NOW THEREFORE, be it resolved by Parliament that the Government is hereby authorised to secure the said financing of SDR 54,400,000 from the International Development Bank (IDA) of the World Bank Group for the purposes and upon the terms and conditions therein stated.

I certify that this resolution was passed by Parliament on **25th** Day of **November** 2015.

Jane L. Kibirige (Mrs.)
CLERK TO PARLIAMENT

CLERK TO PARLIAMENT

Summary of the Environment and Social Management and Monitoring Plan (Impact-Mitigation Responsibility Matrix)

Environmental/Social Impact	Mitigation/Enhancement Measures	Desired Outcome	Monitoring Indicators	Source of Data (MoVs)	Frequency	Responsibility	Report Recipients
	Pre-Construction Phase						
	Impact on the Socio-economic Environment						
	Positive Impacts						
Creation of employment and business (livelihood) opportunities especially, for vulnerable and marginal groups (VMGs) in the project area such as the women, youth, poor, orphans, PHAs, PWDs in the project area	Vulnerable and marginal groups in the project area shall be the preferred source of unskilled and semi-skilled labor provided they have the requisite qualification, competence & experience	Optimize participation and livelihood opportunities for project communities	Proportion of the un/skilled women, youth, poor, orphans, PHAs, PWDs etc with qualification from the PA employed	Contractor employment records Quarterly monitoring reports Contractor compliance reports	Monthly	Contractor, NITA	• NEMA • WB • NITA-U • MGLSD • DLGs
	The project will promote procurement of materials from local suppliers where it is technically, qualitatively and commercially reasonable and feasible.	Local communities and businesses benefit from procurement process	Number of local businesses benefiting from construction related procurement	Contractor Procurement records Contractor compliance reports	Monthly	NITA-U and Contractor	
	Regular business dealers especially food vendors will be registered	For identity records & effective GRMs	Proportion of regular business dealers by category registered	Contractor inventory for regular business dealers by category	Monthly	NITA-U and Contractor	

	Ensure that nationals benefit from employment opportunities and observe the national labor laws	Optimize participation and livelihood opportunities for project communities	Proportion of nationals in the project labor force	Contractor employment records	Monthly	NITA-U and Contractor	
Environmental/Social Impact	**Mitigation/Enhancement Measures**	**Desired Outcome**	**Monitoring Indicators**	**Source of Data (MoVs)**	**Frequency**	**Responsibility**	**Report Recipients**
	Potentially Negative Impact						
Potential disruption of livelihood in project areas	Project Implementation for sections of open markets will strictly be done on non-open market days after prior consultations with local authorities to avoid any envisaged impacts.	Minimal or no disruption of livelihoods	Record of community complaints Number of community engagement reports Contractor's implementation schedules	• Document reviews • Stakeholder engagement meetings • Field inspections	Monthly	• Contractor • LG - CDOs • NITA-U	• NEMA • WB • NITA-U • MGLSD • DLGs • Police
	Construction activities within urban areas in such specific sections of potential economic disruptions will be designed for night time, (9.00pm-2.00pm). This will be done in consultation with the respective urban	Well managed construction schedule and effective consultation ensuring that affected communities are informed of the project schedule and impacts	Record of community complaints Number of community engagement reports	• Document reviews • Stakeholder engagement meetings • Field inspections	Monthly	• Contractor • LG – CDOs • NITA-U	

	authorities and the business owners.		Contractor's implementation schedules				
	Arrangements will be made to ensure participation of business owners and representatives of the urban authorities during implementing hours to guarantee security and safety of their businesses,	Well managed construction schedule and effective consultation ensuring that affected communities are informed of the project schedule and impacts	Record of community complaints Number of community engagement reports Contractor's implementation schedules	• Document reviews • Stakeholder engagement meetings • Field inspections	Monthly	• Contractor • LG – CDOs • NITA-U	• NEMA • WB • NITA-U • MGLSD • DLGs • Police
	The project will use road reserves, free public lands, aerial poles, linear stretches and work during non-market days and nights to avoid livelihood disruption and destruction of property at all costs	Implement the project with minimal livelihood disruption in project areas	No. of incidents reported	ESIA/ESMMP implementation reports, field stakeholder engagements	Monthly/ annual E&S audit reports	NITA-U and Contractor	
	Continuous social risk assessments on potential livelihood disruptions. In the event land acquisition emerges during continuous	Timely identification of risks and impacts for quick mitigation	No of emerging risks and impacts identified and mitigation measures developed	ESMMP implementation reports; field stakeholder engagements	Monthly/ annual E&S audit reports	NITA-U and Contractor	

	assessment [though unlikely], RPF will be applied to guide development of an action plan.						
	Continuous engagement of community and stakeholders on the potential impacts and mitigation measures	Up to date and clear information to and from affected communities to inform the management of the project	No of community concerns raised and responses	ESMMP implementation reports; field stakeholder engagements	Monthly/ annual E&S audit reports	NITA-U and Contractor	• NEMA • WB • NITA-U • MGLSD • DLGs • Police
	Establish grievance management committees	All grievances adequately managed	Number of grievances related to livelihood disruption identified and managed	ESMMP implementation reports Grievance management reports, Annual audit reports	Monthly/annual E&S audit reports	NITA-U, Contractor, LC, District and NITA grievance committees	
Environmental/Social Impact	**Mitigation/Enhancement Measures**	**Desired Outcome**	**Monitoring Indicators**	**Source of Data (MoVs)**	**Frequency**	**Responsibility**	**Report Recipients**
Occupational and community health and safety hazards	Stakeholder consultations shall precede project implementation to brief project communities, address possible concerns, promote transparency and increase participation	Participation and cooperation of project communities	Stakeholder consultation site specific attendance registers and minutes	Stakeholder Engagement reports Annual ESIA audit reports	Monthly	NITA-U, Contractor	• NEMA • WB • NITA-U • MGLSD • DLGs • MoH • Police

	Only trained and professional drivers and operators shall be allowed to man construction vehicles and machinery or vehicles	Safety from traffic offences and work hazards	Proportion of drivers and operators with requisite training and professional documents	Contractor employment records, Contract compliance reports, field visits	Monthly	NITA-U and Contractor	
	First Aid kits shall be carried around by the Project teams	No life is lost due to injury incidents triggered by project related work	Proportion of injury incidents receiving first aid	Injury and illness incident reports	Monthly	NITA-U and Contractor	
	Project workers and communities inducted & sensitized on protection of children, gender and criminal effects of sexual engagement with children in the project sites	Promote respect for rights of local communities and workers especially, VMGs. No local community - contractor staff conflicts. No STI, HIV/AIDS, sex abuse and family breakups triggered by the project.	% of sites with workers and communities inducted and sensitized on child, gender and criminal effects of sexual engagement with children in the project sites	Contractor sensitisation records, Field visits and observations	Monthly	NITA-U and Contractor	
	Coordinate with MoGLSD and develop protocols on responding to labor and child protection issues.	All cases of labor and child rights infringed by contractor staff on site handled according to the laws of Uganda	Status of protocol development with MoGLSD on responding to labor &child protection issues.	Project inventory review	Monthly	NITA-U Contractor, MoGLSD	

	Construction Phase						
	Impact on the Socio-economic environment						
	Positive Impacts						
Environmental/Social Impact	**Mitigation/Enhancement Measures**	**Desired Outcome**	**Monitoring Indicators**	**Source of Data (MoVs)**	**Frequency**	**Responsibility**	**Report Recipients**
	Positive Impacts						
Creation of employment and business (livelihood) opportunities especially, for VMGs in the project area like the women, youth, poor, orphans, PHAs, PWDs in the project area	VMGs in the project area shall be the preferred source of unskilled and semi-skilled labor provided they have the requisite qualification, competence & experience	Optimize participation and livelihood opportunities for project communities	Proportion of the un/skilled women, youth, poor, orphans, PHAs, PWDs etc. employed	Contractor employment records Contractor compliance reports	Monthly	Contractor, NITA-U	• NEMA • WB • NITA-U • MGLSD • DLGs
	The project will promote procurement of materials from local suppliers where it is technically, qualitatively and commercially reasonable and feasible.	Local communities and businesses benefit from the procurement process and earn income	Number of local businesses benefiting from construction related procurement	Contractor Procurement records Contractor compliance reports	Monthly	NITA-U and Contractor	
	Ensure regular business dealers especially food vendors are registered for identity & effective GRMs	For identity records & effective GRMs	Proportion of regular business dealers by category registered	Contractor inventory for regular business dealers by category	Monthly	NITA-U and Contractor	
	Ensure that nationals benefit from employment opportunities and	Optimize participation and livelihood opportunities	Proportion of nationals in the project labor force	Contractor employment records	Monthly	NITA-U and Contractor	

	observe the national labor laws						
Environmental/Social Impact	**Mitigation/Enhancement Measures**	**Desired Outcome**	**Monitoring Indicators**	**Source of Data (MoVs)**	**Frequency**	**Responsibility**	**Report Recipients**
	Potentially Negative Impact						
Temporal business disruptions due to trenching in urban centers and markets in rural areas	Trenching shall be done during business off-peak hours (night) and days (weekends) to minimize disruption	Implement the project with as less disruptions on the project communities as possible	Number of community complaints lodged over disruptions	Field Visits and reports	Monthly	Contractor NITA-U District Commercial Officer	• NEMA • WB • NITA-U • MGLSD • DLGs
Construction noise, vibration and air quality	Only equipment and vehicles in good working order will be used	Management of noise, dust and vibration nuisance	Complaints of DMC equipment and vehicles in use	Field consultations with District Engineer, Complains from the operators and community	Monthly	District Engineer DEO NITA-U Contractor	• NEMA • WB • NITA-U • MGLSD • DLGs • Police
	Only trained and professional drivers (operators) shall be allowed to drive construction vehicles and to operate machinery.	Management of noise, dust and vibration nuisance	Proportion of drivers (operators) with requisite training and professional documents	Contractor employment records Contractor compliance reports inventories	Monthly	NITAU and Contractor	
	Implement best driving (operator) practices to minimize noise /dust created through unnecessary acceleration and breaking	Management of noise, dust and vibration nuisance	Complaints on bad driving/machine operations. Evidence of best fleet management policy for	Contractor compliance reports , field consultations with OC traffic	Monthly	OC Traffic, NITA-U and Contractor	

			example: Proportion of machines/vehicles with a call number for bad driving/operation Proportion of bad driving/operation reports acted on by the contractor				
	Regular inspection of vehicles, machinery and equipment used in the operation according to manufacturer inspections to ensure that they are in good working condition	Management of construction noise, dust and vibration nuisance	Proportion of vehicles, machinery and equipment inspection and serviced according to manufacturer specifications	Inspection records of vehicles, machinery and equipment field consultations with OC Traffic and District Engineer	Monthly	OC Traffic, District Engineer NITA-U and Contractor	
	Noise generating sources shall be located away from residential areas, schools, hospitals and other sensitive receptors to meet the noise emission levels provided in IFC's General EHS Guidelines	To keep noise emission at levels provided in IFC's General EHS Guidelines especially, in noise sensitive receptors	Complaints of noise generating sources located in residential areas, schools, hospitals and other sensitive receptors	Community observations Contractor compliance reports Field visit consultations with DEOs	Monthly	DEOs, NITA-U and Contractor	
	Use of noise suppression shields and mufflers	To keep noise emission levels low	% of machines generating beyond 50dBA with noise	Field observations and consultations with DEOs	Monthly	DEOs, NITA-U, Contractor	

			suppression shields and mufflers				
	Observe the 75 dBA and 50 dBA NEMA regulation limits for day and night time noise levels respectively	To comply with the NEMA regulation limits for day and night time noise levels respectively	Complaints of noise levels beyond the 75 dBA and 50 dBA NEMA regulation limits for day and night time noise levels respectively	Field visit consultations with the DEOs	Monthly	DEOs, NEMA, NITA-U, Contractor	
	Engines of vehicles/trucks and earth-moving equipment shall be switched off when not in use.	To keep noise emission levels low	Complaints on engines of vehicles/trucks and earth-moving equipment running when not in use.	Field visit consultations with the district Engineer and OC traffic	Monthly	District Engineer , OC traffic NITA-U, Contractor	
	Installing suitable mufflers on engine exhausts and compressor components to reduce vibration levels	To keep vibration nuisance levels low	% of machines generating vibration nuisance with mufflers	Field visit consultations with the DEO	Monthly	DEOs, NITA-U, Contractor	
	Sprinkling water regularly during dusty conditions	To suppress dust emissions, improve visibility and minimize the health impact of dust pollution to both workers & the general public.	Public recognition of contractors attempts to manage dust particles through water sprinkling	Field visits	Monthly	NITA-U DEO, Contractor NEMA	

Environmental/Social Impact	Mitigation/Enhancement Measures	Desired Outcome	Monitoring Indicators	Source of Data (MoVs)	Frequency	Responsibility	Report Recipients
Impact on cultural heritage/ archeological interests/Chance finds in OP 4.11 safeguards	Locations of Cultural Heritage/ Archaeological interest shall be avoided by project activities	To keep Cultural Heritage/ Archaeological sites in tact	No. of Cultural Heritage/ Archaeological interest interfered with by the project activities	Field visits, Chance finds reports	Monthly	Contractor Cultural leaders, NITA U, Department of Antiquities	• NEMA • WB • NITA-U • UWA • MGLSD • MoTA • DLGs
	Work must immediately stop along an affected section, and the Supervising Engineer, Dep't of Museums and Antiquities and the competent authority under NEMA immediately informed to take a decision on the way forward	To save and protect chance finds in OP 4.11 safeguards	Incidents where work continued in sections of chance finds in OP 4.11 safeguards	Chance finds reports, field visits	Monthly	Contractor NITA-U LG, Dep't of Museums and Antiquities and the competent authority under NEMA	
	In case of chance finds, the Contractor shall mark, cordon and secure the subject site(s) to avoid damage in the course of road construction and immediately notify the Department responsible for museums and monuments.	To save and protect chance finds in OP 4.11 safeguards	Incidents where work continued in sections of chance finds in OP 4.11 safeguards	Chance finds reports, field visits	Monthly	Contractor NITA-U LG, Dep't of Museums and Antiquities and the competent authority under NEMA	
	Opening of a new borrow or quarry site shall be witnessed and inspected	To save and protect chance	Incidents where work continued in sections of	Chance finds reports, field visits	Monthly	Contractor NITA-U LG, Dep't of	

	by official(s) from the Department responsible for museums and monuments for the first 2 days of site opening. The official(s) shall maintain watching briefs during works, with clear procedures for protection and documentation of any "chance finds" encountered.	finds in OP 4.11 safeguards	chance finds in OP 4.11 safeguards			Museums and Antiquities and the competent authority under NEMA	
	The Contractor and supervising engineer shall maintain contact details of the Department of Museums and Monuments to quickly notify it in case chance finds are encountered	To save and protect chance finds in OP 4.11 safeguards	Incidents where work continued in sections of chance finds in OP 4.11 safeguards	Chance finds reports, field visits	Monthly	Contractor NITA-U LG, Dep't of Museums and Antiquities and the competent authority under NEMA	
	"Chance finds" encountered in absence of these official shall be handed over to supervising Engineering Assistant, Environmental Officer or District Engineer who would immediately notify officials of the	To save and protect chance finds in OP 4.11 safeguards	Number of Chance finds handed over to supervising Engineering Assistant, Environmental Officer or District Engineer	Chance finds reports, field visits	Monthly	Contractor NITA-U LG, Dep't of Museums and Antiquities and the competent authority under NEMA	

	Department of Museums and Monuments.						
	"Chance finds" encountered in presence of official(s) from the Department of Museums and Monuments shall be handed to them for transfer to the national museum.	To save and protect chance finds in OP 4.11 safeguards	Number of Chance finds handed over to the Department of Museums and Monuments	Chance finds reports, field visits	Monthly	Contractor NITA-U LG, Dep't of Museums and Antiquities and the competent authority under NEMA	
Occupational and community health and safety risks	All manual equipment such as pickaxe, Pick Mattock, Cutter Mattock, etc. shall be sturdy and firmly fixed	Promote occupational health and safety	Complaints of workers sheared by falling off pick, mattock, hoe etc.	Occupational health and safety risk incidence inventories	Monthly	MGLSD NEMA Contractor District labour officer	• NEMA • WB • NITA-U • MGLSD • MoH • Police • DLGs
	Only trained and professional drivers and operators shall be allowed to man construction vehicles and machinery.	Management of traffic accidents	Proportion of drivers and operators with requisite training and professional documents	Contractor employment records Contractor compliance reports inventories	Monthly	District Engineer, NITAU and Contractor	
	Except for areas secured by fencing, all active construction areas shall be marked with high-visibility tape	To reduce the risk of accidents involving pedestrians and vehicles.	Reports of pedestrians and vehicles falling into trenches	Site visits, complaints filed in Police, Field visits	Monthly	NITA-U MGLSD NEMA Contractor District Labour Officer	

	All open trenches should be marked with high-visibility tape to reduce the risk of accidents involving children, women, disabled and elderly persons.	To reduce the risk of accidents involving pedestrians and vehicles.	Reports of pedestrians and vehicles falling into trenches	Field visits, complaints filed in Police	Monthly	NITA-U MGLSD NEMA Contractor District Labour Officer	
	All open trenches and excavated areas should be backfilled as soon as possible after cable laying and construction has been completed.	To reduce the risk of accidents involving pedestrians and vehicles.	Reports of pedestrians and vehicles falling into trenches	Field visits, complaints filed in Police	Monthly	NITA-U MGLSD NEMA Contractor District Labour Officer	
	Construction workers shall be provided with and enforced to wear suitable Personal Protective Equipment (PPE) including hard hats, overalls, high-visibility vests, safety boots, gloves	Promote occupational health and safety	Proportion of workers provided with and enforced to wear suitable Personal Protective Equipment (PPE)	Field visits	Monthly	NITA-U MGLSD NEMA Contractor District Labour Officer	
	Clear signage shall be used near project sites	To reduce traffic accidents	Public & worker complaints on lack of signage	Field visits	Monthly	NITA-U MGLSD Contractor	
	Training of workers and community members on safety precautions.	To reduce accidents	Training reports	Field visits	Monthly	NITA-U MGLSD Contractor OC Traffic	
	Community and workers training on potential of disease transmission such	Prevent potential transmission of diseases such as	Training reports	Field visits, documentary review	Monthly	NITA-U MGLSD Contractor	

	as HIV/AIDs, Hepatitis, Gender Based Violence and Child abuse	HIV/AIDs, Hepatitis, Gender Based Violence Child abuse				NEMA DHO	
	Documentation of Accidents and actions taken	For assess and improve safety mechanisms	Evidence of accidents documentation	Field visits	Monthly	NITA-U MGLSD Contractor NEMA DHO	
	Awareness on potential risks associated with sexual interactions and notification	Zero Tolerance to child abuse and sexual harassment	Evidence of documentation on child abuse and sexual harassment	Police Reports Field visits	Monthly	NITA-U MGLSD Contractor DHO Police	
	Ensuring labor conditions compliance	Zero Tolerance for labor rights abuse	Evidence of labor related complaints registered	Number of labor related complaints registered	Monthly	Contractor NITA-U DLO	
	The Contractor shall develop: (i) Gender Based Violence (GBV) and Child Abuse/Exploitation (CAE) Codes of Conduct; and, (ii) an Action Plan to mitigate and respond to GBV and CAE within the company and the community.	Zero Tolerance for Child Abuse and Gender based violence	Status of codes developed and implementation	Number of child abuse and gender based violence cases reported	Monthly	NITA-U MGLSD Contractor DHO Police	
	Ensure latrine, bathroom and accommodation facilities are	To protect VMGs from abuse of sexual	Evidence of separate	Field visits	Monthly	NITA-U MGLSD Contractor	

	separate according to gender	, gender and privacy rights	latrine, bathroom and accommodation facilities by gender			NEMA DHO	
Environmental/Social Impact	**Mitigation/Enhancement Measures**	**Desired Outcome**	**Monitoring Indicators**	**Source of Data (MoVs)**	**Frequency**	**Responsibility**	**Report Recipients**
Construction traffic related accidents and traffic interference	Trenching across roads and project vehicles and trucks movement shall be scheduled during general traffic off-peak hours	To avoid traffic jam due to project activities	Evidence of trenching across roads and project trucks moving during traffic peak hours	Reports from traffic wardens and field visits	Monthly	NITA-U MGLSD Contractor NEMA DHO	• NEMA • WB • NITA-U • MoH • MGLSD • Police • DLGs
	Employ safe traffic control measures, including temporary road signs and flag persons to warn of dangerous conditions and on-going road construction works or diversions	Minimize traffic accidents	Evidence of traffic control measures	Field visits	Monthly	NITA-U MGLSD Contractor District OC Traffic	
	Trucks carrying construction materials will be covered with tarpaulin or appropriate polythene material from or to project site	Prevent injuries caused by flying objects from project trucks hauling construction materials	complaints of people being hit by objects from moving project truck	Field visits	Monthly	MGLSD NEMA Contractor District labour officer and OC Traffic	
	Attach speed limits to vehicles that will use the Road	To reduce human error associated with accidents due to over speeding	complaints of over speeding by project vehicles	Field visit consultations	Monthly	NITA Contractor NEMA OC Traffic	

	Documentation of Accidents and actions taken	To ascertain the impact of the project and take timely corrective action	Evidence of accident documentation	Field visits	Monthly	NITA-U MGLSD Contractor District OC Traffic	
Risk of assault/ Attack/ intimidation	Report all the criminal cases to police and seek police protection in affected sites	To prevent risk of assault/ Attack/ intimidation	Cases reported to police	Incident reports in Police	Monthly	NITA-U MGLSD Contractor DPC	
Potential disruption to livelihood (crops, market stalls, kiosks)	Refer to the mitigation measures in the construction phase for Potential disruption to livelihood (crops, market stalls, kiosks)					NITA-U and Contractor	
	Impact on the Biophysical environment						
	Potentially Negative Impact						
Susceptibility to soil erosion during rainy days	Minimal stripping of vegetation shall be restricted to road reserves	To minimize project footprint and soil erosion	Evidence of eroded soil mass from the road reserve	Field visits and consultations with the DEOs	Monthly	NITA Contractor DEOs, NEMA	• NEMA • WB • NITA-U • MoWE
	Use aerial transmission poles in erosion prone spots	To minimize project footprint and soil erosion	Evidence of eroded mass from project sites	Field visits and consultations with the DEOs	Monthly	NITA Contractor DEOs, NEMA	
	The Contractor will preferably deal with local borrow material suppliers certified by NEMA	To promote best practices in project footprint and soil erosion management	The legal status of local borrow material suppliers	Field visits and consultations with the DEOs, audit of supplier documentation	Monthly	NITA Contractor DEOs, NEMA	
Environmental/Social Impact	**Mitigation/Enhancement Measures**	**Desired Outcome**	**Monitoring Indicators**	**Source of Data (MoVs)**	**Frequency**	**Responsibility**	**Report Recipients**
Impact on natural habitats and protected areas	Siting of strong short aerial poles (<9 Meters) that cannot be damaged	To avoid/protect critical habitats e.g. nesting	The layout of the OFC implemented	Field visits and consultations with the DEOs	Monthly	NITA Contractor DEOs, NEMA	• NEMA • WB

	by larger fauna along the road reserves in conservation areas	grounds, bird flying spaces, foraging corridors, and migration corridors	in conservation areas				• NITA-U • MoWE • MoTA
	Avoidance of construction activities during the breeding season and other sensitive seasons or times of day in collaboration with conservation teams	To avoid interference with the breeding seasons and habits of endangered species in conservations	The timing of construction in conservation areas	Field visits and consultations with the DEOs	Monthly	Contractor, DEOs, NITA–U, NEMA	
	Laws governing such sensitive ecosystems will be strictly adhered to such as poaching will be strictly prohibited.	Protection of the ecosystem	Number of awareness sessions conducted Number of poaching incidents reported	Field visits and consultations with the DEOs	Monthly	NITA Contractor DEOs, NEMA	
	Refer also to mitigation measures under construction phase for increased susceptibility to soil erosion during rainy days						
Construction waste generation	Trenching wastes shall be used for backfill	To avoid waste hazards	Records of backfill with trench wastes	Field visits and consultations with the DEOs	Monthly	NITA Contractor DEOs, NEMA	• NEMA • WB • NITA-U • MoH • MoWE • MoTA
	All wastes shall be collected in gazetted areas and sorted	To separate hazardous and non-hazardous wastes for proper disposal.	Records for wastes generated and disposal practice	Field visits and consultations with the DEOs	Monthly	NITA Contractor DEOs, NEMA	

	Contractor shall seek guidance of local environmental officers to identify acceptable disposal sites	To avoid pollution of the ecosystem	Reports of illegal waste dumping in non-designated areas	Field visits and consultations with the DEOs	Monthly	NITA Contractor DEOs, NEMA	
	Where it does not exist for hazardous wastes, a NEMA certified waste handler shall be contracted	To transport and dispose of wastes to a known NEMA approved waste disposal facility.	Reports of illegal handling of hazardous waste by not NEMA approved companies	Field visits and consultations with the DEOs	Monthly	NITA Contractor DEOs, NEMA	
	Contractors shall induct their drivers and sensitise them on safe transportation of the rubble and cut-to-spoil materials to the final disposal site	To avoid littering of project communities with wastes	Induction and sensitisation reports for drivers	Field visits and consultations with the DEOs	Monthly	NITA Contractor DEOs, NEMA, OC Traffic	
Environmental/Social Impact	**Mitigation/Enhancement Measures**	**Desired Outcome**	**Monitoring Indicators**	**Source of Data (MoVs)**	**Frequency**	**Responsibility**	**Report Recipients**
E-Wastes	Contractors shall undertake waste segregation to separate e-waste waste from non-e-waste waste and follow the NEMA guidelines including using a NEMA certified service providers for safe disposal	To restore excavations	Waste segregation practice reports, Labeled waste bins, Documentation of formal engagement of refuse handlers	Field visits and consultations with the DEOs/NEMA	Monthly	Contractor NITA-U DEOs/NEMA	• NEMA • WB • NITA-U • MoH • MoWE • MoTA
	Ensuring that new support equipment does not contain	To avoid hazard wastes	Manufacturer equipment specifications	Field visits and consultations	Monthly	Contractor NITA-U DEOs/NEMA	

	PCBs or ODSs. PCBs from old equipment shall be managed as a hazardous waste			with the DEOs/NEMA			
	Purchasing electronic equipment that meet international phase out requirements for hazardous materials contents and implementing procedures for the management of waste from existing equipment according to the hazardous waste guidance in the General EHS Guidelines.	Durable and genuine equipment installed	Manufacturers' Specification records	Field visits and consultations with the DEOs/NEMA	Monthly	Contractor NITA-U DEOs/NEMA	• NEMA • WB • NITA-U • MoH • MoWE • MoTA
	Considering the implementation of a take-back program for consumer equipment such as cellular telephones and their batteries.	To avoid accumulation of hazard wastes	Equipment purchase agreements	Field visits and consultations with the DEOs/NEMA	Daily	Contractor NITA-U DEOs/NEMA	
	Refer also to mitigation measures under construction phase for construction waste generation where applicable						
Environmental/Social Impact	**Mitigation/Enhancement Measures**	**Desired Outcome**	**Monitoring Indicators**	**Source of Data (MoVs)**	**Frequency**	**Responsibility**	**Report Recipients**

Water pollution	Maintenance and cleaning of vehicles, trucks and equipment shall take place offsite and away from water sources and conservation areas	To avoid any contact with water	Project vehicles cleaning and maintenance records	Field visits and consultations with the DEOs/NEMA	Monthly	Contractor NITA-U DEOs/NEMA	• NEMA • WB • NITA-U • MoH • MoWE • MoTA
	All wastes shall be collected in areas separate from the surface water bodies such as streams by authorised handlers	To avoid any contact with water	Records for water sample analysis Evidence of garbage/refuse, oily/ fuel waste in drains	Field visits and consultations with the DEOs/NEMA	Quarterly	Contractor NITA DEOs/NEMA	
	Packing of contaminated and worn plastic sheeting into drums prior to proper disposal	To avoid any contact with water	Contaminated and worn plastic sheeting Disposal records	Field visits and consultations with the DEOs/NEMA	Quarterly	Contractor NITA DEOs/NEMA	
	Recycle and proper disposal of all waste	To avoid any contact with water	Waste recycling and or disposal records	Field visits and consultations with the DEOs/NEMA	Quarterly	Contractor NITA DEOs/NEMA	
	Constructor shall provide latrine facilities for construction workers	To avoid indiscriminate defecation in nearby bush or shores	Evidence of latrine facilities on site	Field visits and consultations with the DEOs/NEMA	Quarterly	Contractor NITA DEOs/NEMA	
Environmental/Social Impact	**Mitigation/Enhancement Measures**	**Desired Outcome**	**Monitoring Indicators**	**Source of Data (MoVs)**	**Frequency**	**Responsibility**	**Report Recipients**

Visual and Aesthetic Impacts i.e. Alteration of visual and aesthetic quality of sites	Taking into account public perception about aesthetic issues by consulting with the local community during the siting process of antenna towers and site selection.	To review site, material and technology alternatives with the visual interests of project communities in mine	Concerns with aesthetic changes and consideration of public input	Field visits and consultations with the DEOs	Prior to erection and in the design process	Contractor, LG DEOs, NITA–U, NEMA	• NEMA • WB • NITA-U • MoGLSD • MoWE • MoTA •
	Limiting vegetation clearance to the road reserve	To minimize interference with sceneries in project communities	The extent of the project foot prints in conservation areas. Evidence of re-vegetation	Field visits and consultations with the DEOs	Monthly	Contractor, LG DEOs, NITA–U, NEMA	
	Any areas that were cleared of vegetation but are not paved shall be planted with grass indigenous to those areas.	To restore the vegetation to its indigenous state	The extent of the project foot prints in conservation areas.	Field visits and consultations with the DEOs	Monthly	Contractor, LG DEOs, NITA–U, NEMA	
	Buying materials from only suppliers with evidence of compliance with Statutory requirements for commercial sources in place.	To promote compliance with Statutory requirements for Commercial sources in place.	Evidence of compliance with Statutory requirements for Commercial sources in place.	Field visits and consultations with the DEOs	Monthly	Contractor, LG DEOs, NITA–U, NEMA	
	Proper storing and disposal of all wastes generated to appropriate gazetted areas with the help of	To protect integrity of the ecosystem	Waste storing and disposal records	Field visits and consultations with the DEOs	Monthly	Contractor, DEOs, NITA–U, NEMA	

	NEMA certified service providers						
Environmental/Social Impact	**Mitigation/Enhancement Measures**	**Desired Outcome**	**Monitoring Indicators**	**Source of Data (MoVs)**	**Frequency**	**Responsibility**	**Report Recipients**
	Post-Construction Phase						
	Potential impacts on the socio-economic environment						
	Potentially Negative Impact						
Visual and Aesthetic Impacts i.e. Alteration of visual and aesthetic quality of sites	Demobilization and restoration of sites hosting support construction facilities for the project at project closure	To restore the site to its original aesthetics	Demobilization and restoration status of sites hosting support construction facilities	Field visits and consultations with the DEOs	Quarterly	Contractor, DEOs, NITA–U, NEMA	• NEMA • WB • NITA-U • MoGLSD • MoWE • MoTA
	Refer also to mitigation measures under construction phase for construction waste generation visual and Aesthetic Impacts i.e. alteration of visual and aesthetic quality of sites for general mitigation mechanisms						
	Operational Phase						
	Impact on Socio-Economic Environment						
	Potentially Negative Impact						
Occupational and Community Health and Safety Risk	Only qualified and certified workers shall be employed to install, maintain, or repair any equipment onsite	To prevent skills related accidents and errors	Qualifications of workers employed to install, maintain, or repair any equipment onsite	Documentary review, stakeholder engagements	Bi-annually	MoGLSD, MoFPED, UBOS, NITA	• NEMA • WB • NITA-U • MoGLSD • MoWE • MoTA
	Maintenance workers will be provided with adequate PPE to limit their risks to works accidents. Such PPE will include gloves, helmets,	To prevent accidents and severe injuries to operation staff.	Proportion of maintenance workers with adequate PPE. Such PPE will	Documentary review, stakeholder engagements	Bi-annually	Contractor, MoH, NITA–U, MoGLSD	

	safety belts for working in heights, and any other as deemed necessary.						
	A first Aid kit will be kept onsite whenever there are maintenance activities.	To prevent loss of life due to injury operation staff.	Reports of injuries during maintenance	Documentary review, stakeholder engagements	Bi-annually	Contractor, MoH, NITA–U, MoGLSD	
	Refer also to mitigation measures under the construction phase for Occupational Health and Safety Risk						
	Bio-Physical Environment Impact						
	Potentially Negative Impact						
Environmental/Social Impact	**Mitigation/Enhancement Measures**	**Desired Outcome**	**Monitoring Indicators**	**Source of Data (MoVs)**	**Frequency**	**Responsibility**	**Report Recipients**
Lightning risks and associated impacts	Lightning arrestors with appropriate earthlings will be incorporated in the project design.	To safeguard against lightning.	Record of lightning strikes	Installation during construction and maintenance during operation	Bi-annually	Contractor, DEOs, NITA–U, NEMA	• NEMA • WB • NITA-U • MoWE
e-Waste generation	Contractor shall undertake waste segregation onset to separate e-waste waste from non-e-waste waste and use NEMA certified service providers for safe disposal Refer also to the mitigation measures in the construction phase for e-waste management						

ANNEX 5

IMPACT ON PHYSICAL CULTURAL RESOUCES [CHANCE FINDS]

Construction operations may encounter cultural and archaeological resources or chance finds. Construction can also reveal buried resources, necessitation “salvage archaeology” for their recovery and protection. Once first stages of earthworks show signs of likely presence of archaeological resources, salvage entails quick excavation to remove artifacts or other traces of human settlement before extensive earth-moving continues. As a general construction principle, any archaeological “chance finds” should be handed to the Department of Museums and Moments in the Ministry of Tourism, Trade and Industry [MITI]

A protocol for managing chance finds developed based on *The Historical Monuments Act, 1967* is provided in the box below;

a) The contractor shall not perform excavation, demolition, alteration or any works that may harm resources of cultural importance without authorization of Engineering Assistant or officials from the Department responsible for museums and monuments.
b) In case of chance finds, the Contractor shall mark, cordon and secure the subject sites(s) to avoid damage in the course of road construction and immediately notify the Department responsible for museums and monuments.
c) Opening of a new borrow or quarry site shall be witnessed and inspected by official(s) from the Department responsible for museums and monuments for the first 2 days of site opening. The official(s) shall maintain watching briefs during works, with clear procedures for protection and documentation of any “chance finds” encountered (cost of this has been provided in the ESMP)
d) The contractor is obliged to provide for and ensure archaeological intervention in case the come across new finds. This involves immediate discontinuation of works and notifying the Department responsible for museums and monuments about any discoveries
e) “Chance finds” encountered in presence of official(s) from the Department of Museums and Monuments shall be handed to them for transfer to the national museum.
f) “Chance finds” encountered in absence of these officials shall be handed over to supervising Engineering Assistant, Environmental officer or District who would immediately notify officials of the Department of Museums and Monuments.
g) The contractor and supervising engineer shall maintain contact details of Department of Museums and Monuments to quickly notify it in case chance finds are encountered.

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