

**The Republic of Kenya**  
**Ministry of Transport, Infrastructure, Housing and Urban Development**  
**The Republic of Uganda**  
**Ministry of Works and Transport**

# **Project for Master Plan on Logistics in Northern Economic Corridor**

## **Final Report Annex - Data Book - Volume 3**

**March 2017**

**Japan International Cooperation Agency (JICA)**

**Nippon Koei Co., Ltd.**  
**Eight-Japan Engineering Consultants Inc.**  
**PADECO Co., Ltd.**

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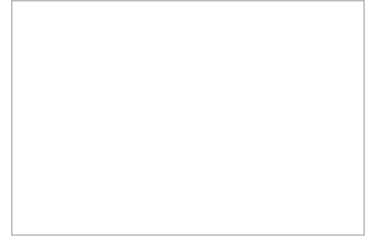
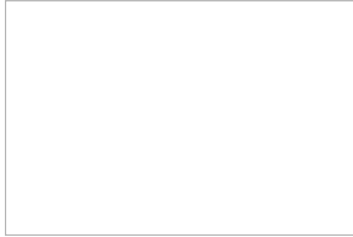




**Data 6:  
Strategic  
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Assessment  
(Uganda)**







# Final Strategic Environmental Assessment (SEA) for the Formulation of a Master Plan on Logistics in the Northern Economic Corridor, Uganda

SEA Report

February 2017

[www.erm.com](http://www.erm.com)

## SEA Report

# *Final Strategic Environmental Assessment (SEA) for the Formulation of a Master Plan on Logistics in the Northern Economic Corridor, Uganda*

February 2017

[www.erm.com](http://www.erm.com)

Prepared by:

For and on behalf of  
Environmental Resources Management

Approved by: Mike Everett

Signed: *Mike Everett*

Position: Partner







Date: February 2017

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## DECLARATION OF INDEPENDENCE


### Declaration of independence:

We declare that we are independent consultants and have no business, financial, personal or other interest in the proposed Master Plan for the Northern Economic Corridor in respect of which we were appointed to provide input into the Strategic Environmental Assessment other than fair remuneration for work performed in connection with the activities. There are no circumstances that compromise the objectivity of our performing such work.

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<b>Name and qualifications</b>	<b>Designation</b>	<b>Signature</b>
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## Acronyms

AIDS	Acquired Immuno Deficiency Syndrome
AfDB	The African Development Bank
AU	African Union
AADT	Annual Average Daily Traffic
ART	Anti-Retroviral Therapy
AEO	Authorized Economic Operators
BID	Background Information Document
BAU	Business As Usual
COD	Cargo-Oriented Development
COMESA	Common Market for Eastern and Southern Africa
CFR	Central Forest Reserve
CAO	Chief Administrative Officer
CSA	Climate Smart Agriculture
CAIIP	Community Agriculture Infrastructure Improvement Programme
CNDPF	Comprehensive National Development Planning Framework
CFS	Container Freight Station
CBFT	Cross Border Freight Traffic
CIA	Cumulative Impact Assessment
DRC	Democratic Republic of Congo
DPs	Development Partners
DEM	Digital Elevation Models
DWRM	Directorate of Water Resources Management
DDPs	District Development Plans
DEO	District Environment Officer
DNRO	District Natural Resource Officers
EAC	East African Community
EARS	Eastern African Rift System
EN	Endangered
ERB	Engineers' Registration Board
ENR	Environment and Natural Resources
EHS	Environment, Health and Safety
ESIA	Environmental and Social Impact Assessment
EIA	Environmental Impact Assessment
ERM	Environmental Resources Management
EC	European Commission
EDF	European Development Fund
EU	European Union
EFC	Expected Further Clearance
FEI	Fuel Efficiency Initiative
GIS	Geographical Information Systems
GoJ	Government of Japan

GoK	Government of Kenya
GoU	Government of Uganda
GKMA	Greater Kampala Metropolitan Area
GHG	Greenhouse Gases
GDP	Gross Domestic Product
HSSIP	Health Sector Strategic Investment Plan
HCT	HIV Counselling and Testing
HIV	Human Immuno Virus
IBA	Important Bird Area
IBS	Industrial Baseline Survey
ICD	Inland Container Depots
ITCZ	Inter Tropical Convergence Zone
IOM	International Organisation for Migration
IUCN	International Union for Conservation of Nature
JICA	Japan International Corporation Agency
JST	JICA Study Team
JWESSP	Joint Water and Environment Sector Support Programme
JKIA	Jomo Kenyatta International Airport
KCCA	Kampala Capital City Authority
KACITA	Kampala City Traders Association
KPA	Kenya Ports Authority
LVBC	Lake Victoria Basin Commission
LAPSSET	Lamu Port Southern Sudan-Ethiopia Transport
LC	Local Council
LFR	Local Forest Reserves
MP	Master Plan
CBFT	Maximum traffic for the cubic feet
MW	Mega Watt
MGR	Meter Gauge Railway
MDAs	Ministries, Departments and Agencies
MFPED	Ministry of Finance, Planning and Economic Development
MoH	Ministry of Health
MoLHUD	Ministry of Lands, Housing and Urban Development
MoLG	Ministry of Local Government
MTWA	Ministry of Tourism, Wildlife and Antiquities
MoTI	Ministry of Transport and Infrastructure
MoWT	Ministry of Works and Transport
NAADS	National Agricultural Advisory Services
NAPE	National Association of Professional Environmentalists
NDP	National Development Plan
NEMA	National Environment Management Authority
NFA	National Forestry Authority
NPA	National Planning Authority

NRSE-NTB	National Response Strategy for Elimination of Non-Tariff Barriers
NTMP	National Transport Master Plan
NMT	Non-Motorised Transport
NTB	Non-Tariff Barriers
NCIP	Northern Corridor Integration Projects
NCSDP	Northern Corridor Spatial Development Programme
NCTTCA	Northern Corridor Transit Transport Coordination Authority
NEC	Northern Economic Corridor
ODA	Official Development Assistance
OSBP	One Stop Border Post
OECD	Organisation for Economic Co-operation and Development
OVC	Other Vulnerable Children
PPP	Policy, Plan, Programme
PSFU	Private Sector Foundation Uganda
RDL	Railway Development Levy
RMCs	Regional Member Countries
RDC	Residence District Commissioner
RVR	Rift Valley Railways
RORO	roll-on/roll-off
STEI	Science, Technology, Engineering and Innovation
SDPs	Sector Development Plans
STDs	Sexually Transmitted Diseases
SEZ	Special Economic Zones
SEP	Stakeholder Engagement Plan
SGR	Standard Gauge Railway
SEA	Strategic Environmental Assessment
SDGs	Sustainable Development Goals
TDA	Tourism Development Areas
TMEA	TradeMark East Africa
TTFA	Transit Transport Facilitation Agency
TEU	Twenty Foot Equivalent Unit
UNRA	Uganda National Road Authority
UAIA	Uganda Association of Impact Assessment
UBOS	Uganda Bureau of Statistics
UCMP	Uganda Chamber of Mines and Petroleum
UEPB	Uganda Export Promotions Board
UCIFA	Uganda Clearing Industry and Forwarding Association
UFFA	Uganda Freight Forwarders Association
UHSSP	Uganda Health System Strengthening Project
UGIETA	Uganda Importers & Exporters Association
UIRI	Uganda Industrial Research Institute

UMA	Uganda Manufacturers Association
UNCCI	Uganda National Chamber of Commerce and Industry
UNMA	Uganda National Meteorology Authority
URC	Uganda Railways Corporation
URF	Uganda Road Fund
URSSI	Uganda Road Sector Support Initiative
USSIA	Uganda Small Scale Industries Association
USMID	Uganda support to Municipal Infrastructure Development
UWA	Uganda Wildlife Authority
UN	United Nations
USEPA	United States Environmental Protection Agency
UPE	Universal Primary Education
VECs	Valued Ecosystem Components
VHT	Village Health Team
VU	Vulnerable
Wfp	Water for Production
YLP	Youth Livelihood Programme
NDC	Nationally Determined Contributions
WHO	World Health Organisation
PM	Particulate Matter

### Abbreviations

m <sup>3</sup>	Cubic metres
µg	Micro grams
NO <sub>2</sub>	Nitrogen dioxide
O <sub>3</sub>	Ozone
SO <sub>2</sub>	Sulphur dioxide



## Overview

The Northern Economic Corridor (NEC) <sup>(1)</sup> is defined as all the transport infrastructures and facilities providing a gateway through Kenya to the landlocked economies of Uganda, Rwanda, Burundi and Eastern Democratic Republic (DR) of Congo. It also serves South Sudan.

The Corridor is multi-modal: consisting of road, rail, pipeline, and inland waterways transport, and is recognised as a significant corridor for logistics in East Africa. It is recognised as one of the major economic corridors in Africa.

The JICA Study Team (JST, 2016) stresses that while the importance of the Northern Corridor is increasing and the current combined transit and trans-shipment traffic through the Corridor has been growing at a rate of 20 percent annually the following obstacles have raised the transport cost within the Corridor, which accounts for about 30 percent of the value of the goods:

- Inadequate infrastructure,
- Poor interconnectivity of transport modes,
- Long delays (stagnation) of cargo at the port and broad post, and lack of goods to transport for the return trip from the inland area to Mombasa port.

The above mentioned impediments are increasingly being recognised as some of the factors hindering the economic development of the East African Region, particularly the inland areas.

The Governments of Uganda (GoU) and Kenya therefore requested the Government of Japan (GoJ) to implement a project to formulate a master plan on logistics in the NEC in order to promote regional development. In response to these requests, the Japan International Cooperation Agency (JICA) dispatched a 'Detail Design Formulation Team for the Project' in October and November 2014.

(1) Previously referred to as the Northern Corridor. The Phrase NEC was adopted in the early stages of formulating this Master Plan since it is intended not only to focus on logistics but also regional development along it.

The Team proposed to develop a concept that would cover not only logistics, but also regional development along the NEC. The Governments of Kenya and Uganda agreed with the concept and signed the Record of Discussion with JICA for the implementation of the *Project for Formulation of the Master Plan on Logistics in the Northern Economic Corridor* (the Master Plan).

In order to ensure that potential environmental and social challenges attributed to the NEC Master Plan are addressed holistically and in a proactive manner, it was decided that the Master Plan be subjected to a Strategic Environmental Assessment (SEA), ie, “an assessment that is implemented at the policy, planning, and program levels, but not a project-level EIA (JICA, 2010),” in line with JICA’s Guidelines for Environmental and Social Considerations (2010) , as well as the prevailing in-country environmental legal and regulatory framework.

The SEA process in Uganda was undertaken by Environmental Resources Management (ERM) and Atacama Consulting, the latter being a Uganda Environmental Consultancy firm.

### **Aim and Objectives**

The overall aim of the SEA is to ensure that environmental and social considerations are well integrated into the NEC Master Plan. The key objectives of the SEA are to:

- Describe, identify and assess the potential significant effects on the environment of implementing the Master Plan;
- Furnish decision makers of both Governments (GoU and GoJ) with the relevant information required to make informed choices about the sustainability of the Master Plan, and
- Provide robust recommendations on mitigation and management measures that are to be factored into the Master Plan, with negative impacts being minimised and positive ones enhanced.

### **Master Plan Proponent**

In Uganda, the Master Plan Proponent is the Ministry of Works and Transport (MoWT) which has a mandate to plan, develop and maintain economic, efficient and effective transport infrastructure and transport services by road, rail, water, and air.

MoWT is also mandated with managing public works including Government Structures and promoting standards in the construction industry. MoWT also aims to promote adequate, safe and well maintained public works and transport infrastructure and services, so as to effectively contribute to the socio-economic development of the country.

### **Brief Description of the NEC Master Plan**

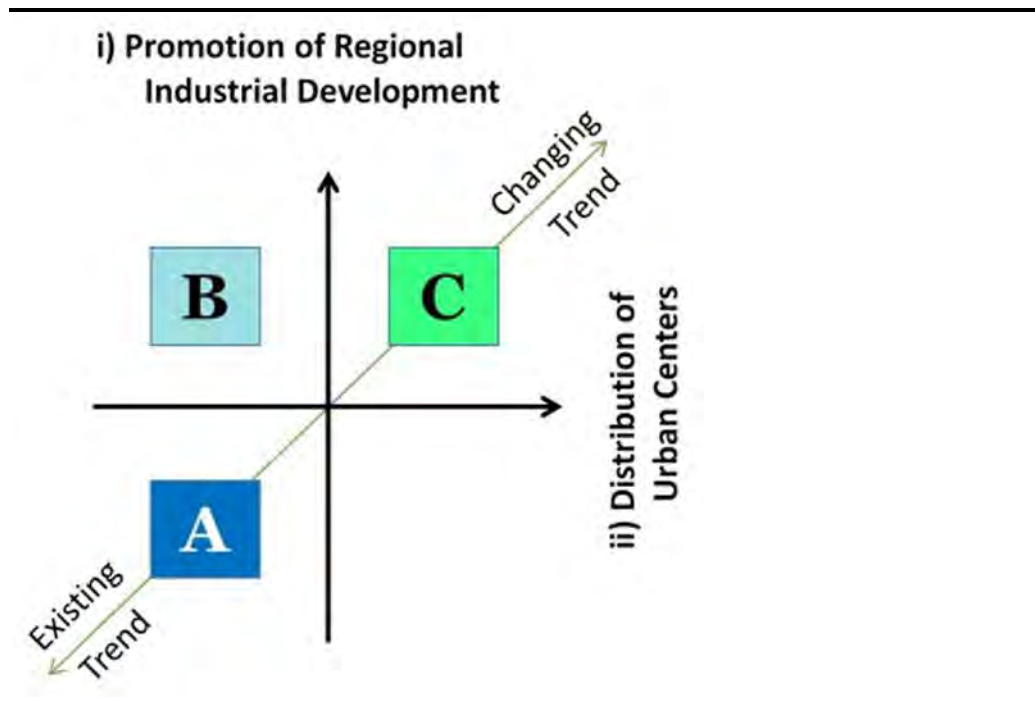
The proposed NEC Master Plan is anchored on the vision: *“To be the Leading Economic Corridor with Integrated Transport and Logistics Systems in Africa”*.

A number of alternatives and development strategies have been identified by JST to enable the realisation of the development, with the principal development strategies being regional, industrial and transport strategies, which will be supported by organisation/ policy and financial strategies.

The overall objective of the Master Plan is to improve logistics for the NEC as well as provide an integrated regional development strategy consistent with sub-regional development plans and national development plans (JST, 2016). It is hoped that this will spur regional economic development within Uganda and the Region.

A number of development alternatives and associated strategies have been identified for meeting the main objective of and realising the vision of the Master Plan. The three main alternatives which also include the “Do minimum” or “Business As Usual (BAU)” alternative are as indicated below.

Figure 1.1 Main Alternatives



Source: JST, 2016

### Target Area of the NEC

The Master Plan will target the following routes (*Figure 1.2*) which make up the NEC and its surrounding areas, inclusive of a 50km radius on either side of the routes.

Figure 1.2 Target Areas of the NEC



Source: JST, 2016

### Master Plan Implementation Schedule

The GoK and GoU have the mandates of implementing the Master Plan in their respective jurisdictions. The target years for the planning horizon of the Master Plan are as follows:

- Year 2015: This is the base year of the Study.
- Year 2020: This is the target year for the short term plan.
- Year 2025: This is the target year for the medium term plan.
- Year 2030: This is the target year for the long term plan.

**Table 1.1 Master Plan Implementation Schedule**

Reference number	Sector	Implementation term				Total
		Short	Medium	Long	After 2030	
1.	Road	4	4	4	8	20
2.	Port	3	1	1	0	5
3.	Airport	2	1	1	0	4
4.	Waterway	1	0	0	0	1
5.	Railway	14	3	0	0	17
6.	Logistic hub	0	4	3	0	7
7.	Border post	8	5	2	0	15
8.	Oil and Gas	3	0	0	0	3
9.	Agribusiness	0	18	6	0	24
10.	Industry	0	5	1	0	6
11.	Water	4	6	1	0	11
12.	Power	0	6	0	0	6
	<b>Total</b>	<b>39</b>	<b>53</b>	<b>19</b>	<b>8</b>	<b>119</b>

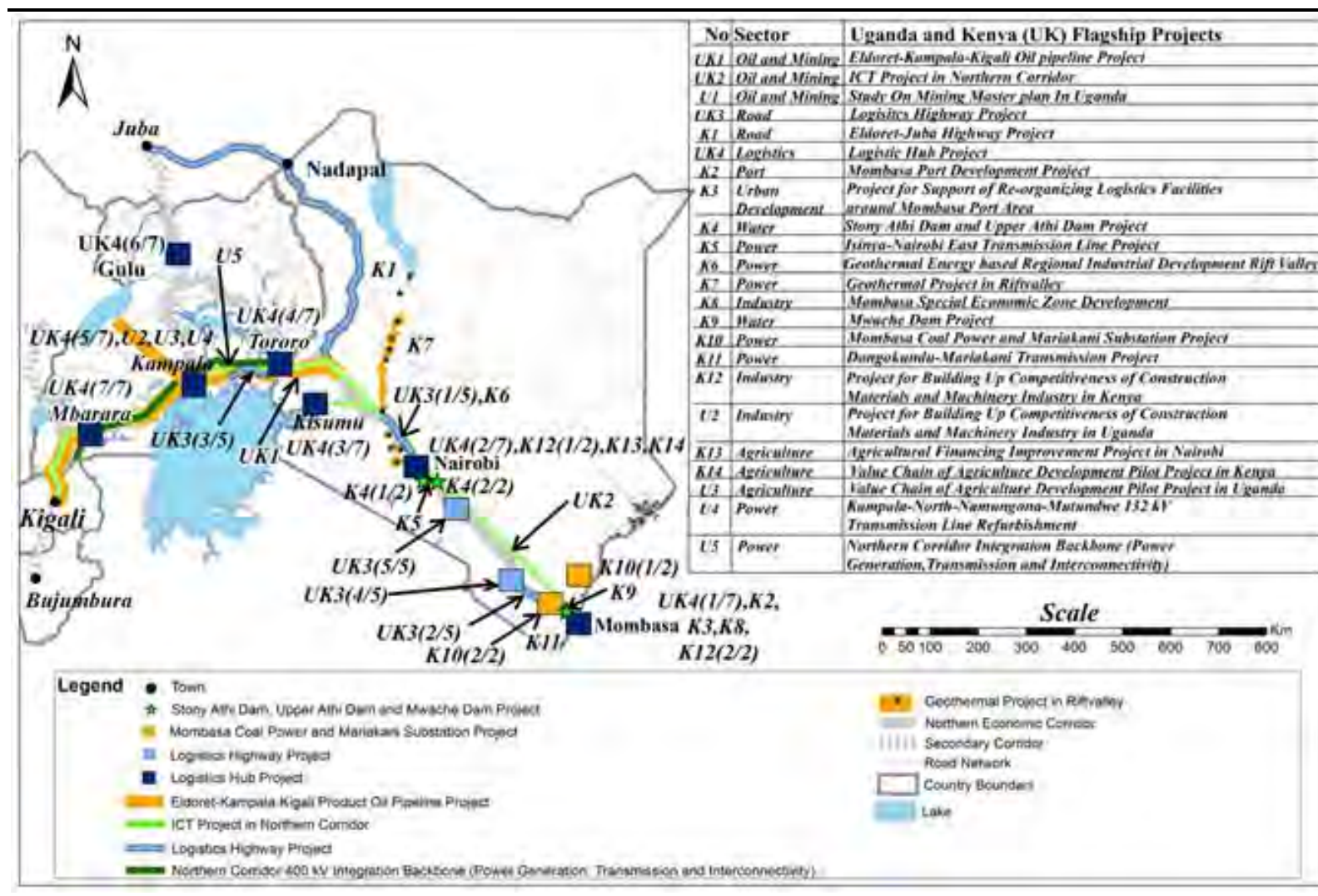
Source: JST 2015

Out of all the suggested 119 projects for the development of the NEC the JST has selected 23 flagship projects that can contribute to continued logistics improvement along the NEC, and to further economic development of each country, as well as the region. The location of the 23 NEC flagship projects are shown in *Figure 1.3* below:

The primary aim of these flagship projects is to:

- Solve future logistics bottlenecks along the NEC including at the port, roads, and logistic hubs;
- Contribute to cross border infrastructure, such as pipelines and transmission lines;
- Develop key industrial areas along the NEC;
- Ensure power and water supply to identified key industrial areas, and
- Support agribusiness and mining business developments.

Figure 1.3 Location of NEC Flagship Projects



Source: JST, 2016

## Strategic, Legal and Institutional Framework

The respective policies, plans, programmes and legal framework that served as a reference point for providing direction for the SEA are presented in (Table 1.2) below.

**Table 1.2 Policies, Plans, Programmes and Legal Framework**

PPP	Specific Instrument
Policies	<ul style="list-style-type: none"> <li>• National Environment Management Policy, 1994</li> <li>• National Energy Policy, 2002</li> <li>• National Water Policy, 1999</li> <li>• Uganda Wildlife Policy, 2014</li> <li>• Uganda National Land Policy, 2013</li> <li>• National Industrial Policy, 2008</li> <li>• National Wetlands Conservation and Management Policy, 1995</li> <li>• National Climate Change Policy, 2015</li> <li>• National Policy for Disaster Preparedness and Management, 2010</li> <li>• National Gender Policy, 1997</li> <li>• Transport Draft Policy and Strategy Paper</li> <li>• Draft Non-Motorised Transport (NMT) Policy, (2012)</li> <li>• National Agriculture Policy, 2013</li> <li>• HIV/ AIDS Policy, 2007</li> <li>• Mineral Policy, 2000</li> <li>• Tourism Policy, 2015</li> <li>• National Oil and Gas Policy, 2014</li> <li>• Fisheries Policy, 2004</li> <li>• National Land Use Policy, 2007</li> </ul>
Other important instruments	<ul style="list-style-type: none"> <li>• Uganda’s Vision 2040</li> <li>• Africa Agenda 2063</li> <li>• Sustainable Development Goals (SDGs)</li> </ul>
Plans	<ul style="list-style-type: none"> <li>• Uganda’s Second National Development Plan (NDP II), 2015-2019</li> <li>• Sector Development Plans (SDPs)</li> <li>• National Transport Master Plan (NTMP) including the Transport Master Plan for the Greater Kampala Metropolitan Area (GKMA), (2009)</li> <li>• National Irrigation Master Plan (2010 – 2035)</li> <li>• Northern Corridor Infrastructure Master Plan, (2011)</li> <li>• Local Government Development Plans</li> <li>• Protected Area Management Plans</li> </ul>



PPP	Specific Instrument
Programmes	<ul style="list-style-type: none"> <li>• National Response Strategy for Elimination of Non-Tariff Barriers (NRSE-NTB) Programme</li> <li>• National Agricultural Advisory Services (NAADS) Programme</li> <li>• Joint Water and Environment Sector Support Programme</li> <li>• Fuel Efficiency Initiative (FEI) in Uganda</li> <li>• Youth Livelihood Programme (YLP)</li> <li>• Northern Corridor Spatial Development Programme (NCSDP)</li> <li>• District Livelihoods Support Programme</li> <li>• CAIIP-II - Community Agriculture Infrastructure Improvement Programme</li> </ul>
Legislation	<ul style="list-style-type: none"> <li>• The Constitution of the Republic of Uganda, 1995</li> <li>• National Environment Act, Cap 153</li> <li>• Traffic and Road Safety Act, 1998</li> <li>• Uganda Railways Corporation Act, 1992</li> <li>• Inland Water Transport (Control) Act, 1964</li> <li>• Lake Victoria Transport Act, 2007</li> <li>• Investment Code, Cap 92</li> <li>• Water Act, Cap 152</li> <li>• Uganda Wildlife Act, Cap 200</li> <li>• Local Government Act, Cap 243</li> <li>• Public Health Act, Cap 281</li> <li>• Historical and Monuments Act, 1967</li> <li>• The Land Act, Cap 227</li> <li>• The Land Acquisition Act, Cap 226</li> <li>• Occupational Safety and Health Act, 2006</li> <li>• Traditional Rulers (Restitution of Assets and Properties) Act, Cap 247</li> <li>• National Forestry and Tree Planting Act, 2003</li> <li>• Physical Planning Act, 2010</li> </ul>
Institutions	<ul style="list-style-type: none"> <li>• Ministry of Works and Transport (MoWT)</li> <li>• Uganda National Roads Authority (UNRA)</li> <li>• Ministry of Finance Planning and Economic Development (MFPED)</li> <li>• Uganda Road Fund Board</li> <li>• Ministry of Local Government (MoLG)</li> <li>• Urban &amp; District Local Government Authorities</li> <li>• Ministry of Lands Housing and Urban Development (MoLHUD)</li> <li>• Town and Country Planning boards</li> <li>• National Environment Management Authority (NEMA)</li> <li>• Transport Licensing Board</li> <li>• Uganda Freight Forwarders Association (UFFA)</li> </ul>

PPP	Specific Instrument
	<ul style="list-style-type: none"> <li>• National Planning Authority (NPA)</li> <li>• Uganda Railways Corporation (URC)</li> <li>• Uganda Revenue Authority</li> <li>• Uganda National Meteorology Authority</li> <li>• Lake Victoria Basin Commission</li> <li>• Uganda Chamber of Mines and Petroleum (UCMP)</li> </ul>

## **Methodology and Approach**

### *Methodology*

#### **Screening**

The SEA process for the Master Plan for the NEC was initiated in 2014 by screening the need and possible objectives for conducting an SEA. Through the screening process, a platform (organisation of the SEA process) for the SEA was established.

#### **Scoping**

An important objective of scoping was to identify key environmental and social issues as a basis for the SEA process as well as developing the Terms of Reference (ToR) for the SEA based on the vision of the Master Plan and input from the relevant stakeholders.

#### **Detailed SEA Study**

This phase entailed collecting and analysing baseline data. A number of methods were used and these included:

- Literature Surveys;
- Opinion/Questionnaire Surveys;
- Geographical Information Systems, and;
- Constraints Mapping.

#### **Stakeholder Engagement**

A regional consultative approach was favoured because of the spatial extent of the NEC Master Plan. Workshops were held in three strategic regions, namely Kampala, Mbarara and Tororo Districts. Stakeholder engagement was undertaken at the scoping and detailed assessment stages. The SEA consultations methodology and approach were consistent with the Uganda ESIA Legislative Framework as well as the JICA Guidelines for Environmental and Social Considerations, 2010. Stakeholder consultations were held to gather baseline data and identify impacts.

## **Expert Judgment**

This was used as a way of drawing meaningful conclusions following the internalisation of the data and information collected using the various assessment methods listed above.

## **Transport Modelling and Forecasting**

The data collected during the JST 2015 Traffic Survey clearly identified the amount of Cross Border Freight Traffic (CBFT) – which data included; the origins and destinations of the traffic, the weight and type of cargo carried, in addition to other key information.

## **Matrices**

These were used to examine the significance of the impacts likely to arise from the implementation of the Master Plan. This was conducted by evaluating the relationship between the magnitude of the impacts and the sensitivity of the environmental and social receptors.

## **Approach**

Although there are a number of approaches for conducting SEA, an EIA-based approach was adopted for this assessment <sup>(1)</sup>. Equally of importance was the model that was chosen for linking the SEA process with the NEC Logistics Master Plan formulation process. A parallel model which entailed the SEA process being conducted in parallel with the Master Plan formulation process was chosen.

### *Potential Impact Identification*

The significance of impacts was formulated as a function of the environmental or social receptor (*sensitivity*) and the *magnitude* of the impact (change) as indicated below.

(1) EIA and SEA have many similarities and a common environmental foundation, although SEA has been largely developed as a response to the levels and types of decision-making that are not covered by EIA. In doing so, SEA has derived, adapted and implemented EIA arrangements, procedure and methodology, particularly at the plan and programme level (<http://www.unep.ch/etu/publications/textONUBr.pdf>).

**Table 1.3 Receptor Sensitivity**

<b>Sensitivity</b>	<b>Description</b>
Very High	Very high importance and rarity, international scale and very limited potential for substitution
High	High importance and rarity, national scale, and limited potential for substitution
Medium	High or medium importance and rarity, regional scale, limited potential for substitution.
Low	Medium or low importance and rarity and local scale.
Negligible	Very low importance and rarity, local scale.

**Table 1.4 Magnitude of Impacts**

<b>Magnitude</b>	<b>Description</b>
Major	<ul style="list-style-type: none"> <li>• Loss of resource and/or quality and integrity of resource; severe damage to key characteristics and/or features (Adverse).</li> <li>• Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality (Beneficial).</li> </ul>
Moderate	<ul style="list-style-type: none"> <li>• Loss of resource, but not adversely affecting the integrity; partial loss of/ damage of key characteristics and/or features (Adverse).</li> <li>• Benefit to, or addition of key characteristics, features or elements; improvement of attributes quality (Beneficial)</li> </ul>
Minor	<ul style="list-style-type: none"> <li>• Some measurable change in attributes, quality or vulnerability; minor loss or alteration to, one (may be more) key characteristics, features or elements (Adverse).</li> <li>• Minor benefits to, or addition of one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring (Beneficial).</li> </ul>
Negligible	<ul style="list-style-type: none"> <li>• Very minor loss or detrimental alteration to one or more characteristics, features or elements (Adverse).</li> <li>• Very minor benefit to or positive addition of one or more characteristics, features or elements (Beneficial).</li> </ul>
No change	<ul style="list-style-type: none"> <li>• No loss or alteration of characteristics, features or elements; no observable impact in either direction.</li> </ul>

The impact significance was determined by evaluating the magnitude of the impact and the sensitivity of the environmental and social receptors. The five significance categories gave rise to eight potential outcomes.

The greater the environmental sensitivity of the receptor, and the greater the magnitude of impact, the more significant the impact as presented below.

**Table 1.5 Significance of Impact Categories**

		Impact magnitude				
		No change	Negligible	Minor	Moderate	Major
Receptor sensitivity	Negligible	Neutral	Neutral	Slight	Moderate	Moderate
	Low	Neutral	Slight	Slight	Moderate	Large
	Medium	Neutral	Slight	Moderate	Large	Large
	High	Neutral	Moderate	Moderate	Large	Very large
	Very high	Neutral	Moderate	Large	Very large	Very large

### Environmental Baseline

Summarised below, is a description of the physical and biological baseline environment of the NEC as this was important for accurately predicting the potential impacts the Master Plan may have on the environment. It is important to note the following:

- The baseline information presented below is the prevailing situation in the NEC prior to any interventions ie relevant aspects that need to be considered for decisions to be taken in line with the Master Plan.
- The collection of baseline data was focused on providing information to support the assessment of potential impacts.
- The Corridor covers the Eastern, Western, Northern, and South Western parts of Uganda as well as Lake Victoria (also considering the 50km radius on either side of the Corridor and the location of the proposed interventions) – and therefore, for certain aspects/where applicable, data relevant to Uganda as a whole is presented.

### Physical Environment

#### *Climate*

Overall, Uganda’s climate is classified as humid-equatorial.

#### *Rainfall*

Seasonal rainfall in Uganda is driven mainly by the migration of the Inter Tropical Convergence Zone (ITCZ). This causes Uganda to

experience two distinct rainfall seasons – the ‘short’ rains in August to December, and the ‘long’ rains in March to May. These gradually merge into one long rainy season the further north one moves from the equator.

Uganda’s rainfall varies from as little as 400mm per annum in the more arid zones (north eastern parts of Uganda traversed by the Tororo – Gulu route) to over 2000mm per annum in the Lake Victoria region.

Extreme rainfall events are among the issues that are predicted to become more pronounced as a result climate change.

#### *Temperature*

Temperatures in Uganda vary little throughout the year, with average temperatures increasing in the north of the country as the elevation decreases towards the Sudanese plain.

The country's temperature ranges between 16°C and 34°C, but the situation countrywide indicates great disparities.

Mean annual temperatures range from about 16°C in the south-western highlands to 25°C in the north-west and in the north-east, the climate becomes more arid with temperatures exceeding 30°C for 254 days of the year.

#### *Air Quality*

A pilot cross – sectional spatial assessment of the state of ambient air quality conducted between 30 June and 17 July, 2014 (dry season) in two Ugandan urban centres (Kampala and Jinja, both within the NEC) demonstrated presence of high Particulate Matter (PM) concentrations (PM<sub>2.5</sub> concentrations - 5.3 fold above the limit defined by World Health Organisation (WHO)) and low gas phase air pollutant levels (NO<sub>2</sub>, SO<sub>2</sub> and O<sub>3</sub>). Particulate air pollution levels were greatest in areas with high commercial/industrial land use and unpaved roads.

Transport related emissions within the NEC tend to be high largely as a result of the large stock of used vehicles imported into the country. The fuel efficiency of such vehicles tends to be poor leading to the high emission of Greenhouse gases that affect air quality.

#### *Hydrology*

- The NEC traverses the Lake Victoria Basin, Lake Edward Basin, Lake Kyoga Basin, Victoria Nile Basin and the Albert Nile Basin.

- Due to the interconnected nature of the surface water resources of Uganda, the Corridor traverses some of the country's major wetlands in the Lake Kyoga Basin (Tororo - Gulu route) and Lake Victoria Basin (Kampala - Mbarara route). Also important to consider is the River Nile crossing along the Tororo - Kampala route as well as the Kazinga Channel crossing along the Mbarara - Mpondwe route.
- The road infrastructure along the NEC traverses some of Uganda's permanent wetlands including but not limited to; Kibimba Wetland in Bugiri District along the main Tororo - Kampala - Katuna route, Lake Mbuho wetland along the Kampala - Mbarara route as well as along the Lake Kyoga wetland along the Tororo - Gulu - Elegu route.

### *Water Quality*

- Available water quality data for point sources, non-point sources, rivers and streams, and for lakes, has some extreme values indicating the surface waters are threatened by pollution.
- The major sources of pollution include sewerage and municipal or urban effluents, industrial effluents, domestic effluents, agricultural run-off and changing land use leading to soil erosion, natural conditions, floating aquatic macrophytes, as well as atmospheric deposition of pollutants.

### *Flooding*

Of the 39 districts traversed by the NEC, 23 are prone to flooding. More so, floods had already occurred (2013) in 14 of the 23 flood prone districts. Half of the districts where floods had occurred are along the Tororo - Gulu route.

### *Ground Water*

The main aquifers in Uganda are in weathered crystalline basement. These are generally low-permeability and low-storage aquifers, and the physical properties are largely a function of tectonic history and long-term cycles of weathering and erosion. Unconsolidated deposits also form aquifers of local importance.

Groundwater quality in Uganda is generally good, although high concentrations of iron and manganese are common in the crystalline basement aquifers, and microbial contamination related to faecal waste has been observed in shallow urban aquifers. High fluoride



concentrations are often observed in igneous groundwater, for example at Kisoro and Mbale (Tororo - Kampala - Katuna border route).

**Table 1.6** *Topography*

<b>Route</b>	<b>Altitude range (m.a.s.l)</b>
Tororo - Kampala - Mbarara route	1163m to 1462m
Mbarara - Katuna border route	1462m to 1804m
Mbarara - Mpondwe border route	1462m to 1804m Drops to between 864m to 1163m in the later sections
Tororo - Gulu route	864m to 1163m
Kampala - Gulu route	864m to 1163m Drops to between 52m and 864m in Amuru District

**Table 1.7** *Geology*

<b>Route</b>	<b>Geology</b>
Tororo - Kampala route	Nyanzanian Basement complex in Tororo District and the Buganda-Toro Proterozoic rocks in the Busoga region districts
Kampala - Katuna border route	Proterozoic rocks and undifferentiated basement complex
Mbarara - Mpondwe border route	Within Mbarara District -Karagwe-Ankolean Proterozoic rocks but proceeds further into undifferentiated basement complex and meso/Cenozoic sediments and meso/Cenozoic volcanics to the Mpondwe border
Tororo - Gulu route	Undifferentiated basement complex
Kampala - Gulu route	Undifferentiated basement complex. In addition, a section of the route, specifically in Masindi District, is underlain by the Bukoban Proterozoic rocks

### *Seismicity*

The Eastern African Rift System (EARS) is one of the tectonic features most associated with seismicity in Uganda. The others are the Katonga fault break which starts from the foot hills of the Rwenzori Block Mountains, traverses Lake Victoria and connects to the Kavirondo Gulf in south-western Kenya and the Speke Gulf south of Lake Victoria in

Tanzania; and, the Aswa shear zone that starts from Nimule at the South Sudan-Uganda border and joins Mt. Elgon on the Eastern border. As pertains to the NEC, the Mbarara-Mpondwe Border route, Kampala-Gulu route, and the Tororo-Gulu route are at a higher risk of seismic activity (earthquakes) because they traverse the Eastern African Rift System (EARS).

**Table 1.8**     *Soils*

<b>Route</b>	<b>Soil types</b>
Tororo - Kampala route	Petric Plinthosols, Nitisols, Luvisols and Acric Ferrasols
Kampala - Katuna border route	Luvisols, Planosols, Acric Ferrasols, and Dystric Regsols
Mbarara - Mpondwe border route	Luvisols, Acric Ferrasols, Nitisols and Luvic Andosols
Tororo - Gulu route	Petric Plinthosols, Acric Ferrasols, Leptosols, Luvisols and Melanic Andosols
Kampala - Gulu route	Luvisols, Acric Ferrasols, Petric Plinthosols and Leptosols

*Biological Environment*

The NEC traverses a number of protected areas including: Lake Mbuoro National Park along the Kampala - Mbarara - Mpondwe route, Murchison Falls National Park along the Kampala - Gulu route, Central Forest Reserves (Mabira CFR and Busitema CFR along the Tororo - Kampala route, Mpanga CFR along the Kampala-Katuna border, Kalinzu and Maramagambo CFRs along the Mbarara-Mpondwe border) as well as Queen Elizabeth National Park (QENP) along the Mbarara - Mpondwe route.

Key avifauna habitats (Important Bird Areas - IBAs) traversed include: River Nile and Mabira CFR along the Tororo - Kampala route, Lake Mbuoro National Park along the Kampala - Katuna border route and Queen Elizabeth National park along the Mbarara - Mpondwe route.

## **Socio-Economic Baseline**

### *Physical Planning within the NEC*

Most of the major towns within the NEC (Tororo, Jinja, Mbale, Soroti, Lira, Gulu, Masindi, Kampala, Masaka, and Mbarara) have Physical Development Plans but are not consistent with aspects such as multi modal transport, among other things.

There are other physical planning projects ongoing in the urban realm which are aimed at upgrading of slums (in Mbale, Jinja, Mbarara and Gulu where 60 percent of the urban population reside), provision of infrastructure, and regional and other plans which could contribute to the strategy to build an effective physical planning system.

All the major urban towns within the NEC conurbation have spread de facto beyond the Municipality's boundaries and are rapidly impacting on the peri- urban areas as they sprawl without any development control guidance from the relevant authorities.

### *Green Belts*

Uganda's urban towns do not have distinctive green belts between the urban and rural settlements. The physical plans within the corridor of the urban centers in Uganda have reserved some areas as green belts in form of public spaces but these are very limited.

There are however green belts which were mostly created as parks and open spaces in many major towns within the corridor ie Malukhu wetland in Mbale, Kauda grounds and Pece wetland in Gulu, although these have been encroached and built upon.

The few developed and maintained gardens in Kampala city are concentrated in the city centre and generally closed off from the public. The wetland areas are used for recreation; however, landfilling for playfields contributes to their further degradation.

### *Transport*

The transport infrastructure in Uganda includes road, water, air and railway. However, road transport, as is common in other East African countries, is the commonest means for movement of goods, with over 95 percent of cargo and passenger traffic using road transport.

### *Road Transport*

Some of the major roads connected to the NEC route are:

**Table 1.9** *Roads Connecte to NEC Route*

<b>Corridor route</b>	<b>Major roads</b>
Kampala-Gulu	Kigumba-Kyema, Wiyo-Karuma, and Gulu-Paicho
Mbarara-Mpondwe	Mbarara-Ibanda
Kampala-Katuna	Masaka-Mutukula, Mityana-Mubende, and Kiboga-Busunju
Kampala-Tororo	Bugiri-Tororo and Iganga-Mbale
Tororo-Gulu	Lokichar-Nariwo and Chplibur-Kilak

Most towns in Uganda grew out of road side markets and other commercial activities. As such, they have developed with major highways passing right through their centres. The main NEC route passes through the centre of every major town in Uganda with only a few exceptions such as Entebbe and Fortportal. Traffic flows through these towns is difficult and as such most town centres experience traffic jams.

#### *Railway Transport*

Operation of railway transport services was awarded to Rift Valley Railways (RVR) in 2006 as part of a region-wide public private partnership (PPP) programme to revamp railway operations. There is still a low usage of the railway system generally. Railway share of cargo transport for example, is less than 5 percent and its share of passenger transport even much less. Low-level passenger transport has returned for short trips from Namanve to Kampala city at peak times (as part of a pilot scheme to ease on congestion on the roads leading in and out of the city at those times) but inadequate frequency renders it uncompetitive compared to road transport.

#### *Air Transport*

Entebbe International Airport is the second busiest airport in terms of cargo handling in East Africa. In 2012, it handled 81,000 tonnes of cargo but that is still a very small fraction compared to what is transported by road.

## *Water Transport*

There is currently very little use of water transport in the NEC. Uganda Railways Corporation (which is the entity in charge of cargo water ferries)<sup>1</sup> has only one commercial cargo ferry still operational. Railway connection to Port Bell is out of service currently and ferries are not operated as rail-wagon ferries.

<sup>1</sup> Uganda National Roads Authority (UNRA) only operates passenger ferries between selected islands in Uganda only.

## *Road Safety*

Uganda has the highest accident rates in the Great Lakes region. The highest number of road accidents and fatalities attributed to high traffic volumes, numerous urban centres (with inadequate pedestrian crossing facilities and the generally haphazard nature of crossing by pedestrians) resulting in high pedestrian/vehicle interactions, several accident 'black spots' and, high traffic speeds, mainly occur within the NEC.

## *Current Freight Traffic Demand*

A traffic survey was conducted by JST in 2015 to establish the current traffic demand on the NEC, at key border posts along the Uganda border and at three key locations along the NEC (the Kampala - Tororo route, Kampala - Mbarara route and Kampala - Gulu route). This survey established that:

- The most critical border crossing along the NEC is Malaba where most border crossing movements take place.
- Traffic originating from Uganda reaches the border before traffic from Kenya due to the shorter distance generally from the Uganda side to Malaba
- A single peak occurs during the day for both traffic from Kenya (4pm to 10pm) and Uganda (3pm to 10pm)
  - The peak seems to occur as truck drivers target to take their rest break at the Malaba border.
  - The average arrival from the Ugandan side during the peak period is about 45 trucks per hour and from the Kenya side 55 trucks per hour.

## **Social and Cultural Conditions**

### *Population*

Wakiso District is the most populous district in the Ugandan Section of the NEC followed by Kampala district. Ngora, Rubirizi and Lyantonde districts are the least populated.

### *Population Density*

Kampala District has the highest population density, while Nakasongola is the least densely populated.

### *Urbanisation*

Within the NEC, the level of urbanisation is highest in Kampala city.

### *Education and Literacy Levels*

Based on the Educational Sector Performance Report of 2013-2014, within the NEC, the Tororo - Gulu and, Kampala - Mbarara - Katuna Border routes have the highest education and literacy levels (85.2 percent and 87 percent for males and females respectively). The Tororo - Kampala route has the lowest education and literacy levels (55 percent and 55.2 percent for males and females respectively).

### *Livelihoods*

The major livelihood activities along the NEC, mainly concentrated in Kampala, Wakiso, Tororo and Kasese Districts are:

- Agriculture;
- Fisheries, mainly carried out in the open water bodies of Lakes Victoria, Edward, and George;
- Business, mainly carried out in all major towns, and
- Industrialisation

Most of the livelihood activities are land based, with subsistence agriculture being the major source of livelihood in Uganda. Land is therefore the most precious asset that the people possess.

### *Income Levels*

The Kampala - Katuna border route, the Mbarara - Mpondwe route as well as a section of the Kampala - Gulu route (central Uganda region), fall primarily within areas of low poverty. On the other hand, the Tororo - Gulu route as well as a section of the Kampala - Gulu route (northern Uganda region) fall within a zone of high poverty.

### *Land Tenure*

Customary ownership is the major form of land tenure system along the Tororo-Gulu route and the Mbarara-Mpondwe Border route, while a mixture of Mailo/Freehold/Kibanja, Leasehold and Customary ownership are the major forms of land tenure along the Kampala-Gulu route, Tororo-Kampala route, and the Kampala-Mbarara-Katuna Border route.

### *Access to Health Services*

Based on selected performance indicators used to assess the health performance of various districts in Uganda, seven of the top fifteen performing districts are within the NEC (Gulu, Kampala, Jinja, Rukungiri, Mbale, Bushenyi and Mbarara).

### *Sanitation*

The Kampala - Katuna border route, the Mbarara - Mpondwe route as well as a section of the Kampala - Gulu route (central Uganda region), fall primarily within areas with a high record of sanitation facilities. On the other hand, the Tororo - Gulu route as well as a section of the Kampala - Gulu route (northern Uganda region) fall within a low record of sanitation facilities.

### *Access to Safe Water*

The Tororo-Kampala route has the lowest access to safe water at 26 percent, while the Mbarara-Mpondwe border route has the highest access to safe water at 78 percent.

### *HIV/AIDS*

HIV/ AIDS remains a major socio-economic challenge in Uganda. The prevalence rate in the general population among adults stands at 7.4 percent according to the 2012/2013 survey<sup>1</sup>.

According to the International Organisation for Immigration report, 2009, mobility has been identified as one of the key factors behind the spread of HIV/ AIDS in East Africa due to the high risk environments associated with transport corridors which often facilitate multiple concurrent sexual partnerships.

<sup>1</sup>2014 Uganda HIV and AIDS Country Progress report, 2015



### *Lighting*

Paraffin (*Tadooba*) is the major source of energy used for lighting along the Tororo-Gulu route, Kampala-Mbarara-Katuna Border route, and the Mbarara-Mpondwe Border route, while electricity is the major source of energy along the Kampala - Gulu route and the Tororo - Kampala route.

### *Cooking*

Firewood is the major source of energy used for cooking along the Tororo - Gulu route, Kampala-Mbarara-Katuna Border route, and the Mbarara-Mpondwe Border route while charcoal is the major source of energy used along the Kampala-Gulu route and Tororo-Kampala route.

### *Gender*

The GoU adopted a National Gender Policy (1997), whose main objective is to mainstream gender concerns in national development processes through guiding resource allocation in all sectors to address gender inequality.

During the second round of stakeholder consultations, the stakeholders expressed the need for the deliberate inclusion of gender mainstreaming issues in the SEA for consideration during the Master Plan formulation.

### *Vulnerable Groups*

A vulnerable group is a population that has some specific characteristics that make it at higher risk of falling into poverty than others living in areas targeted by a project/ plan (World Bank, 2015) in this case the Master Plan.

Results from the opinion survey conducted during the stakeholder consultative meetings indicate that groups identified as vulnerable by the respondents include: slum dwellers, people in traditional houses, the disabled, the poor, as well as the Karamajong (an ethnic group of agro-pastoral herders living mainly in the north-east of Uganda).

## Stakeholder Engagement

Stakeholder engagement was conducted throughout the SEA process. *Table 1.10* below shows selected key outcomes, attitudes, concerns, and expectations following the stakeholder engagement process during the detailed SEA study. A more detailed presentation of all of these as gathered during the SEA is provided in *Chapter 7* of this report.

Table 1.10 Key Attitudes, Concerns and Expectations from the Stakeholder Engagement

Key Attitudes, Concerns and Expectations
<b>Biodiversity</b>
Local Forest Reserves (LFR) should be taken into consideration during the SEA.
Conservation of existing biodiversity assets along and around the Corridor.
<b>Socio-economic</b>
Include recreation centres and leisure parks in the socio-economic baseline.
Include communication in the social baseline.
Cross cutting issues like Gender, HIV/AIDS, the elderly etc. should be incorporated into the SEA.
The SEA team should shade more light on rural urban migration as a positive impact of the Master Plan.
Involuntary resettlements along the Northern Economic Corridor should be considered.
What will be done with the population along the railway line especially in highly seismic areas?
Registered land is presented as a constraint yet unregistered land is more challenging as a constraint due to insecurity.
<b>Other developments</b>
How does this Master Plan integrate with other infrastructure and development plans beyond the SGR and pipeline (it should additionally be clear what type of pipeline is being referred to)?
The Master Plan process should consider cascading development in line with the Local Development Plans.
<b>Scenario development/aspects for the Master Plan to further consider</b>
Is it possible to build different scenarios shaping the Master Plan?
What are the strategies for popularising the Master Plan?
Mombasa Port is already congested. Why not consider Lamu Port especially along the LAPSSET Corridor?
Build synergy with the National Industrial and Business Park development strategy.
Align the Master Plan environmental requirements with the current economic establishments that may not meet requirements of the SEA.
Integrate by-pass road designs around major towns to mitigate traffic congestion, urban pollution, and potential accident impacts.
There is need to consider urban mobility plans and also the need to fit satellite cities into the Corridor.
In line with the proposed secondary cities, adaptation is better since climate change is a reality.
Is there connectivity of the transport strategy ie from road to railway and airport?
Increase in traffic demand results in increase in traffic congestion and this can be solved by bypasses. Is there any plan for a bypass in Mbale, Lira and Gulu?
Unless we relate productivity and planning, the trucks will go back to Mombasa empty.
We are concerned about the identification of the key strategic areas by the Master Plan.
With regards to flooding, the Master Plan should improve the drainage system such that this water can be tapped for productivity.
How has the SEA taken into consideration the factors that led to the collapse of the Metre Gauge Railway?
Affordable infrastructure for people doing business - the project should bring on board interests of the business community as early as possible.
<b>Policy issues</b>
The routes go as far as the border of other countries but only Uganda and Kenya have been involved and we would therefore like to see the involvement of other countries such as Rwanda, Congo and South Sudan.
Under COMESA arrangements, transboundary markets will be established, the Master Plan should take keen interest in this since other African agencies have interest in developing our countries.
How has the MoWT considered implementation of the Master Plan <i>visa vis</i> District Development Plans?
The study is deliberately ignoring the political dimension which is led by increasing income division and thus the potential for conflict is high. Marginalised groups should be considered.
<b>Safety</b>
Since we face a challenge of vandalism especially of metal related infrastructure, planning should consider the safety of this infrastructure in the face of urbanisation.
Consider the undisciplined society which does not respect common user rights.

## Analysis of Alternative and Strategy Options

The following alternatives were considered by the JST during the Master Plan formulation process:

- *A: Super Double-Core Type* - for concentrating investments on capitals as usual;
- *B: Double-core with Regional Industrial Promotion Type*, for expanding exports with industrial promotion), and
- *C: Multi-core with Regional Industrial Development Type*, for expanding exports with industrial promotion and balanced development))

The above were all considered as possible development options based on three main criteria, specifically public benefit, public intervention and vision.

*Alternative C* (Multi-core with Regional Industrial Development Type) was selected as the preferred alternative and includes the following strategies:

- Expanding export with industrial promotion and balanced development through the promotion of “Regional Production Centers” ;
- Promotion of urban and logistics functions of “Secondary Cities” into hubs of business, commerce, service and logistics for surrounding regions with the local government involvement; and
- Establishment and enhancement of an efficient transport network.

Alternative C was determined to be the most suitable alternative for the Master Plan on the balance of its implications on the SEA objectives and based on a set of environmental conditions, specifically:

- Maintain the integrity of water bodies;
- Maintain the integrity of soils and geology conditions;
- Maintain and enhance air quality;
- Minimise noise and vibrations;
- Minimise impact on protected areas;
- Conserve and enhance biodiversity outside protected areas;
- Safeguard public health and safety;

- Minimise land take and disruption of livelihoods;
- Well integrated modes of transport;
- Protect integrity of archaeological and cultural heritage sites; and
- Minimise visual impacts.

The impact identification and analysis was therefore based on the preferred Alternative C.

### **Key Impacts**

Only the impacts that were deemed to be negative and 'major' in scope were taken forward for the detailed impact assessment<sup>1</sup>. Positive impacts were also identified and measures to enhance them were also proposed. A summary of the key negative impacts is provided in *Table 1.11*.

<sup>1</sup> The assessment process was preceded by the identification and evaluation of potentially significant environmental impacts likely to be attributed to the implementation of the Master Plan. However, only the significant issues are the focus of any SEA, and the reference point for the level of significance of potential impacts in the current study were the SEA objectives.

**Table 1.11 Summary of Negative Impacts associated with the NEC Master Plan**

Impact	Regional Strategy		Industrial Strategy			Transport Strategy			Applicable constraints	
	Strategy Options									
	Linking agricultural productive areas and mineral resources areas through development secondary cities	Linking with LAPSSET, central corridor and Kampala-Juba-Addis Ababa-Djibouti Corridor	Establishment of logistic hubs with Inland Container Depots (ICD) and Logistic Centre	Connecting industrial areas to logistic hubs through Cargo-Oriented Development (COD)	Promotion of growth drivers to increase export, reduce import, and develop local economy	Modal shift from truck to rail and pipeline	Reduction of bottlenecks of freight traffic and logistics	Enhancement of transport infrastructure		
Impacts on the integrity of water bodies	Very large	Very large	✘	✘	Very large	✘	Large	✘	Rivers; Nile Katonga, Rwizi Lakes; Kyoga, Victoria, Albert Wetlands; Kibimba, Northern shores of Lake Victoria, Lake Kyoga wetlands, Lake Mbuoro wetlands.	
Impacts on soils and	✘	✘	Slight	✘	Very large	✘	✘	✘	Agricultural areas	

Impact	Regional Strategy		Industrial Strategy			Transport Strategy			Applicable constraints	
	Strategy Options									
	Linking agricultural productive areas and mineral resources areas through development secondary cities	Linking with LAPSSET, central corridor and Kampala-Juba-Addis Ababa-Djibouti Corridor	Establishment of logistic hubs with Inland Container Depots (ICD) and Logistic Centre	Connecting industrial areas to logistic hubs through Cargo-Oriented Development (COD)	Promotion of growth drivers to increase export, reduce import, and develop local economy	Modal shift from truck to rail and pipeline	Reduction of bottlenecks of freight traffic and logistics	Enhancement of transport infrastructure		
geology										
Impact on air quality (Greenhouse gas emissions)			*	*		*	Moderate	*	Protected Areas, Internationally Designated Areas, Sensitive ecosystems, Biodiversity (flora and fauna), Rivers, lakes and wetlands, Agricultural areas, Settlements, and Existing infrastructure.	

Impact	Regional Strategy		Industrial Strategy			Transport Strategy			Applicable constraints	
	Strategy Options									
	Linking agricultural productive areas and mineral resources areas through development secondary cities	Linking with LAPSSSET, central corridor and Kampala-Juba-Addis Ababa-Djibouti Corridor	Establishment of logistic hubs with Inland Container Depots (ICD) and Logistic Centre	Connecting industrial areas to logistic hubs through Cargo-Oriented Development (COD)	Promotion of growth drivers to increase export, reduce import, and develop local economy	Modal shift from truck to rail and pipeline	Reduction of bottlenecks of freight traffic and logistics	Enhancement of transport infrastructure		
Impact on air quality (dust emissions)	x	x	x	x	x	x	Large	x	Settlements	
Noise and vibration impacts	x	x	x	x	x	x	Large	x	Settlements	
Impacts to Biodiversity in Protected Areas	x	Very large	x	x	Very large	Very large	Moderate	Large	Mabira CFR, Mpanga CFR, Moroto CFR, Murchison Falls National Park, Lake Mburo National Park, Kibale National Park, Queen Elizabeth	



Impact	Regional Strategy		Industrial Strategy			Transport Strategy			Applicable constraints	
	Strategy Options									
	Linking agricultural productive areas and mineral resources areas through development secondary cities	Linking with LAPSSET, central corridor and Kampala-Juba-Addis Ababa-Djibouti Corridor	Establishment of logistic hubs with Inland Container Depots (ICD) and Logistic Centre	Connecting industrial areas to logistic hubs through Cargo-Oriented Development (COD)	Promotion of growth drivers to increase export, reduce import, and develop local economy	Modal shift from truck to rail and pipeline	Reduction of bottlenecks of freight traffic and logistics	Enhancement of transport infrastructure		
									National park, Lake Victoria, IBAs, Ramsar sites.	
Impacts on public Health and Safety	Moderate	Very large	Large	x	x	x	x	x	Dense settlements, Border points, and Existing HIV/AIDS hotspots	
Impacts related to Land take and disruption of livelihoods	x	Very large	Moderate	x	x	x	x	x	Mailo land owners, and Customary land owners.	

Following assessment of the SEA objectives where major negative impacts will potentially occur during the implementation of the Master Plan, bearing in mind the uncertainties surrounding: e protection of the integrity of archaeological and cultural heritage sites for the regional strategy, industrial strategy and transport strategy, and, minimising land take and disruption of livelihoods for the industrial strategy alternative associated with the promotion of growth drivers to increase export, reduce import, and develop local economy, the following are the findings:-

Impacts of major significance identified include impacts on the integrity of water bodies and impacts on biodiversity in protected areas. This is because:-

- The NEC traverses the Lake Victoria Basin, Lake Edward Basin, Lake Kyoga Basin, Victoria Nile Basin and the Albert Nile Basin. Additionally, due to the interconnected nature of the surface water resources of Uganda, the Corridor (specifically, the road infrastructure associated with it) traverses some of the country's major wetlands (of social and ecological importance) including but not limited to permanent wetlands such as; the Lake Kyoga wetland (Tororo - Gulu -Elegu route) Kibimba wetland in Bugiri along the main Tororo - Kampala - Katuna route and, Lake Mburu wetland along the Kampala - Mbarara route. Also important to consider is the River Nile crossing along the Tororo - Kampala route as well as the Kazinga channel crossing along the Mbarara - Mpondwe route.
- The NEC traverses a number of protected areas including: Lake Mburu National Park along the Kampala - Mbarara - Mpondwe route, Murchison Falls National Park along the Kampala - Gulu route, Central Forest Reserves (Mabira CFR and Busitema CFR along the Tororo - Kampala route, Mpanga CFR along the Kampala-Katuna border, Kalinzu and Maramagambo CFRs along the Mbarara-Mpondwe border) as well as Queen Elizabeth National Park (QENP) along the Mbarara - Mpondwe route. Key avifauna habitats (Important Bird Areas - IBAs) traversed include: R. Nile and Mabira CFR along the Tororo - Kampala route, Lake Mburu National Park along the Kampala - Katuna border route and Queen Elizabeth National park along the Mbarara - Mpondwe route.

- The regional strategy of linking with LAPSSET, Central Corridor and Kampala-Juba-Addis-Ababa-Djibouti Corridor has the highest number of impacts with very large significance (4 impacts), followed by the industrial strategy of promotion of growth drivers to increase export, reduce import and develop local economy (3 impacts), and the transport strategy of reduction of bottlenecks of freight traffic and logistics (2 impacts). This is the case since the proposed projects associated with these options will most likely be implemented in protected areas such as Lake Victoria and CFRs.
- The strategies with the least number of impacts were; the transport strategies of enhancement of transport infrastructure, and, modal shift from truck to rail and pipeline (with 1 impact each), and, the industrial strategy of connecting industrial areas to logistic hubs through Cargo Oriented Development (COD) which had no impacts. This is the case since the shift of cargo to either pipeline or rail transport does not involve direct physical disturbance of the biophysical and social environment other than making use of available infrastructure. The industrial strategy of connecting industrial areas to logistic hubs through Cargo Oriented Development (COD) had no impacts since by its nature it was supporting the establishment of logistics hub strategy.

It is important to note however that, certain strategies within the Master Plan are highly interdependent and one cannot be implemented or realised without the other. For example, the regional strategy of linking with LAPSSET, Central Corridor and Kampala-Juba-Addis-Ababa-Djibouti Corridor, cannot be implemented without the transport strategy of enhancement of transport infrastructure because, establishment of the inland waterway linkage routes is to some extent, largely dependent on rehabilitation of the ports on the lake, and therefore, the impacts of both these strategies would need to be considered.

#### *Cumulative Impact Assessment*

Cumulative Impact Assessment (CIA) is a systematic procedure for identifying and evaluating the significance of impacts from multiple activities. The CIA undertaken during this SEA, as guided by the guidelines for Cumulative Effects Assessment in SEA of Plans (Cooper, 2004), indicated the following:

- Cumulative impacts will not be realised in some instances because other innovations aimed at streamlining developments within the NEC, contain similar projects as the Master Plan for example, the following:-
  - Under the NCIP (designed to generate sustainable political will to fast track the implementation of the projects identified in the Northern Corridor) - Standard Gauge Railway, ICT Infrastructure, Oil refinery development, Power generation, transmission and interconnectivity, Crude oil pipeline development, Refined petroleum products pipeline development, Commodities exchange, Single customs territory;
  - Under Vision 2040 (conceptualized around strengthening the fundamentals of the economy to harness the abundant opportunities around the country) - oil and gas, tourism, minerals, ICT business, trade, water resources, industrialisation, and agriculture. On the other hand, the fundamentals include: infrastructure for (energy, transport, water, oil and gas and ICT); and
  - Under The second National Development Plan (NDP II) (designed to propel Uganda towards middle income status by 2020, in line with the aspirations of Uganda's Vision 2040) - Agriculture, Tourism, Minerals, oil and gas, Infrastructure development.

Therefore, even without implementation of the Master Plan, if these other PPPs are implemented, these impacts will still be realised.

However, there are other PPPs, which if implemented, even within the Master Plan itself alone ( eg a combination of different industrial, transport and regional strategies), will result in cumulative impacts (particularly those PPPs affecting the same receptor, or PPPs that would need to be implemented at the same time/within a short time period of the other).

This is particularly true for the cumulative impacts arising from the interactions between the following interventions, which would result in the significance ratings indicated in (*Table 1.12*):-

- Linking agricultural productive areas and mineral resources areas through development of secondary cities;

- Linking with LAPSSSET, central corridor and Kampala-Juba-Addis Ababa- Djibouti Corridor;
- Establishment of logistic hubs with ICD and Logistic Centre;
- Connecting industrial areas to logistic hubs through Cargo-Oriented Development (COD);
- Promotion of growth drivers to increase export, reduce import, and develop local economy;
- Reduction of bottlenecks of freight traffic and logistics; and
- Land and urban development under Vision 2040.

As is evident from (Table 0.12), significant cumulative impacts are:

- Impacts on the integrity of water bodies;
- Impacts on soils and geology; and
- Impacts on biodiversity within protected areas.

This is mainly as a result of the more than one of the proposed PPPs being implemented in the same locality/receptor. The overall significance of the impact of noise and vibrations however, can be reduced if the PPPs are not implemented at the same time – although the impact itself would be felt for longer due to the combination of PPPs ie one after another.

**Table 1.12** *Cumulative Impacts*

<b>Impact</b>	<b>Significance</b>
Impact on the integrity of water bodies	Very large
Impacts on soils and geology	Very large
Impacts on air quality (Greenhouse gases emissions)	Slight
Impacts on air quality (Dust emissions)	Moderate
Noise and vibration impacts	Large
Visual intrusion	Slight
Impacts on biodiversity within protected areas	Very large
Impacts related to land-take and disruption of livelihoods	Large
Impacts on public health and safety	Large

## Climate Change Vulnerability Assessment

Based on a climate change vulnerability assessment, issues associated with the implementation of the regional, industrial and transport strategies associated with the NEC Master Plan were found to include:

**Table 1.13 A. Greenhouse Gas Emissions**

Strategy	Option	Potential Impact on Climate Change
Transport	Modal shift from truck to rail and pipeline.	This strategy option will <u>reduce</u> greenhouse gas emissions in the long term. The trains to be run on the proposed SGR will be electric and transportation of oil via pipeline is likely to require significantly less energy than trucking or using rail – hence reduced emissions.
	Reduction of bottlenecks of freight traffic and logistics.	This strategy option will <u>increase</u> greenhouse gas emissions. Removal of bottlenecks will most likely result in a spike in traffic volumes, especially road traffic that is currently constrained by these bottlenecks which will result in a corresponding increase in emissions from the increased traffic.
Industrial	Promotion of growth drivers to increase exports, reduce imports, and develop the local economy.	This strategy option will <u>increase</u> greenhouse gas emissions as this option is likely to intensify the supply side of the economy. Processes associated with the development and operation of mineral and agricultural production industries, where GHGs are emitted, may result in the release of these emissions into the atmosphere.

**Table 1.14 B. Flooding**

Strategy	Options	Potential Impact on Climate Change
Transport	Enhancement of transport infrastructure	Development of impervious infrastructure is likely to result in increased surface water runoff, which may lead to flooding in flood prone areas if the drainage systems associated with the infrastructures are not properly developed to contain surface runoff, and prevent flooding.
	Reduction of bottlenecks of freight traffic and logistics	

Strategy	Options	Potential Impact on Climate Change
Regional	Linking agricultural productive areas and mineral resources through development of secondary cities	Development of secondary cities (currently planned for Mbarara, Gulu, Arua and Mbale) will result in major infrastructural development that increase paved surfaces areas – resulting in increased surface water runoff, which is exacerbated if drainage systems are not properly designed, constructed and maintained. Additionally, development of secondary cities could encroach on green field sites such as wetlands which are supposed to regulate water flow thereby exacerbating the flooding situation. This is particularly important for Mbarara and Gulu districts – which are prone to flooding.
Industrial	Establishment of logistic hubs with ICD and Logistic Centre	Establishment of logistic hubs is likely to result in an increase in the pave surface area which can also have an effect on runoff speeds/flooding potential.

In light of the above, climate change adaptation strategies such as Sustainable development goal 9 - “*Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation*” (SDG, 2015), integration of climate into existing infrastructure risk assessments and, climate proof building need to be considered.

With regards to agricultural production areas - promote agricultural best practices, sustainable utilisation of agricultural products and, new technologies in processing and industry to enhance cleaner production.

Traffic management in secondary cities to reduce traffic congestion and emissions and promoting investment in low-carbon emissions, should also be considered.

### **Mitigation and Management**

Following the identification of the key environmental and social impacts associated with the implementation of the Master Plan, a number of key recommendations for the minimisation of negative impacts have been identified.

Key among these, based on the components of the environment likely to be most affected by the proposed NEC Master Plan (despite the strategy(ies) chosen for implementation), are the mitigation measures and monitoring recommendations linked to the management of impacts on water resources and biodiversity within protected areas traversed by the NEC.

Linked to the above, a number of Government Institutions will need to be involved in the monitoring of impacts associated with the implementation of the Master Plan and it is therefore essential that the capacity of these institutions is developed, so as to allow them to duly undertake their responsibilities during implementation.

SEAs are designed to complement, not replace EIAs within the planning process therefore, it is imperative that EIAs for specific infrastructure projects are undertaken and that, these follow the SEA of the NEC Master Plan to ensure that local/project-specific issues are evaluated in detail, and the 'broader' mitigation measures under this Master Plan considered.



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# 1 INTRODUCTION

## 1.1 OVERVIEW

The Northern Economic Corridor (NEC) is defined as all the transport infrastructures and facilities providing a gateway through Kenya to the landlocked economies of Uganda, Rwanda, Burundi and Eastern DR Congo. It also serves South Sudan.

The NEC is multi-modal: consisting of road, rail, pipeline, and inland waterways transport, and is recognized as a significant corridor for logistics in East Africa. It is recognized as one of the major economic corridors in Africa.

The main road network that makes up the NEC runs from Mombasa Sea Port through Kenya and Uganda to Rwanda and Burundi, and to the Democratic Republic of Congo (DRC). The road network also links Kenya and Uganda to Juba in South Sudan.

The importance of the NEC is increasing, and the current combined transit and trans-shipment traffic through the Corridor has been growing at a rate of 20 percent annually (JICA Study Team, 2015). However, there are some obstacles in the NEC that include:

- Inadequate infrastructure;
- Poor interconnectivity of transport modes;
- Long delays (stagnation) of cargo at the port and broad post; and
- Lack of goods to transport for the return trip from the inland area to Mombasa Port.

These obstacles raise the transport cost within the Corridor, which accounts for about 30 percent of the value of the goods (JICA Study Team, 2015).

The above mentioned impediments are increasingly being recognised as some of the factors that are hindering economic development of the region, particularly the inland area.

The Governments of Uganda (GoU) and Kenya therefore requested the Government of Japan (GoJ) to implement a project to formulate a master plan on logistics in the NEC in order to promote regional development. In response to these requests, the Japan International Cooperation Agency (JICA) dispatched a 'Detail Design Formulation Team for the Project' in October and November 2014. The Team proposed to develop a concept that would cover not only logistics, but also regional development along the NEC. The Governments of Kenya and Uganda agreed with the concept and signed the Record of Discussion with JICA for the implementation of the *Project for Formulation of the Master Plan on Logistics in the Northern Economic Corridor* (the Master Plan).

In order to ensure that potential environmental and social challenges attributed to the Master Plan are addressed holistically and in a proactive manner, it was decided that the Master Plan be subjected to a Strategic Environmental Assessment (SEA) - "*an assessment that is implemented at the policy, planning, and program levels, but not a project-level EIA (JICA, 2010),*" in line with JICA's environmental and social guidelines, as well as the prevailing in-country environmental legal and regulatory framework.

The SEA process in Uganda was undertaken by Environmental Resources Management (ERM) and Atacama Consulting, the latter being a Uganda Environmental Consultancy firm.

## 1.2 **PURPOSE OF THE REPORT**

The purpose of this SEA Study Report is to present the findings of the SEA. Specifically, it presents the key environmental and social impacts that will be associated with the implementation of the NEC Master Plan and the recommendations for the minimisation of negative impacts and enhancement of positive impacts.

It is important to note that due to the nature of this assignment <sup>(1)</sup> a high level assessment needed to guide decision making on the Master Plan has been conducted. Future projects that will be identified as part of programmes emanating from the Master Plan will need to be subjected to independent ESIA where project-specific impacts will be identified and appropriate mitigation measures identified for the minimisation of the negative impacts (as well as enhancement of positive ones).

(1) it is an SEA and not an Environmental and Social Impact Assessment (ESIA)

### 1.3 *AIM OF THE SEA*

The overall aim of the SEA was to ensure that environmental and social considerations are well integrated into the Master Plan.

The integration process meant that the SEA was undertaken in parallel with the Master Plan formulation process. This way, environmental and social considerations were addressed in a proactive manner so as to better inform the decision making processes.

Some of the key objectives of the SEA were to:

- Describe, identify and assess the potential significant effects on the environment of implementing the Master Plan;
- Furnish decision makers of both Governments (GoU and GoJ) with the relevant information required to make informed choices about the sustainability of the Master Plan; and
- Provide robust recommendations on mitigation and management measures that are to be factored into the Master Plan, with negative impacts being minimised and positive ones enhanced.

### 1.4 *MASTER PLAN PROPONENT*

In Uganda, the Master Plan Proponent is the Ministry of Works and Transport (MoWT). MoWT has a mandate to plan, develop and maintain an economic, efficient and effective transport infrastructure; and transport services by road, rail, water, and air. They are also mandated to manage public works including Government Structures, and promote standards in the construction industry. MoWT also aims to promote adequate, safe and well maintained public works and transport infrastructure and services so as to effectively contribute to the socio-economic development of the country.

### 1.5 *SEA STEERING TEAM*

An SEA Steering Team was also formulated to steer the implementation of SEA and give approval from relevant organisations. The Steering Team was facilitated to guide and review the work of the SEA team throughout the duration of the consultancy.



The Team consisted of representatives from MoWT, Ministry of Finance, Planning and Economic Development, Ministry of Trade Industry and Cooperatives, Ministry of Energy and Mineral Development, Ministry of Water and Environment, Ministry of Agriculture, Animal, Industry and Fisheries, Ministry of Local Government, Ministry of Information, Communication and Technology and JICA.

## 1.6 *MASTER PLAN STUDY TEAM*

The JICA Study Team (JST), consisting of 16 experts with the following expertise, is currently undertaking the Master Plan study in both Uganda and Kenya:

- Team Leader/ Development Planning;
- Logistics Plan;
- Infrastructure Development;
- Logistics Infrastructure 1;
- Logistics Infrastructure 2 (Railway);
- Freight Traffic Analysis and Demand Forecasting;
- Industrial Development and Investment Promotion;
- Public-Private Partnership;
- Mineral Resources and Energy;
- Power;
- Agriculture and Agri-Business;
- Urban Development/Land Use Specialist;
- Water;
- Economist (Socio Economic Analysis);
- Environmentalist (Social and Environmental Consideration); and
- Coordinator/Human Resource Development.

## 1.7 *SEA CONSULTANTS*

### 1.7.1 *Environmental Management Resources (ERM)*

ERM is a global environmental consulting organisation with over 150 offices in 40 countries employing more than 5,000 people. ERM, the world's leading sustainability consultancy, has operated throughout Africa for over thirty-five years, and its Sub-Saharan Africa Business Division with over 200 employees, is currently based in South Africa (Cape Town, Durban and Johannesburg), Mozambique (Maputo) and East Africa (Nairobi).

## 1.7.2 *Atacama Consulting*

Atacama Consulting is a leading environmental consultancy firm based in Kampala, Uganda. The firm was established in 2004 with the sole purpose of providing cutting edge consultancy services in the environmental management arena and related areas. Atacama's core service areas include; Environmental related Trainings, Environmental Assessments and Audits, Evaluations, and Technical Advice and Policy Analysis. The firm is registered with the Uganda National Environment Management Authority (NEMA) for purposes of conducting environmental assessments.

Both ERM and Atacama were appointed by JST to undertake the SEA for the Master Plan. ERM/Atacama and any specialists appointed by ERM during the course of this SEA have no financial ties to, nor are they a subsidiary, legally or financially, of the JST.

## 1.8 *REPORT STRUCTURE*

The Structure of this SEA Report is as follows:

**Table 1.1** *SEA Report Structure*

<b>Section</b>	<b>Contents</b>
Chapter 1 Introduction	Contains a brief overview of the NEC and the Master Plan, purpose of the report, Master Plan objectives, aim of the SEA, PPP owner, SEA consultants and an outline of the report structure.
Chapter 2 Description of the Northern Economic Corridor Logistics Master Plan	Contains a description of the NEC Master Plan and its extent.
Chapter 3 Legal and Institutional Framework	Outlines the legislative and policy requirements applicable to the PPP
Chapter 4 Methodology and Approach	Outlines the approach to the SEA and summarises the process undertaken to date.
Chapter 5 Environmental Baseline	Describes the receiving environmental baseline environment.
Chapter 6 Socio-economic Baseline	Describes the receiving socio-economic baseline environment.
Chapter 7 Stakeholder Engagement	Presents the objectives of stakeholder engagement, stakeholder identification and mapping, stakeholder consultations undertaken and the outcomes of stakeholder engagement.

Section	Contents
Chapter 8 Analysis of Alternatives and Strategy Options	Describes alternative PPP options that have been considered and compared against environmental indicators, a justification for the preferred alternatives and alternative policy, options and strategies.
Chapter 9 Key Impacts	Describes the key environmental, socio-economic and cumulative impacts, and the linkages with ongoing projects and how they fit in the proposed PPP
Chapter 10 Mitigation and Management	Specifies the mitigation and management measures to be undertaken
Chapter 11 Conclusions and Recommendations	Presents the conclusions and recommendations made for proper implementation of the Master Plan.

In addition, the Report includes the following annexures:

*Annex A: Stakeholder Engagement Plan (SEP)*

This *Chapter* provides an overview of the Northern Economic Corridor (NEC) and Master Plan. The main source of information for this *Chapter* is the Master Plan on Logistics in the Northern Economic Corridor - Interim Report (2016) prepared by the JICA Study Team (JST).

## 2.1 ***BOTTLENECKS TO EFFICIENT CARGO TRANSPORTATION***

According to the JST (2016), bottlenecks to efficient cargo transportation, which have hindered the economic development of the region, include:

### 2.1.1 ***Road Congestion***

This occurs mainly around Mombasa, Nairobi, Nakuru, Eldoret, Kisumu and Malaba in Kenya and also around Jinja, Kampala and Entebbe in Uganda. The congestion around these points is caused by both cargo and passenger traffic. According to the JST (2016), while improvement of existing road networks and construction of new ones have been aggressively implemented, road congestion still remains a serious problem.

### 2.1.2 ***Mombasa Port Operations***

Mombasa Port is the only international seaport on the NEC, and while the Port has implemented projects with capacity expansion and efficiency improvement, these developments have not matched the 10 percent average annual growth rate in demand for import cargo registered in the past five years (JST, 2016). As the container terminal construction and cargo handling improvement cannot catch up with the rapid increase in cargo demand, this translates to longer time at the Port.

In addition to the congestion of Mombasa port, Mombasa city is characterised by inadequate road capacity and inappropriately sited container freight stations. These factors make Mombasa to be the most heavily congested section by trucks in the NEC (JST, 2016)

### 2.1.3 ***Cross Border Delays***

One Stop Border Post (OSBP) projects have greatly contributed to improved operational efficiency but it still takes long time to cross the borders.

At the Malaba border located between Kenya and Uganda, for example, queues of more than 3km are commonly witnessed during the daytime. In addition, custom clearance procedures are still inefficient due to a lack of human capacity, electricity, internet communication, inadequate parking lots, and access roads, amongst others

## 2.2 *OBJECTIVES OF THE NEC MASTER PLAN*

Based on the bottlenecks described in *Section 2.1*, the overall objective of the Master Plan is to therefore to improve logistics for the NEC as well as to provide an integrated regional development strategy consistent with sub-regional and national development plans. It is hoped that this will spur regional economic development within Kenya and Uganda.

## 2.3 *TARGET AREAS*

The target area of the Master Plan study covers the following routes and surrounding areas (see *Figure 2.1* below):

- **Main route**
  - Mombasa – Nairobi – Tororo –Kampala – Katuna – Kigali (Rwanda)
- **Sub-routes**
  - Eldoret – Nadapal – Juba (South Sudan)
  - Tororo – Gulu – Elegu – Juba
  - Kampala – Gulu – Elegu – Juba
  - Mbarara – Mpondwe – Kisangani (DRC)

Figure 2.1 Routes of the Northern Economic Corridor



Source: JST, 2016

## 2.4 REGIONAL STRUCTURE PLAN

The significant issues with regards to the current spatial structure include an excess of imports and the concentration of functions on the respective country's capitals. The rate of import and export of East African Community (EAC) countries are 92 percent and 8 percent respectively, meaning that most of the income is outflowing to outside of the region. The area within a 50 km radius of Nairobi and Kampala accounts for 33 percent and 37 percent of the urban population in Kenya and Uganda respectively. Nairobi for instance, generates 40-50 percent of the GDP in Kenya, according to Kenya Vision 2030.

Three alternative spatial structures for the NEC were examined, taking into account the following factors:

- i) *regional industrial development*: promoting regional industrial development;
- ii) *urban centers of the region*: centralizing urban functions or decentralizing; and
- iii) *Transport network*: promoting regional linkage.

These alternatives are discussed separately in the Alternatives Chapter of this report (*Chapter 7*). The preferred alternative for the NEC, as concluded by the JST (2016) is described in this *Chapter* in *Section 2.9* below.

## 2.5 *SECTOR DEVELOPMENT IN KENYA AND UGANDA*

### 2.5.1 *Industrial Development*

Despite primary commodities production from both the agricultural and mining sectors in Kenya and Uganda, value-addition within both countries is limited. Some products consumed in the domestic and/or regional market are processed; these products include primarily dairy and meat products and cement production, based on limestone deposits.

Kenya does have a relatively developed system of industries and a connection to the export market through the Port of Mombasa, as well as a relatively well facilitated air cargo network. The connectivity advantage further gives Kenya opportunities for an increased share in the domestic and regional markets. As such, Kenya's industrial development should expand the production not only of currently available products, but also of products which can serve the multiple sectors across the region.

Uganda's value addition activities are still at the infancy stage. Manufacturing using imported materials does occur, and this serves both the domestic and export market in the other corridor countries, such as the DRC and South Sudan.

### 2.5.2 *Agriculture Development*

With regards to agricultural development in Kenya, the candidate agricultural products selected as growth drivers for the Project include tea, coffee, cut flowers, processed fruits and vegetables, rice, and meat products.

With regards to agricultural development in Uganda, the candidate agricultural products selected as growth drivers for the Project include coffee, oil seed, palm oil, rice, meat production, and maize.

These growth drivers were selected based on future demand from the global, regional, and domestic markets.

### 2.5.3 *Mining and Petroleum Sector Development*

Coal, crude oil, natural gas, soda ash, niobium and rare earth elements will be growth drivers for the mining and energy sectors in the NEC region in Kenya.

Petroleum and crude oil will be growth drivers in the NEC region for Uganda.

With regards to the expansion and extension of the regional oil product pipeline, construction of an oil product pipeline in the East African Community (EAC) member nations has been endorsed by EAC member nations, and the project is considered to have the potential to contribute to the economic development, as well as energy security, in the region.

The pipeline system in Kenya will be extended further and tied into Uganda's system, and further extended to Kigali in Rwanda, and/or Tanzania.

### 2.5.4 *Manufacturing Sector Development*

Growth drivers for Kenya's and Uganda's manufacturing sector are provided in *Table 2.1* and *Table 2.2* below:

**Table 2.1** *Categories of Kenya's Manufacturing Growth Drivers*

<b>Category</b>	<b>Timeframe for Development</b>	<b>Examples of Industries</b>
Processing for domestic and regional market	Short to mid-term	Construction materials ( eg, iron and steel, glass), consumer goods ( eg, soaps and detergents, processed foods), plastics packaging
Export-oriented light manufacturing	Short to mid-term	Note: It can be both heavy and light industry. Textile and apparel, Leather



**Table 2.2** *Manufacturing sector in Uganda*

<b>Industries</b>	<b>Production and Income Increase</b>
Construction materials ( eg, iron and steel)	The demand in domestic and regional markets will provide the income through the industry.
Consumer goods ( eg, soaps and detergents)	The demand in domestic and regional markets will provide the income through the industry.
Leather	World market is growing.

### 2.5.5 *Tourism Sector Development*

Kenya Vision 2030 has identified tourism as one of the six priority sectors. However, limited resources, poor infrastructure and facilities in and around the national parks, and security concerns have been cited as barriers for the sector’s development. The development of cities as tourism hubs will generate additional flow of goods and passengers along the NEC, and the Corridor will also serve as a key infrastructure to tourist sites.

In Uganda, the total number of visitors has largely increased in recent years, although the rate of increase in tourism numbers year-on year has become slow and unstable. Six Tourism Development Areas (TDAs) are designated according to the current major and potential destination locations. TDAs will be connected to each other by air or by road, and the NEC will act as the necessary infrastructure to ensure access to most of these TDAs, which will serve to boost regional development.

### 2.6 *KEY GROWTH DRIVERS*

Key growth drivers considered in both Kenya and Uganda include those which will:

- i) Expand domestic and regional, and international markets for net profit;
- ii) Produce strategic products or industries which provide significant solutions for industrial structure upgrading; and
- iii) Includes industries with strong forward and backward linkages.

Growth drivers categorized for both Kenya and Uganda are shown below.

**Table 2.3 Candidates for Growth Drivers**

Source of Growth	Kenya	Uganda
i) Expanding domestic and regional, and international markets for net profit	<ul style="list-style-type: none"> <li>• Soda Ash, Niobium and Rare Earth Elements</li> <li>• Coffee, Tea, Rice, , Processed Fruits and Vegetables, Meat Products</li> <li>• Consumer Goods (soaps, cosmetics and detergents),</li> <li>• Construction Materials (cement, iron and steel)</li> </ul>	<ul style="list-style-type: none"> <li>• Coffee, Dairy Products, Consumer Goods ( eg, soaps and detergents), Leather Products, Rice, Maize, Construction Materials (iron and steel), Meat Products</li> </ul>
ii) Strategic products or industries which provide significant solutions for industrial structure upgrading	<ul style="list-style-type: none"> <li>• Crude Oil</li> <li>• Coal, Natural Gas</li> </ul>	<ul style="list-style-type: none"> <li>• Crude Oil</li> <li>• Petroleum</li> <li>• Phosphate</li> </ul>
iii) Industries with strong forward and backward linkages	<ul style="list-style-type: none"> <li>• Cut Flowers</li> <li>• Apparel Industry, Leather Industry, Packaging</li> </ul>	<ul style="list-style-type: none"> <li>• Oil Seeds</li> <li>• Other Minerals ( eg, gold, iron ore), wolfram, tin, tantalite, copper etc.) Palm Oil</li> </ul>
iv) Other Services	<ul style="list-style-type: none"> <li>• Tourism, Logistics Services</li> </ul>	<ul style="list-style-type: none"> <li>• Tourism, Logistics Services</li> </ul>

The above 35 growth drivers have the potential for:

- i) Increasing exports to the East African region or international markets;
- ii) Decreasing imports through the expansion of domestic production; and

iii) Increasing the contribution to add value to the local economy.

## 2.7 *TRANSPORT AND LOGISTICS INFRASTRUCTURE DEVELOPMENT*

### 2.7.1 *Overview*

The current transport and logistics situation for the NEC is that the movement of cargo is heavily influenced by road traffic congestion, the operation of the Mombasa Port, and cross border operations.

For future operations, other important aspects such as how the corridor interacts with both the central and Lamu Port Southern Sudan-Ethiopia Transport (LAPSSET) corridors, how to deal with an increasing demand in logistics for minerals from Uganda, DRC and South Sudan to the port of Mombasa, and how to develop local industries and promote local products for export, needs to be considered.

### 2.7.2 *Current and Future Gaps*

#### *Roads in Kenya*

Major bottlenecks for road traffic are witnessed in the city centers of Mombasa, Nairobi, Nakuru, Eldoret, Kisumu and their surrounding areas, as well as around the borders of Malaba (in Kenya) and Busia (in Uganda), Mombasa Port and at railway stations.

Currently very long queues of trucks and trailers of more than 2km can be seen in both Mombasa urban areas and at Malaba's border area during the day.

Although the road surface on the main route is generally good, heavy trucks cause a deterioration in the road surface over relatively short periods of time. There is a need, therefore for continuous improvement and maintenance of the road network, to meet increasing traffic demand, for both safe and efficient logistics and passenger transport.

### *Roads in Uganda*

In Uganda, bottleneck points for road traffic can be seen in the city centers of Kampala, Entebbe and Jinja. Passenger car demand is greater than cargo truck demand. Therefore, such bottlenecks should be dealt with through an urban transport management plan, rather than through cargo traffic management.

Bottleneck points also exist at the Malaba border with Kenya, and around the Inland Container Depots (ICDs) and railway cargo station in Kampala. In order to unlock the bottlenecks, it will be necessary to expand network capacity by construction of new expressways, bypasses, ring roads, over/under passes, additional climbing lanes and conducting traffic demand management.

### *Railways*

Rift Valley Railways (RVR) has invested in infrastructure and equipment but overall, it appears to have lost market share of cargo transportation to trucking. Further strengthening of track and infrastructure and additions to rolling stock should be considered to enable RVR to increase its cargo share.

The project to implement a standard gauge railway (SGR) serving the NEC has been commissioned, with the line between Mombasa and Nairobi expected to be complete, and in operation, by June 2017. The SGR project has as its objective, the provision of a world class railway service along the NEC, and to increase its competitive advantage by increasing its market share of cargo from trucking to rail.

### *Port*

Although dwell time and loading/unloading times in the Mombasa Port have significantly reduced, it still takes too long to import and export cargo, to clear customs and to move cargo out of the port. Dwell time and loading/unloading times are the dominant factors in the total travel time for cargo in and out of the Mombasa port.

The roads within the Mombasa urban area are also heavily congested, resulting in cargo traffic rendered immobile during the day-time. The most fundamental problem is an inadequate road network and the capacity of the trunk road, with an urgent need to construct the Southern by-pass. Moreover, relocation of Container Freight Station (CFSs) services outside the port should be considered in the short term in order to avoid a concentration of cargo traffic on the Mombasa Port road.

### *Waterways*

Currently only one ferry is in operation and very few boats come to Port Bell (in Uganda) from Kisumu port (in Kenya). Cargo throughput at Port Bell in Uganda has rapidly declined since 2005, with only 8,100 tons of cargo handled in Port Bell in 2014; this in relation to the peak figure of 478,115 tons of cargo handled in 2002.

Strategic targeting of several cargos with potential demand for lake transport as a form of transport should be considered. In this regard, inter-regional trade or Expected Further Clearance (EFCs') trade with both Uganda and Tanzania, as well as international trade, should be investigated. Kisumu and Port Bell should be well linked with Mwanza port (in Tanzania), through an improvement in infrastructure of wagon/car ferry ports, as well as through the provision of new vessels, including car ferries and passenger vessels.

### *Pipelines*

Demand for petroleum products has increased significantly and a further increase is forecast. In addition, transit oil products to inland countries adjacent to Kenya, including Uganda, South Sudan, the DRC, etc. are also increasing. The majority of these transit oils are transported via Kenya's pipeline system. In order to meet the increasing demand, the capacity of the pipeline needs to be expanded. Currently, Line 5 is under construction so as to increase the capacity of the oil pipeline from Mombasa to Nairobi, replacing the old (Line 1) system. The Line 3, from Sinendet to Kisumu, will also be replaced with Line 6. Line 2 will also be decommissioned at the time of upgrading of Line 4.

### *Border Posts*

The most serious bottleneck is the east side border between Kenya and Uganda, especially at the Malaba border, where the largest number and longest queues of heavy goods vehicles are witnessed. Projected future bottlenecks are also expected to occur on the DRC borders, such as the Mpondwe and Goli border posts, where border infrastructure is insufficient, despite the fact that future cargo demand will probably increase due to DRC's envisaged increases in mineral and timber export.

### *Inland Container Depots (ICDs)*

Although the Kenya Ports Authority (KPA) currently operates two Inland Container Depots (ICDs), namely one in Nairobi (in Embaski) and the other in Kisumu, their performance is relatively low.

The Embaski ICD for instance, has an annual handling capacity of 180 000 Twenty Foot Equivalent Unit (TEU's), but less than 10 percent of this capacity is utilized. The Kisumu ICD has almost stopped operations due to the collapse of the railway service to Western Kenya from 1994. The low performances of ICDs are due mainly to poor railway performance, delays, unreliable service, and low frequency of trains, amongst other factors.

Construction of the new Mukono ICD in Uganda was completed in July 2015 and as such, all container cargo handling will be shifted from the current Kampala railway terminal from the beginning of 2016. The location of the new Mukono ICD is strategically located along the Kampala-Jinja highway, allowing for ease of access for both the Kampala city and industrial areas.

### **2.7.3 *Future Total Freight Forecasting***

Total freight forecasting shows that total import freight (tonnage/year) from the port of Mombasa is projected at 57 million tons in 2030, growing 2.4 times from the 24 million tons of freight in 2015. Total export freight in 2030 is estimated at 4,650 thousand tons, growing 1.9 times from the 2,451 thousand tons in 2015.

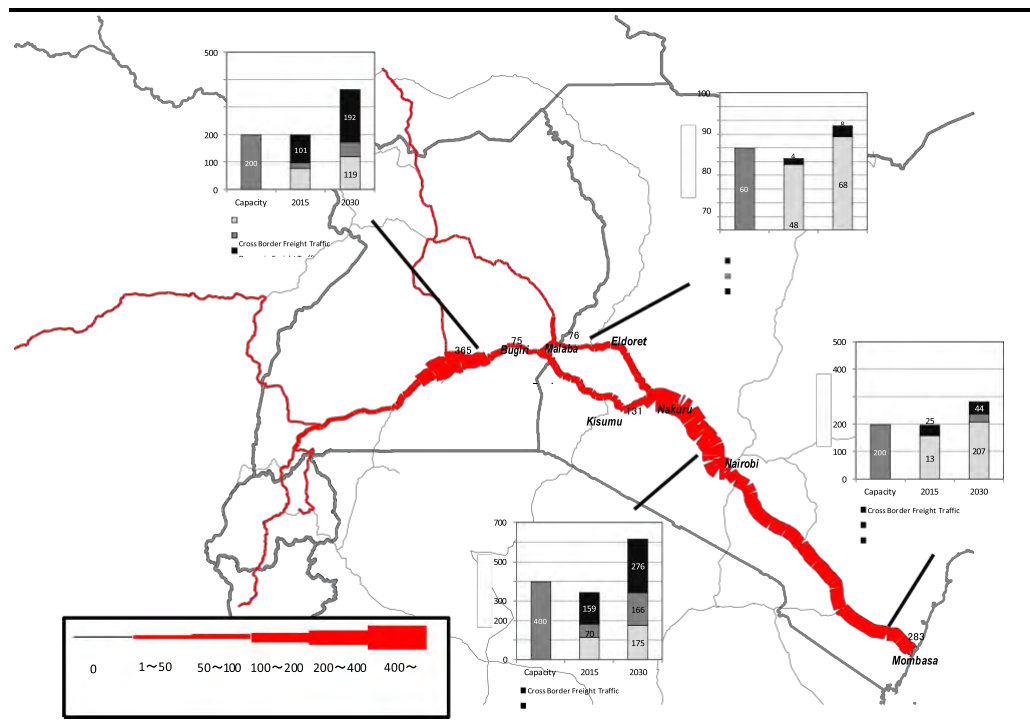
From the forecast results, it is predicted that the SGR and MGR railway share will become at least 50 percent between the Mombasa port and those zones with main railway stations.

### **2.7.4 *Future Traffic Forecasting***

*Figure 2.2* indicates shows the main bottlenecks on the road by 2030, where:

- Maximum traffic for the cubic feet (CBFT) in 2030 is estimated at 21,000 pcu/day, on the section between Nairobi and Mombasa;
- In the future, total traffic will exceed 30,000 passenger car units per day (pcu/day) between Nairobi and Nakuru, and around the Kampala area.

**Figure 2.2 Bottlenecks on the Road in 2030**



Source: JST, 2016

## 2.8 DEVELOPMENT SCENARIO FOR TRANSPORT AND LOGISTICS INFRASTRUCTURE DEVELOPMENT

### 2.8.1 Scenario Modelling

Several scenarios emerge from the future demand forecasting, which are described below:

- In the Base case in 2030, railway is forecasted to carry 20.4 million tons of cargo per year, and will achieve a market share of 33 percent between truck carrying cargo, railways and pipelines, for cargo at the Mombasa port. If the pipeline is excluded, railway will achieve a market share of 42 percent, with the truck cargo's share at 58 percent.
- In the Optimistic case for 2030, railway is forecasted to carry 28.5 million tons per year, obtaining a 46 percent share amongst truck carrying cargo, railways and pipelines for cargo at Mombasa port. If the pipeline is excluded, the share is 59 percent for railways, whereas truck carrying cargo's share is 33 percent. The Optimistic case is as highly effective case for controlling truck use, even though total ton-kilometers by trucks will increase by 22 percent, from 19,809 million ton kilometers to 24,283 million ton-kilometers.

- In the Pessimistic case for 2030, railways are forecasted to carry 9.2 million tons per year, obtaining a market share of 15 percent amongst truck carrying cargo, railways and pipelines for cargo at Mombasa port. If the pipeline is excluded, the market share for railways is 19 percent, whereas for truck carrying cargo it is 81 percent.

## 2.8.2 *Transport Network Improvements*

Based on these scenarios, the following improvement scenarios for the NEC, to result in transport improvements, should be achieved:

- The NEC should be built as a **Comprehensive Multimodal Transport System** consisting of road transport, railways, airways, waterways and pipelines in order to effectively utilize the existing and planned assets of infrastructure, to maximize efficiencies and to provide for eco-friendly transport in the future.
- **A Modal shift from truck to rail and other modes of transport is a key issue in the Northern Economic Corridor in the near future.** Currently 95 percent of cargo from Mombasa port to EACs is reported to be carried by truck. Railway is usually a cost-efficient mode for long distance, heavy and large volumes of freight (such as coal, cement, construction materials etc.). In future, railways (and in particular, the SGR) should be used more for cargo transport. Moreover, the pipeline should be promoted for oil transport; and inland water transport on Lake Victoria should be revived as an eco-friendly transport means, especially between Kenya, Uganda and Tanzania.
- **Improvement of the bottlenecks and safety on roads is urgently required;** particularly in Mombasa, Nairobi, Nakuru, Eldoret, Kisumu, Kampala and their surrounding areas. There is an increasing traffic demand, and bottlenecks of road traffic around these areas is steadily worsening; it is therefore necessary to expand the capacity of the road network through road widening.
- **Logistics hubs** near the Mombasa port, railway and airport cargo terminals, at the junction of major roads, at ICDs and borders, and within industrial park developments (for manufacturing, warehousing, fishery /agricultural/ timber processing etc.) should be planned. Such development can be referred to as Cargo-Oriented Development (COD), and will activate regional economic vitality, will create jobs and effectively promote international trade.



As a result, it would lead to an improvement between the import and export of cargo, and will decrease the number of unloaded trucks and empty containers on the road back to the Mombasa port.

- **Transit times for import** must be improved through improved customs procedures at both the Mombasa port and border posts.

## 2.9

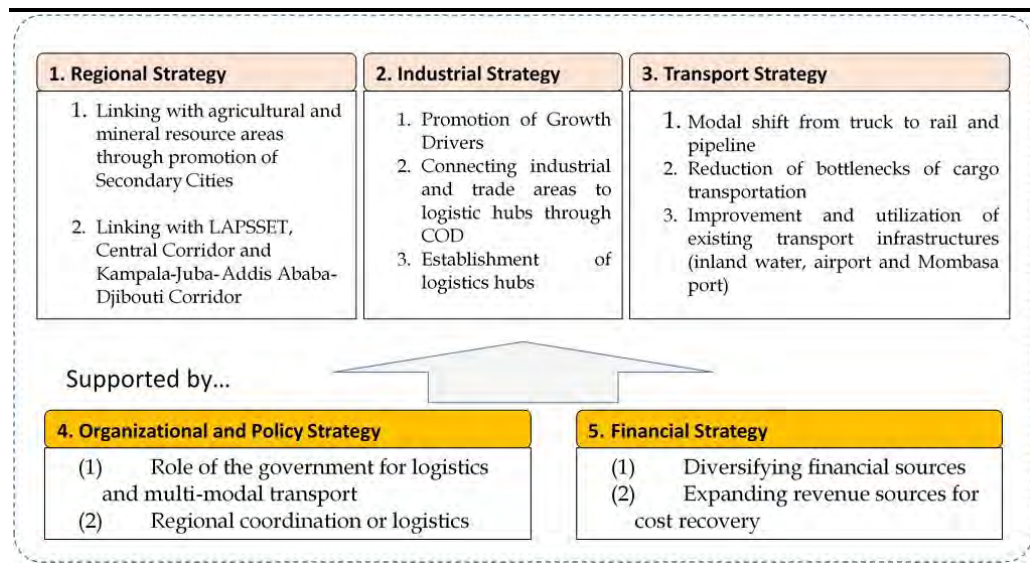
### *DEVELOPMENT VISION AND STRATEGIES*

The development vision for the NEC is: *'to be the leading economic corridor with integrated transport and logistics systems in Africa'*. The Development Vision has four key words/phrases which make the NEC distinct from other corridors, and these are:

- *Leading*, to be the leading, most efficient and reliable in Africa and the success can be applied to other corridors;
- *Integrated transportation system*, which offers diversified and multi-modal options (road, rail, waterway, and pipeline) and facilitates regional integration in East Africa;
- *Integrated logistic hub*, in which multi-modal options are available, and industrial areas connected and promoted by transport and logistic infrastructure; and
- *Economic corridor*, stimulate regional economic development in the area surrounding the corridor through development of transport infrastructure, logistic facilities and creating industries (JST, 2016).

The proposed Development Vision will be attained through the implementation of 5 strategies, namely regional, industrial, and transport strategies, which will be strengthened by organizational and policy strategy as illustrated in *Figure 2.3* below and summarised in the *Sections* below.

**Figure 2.3 Proposed Five Strategies for the NEC Master Plan**



Source: JST, 2016

### 2.9.1 Regional Strategy: Linking Production Centres and Corridors

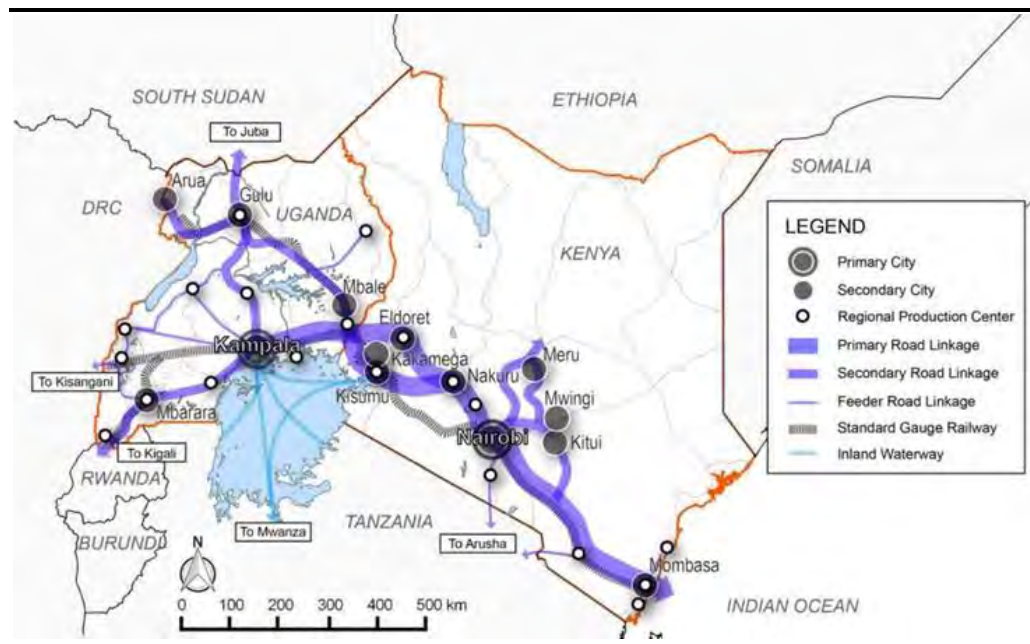
*Linking Agriculturally Productive Areas and Mineral Resources through the Development of Secondary Cities*

Major cities and economic activities have been developed along the NEC, and it is essential to link potential agricultural productive areas and mineral resources through feeder roads. In this regard, the JST proposes, as a spatial structure of the NEC, the development of multi-centers with regional development (distributing urban functions with a regional industries system), considering the distribution of growth drivers. The spatial structure plan has the following characteristics:

- i) Balanced growth and efficient logistics in the NEC region through promoting urban functions of 12 “Secondary Cities”; and
- ii) Secondary Cities that serve as regional urban centers, which supply urban services and act as logistics hubs, which connects Regional Production Centers and Primary Cities as consumption areas.

The expected impact of this regional strategy is to realize smooth movement of products and the balanced development of the NEC region. This strategy is depicted in *Figure 2.4* below.

**Figure 2.4 Proposed Spatial Structure Plan for the NEC**



Source: JST, 2016

**2.9.2 Industrial Strategy: Effective and Efficient Logistical System for Industry and Trade**

*Promotion of Growth Drivers to increase export, reduce import and develop the Local Economy*

From an industrial development viewpoint within the NEC region, 35 growth drivers consisting of manufacturing, agriculture and livestock, and energy and mining products etc. are nominated. The JST deduced that growth drivers have the potential for:

- i) Increasing export to the East African region or the international market;
- ii) Decreasing imports through the expansion of domestic production; and
- iii) Contributing by adding value to the local economy.

Candidates for growth drivers are shown in *Table 2.3*.

Connecting Industrial Areas To Logistics Hubs through Cargo Orientated Development (COD) Logistic hubs can be constructed at strategic locations such as at SGR stations, strategic cities, key industrial areas, and so on. The harmonization of such developments with industrial plans, mineral resource developments, and agricultural developments is key for transport and logistics planning.

Such developments can be referred to as Cargo-Oriented Developments (COD). The expected impact of such CODs is to realize an efficient and reliable logistics network for industry.

Special Economic Zones (SEZs) in Mombasa, Naivasha, Eldoret, and Kisumu), Industrial Parks (at Voi and Athi River) and Inland Container Depots (ICDs) at Konza City) are planned to be implemented along the NEC in Kenya.

Currently, ICDs are operational in Embakasi (Nairobi), Kisumu, and Eldoret. SGR stations will be constructed in Mombasa, Mariakani, Voi, Mtito Andei, Sultan Hamud, Athi River, Nairobi, Longonot, Narok, Bomet, Sondu, Ahero, Kisumu, Yala, Mumias and Malaba, and will be significant for transport and logistics activities in future.

If a logistic hub's catchment area is assumed to be 200km in diameter, requiring approximately three hours of travel time, making it possible to do a one days' round-trip, it becomes logical to install logistic hubs in at least 3 locations (namely Nairobi, Kisumu and Voi/Mombasa) in Kenya.

In Uganda, seven economic areas (Gulu, Moroto, Kabale, Mpondwe, Kampala, Nakasongola, Hoima) and three trade zones are proposed in the Vision 2040 document. In addition, the Vision 2040 document identifies four regional cities (Gulu, Arua, Mbale, and Mbarara) and five strategic cities (Jinja, Moroto, Fort Portal, Hoima, and Nakasongola). Cross border markets are also proposed in five border cities (Nimule, Mpondwe, Kabale, Busia, Bubulo) while ICDs are located in Mukono, Jinja, and Tororo. Gulu will be a strategic and regional location for transportation to South Sudan and Northern Uganda. Mbarara can serve as a strategic location to link with mining areas and border trade with both Rwanda and DRC. Pakwach can be a strategic and regional location to link DRC and inland waterways connecting to the oil and gas areas in Lake Albert. Soroti or Tororo/Mbale can be a strategic location for mineral resource transport from Moroto.

As in the case of Kenya, if the catchment area for the logistics hub is 200km, it is logical to install a logistic hub in at least four locations (Kampala (Mukono), Tororo, Gulu, and Mbarara) in Uganda.

### *Establishment of Logistics Hubs with ICD and Logistics Centre*

A logistic hub is defined as a center or specific area designated to deal with activities related to transportation, collection, distribution, and storage of goods for national and international transit, where traffic is exchanged across several modes of transport.

A potential logistic hub could have multi-modal facilities such as an ICD that connects railway to road, inland water, and/or an airport. In addition to multi-modal facilities, a logistic hub provides a logistic center with facilities and services such as warehousing, a distribution center, and a “one-stop shop”. Logistics Hubs therefore connect roads and railways through an ICD to domestic “door” delivery through a logistics center. Logistic hubs with ICDs and logistics centers are designed to connect with industrial parks, mineral resource areas, and agricultural zones in order to facilitate economic activities and investment opportunities.

The expected impacts of such logistics hubs will be to:

- i) Establish effective linkages between rail and truck modes;
- ii) Reduce empty container movement (by 7 percent in Mombasa);  
and
- iii) Expand local logistics service providers, based on clients’ needs.

### *Major Suggested Projects for the Industrial Strategy*

#### *Agricultural Projects*

The following projects are identified in both Kenya and Uganda for agricultural and fishery development, and agribusiness development.

**Table 2.4** *Agricultural Project in Kenya and Uganda*

Kenya	Uganda
1) Agricultural financing improvement	1) Agricultural union commercialisation support
2) Food processing hub development program	2) Irrigation Scheme Development project in Central and Eastern Uganda
3) Distribution improvement program of commercial crop	3) Fertilizer Promotion
4) Fertilizer promotion	4) Superior seed production enhancement projects for small scale sesame farmers support
5) Specialty coffee export promotion	5) Rice Production Promotion
6) Tea brand development	6) Maize promotion support
7) Flower export promotion	7) Specialty coffee export promotion
8) Value chain of livestock development	

*Industrial Development Projects*

The following projects are identified in both Kenya and Uganda for industrial development.

**Table 2.5** *Industrial Development in Kenya*

<b>Special Economic Zone Development</b>	The concept of Special Economic Zones (SEZ) is to provide quality infrastructure as well as a good business environment, together with fiscal incentives within designated areas. The locations include Dongo Kundu SEZ, Naivasha Industrial Park, Athi River Industrial Park, Machacos-Kajiado Leather Industrial Park, and Konza Tech City.
<b>Packaging industry development for food-processing</b>	The project is to assist local packaging industries to be able to supply quality packaging materials with functions such as keeping stability of processed foods or with aesthetic appearance. The project can comprise training for packing industries, research and development institutions, and agro-processing operators.

**Table 2.6** *Industrial Development in Uganda*

<b>Industrial Park Development</b>	The project concept is to ease access to land with good infrastructure and business environment. The locations include Bweyogerere Industrial Park in the suburbs of Kampala, Mbarara, Masaka, Mbale, Soroti, Gulu, and Kasese.
<b>Building capacity of Standard, Metrology, Quality Infrastructure</b>	The project is to establish standard, quality and metrology infrastructure. In addition, the institutional capacities with involvement of private sector in the area of standard, quality and metrology should be developed.
<b>Leather Industry Infrastructure Upgrading</b>	The project is to upgrade the leather industry from two aspects: improvement of the level of the processing to a higher level than wet-blue and valued raw material of quality final products; and establishing the functions for manufacturing final goods such as shoes.
<b>Marketing hubs for DRC and South Sudan</b>	While frontier markets such as DRC and South Sudan are with potential, the conditions of infrastructure and business environment should be improved through the project to extensively explore the market with actual physical presence in such countries.

*Mining and Oil Development Projects in Kenya and Uganda*

The following projects are identified in both Kenya and Uganda for mining development.

**Table 2.7** *Mining Development in Kenya*

<b>Name of Project</b>	<b>Outline</b>
Coal Transportation Infrastructure	Construction of a railway branch line from the main rail line to the coal mines in Kitui is a priority infrastructure project. The feasibility study on the coal transportation system including coal terminals should be carried out.
Expansion/ Extension of Oil Product Pipeline	Kenya has operated an oil product pipeline from Mombasa to Nairobi since 1978, and it was further extended to Eldoret and Kisumu. Due to rapid growth of imported oil product, the replacement and expansion as well as additional pipelines should be carried out.

**Table 2.8 Mining Development in Uganda**

Name of Project	Outline
Refinery and Oil Product Tailing Pipeline Construction	Refinery Project consists of refining facilities and oil product shipping pipeline from the refinery to an oil product terminal near Kampala. Project entity will be founded through a PPP scheme.
Cross Border Product Oil Pipeline	With the economic development of these land locked countries, demand of product oils has increased significantly and road traffic has started to be over loaded. To mitigate the road traffic situation, and to enhance the traffic safety, extension of the pipeline to Kampala, and to Kigali will be constructed.
Mining Master Plan	The Project objective is to maximize the value of mineral resources and boost initial part of the economic development of the country. The master plan includes: i) Mineral Strategy , ii) List of Strategic Minerals and Target area, iii) Development of Strategic Mineral Mapping and Database, vi) Mineral Identification Capability, etc.

*Logistics Hub Projects*

Logistic Hubs should be constructed at Mombasa, Nairobi, Kisumu, Tororo, Kampala, Gulu, and Mbarara.

Most of the logistics hubs have two common functions, namely:

- i) ICD function for modal shift and empty container depot service as far as SGR extension is expected; and
- ii) Logistics center function, which focuses on inventory and delivery service whose catchment area is set up at approximately a 200km radius, in order to achieve one-day delivery.

**2.9.3 Transport Strategy: Efficient and Integrated Multi-Modal Transportation System**

*Modal Shift from truck to railway and pipeline*

In both Kenya and Uganda, around 95 percent of cargo freight is transported by trucks, while other transport modes such as railways and inland waterways, contribute less than 5 percent of total freight.



Currently, trucks carry all types of goods from bulk cargo, mineral resources and liquid fuels. It is more efficient to transport large amounts of heavy freight such as coal, cement, and construction materials over long distances by railway. As such, railways should be used more for cargo transport through the SGR project, as opposed to road transport using trucks. According to the result of preliminary freight traffic demand forecasting, the transit cost by SGR is almost 50 percent of a truck's transit cost, and total railway demand of MGR and SGR can be nearly 40 percent of all freight tonnage via Mombasa port. This means that the service level of SGR, including the cargo transport charge, is a key success factor in order to realize a modal shift from truck to rail.

Furthermore, the GoK plans to replace old pipelines and establish new ones with an expanded capacity to meet increasing demand for petroleum products in future. It is, therefore important that the pipeline should be constructed and operated as planned.

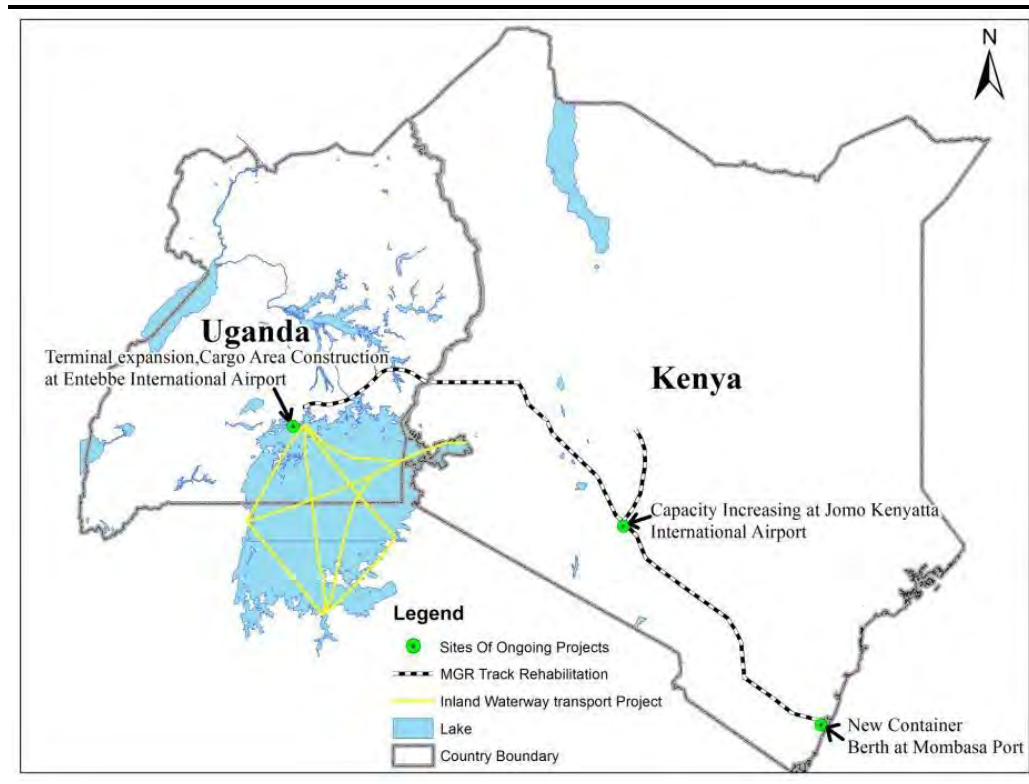
#### *Reduction of Bottlenecks of freight traffic and logistics*

Based on the Origin and Destination survey, together with the traffic survey for cross border traffic on the roads, bottlenecks caused by cargo traffic are identified, particularly in sections around Mombasa port and the Malaba border.

#### *Enhancement of existing transport infrastructure*

In addition to roads and the new SGR, existing transport infrastructure such as the MGR, the Mombasa port, Lake Victoria waterway, and international airports should be enhanced. Promotion of these modes of transport can contribute to the improvement of logistics along the NEC. The expected impact is to realize a multi modal system, covering sea port, air, existing rail, and waterways for the NEC in addition to truck, new rail and pipelines. The location of the existing transport structures to be enhanced is illustrated in *Figure 2.5* below.

**Figure 2.5** *Location of the Existing Transport Infrastructure to be Enhance*



Source: JST, 2016

*Major Suggested Projects for Transport Strategies*

*Roads*

**Logistics Highway Project**

The main route of the NEC from Mombasa, Nairobi, Kampala, Kigali and Bujumbura should have at least a dual carriageway. This is due to the fact that most sections of this route will require four lane capacity, at least up to 2030. A double carriageway with a median strip is much safer than a single carriageway without a median strip.

**Truck Service Stations Project:**

Truck Service Stations should be established which must be large enough to accommodate at least 100 trucks, as more than 100 heavy goods vehicles heading in one direction are currently witnessed during the daytime on many sections of the NEC. In addition, sufficient accommodation, open 24 hours a day, should be provided for long distance drivers. Traffic restriction information should also be provided to drivers before selecting a border to pass.

## *Railways*

The Base case railway strategy has several elements:

### **Short term:**

Determine an operating format for the Mombasa-Nairobi SGR:

- Implement SGR from Nairobi to Malaba and Malaba to Kampala.
- Involve the private sector in railway investments such as in ICDs or terminals or smaller initiatives, such as leasing rail wagons and locomotives to the railways and shippers.

### **Medium term:**

- Implement SGR to Gulu, Pakwach and Nimule.
- Implement ICDs and railway yards and obtain operators.
- Develop a plan for meter gauge and standard gauge side-by-side operations.
- Use policies and regulations to support the shift of cargo from road to rail.

### **Long term:**

- Invest in and maintain the standard gauge railway.

It is expected that Kenya and Uganda will retain ownership of the SGR infrastructure and contract operations to a private company. The two countries should closely monitor the condition of the railway and ensure that sufficient time and expenditure is devoted to maintenance.

## *Port*

The Mombasa port is expected to be one of the hub ports in the world in the long term, and will need to be able to handle more than 3 million TEUs per year. The following projects should be completed in the short to medium term in order to at least accommodate such volumes:

- Construction of Second Container Terminal (depth: 15m and 11m; 2xberths);
- Construction of an access road (approx. 1.6km);

- Dredging works (dredging volume: approx. 3 million cubic meters);
- Construction of a new SGR linking Mombasa with Nairobi, Kampala and other hinterland destinations; and
- Construction of a southern by-pass for Mombasa linking the south to north coasts.

### *Airport*

Jomo Kenyatta International Airport (JKIA) is improving capacity to deal with increasing passenger and cargo demand through an on-going project. JKIA already has 5 cargo terminals which are privatised. Air carriers can choose cargo terminals depending on the service standard and cost performance. The service improvement will be a key factor to becoming an Air-Air Cargo Hub in the region.

The Eldoret International Airport runway and cargo handling facilities will be expanded to start export of fresh agricultural produce. This runway will be extended to 4.3km, from its present length of 3.5km.

The Entebbe International Airport will improve its air cargo facilities. Considering the current (good) JKIA performance, the Entebbe International Airport should adopt a fresh strategy, such as an air and truck services with good cross border facilitation, to for example, facilitate the cross border movement of higher value goods into the DRC.

### *Waterways*

From a cargo and tourist transport point of view, several alternatives for Lake Victoria waterways should be examined. Currently, the rehabilitation of Port Bell in Uganda is being supported by the World Bank and EU, and is underway.

Development of Mwambani port in Tanga, Musoma Port and New Kampala Port at Bukasa are also projects under consideration. The Bukasa Port development project, as the new port, was proposed in the past to realize better port functions, expand port-areas, and to add not only wagon ferries but also roll-on/roll-off (RORO) boats. Further review of the project should be considered.

## *Border Posts*

Malaba border is the main border crossing for several countries and therefore its congestion is a serious bottleneck for the whole of the EAC region. In order to reduce the risks of congestion, the following two interventions should be considered;

(i) Establishing multiple lanes

It is a common practice in the world to set up multiple lanes at the border as they help in reducing congestion;

(ii) Designated lanes for specific commodities/transporters (fast lanes).

Dedicated lanes (fast lanes) will be an incentive for Authorized Economic Operators (AEO). A dedicated lane for petroleum products will be beneficial for speeding up its border crossing, also to be considered for other commodities.

### **2.9.4 *Financial Strategy***

#### *Financial Capacity in Kenya and Uganda*

##### *Kenya*

The Government of Kenya established a Railway Development Fund, which collects 1.5 percent as Railway Development Levy (RDL) on all imports. It is projected that the RDL will increase from Ksh 19.7 billion in 2013/14 to Ksh 32.3 billion in 2017/18. The RDL is to be used solely for the financing of the SGR.

The transport sector stands at 26 percent of the total capital expenditure, a figure that will increase to 41 percent in 2015/16, mainly due to increased expenditure in the railway sub-sector. The construction of the SGR has been prioritized in the transport and logistic sectors over the medium term, with the SGR section between Nairobi and Mombasa expected to be complete by 2017. The road sector is also expected to increase steadily by an annual average growth rate of 15 percent. The expenditure pressure for the road sector remains strong, despite the recent emphasis of a shift from truck to railway for freight cargo. The expenditure for marine transport and air transport accounts for 2.2 percent and 3.4 percent respectively of the total transport expenditure.

## *Uganda*

The 2<sup>nd</sup> National Development Plan 2015/16-2019/20 adopted an expenditure strategy focusing on infrastructure and human capital development. The Works and Transport Sector received the largest share in the Ugandan budget, from 18.2 percent to 23.4 percent of the budget between 2015/16 and 2018/19 (2<sup>nd</sup> National Development Plan 2015/16-2019/20, Uganda). The continued allocation of the lion's share of the national budget to the works and transport sector is bound to continue as good transport infrastructure has been earmarked as a key driver of Uganda's socio-economic transformation ambitions.

### *Diversifying Financial Sources*

Currently, financing for infrastructure is largely limited to government grants and external sources. It is therefore important to diversify sources of funding, especially from the private sector to more commercially oriented projects through a PPP arrangement and by issuance of infrastructure bonds. To minimize transaction costs and duplication, regional financing mechanisms can be sought for regional projects.

### *Expanding the revenue sources of the governments for cost recovery*

Related to the above, internally generated sources, or cost recovery from users, are currently limited to road maintenance and airport operations in the transport sector. Cost recovery from users should be expanded to the extent possible, in order to respond to increasing financing needs and for financial sustainability. The largest financing needs for the NEC is the SGR investment in the medium to long term, and a principle of cost recovery should be analyzed to the extent possible for this investment.

## **2.9.5 Organisational and Policy Strategy**

### *Regional Coordination for logistics improvement*

The organizational and regulatory framework for logistics and multi-modal transportation needs to be established at the regional level. Regional coordination for planning and monitoring for the NEC is so far being implemented by the Northern Corridor Transit Transport Coordination Authority (NCTTCA). NCTTCA's coordination function with concerned ministries for both Kenya and Uganda should be maintained. On the other hand, regional coordination mechanisms and private sector involvement are being developed through the Northern Corridor Integration Projects (NCIP).

### *Proposed Organisational Framework*

Considering the current situation, some recommendations for organizational framework as well as organizational structure are proposed.

Once the Management Plan is approved and implementation thereof has commenced, there must be a monitoring and evaluation mechanism. It is essential therefore, under the initiative of Ministry of Transport and Infrastructure (MoTI) in Kenya / MoWT in Uganda, to establish a taskforce covering various ministries/agencies in charge of transport, finance, trade, industry, agriculture, mining, energy, water etc. as well as private sector organizations and NCTTCA, to monitor and evaluate the implementation of this Plan.

It is recommended that the working group and steering committee should be maintained after the JICA study as a further monitoring and implementation mechanism.

## 2.10

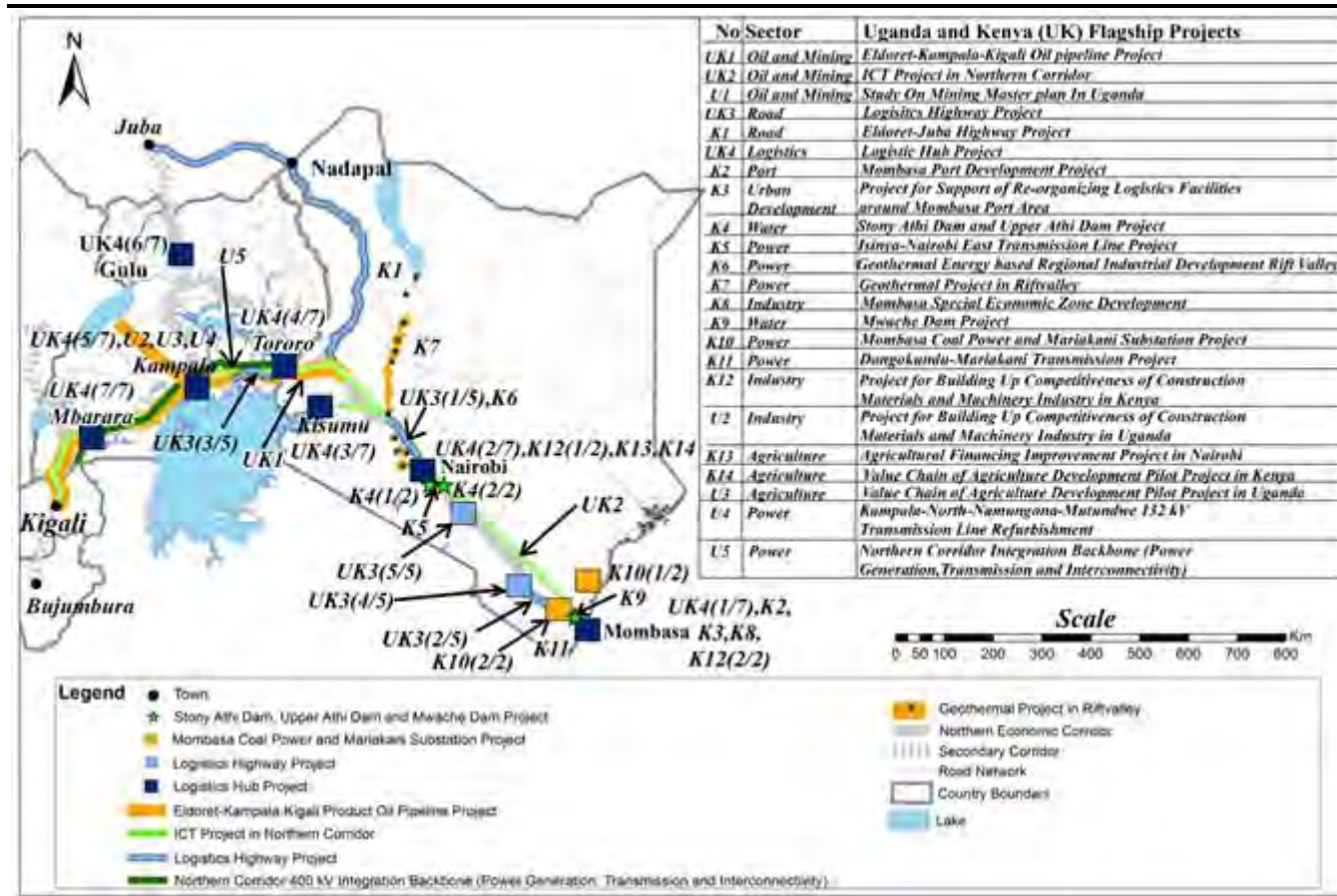
### **OVERALL IMPLEMENTATION STRATEGY**

Out of all the suggested 119 projects for the development of the NEC the JST has selected 23 flagship projects that can contribute to continued logistics improvement along the NEC, and to further economic development of each country, as well as the region. The location of the 23 NEC flagship projects are shown in *Figure 2.6* below:

The primary aim of these flagship projects is to:

- Solve future logistics bottlenecks along the NEC including at the port, roads, and logistic hubs;
- Contribute to cross border infrastructure, such as pipelines and transmission lines;
- Develop key industrial areas along the NEC;
- Ensure power and water supply to identified key industrial areas;  
and
- Support agribusiness and mining business developments.

Figure 2.6 Location of NEC Flagship Projects



Source: JST, 2016



The GoK and GoU have the mandates of implementing the Master Plan in their respective jurisdictions.

The target years for the planning horizon of the Master Plan are as follows:

Year 2015:	This is the base year of the Study.
Year 2020:	This is the target year for the short term plan.
Year 2025:	This is the target year for the medium term plan.
Year 2030:	This is the target year for the long term plan.

All the proposed projects were divided into:

- Projects that should be implemented and completed by 2020 (development in the short term horizon);
- Projects that should be implemented and completed by 2025 (development in the mid-term horizon);
- Projects that should be implemented and completed by 2030 (development in the long term horizon); and
- Projects that should be implemented after 2030 (beyond the long term horizon of the master plan).

**Table 2.9** *Implementation Term of NEC Projects*

Reference number	Sector	Implementation term				Total
		Short	Medium	Long	After 2030	
	Road	4	4	4	8	20
	Port	3	1	1	0	5
	Airport	2	1	1	0	4
	Waterway	1	0	0	0	1
	Railway	14	3	0	0	17
	Logistic hub	0	4	3	0	7
	Border post	8	5	2	0	15
	Oil and Gas	3	0	0	0	3
	Agribusiness	0	18	6	0	24
	Industry	0	5	1	0	6
	Water	4	6	1	0	11
	Power	0	6	0	0	6
	<b>Total</b>	<b>39</b>	<b>53</b>	<b>19</b>	<b>8</b>	<b>119</b>

Source: JST 2016

*3.1 STRATEGIC FRAMEWORK (POLICIES, PLANS AND PROGRAMMES)*

The respective policies, plans and programmes (PPPs) that will serve as a reference point for providing direction for the assessment are presented in *Table 3.1, Table 3.2, and Table 3.3* respectively. They have been considered from a national, regional and international context coupled with other requirements that are deemed of importance in informing the SEA.

It is worth noting that although Uganda has a National Environment Management Policy in place and the pertinent mix of policy tools for ensuring its implementation, the guidelines governing SEA are still in Draft form and have not been formally approved. Therefore, in the absence of the guidelines, SEA has largely remained a voluntary endeavour although in certain instances the Government has had to make it a mandatory requirement as part of proactive environmental management.

3.1.1 *Relevant Policies*

Table 3.1 *Policies Directing the SEA of the NEC Master Plan*

<b>Policies</b>	<b>Key provisions/ requirements</b>	<b>Relevance to the Master Plan</b>
The National Environment Management Policy, 1994	Provides for sustainable economic and social development, through a number of strategies that include Environmental Impact Assessment.	Activities associated with the implementation of the Master Plan could give rise to both environmental and social impacts. These need to be identified using a proactive environmental assessment approach by subjecting the Master Plan to an SEA.
The National Energy Policy, 2002	Outlines the objectives of the energy sector in Uganda, which include among others, the requirement to manage energy related environmental impacts.	The NEC is traversed by energy infrastructure and more infrastructure is planned to be rolled out. Some of the infrastructure will be relied upon for logistical purposes (bulk transportation of fuel and as a source of power).
The National Water Policy, 1999	The objective of this Policy is to provide guidance on development 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 needs, with the full participation of all stakeholders and being mindful of the needs of future generations.	The integrity of water resources along the NEC coupled with their sustainable utilisation are factors to be taken into account as part of implementation of the Master Plan.
The Uganda Wildlife Policy, 2014	This Policy is aimed at providing overall policy guidance for the conservation and development of the wildlife resources of Uganda.	The NEC traverses some protected areas. The resources contained therein will need to be safeguarded as they are a key element to the Uganda's economic development given their contribution to the country's tourism industry – a key contributor to the country's economy.
The Uganda National Land Policy, 2013	The goal of this Policy is to ensure efficient, equitable and optimal utilisation and management of Uganda's land resources for poverty reduction, wealth creation and overall socio-economic development.  Policy statement number 14 states that: "the state shall exercise the power of public regulation of land use, in the interest of socio-economic welfare and development." In addition, policy statement (d) states that, "Government shall ensure that all land use practices conform to land use plans and the principles of sound environmental management, including biodiversity conservation, soil and water protection, conservation and sustainable land management".	The implementation of the Master Plan will need to be consistent with the provisions of this Policy in order to avoid land conflicts. Among the issues that will have to be addressed are the modalities for the acquisition of land in order to accommodate activities prescribed by the Master Plan.
The National Industrial Policy, 2008	This Policy is a framework for Uganda's transformation, competitiveness and prosperity. It envisions building Uganda's industrial sector as a modern, competitive and dynamic sector, fully integrated into the domestic, regional and global economies.	Industrial development has been earmarked by the Master plan as one of the key pillars to addressing the import/export imbalance that currently favours imports over exports.
The National Wetlands Conservation and Management Policy, 1995	This Policy is aimed at promoting the conservation of Uganda's wetlands in order to sustain their ecological, social and economic functions for the present and future generations.  It further aims at maintaining an optimum diversity of uses and users, and consideration for other stakeholders when using a wetland.	The NEC traverses through some wetlands whose integrity will need to be maintained as part of the implementation of the Master Plan. Wetlands are important ecosystems that contribute to the country's economy and livelihoods.
The National Climate Change Policy, 2015	The goal of this Policy is to ensure a coordinated approach towards a climate-resilient and low carbon development path for sustainable development in Uganda.	The transport sector is one of the leading sources of GHG emissions which are key contributors to climate change. Logistics is a key element of the transport sector.
The National Policy for Disaster Preparedness and Management, 2010	This policy aims at ensuring that disasters are properly managed by focusing on preparedness and reduction of risk and vulnerability.	It's important that developments related to the Master Plan are steered away from disaster prone areas or in areas where the likelihood of disaster attributed to the Master Plan's interventions could result in serious consequences.

Policies	Key provisions/ requirements	Relevance to the Master Plan
The National Gender Policy, 1997	The aim of this Policy is to guide and direct at all levels, the planning, resource mobilisation and implementation of development programmes with a gender perspective.	Gender concerns will have to be mainstreamed into the Master Plan, so as to ensure that it is gender sensitive and responsive.
Transport Draft Policy and Strategy Paper	The transport sector is expected to provide cost effective, efficient, safe and environmentally sensitive transport services. Some of the key features of the policy and strategy paper include: the need to increase trade, employment, economic output and reduce poverty; equitable treatment of different modes of transport taking into account efficiency and modal suitability to determine modal split; promote modal integration; and maintaining high quality trading links through the Northern and central corridors.	An effective transport policy framework is key to having efficient mode(s) of transportation that in turn determines the degree of efficiency of the logistics system.
Draft Non Motorised Transport (NMT) Policy	The policy is intended to: raise the profile of NMT within planning and programming for transport in general; and to provide guidelines for the inclusion of NMT needs within transport projects, among other things.	A large section of the population along the Northern corridor are NMT users and therefore conditions for walking and cycling within the corridor have to be taken into account by the Master Plan. The conditions can be improved through allocation of more space for pedestrians and cyclists, reduction of vehicle speeds, and promoting compact and mixed land use.
National Agriculture Policy (2013)	The overall objective is to promote food and nutrition security and to improve household incomes through coordinated interventions that will enhance sustainable agricultural productivity and value addition, provide employment opportunities, and promote agribusinesses, investments and trade.	Majority of the people within the Northern corridor derive their livelihood from Agriculture directly or linkages related to the agricultural sector. It is also among the sectors for which the Master Plan has earmarked some interventions that are aimed at boosting Uganda's exports.
HIV/ AIDS Policy (2007)	It aims at preventing new HIV/ AIDS infections and eliminating the socio-economic burden of HIV and AIDS in the country and all categories of its population.	According to UNAIDS, mobility has been identified as one of the key factors behind the spread of HIV/ AIDS in East Africa due to the high risk environments associated with transport corridors, which often facilitate multiple concurrent sexual partnerships.
Mineral Policy (2000)	It aims at building the mineral sector for it to contribute significantly to the national, social and economic growth.	Exploitation of the country's mineral wealth is among the Master Plan's interventions as part of process of boosting export led economic growth.
Tourism Policy (2015)	This Policy aims to ensure that tourism becomes a vehicle for poverty reduction through wide participation of Ugandan and foreign investors. The policy particularly seeks to assist in the effort to promote the economy and the livelihoods of the people, through encouraging the development of sustainable quality tourism that is culturally and socially acceptable, ecologically friendly, environmentally sustainable, and economically viable.	There are some biodiversity hotspots as well and cultural and heritage sites within the NEC and these happen to be important tourism hubs for the country from which the country generates most of its tourism revenue.
National Oil and Gas Policy (2008)	This policy aims to use the country's oil and gas resources to help eradicate poverty and to create lasting value to society. It addresses the entire chain that includes; exploration, development, production and utilisation of the country's oil and gas.	In order for the country to successfully harness its oil and gas reserves, efficiency of logistics will be the key. According to the results of an oil and gas Industrial Baseline Survey (IBS) for Uganda (that was launched in 2014); from a transportation and logistics perspective, at the peak of operations up to 1,200 trucks will be required per month for transportation of equipment, raw bulky material, food and water. Majority of these will pass through NEC.

Policies	Key provisions/ requirements	Relevance to the Master Plan
Fisheries Policy (2004)	The goal of the policy is to ensure increased and sustainable fish production and utilisation by properly managing the capture of fish; promoting aquaculture and reducing post-harvest losses. This goal contributes to the overall national development policy of poverty eradication and food security. The policy provides that participatory planning and policy-making form the basis of fisheries management, so as to ensure that fisheries management systems are based on dynamic processes that take account of technical, biological, social, economic, environmental and cultural aspects. The policy further provides that adverse environmental impacts on fisheries are to be minimised, and mechanisms established at appropriate levels to achieve this by protecting fisheries and aquatic ecosystems from adverse environmental impacts	The Master Plan advocates for the upgrade of and use of water transport for movement of cargo, particularly around the Lake Victoria basin. Lake Victoria is a major source of fish and fish is among the leading non-traditional exports from East Africa.
National Land Use Policy (2007)	The aim of the policy is to: “achieve sustainable and equitable socio-economic development through optimal land management and utilisation”. The specific goals include; To adopt improved agriculture and other land use systems that will provide lasting benefits for Uganda. To reverse and alleviate adverse environmental effects at local, national, regional and global levels. To promote land use activities that ensure sustainable utilisation and management of environmental, natural and cultural resources for national socio-economic development. To ensure planned, environmentally friendly, affordable and well-distributed human; and settlements for both rural and urban areas. To update and harmonise all land use related policies and laws, and strengthen institutional capacity at all levels of Government.	It’s important that the interventions of the Master Plan conform to sustainable land use practices within the Northern Corridor.
<b>Other Important Instruments</b>		
Uganda’s Vision 2040	This Vision is Uganda’s socio-economic transformation roadmap aimed at transforming Uganda from a predominantly subsistence based low income economy, into a middle income economy by 2040.	Contribution to economic and social development along the NEC is among the key objectives of the Master Plan and this is in tandem with Uganda’s socio-economic transformation theme of Vision 2040.
Africa Agenda 2063	This is Africa’s transformation plan over the next 50 years and sets out a number of aspirations that are to be realised during that period. The Agenda has since been adopted by the African Union (AU).	The Agenda advocates for a number of actions that are in tandem with some of the aspirations of the Master Plan. Some of key actions include: eradication of poverty through skills enhancement and improved incomes; transform, grow and industrialise Africa’s economies through beneficiation and value addition of natural resources; consolidate the modernisation of African agriculture and agro-businesses; and connect Africa through world class infrastructure including in the transport sector, among other sectors.
Sustainable Development Goals (SDGs)	The SDGs were formally adopted by Uganda and other member states in September 2015 as an integral part of the 2030 Agenda on Sustainable Development. SDG indicators and targets are to be integrated in the appropriate Sector and Local Government Plans and budgets coupled with implementation, monitoring and evaluation frameworks.	Interventions in the Master Plan are closely linked with some of the SDGs particularly; SDG 1: End Poverty. SDG 9: Resilient infrastructure, sustainable industrialisation and innovation. SDG 11: inclusive, resilient, sustainable cities. SDG 12: Ensure sustainable consumption and production patterns.

Table 3.2 *Plans Directing the SEA of the NEC Master Plan*

<b>Plans</b>	<b>Key provisions/ requirements</b>	<b>Relevance to the Master Plan</b>
Uganda's Second National Development Plan (NDP II), 2015-2019	The Plan aims to strengthen the country's competitiveness for sustainable wealth creation, employment and inclusive growth. It is the second of a series of 5-year NDPs geared towards the realisation of Vision 2040.	All development interventions in the country including those contained in the Master Plan are expected to be consistent with the NDP and feed into it as opposed to being parallel intervention to the Master Plan.
Sector Development Plans (SDPs)	Proactive vision-based planning is the basis of the SDPs. Policies, Strategies and Programmes of Ministries, Departments and Agencies (MDAs) are meant to be consolidated into the SDPs that are then aligned to the NDP and Uganda Vision 2040.	The Master Plans interventions in the respective sectors must be consistent with the SDPs.
National Transport Master Plan (NTMP) including the Transport Master Plan for the Greater Kampala Metropolitan Area (GKMA) (2009)	This Master Plan sets out a framework for the development of the transport sector over the next 15 years (2008 - 2023)	The NTMP and the Master Plan for the GKMA pronounce themselves on the need for integration of the different modes of transport, which is critical for the NEC, a multi-modal transport corridor.
National Irrigation Master Plan (2010 - 2035)	The overall objective of the plan is to alleviate poverty and promote economic growth through the sustainable realisation of the country's irrigation potential thereby contributing to the transformation of Ugandan society from a peasant to a modern and prosperous country.	Irrigation has been earmarked among the interventions of the Master Plan in the agricultural sector.
<b>Regional Plans</b>		
Northern Corridor Infrastructure Master Plan (2011)	The main objective of the Northern Corridor Infrastructure Master Plan is to provide for the development of transport infrastructure in the region by among other things, transforming the Corridor into an economic development corridor that offers internationally competitive transit transport services.	Good infrastructure is a key factor in overcoming logistical bottlenecks and related inefficiencies.
<b>Local Plans</b>		
Local Government Development Plans	It is a requirement that all Districts have 5-year District Development Plans (DDPs) in place as a basis for tracking government programs and directing development investment.	Interventions in the Master Plans will have to conform to the Local Government Development Plans as the plans are consistent with the NDP and Vision 2040.
Protected area management plans.	These are planning documents that guide all activities in each of the protected areas including but not limited to, National Parks, Forest reserves, among others. Their main purpose is to ensure that the core objectives for which the protected areas were designated are not compromised by potential developments within or in their vicinity.	Developments associated with the proposed Master Plan could potentially have an effect on protected areas. However, it is essential that these developments do not infringe upon the purposes for which these protected areas were designated.

3.1.3 *Relevant Programmes*

Table 3.3 *Programmes Directing the SEA of the NEC Master Plan*

<b>Programmes</b>	<b>Key provisions/ requirements</b>	<b>Relevance to the Master Plan</b>
National Response Strategy for Elimination of Non-Tariff Barriers (NRSE-NTB) Programme	It is aimed at overcoming trade related bottlenecks that can be a constraint to economic growth by having National Monitoring Committees in place. The bottlenecks include; laws, regulations, as well as administration and technical requirements with the exception of tariffs imposed by respective partner states.	NTBs are a major impediment to efficient logistics and will need to be addressed by the Master Plan.
National Agricultural Advisory Services (NAADS) Programme	The mandate of NAADS is to support the management of the agricultural input distribution chains; and strategic interventions for value chain development focusing on the upper end of the commodity chains.	Situation analysis of the agricultural value chains is critical to the success of the Master Plan related agricultural sector interventions.
Joint Water and Environment Sector Support Programme	The main objective is to support the water and environment sector to achieve its targets and improve its efficiency through a consistent, harmonised support programme that is aligned to government objectives, policies and delivery modalities.	Water and Environment sectoral intervention of the Master Plan will have to be aligned with those of the Joint Water and Environment Sector Programme in as much as possible.
Fuel Efficiency Initiative (FEI) in Uganda	The programme aims to promote sustainable development in the energy sector through the adoption of cleaner and more fuel efficient vehicle strategies.	Poor fuel efficiency drives up the cost of logistics. In addition, poor fuel efficiency drives up the carbon footprint contribution from the transport sector.
Youth Livelihood Programme (YLP)	The programme aims to address the under/unemployment situation in the country by ensuring that the youth are equipped with appropriate skills so as to be absorbed in the economy.	Uganda has one of the youngest populations in the world but also a high youth unemployment rate. Therefore, it is important that livelihood related interventions factor in the youth.
<b>Regional Programmes</b>		
Northern Corridor Spatial Development Programme (NCSDP)	It provides a spatial perspective of the key industry-resource linkages with proposed infrastructure developments along the Northern Corridor.	The programme can serve as a useful guide for spatial planning of the Master Plan interventions.
<b>Local Programmes</b>		
District Livelihoods Support Programme	The goal is to improve the standard and sustainability of the livelihoods of poor households in the rural areas and emerging growth centres within the programme area.	Majority of Uganda's population is rural based and it is important that the Master Plan is seen to be making difference (impact) to their livelihoods.
CAIIP-II - Community Agriculture Infrastructure Improvement Programme	The goal is to increase agricultural productivity and hence rural household incomes through investment in infrastructure.	The Master Plan aims to improve infrastructural linkages with agricultural production areas as part of its interventions.

## 3.2 *LEGAL FRAMEWORK*

Following on from the strategic framework that was presented above, it is important to understand the legal and regulatory conditions that the Master Plan would be expected to comply with although these do not set a strategic direction for the Master Plan like the strategic framework does. Aspects of the respective legal requirements are discussed below.

### 3.2.1 *National Legal Framework*

Implementation of the NEC logistics Master Plan will have to abide by the existing national laws and regulations. For purposes of this SEA, specific sections of the existing national laws and regulations that have been deemed to be of relevance to the development and implementation of the Master Plan from an environmental and social point of view have been reviewed and presented in *Table 3.4* below.

### 3.2.2 *Regional and International Legal Framework/ Treaties*

Uganda is a member of regional and international organisations like the East African Community (EAC), African Union (AU) and United Nations (UN). These organisations have a number of regulations in place which are binding on all the member states. With respect to the Master Plan, the following regional and international regulations are deemed to be of relevance.

- The Constitutive Act of the African Union, 2000;
- Treaty for the Common Market for Eastern and Southern Africa, 1993;
- Treaty for the establishment of the East African Community (EAC), 1999; and
- Northern Corridor Transit and Transport Agreement, 2007.

### 3.2.3 *Institutional Framework*

There are a number of institutions with vested interests in Uganda's transport sector. It is especially important to understand their respective roles and responsibilities in the context of decision related to the SEA for the Master Plan. The institutions include; national, regional and international organisations.



Those deemed to be of critical importance in as far as the Master Plan is concerned are discussed in *Sections 3.4.1 to 3.4.3* below while the complete list is presented in *Chapter 7* (Stakeholder Engagement).

### **3.2.4 National Institutions**

*Table 3.5* National Institutions indicates the institutions that are deemed to be of National significance for purposes of the SEA for the Master Plan.

### **3.2.5 Regional Institutions**

#### *East African Community*

The East African Community (EAC) is the regional co-operation that comprises the Republic of Tanzania, Kenya, Burundi, Rwanda and Uganda. Under the EAC, a number of common transport and communications programmes and projects aiming at simplifying transport and communications in the region are being developed.

Most of the constraints to cross-border trade and investment in the region are considered to be related to the limited development of transport and communications networks in the region and to inadequacies in the rules and regulations governing trade, payments and investment in the different countries.

The EAC is therefore undertaking huge efforts to improve infrastructure in the region, especially road and rail transport, the upgrading of ports and the construction of new ports along the Indian Ocean coast which is in line with the Record of Discussion signed between the GoU and GoK with JICA for the implementation of the Project for Formulation of the Master Plan.

#### *The Community of Eastern and Southern Africa (COMESA)*

COMESA is a regional organisation, based in Lusaka, Zambia, which also undertakes transport planning activities for an extensive area of Eastern and Southern Africa. Under COMESA, transport corridors are a key focus of trade facilitation in the region and are viewed as a solution to the challenge of fragmentation among countries in the region by providing the much needed facilitation; particularly for landlocked countries like Uganda.

### *African Development Bank*

The African Development Bank (AfDB) is a regional multilateral development finance institution established to contribute to the economic development and social progress of African countries that are the institution's Regional Member Countries (RMCs) (1)

The African Development Bank Transport Forum (ATF) 2015 ended on November 27, 2015, with the AfDB reiterating its support for transport development to ensure economic growth on the continent.

The construction of 23.7-kilometre expressway from Busega to Mpigi (in the Northern Corridor) is one of the transport projects which will be financed with funds already approved by the AfDB in a bid to boost regional trade while decongesting traffic from Kampala to Mpigi. This is in line with the transport strategy of the Master Plan.

### *The Northern Corridor Transit Transport Coordination Authority*

The Northern Corridor Transit Transport Coordination Authority (NCTTCA) was created in the mid-1980s, following the signing of the Northern Corridor Transit Agreement (the Treaty), by Burundi, Kenya, Rwanda and Uganda. The Democratic Republic of Congo became a contracting state of the NCTTCA in 1987 after ratifying the treaty, (International Conference on the Great Lakes Region, August, 2006).

The NCTTCA mandate is stipulated in the Transit Agreement and it includes:

- Safeguarding the freedom of transit and right of access to and from the sea for the landlocked countries;
- Ensuring implementation of and compliance with the provisions of the Transit Agreement;
- Joint promotion and coordination of the development of regional transport infrastructure;
- Reduction of transport costs through the removal of all customs barriers in the corridor;
- Harmonisation of transit transport policies and technical standards in order to facilitate operations along the corridor;

(1) <http://www.afdb.org/en/about-us/frequently-asked-questions/>

- Promotion of regional consensus on all matters relating to the management of the corridor and which are of mutual benefit to the member States; and
- Cooperation with other international organizations.

The mandate of NCTTCA mirrors the project's objective of formulation of a Master Plan on Logistics for the Northern Economic Corridor.

#### *Trade and Markets East Africa*

Trade and Markets East Africa (Trade Mark East Africa – TMEA) is an East African not-for profit Company Limited by Guarantee established in 2010 to support the growth of trade - both regional and international - in East Africa. TMEA is focused on ensuring gains from trade result in tangible gains for East Africans. TMEA provided input on the Master Plan formulation by being part of the technical and the Steering Committees at Ministry of Works.

#### *The Central Corridor Transit Transport Facilitation Agency (TTFA)*

The TTFA was formed in recognition of the right of landlocked countries to transit trade as declared under specific United Nations General Assembly Resolution 56/180 on particular needs of Landlocked Developing Countries from which other declarations and action programmes evolved.

Through co-operation amongst private and public sector stakeholders the TTFA is charged with the promotion of transport utilisation of the Central Corridor, encouraging the maintenance, upgrading, improvement and development of infrastructure and supporting service facilities at port, rail, lake, road border posts and along the route to meet user requirements, ensure open competition and reduce the costs of transit transport for land-locked Member States of which Uganda is among. Linking with the Central Corridor is one of the Regional strategic options provided with which the Master Plan will improve logistics in the NEC.

### **3.2.6**

#### ***International Institutions***

##### *Japan International Cooperation Agency*

Japan International Cooperation Agency (JICA) is a governmental agency that coordinates Official Development Assistance (ODA) for the GoJ.

JICA aims to contribute to the promotion of international development cooperation and addressing the global agenda by supporting the socio-economic development, recovery and economic stability of developing countries. The Official Development Assistance coordinated by JICA is broadly divided into bilateral aid, in which assistance is given directly to developing countries, and multilateral aid, provided through international organizations.

JICA is responsible for the formulation and implementation of the Master Plan where the JICA Study Team is to provide relevant technical assistance to MoWT until the completion of Stakeholder Validation Meeting and the preparation of SEA Final Report.

### *European Union*

The European Union (EU) is both a bilateral donor and a multilateral donor. The development cooperation in Eastern Africa is delivered at different levels: national, regional, continental and thematic, all of which are financed either by the 11<sup>th</sup> European Development Fund or the EU budget. The European Commission (EC) and Uganda have partnered in development for more than 30 years since the opening of its Delegation to Uganda in 1976<sup>(1)</sup>.

Transport infrastructure is one of three identified thematic/focal areas for which the EU is providing support to Uganda since the 1970's. The EU grant contribution to the Northern Corridor Route Improvement Project stands at 129 million Euros. Under the 11<sup>th</sup> European Development Fund (EDF) support to Uganda, the EU is providing Uganda none repayable grants, the sum of € 578 million for the period 2014-2020. At least 40 percent of the support is dedicated to Transport Infrastructure development over the period <sup>(2)</sup>.

(1) <http://independent.co.ug/supplement/99-33-years-of-eu-uganda-development-partnership>

(2) ([http://www.eeas.europa.eu/delegations/uganda/press\\_corner/all\\_news/news/2015/20150821\\_en.htm](http://www.eeas.europa.eu/delegations/uganda/press_corner/all_news/news/2015/20150821_en.htm))

3.2.7 *Key Legislation Relevant to the NEC logistics Master Plan*

**Table 3.4** *National Laws and Regulations*

<b>Legislation</b>	<b>Key provisions/ requirements</b>	<b>Relevance to the NEC logistics Master Plan</b>
The Constitution of the Republic of Uganda, 1995	This is the supreme law in the country and it, among other things, calls upon the Government of Uganda to promote sustainable development and public awareness of the need to manage, promote and protect the rational use of natural resources, in a balanced and sustainable manner for present and future generations.	Implementation of the Master Plan will result in the development and growth of secondary cities, creation of logistic hubs, and establishment of alternative transport routes among others. All these developments are associated with negative environmental impacts and will therefore need to be undertaken in a balanced and sustainable manner.
The National Environment Act, Cap 153	This is the most significant legislation pertaining to environmental management in the country. In its Third Schedule, the Act highlights the types of projects that require EIA, with transportation (including all major roads, railway lines, airport and airfields, pipelines, water transport etc.) being among them. Although the current Act is silent about SEA, most project level EIA requirements tend to be consistent with the Policy, Plan and Programme (PPP) level SEA requirements.	The NEC logistics Master Plan will be operationalised through implementation of a number of projects like construction of railway lines, roads including ring roads around cities, improvement of water transport on Lake Victoria and creation of ICDs among others, all of which will need to be subjected to project specific EIAs.

Legislation	Key provisions/ requirements	Relevance to the NEC logistics Master Plan
Traffic and Road Safety Act, 1998	This is the main Act governing road transport in the country. In particular, the Act provides for among other things the use of a motor vehicle trailer or engineering plant on any road, need for the registration of all motor vehicles, the need for obtaining driving permits, the requirement to comply with road signs and speed limits, the procedure to be followed at the time of an accident, and the need for the employer to keep record of drivers.	The NEC logistics Master Plan has a road component whose design, implementation and utilisation will need to put into considerations of the Traffic and Road Safety Act, 1998.
Uganda Railways Corporation Act, 1992	This is the main Act governing the rail sector.	The multi-modal shift strategy of the Master Plan proposes utilisation of the railway (Standard Gauge Railways – SGR and Metre Gauge Railway) as the main alternative means cargo transportation from the Mombasa to Uganda and beyond. The design, construction and utilization of the railway system will need to be in line with the requirements of the Uganda Railways Corporation Act, 1992.
Inland Water Transport (Control) Act, 1964	This Act governs the carriage of goods and passengers on inland waterways.	One of the strategic options for operationalisation of the Master Plan is a modal shift from truck to inland waterway (in particular, on Lake Victoria) among other options. Therefore, development and utilisation of transport routes on Lake Victoria will need to comply with the requirements of the Inland Water Transport (Control) Act, 1964.

Legislation	Key provisions/ requirements	Relevance to the NEC logistics Master Plan
Lake Victoria Transport Act, 2007	This Act grants the Lake Victoria Basin Commission (LVBC), the powers to regulate maritime safety on Lake Victoria water which entails; registration, licensing and ascertaining the transportation worthiness of lake vessels.	One of the strategic options for operationalisation of the Master Plan is a modal shift from truck to inland waterway (in particular, on Lake Victoria) among other options. Therefore, development and utilisation of transport routes on Lake Victoria will need to comply with the requirements of the Lake Victoria Transport Act, 2007 of which one of them is to obtain the relevant licenses from LVBC and allow to be regulated by this commission.
The Investment Code, Cap 92	Requires an investor to take necessary steps to ensure that the operations of his or her business enterprise do not cause injury to the ecology or environment (Section 18 (2) (d)).	Some of the strategic options for the operationalisation of the Master Plan require investments in a number of sectors to spur the creation and growth of secondary cities, logistic hubs and alternative forms of transport (modal shift). These investments will need to be undertaken in an environmentally friendly manner.
The Water Act, Cap 152	This Act provides for the use, protection and management of water resources and supply in Uganda.	The NEC crosses a number of water ways like River Nile in addition to the proposed modal shift from trucks to inland water ways among others. Therefore, the Master Plan implementation should conform to sound integrated water resource management practices as provided for in the Water Act, Cap 152.

Legislation	Key provisions/ requirements	Relevance to the NEC logistics Master Plan
Uganda Wildlife Act, Cap 200	This Act provides for sustainable management of wildlife.	Uganda has a number of protected areas which are homes to diverse wildlife. Implementation of the Master Plan will have to consider the need to maintain the integrity of the existing protected areas which are a key factor in Uganda's tourism industry and economic development.
The Local Government Act, Cap 243	This Act provides for the decentralised governance and devolution of central government functions, powers and services to local governments that have their own political and administrative set-ups. Through this provision, local governments can enact ordinances and by-laws, as long as they are consistent with the Constitution of the Republic of Uganda, 1995. Environmental by-laws are a case in point.	The NEC traverses a number of local governments (in particular, districts). The Master Plan implementation will need to observe the requirements of the ordinances and by-laws of all the districts traversed in addition to the national laws.
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 of, or deal with, any outbreak or prevalence of any infectious, communicable or preventable disease and to safeguard and promote public health.	The necessary public health safeguards will have to be factored into the Master Plan, especially given the fact that HIV/AIDS hotspots have been identified along the transit routes within the corridor.
The Historical and Monuments Act, 1967	It provides for the preservation and protection of historical monuments and objects of archaeological, paleontological, ethnographical and traditional interest.	All reasonable measures will need to be taken to ensure that the integrity of any historical monuments and objects of archaeological, paleontological, ethnographical and traditional interest along the NEC are not affected by the implementation of the Master Plan.



<b>Legislation</b>	<b>Key provisions/ requirements</b>	<b>Relevance to the NEC logistics Master Plan</b>
The Land Act, Cap 227	This Act provides for types of land holding, ownership and management of land.	The NEC logistics Master Plan will have to consider the land tenure regime in the respective districts traversed by the NEC.
The Land Acquisition Act, Cap 226	This Act spells out the modalities that the Government has to follow for purposes of compulsory purchase of private land for public purposes.	During the implementation of the Master Plan, land will have to be acquired for development projects like establishment of ICDs, feeder roads and ring roads among others. The land acquisition process will have to conform to the provisions of this Act.
The Occupational Safety and Health Act, 2006	This Act consolidates, harmonises and updates the law relating to occupational safety and health.	A number of employees will be recruited to provide labour for the implementation of the Master Plan. The contractors will have to consider work safety related concerns in line with the requirements of this Act.
The Traditional Rulers (Restitution of Assets and Properties) Act, Cap 247	This Act restored ownership of property to Traditional Rulers and gives them powers to negotiate with the Central government with a view of returning to them such assets and properties as may be agreed.	The NEC traverses through some regions like central region where land belongs to traditional leaders. Acquisition of land in such areas will require negotiation with these (traditional) leaders.
The National Forestry and Tree Planting Act, 2003	This Act provides for the conservation, sustainable management and development of forests for the benefit of the people of Uganda. Section 38 requires any person intending to undertake a project or activity which may, or is likely to have, a significant impact on a forest or forest reserve to undertake an EIA.	The NEC traverses through some Central Forest Reserves of National and International importance. Project planning will need to ensure that disruption of the environment in these areas is minimised and appropriate mitigation measures are established and implemented.

Legislation	Key provisions/ requirements	Relevance to the NEC logistics Master Plan
Physical Planning Act, 2010	This is the principle Act governing the preparation of physical development plans at all levels including Regional Development Plans. It stipulates the contents of the Plans and their relationship to one another.	Physical plan aspects enshrined in the Master Plan will have to conform to the provisions of this Act.

### 3.2.8 *Key National Institutions Relevant to the SEA/Master Plan*

**Table 3.5** *National Institutions*

Organisation	Main Functions and roles	Relevance to the NEC logistics Master Plan
Ministry of Works and Transport (MoWT)	Main role is policy, planning and regulatory functions.	The Master Plan is housed within this ministry.
Uganda National Roads Authority (UNRA)	Construction and maintenance of national road network; resort to force account; and pursuing long-term performance contracting.	UNRA will be responsible for implementation of the desirable institutional changes as well as road construction.
Ministry of Finance Planning and Economic Development (MFPED)	Its overall responsibility is for entire public financial management cycle, planning, budgeting, execution and accounting.	Working closely with JICA to implement the bilateral financing modalities between the GoJ and GoU.
Uganda Road Fund Board	Administration of maintenance funds derived from fuel levy. Oversight of UNRA activities.	Uganda road fund will be responsible for administration of fuel levy for the improvement of the road infrastructure.
Ministry of Local Government (MoLG)	The MoLG is responsible for coordinating the financing and delivery of road services on local road networks.	MoLG is expected to harmonise and coordinate requests for inputs from Local Governments or from MoWT.

Organisation	Main Functions and roles	Relevance to the NEC logistics Master Plan
Urban & District Local Government Authorities	The Urban and District Local Governments are the implementers of Government programmes within their locality/ areas of jurisdiction in accordance with the Constitution of the Republic of Uganda, 1995 and the Local Governments Act Cap 243;	<p>District Local Government are defined as one of the lead agencies under the National Environment Act and are mandated to establish a District Environment Committee that coordinates with NEMA on all issues relating to environment management.</p> <p>The district land board is responsible for land allocation at local government level and will be focal in regard to provision of land for infrastructural development and improvement.</p>
Ministry of Lands Housing and Urban Development (MoLHUD)	The MoLHUD is mandated to develop and manage policy and standards relating to land management, housing, and urban development.	MoLHUD will be responsible for administrative services relating to land management, housing, and urban development.
Town and Country Planning boards	The 1995 Constitution of the Republic of Uganda provides for the formation of the Town and Country Planning Board that should plan and oversee orderly progressive development of land in towns and rural areas.	The Town and Country Planning boards will oversee the developments of the infrastructure in the various areas of jurisdiction.
National Environment Management Authority (NEMA)	NEMA as the principal Agency in Uganda responsible for the management of the environment by coordinating, monitoring, regulating, and supervising all activities in the field of environment.	Since there is no binding SEA Guideline in Uganda. NEMA will be regarded an important stakeholder of this SEA and Master Plan.
Transport Licensing Board	Registration and regular inspection of all commercial road vehicles and marine vessels.	Registration and regular inspection of all commercial road vehicles and marine vessels that will be used along the NEC.

<b>Organisation</b>	<b>Main Functions and roles</b>	<b>Relevance to the NEC logistics Master Plan</b>
Uganda Freight Forwarders Association (UFFA)	The main role is movement of goods from the port to the interior and vice versa.	Promoting professionalism and self-regulation of standards during the transportation of goods along the NEC.
National Planning Authority (NPA)	The NPA function is to produce comprehensive and integrated development plans for the country, supporting the national vision and long-term objectives.	NPA will provide the Comprehensive National Development Planning Framework (CNDPF), within which the Master Plan is expected to support other development sectors.
Uganda Railways Corporation (URC)	Construction, operation and maintenance of railway, marine and road services both in and outside Uganda, for the carriage of passengers and goods.	The development of the SGR along with the Meter Gauge Railway will boost the transport infrastructure in the NEC, thereby reducing some of the bottlenecks identified in the sector.
Uganda Revenue Authority	Responsible for assessment and collection of specified revenue, administration and enforcement of the laws relating to such revenue and to providing for related matters.	Implement the non-infrastructure related interventions proposed by the Master Plan that customs clearance if currently faced with
Uganda National Meteorology Authority	Responsible for establishing and maintaining weather and climate observing stations network, collection, analysis and production of weather and climate information, (including warnings/advisories) to support social and economic development.	Availing weather and climate related information to support climate resilient options proposed by the Master Plan
Lake Victoria Basin Commission	Responsible for coordinating the sustainable development agenda of the Lake Victoria Basin.	The commission will regulate activities proposed by the Master Plan by issuing relevant licenses that ensure maritime safety on Lake Victoria water

Organisation	Main Functions and roles	Relevance to the NEC logistics Master Plan
Uganda Road Sector Support Initiative (URSSI)	To facilitate coherent and timely development and planning of road transport and urban development in Uganda with particular emphasis on roads, municipal planning and sustainable transport management both in rural and urban areas.	URSSI advocates for professionally designed, wide roads of international standard that are well planned and maintained with better drainage systems, and unencumbered road reserves which is also true for the reduction of bottlenecks as envisaged by the Master Plan
Uganda Chamber of Mines and Petroleum (UCMP)	To promote, through the collective action of members, the growth and development of Uganda's mining and petroleum industry, for the benefit of all Ugandans and investors.	Oil and gas and other mining projects have been identified as priority areas for rolling out the Master Plan for which UCMP wants to ensure proper dissemination of information. The organisation wants to ensure proper dissemination of information within the mines and petroleum sector.

### 3.3 *INTERNATIONAL REGULATIONS AND REQUIREMENTS*

#### 3.3.1 *The Japan International Co-operation Agency (JICA) Guidelines for Environmental and Social Considerations, 2010*

The objectives of the guidelines are to encourage project proponents to have appropriate consideration for environmental and social impacts, as well as to ensure that JICA's support for and examination of environmental and social considerations are conducted accordingly. The guidelines outline JICA's responsibilities and procedures, along with its requirements for project proponents etc., in order to facilitate the achievement of these objectives. In doing so, JICA endeavours to ensure transparency, predictability, and accountability in its support for and examination of environmental and social considerations.

Given that the GoJ through JICA is financing the Master Plan it is pertinent that the JICA guidelines are taken into account in line with lenders environmental and social requirements.

#### 3.3.2 *The Organisation for Economic Co-operation and Development (OECD) Guidelines and Reference Series for Applying Strategic Environmental Assessment, 2006*

The Organisation for Economic Cooperation and Development is a unique forum where the governments of 34 democracies with market economies work with each other, as well as with more than 70 non-member economies to promote economic growth, prosperity, and sustainable development. The OECD Guidelines for Multinational Enterprises are far reaching recommendations for responsible business conduct that 44 adhering governments – representing all regions of the world and accounting for 85 percent of foreign direct investment – encourage their enterprises to observe wherever they operate. The ultimate objectives of the guidelines are to ensure that:

- Environmental considerations, and their linkages with social and economic factors, are adequately understood, recognising the contribution of environmental management to economic growth and poverty reduction.
- Environmental and social considerations are appropriately analysed and taken into account in development policy, planning and strategic decision making at the formative stage and appropriate response measures, effectively integrated into the development of PPPs and projects.

- As a result of the above, the outcomes of PPPs have better prospects to contribute to sustainable development and attainment of the Sustainable Development Goals (SDGs).
- In the absence of SEA guidelines in Uganda, the OECD guidelines supplemented the JICA guidelines for Environmental and Social Considerations during the SEA Study.

#### 3.4

##### *CONSISTENCY ANALYSIS OF THE MASTER PLAN WITH OTHER PPPs*

Consistency analysis, *Table 3.6, Table 3.7 and Table 3.8* was carried out to check the consistency of the Master Plan with key policies, plans and programmes.

As part of the analysis, it had to be ascertained as to whether the policies, plans and programmes:

- Generate opportunities for the Master Plan;
- Set environmental and socio-economic conditions for the Master Plan; and
- The likelihood for conflict with the Master Plan

### 3.4.1 Consistency Analysis for Relevant Policies with the Master Plan

Table 3.6 Relevant Policies

Policies	Opportunities for the Master Plan	Environmental and Social Conditions	Potential areas for Conflict
The National Environment Management Policy, 1994	Policy that advocates for sustainable development (this includes sustainable economic growth).	Although the SEA guidelines for Uganda are still in draft format, the relevant legal and regulatory framework for Environmental Impact Assessment and Environmental Audits exists. Equally, sector specific guidelines including those for the transport sector are in place.	The revised National Environmental Policy could have implications for downstream projects associated with the Master Plan.
The National Energy Policy, 2002	Opportunity to influence the energy infrastructure planning process that will be critical in the transportation of oil.	EIA Guidelines for the Energy Sector are already in place. Additionally, some of the infrastructure associated with the NEC such as the standard Gauge railway will be powered.	Striking a balance between the requirements of this policy with the Oil & Gas policy.
The National Water Policy, 1999	Water for production initiatives that can spur industrialisation initiatives.	The legal and regulatory regime governing the sector is in place namely; water abstraction permits, waste water discharge permits; and water catchment protection guidelines.	Pollution of water bodies and in particular transboundary resources such as Lake Victoria coupled with water user rights issues.
The Uganda Wildlife Policy, 2014	Areas that are devoid of settlements and are well protected.	The Uganda Wildlife Act spells out the environmental and social conditions governing activities in protected areas.	Infrastructure interventions could render wildlife susceptible to traffic accidents.
The Uganda National Land Policy, 2013	An already existing corridor with a clearly define land tenure regime.	The necessary conditions are stipulated in the Land Act.	Striking a balance between the GoU's compensation modalities versus those of the GoJ.



Policies	Opportunities for the Master Plan	Environmental and Social Conditions	Potential areas for Conflict
The National Industrial Policy, 2008	<p>The existence of an industrial research centre of excellence; the Uganda Industrial Research Institute (UIRI) which serves as an industrial incubation hub, and the Uganda Export Promotions Board (UEPB) that are both under the Ministry of Industry Technology and Cooperatives. The two can be leveraged to promoted industrial growth and exports.</p> <p>Industrial parks that have been earmarked for secondary cities.</p>	A few industry sector specific guidelines exist. However it's worth mentioning that regulation 5 of the waste management regulations requires the application of Cleaner Production methods which are applicable to most industrial settings..	Decoupling industrial growth from environmental degradation.
The National Wetlands Conservation and Management Policy, 1995	Wetlands can serve as a greenbelts/ development control measure that help to direct developments related to the Master Plan.	Wetlands, River banks and Lake shores management regulations are already in place. Also of importance are those wetlands that have been designated as sites of International importance ie the Important Bird Areas..	Wetland encroachment due to urban sprawl.
The National Climate Change Policy, 2015	A Climate change proof Master Plan.	Climate change is supposed to be mainstreamed in all sectors including transport.	Transport and industrial emissions attributed to the Master Plan.
The National Policy for Disaster Preparedness and Management, 2010	A disaster profiled Master Plan.	None	Infrastructure related disasters.

<b>Policies</b>	<b>Opportunities for the Master Plan</b>	<b>Environmental and Social Conditions</b>	<b>Potential areas for Conflict</b>
The National Gender Policy, 1997	Mainstreaming gender issues into the Master plan thereby ensuring that its gender sensitive.	Gender issues are cross cutting and so are embedded in the environmental and social conditions of most sectors.	Displacement and employment related issues to do with women and children.
Transport Draft Policy and Strategy Paper	An existing corridor with multi-modal infrastructure that can be improved.	EIA Regulations for the transport sector already exist. In addition, related legislation such as the road and traffic Acts exists.	Changes to the Northern Corridor Integration Projects that may be reflected in the final policy.
Draft Non Motorised Transport (NMT) Policy	Integration of NMT with the other transport modes in the Master Plan.	Conditions imposed by the existing transport and road safety Act as well as the highway code. However, these will have to be reviewed to factor in the NMT.	Improvements in motorised transport logistics might compromise the safety of NMT users.
Agricultural Policy (2011)	A sector that accounts for the majority of the country's exports; employs majority of Ugandan's; and is ready for commercialisation.	Agricultural support sector legislation such as the Agricultural Seeds and Plant Act, The Control of Agricultural Chemicals Act, The National Environment (Minimum Standards for Management of Soil Quality) Regulations etc.	The push for increased exports could result in unsustainable agricultural practices.
HIV/AIDS Policy (2007)	HIV/AIDS awareness initiatives at HIV/AIDS hotspots along the Northern Corridor.	Addressed as a cross cutting issue in most sector interventions.	Increased mobility along the NEC could lead to a rise in the HIV/AIDS prevalence rate(s) along the NEC HIV/AIDS hotspots.
Mineral Policy (2000)	Availability of good mineral resource data based on airborne geophysical surveys that were conducted across the country a few years ago.	EIA Guidelines for the mining sector are now in place.	Licensing regime related bureaucracy.

Policies	Opportunities for the Master Plan	Environmental and Social Conditions	Potential areas for Conflict
Tourism Policy (2015)	Untapped natural and cultural resources with a high potential for tourism within the NEC. The market for international and domestic tourism remain high.	Laws and regulations set by most of the environment protection agencies apply. The agencies include; UWA, NEMA and NFA.	Maintaining the integrity of tourism sites in line with sustainable tourism practices.
National Oil and Gas Policy (2014)	Governments' intention to channel a big percentage of oil and gas revenues towards infrastructural development.	Laws governing the sector are in place and include; the Petroleum (Exploration, Development and Production) Act 2013 and the Petroleum (Refining, Conversion, Transmission and Midstream Storage) Act 2013. These are supplemented by the relevant legal and regulatory framework governing the Environment and Natural Resources (ENR) sectors.	Sharing infrastructure.
Fisheries Policy (2004)	Export oriented fish industry that's conversant with the respective phyto-sanitary standards governing exports.	EIA Guidelines for the fisheries sector and Environmental Audit Manual for the fish processing sector.	Transboundary issues relating to use of a shared resource (Lake Victoria).
National Land Use Policy (2007)	Sustainable use of land.	Use of structure plans to steer development as per the respective zoning regimes contained therein.	Planning obligations.
<b>Other Important Instruments</b>			
Uganda's Vision 2040	Political buy-in and therefore budgetary allocations for interventions which are consistent with Vision 2040.	Indicators and targets in the respective NDP's for implementing Vision 2040.	Master Plan Interventions that may be parallel to Vision 2040.
Africa Agenda 2063	Timeframe for the Master Plan is well within the 50 year timeframe for the vision which allows for flexibility in re-aligning the Master Plan with Africa's evolving needs.	As part of proposed actions, the vision calls on African countries to: Act with a sense of urgency on climate change and the environment.	Aligning GoJ interests with those of Africa Agenda 2063 in as much as possible.

Policies	Opportunities for the Master Plan	Environmental and Social Conditions	Potential areas for Conflict
Sustainable Development Goals (SDGs)	Universally accepted set of development goals with a number of entry points for the Master Plan.	Each of the SDGs has indicators and targets and some have already been mainstreamed in NDP II.	Alignment of targets/indicators.

### 3.4.2 Consistency Analysis for Relevant Plans with the Master Plan

Table 3.7 Relevant Plans

Plans	Opportunities for the Master Plan	Environmental and Social Conditions	Potential areas for Conflict
Uganda's Second National Development Plan (NDP II)	Agriculture, Minerals, Oil and Gas, and Infrastructure which have been earmarked as priority sectors. These are also reflected in the Master Plan.	These are contained in the respective legal and regulatory frameworks of the respective sectors.	Changes in the list of priorities in subsequent NDPs.
Sector Development Plans (SDPs)	Profile of sector needs and interventions.	Sector environmental guidelines, laws and regulations.	Duplication of sector interests.
National Transport Master Plan (NTMP) including the Transport Master Plan for the Greater Kampala Metropolitan Area (GKMA)	Integrated transport planning.	EIA Guidelines for the transport sector and environmental by-laws for Kampala Capital City Authority (KCCA).	Mandates of the Ministry of Works and Transport versus those of KCCA.
National Irrigation Master Plan (2010 - 2035)	Rehabilitation of major water sources for production (Including irrigation schemes) around the country that has seen the total storage created increase from 27.5 billion litres to 44.3 billion litres (Daily Monitor, 2016).	The respective legal and regulatory framework governing the water and agriculture sectors applies. The water for production mandate is shared by the two sectors.	Overlaps of sectoral mandates.
<b>Regional Plans</b>			
Northern Corridor Infrastructure Master Plan	Avoided duplication of planned interventions.	Sector EIA guidelines governing key infrastructure in the Northern Corridor such as transport and energy infrastructure.	Interest of the Master Plan coordinating agencies - MOWT and NCTTCA
<b>Local Plans</b>			

<b>Plans</b>	<b>Opportunities for the Master Plan</b>	<b>Environmental and Social Conditions</b>	<b>Potential areas for Conflict</b>
Local Government Development Plans	Decentralisation of the Master Plan	Environmental and Social by-laws of the respective Districts.	Differing positions between the District technocrats and the political wing on modalities for implementing the Master Plan.
Protected area management plans.	Areas of high tourism potential are clearly defined.	Uganda Wildlife Act and its related regulations.	Development pressure on gazetted areas.

3.4.3 *Consistency Analysis for Relevant Programmes with the Master Plan*

Table 3.8 *Relevant Programmes*

<b>Programmes</b>	<b>Opportunities for the Master Plan</b>	<b>Environmental and Social Conditions</b>	<b>Potential areas of Conflict</b>
National Response Strategy for Elimination of Non-Tariff Barriers (NRSE-NTB) Programme	Operational electronic NTB reporting system that is web-based or Phone-based. Under the phone based system, one has to dial *201# and select NTB to report and send.	All respective institutions have to respond to their NTB complaints.	Selective use of NTBs by partner states.
National Agricultural Advisory Services (NAADS) Programme	National footprint of the Agricultural extension services.	Agricultural phytosanitary standards.	Conflicting roles of the scientists and the military in implementing projects.
Joint Water and Environment Sector Support Programme	Water for Production (Wfp) is a key component of the JWESSP and it's critical for the Master Plan's agricultural sector interventions. There is a chance to leverage joint funding from different Development Partners (DPs).	Embedded in the policy, strategy and legal frameworks of the respective JWESSP components.	Differing policies and strategic areas of support of the respective Development Partners.
Fuel Efficiency Initiative (FEI) in Uganda	Energy efficient transport systems.	Provisions in the climate change policy, renewable energy policy and energy efficiency bill. Prevailing environment levy on imported second hand vehicles (35 percent of vehicles older than 5 year but less than 10 years; and 50 percent on vehicles older than 10 years).	The high cost of new vehicles and tax waivers on certain classes of used vehicles (for example on some heavy goods vehicles).

<b>Programmes</b>	<b>Opportunities for the Master Plan</b>	<b>Environmental and Social Conditions</b>	<b>Potential areas of Conflict</b>
Youth Livelihood Programme (YLP)	Youthful and vibrant workforce.	Adherence to Environmental and Social Management Framework (ESMF) and Resettlement Policy Frameworks for the respective projects.	Low involvement of youth in project processes.
<b>Regional Programmes</b>			
Northern Corridor Spatial Development Programme (NCSDP)	Clear delineations of infrastructure in along the corridor.	None.	Changes to infrastructure routes due to changing strategic interests of respective partner states.
<b>Local Programmes</b>			
District Livelihoods Support Programme	Access to District livelihood profiles	None.	Modalities for ensuring sustainable livelihoods.
CAIIP-II - Community Agriculture Infrastructure Improvement Programme	Infrastructural links with agricultural production areas.	EIAs and Environmental Audits for the respective infrastructural projects.	Maintenance of infrastructure



## 4 METHODOLOGY AND APPROACH

### 4.1 GENERAL APPROACH TO THE SEA

The approach to the SEA was structured around the key phases of the SEA process, namely: screening, scoping and the detailed SEA study. The respective phases of the SEA are discussed in *Sections 4.1.1 - 4.1.3* below.

#### 4.1.1 Screening

Screening is carried out to establish whether an SEA is appropriate and relevant to the development of a PPP. It is used to determine the potential of a PPP to result in significant impacts on the environment and to determine if a SEA is required. The screening stage of the SEA is when:

- Objectives are set; and
- The process of identifying stakeholders is carried out.

The SEA process for the Master Plan for the NEC was initiated in 2015 by JST in Uganda, by establishing the need and possible objectives for starting an SEA.

*As there is no binding SEA Guideline in Uganda, it was agreed that the National Environment Management Authority (NEMA) would be regarded as an important stakeholder.*

#### 4.1.2 Scoping

The scoping stage establishes the focus and content of the SEA and the relevant criteria for assessment. The scoping study identified the potentially significant environmental and social impacts relating to the PPP that needed to be addressed as part of the SEA Study. The scoping study was carried out by Atacama in Uganda between October 2015 and February 2016.

During the scoping stage, key stakeholders were identified and consulted as part of national level consultation meetings, in key strategic regions (Kampala, Mbarara and Tororo) along the NEC. The consultation meetings were held jointly with JST and MoWT.

As part of the consultation process, opinion survey questionnaires were also issued out to the respective participants to seek their views on the Master Plan (see summary of the results in *Chapter 5*).

The purpose of the Scoping was to:

- Highlight key issues that the detailed SEA study would focus on as part of the Master Plan development process; and
- Select methodologies for the collection of baseline data and impact assessment.

#### **4.1.3**      *Detailed SEA Study*

The phase entailed collecting baseline data that would inform the detailed SEA study. The data was used to supplement what was collected during the scoping phase.

### **4.2**            *ASSESSMENT METHODS*

A combination of methods was used for the assessment (see *Sections 4.2.1- 4.2.7*).

#### **4.2.1**        *Literature Surveys*

Due to the extent and magnitude of the NEC, no primary baseline data was collected and as such a number of documents related to the Master Plan were reviewed as part of the literature review. These documents included:

- Progress and Interim Reports from JST;
- Existing PPPs;
- Uganda’s Vision 2040 and its related National Development Plan; and
- SEA best practice guidance documents from other parts of the world.

## 4.2.2 *Stakeholder Engagement*

### *Overview*

A regional stakeholder consultative approach was favored because of the spatial extent of the NEC. Workshops were held in three strategic regions (districts), specifically:

- Kampala, for the stakeholders in central Uganda;
- Mbarara, for the stakeholders in the western region; and
- Tororo, for the Northern and Eastern regions of Uganda.

Stakeholder engagement was carried out at both the scoping and detailed assessment stage. During these meetings, the stakeholders were introduced to the Master Plan and the progress of the SEA study.

The SEA consultation methodology and approach was consistent with the Uganda (Environmental and Social Impact Assessment) ESIA Legislative Framework, as well as the JICA Guidelines for Environmental and Social Considerations (2010). Stakeholder engagement was carried out to:

- Gather baseline data; and
- Identify impacts.

### *Opinion Surveys*

During the stakeholder meetings, opinion surveys were distributed to the stakeholders to gather baseline data. The results of those surveys were then incorporated into the assessment.

## 4.2.3 *Geographical Information Systems (GIS)*

The following spatial data was obtained:

- Satellite images (mainly from google earth and ArcGIS base maps);
- Vegetation/ habitat mapping (including mapping of protected areas);
- Digital Elevation Models (DEM);
- Hydrology;

- Heritage features; and
- Socio-economic data (including administrative boundaries).

Some of this secondary spatial geographical data was generated by digitising available maps.

Using Arc GIS Software Version 10.2, the routes that make up the NEC as were overlain<sup>1</sup> on to the different spatial/biophysical and socio-economic features to map out:

- The physical, social and biological features that are environmentally robust and can cope with development; and
- Sensitive areas where NEC development projects should be avoided.

Overlay mapping findings were also used as a key tool for identifying stakeholders for engagement, as stakeholders interests that were likely to be affected by development actions related to the Master Plan could easily be identified from the GIS maps.

#### 4.2.4 *Constraints Mapping*

During baseline data collection, key environmental and social aspects were identified. With the aid of ArcGIS Software Version 10.2 and overlay mapping, the shapefiles of a number of interlinked/ related parameters were combined in ArcGIS model builder and the spatial locations of the constraints were established.

#### 4.2.5 *Expert Judgment*

Expert (or professional) judgment was an integral part of the assessment process especially given the subjective nature of the qualitative aspects of the SEA. This proved especially valuable when assigning levels of significance to environmental and social impacts associated with the Master Plan (see *Chapter 9* for a full description of the approach).

<sup>1</sup> Overlay mapping is a spatial operation in which two or more maps or layers registered to a common coordinate system are superimposed, either digitally or on a transparent material, for the purpose of showing the relationships between features that occupy the same geographic space.

#### 4.2.6 *Transport Modelling and Forecasting*

The data collected in the JST 2015 traffic survey (see *Table 4.1*) clearly identified the amount of Cross Border Freight Traffic (CBFT).

**Table 4.1** *Current CBFT Demand along the Uganda Border*

Country	Border name	Passenger car	Light & medium goods	Heavy goods	Total
Uganda - Kenya	Malaba	254	58	842	1,154
	Busia	1,373	635	248	2,256
	Sub - total	1,627	693	1,090	3,410
Uganda - Rwanda	Mirama hills	84	34	37	155
	Katuna	323	135	152	610
	Sub - total	407	169	189	765
Uganda - DRC	Goli	130	62	52	244
	Mpondwe	650	145	54	849
	Bunagana	67	93	27	187
	Sub - total	847	300	133	1,280
Uganda - South Sudan	Nimule	205	120	186	511
	Oraba	351	15	28	394
	Sub - total	556	135	214	905
Uganda - Tanzania	Mutukula	385	112	92	589
	Sub total	385	112	92	589
<b>Total</b>		<b>3,822</b>	<b>1,409</b>	<b>1,718</b>	<b>6,949</b>

Source: JST, 2015

This data included the origins and destinations of the traffic, the weight and type of cargo carried, as well as other key information. Using the data, matrices were built for cross-border traffic for all countries served directly by the NEC. Secondly, the countries were individually zoned to identify the specific key origins and destinations. This information was used to further disaggregate the country border crossing matrices into zonal matrices. This would help to determine the specific routes that freight traffic would likely use within the specific countries.

Two models were then built; a freight mode choice model and a truck route assignment model. The two were used hand in hand. The first was used to determine which mode of travel (road, rail, and water) would be preferred for the freight and the other which route. It should be noted that although the NEC is the main route, it is linked to other key corridors and feeder roads. Therefore in some instances, truck traffic would have more than one option of reaching a particular destination. For example freight would have more than one way of reaching Juba; either through the NEC or through the NEC linkage with the LAPSSET corridor.

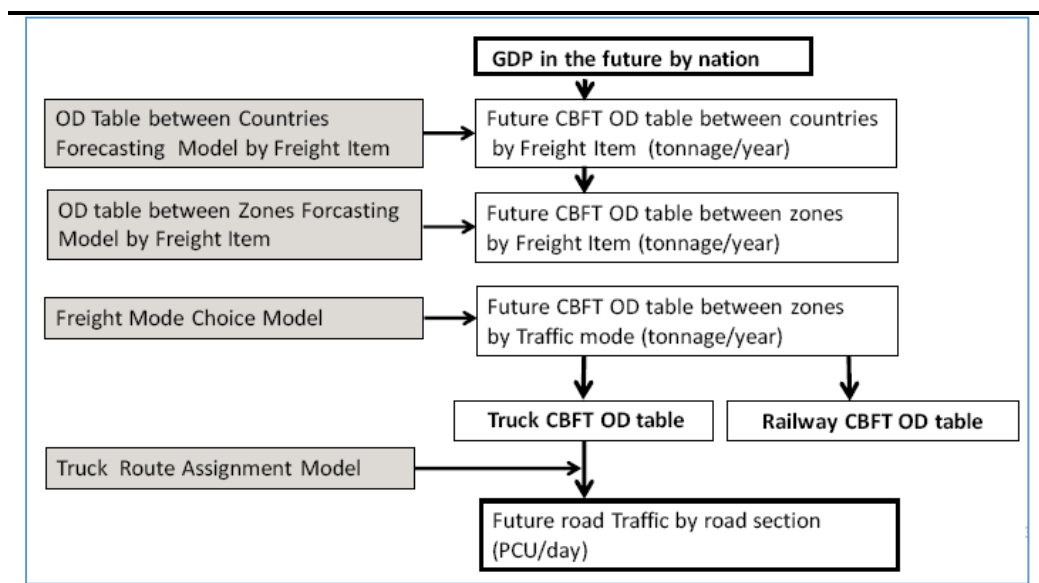
The result of this modelling was CBFT volume by section of the NEC. This is the current traffic. These models were calibrated and validated to ensure that they reproduced within allowable degrees of accuracy, the traffic volumes observed during the survey.

To determine the future CBFT, a number of considerations were made, including;

- Criteria to determine by what route and transport mode the CBFT would be carried (model parameter estimation) ie what is the basis for CBFT to switch modes?
- Existing and future infrastructure development projects along the NEC as well as complementary corridors; and
- The current and future cost of travel especially by road and rail considering the imminent introduction of the Standard Gauge Railway (SGR).

The above considerations resulted in the establishment of zonal future matrices. These were then assigned to the strategic network. A summary of the CBFT forecast process is shown in *Figure 4.1* below.

**Figure 4.1** Summary of CBFT Forecast Process



Source: JST 2015

The other traffic types (passenger and domestic trucks) were estimated using simpler assumptions for forecasting and assignment as follows:

- Passenger traffic would grow at a constant rate equal to the rate of GDP growth in Uganda; and

- Domestic truck traffic would grow in line with both the rates of population and GDP growth.

Although the above assumptions seem reasonable for the more rural sections of the NEC, the growth rates for types of traffic are significantly less at and near Kampala and other major towns.

#### 4.2.7 *Matrices*

Matrices were used to examine the significance of the impacts likely to arise from the implementation of the Master Plan. This was done by evaluating the relationship between the magnitude of the impacts and the sensitivity of the environmental and social receptors.

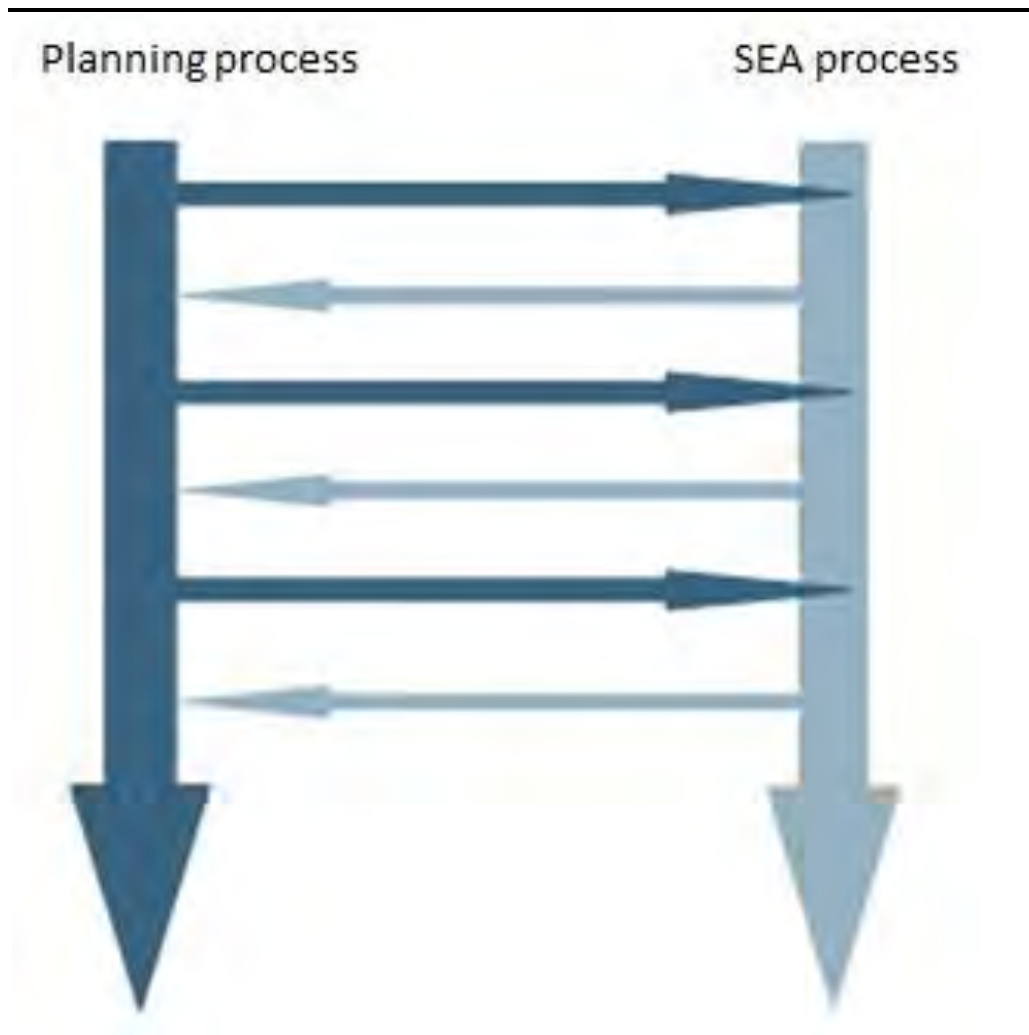
### 4.3 *ASSESSMENT APPROACH*

Although there are a number of approaches for conducting SEA, an Environmental Impact Assessment (EIA)-based approach was adopted for this assessment. EIA-based SEA approaches share three main common characteristics (Partidário, 2012):

- They are related to the preparation of an approvable document;
- Their main aim is to provide information on the environmental effects or consequences of proposed PPPs; and
- Their standard methodological approach follows the typical EIA process steps of screening, scoping, assessment, mitigation, decision making and monitoring

Equally of importance was the model that was chosen for linking the SEA process with the NEC Logistics Master Plan formulation process. A parallel model which entailed the SEA process being conducted in parallel with the Master Plan formulation process was chosen (see *Figure 4.2*).

Figure 4.2 *Parallel SEA Model*



Source: Partidário, 2007

#### 4.3.1 *Potential Impact Identification*

Impact identification entailed the use of a combination of methods that can be applied to that stage of the SEA process and they included:

- Literature surveys;
- Expert judgment;
- Stakeholder engagement; and
- Matrices.

#### 4.3.2 *Assessing the Significance of Environmental Impacts*

The significance of the impact was formulated as a function of the environmental or social receptor (*sensitivity*) (see Table 4.2) and the *magnitude* of the impact (change) (see Table 4.3).



**Table 4.2**      *Receptor Sensitivity*

<b>Sensitivity</b>	<b>Description</b>
Very High	Very high importance and rarity, international scale and very limited potential for substitution
High	High importance and rarity, national scale, and limited potential for substitution
Medium	High or medium importance and rarity, regional scale, limited potential for substitution.
Low	Medium or low importance and rarity and local scale.
Negligible	Very low importance and rarity, local scale.

**Table 4.3**      *Magnitude of Impacts*

<b>Magnitude</b>	<b>Description</b>
Major	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics and/or features (Adverse). Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality (Beneficial).
Moderate	Loss of resource, but not adversely affecting the integrity; partial loss of/damage of key characteristics and/or features (Adverse). Benefit to, or addition of key characteristics, features or elements; improvement of attributes quality (Beneficial)
Minor	Some measurable change in attributes, quality or vulnerability; minor loss or alteration to, one (may be more) key characteristics, features or elements (Adverse). Minor benefits to, or addition of one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring (Beneficial).
Negligible	Very minor loss or detrimental alteration to one or more characteristics, features or elements (Adverse). Very minor benefit to or positive addition of one or more characteristics, features or elements (Beneficial).
No change	No loss or alteration of characteristics, features or elements; no observable impact in either direction.

### 4.3.3 *Impact significance*

The impact significance was determined by evaluating the magnitude of the impact and the sensitivity of the environmental and social receptors. The five significance categories gave rise to eight potential outcomes. The greater the environmental sensitivity of the receptor, and the greater the magnitude of impact, the more significant the effect as presented in *Table 4.4*.

**Table 4.4** *Significance of Impact Categories*

		Magnitude of impact				
		No change	Negligible	Minor	Moderate	Major
Environmental Sensitivity	Very high	Neutral	Slight	Moderate or Large	Large or very large	Very large
	High	Neutral	Slight	Slight or Moderate	Moderate or Large	Large or very large
	Medium	Neutral	Neutral or slight	Slight	Moderate	Moderate or Large
	Low	Neutral	Neutral or slight	Neutral or slight	Slight	Slight or Moderate
	Negligible	Neutral	Neutral	Neutral or slight	Neutral or slight	Slight

## 4.4 *GAPS AND UNCERTAINTIES*

In any SEA process it is inevitable gaps remain. This *Section* summarises the gaps and uncertainties which were considered when undertaking the SEA.

### 4.4.1 *Environmental Baseline Gaps and Uncertainties*

Several data gaps and uncertainties have been identified through the preparation of the environmental baseline. There is limited data on the following, which will make future detection of change difficult within the NEC:

- Ambient air quality;
- Ambient noise levels; and
- Biodiversity inventories, especially within wetlands and outside protected areas.

Also the draft regulations which are the basis of this assessment could be finalised within the lifetime of the Master Plan, therefore any changes therein may modify the implementation of the Master Plan

#### 4.4.2

#### *Social Baseline Gaps and Uncertainties*

Up to date socioeconomic information was preferred during the assessment. Where up to date information was not readily available, the most recent information available was used in the assessment

This section presents a description of the physical and biological baseline environment of the NEC. It is essential that the baseline conditions of an environment are characterised in order to accurately predict the potential effects the PPP may have on the environment. The collection of baseline data also focuses on providing information to support the assessment of any potential impacts.

## 5.1 PHYSICAL ENVIRONMENT

### 5.1.1 Climate

#### *Overview*

Climate is an important baseline consideration as part of the SEA for the Master plan on logistics in the NEC given that transport, agriculture and energy are the leading contributors of Greenhouse gases (GHGs) in Uganda.

Overall, Uganda's climate is classified as humid-equatorial with two rainy seasons, specifically the "long rains" of March to May and the "short rains" of October to November (1) and broadly, the climate can be divided into three categories as described below:

- *Highland*: These include areas such as Mt. Elgon and the Rwenzori mountain area, the latter of which has a permanent snow cap. These areas experience temperatures as low as 4°C and moderate mean annual rainfall in the region of 900mm.
- *Savanna tropical*: Including the Lake Victoria Basin, experiences moderate temperatures of around 28°C with mean annual rainfall of 1200mm in the region. This is where the country's wetlands and tropical forests occur.
- *Semi-arid*: These areas cover a broad swathe across the middle of the country from the south-west to the north-east being most extensive in the latter. Temperatures are generally high, in the range of 26°C to 28°C but temperatures as high as 35.6°C have been recorded and rainfall is low, typically 800mm per year in the region, but can be as low as 400mm or less when severe drought strikes these zones.

(1) NEMA 2006/07

### *Rainfall*

Seasonal rainfall in Uganda is driven mainly by the migration of the Inter Tropical Convergence Zone (ITCZ), a relatively narrow belt of very low pressure and heavy precipitation that forms near the equator (1). Extreme rainfall events are among the issues that are predicted to become more pronounced as a result of climate change.

The exact position of the ITCZ changes over the course of the year, migrating southwards through Uganda from October to December, and returning northwards in March, April and May. This causes Uganda to experience two distinct rainfall seasons – the ‘short’ rains in August to December, and the ‘long’ rains in March to May. These gradually merge into one long rainy season the further north one moves from the equator. Uganda’s rainfall varies from as little as 400mm per annum in the more arid zones to over 2000mm per annum in the Lake Victoria region (*Figure 5.1*)

### *Temperature*

Temperatures in Uganda vary little throughout the year, with average temperatures increasing in the north of the country as the elevation decreases towards the Sudanese plain (*Figure 5.2*). The country's temperature ranges between 16°C and 34°C, but the situation countrywide indicates great disparities. Mean annual temperatures range from about 16°C in the south-western highlands to 25°C in the north-west and in the north-east, the climate becomes more arid with temperatures exceeding 30°C for 254 days of the year. The temperature in Uganda just like the rest of the world is expected to rise over the next few decades with the average temperature increase over the next 50 years predicted to be in the range of 1.5 to 2°C. On the extreme end (with little climate change mitigation), the temperature rise over the same period could be in the range of 2 to 3°C.

(1) NEMA 2006/07

Figure 5.1 Rainfall Patterns within the NEC

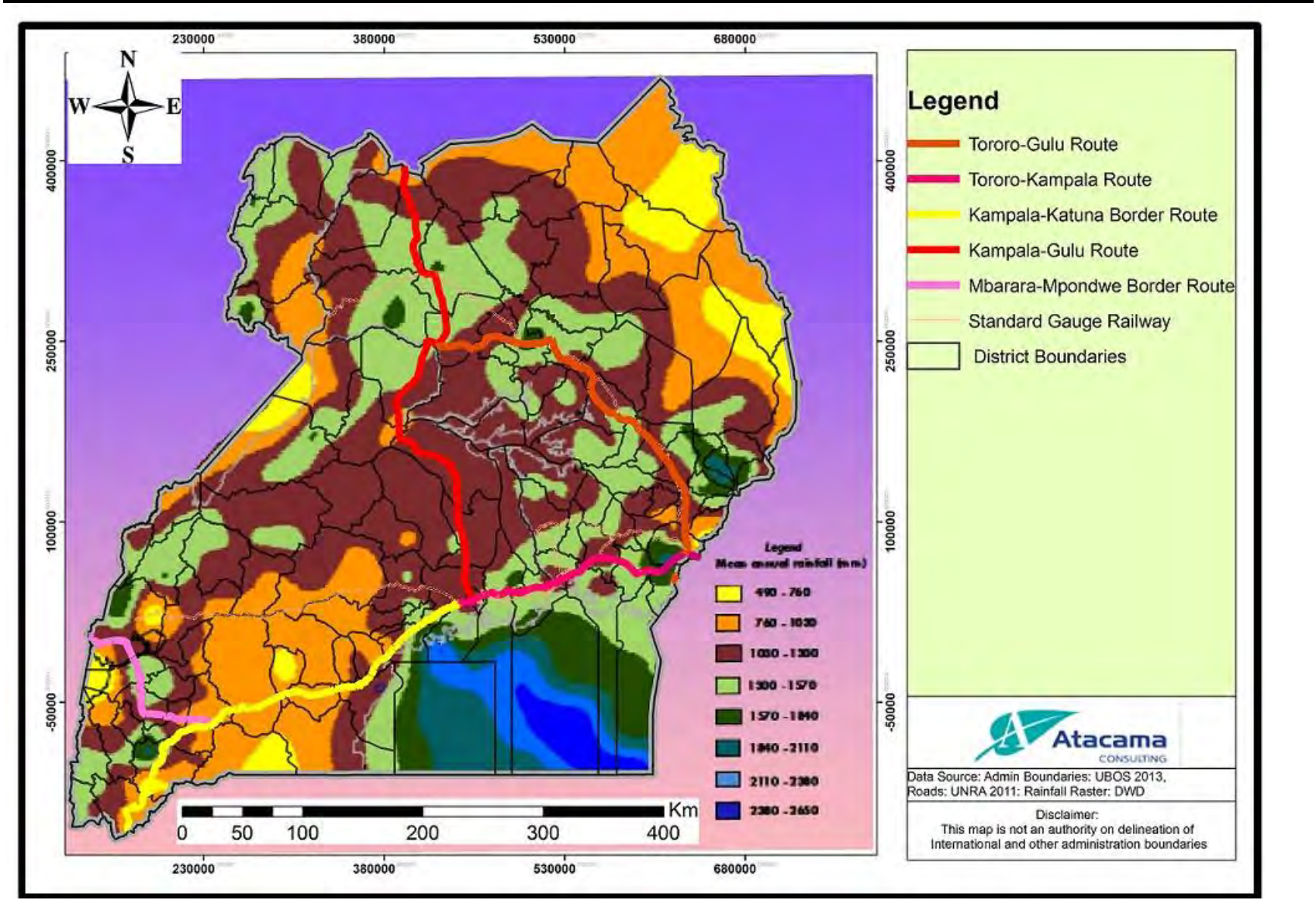
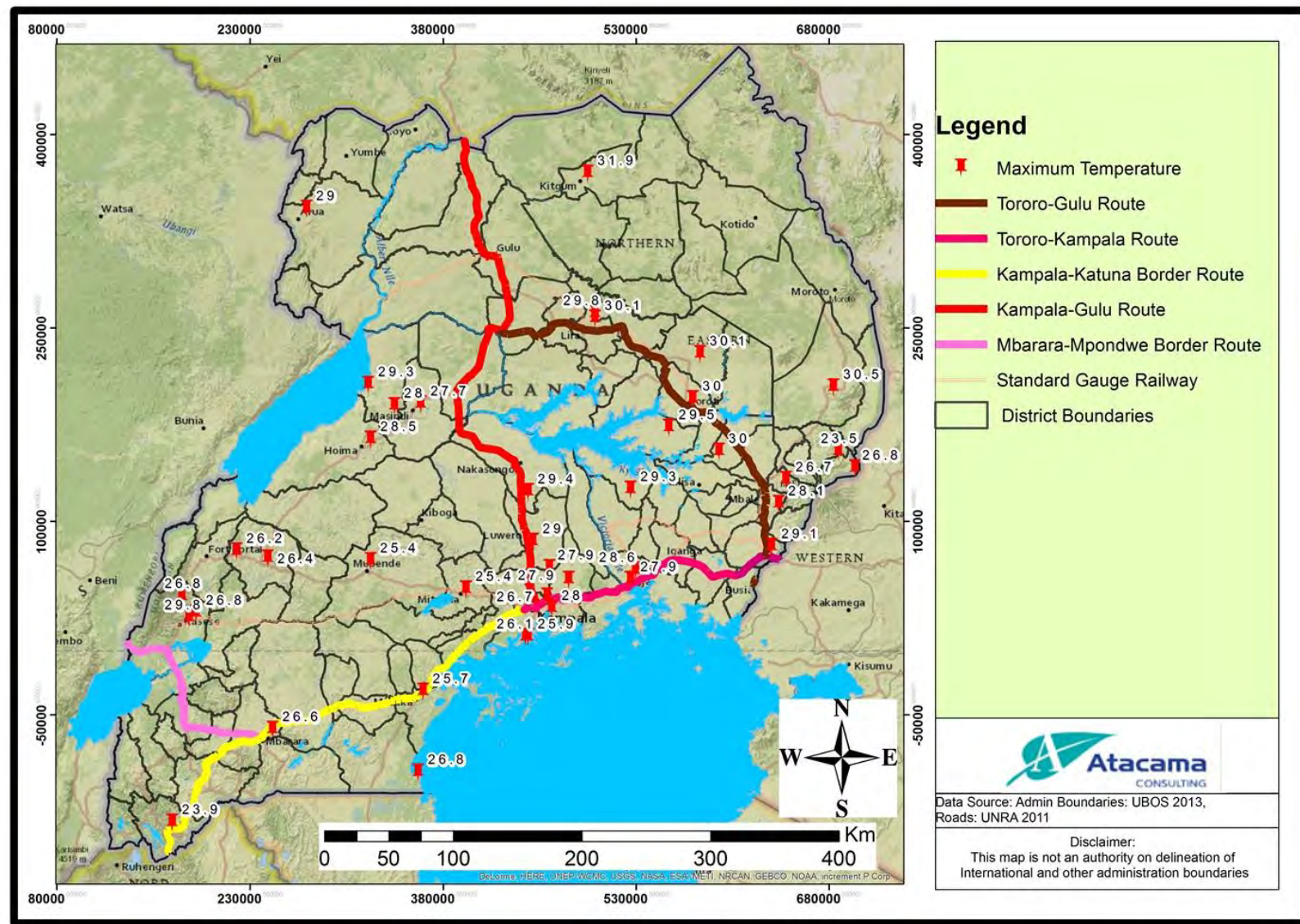


Figure 5.2 Temperature Variation within the NEC



## 5.1.2

### *Air Quality*

Sources of particulate air pollution described in the studies of African cities are typically emissions from vehicles, re-suspended dust from unpaved roads, smoke from indoor biomass fuel use and garbage burning, and industrial sites.

Available literature for a pilot cross – sectional spatial assessment of the state of ambient air quality in two Ugandan urban centres (Kampala and Jinja, also within the NEC) conducted in 2014 has been considered in this assessment. This pilot study demonstrated presence of high Particulate Matter (PM) concentrations and low gas phase air pollutant levels (NO<sub>2</sub>, SO<sub>2</sub> and O<sub>3</sub>) in Kampala and Jinja between 30 June and 17 July, 2014 – dry season (Bruce *et.al* 2015). The observed mean PM<sub>2.5</sub> concentration of 132.1 µg/m<sup>3</sup> was 5.3 fold above the limit defined by World Health Organisation (WHO). As expected, particulate air pollution levels were found to be greatest in areas with high commercial/industrial land use and unpaved roads.

Although Uganda has the National Environment (Draft Air Quality) Standards for Uganda (2006) in place, as indicated in *Table 3.1*, the Country launched her National GHG inventory system on 21<sup>st</sup> October 2016. The leading sectors of greenhouse gas emissions identified include; transport, agriculture and energy. Uganda has already ratified the Paris Agreement on Climate Change and is committed to reducing GHG emissions by 22 percent by 2030 under the country's Nationally Determined Contributions (NDC).



**Table 5.1** *Regulatory Air Quality Standards for Selected Gases (1)*

<b>Pollutant</b>	<b>Averaging time for ambient air</b>	<b>Standard for ambient air</b>
Carbon dioxide (CO <sub>2</sub> )	8hr	9.0ppm
Carbon monoxide (CO)	8hr	9.0ppm
Hydrocarbons	24hr	5mgm-3
Nitrogen dioxides (NO <sub>2</sub> )	24hr	0.10ppm
Smoke	Not to exceed 5 minutes in any 1hr	Ringlemann scale No.2 or 40 percent observed at 6m or more
Soot	24hr	500µg/Nm-3
Sulphur dioxide (SO <sub>2</sub> )	24hr	0.15ppm-3
Sulphur trioxide (SO <sub>3</sub> )	24hr	200µg/Nm-3

Source: Draft National Air Quality Standards (2006).

Transport related emissions within the NEC tend to be high largely as a result of the large stock of used vehicles that are imported into the country including those that ply the routes along the corridor. The fuel efficiency of such vehicle tends to be poor which in turn leads to the high emission of Greenhouse gases that affect the air quality.

### 5.1.3 *Hydrology and Water Resources*

#### *Surface Water*

The surface drainage system of Uganda is highly complex and interconnected (*Figure 5.3*). It is mainly influenced by landscape structure as a result of the initial uplift of the African surface in the eastern part of the continent, and the tectonic and volcanic activities that took place during the later geological times (Uganda Atlas, 2009).

Most of Uganda lies within the upper part of the White Nile Basin and is nearly wholly drained by the White Nile, save for a small portion to the north-east, that drains into the Lake Turkana basin in Kenya (UN Water, 2005<sup>2</sup>). The Nile has its source at the point where Lake Victoria spills over Ripon Falls.

Uganda's Department of Water Resources Management (DWRM) has categorised the surface water resources of Uganda into eight main drainage sub-basins (Francis *et.al* 2014).

(1) ppm= parts per million; "N" in µg/Nm-3 standards for normal atmospheric conditions of pressure and temperature (25oC and 1 atmosphere).

<sup>2</sup>UN-WATER/WWAP, 2005.Uganda National Water Development Report.

These include; Lake Victoria, Lake Kyoga, River Kafu, Lake Edward, Lake Albert, River Aswa, Albert Nile and Kidepo valley. The yield from these sub-basins, although small compared with the total Nile flow, dominates the water resources potential within Uganda.

The NEC traverses the Lake Victoria Basin, Lake Edward Basin, Lake Kyoga Basin, Victoria Nile Basin and the Albert Nile Basin (*Figure 5.4*). Due to the interconnected nature of the surface water resources of Uganda, the Corridor traverses some of the country's major wetlands (of social and ecological importance) in the Lake Kyoga basin (Tororo - Gulu route) and Lake Victoria basin (Kampala - Mbarara route) (*Figure 5.3*). Also important to consider is the transboundary River Nile crossing along the Tororo - Kampala route as well as the Kazinga channel crossing along the Mbarara - Mpondwe route. This channel is amongst the most important features of the Queen Elizabeth National Park, supporting a vast array of wildlife and important for tourism in this region.

#### *Water quality*

The key player in regular water quality monitoring is the Water Resources Management Department of the Directorate of Water Development, which falls under the Ministry of Water, Lands and Environment

Available water quality data for point sources, non-point sources, rivers, streams, and lakes, have some extreme values, indicating some surface waters are threatened by pollution. The major sources of pollution include sewerage and municipal or urban effluents, industrial effluents, domestic effluents, agricultural run-off and changes in landuse, leading to soil erosion and eutrophication of surface water resources<sup>1</sup>.

Forested areas and wetlands perform water purification functions in Uganda. However increasing population density and demand for land for agriculture, settlements and industrial establishments have led to their widespread clearance. The resulting landscape is poor at retaining and purifying water, leading to rapid water runoff and soil erosion. This, coupled with little or no access to improved sanitation, inappropriate land and wetland uses, and poor quality discharges from industry and municipalities and other urban areas, undermines the quality of surface water in the respective water catchments.

<sup>1</sup> Otim., M (2005). Baseline Study of the Status of Water Quality Monitoring In Uganda. The Nile Basin Transboundary Environmental Action Project

Figure 5.3 Surface Drainage along the NEC

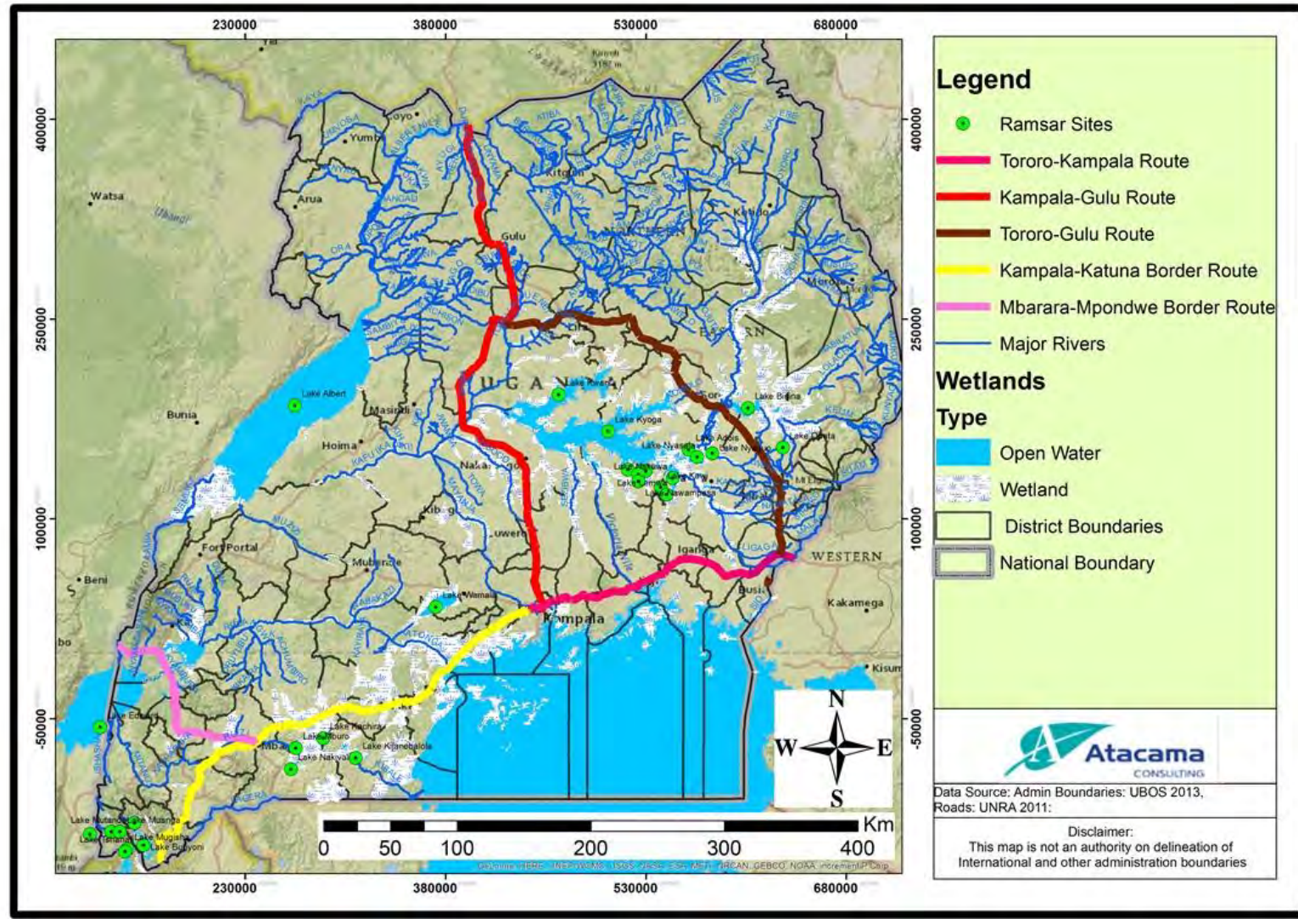
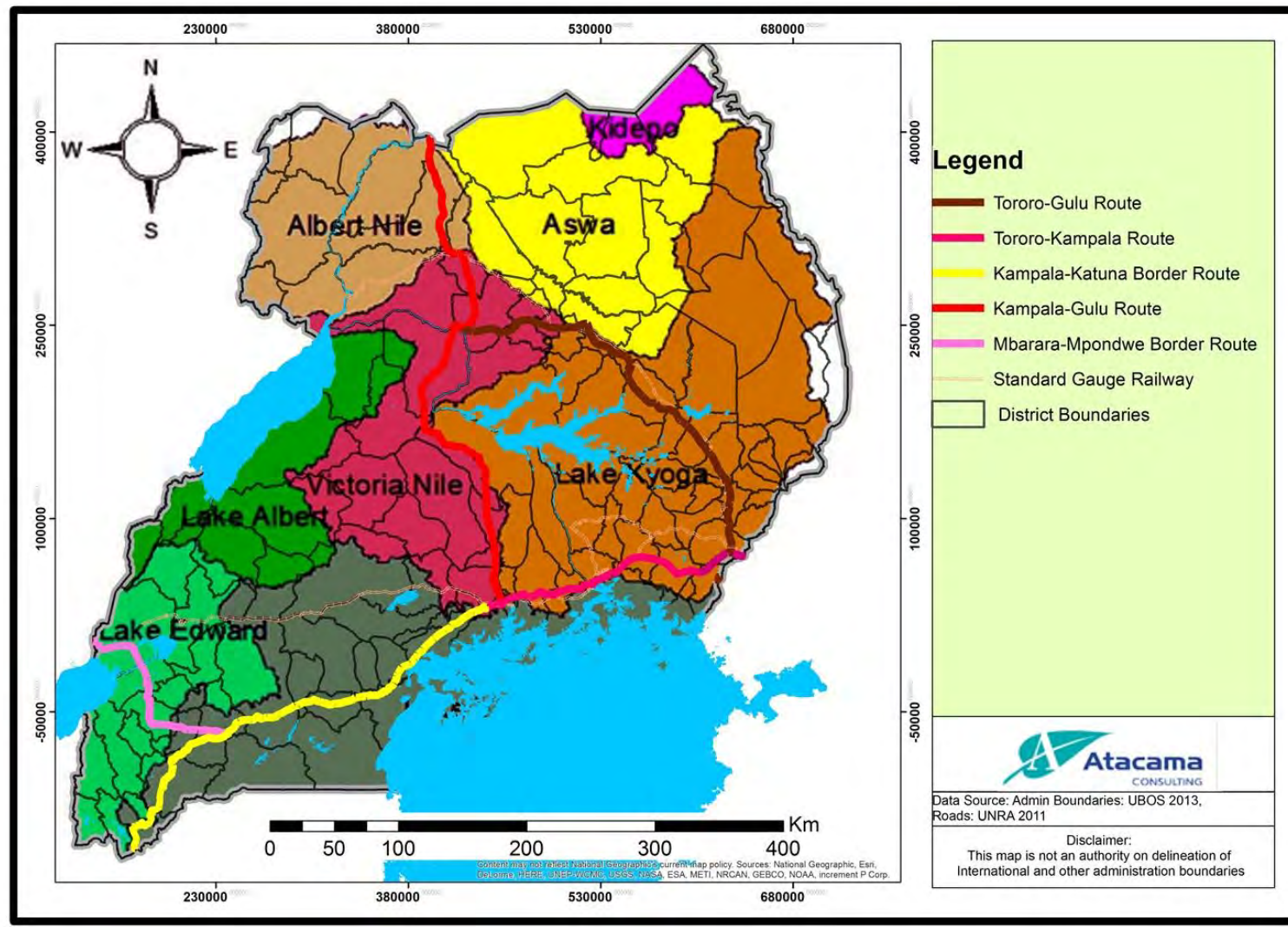


Figure 5.4 Drainage basins along the NEC



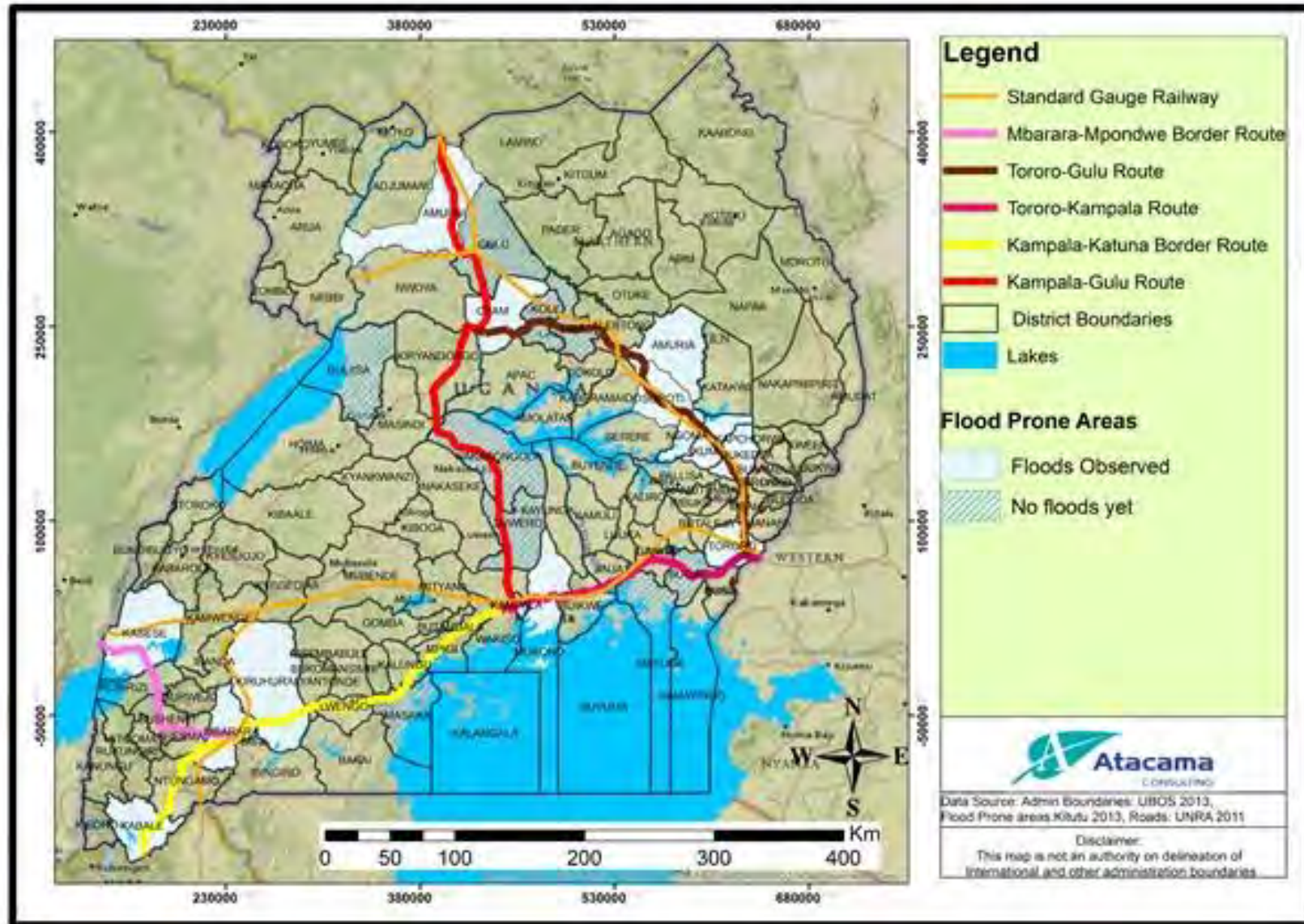
#### 5.1.4

#### *Flooding*

An area's risk to flooding is a combination of the topography, nature of soils and amount of rainfall received. For example flat lands are at a higher risk of flooding than uplands/ hill slopes. Similarly, compacted soils provide favorable conditions for flooding due to their low water infiltration rates and areas that receive high amounts of rainfall can easily be flooded compared to those that receive low amounts of rainfall. Furthermore, it is important to note that change in land use practices has an effect on the soil properties and can thus alter the level of proneness of an area to flooding.

Using the above approach, the flood areas of Uganda were determined (Kitutu 2013) and the results in relation to the NEC are as presented below. Of the 39 districts traversed by the NEC, 23 of them are prone to flooding. More so, floods had already occurred (2013) in 14 of the 23 flood prone districts (*Figure 5.5, Table 5.2*). Half of the districts where floods had occurred are along the Tororo – Gulu route.

Figure 5.5 Flood prone areas along NEC



**Table 5.2 Flood prone Districts traversed by the NEC**

<b>N0.</b>	<b>District</b>	<b>NEC Route</b>	<b>Status</b>
1	Kampala	Kampala- Gulu route	Observed
2	Luwero	Kampala - Gulu route	No floods yet
3	Nakasongola	Kampala - Gulu route	No floods yet
4	Kabale	Kampala - Katuna border route	Observed
5	Kiruhura	Kampala - Katuna border route	Observed
6	Masaka	Kampala- Katuna border route	No floods yet
7	Mbarara	Mbarara - Mpondwe route	Observed
8	Kasese	Mbarara - Mpondwe route	Observed
9	Tororo	Tororo - Kampala route	Observed
10	Busia	Tororo - Kampala route	No floods yet
11	Bugiri	Tororo - Kampala route	No floods yet
12	Mukono	Tororo - Kampala route	Observed
23	Ngora	Tororo - Gulu route	Observed
14	Kumi	Tororo - Gulu route	Observed
15	Bukedea	Tororo - Gulu route	Observed
16	Mayuge	Tororo - Gulu route	No floods yet
17	Amuria	Tororo - Gulu route	Observed
18	Soroti	Tororo - Gulu route	Observed
19	Amuru	Tororo - Gulu route	Observed
20	Gulu	Tororo - Gulu route	No floods yet
21	Kole	Tororo - Gulu route	No floods yet
22	Lira	Tororo - Gulu route	No floods yet
23	Oyam	Tororo - Gulu route	Observed

Source: Kitutu 2013

### 5.1.5 Groundwater

Groundwater is known to maintain baseflow to rivers, lakes and wetlands in several areas, although the magnitude of these contributions is not well understood. The contribution of groundwater is particularly important in the low-relief wetlands along the Katonga River and in the semi-arid Karamoja Region. Groundwater-fed springs are also important in the eastern and western highlands of Uganda.

The main aquifers in Uganda are in weathered crystalline basement rocks (*See Section 5.17, Geology*). These are generally low-permeability and low-storage aquifers, and the physical properties are largely a function of tectonic history and long-term cycles of weathering and erosion. Unconsolidated deposits also form aquifers of local importance.

Igneous, sedimentary and metasedimentary rocks are not widely used as aquifers and little is therefore known about their aquifer properties. There are currently no widespread issues with groundwater quantity, although localised groundwater depletion may be an issue where the low permeability basement aquifers are exploited by high yielding electric pumps.

Groundwater quality in Uganda is generally good, although high concentrations of iron and manganese are common in the crystalline basement aquifers, and microbial contamination related to faecal waste has been observed in shallow urban aquifers. High fluoride concentrations are often observed in igneous groundwater, for example at Kisoro and Mbale (Tororo – Kampala – Katuna border route).

### 5.1.6 Topography

Topography is a key factor worth considering when planning for infrastructure (residential buildings, non-residential private buildings, public infrastructure, roads, railways and bridges) related interventions.

Uganda can be divided into four relief regions:-

- (i) Above 2000 metres – 2 percent of the land area;
- (ii) 1500 – 2000 metres – 5 percent of the land area;
- (iii) 900 – 1500 metres – 84 percent of the land area; and
- (iv) Below 900 metres – 9 percent of the land area.

Areas in the western and south-western parts of the country predominantly range from 750m to 2250m above sea level; those areas closer to Mount Rwenzori reach an altitude of 4655m above sea level; areas in the northern and north-eastern parts range from 750m to 1500m above sea level; while those in the north-western parts predominantly range from 750m to 1000m above sea level. Areas in the eastern parts of the country range from 1000m to 4855m above sea level. This is majorly because of the existence of Mount Elgon in the eastern region.

The lowest elevation within the NEC, is 52m above sea level in Amuru District, and the highest elevation is 1462m above sea level in different sections of the corridor as indicated in *Figure 5.6*. The topography along the other routes that make up the corridor is indicated below.



*Tororo - Kampala - Mbarara route*

This section of the Corridor lies within an attitude range of 1163m to 1462m above sea level.

*Mbarara – Katuna border route*

The section of the Corridor lies largely within an altitude range of 1462m to 1804m above sea level.

*Mbarara – Mpondwe border route*

From Mbarara, the section lies within an altitude range of 1462m to 1804m above sea level and the altitude drops to between 864m to 1163m above sea level in the later sections.

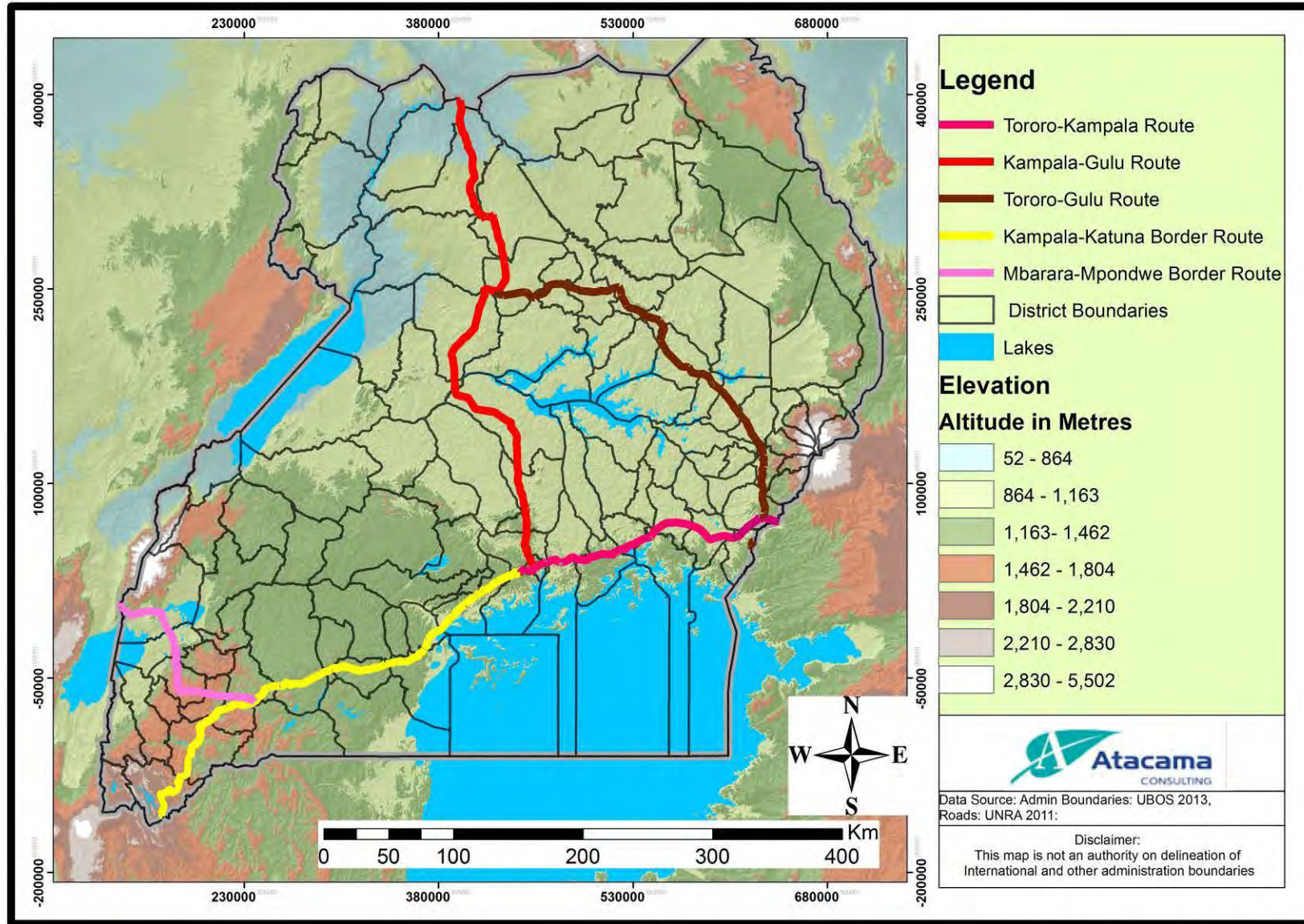
*Tororo - Gulu route*

This section of the Corridor lies within an attitude range of 864m to 1163m above sea level.

*Kampala – Gulu route*

This section of the Corridor lies largely within an attitude range of 864m to 1163m above sea level but the altitude drops to between 52m and 864m above sea level in Amuru district.

Figure 5.6 Generalised Topography along NEC



Uganda lies in the eastern part of the African Continental crust. The geology of the country is comprised of crystalline Precambrian basement rocks, Proterozoic metavolcanic and metasedimentary formations, Paleozoic Karoo formation and Mesozoic to Cainozoic volcanic rocks and sediments (*Figure 5.7*). Major structures across Uganda include the rift system of the western flank and the Aswa shear zone (~ 300 km long).

According to geological studies (Kisolo and Barifajj, 2008), two-thirds of Uganda is underlined with Precambrian rocks. Archean rocks are exposed in the south-east of the country and are part of the extensive granite-greenstone terrane of the Tanzania Craton. Three major Proterozoic belts underlie central and western Uganda: the Paleoproterozoic Buganda-Toro metasediments, the Mesoproterozoic Karagwe-Ankolean (Kibaran) belt in the south-west of the country, and Neoproterozoic Pan-African rocks (Gabert 1984). The Neoproterozoic includes; the Bunyoro Series with tillites and argillites (Bjorlykke 1973), and the under-formed shallow water sediments of the Bukoban Super group. Tertiary to recent sediments have filled parts of the down-faulted Western Rift. Tertiary carbonatites and Cenozoic volcanics are related to rift activities and occur along the eastern and western borders of the country.

The NEC is underlain by the following geological formations (*Figure 5.7*):

**The Nyanzian complex** is comprised principally of mafic volcanic rocks and sediments. It forms the gold-bearing greenstone belt, which is part of the famous Lake Victoria gold field of northern Tanzania and western Kenya. Gold mineralisation is confined to quartz veins within the basic metavolcanics, within banded-iron formations (BIF) or in the rocks adjacent to the BIF units.

**The Buganda-Toro system** is composed of argillaceous rocks together with quartzites and stretches from the southwest of the country through Rwenzori Mountains swinging eastward to the north of Lake Victoria. In some areas in central and southern parts within this belt, the rocks are metamorphosed to a higher degree reaching the almandine-amphibolite facies. The system is a host to gold, base metals such as copper, cobalt, nickel, columbite-tantalite and tungsten.

**Basement Complex** is of predominantly granitic metamorphic rocks of Archaean shield in central and northern areas of the country. Little mapping has been undertaken to differentiate the rock units. This domain has a variety of minerals which include asbestos, graphite, kyanite, garnet, talc, feldspar, kaolin, clays and stone for aggregate.

**The Karagwe-Ankolean system** extends from the southwest of the country for over 2000 kilometres to Katanga in the Democratic Republic of Congo. The rocks are similar to those of the Buganda -Toro System but are usually less metamorphosed. Intrusive porphyritic granites within the cores of anticlines are a common feature. The system is a major host of gold, tin, tungsten, beryl, lithium, columbite, tantalite, bismuth and iron ore. Most gold workings in the belt have been largely by artisans.

The geology along the respective routes of the corridor is as indicated below:

*Tororo - Kampala route*

The route is underlain by the Nyanzanian Basement complex in Tororo district and the Buganda -Toro Proterozoic rocks in the Busoga region districts.

*Tororo - Gulu route*

The route is generally underlain by undifferentiated basement complex.

*Kampala - Katuna Border route*

The route is mainly underlain by Proterozoic rocks and undifferentiated basement complex.

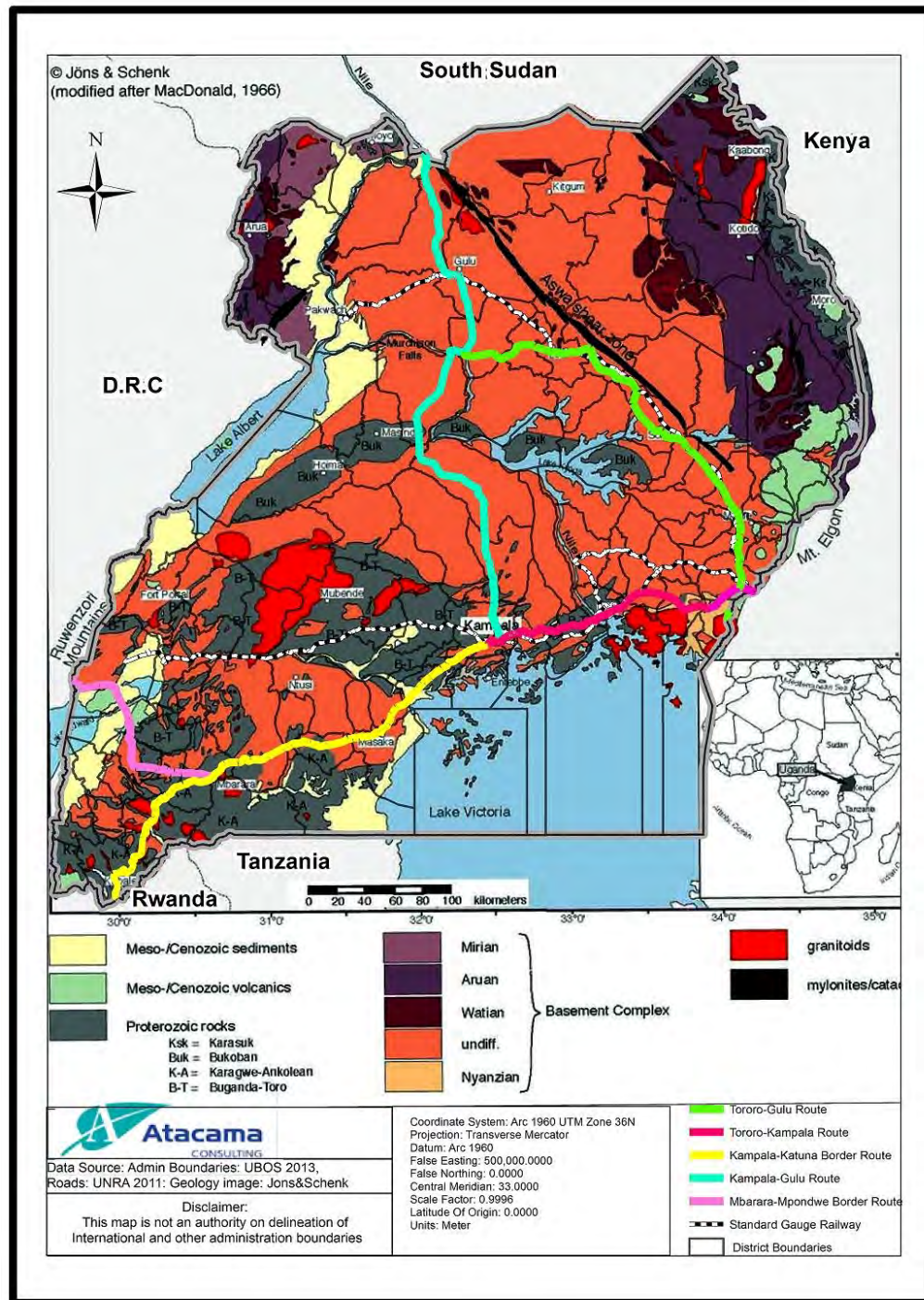
*Kampala - Gulu route*

Similar to the Tororo - Gulu route, the Kampala - Gulu route is underlain by undifferentiated basement complex. In addition, a section of the route, specifically in Masindi district, is underlain by the Bukoban Proterozoic rocks.

*Mbarara - Mpondwe border route*

Within Mbarara district, the route is overlain by the Karagwe-Ankolean Proterozoic rocks but proceeds further into undifferentiated basement complex and meso/Cenozoic sediments and meso/Cenozoic volcanics to the Mpondwe border.

Figure 5.7 Generalised Geology of Uganda

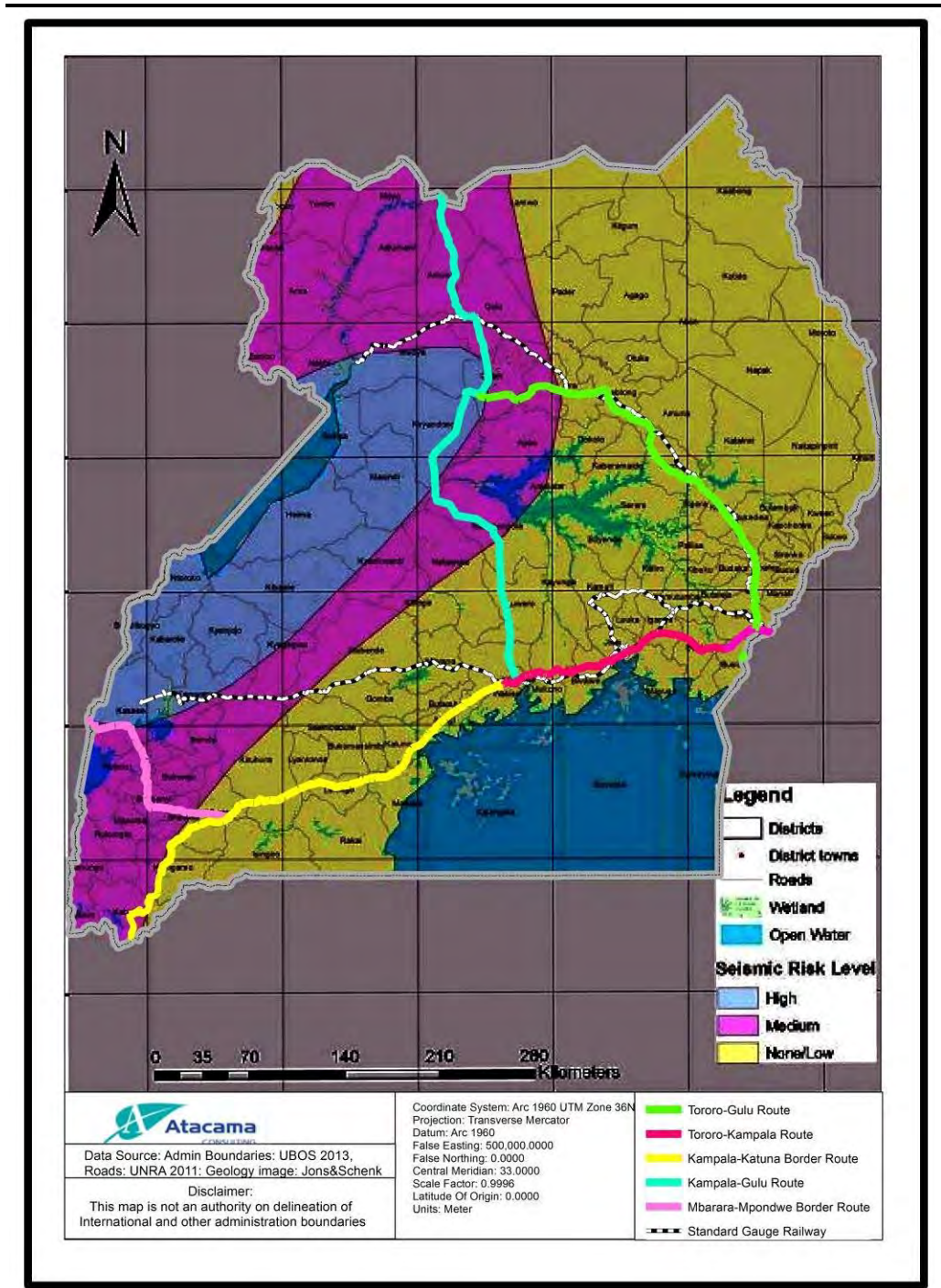


### 5.1.8 Seismicity

Seismicity of an area refers to, the frequency, type and size of earthquakes (the result of a sudden release of energy in the earth's crust that creates seismic waves) experienced over a period of time. The Eastern African Rift System (EARS) is one of the tectonic features most associated with seismicity in Uganda.

The others are the Katonga fault break which starts from the foot hills of the Rwenzori Block Mountains, traverses Lake Victoria and connects to the Kavirondo Gulf in south-western Kenya and the Speke Gulf south of Lake Victoria in Tanzania; and, the Aswa shear zone that starts from Nimule at the South Sudan-Uganda border and joins Mt. Elgon on the Eastern border (Figure 5.8)

Figure 5.8 Seismicity of Uganda



Source: Kitutu, 2013

Uganda lies in an earthquake zone but the earthquakes that have occurred in the region have all been relatively weak in the past two decades. In 1994 an earthquake (6.2 on the Richter scale) struck near Fort Portal, and affected about 50,000 people in the region leaving extensive damage but a limited number of casualties.

### 5.1.9

#### **Soils**

The NEC in Uganda traverses several soil types as indicated in *Figure 5.9*. Soil is particularly important in the Ugandan context given that the country's economy is largely subsistence driven with agriculture accounting for the largest workforce. The respective soil types in the NEC are discussed below:

#### **Luvisols**

These soils are moderately weathered with favourable physical characteristics. The mixed mineralogy, high nutrient content, and good drainage of these soils make them suitable for a wide range of agriculture, from grains to orchards to vineyards. Luvisols form on flat or gently sloping landscapes under climatic regimes that range from cool temperate to warm Mediterranean. Luvisols are technically characterized by a surface accumulation of humus overlying an extensively leached layer that is nearly devoid of clay and iron-bearing minerals (<http://www.britannica.com/science/Luvisol>).

#### **Leptosols**

Leptosols are soils with a very shallow profile depth (indicating little influence of soil-forming processes), and they often contain large amounts of gravel. They typically remain under natural vegetation, being especially susceptible to erosion, desiccation, or waterlogging, depending on climate and topography (<http://www.britannica.com/science/Leptosol>).

#### **Planosols**

Planosols are characterised by a subsurface layer of clay accumulation. They occur typically in wet low-lying areas that can support either grass or open forest vegetation. They are poor in plant nutrients, however, and their clay content leads to both seasonal waterlogging and drought stress (<http://www.britannica.com/science/Planosol>).

## **Andosols**

Andosols are highly porous, dark-coloured soils developed from parent material of volcanic origin, such as volcanic ash, tuff, and pumice (<http://www.britannica.com/science/Andosol>).

## **Nitisols**

Nitisols are strongly influenced by biological activity, resulting in a homogenization of the upper portion of the soil profile. They are perhaps the most inherently fertile of the tropical soils because of their high nutrient content and deep, permeable structure. They are exploited widely for plantation agriculture.

## **Regosols**

Regosols are characterised by shallow, medium-to fine-textured, unconsolidated parent material that may be of alluvial origin and by the lack of a significant soil horizon (layer) formation because of dry or cold climatic conditions (<http://www.britannica.com/science/Regosol>).

## **Plinthosols**

Plinthosols form under a variety of climatic and topographic conditions. They are defined by a subsurface layer containing an iron-rich mixture of clay minerals (chiefly kaolinite) and silica that hardens on exposure into ironstone concretions known as plinthite. The impenetrability of the hardened plinthite layer, as well as the fluctuating water table that produces it, restrict the use of these soils to grazing or forestry, although the hardened plinthite has value as subgrade material for roads or even as iron ore (<http://www.britannica.com/science/Plinthosol>).

The soil types along the respective routes of the corridor are as indicated below:

### *Tororo - Kampala route*

The sub-route is underlain by soil types including; Petric Plinthosols, Nitisols, Luvisols and Acric Ferrasols.



*Tororo - Gulu route*

The route is mainly underlain by Petric Plinthosols, Acric Ferrasols, Leptosols, Luvisols and Melanic Andosols.

*Kampala - Katuna Border route*

The route is mainly underlain by Luvisols, Planosols, Acric Ferrasols, and Dystric Regsols.

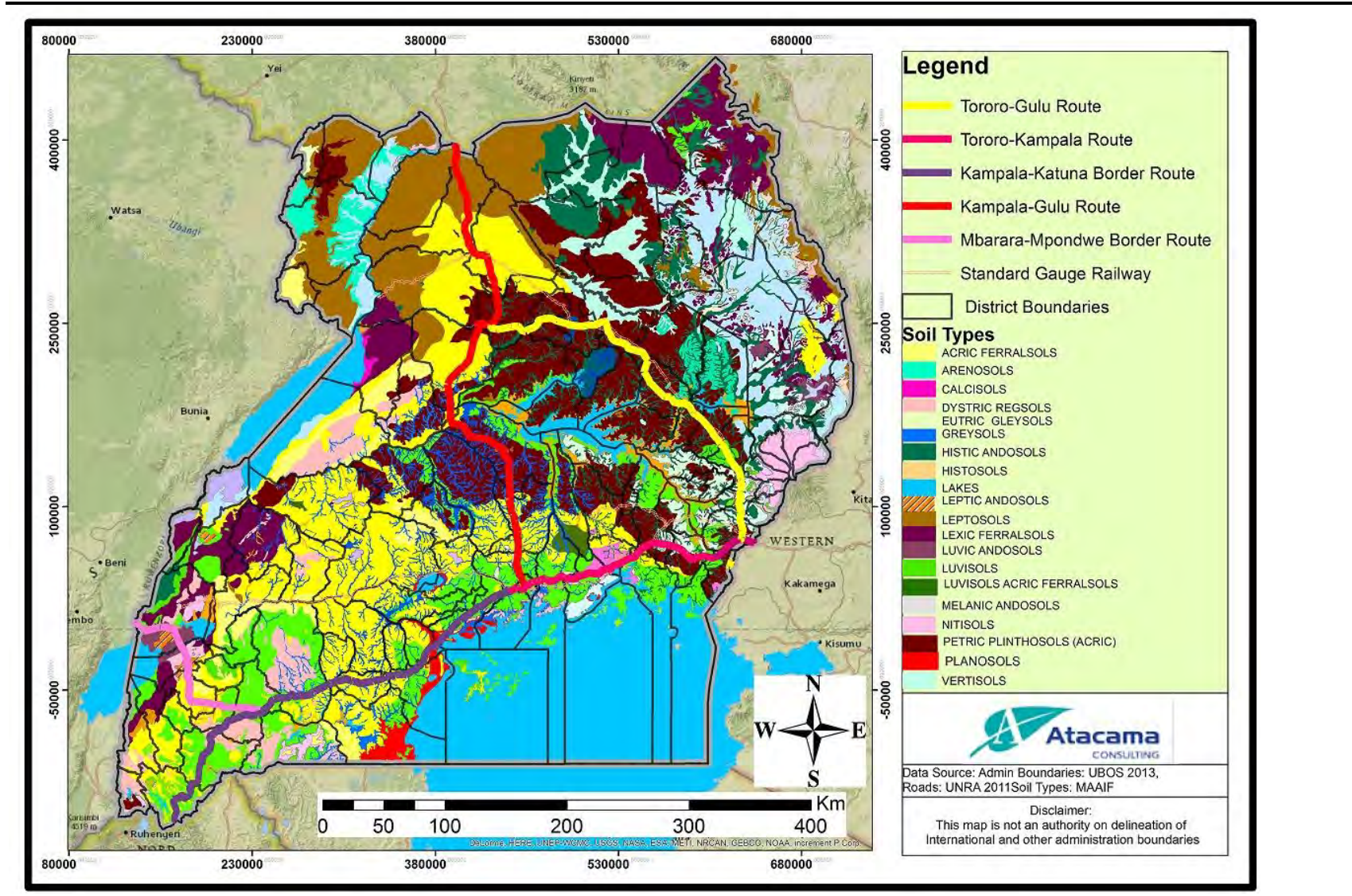
*Kampala - Gulu route*

The route is underlain by Luvisols, Acric Ferrasols, Petric Plinthosols and Leptosols

*Mbarara - Mpondwe Border Route*

The route is overlain by Luvisols, Acric Ferrasols, Nitisols and Luvic Andosols.

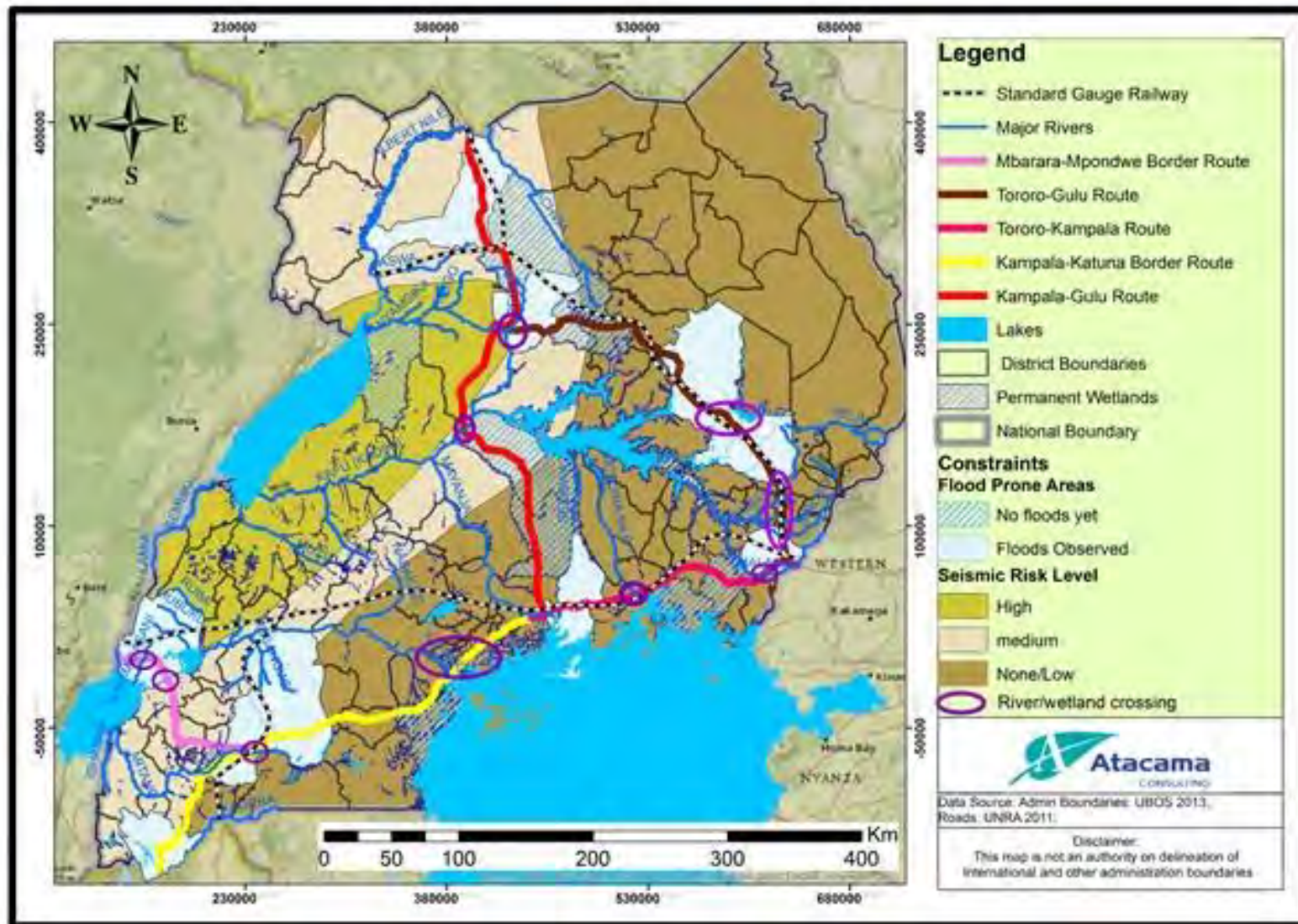
Figure 5.9 Soils Types along the NEC



*Physical Constraints Identified within the NEC.*

The physical constraints identified are presented in *Figure 5.10*.

Figure 5.10 Physical Constraints along the NEC



## 5.2 *BIOLOGICAL ENVIRONMENT*

### 5.2.1 *Description of the biological environment*

Biodiversity is essentially defined as the abundance and diversity of living things, or the assortment, variation and array of flora and fauna. In this context biodiversity is herein taken to refer to flora and fauna (species diversity) and their associated habitats (ecological diversity). Uganda is rich in biodiversity, and relatively richer than many African countries for its small size 241,000 km<sup>2</sup>. The country is rich in terms of species richness and abundance; has species of high conservation value(s), and a rich and varied landscape with many ecosystems (National Biodiversity Data Bank, 2012).

The biological environment described in this section includes the biodiversity along the NEC at ecosystem level. Protected and sensitive ecosystems within the NEC are described in *Table 5.5* and depicted in *Figure 5.11*.

### 5.2.2 *Flora*

The natural vegetation of an area is that type of plant cover that grows naturally following climatic conditions. Due to a variety of climatic conditions, soil and altitude, a wide range of natural vegetation grows in Uganda ranging from high montane moorland and through various types of forests, forest-savanna mosaics, savannas, thickets, grasslands, wetlands and cultivated forest, grassland and swamps. The two major ecosystems in Uganda are the forests and wetlands.

#### *Forests*

Uganda's natural forests vary in structure and composition in different parts of the country covering a wide range of habitats and terrestrial biodiversity. It is in these forests that most of Uganda's biodiversity can be found (NEMA and MoWE, 2009).

The major forests in Uganda with respect to the NEC include:

- West Bugwe (Busitema) CFR;
- South Busoga CFR;
- Mabira CFR;
- Kasagala CFR;
- Katugo CFR;
- Nyamakere CFR;
- Opit CFR;

- Kilak CFR;
- Kibeka CFR;
- Mpigi group CFRs;
- Kalinzu and Maramagambo CFRs;
- Kashyoha-Kitomi CFR;
- Jubiya CFR;
- Bukabaleba CFR;
- Igwe Luvunya CFR;
- Kijanebalola CFR; and
- Kyalwamuka CFR.

### *Wetlands*

For its size, Uganda's wetlands are complex and extensive, being found in almost all areas of the country. The country's wetlands ecosystems can be classified into two broad categories: wetlands associated with lakes, and wetlands associated with rivers and flood plains. Prominent wetland flora is comprised of emergent, floating and submerged categories of macrophytes plus the microscopic, mostly epiphytic algae. The most common vegetation in Uganda's wetlands is papyrus but other wetlands include flood plains and swamp forests. The road infrastructure along the NEC traverses some of Uganda's permanent wetland systems listed below:

- Lake Mburo wetland system;
- Lake Victoria wetland system;
- Lake Kyoga wetland system;
- River Kagera wetland system; and the
- Victoria Nile wetland system.

### 5.2.3 *Fauna*

Uganda is home to species of world-wide importance and contains globally recognised biodiversity of species and habitats that are distributed throughout the country's vast wetlands, lakes, protected forests, and savannah grasslands. Despite its small size, Uganda has an extraordinary amount of diversity in both terrestrial and aquatic habitats occurring within and outside protected areas (NEMA and MoWE, 2009).

However, largely, the status of biodiversity outside the PAs is not known for most species. Uganda Wildlife Authority (UWA) is the statutory body established by the Uganda Wildlife Act 2000 mandated with management and conservation of wildlife in Uganda, both in and outside the wildlife protected areas.

Protected areas traversed by the NEC include; Lake Mburo National Park along the Kampala - Mbarara - Mpondwe route, Murchison Falls National Park along the Kampala - Gulu route, Mabira Central Forest Reserve along the Tororo - Kampala route as well as Queen Elizabeth National Park (QENP) along the Mbarara - Mpondwe route.

### *Mammals*

Uganda has a total of 345 mammal species<sup>1</sup> in all sizes; from large mammals Gorillas, Lions, and Elephants to small ones, such as Bats, Rats, shrews and moles. Of particular relevance are the IUCN red-listed species indicated in the *Table 5.3* below.

**Table 5.3** *IUCN Red-Listed Mammals in Uganda*

Species name	Common name	IUCN status	Location in Uganda
<i>Lycaon pictus</i>	Hunting Dog	EN	Pian Upe Wildlife Reserve and possibly Karamoja to Kidepo Valley National Park
<i>Acinonyx jubatus</i>	Cheetah	VU	Kidepo Valley National Park, Pian Upe Wildlife Reserve, Matheniko-Bokora Wildlife Reserve
<i>Panthera leo</i>	Lion	VU	Queen Elizabeth National Park, Murchison Falls National Park, Kidepo Valley National Park (very small numbers also in Toro-Semliki Wildlife Reserve)

<sup>1</sup> NEMA, 2007. National Environment Management Authority, 2006/07, *State of Environment Report for Uganda*, NEMA, Kampala.

Species name	Common name	IUCN status	Location in Uganda
<i>Loxodonta africana</i>	African Elephant	VU	Murchison Falls National Park, Queen Elizabeth National Park, Kibale National Park, Kidepo Valley National Park, Bwindi Impenetrable National Park, Semuliki National Park, Toro-Semliki Wildlife Reserve
<i>Delanymys brooksi</i>	Delany's Mouse	VU	South Western, known from Echuya Forest Reserve
<i>Cephalophus rubidus</i>	Rwenzori Duiker	EN	Rwenzori Mountain National Park
<i>Giraffa rothschildi</i>	Rothschild's Giraffe	EN	Murchison Falls National Park, Kidepo Valley National Park
<i>Caracal aurata</i>	African Golden Cat	VU	Bwindi Impenetrable National Park, Kibale National Park, Mgahinga National Park, Kasyoha Kitomi Forest Reserve, Maramagambo Forest Reserve, Echuya Forest Reserve
<i>Myosorex blarina</i>	Ruwenzori Mouse-shrew, Montane Mouse-shrew	EN	Rwenzori Mountain. National Park
<i>Phataginus tetradactyla</i>	Long-tailed Pangolin, Black-bellied Pangolin	VU	Semuliki National Park
<i>Procolobus tephrosceles</i>	Uganda Bay Colobus	EN	Kibale National Park
<i>Gorilla gorilla</i>	Mountain Gorilla	EN	Mgahinga Gorilla National Park, Bwindi Impenetrable National Park
<i>Pan troglodytes</i>	Common Chimpanzee	EN	Found in nearly all Albertine Rift forest (except Echuya)
<i>Otomys barbouri</i>	Barbour's Vlei Rat	EN	Mt. Elgon National Park
<i>Dasymys montanus</i>	Montane Marsh Rat, Montane Shaggy Rat	EN	Rwenzori Mountain National Park
<i>Praomys degraaffi</i>	De Graaff's Praomys	VU	Bwindi Impenetrable National Park, Echuya Forest Reserve
<i>Hippopotamus amphibius</i>	Hippopotamus	VU	Widespread though only concentrated in Queen Elizabeth National Park and Murchison Falls National Park



Species name	Common name	IUCN status	Location in Uganda
<i>Ruwenzorisorex suncooides</i>	Osgood's Montane Shrew, Rwenzori Shrew	VU	Rwenzori Mountain National Park, possibly Bwindi Impenetrable National Park
<i>Sylvisorex lunaris</i>	Long-tailed Forest Shrew, Moon Forest Shrew	VU	Rwenzori Mountain National Park, Bwindi Impenetrable National Park, Mgahinga National Park
<i>Phataginus tricuspis</i>	Tree Pangolin, White-bellied Pangolin	VU	Bwindi Impenetrable National Park, Queen Elizabeth National Park, Mabira Forest Reserve, Budongo Forest Reserve, Kibale National Park
<i>Smutsia gigantea</i>	Giant Pangolin, Giant Ground Pangolin	VU	Murchison Falls National Park, Queen Elizabeth National Park, Lake Mburo National Park, Lake Albert, Migadde (Gayaza District), Kibale National Park, Budongo Forest Reser
<i>Smutsia temminckii</i>	Ground Pangolin, Temminck's Ground Pangolin	VU	Murchison Falls National Park, Kidepo Valley National Park
<i>Hybomys lunaris</i>	Rwenzori Striped Mouse	VU	Rwenzori Mountain National Park

Source: Wildlife Conservation Society, 2016

Key

EN: Endangered

VU: Vulnerable

### *Avifauna*

The avifauna of Uganda includes a total of 1012 species<sup>1</sup>. Of these, the IUCN redlisted species are indicated in the *Table 5.4* below. The birds occur in nearly all habitats although some areas such as the Lake Victoria Basin present rare opportunities for bird watching. The key avifauna habitats traversed by the corridor include R. Nile and Mabira Central Forest Reserve along the Tororo - Kampala route, Lake Mburo National Park along the Kampala - Katuna border route and Queen Elizabeth National park along the Mbarara - Mpondwe route. These are major tourist destinations for bird watchers in Uganda.

**Table 5.4 IUCN Red Listed Birds in Uganda**

Species name	Common name	IUCN status	Location in Uganda
<i>Neophron percnopterus</i>	Egyptian Vulture	EN	Queen Elizabeth National Park, Lake Mburo National Park, Pian Upe Wildlife Reserve, Kidepo Valley National Park, Karamoja sub-region (Mt Elgon)
<i>Torgos tracheliotus</i>	Lappet-faced Vulture	EN	Queen Elizabeth National Park, Lake Mburo National Park, Murchison Falls National Park, Semliki Wildlife Reserve
<i>Trigonoceps occipitalis</i>	White-headed Vulture	CR	Kidepo Valley National Park, Lake Mburo National Park, Queen Elizabeth National Park, Semliki Wildlife Reserve, Murchison Falls National Park
<i>Balearica pavonina</i>	Black-crowned Crane	VU	West Nile Region
<i>Ardeola idae</i>	Madagascar Pond-heron, Madagascar Squacco Heron	EN	Queen Elizabeth National Park, Lake Mburo National Park, Lake Victoria, Lake Albert, Lake Kyoga
<i>Balaeniceps rex</i>	Shoebill	VU	Lake Victoria, Lake Albert, Lake Kyoga, River Nile, Queen Elizabeth National Park, Lake Mburo National Park, Murchison Falls National Park
<i>Necrosyrtes monachus</i>	Hooded Vulture	CR	Throughout Uganda
<i>Gyps africanus</i>	African White-backed Vulture	CR	Significant populations in Queen Elizabeth National Park, Murchison Falls National Park
<i>Gyps rueppelli</i>	Ruppell's Griffon Vulture	CR	Queen Elizabeth National Park, Murchison Falls National park, Lake Mburo National Park
<i>Balearica regulorum</i>	Grey Crowned Crane	EN	Widespread in moist non---forest areas
<i>Pseudocalyptomena graueri</i>	African Green Broadbill	VU	Bwindi Impenetrable National Park (Ruhiza)
<i>Hirundo</i>	Blue Swallow	VU	Lake Victoria, Tororo

Species name	Common name	IUCN status	Location in Uganda
<i>atrocaerulea</i>			District, Kidepo Valley National Park (Napori Hills), Maramagambo Forest Reserve Queen Elizabeth National Park
<i>Apalis karamojae</i>	Karamoja Apalis	VU	Karamoja sub--region, Kidepo Valley National Park
<i>Muscicapa lendu</i>	Chapin's Flycatcher	VU	Bwindi Impenetrable National Park
<i>Cryptospiza shelleyi</i>	Shelley's Crimson-wing	VU	Rwenzori Mountains National Park, Bwindi Impenetrable National Park
<i>Ciconia microscelis</i>	African Woollyneck, Woolly-necked Stork	VU	Murchison Falls National Park, Queen Elizabeth National Park, Lake Mburo National Park, Lake Victoria, Lake Albert, Lake Kyoga, West Nile region
<i>Sagittarius serpentarius</i>	Secretary Bird	VU	Queen Elizabeth National Park, Murchison Falls National Park, Kidepo Valley National Park
<i>Ptilopachus nahani</i>	Nahan's Francolin	EN	Budongo Forest Reserve, Bugoma Forest Reserve, Mabira Forest Reserve
<i>Psittacus erithacus</i>	Grey Parrot	VU	Bwindi Impenetrable National Park, Mabira Forest Reserve, Maramagambo Forest Reserve, Lake Victoria (including Islands), Western Forests
<i>Bradypterus graueri</i>	Grauer's Swamp-Warbler, Grauer's Rush Warbler	EN	Muchuya wetland, Mubwindi wetland, Lake Bunyonyi
<i>Chloropeta gracilirostris</i>	Papyrus Yellow Warbler	VU	Lake Mburo National Park, Lake Albert, Nyamuriro Swamp IBA, Lake Bunyonyi, Lake George (Muhokya Wetland), Lake Mutanda

Source: Wildlife Conservation Society, 2016

Key

EN: Endangered

VU: Vulnerable

CR: Critically Endangered

## *Fish*

The fish diversity in Uganda includes 501 species<sup>1</sup>. Lake Victoria, which is the second largest fresh-water lake in the world, is also known to have high fish diversity. The *Lates Niloticus* (Nile perch) is the basis for L. Victoria's most important industry (fishing) and underpinning subsistence lifestyle in rural portions in the riparian districts of Lake Victoria. The other species include *Alestes*, *Barbus*, *Labeo*, *Synodontis*, *Schilbe*, *Protopterus*, *Clarius*, *Mormyrus* and *Haplochromis*. These fishes are of extreme high value and are sold as niche fishes in the domestic markets. (<http://www.afipek.org/lakevictoriafisheries.html>)

## *Amphibians*

Amphibians have not been comprehensively studied in Uganda. However, a total of 86 species of amphibians have so far been recorded in the country, 14 of which are listed as vulnerable according to the IUCN Red List<sup>1</sup>. Of the 86 species recorded, 38 are Albertine Rift Endemics.

Forty eight (48) species of amphibians are supported by Uganda's wetlands, with the rest existing under forest or savannah/grassland ecosystems.

## *Reptiles*

Uganda has a total of 142 species of reptiles<sup>1</sup> Two species of crocodile are known to occur in Uganda; the Nile crocodile (*Crocodylus niloticus*) and the dwarf crocodile (*Osteolaemus tetraspis*). There is very little information about the status of other reptiles such as snakes, which comprise 103 species of the total number of reptile species.

Wetlands support 19 species of reptiles<sup>2</sup> while many reptile species occur under the forest and savannah/grassland ecosystems.

The ecosystems/fauna habitats of particular relevance to the NEC are presented in *Table 5.5*. *Figure 5.11* is indicative of the biological constraints associated with the Master Plan.

<sup>1</sup> (USAID, 2006)

<sup>2</sup> (Uganda National Water Development Report, 2005)

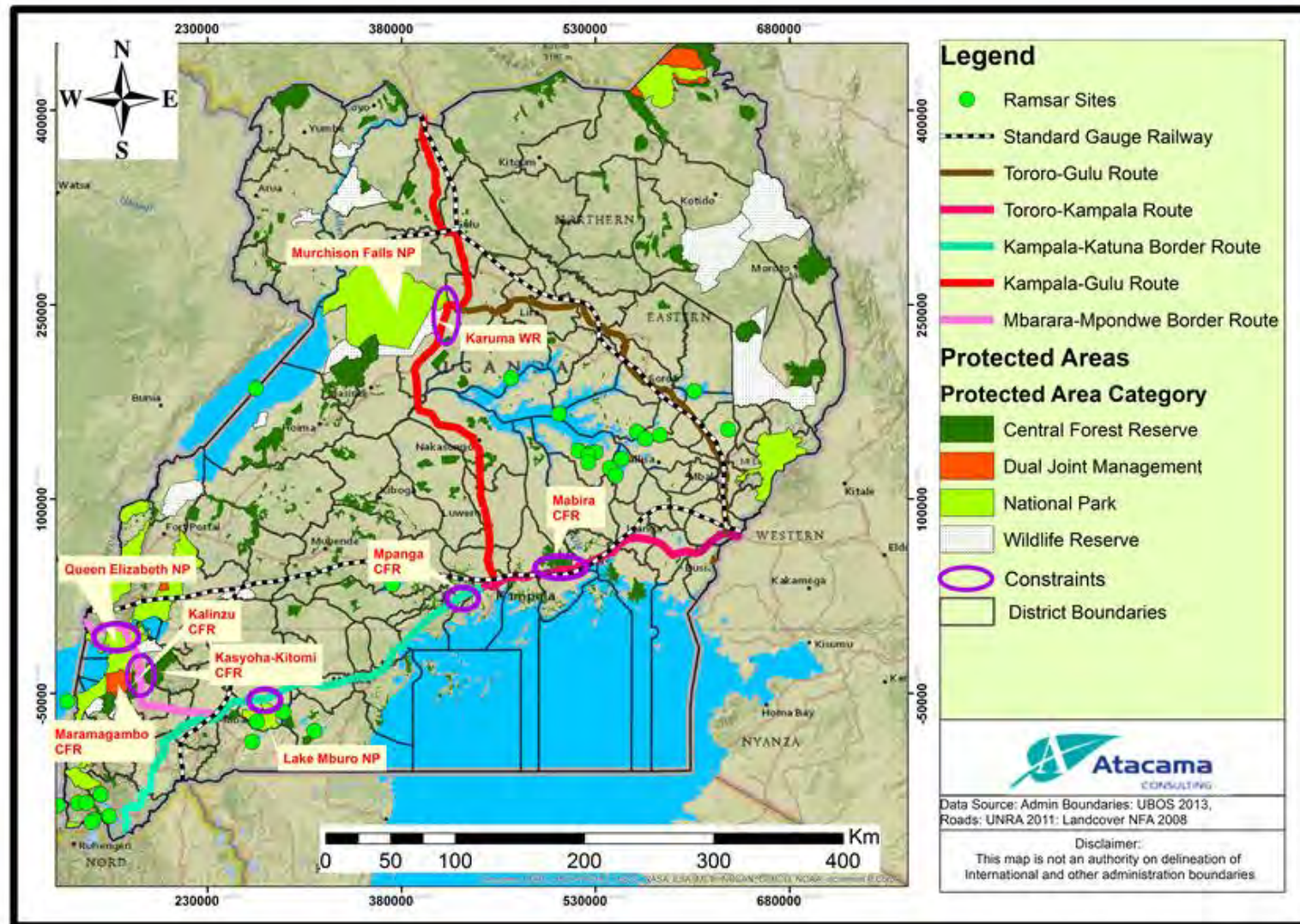
**Table 5.5 Protected and Sensitive Ecosystems within the NEC**

Section of Northern Economic Corridor	Ecosystem	Special Notes
Tororo - Kampala route	Mabira Central Forest Reserve	<p>The forest is a natural Habitat of 312 species of trees including the <i>Diphasia angolensis</i> which is not known to exist elsewhere in Uganda and five species which are of international conservation concern, the <i>Cordia Millenii</i>, <i>Milicia Excelsa</i>, <i>Irvingia gabonensis</i>, <i>Entandrophragma angolense</i>, and <i>Lovoa swynnertonii</i>.</p> <p>The <i>Warbhugia ugandenesis</i> which has medicinal properties and known to cure over forty ailments; and the vulnerable <i>Prunus africana</i> are also there.</p> <p>The forest is also an Important Bird Area (IBA) in addition to hosting a wide range of animals, including endangered primates.</p>
	Busitema Central Forest Reserve	The forest although severely degraded is a home to some of Uganda’s primates including the Olive Baboon.
	Kibimba wetland	It is neither protected nationally or internationally but the site is a habitat for many birds including parleatic migrants as well as many species of amphibians and fish especially in the swamps and at the dam which was formed when River Kibimba was blocked forming an area of open water which is dominated by steep sided grassy hills, papyrus and floating mats of <i>Nymphaea caerulea</i> and <i>Eichhornia crassiper</i> . Several species of butterfly can also be found there.
	River Nile	The transboundary resource is a home to a number of birds, a hotspot for many tourists who enjoy bird watching.
Tororo - Gulu route	Lake Kyoga/Kwania complex	The Lake Kyoga complex opens off of the Victoria Nile, north of Lake Victoria, as an extensive network of shallow open water areas fringed by papyrus swamps. Open water varies over years and seasons, but is estimated to average around 2700 km <sup>2</sup> in size, with the largest lakes consisting of Kyoga, Kwania, Nakuwa and Bisina.
Kampala – Gulu route	Riverine swamps of the Kafu River system in Nakasongola district	The swamp ecosystem is one of Uganda’s main riverine wetlands containing significant habitats, flora and fauna

Section of Northern Economic Corridor	Ecosystem	Special Notes
Kampala – Katuna border	Mpanga Central Forest Reserve	<p>It's a Gazetted forest.</p> <p>It's also a tourist attraction especially as it contains medium sized primates and birds.</p>
	Lake Mburo National Park	<p>The park is home to 350 bird species as well as zebra, impala, eland, buffalo, oribi, Defassa waterbuck, leopard, hippo, hyena, topi and reedbuck.</p> <p>Also an IBA</p>
	Permanent wetland ecosystems of Lake Mburo	<p>A system of open and wooded savanna, seasonal and permanent wetlands, and five lakes, of which Lake Mburo is by far the largest. The system 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 Afro-tropical migrant birds during adverse conditions. It supports two of the endangered cichlid fish species which have become extinct in the main lakes, and it is the only area in Uganda in which the Impala is found. The site is also of immense socio-economic value as a source of water for domestic use, livestock and wildlife; pasture for the local herds during droughts; fish; and materials for crafts and thatching.</p>
Mbarara – Mpondwe border	Kazinga channel crossing	<p>The channel attracts a varied range of animals and birds, with one of the world's largest concentration of hippos and numerous Nile Crocodiles.</p>
	Kalinzu and Maramagambo Central Forest Reserves	<p>Kalinzu Forest reserve is known for its 414 species of trees and shrubs including; prunus African Ficus and Parinari among others. The forest is also famous for its six different primate species that include; chimpanzee, black and white colobus monkeys, blue monkeys, L'hoest guenon, vervet monkeys, and baboon. The reserve also harbors 378 species of birds including sun birds, black and white casket, cuckoos and the Great Blue Turaco, it host also 97 moths, 262 butterflies ,flowers and reptiles.</p> <p>Maramagambo forest cuts across the central part of Queen Elizabeth Park – from the Kichwamba</p>

Section of Northern Economic Corridor	Ecosystem	Special Notes
		<p>escarpment to Lake Edward. The forest is bordered by two crater lakes; Lake Kyasanduka and Lake Nyamasingiri. The forest has 242 tree species of plants and is a home to primates, including L'Hoest's, red-tailed, vervet and black and white colobus monkeys, chimpanzees and baboons, as well as bird species including the rare Forest Flycatcher, White-naped Pigeon and the striking Rwenzori Turaco.</p>
	Queen Elizabeth National Park	<p>The Queen Elizabeth National Park has been designated a Biosphere Reserve for Humanity under the auspices of UNESCO. The park, includes a remarkable variety of ecosystems, from semi-deciduous tropical forest to green meadows, savannah and swamps. It is the home of the famous tree climbing lion as well as the Uganda Kob, other antelope species, elephant, baboons, hippos, buffalo and chimpanzees. Over 600 species of birds have been recorded, making the park a magnet for bird watchers. It's also an IBA.</p>

Figure 5.11 Biological Constraints Associated with the Master Plan





## 6.1 PHYSICAL PLANNING IN UGANDA

### 6.1.1 District and County Headquarters

Uganda is divided into 111 districts and the Kampala Capital City. The districts are further sub-divided into Counties, Sub-counties, Parishes and Villages/Local Council 1 (LC 1) Zones. The districts and county headquarters along the NEC are highlighted along the respective routes in *Figure 6.1*.

According to the Local Government Act of 1997, the system of local government in Uganda is based on the district as a unit under which there shall be lower local governments and administrative units. The local governments in a district located in a rural area include (a) the district council; and (b) the sub-county councils; while the local governments in a city<sup>1</sup> (subject to the Kampala City Council Authority (KCCA) Act, 2010) are (a) the city council; and (b) the city division councils. A local government has legislative, administrative and executive powers exercised in accordance with the National Constitution of 1995 and Local Governments Act.

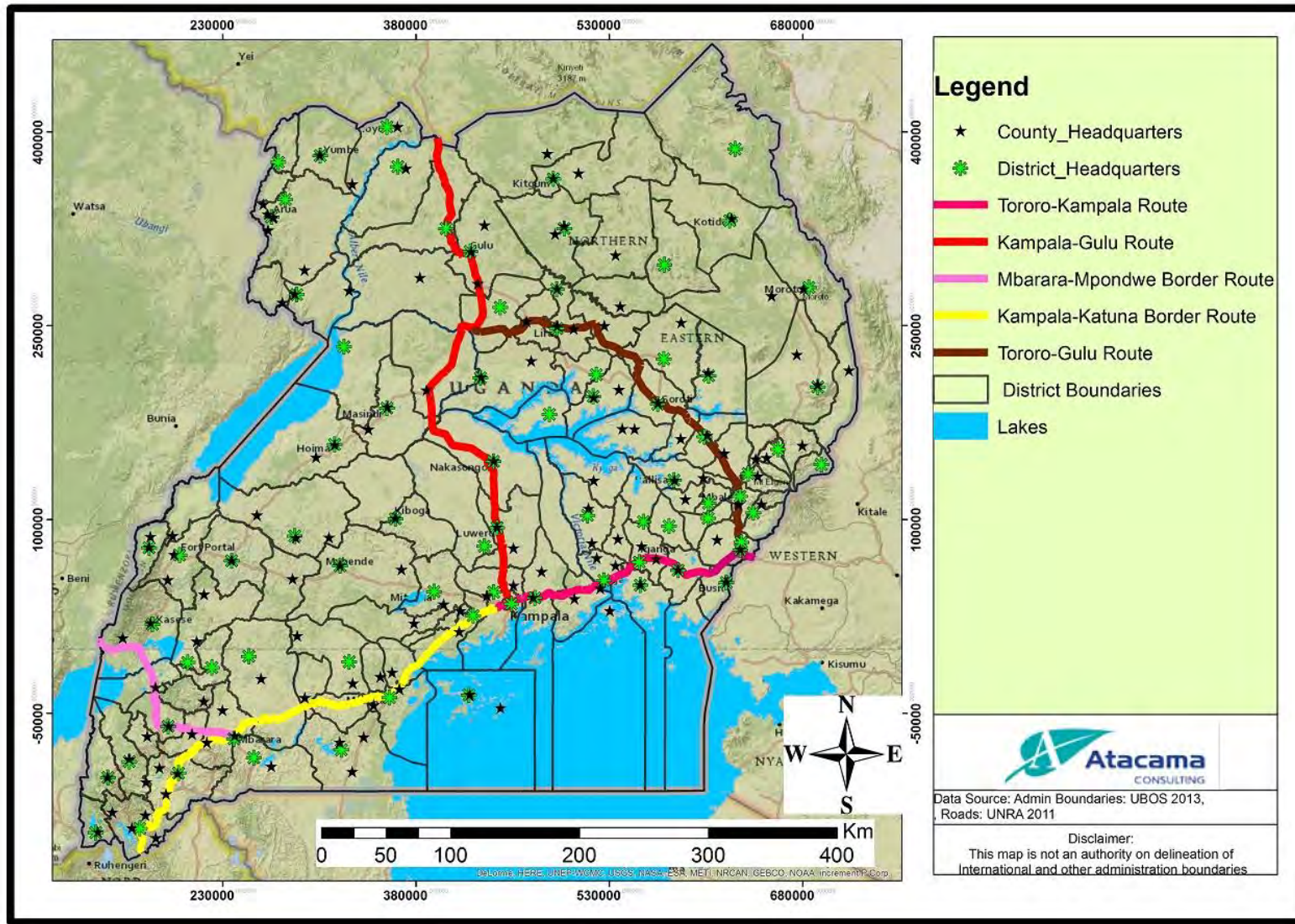
There are a number of administrative units in rural areas which include: (i) the county; (ii) the parish; and (iii) the village, whilst in urban areas there is, (i) the parish or ward; and (ii) the village/zone. These administrative units do not have legislative and executive powers. There are local councils (LCs) established at the village level (LC I), parish level (LC II), sub-county level (LC III), county level (LC IV) and district or city level (LC V). The sub-county (LCIII) and district (LC V) are local governments, while LCI, LCII and LC IV are administrative units, not local governments.

In Uganda, the definition of urban areas has been changing over time. The 2002 and 2014 Censuses defined urban areas to include only the gazetted urban centres. Uganda's urban portfolio is dominated by Kampala.

<sup>1</sup> For purposes of the Local Government Act, 1997; a city is equivalent to a district, and a city council exercises all functions and powers conferred upon a district council within its area of jurisdiction (Part II Section 4 Sub-section a-b)

Kampala's primacy is not an outlier when compared with other countries in Africa (or low income countries in general). There are 202 urban centres (22 Municipalities and 174 Town Councils with a total of six(6) million persons) and seven secondary towns in Uganda with a population ranging between 100,000 to 250,000 people making a total population of 926,831 (12.5 percent). The size of the urban centres varies widely, from Kampala City with 1.5 million persons to small Town Councils with less than 5,000 persons (The National Population and Housing Census, 2014)

Figure 6.1 District and County Headquarters Traversed by the NEC



The planning powers of local authorities are stipulated in the Physical Planning Act, 2010. The Act states that the local authority shall be the local planning authority for the area of the local authority, thus, conferring a primary physical planning responsibility at the local level, and plan approvals. To carry out this function, the local authority shall prepare a physical development plan and detailed lay out plan for the purpose of organising, controlling and planning the development and use of land and buildings in their area.

There is an obligation on the Urban/Municipal Physical Planning Committee to ensure that permissions granted under the Planning Acts are consistent with the policies and objectives set out in the Physical Development Plan, and the proper planning and sustainable development of the area.

Most of the major towns (Tororo, Jinja, Mbale, Soroti, Lira, Gulu, Masindi, Kampala, Masaka, and Mbarara) within the NEC have physical development plans but are not consistent with aspects such as multi modal transport, amongst other things.

The extensive 'Physical Plans', such as Town and Municipality Structure Plans and Detailed Plans which were prepared under the Local Government Development Programme in 2008 (Mukono, Jinja, Tororo, Mbale, Soroti, Lira, Gulu, Masaka, Mbarara) were for a 10 year period (2008-2018). These were prepared without Physical Planners at local government level having the institutional structures or the tools for adapting and implementing them, and as such they have remained largely ignored, and the settlements have already outgrown them.

There are other physical planning projects ongoing in the urban realm which are aimed at upgrading of slums (in Mbale, Jinja, Mbarara and Gulu; where 60 percent of the urban population reside), provision of infrastructure and regional and other plans which could contribute to the strategy to build an effective physical planning system.

There are eight criteria for planning of the existing and new urban areas within the NEC; comprehensively covering plans for utilising land and transportation, developing the economy and infrastructure, evaluation of the environment, and urban development; preparation for future-oriented public plans from short-term, middle-term, and long-term perspectives; making regulations for developing nationally significant infrastructure; reflecting on nationally important policy issues; enhancing networks among local governments, and countries; supplying lands with on-plans, phases, and evidences, and keep a balance between developed and underdeveloped lands; setting the priority of investment and suggesting plans of attracting private investment; and creating world-class urban planning and construction.

However, almost all the major urban towns within the NEC conurbation have spread *de facto* beyond the Municipality's boundaries and are rapidly impacting on the peri-urban areas as they sprawling without any development control guidance from the relevant authorities.

### 6.2.1 *Green Belts*

The main objectives of the green belts are to protect the land around larger urban centres from urban sprawl, and maintain the designated area for recreational, public land reserves, wetlands, forestry and agriculture as well as to provide habitat to wildlife. Urban population, on the other hand, is provided an access to an open space which offers opportunities for outdoor activities and access to clean air. By preventing the urban sprawl, it helps protect agricultural activities and the unique character of rural communities.

Uganda's urban towns do not have distinctive green belts between the urban and rural settlements. The physical plans within the corridor of the urban centres in Uganda have reserved some areas as green belts in form of public spaces but are very limited and most of them have been encroached upon.

The green belts which were mostly created as parks and open spaces in many major towns within the corridor ie Malukhu wetland in Mbale, Kauda grounds and Pece wetland in Gulu, that are within the corridor have been encroached upon and have been built upon.

The few developed and maintained gardens in Kampala city for example are concentrated in the city centre and generally closed off from the public. (Table 6.1). While the wetland areas are used for recreation, landfilling for playfields contributes to their further degradation.

Most residential neighbourhoods lack public open space, gardens, parks and playgrounds that allow them to escape from the congestion and density of urban life.

**Table 6.1** *Sample of Protected and Public Open Spaces in Kampala*

<b>Public Spaces of Kampala</b>	<b>Historic Use</b>	<b>Current Usage and Status</b>
Jubilee Park (next to Sheraton Hotel)	Public park and garden	Park and garden closed to public
Mayor’s garden (now closed to public)	Public park and garden	Park and garden closed to public
Kololo – used to be a children’s park	Public park and playground	Developed for a shopping plaza
Shoprite Game –	Public park	Developed for a Shopping plaza/convention center
Namanve Forest Lands	Protected Forest Reserve (appx 2,200 ha)	Appx 1,000 ha remain, but have been significantly encroached upon
Centenary Park	Public park	(Recreational developed with bars)
Jinja Road linear Park		Cemetery
KCCA Gardens	Public park	(Offices for KCCA use)

Source: KCCA Strategic Plan, 2014

### 6.3 **TRANSPORT**

The transport infrastructure in Uganda includes road, water, air and railway. However, road transport, as is common in other East African countries, is the most common means of movement for goods, with over 95 percent of cargo and passenger traffic using road transport.

The existing urban transport system is a major bottleneck for the development of all the major towns with the NEC. Unplanned urbanisation caused by poor transportation and land-use planning has resulted in decreased accessibility, level of service, safety, comfort, and operational efficiency, causing increased costs, loss of time, air pollution, and psychological strain, and posing a serious risk to the economic viability of the towns and the sustainability of their environment.

### 6.3.1 *Road Transport*

The national road network is categorised into four categories, namely; national roads/highways, district roads/major roads, urban roads/secondary roads and community access roads/primary roads. These four categories are further subdivided into two types - paved (tarmac) roads and unpaved (murrum) roads. Most highways and major road surfaces are paved (tarmac) roads. Some of the major roads connected to the NEC route are shown in *Table 6.2*

**Table 6.2** *Major Roads Connected to the NEC routes*

<b>Corridor route</b>	<b>Major roads</b>
Kampala - Gulu	Kigumba - Kyema, Wiyo - Karuma, and Gulu - Paicho
Mbarara - Mpondwe	Mbarara - Ibanda
Kampala - Katuna	Masaka - Mutukula, Mityana-Mubende, and Kiboga-Busunju
Kampala -Tororo	Bugiri - Tororo and Iganga - Mbale
Tororo - Gulu	Lokichar - Nariwo and Chplibur - Kilak

Most towns in Uganda grew out of road side markets and other commercial activities. As such, they have developed with major highways passing right through their centres. The main NEC route passes through the centre of every major town in Uganda with only a few exceptions such as Entebbe and Fort Portal. Traffic flows through these towns is difficult and as such most town centres experience traffic jams.

### 6.3.2 *Railway Transport*

Operation of railway transport services was awarded to Rift Valley Railways (RVR) in 2006 as part of a region-wide public private partnership (PPP) programme to revamp railway operations.

There is still a low usage of the railway system generally. Railway share of cargo transport for example is less than 5 percent and its share of passenger transport even much less. Low-level passenger transport has returned for short trips from Namanve to Kampala city at peak times (as part of pilot scheme to ease on congestion on the roads leading in and out of the city at those times) but inadequate frequency renders it uncompetitive compared to road transport.

### **6.3.3**      *Air Transport*

Entebbe Airport is the second busiest airport in terms of cargo handling in East Africa. In 2012, it handled 81,000 tonnes of cargo but that is still very small fraction compared to what is transported by road.

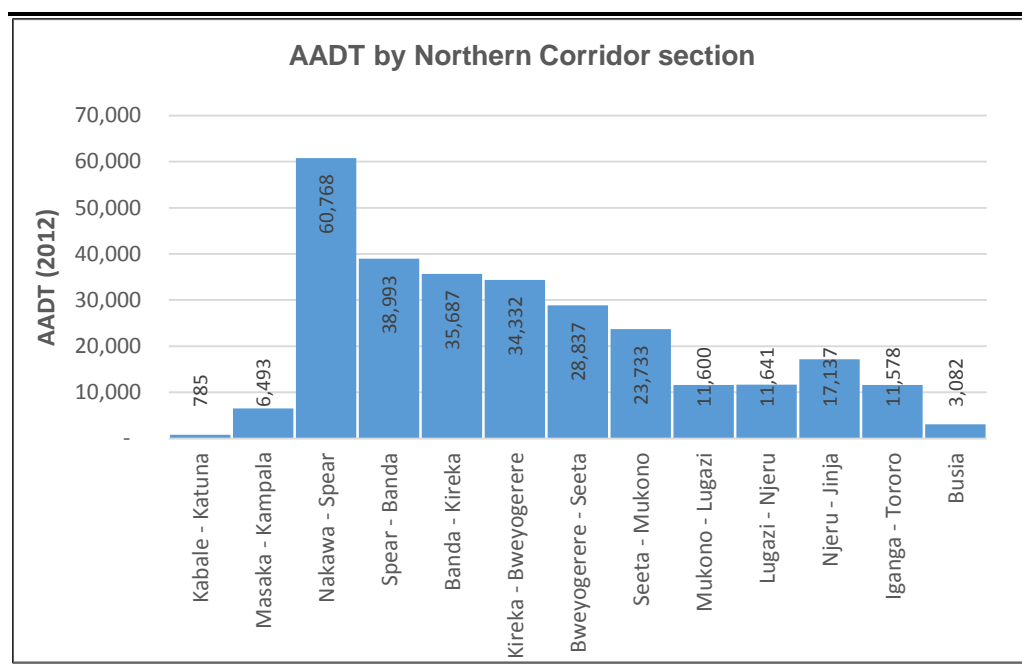
### **6.3.4**      *Water Transport*

There is currently very little use of water transport in the NEC. Uganda Railways Corporation has only one commercial ferry still operational. Railway connection to Port Bell is out of service currently and ferries are not operated as rail-wagon ferries.

The movement of goods in Uganda relies heavily on road transport. The primary NEC route is highly congested especially from Kampala towards the east to Tororo. The corridor sections west of Kampala are less busy. *Figure 6.2* below summarises the observed Annual Average Daily Traffic (AADT) figures by section of the corridor from Katuna (Rwanda border) to Busia (Kenya border). The analysis is based on 2012 traffic data and 2015 data. Both sets of data were recast to 2012.



**Figure 6.2 Summary of AADT by Section along Northern Corridor**



Currently the transport infrastructure in the corridor (highways, railway, waterways) supports and is supported by national policies. However, the integration of these modes is at a low level. Integration of waterways with rail is minimal and integration of road and rail for example at rail terminals in Kampala is faced with severe congestion and lack of clarity.

Integration of public transport modes is also currently poor. For example, integration of rail and road public transport is low, while integration of air and road faces significant bottlenecks on the existing Entebbe Road.

### 6.3.5 Road Safety

Uganda has the highest accident rates in the Great Lakes region. Although available official data (below) suggests fatalities are decreasing, general anecdotal evidence suggests that accidents (and hence fatalities) increase with increase in traffic. This is expected to be the position on the NEC and in the country as a whole.

Table 6.3 presents available road accident data. Logical and consistent traffic data is notoriously difficult to obtain in Uganda and there are questions on the completeness of the data presented here. Nonetheless, it provides some useful insights on the criticality of this element of the transport system.

**Table 6.3** *Number of Fatalities on the NEC*

<b>Accident type</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
Total fatalities in northern corridor	1,259	1,256	1,136	1,083	940
Total fatalities except northern corridor	1,361	1,587	1,475	1,318	1,578
Total fatalities	2,620	2,843	2,611	2,401	2,518
Proportion on northern corridor	48.1 percent	44.2 percent	43.5 percent	45.1 percent	37.3 percent

Source: JST 2015 data and analysis

The data shows that the highest numbers of fatalities are within the NEC. On average 43.6 percent of all fatalities over a five-year period 2010 – 2014 occurred within the NEC.

The main reasons for the high fatality and accident rates within the NEC are high traffic volumes, numerous urban centres resulting in high pedestrian/vehicle interactions, several accident ‘black spots’ and high traffic speeds.

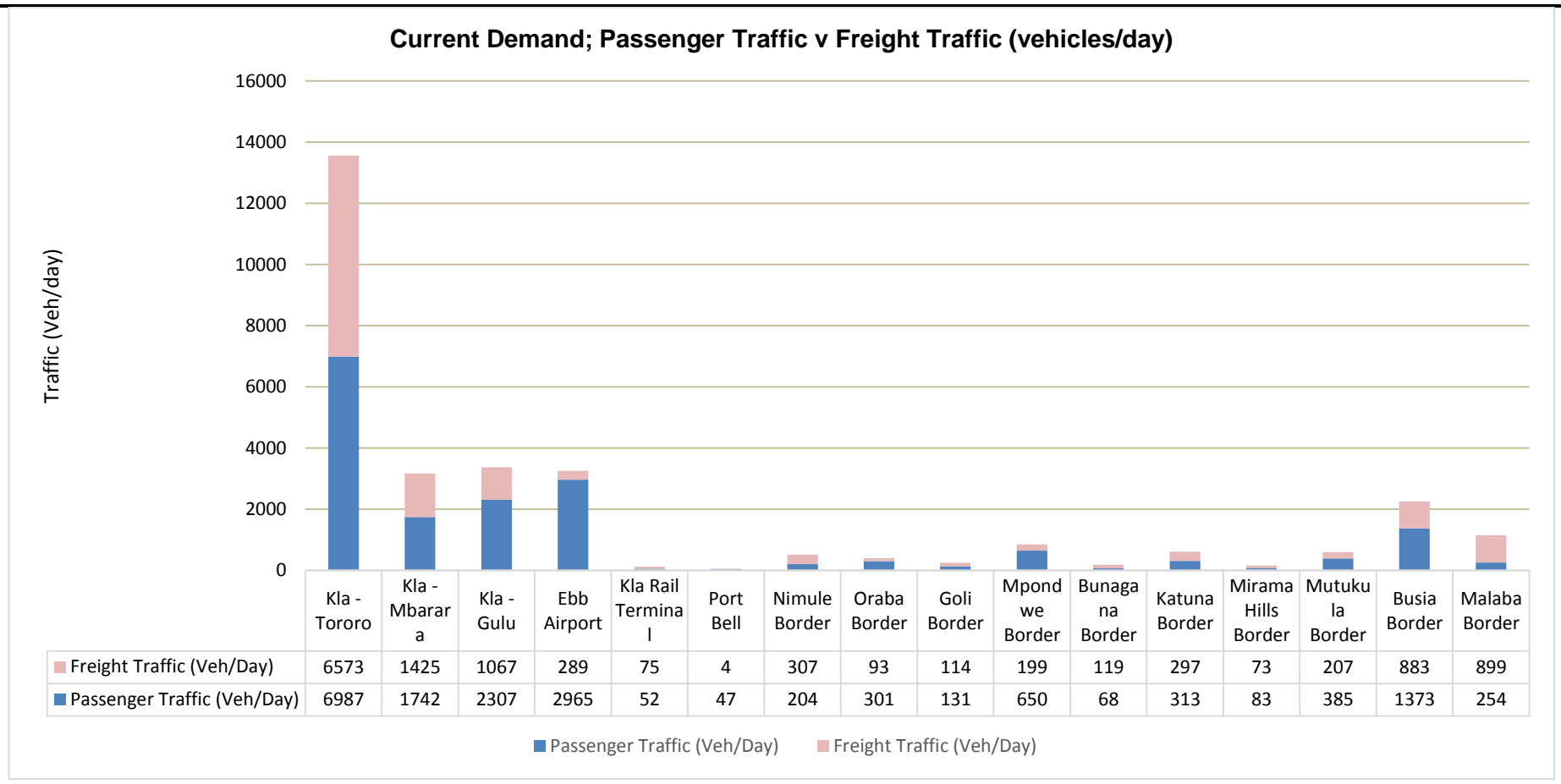
At busy urban centres such as key towns along the NEC, the lack of adequate pedestrian crossing facilities and the generally haphazard nature of crossing by pedestrians, and high traffic speeds through the towns are the main cause of high fatalities.

### **6.3.6** *Current Freight Traffic Demand*

To establish the current traffic demand on the NEC, a traffic survey was conducted by the JICA Study Team (JST) at key border posts along the Uganda border and at three key locations along the NEC. The locations included; the Kampala – Tororo route, Kampala – Mbarara route and Kampala – Gulu route.

The survey included all traffic types but an effort was made to accurately determine the amount of freight traffic, its origins and destinations, and other pertinent information. The graph in *Figure 6.3* below summarises the current total, passenger and freight traffic at key sections of the NEC within Uganda and at border crossings.

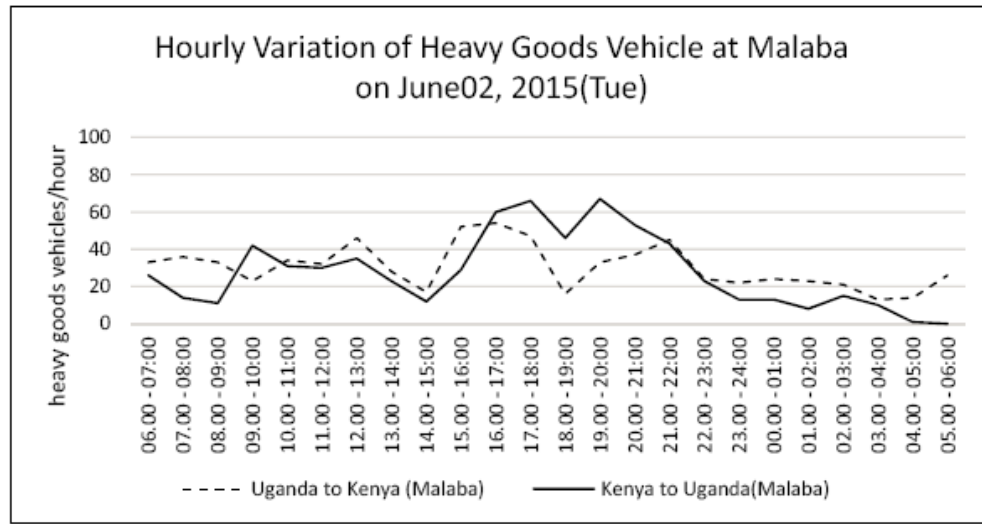
Figure 6.3 Summary of Total, Passenger and Freight Traffic



Source: JST 2015 traffic data, Atacama analysis

The daily traffic variation at the border crossings was also investigated. The most critical border is Malaba where most border crossing movements take place. *Figure 6.4* below presents the daily traffic variations at Malaba border.

**Figure 6.4** *Daily Truck Traffic Variation at Malaba*



Source: JST data and analysis

*Figure 6.4* shows that a single peak occurs during the day for both traffic from Kenya and traffic from Uganda. For traffic from Kenya, the peak is 4PM to 10PM, while for traffic originating from Uganda, the peak is 3PM to 10PM. The following can be noted:

- Traffic originating from Uganda reaches the border before traffic from Kenya due to the shorter distance generally from the Uganda side to Malaba.
- The peak seems to occur as truck drivers target to take their rest break at the Malaba border.
- The average arrival from the Ugandan side during the peak period is about 45 trucks per hour and from the Kenya side 55 trucks per hour.

The above means that the border crossing is critically busy during this period and it is clear that one way of reducing congestion and waiting time at Malaba is to encourage a flattening of the daily traffic variation ie encouraging drivers to arrive in less busy time periods.

This section mainly focuses on the districts traversed by the NEC. A summary of some of the social aspects within the NEC is shown in *Table 6.4* and also further described in the subsequent *Sections 6.4.1* to *6.4.14*.

Table 6.4 Selected Socio-Economic Aspects within the NEC

Districts	Population (2014 NHPC Report)			Access to safe water (MWE Water Atlas 2016)	Access to Sanitation facilities (MWE-SPR 2015)	Access to health facilities (Heath Sector Report 2013)	Education and literacy levels [6-18 years] from Educational Sector performance report (2013-2014)		Source of Energy for lightening and cooking [National Census Main Report 2014]								Major Livelihood Activity	Major Land Tenure
	ab* (000)	ac*	ad* (%)				M (%)	F (%)	Lighting (No of Households)				Cooking (No of Households)					
									a*	b*	c*	d*	a*	e*	d*	f*		
Kampala	1507.1	2	100	87.8	N/A	1392	36	34	349,178	19,409	11,511	95	33,792	321,686	10,612	17,947	Formal employment Formal and Informal Trade	Mailo/ freehold/ kibanja, and Leasehold
Luwero	457	2.4	20.9	75	58	39	88	92	28,172	15,278	50,894	614	3,105	31,732	67,861	1,074	Crop and animal farming	Mailo/ freehold/ kibanja, and Leasehold
Nakasongola	181.8	3	10.4	74	68	33	82	88	5,747	5,057	15,096	349	937	7,695	26,558	318	Crop and animal farming	Mailo/ freehold/ kibanja, and Leasehold and customary
Masindi	291.1	2.8	32.4	62.3	57	43	37	38	13,247	7,113	36,526	1,069	2,083	14,199	47,046	652	Crop and animal farming	Customary
Kiryandongo	266.2	2.9	20.9	60	38	22	35	35	6,517	7,986	29,185	1,389	464	8,776	41,949	357	Crop and animal farming	Customary
Kabale	528.2	1.2	14.4	65.4	45	139	102	97	13,993	8,490	100,961	2,108	2,073	13,609	100,102	519	Crop and animal farming	Customary
Kiruhura	328.1	3.6	9.5	65.5	63	39	73	69	9,900	11,400	30,537	1,251	830	7,154	57,153	592	Crop and animal farming	Customary
Mpigi	250.5	2.4	17.3	81	43	33	65	65	13,314	9,140	31,103	590	1,008	14,621	42,417	635	Formal employment , trade, Crop and animal farming	Mailo/ freehold/ kibanja, and Leasehold and customary
Lwengo	275	1	15.6	72	55	38	92	94	11,184	6,702	39,785	527	1,028	10,322	49,014	592	Crop and animal farming	Customary
Ntungamo	483.8	2	12.5	73	55	41	68	72	12,662	12,893	67,088	886	1,385	11,392	85,832	623	Crop and animal farming	Customary
Masaka	297	2.2	34.8	67	50	32	82	78	28,225	9,936	31,791	304	2,927	27,166	41,617	2,160	Crop and animal farming	Mailo/ freehold/ kibanja, and Leasehold and customary
Mbarara	472.6	2.2	41.3	65.5	93	58	64	66	37,516	16,448	46,931	687	3,786	33,677	69,924	2,250	Crop and animal farming	Customary
Kasese	695	2.4	17.4	90.2	67	107	57	58	23,650	13,156	92,847	1,300	2,947	28,120	103,826	1,498	Crop and	Customary

Districts	Population (2014 NHPC Report)			Access to safe water (MWE Water)	Access to Sanitation facilities (MWE-SPR)	Access to health facilities (Heath)	Education and literacy levels [6-18 years] from		Source of Energy for lightening and cooking [National Census Main Report 2014]								Major Livelihood Activity	Major Land Tenure	
																		animal farming	
Tororo	517.1	2.6	14	39.2	60	74	81	79	10,863	8,229	73,581	1,370	1,518	11,816	83,963	868		Crop and animal farming	Customary
Busia	323.7	3	16.9	70	80	34	94	92	7,941	8,331	45,370	350	226	1,420	21,246	100		Crop and animal farming	Customary
Bugiri	382.9	3	16.8	63	60	50	63	66	6,213	5,817	55,951	604	720	10,383	61,870	293		Crop and animal farming	Customary
Mukono	596.8	2.9	27.3	76	55	45	45	48	47,918	21,597	59,521	959	3,349	59,563	76,018	1,940		Formal employment , trade, Crop and animal farming	Mailo/ freehold/ kibanja, and Leasehold and customary
Wakiso	1997.4	6.6	59.2	43	58	103	38	38	309,133	63,304	70,528	1,994	22,292	342,921	99,136	13,714		Formal employment , trade, Crop and animal farming	Mailo/ freehold/ kibanja, and Leasehold and customary
Mayuge	473.2	3.1	7.1	53	30	42	58	57	9,092	5,012	67,036	1,419	1,358	16,609	73,675	471		Crop and animal farming	Customary
Ngora	141.9	2.8	10.7	68	68	12	62	65	1,516	1,333	6,092	446	226	1,420	21,246	100		Crop and animal farming	Customary
Kumi	239.3	3.1	15.3	66	75	24	80	84	3,208	4,014	14,319	644	460	3,668	35,767	213		Crop and animal farming	Customary
Bukedea	203.6	4.3	5.4	72	70	20	83	91	2,098	3,165	22,814	508	242	2,150	33,346	149		Crop and animal farming	Customary
Amuria	473.2	3.1	7.1	82	30	42	58	57	9,092	5,012	67,036	1,419	1,358	16,609	73,675	471		Crop and animal farming	Customary
Soroti	270.9	3.4	6.4	79	70	38	46	44	3,448	2,751	18,140	1,985	323	2,584	44,826	124		Crop and animal farming	Customary
Amuru	296.8	3.6	16.7	25.7	66	31	57	59	8,123	5,663	23,212	1,476	883	13,023	39,591	382		Crop and animal farming	Customary
Gulu	186.7	2.7	5	82	55	55	36	36	2,352	7,156	22,281	1,272	475	3,382	31,585	284		Crop and animal farming	Customary
Kole	436.3	3.2	34.3	80.9	73	73	56	58	13,384	16,382	49,511	1,038	966	29,118	54,839	685		Crop and animal farming	Customary
Lira	239.3	3.1	3.7	94	55	55	45	44	2,817	9,202	26,387	930	447	1,169	45,907	292		Crop and animal farming	Customary
Oyam	408	2.8	24.8	40.8	30	29	43	47	14,047	16,947	39,360	902	1,208	28,611	56,352	710		Crop and animal farming	Customary
Amolatar	383.6	3	4.8	70	55	55	48	48	5,268	14,572	41,544	1,806	668	2,962	70,437	561		Crop and	Customary

Districts	Population (2014 NHPC Report)			Access to safe water (MWE Water)	Access to Sanitation facilities (MWE-SPR)	Access to health facilities (Heath)	Education and literacy levels [6-18 years] from		Source of Energy for lightening and cooking [National Census Main Report 2014]								Major Livelihood Activity	Major Land Tenure	
																		animal farming	
Adjuman	225.3	0.9	17.9	90	40		10	10	3,640	3,918	9,800	2,131	348	8,284	31,238	211	Crop and animal farming	Customary	
Sheema	207.3	1.2	13.3	78	68	35	79	79	8,320	9,867	24,307	266	732	4,914	38,583	512	Crop and animal farming	Customary	
Bushenyi	234.4	1.1	20.4	83	73	36	66	66	10,060	12,650	24,187	365	1,088	6,827	41,827	747	Crop and animal farming	Customary	
Rubirizi	129.1	2	13.3	60	43	16	54	56	3,280	2,789	20,437	231	395	3,090	24,618	265	Crop and animal farming	Customary	
Kalungu	183.2	1.1	4.4	88	65	24	110	128	8,166	5,233	25,672	274	742	6,868	32,432	635	Crop and animal farming	Customary	
Lyantonde	93.8	2.9	14.7	51	43	28	111	111	4,300	3,058	10,565	275	284	4,941	14,641	337	Crop and animal farming	Customary	
Iganga	504.2	2.9	18.4	71	48	57	52	54	17,450	9,532	64,430	596	1,322	29,707	69,284	587	Crop and animal farming	Customary	
Jinja	471.2	1.6	36.6	66	45	113	32	32	34,172	9,039	52,793	374	3,965	48,848	49,229	877	Crop and animal farming	Customary	
Budaka	207.6	3.5	11.5	80	30	19	82	91	2,176	2,486	29,929	228	326	2,205	34,145	117	Crop and animal farming	Customary	
Mbale	489	3.2	25.2	69	45	47	75	75	25,585	16,061	55,337	1,486	2,771	35,249	63,931	1,342	Crop and animal farming	Customary	
Alebtong	227.5	2.8	2.9	88	60	18	56	56	1,862	4,885	28,847	809	378	1,346	43,828	222	Crop and animal farming	Customary	

KEY

ab\* Population  
ac\* Population growth  
ad\* Level of urbanisation  
a\* Electricity  
b\* Paraffin (Lantern)

c\* Paraffin (Tadooba)  
d\* Firewood  
e\* Charcoal  
f\* Paraffin (stove)  
M Male  
F Female



## 6.4.1

### *Population and Urbanisation*

According to the National Housing and Population Census of August 2014 (Uganda Bureau of Statistics, 2014), Uganda has a total population of 34.6 million persons – an increase of 10.4 million from the 24.2 million indicated by the 2002 Census. The average annual rate of population increase in this twelve year period was 3 percent. At this rate of growth, by the year 2025, the population of Uganda is projected to have reached 47 million persons.

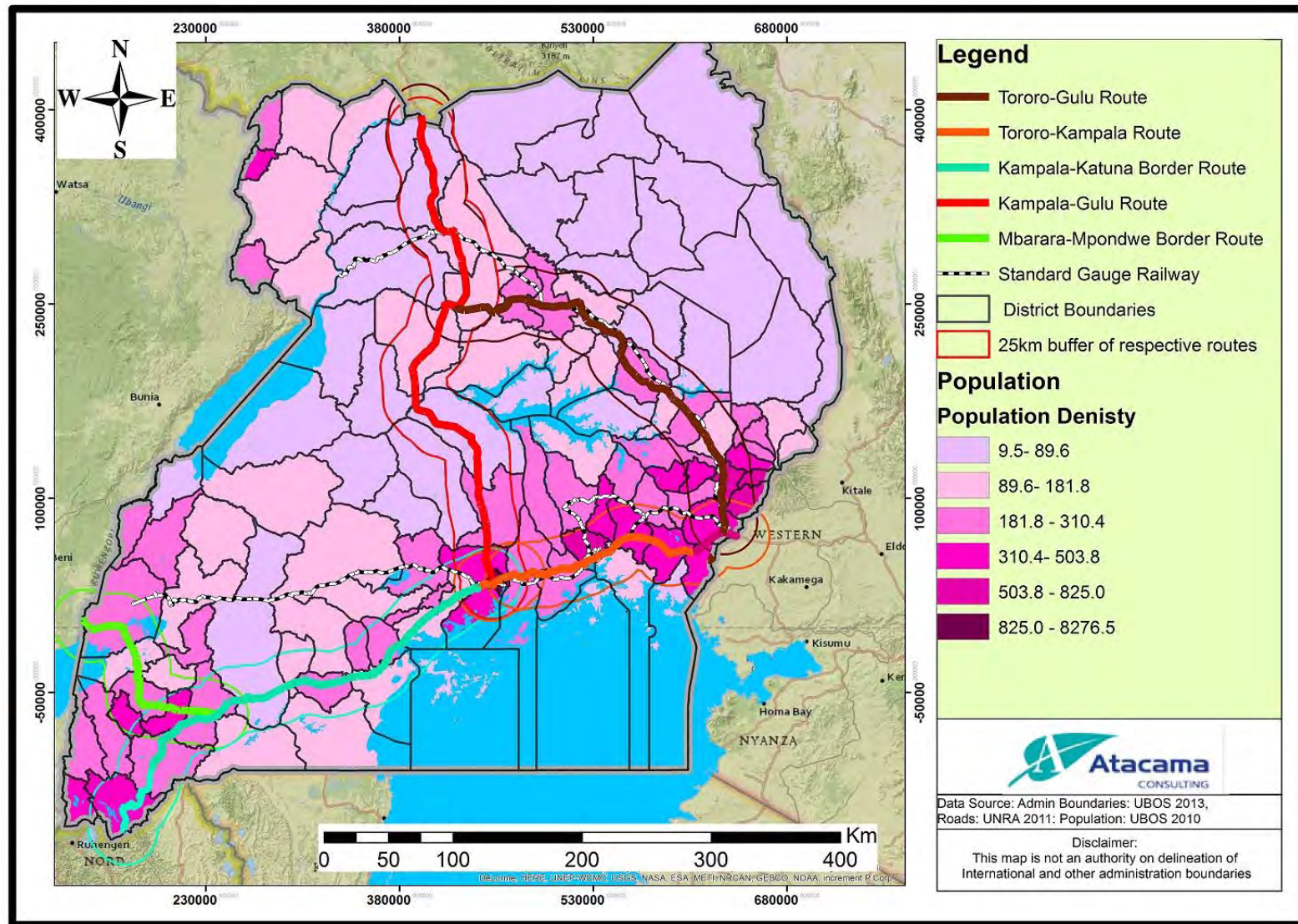
Wakiso district that is within the NEC is the most populous district with close to two million persons based on the 2014 national census figures. This is followed by Kampala district with about 1.5 million people. On the other hand districts such as Ngora (149,900), Rubirizi (129,000) and Lyantonde district (93,800) have the least populations within the NEC.

The urban population in Uganda is also steadily increasing. According to the same 2014 census results, Uganda's urban population was 7.4 million persons, representing more than two times the figure of 2002. Kampala City had approximately 1.5 million persons and the surrounding Wakiso district had a population of 1.99 million, accounting for about six percent of the total population.

The Population Density of Uganda in 2014 was 173 persons per square kilometer, a two-fold increase from the 85 persons per square kilometer in 1991. Population Density by district, *Figure 6.5*, varies widely, between 7,928 square kilometers (sq. kms) for Kampala which is the highest, followed by Wakiso district with 1060 sq. kms to the lowest for Nakasongola with 55 sq.kms within the NEC project area.

Since 2002, the urbanisation level in Uganda has increased by 62.9 percent as per the 2014 figure. As of March 2016, gazetted urban centres included one Capital City, 33 Municipalities, 163 Town Councils and 62 Town Boards. The urban centers are concentrated especially around the Northern Economic Corridor. Within the NEC, the level of urbanisation is highest in Kampala city (100 percent), followed by Wakiso (60 percent), Mbarara (41 percent), Masaka (35 percent), Jinja (36 percent), Kole (34 percent) and Masindi (31 percent). According to the interim report for the Master Plan on Logistics in Northern Economic Corridor Interim Report (February 2016), the area within 50km from the main route has 66 percent of population in Uganda's urban centres, and the area within 50km from Kampala City has 33 percent of the same amount.

Figure 6.5 Population Density along the NEC



## 6.4.2

### *Education*

The second National Development Plan recognises education as an engine for empowerment, economic growth and social transformation.

In line with the National development Plan, Uganda has been running an education for all policy commonly known as Universal Primary Education (UPE) with three overarching goals: Expanding and improving comprehensive Early Childhood Care and Education especially for the most vulnerable and the disadvantaged children; Ensuring that by 2015, all children, particularly girls, children in difficult circumstances and those belonging to ethnic minorities, have access to and complete free and compulsory primary education of good quality; and Ensuring that the learning needs of all young people and adults are met through equitable access to appropriate learning and life skills programs (Uganda Education Sector Report, 2013).

At National level, about 72 percent of the population are literate, higher than about 70 percent in 2002. Literacy among females is lower (68 percent) than for males (77 percent). Literacy rates are higher in urban areas than rural areas (2014 Uganda National Census Main Report).

The skills being generated by the education sector are not aligned with the human resource needs of the productive sectors of the economy. The current education system gives an incentive for students and teachers/lecturers to focus on examinations, instead of learning and or imparting essential skills which are required by industry/productive sectors. As a result, even though the enrolment in tertiary education has increased, very few university graduates are self-employed or can find jobs (The State of Uganda Population Report, 2015).

Therefore, to reach its national aspiration of becoming a middle-income country as articulated in the country's Vision 2040, Uganda needs to make a concerted effort to improve the quality of public education services, so that the current generation can grow into a healthy and educated work force.

## 6.4.3

### *Livelihoods*

Most Ugandans are engaged in farming at the subsistence level. Nearly two thirds (64 percent) of the working population is engaged in subsistence agriculture according the 2014 National Housing and Population Census report. In respect to the districts along NEC, formal paid employment is more pronounced around Kampala, Mukono, Wakiso and Jinja.

The major activities along the NEC are; agriculture, fisheries (mainly carried out in the open water bodies of Lakes Victoria, Edward, and George), business (mainly carried out in all major towns) and industrialisation which is mainly concentrated in Kampala, Wakiso, Tororo and Kasese districts. It is important to note that most livelihood activities are land based

Agriculture is mainly in form of food production and animal rearing while fisheries also play a very important role as a foundation of subsistence and commercial livelihood. Lake Victoria is by far the largest and economically most significant of the national fisheries. However, other large lakes, within the corridor including George, Edward, and Kyoga, along with the River Nile and a great variety of minor lakes around each of the large lakes (usually referred to as 'satellite lakes'), swamps and streams, also contribute substantially to the annual national catch (<http://www.fao.org/fi/oldsite/FCP/en/uga/body.htm>).

Key sources of livelihood along the respective routes of the NEC are as indicated below:

#### *Kampala - Gulu route*

The crops grown include; sorghum, bananas, peas, groundnuts, soya beans, finger millet, simsim, and cassava. Livestock farming comprises of cattle and goat rearing. However, there is less crop farming activities in Kampala which is highly urbanised with less land available for farming activities.

#### *Mbarara - Mpondwe border route*

Crops grown include; bananas, beans and coffee. Livestock farming entails; cattle, goat and sheep rearing.

Due to the presence of industries in Kasese district ( eg, Hima cement factory that is part of the Lafarge group, Kasese Cobalt Company and the Kilembe copper mines) industrialisation supplements the agricultural activities within the area.

There are also fishing activities from Lakes George, Edward and the Kazinga channel (that joins the two lakes).

#### *Kampala - Katuna boarder route*

Crops grown include; bananas, beans, cassava, sweet potatoes, maize and Irish potatoes, and coffee. Livestock farming includes; cattle and goat rearing. In addition, fishing activities are carried out in Masaka district on Lake Victoria. Other activities include business and mining industries.

#### *Kampala - Tororo route*

Crops grown include; maize, rice, sweet potatoes, cassava, bananas, sugar cane, and coffee. Livestock activities include cattle and goat rearing. In addition to crop and livestock farming, fishing activities are carried out on Lake Victoria in the districts of Jinja, Bugiri, Mukono and Busia. Other activities include; business and mining industries in Tororo, and factories in Jinja.

#### *Tororo - Gulu route*

Crops grown include: finger millet, maize, rice, sorghum, peas, ground nuts, simsim, sweet potatoes and cassava. Livestock farming mainly includes; cattle and goat rearing. Fishing is carried out in Lake Kyoga in Soroti district. Other livelihood activities along this route include; business in the major towns of Mbale and Soroti, and mining industries in Tororo district.

### **6.4.4 Mining**

Uganda is endowed with a considerable degree of mineral wealth which is hoped will contribute towards the country's socio-economic transformation. Unfortunately, for a long time, the exploitation of the mineral wealth was on an artisanal basis and often with very little value addition. However, the value of mineral exports has been on the increase, with a 20 percent increase being registered between 2012 and 2013. Some of Uganda's mineral reserves are located in the NEC as shown in *Figure 6.6* and described in the sections below: Please note that the discovered oil reserves in the Albertine Rift region are not indicated on the map since the drilling has not commenced.

#### *Tororo - Kampala route*

All districts along the Tororo - Kampala route have no mining industries except Tororo, Bugiri and Mukono districts.

*Tororo – Gulu route*

Apart from Tororo district, all other districts along the Tororo – Gulu route have no mining industries.

*Kampala - Katuna border route*

Apart from Ntungamo and Kabale districts, all other districts along the Kampala – Katuna border route do not have mining industries.

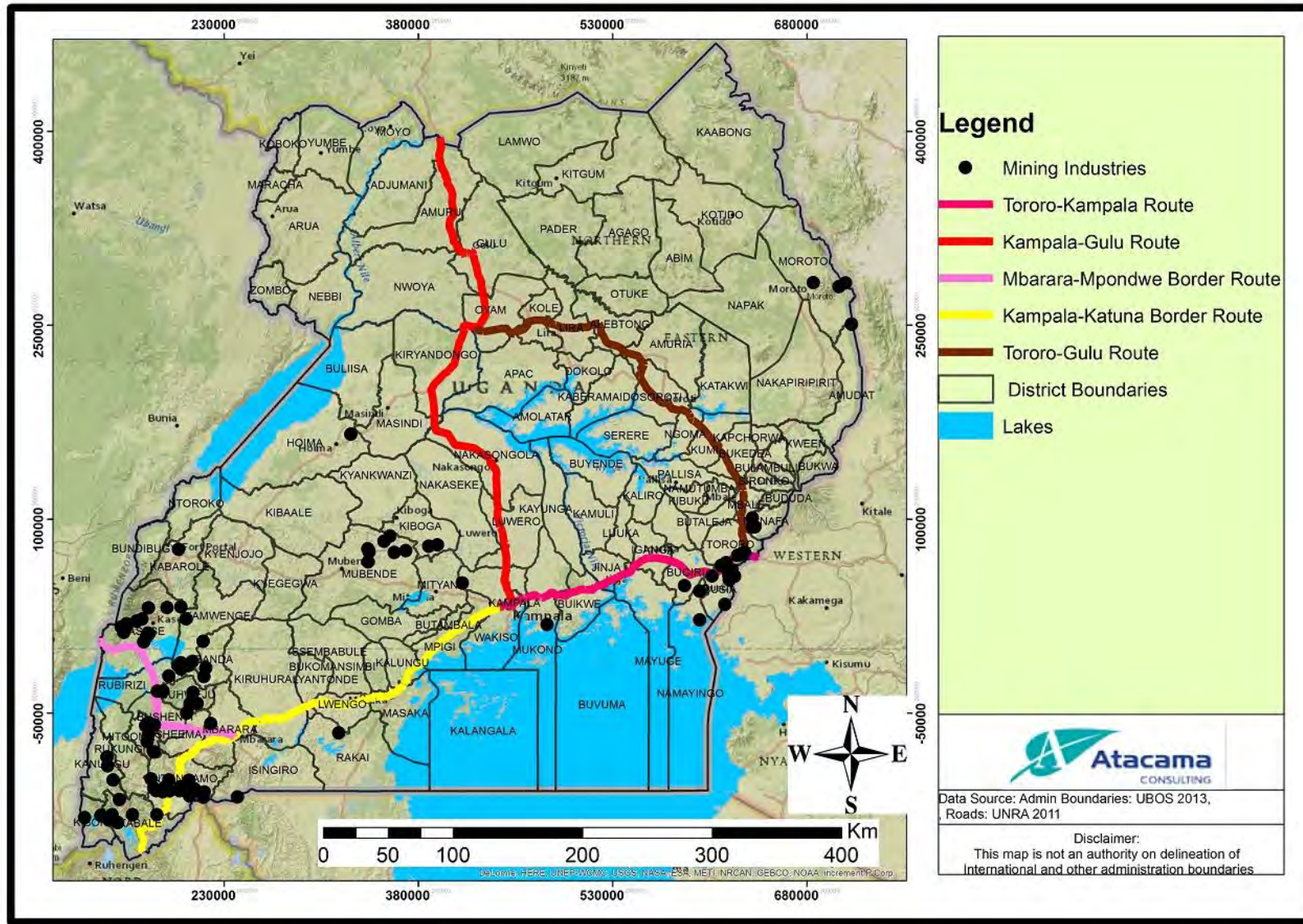
*Mbarara – Mpondwe border route*

Unlike other routes with no or few mining industries, all districts along the Mbarara – Mpondwe border route have mining industries.

*Kampala – Gulu route*

Unlike the Mbarara – Mpondwe border route where mining industries are located in all districts, the Kampala – Gulu route has no mining industries.

Figure 6.6 Mining Industries along the NEC



Based on the 2012/13 survey data (UBOS, 2014), 19.7 percent (6.7 million) of Ugandans are poor. The incidence of poverty remains higher in rural areas than in urban areas - 22.8 percent of the rural population was poor, while only 9.3 percent of the urban population was categorised as poor. The rural areas with about 77 percent of the total population, account for 89 percent of national poverty. On the other hand, the urban areas represent 22.6 percent of the population and account for 11 percent of national poverty.

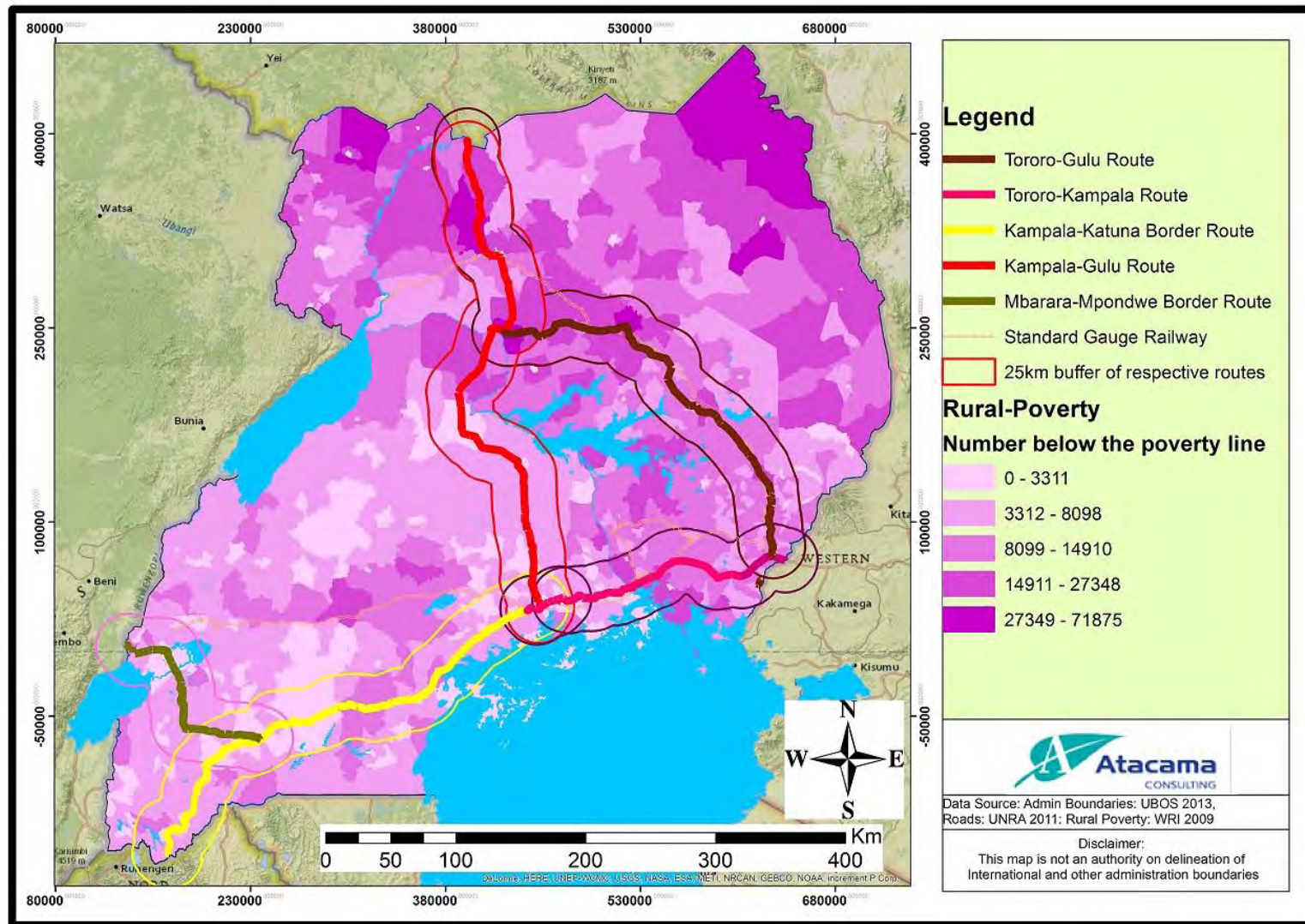
According to statistical abstract UBOS 2015, the incidence of poverty remains highest in the Northern region (43.7 percent) and least in the Central region (4.7 percent). Clearly, the incidence of poverty in the Northern and Eastern regions is much higher than the national average of 19.7 percent.

The chronically poor reside in rural areas (20.6 percent) and 32.8 percent of their household heads lack formal education. Majority (26.3 percent) of the chronically poor were residing in the Northern region of Uganda as per the census. On the other hand, people who experienced mobility into poverty between 2011/12 and 2013/14 were mainly from the Eastern followed by Northern regions. However, overall, more than half of the households remained non-poor (51.0 percent) over the two panel survey periods. The majority of those households that remained non-poor had post-secondary education.

As indicated in *Figure 6.7*, poverty levels are low in the central and western regions of Uganda, and high in the northern and eastern regions. The Kampala - Katuna border route, the Mbarara - Mpondwe route as well as a section of the Kampala - Gulu route (central Uganda region) fall primarily within areas of low poverty. On the other hand, the Tororo - Gulu route as well as a section of the Kampala - Gulu route (northern Uganda region) falls within a zone of high poverty.



Figure 6.7 Poverty levels along the NEC



**Land Tenure**

The Land Act (1998) identifies four forms of land tenure systems in Uganda which include Customary, Leasehold, Freehold and Mailo. Customary land is governed by customary laws while other forms of tenure are registered and the owner is entitled to a land title.

Registered land is common around urban centres and in the districts in central Buganda sub-region (Kayunga, Mukono, Mpigi, Kampala, Wakiso, Lwengo and Masaka). Other than the Buganda sub-region within the NEC, most districts enjoy a customary land tenure system.

**Land Use**

Land use refers to the management activities on the natural environment such as farming, protected areas, settlements, and industrialisation among others. The land use patterns in the different regions of Uganda along the NEC are depicted in *Figure 6.8* and as described below (for the respective routes).

*Kampala - Gulu route*

The main land use pattern along this route is agriculture (farming and rearing of animals on a subsistence scale and pastoralism). Other land uses include; settlements and provision of commercial services. Masindi district is particularly important due to the presence of protected areas (Murchison Falls National Park and Budongo Central Forest Reserve (CFR)).

*Mbarara - Mpondwe border route*

The land use pattern along this route is mainly crop farming and animal rearing. The other land use activities include settlement/housing and economic activities in major towns along the sub-route as well as protected areas (Queen Elizabeth National Park, Kalinzu and Maramagabo CFRs).

*Kampala - Katuna border route*

The land use pattern is similar to that of Mbarara - Mpondwe border route and Kampala - Gulu route where most land is under crop cover and animal farming followed by settlement and social economic activities. Mpigi district is of particular importance due to the presence of Mpanga CFR along this sub-route.

### *Kampala - Tororo route*

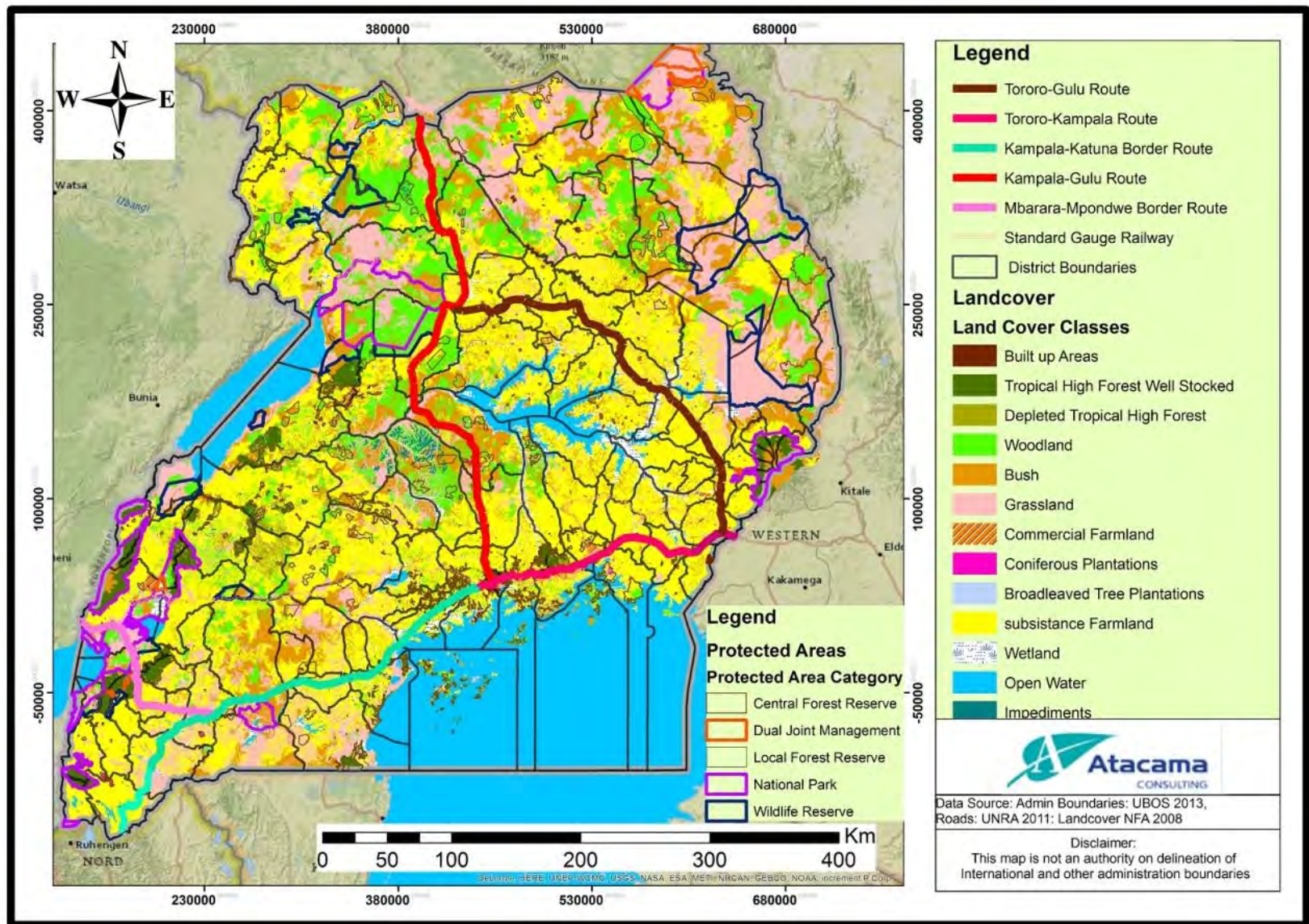
Most of the land along this route is used for agriculture with majority of the people engaged in subsistence agriculture (arable farming and animal husbandry). Other land use activities are settlement, and trade mainly in urban areas as well as protected areas (Mabira CFR).

Industrial activities are carried out mainly in Wakiso, Jinja and Tororo districts. Some districts such as, Mukono, Jinja, and Bugiri are partially surrounded by Lake Victoria where fishing is carried out.

### *Tororo - Gulu route*

As with other routes, the land use pattern along this route is mainly agriculture (crop farming and rearing of animals on a subsistence scale). Other land use practices include settlement and commercial services.

Figure 6.8 Land use Practices along the NEC



Tourism is a major part of Uganda's economy contributing 9 percent of the country's Gross Domestic Product (GDP) or \$1.7 billion per annum. It is a major driver of employment, investment and foreign exchange. The New York Times Travel Section Annual Guide ranked Uganda among the top 33 places to visit in the world in 2012 (MTWA, 2012b).

Vision 2040 is conceptualised on harnessing strategic opportunities by strengthening the relevant fundamentals capable of maximizing returns to the economy and tourism is one of the identified opportunities.

Tourism in Uganda is focused on Uganda's diverse culture, landscape, flora, and fauna (natural resources attract most of the tourists). Tourists Arrivals in the country include those visiting friends and, those who come to attend business and professional conferences and then those who come for leisure, recreation and holidays.

Uganda has twelve National parks offering a wide variety of tourism products. *Table 6.5* presents the details of tourists' destination as per the respective National Parks. Visitors to Lake Mburo, Kibale, Kidepo Valley, Rwenzori Mountains and Mount Elgon have increased in recent years, though these are still not the major destinations like Murchison Falls or Queens Elizabeth National Parks.

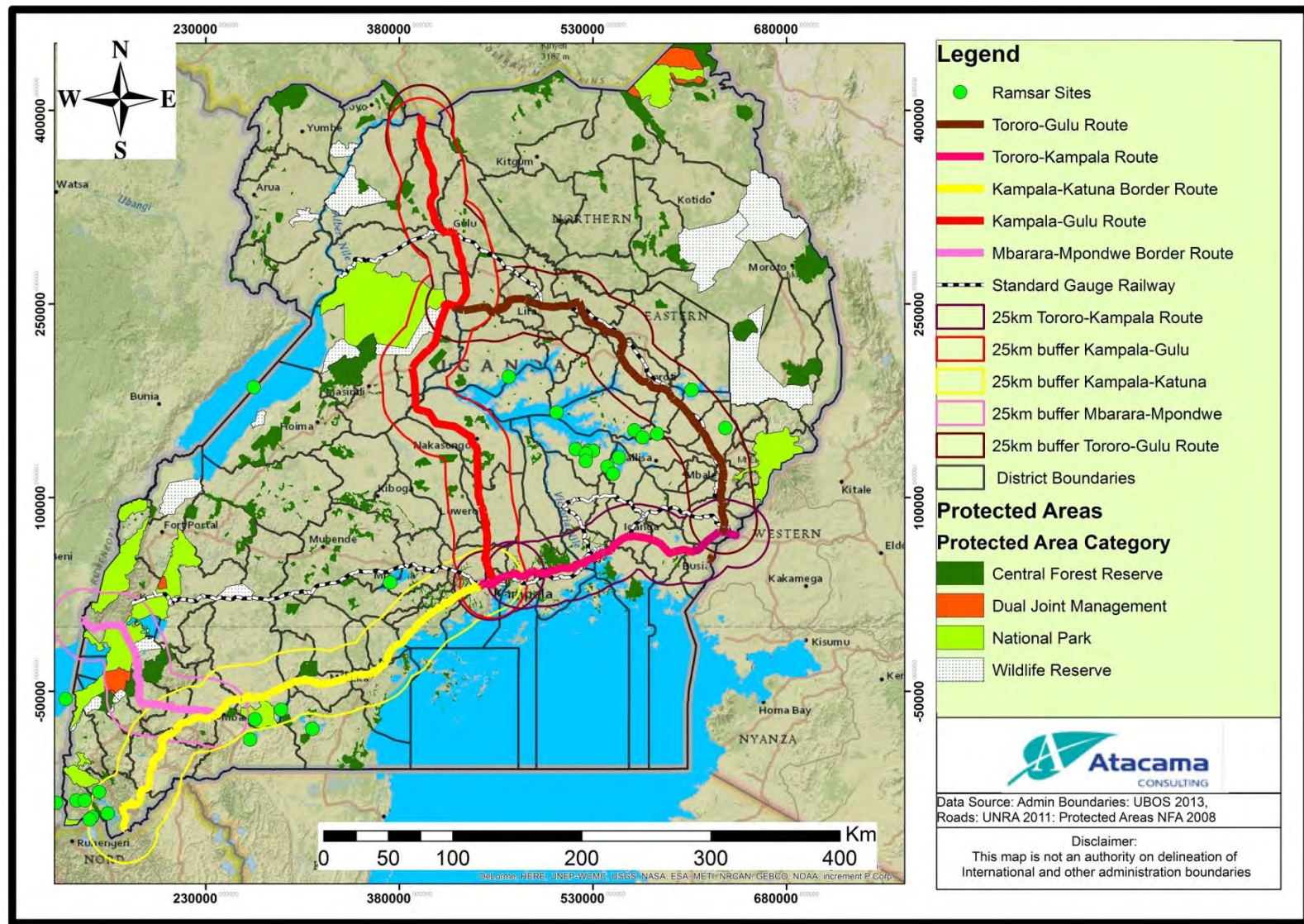
**Table 6.5** *Visitors to National Parks (Citizens and Foreigners), 2010-14*

<b>National Park</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>Share</b>
Murchison Falls	53,460	60,273	60,803	70,798	68,844	33.7 percent
Queen Elizabeth	76,037	87,924	58,172	69,193	58,769	28.8 percent
Lake Mburo	20,966	21,480	22,927	14,068	26,980	13.2 percent
Bwindi Impenetrable	15,108	17,335	18,259	21,695	20,611	10.1 percent
Kibale	9,482	10,433	10,372	10,834	12,097	5.9 percent
Semliki	3,393	3,152	3,591	5,752	4,824	2.4 percent
Mgahinga Gorilla	3,328	1,899	2,497	8,952	3,033	1.5 percent
Kidepo Valley	3,208	2,452	2,300	2,890	4,091	2.0 percent
Rwenzori Mountains	1,529	1,738	1,663	2,724	2,758	1.3 percent
Mountain Elgon	2,660	2,350	1,565	2,096	2,314	1.1 percent
<b>Total</b>	<b>189,171</b>	<b>209,036</b>	<b>182,149</b>	<b>209,002</b>	<b>204,321</b>	

Source: Statistical Abstract, 2015

As indicated in *Figure 6.9*, tourist destinations (central forest reserves, national parks, wildlife reserves etc.) are located in some of the districts along the NEC.

Figure 6.9 Tourism Hotspots along the NEC



#### 6.4.8

#### *Access to Health Services*

The structure of Uganda's health systems includes Village Health Team (VHT) at the Village level, Health Centre II at parish level, Health Centre III at Sub county level, Health centre IV at county level, Hospital at district level, Regional Referral Hospital at regional level and one National Referral Hospital (Mulago National Referral Hospital in Kampala).

The health sector in Uganda has 12 regions based on the referral hospital(s) catchment areas namely; Kampala, Jinja, Mbale, Soroti, Lira, Moroto, Gulu, Arua, Hoima, Fort Portal, Mbarara and Masaka. Out of the twelve, at least eight are located within the NEC.

The total number of hospitals (public and private) in Uganda is 155. Of these, two are National Referral Hospitals (Mulago and Butabika), 14 are Regional Referral Hospitals and 139 are General Hospitals. In terms of ownership, 65 are government owned, 63 Private Not for Profit and 27 are private.

According to the Annual Health Sector Performance Report for Financial Year 2014/15, 51 percent (100/195) of the HC IVs were functional; meaning that they were able to carry out cesarean sections and this is the Health Sector Strategic Investment Plan (HSSIP) target of 50 percent. The percentage of clients expressing satisfaction with health services improved from 46 percent in 2008 to 69 percent (barely short of the HSSIP target of 70 percent) in 2014 under the Uganda Health System Strengthening Project (UHSSP) Client satisfaction Survey.

Selected performance indicators were used to assess the health performance of various districts in Uganda and seven of the top fifteen performing districts were within the NEC (Gulu, Kampala, Jinja, Rukungiri, Mbale, Bushenyi and Mbarara in that order but not respectively). On the other hand, Wakiso district was in the 99<sup>th</sup> position out of the 112 districts.

#### 6.4.9

#### *HIV/AIDS*

HIV/AIDS remains a major socio-economic challenge in Uganda. The prevalence rate in the general population among adults stands at 7.4 percent according to the 2012/2013 survey<sup>1</sup>.

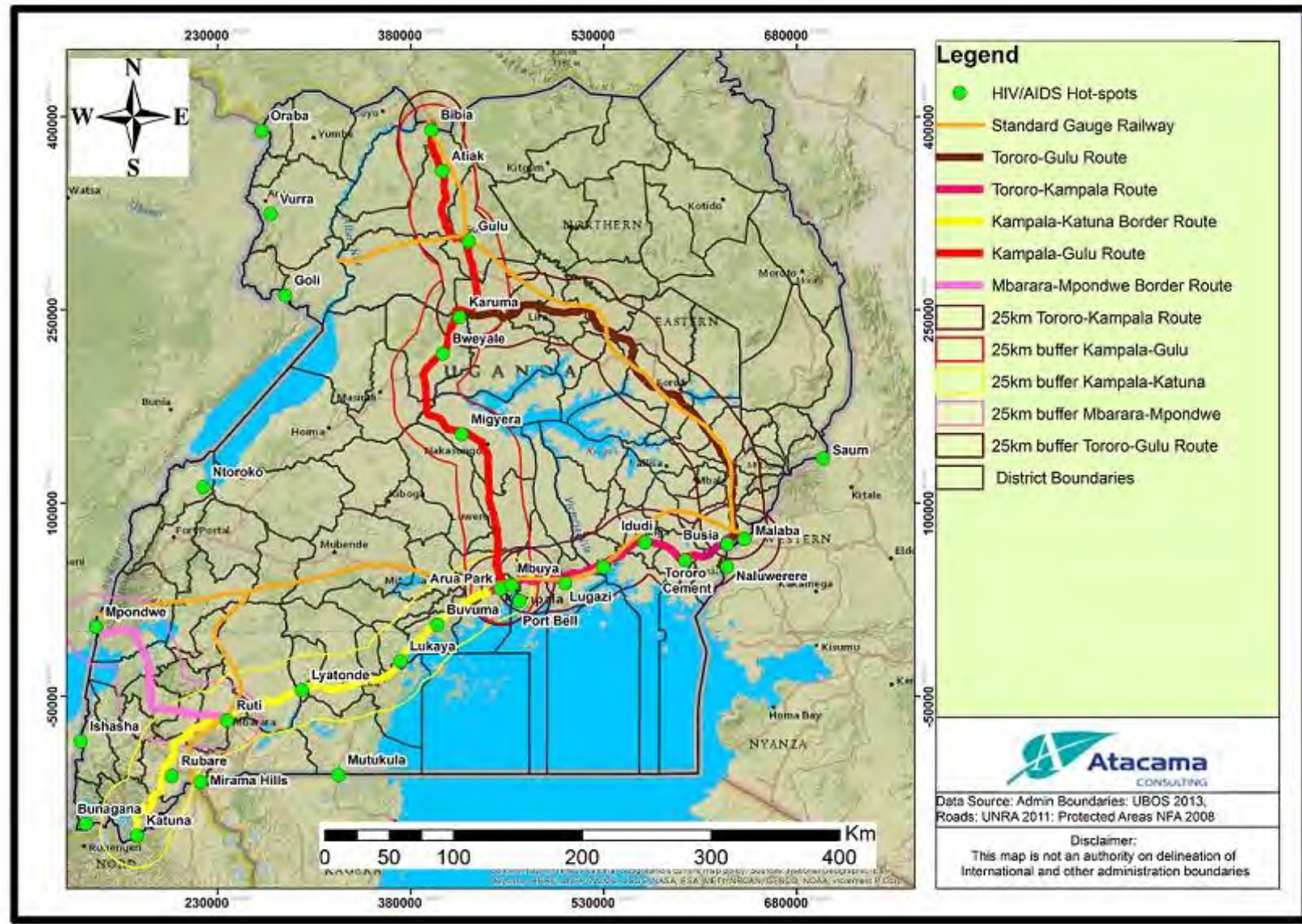
<sup>1</sup> 2014 Uganda HIV and AIDS Country Progress report, 2015



According to the International Organisation for Migration (IOM) report, 2009, mobility has been identified as one of the key factors behind the spread of HIV/AIDS in East Africa due to the high risk environments associated with transport corridors (*Figure 6.10*), which often facilitate multiple concurrent sexual partnerships.

The country has the National AIDS Policy (2007) in place, a tool with guidelines that include HIV Counselling and Testing (HCT), Anti-Retroviral Therapy (ART), Orphans and Other Vulnerable Children (OVC) and several others that directly or indirectly respond to impacts created by HIV&AIDS.

Figure 6.10 Active Hotspots for HIV/AIDS in Uganda as of December 2008



#### 6.4.10 *Gender*

The Government of Uganda adopted a National Gender Policy (1997), whose main objective is to mainstream gender concerns in national development processes through guiding resource allocation in all sectors to address gender inequality. It is pertinent that both women and men are involved at all levels across the different development sectors such that women's as well as men's concerns and experiences become an integral dimension of the policies and programmes so that women and men benefit equally and inequality is not perpetuated. In line with this is the gender mainstreaming policy in the road sector which is relevant to the implications of the Master Plan. During the second round of stakeholder consultations, the stakeholders expressed the need for the deliberate inclusion of gender mainstreaming issues in the SEA for consideration during the Master Plan formulation.

#### 6.4.11 *Vulnerable Groups*

**Vulnerability** refers to the conditions determined by physical, social, economic and environmental factors or processes, which increase the susceptibility of a community to the impact of hazards. A vulnerable group is therefore a population that has some specific characteristics that make it at higher risk of falling into poverty than others living in areas targeted by a project (World Bank, 2015), in this case the Master Plan. Results from the opinion survey conducted during the stakeholder consultation meetings indicate that groups identified as vulnerable by the respondents include slum dwellers, people in traditional housed, the disabled, poor as well as the Karamajong.

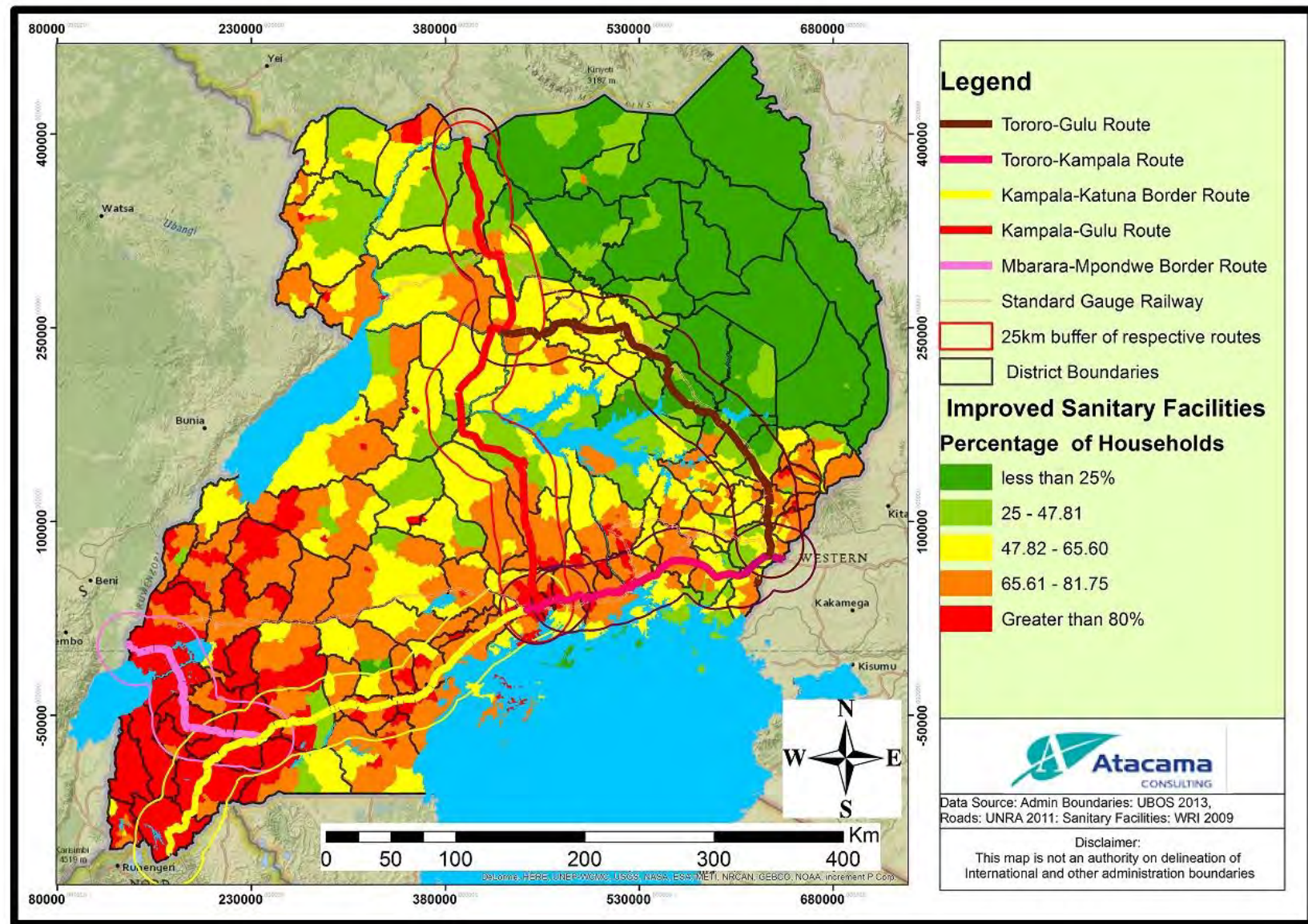
#### 6.4.12 *Sanitation*

The national goal of Uganda's water supply and sanitation sector is to increase access to water supply and sanitation services from 65 percent and 70 percent respectively in 2010 to 100 percent by 2035. Sanitary facilities are an indicator of the health of the population. Where sanitary facilities are deemed few, the population is at a higher risk of suffering from sanitation related diseases/disorders such as cholera, typhoid and diarrhoea.

As indicated in *Figure 6.11*, the highest record of sanitation facilities in Uganda is found in the western region (greater than 80 percent) followed by the central region. The eastern and northern regions have the lowest coverage of sanitary facilities (less than 25 percent).

The Kampala - Katuna border route, the Mbarara - Mpondwe route as well as a section of the Kampala - Gulu route of the NEC (central Uganda region) fall primarily within areas with a high record of sanitation facilities. On the other hand, the Tororo - Gulu route as well as a section of the Kampala - Gulu route (northern Uganda region) falls within a low record of sanitation facilities.

Figure 6.11 Sanitary Facility Coverage along the NEC



The energy sector is one of the key sectors of the Ugandan economy. Uganda has a total primary energy consumption of 0.0593 quadrillion Btu. About 90 percent of the total primary energy consumption is generated through biomass, namely; firewood (78.6 percent), charcoal (5.6 percent) and crop residues (4.7 percent). Electricity contributes only 1.4 percent to the national energy balance while oil products, which are mainly used for vehicles and thermal power plants, account for the remaining 9.7 percent. The electricity demand has been growing at an average of 10 percent per annum ([https://energypedia.info/wiki/Uganda\\_Energy\\_Situation](https://energypedia.info/wiki/Uganda_Energy_Situation)).

Currently, Uganda has stable electricity supply which is provided from large and mini hydropower resources as well as cogeneration plants. The existing supply from renewable energy sources is sufficient to meet the current demand. The total system demand in 2015 was about 560MW. The Generation mix by 2015 stood at 873.34MW, of which 695MW were from hydro, 118.84MW from petroleum-based thermal and 59.5MW from biomass co-generation sources. Total energy generated in 2014 was 3,257,710MWh, slightly higher than the previous year's generation by 7.2 percent. Most of this energy came from large hydropower plants (78.6 percent), while small proportions of 16.1 percent, 4.2 percent and 1 percent came from embedded generators, thermal generators and imports, respectively. Energy exports were 125,064MWh while imports stood at 32,696MWh.

The total installed capacity of electricity power plants in Uganda increased by 15.2 percent from 718.4 MW in 2012 to 827.5 MW in 2013. This was due to a 125 percent increase in the installed capacity of Bagasse electricity from 16 MW in 2012, to 36 MW in 2013 and an 18.7 percent increase in the installed capacity of hydroelectric power from 582.4 MW in 2012, to 691.5 MW in 2013.

Similarly, according to UBOS 2015 statistical abstract, the total installed capacity of electricity power plants increased by 4.4 percent from 827.5 MW in 2013 to 867.0 MW in 2014 and the total number of UMEME (the electricity utility) customers increased by 13.0 percent from 574,465 customers in 2013 to 650,573 customers in 2014.

However, results from the National Population and Housing Census report for 2014 indicate that majority of the Ugandan households (52 percent) used *Tadooba* (local paraffin candle) as the main source of energy for lighting while about 20 percent used electricity.

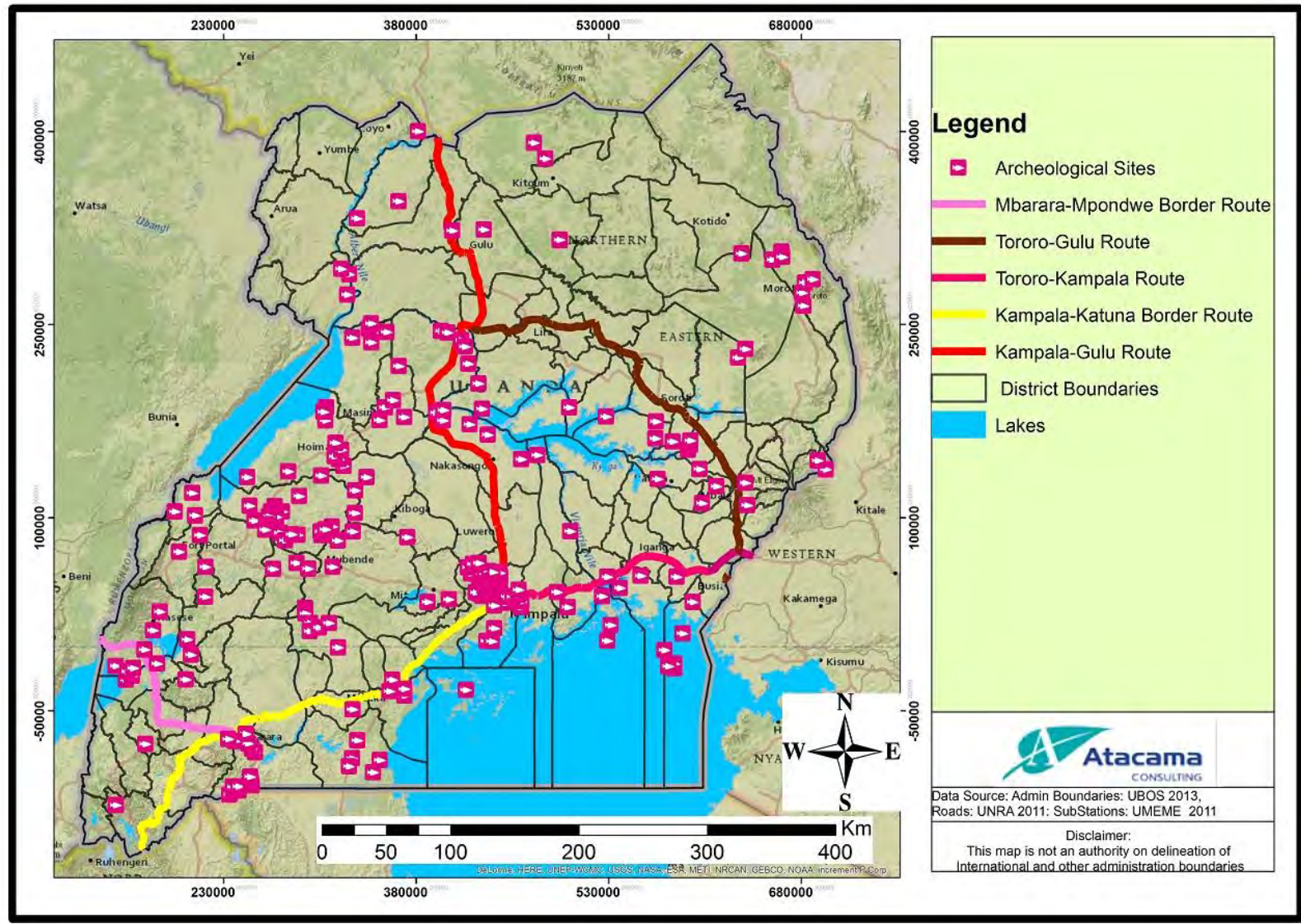
Electricity use has more than doubled and use of *Tadooba* has reduced by about 20 percent. The *Tadooba* was predominantly used in the rural areas (60 percent) compared to the urban areas. This is in line with the government programme on rural electrification that has increased coverage of electricity in rural and urban areas. The residence divide in 2014, shows that the use of electricity for lighting in the rural areas has increased from 3 percent in 2002 to 10 percent in 2014. This trend is similar in most of the districts along the NEC where most households are using biomass for cooking.

#### **6.4.14** *Archaeological and Cultural Heritage Sites*

Uganda does not possess human archaeological remains of great antiquity value. However, the country has a very strong cultural heritage ([http://www.aboutuganda.com/uganda/arts\\_and\\_culture/culture](http://www.aboutuganda.com/uganda/arts_and_culture/culture)) and possesses 100 heritage sites illustrating the rich culture of Uganda little known by Ugandans and the world (<http://irdl.info.yorku.ca/uganda/>). A wide range of archaeological remains have been discovered in Uganda, ranging from early stone tools ranging from stone axes, pottery, earthworks, rock-paintings to trade goods brought from the coast by nineteenth century traders and explorers (<http://www.africa.upenn.edu/NEH/uarchaeology.htm>). The archaeological and historic sites of national importance include royal tombs, shrines and forts (Langlands 1975, Uganda Museum, 2008) as well as the unique physical resources of the Rift Valley, Rwenzori Mountains, National Parks and lakes.

As indicated in *Figure 6.12*, various archaeological and cultural heritage sites exist in several districts within the NEC.

Figure 6.12 Archaeological Sites along the NEC





Uganda has enjoyed relative peace for more than decade despite the war in Northern Uganda led by the Lord's Resistance Army that was brought to an end in 2005, when peace fully returned to the country. Despite the restoration of peace to the entire country, there are a number of internal threats to Uganda's security which mainly stem from public protests, strikes, demonstrations, and political violence.

Externally, the country is generally viewed as safe, secure, and politically stable, although its extensive and porous borders could allow for instability. The Rebel groups operating in the eastern Democratic Republic of Congo (DRC), pose a potential risk along Uganda's western border region while the northern border with South Sudan is faced with security challenges due to the conflict in South Sudan.

Additionally, threats from terrorism raise security concerns. Potential target areas include airports and government establishments in Entebbe and Kampala, churches, schools, business centres and congested areas.

**7.1 OVERVIEW**

Stakeholder engagement is an important element of any planned intervention as it goes a long way in shaping decisions related to such interventions. It is a continuous process that needs to be understood as running throughout the lifecycle of the intervention and beyond. Certain levels of stakeholder engagement will be pertinent even at the level of detailed ESIA for the NEC projects, including their implementation and operation.

This *Chapter* therefore presents a summary of the stakeholder engagement undertaken as part of the SEA. It also serves as a summary of a more detailed Stakeholder Engagement Plan (SEP), which presents the engagement approach and identifies stakeholders and the mechanisms through which stakeholders have been engaged. The complete SEP is included in *Annex A*.

The engagement process has been designed to meet both Ugandan legal requirements for stakeholder engagement and international requirements for engagement as outlined in the JICA Guidelines for Environmental and Social Considerations, 2010.

**7.2 OBJECTIVES OF STAKEHOLDER ENGAGEMENT**

The objectives of engaging stakeholders during the SEA process and beyond are to:

- Introduce the Master Plan and SEA, specifically to inform the stakeholders about the proposed Master Plan strategies, and potential impacts;
- Obtain stakeholder views, and concerns regarding the proposed Master Plan and potential impacts; and
- Integrate stakeholder views and recommendations into measures to minimise and/or mitigate negative impacts and enhance positive impacts as well as improve the Master Plan formulation process.

In order to achieve the above objectives, the SEA team undertook a highly participatory and consultative approach at the regional level that included participants from the Central region, Western region as well as Eastern and Northern regions of Uganda.

### 7.3 *OUTCOMES OF STAKEHOLDER ENGAGEMENT*

One of the key outcomes of engagement should be free, prior and informed consultation of stakeholders, where this can be understood to be:

- **Free:** engagement free of external manipulation or coercion and intimidation;
- **Prior:** engagement undertaken in a timely way, for example the timely disclosure of information; and
- **Informed:** engagement enabled by relevant, understandable and accessible information.

Stakeholder engagement was carried as part of the preparation process leading up to and throughout the assessment stage of this SEA.

### 7.4 *STAKEHOLDER IDENTIFICATION AND MAPPING*

#### 7.4.1 *Stakeholder Identification*

In order to develop an effective SEP, it was necessary to determine exactly who the stakeholders are and understand their priorities and objectives in relation to the Master Plan. By classifying and analysing the stance, influence, and interests of stakeholders, it was possible to develop an engagement approach for each stakeholder group which was tailored to meet their needs.

Stakeholders were, and will continue to be identified on an on-going basis by:

- i. Identifying the different categories of stakeholders who may be affected by or interested in the Master Plan; and
- ii. Identifying specific individuals or organisations within each of these categories taking into account:

- The geographical area over which the NEC Master Plan may cause impacts (both positive and negative) over its lifetime, and therefore the localities within which stakeholders could be affected; and
- The nature of the impacts that could arise and therefore the types of government bodies, academic and research institutions and other bodies that may have an interest in those issues.

Details of individual stakeholders have been compiled in a stakeholder database (*Annex A1*). The database will be maintained throughout the SEA engagement process and is a 'living document' which will be expanded as the Master Plan formulation process continues to evolve. In particular new stakeholders are also expected to be drawn to the Master Plan through continuous engagement activities and contacts made with MoWT.

#### 7.4.2 *Stakeholder Mapping*

Stakeholder mapping (*Figure 7.1*) was undertaken to understand a stakeholder or stakeholder group's influence and potential contribution in relation to the Master Plan so that tailored consultation approaches could be developed.

*Figure 7.1 Stakeholder Mapping*

<b>A.</b> <b>High influence/High contribution</b>	<b>B.</b> <b>High influence/Low contribution</b>
<b>C.</b> <b>Low influence/High contribution</b>	<b>D.</b> <b>Low influence/Low contribution</b>

#### 7.4.3 *Assessing Stakeholder Contribution*

Stakeholder interest considered the extent to which the interests of a stakeholder are affected by the Master Plan either due to the Master Plan's direct impact on them or because of a political, financial, social, cultural, scientific or technical interest in the Master Plan.

These interests can be either positive or negative and can lead to either an improvement or deterioration in a stakeholder’s baseline conditions. Stakeholder interest was therefore assessed using the criteria shown in *Table 7.1*.

**Table 7.1** *Stakeholder Contribution*

<b>Contribution Level</b>	<b>Definition</b>
<b>High</b>	The Master Plan potentially has a significant positive or negative impact on the interests of the stakeholder. The impact is considered to be significant and the stakeholders are highly sensitive to the impact.
<b>Medium</b>	The Master Plan potentially has a moderate positive or negative impact on the interests of the stakeholder. The impact is considered to be medium and stakeholders are moderately sensitive to the impact.
<b>Low</b>	The Master Plan potentially has a minor positive or negative impact on the interests of the stakeholder. The impact is considered to be minor and stakeholders are not considered sensitive to the impact.

**7.4.4** *Assessing Stakeholder Influence*

Stakeholder influence refers to the power that a stakeholder has over the Master Plan’s implementation/outcomes. Influence can be direct or indirect. Indirect influence derives, for example, from a stakeholder’s ability to influence others or their access to important information. Formal influence may derive from their ability to directly affect decision making through, for example, the issue of government approval and permitting decisions. The assessment of stakeholder influence was qualitative and based on the criteria presented in *Table 7.2* below.

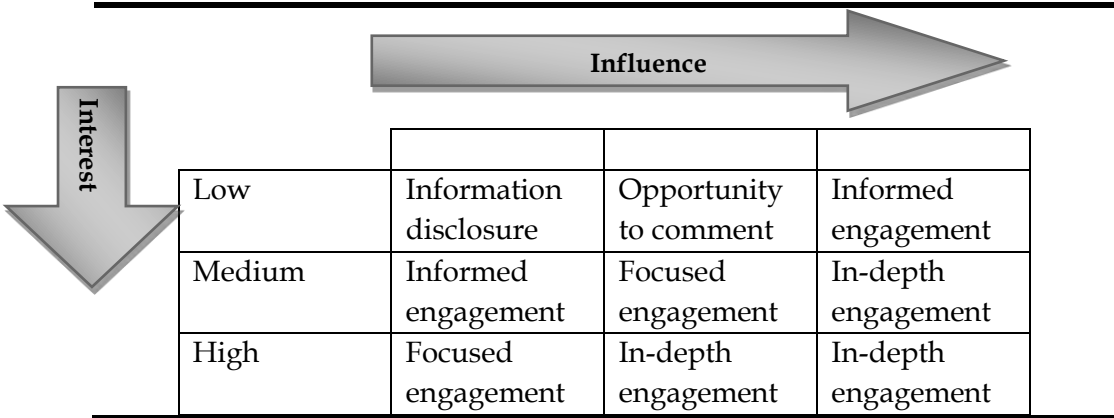
Table 7.2 Stakeholder Influence

Influence Level	Definition
High	The stakeholder or stakeholder group is considered highly influential and has the capacity to stop the implementation of the Master Plan or significantly impact the government’s reputation. For example, decision makers and powerful civil society organisations and individuals who can affect the operationalisation of the Master Plan.
Medium	The stakeholder or stakeholder group is considered to have moderate influence and moderate capacity to influence the Master Plan or impact the governments’ reputation. For example, lobby groups, NGOs and small associations.
Low	The stakeholder or stakeholder group is isolated and has limited capacity to exert influence over the Master Plan or the governments’ reputation. For example, stakeholders who lack institutional and social legitimacy, lack awareness on the Master Plan or have weak capacity.

7.4.5 Stakeholder Analysis Matrix

A stakeholder analysis matrix was used to determine the appropriate level of engagement according to a stakeholder’s interest or influence in the Master Plan (see Figure 7.2). The matrix attributes greater weighting to stakeholder interest than over their ability to influence the Master Plan. This is to ensure that stakeholders likely to have key interests affected by the Master Plan are fully engaged, and that the government of Uganda is aware of their concerns.

Figure 7.2 Stakeholder Analysis Matrix



The stakeholder analysis matrix outlines five levels of engagement, in ascending order:

- Information disclosure:
- Opportunity to comment:
- Informed engagement.
- Focused engagement.
- In-depth engagement.

Higher levels of disclosure and consultation correspond to the provision of more detailed Master Plan information and more in-depth discussion in relation to the Master Plan’s impacts. Lower levels of disclosure and consultation represent more limited Master Plan information and discussion, and are generally less technical and less specific in nature.

Stakeholders that have both high influence and high impact will be continuously engaged and kept fully informed throughout the SEA/Master Plan formulation process. Those with high influence include both ‘key government ministries’ and ‘local government authorities’. Stakeholders that have low influence but high interest will also be kept well informed and involved in a process of informed consultation and participation, which ensures their views are taken into account in during the SEA/Master Plan formulation process.

Preliminary stakeholder mapping was undertaken of the stakeholders identified to date using the stakeholder mapping matrix. The results of the exercise are summarised in *Table 7.3*.

**Table 7.3** *Modalities of Engagement per Stakeholder Group*

Engagement Type	Stakeholders
<b>In-Depth</b>	<ul style="list-style-type: none"> <li>• Ministry of Works and Transport (MoWT)</li> <li>• Ministry of Health (MoH)</li> <li>• Ministry of East African Community Affairs (MEACA)</li> <li>• Ministry of Energy and Mineral Development (MoEMD)</li> <li>• Ministry of Water and Environment (MoWE)</li> <li>• Ministry of Finance, Planning and Economic Development (MoFPED)</li> <li>• Ministry of Trade Industry and Cooperatives (MoTIC)</li> <li>• Ministry of Gender, Labour and Social Development (MGLSD)</li> <li>• Ministry of Local Government (MoLG)</li> <li>• Ministry of Tourism, Wildlife and Antiquities</li> </ul>

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	<ul style="list-style-type: none"> <li>• Uganda National Roads Authority (UNRA)</li> <li>• Uganda Revenue Authority (URA)</li> <li>• Uganda Police Force</li> <li>• Uganda Investment Authority (UIA)</li> <li>• Uganda National Bureau of Standards (UNBS)</li> <li>• National Environment Management Authority (NEMA)</li> <li>• National Planning Authority (NPA)</li> <li>• Uganda National Meteorology Authority (UNMA)</li> <li>• National Forestry Authority (NFA)</li> <li>• Directorate of Citizenship and Immigration Control</li> <li>• Uganda Road Fund (URF)</li> <li>• Uganda Railways Corporation (URC)</li> <li>• Uganda Road Sector Support Initiative (URSSI)</li> <li>• Rift Valley Railways (RVR)</li> <li>• Uganda Bureau of Statistics (UBoS)</li> <li>• Uganda Export Promotions Board (UEPB)</li> </ul>
<b>Focused</b>	<p>Chief Administrative Officers and District Natural Resource Officers (DNRO) for the following districts: Tororo, Mbale, Bukedea, Kumi, Ngora, Soroti, Mayuge, Amuria, Alebtong, Lira, Kole, Oyam, Gulu, Amuru, Busia, Bugiri, Iganga, Jinja, Buikwe, Mukono, Wakiso, Kampala, Mpigi, Kalungu, Masaka, Lwengo, Lyantonde, Kiruhura, Mbarara, Ntungamo, Kabale, Kisoro, Sheema, Bushenyi, Rubirizi, Kasese, Kampala, Luwero, Nakasongola, Masindi, and Kiryandongo</p>
<b>Informed</b>	<ul style="list-style-type: none"> <li>• Kampala City Traders Association (KACITA)</li> <li>• Uganda Small Scale Industries Association (USSIA)</li> <li>• Uganda National Chamber of Commerce and Industry (UNCCI)</li> <li>• Uganda Freight Forwarders Association (UFFA)</li> <li>• Uganda Manufacturers Association (UMA)</li> <li>• Uganda Importers &amp; Exporters Association (UGIETA)</li> <li>• TradeMark East Africa</li> <li>• Economic Policy Research Centre</li> <li>• Ministry of Agriculture</li> <li>• Makerere University Business school</li> <li>• Department of Urban Planning</li> </ul>
<b>Opportunity to comment</b>	<ul style="list-style-type: none"> <li>• National Association of Professional Environmentalists (NAPE)</li> <li>• Uganda Association of Impact Assessment (UAIA)</li> <li>• Engineers' Registration Board (ERB)</li> <li>• JICA Uganda</li> </ul>
<b>Information disclosure</b>	<ul style="list-style-type: none"> <li>• Private Sector Foundation Uganda (PSFU)</li> <li>• Safe Way Right Way Uganda</li> </ul>

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## 7.5 STAKEHOLDER ENGAGEMENT

### 7.5.1 Engagement during the Scoping Study

The stakeholders engaged at this stage are indicated in the *Table 7.5* below. A questionnaire was also administered during the scoping consultative meeting. The attendance registers of these meetings and questionnaire are provided in *Annex A2* of the scoping report.

**Table 7.4 Stakeholders Engaged During the Scoping Stage**

Location of Meeting	Stakeholders Consulted	Date of Consultation
Kampala – Hotel Africana	Industry and Trade Associations: KACITA, UEPB, Professional bodies (UAIA); Government agencies and Departments (NEMA, NFA, Uganda Museums, KCCA, UBOS, Uganda Investment Authority, URF, UETCL); Government ministries (Ministry of Gender, Labour and Social Development, MoWT, and; Officers (Chief Administrative Officers (CAO) and District Natural Resources/ Environment Officers (DNRO/DEO)) from Districts within the vicinity of Kampala Capital City that are traversed by the NEC, namely Wakiso, Buikwe, Jinja, Luweero, Nakasongola, Masindi, and Kiryandongo	16th November 2015
Mbarara – Lake View Hotel	Officers (CAO and DNRO/DEO) from districts within the vicinity of Mbarara district that are traversed by the NEC, namely Kalungu, Masaka, Lwengo, Lyantonde, Kiruhura, Mbarara, Ntungamo, Kabale, Kisoro, Sheema, Bushenyi, Rubirizi, Kasese, Rukungiri and Isingiro	18th November 2015
Tororo – Rock Classic Hotel	Officers (Chief Administrative Officers and Natural Resources/ Environment Officers) from districts within the vicinity of Tororo Municipality that are traversed by the NEC, namely: Tororo, Mbale, Bukedea, Kumi, Ngora, Soroti, Amuria, Alebtong, Lira, Kole, Oyam, Gulu, Amuru, Busia, Bugiri and Iganga	20th November 2015

### 7.5.2 Engagement during the Detailed SEA study

The SEA consultation meetings were held at the national and regional level. The consultations took place between 16 and 20 May 2016) in:

- Kampala for the stakeholders in central Uganda;

- Mbarara for the stakeholders in the western region; and
- Tororo for the Northern and Eastern regions of Uganda.

During these meetings, the stakeholders were introduced to the Master Plan and the progress of the SEA study. Stakeholders engaged during the scoping phase were also engaged during the detailed SEA study phase (see *Table 7.5* below).

By the time of the second round of stakeholder meetings, new stakeholders had been identified and invited to the meetings. These stakeholders included: Mayuge and Mpigi districts, Makerere University Business School, Ministry of Agriculture, Economic Policy Research Centre, Department of Urban Planning and TradeMark East Africa.

A questionnaire was also administered during the consultative meetings. The results were used to inform the baseline data. The attendance registers of these meetings and the BID and questionnaire are provided in *Annex A2* and *Annex A3* respectively of the SEA report.

**Table 7.5 Stakeholders Engaged during the Detailed SEA study**

Location of meeting	Stakeholder consulted	Date of consultation
Kampala – Fair Way Hotel	<ul style="list-style-type: none"> <li>• Industry and Trade Associations: UMA</li> <li>• Professional bodies (USSIA);</li> <li>• Government agencies and Departments (KCCA, UBOS, URC, URF);</li> <li>• Government ministries (Ministry of Lands, Housing and Urban Development, MoWT, Ministry of East African Community Affairs and;</li> <li>• Officers (District Natural Resources/ Environment Officers (DNRO/DEO)) from Districts within the vicinity of Kampala Capital City that are traversed by the NEC, namely; Buikwe and Jinja,</li> </ul>	16th May 2016

Location of meeting	Stakeholder consulted	Date of consultation
Mbarara - Lake View Hotel	Officers (CAO and DNRO/DEO) from districts within the vicinity of Mbarara district that are traversed by the NEC, namely; Kalungu, Masaka, Lwengo, Lyantonde, Kiruhura, Mbarara, Ntungamo, Kabale, Kisoro, Bushenyi, Rubirizi, and Kasese	18th May 2016
Tororo - Green Meadows Hotel	Officers (Chief Administrative Officers and Natural Resources/ Environment Officers) from districts within the vicinity of Tororo District that are traversed by the NEC, namely: Mbale, Bukedea, Kumi, Ngora, Soroti, Alebtong, Lira, Kole, Oyam, Gulu, Amuru, Busia, Bugiri, Mayuge and Iganga	20th May 2016

### 7.5.3 *Baseline Phase Engagement*

#### *BID Surveys*

A Background Information Document (BID) providing brief details of the Master Plan in a clear and accessible format and invitation for comments was provided to all stakeholders as a way of collecting the relevant baseline data that would inform the SEA.

### 7.5.4 *Validation Engagement*

The validation engagement meetings were held at regional level. The meetings took place between 16 and 20 January 2017) in:

- Kampala for the stakeholders in central Uganda;
- Mbarara for the stakeholders in the western region; and
- Tororo for the Northern and Eastern regions of Uganda.

During these meetings, the MoWT reintroduced the Master Plan and the findings of the SEA process contained in the SEA report were presented to the stakeholders where the main objective was to review and comment on the draft SEA. Stakeholders engaged during the scoping phase as well as during the detailed SEA study phase were also engaged at the validation stage (see Table 7.6). Other than the stakeholders identified during the scoping and detailed SEA stages, no new stakeholders were identified at the validation stage. The

attendance registers and minutes of these meetings are provided in *Annex A4*.

The comments and reviews from the stakeholders were used to inform and update the Final SEA report.

**Table 7.6 Stakeholders Engaged during the Validation workshop**

Location of meeting	Stakeholder engaged	Date of engagement
Mbarara - Lake View Hotel	Officers (CAO and DNRO/DEO) from districts within the vicinity of Mbarara district that are traversed by the NEC, namely; Kalungu, Masaka, Lwengo, Lyantonde, Kiruhura, Mbarara, Isingiro, Ntungamo, Kabale, Sheema, Bushenyi, Rubirizi, and Kasese	16 Jan 2017
Kampala - FairWay Hotel	<ul style="list-style-type: none"> <li>• Industry and Trade Associations: UMA and TradeMark East Africa;</li> <li>• Professional bodies (USSIA, UCIFA, PSFU);</li> <li>• Government agencies and Departments (KCCA, UBOS, URC, URF, NPA, NFA, UNBS, Department of Museum and Monuments, NEMA, RVR and UIA);</li> <li>• Government ministries (Ministry of Local Government, Ministry of Trade, Wildlife and Antiquities, Ministry of Finance, Planning and Economic Development, Ministry of Internal Affairs, Ministry of Agriculture, Animal Industry and Fisheries, Ministry of Lands, Housing and Urban Development, MoWT, Ministry of East African Community Affairs, Ministry of Water and Environment, and;</li> <li>• Officers (CAO and District Natural Resources/ Environment Officers (DNRO/DEO)) from Districts within the vicinity of Kampala Capital City that are traversed by the NEC, namely; Buikwe and Jinja, Nakasongola, Luwero and Masindi.</li> </ul>	17 Jan 2017
Tororo - Green Meadows Hotel	Officers (CAO and DNRO/DEO) from districts within the vicinity of Tororo District that are traversed by the NEC, namely: Mbale, Bukedea, Kumi, Ngora, Soroti, Alebtong, Lira, Kole, Oyam, Gulu, Amuru, Busia, Bugiri, Mayuge and Iganga	20 Jan 2017

## 7.6 *OUTCOMES OF STAKEHOLDER ENGAGEMENT*

### 7.6.1 *Key Outcomes*

*Table 7.7* that follows present a summary of key attitudes, concerns and expectations raised during the detailed SEA phase round of stakeholder consultation meetings (refer to *Annex A2* for detailed minutes, attendance registers and photos taken during stakeholder consultations).

**Table 7.7** *Key Attitudes, Concerns and Expectations from the detailed SEA study Stakeholder Consultations*

Meeting Location	Key attitudes, concerns and expectations	
Kampala	In line with the proposed secondary cities, adaptation is better since climate change is a reality	
	There is need to consider urban mobility plans and also the need to fit satellite cities into the corridor	
	Look into vegetation from the physical environment perspective.	
	Include recreation centres and leisure parks in the socio-economic baseline.	
	Gender responsiveness should also be highlighted in the SEA.	
	How integrated is the Corridor? It seems to be focussing on roads and it is not clear what type of pipelines are being refereed to since there is also a plan of an oil pipeline from the Albertine Graben to Buloba.	
	Include communication in the social baseline.	
	There were a lot of uncertainties; is it possible to build different scenarios shaping the Master Plan.	
	Will the SEA team come up with a variety of issues which can be grouped into key issues which can be easily digested?	
	The routes go as a far as the border of other countries but only Uganda and Kenya have been involved and would therefore like to see the involvement of other countries such as Rwanda, Congo and South Sudan.	
	Mbarara is being proposed to be an urban city under Uganda support to Municipal Infrastructure Development (USMID) and the physical development plans are being prepared, how this will be harmonised?	
	One of the key stakeholders at the Mbarara meeting should be the consultant preparing the physical development plan.	
	How will the SEA be able to pick the impact of each development plan in the NEC?	
	SEA is not about the final report but how much it guides decision making and the features of the Master Plan that have been informed by the SEA.	
	Mbarara	Is each country producing its own SEA and to what extent are these SEAs aligned?
		What is the source of funding for the Master Plan? ie, is it from the national resources, international resources or pooling of resources?
What is the timing for implementation of the Master Plan?		
Mombasa port is already congested. Why not consider Lamu port especially along the LAPSSSET corridor?		
Looking at the Economic indicators for East Africa, the region is moving forward and at one point we shall have a boom or blast.		

Meeting Location	Key attitudes, concerns and expectations
	<p>Is it possible at this moment for the Master Plan to give the number of lanes expected along the major highways?</p> <p>Local Forest Reserves (LFR) should be taken into consideration during the SEA.</p> <p>Since we face a challenge of vandalism especially of metal related infrastructure, planning should consider the safety of this infrastructure in the face of urbanisation.</p> <p>The SEA team should consider reviewing literature contained in the Wetland Atlas of Uganda and the Disaster Preparedness Master Plan for Uganda.</p> <p>The residents of Kasese are speculating land take as a result of implementing the Master Plan and have therefore started occupying the land under speculation, how this will be handled?</p> <p>The SEA team should shade more light on rural urban migration as a positive impact of the Master Plan.</p> <p>The Master Plan process should consider cascading development in line with the Local Development Plans.</p> <p>The plan gives us the ability to transform, shall we have an idea of what we are aiming at?</p> <p>Consider the undisciplined society which does not respect common user rights.</p> <p>Is there connectivity of the transport strategy ie from road to railway and airport?</p> <p>Is the Master Plan looking at increasing production by using fertilisers? We need to look at how the plan will increase production by using fertilisers.</p> <p>Under COMESA arrangements, transboundary markets will be established, the master Plan should take keen interest in this since other African agencies have interest in developing our countries.</p>
Tororo	<p>Increase in traffic demand results in increase in traffic congestion and this can be solved by bypasses. Is there any plan for a bypass in Mbale, Lira and Gulu?</p> <p>Will the Master Plan incorporate tree planting along the highways?</p> <p>What will be done to the population along the railway line especially in highly seismic areas?</p> <p>We can get SEA guidelines to guide future PPPs.</p> <p>We need to look at infrastructure and relate it to production.</p> <p>Unless we relate productivity and planning, the trucks will go back to Mombasa empty.</p> <p>How has the SEA taken into consideration the factors that led to the collapse of the Metre Gauge Railway?</p> <p>With the fragile security system, there is a need to be sure the SGR will be protected.</p> <p>We are concerned about the identification of the key strategic areas by the Master Plan.</p> <p>How has the ministry considered implementation of the Master Plan visa vis District Development Plans?</p> <p>Will the Ugandan section of the NEC remain agricultural or will there be some manufacturing?</p> <p>Would like to see a detailed Master Plan presentation about the Resettlement Action Plan.</p>

<b>Meeting Location</b>	<b>Key attitudes, concerns and expectations</b>
	Cross cutting issues like Gender, HIV/ AIDS, the elderly etc. should be incorporated in the SEA.
	The ministry should design the SEA communication strategies.
	The study is deliberately ignoring the political dimension which is led by increasing income division and thus the potential for conflict is high. Marginalised groups should be looked into.
	Myths should be considered.
	vulnerabilities are left open
	Beyond GIS, ground truthing should be done.
	Several plans are being implemented. This should be shown for us to internalise.
	In regards to flooding, the Master Plan should improve the drainage system such that this water can be tapped for productivity.
	Registered land is presented as a constraint yet un registered land is more challenging as a constraint due to insecurity.
	Regional production centres such as Karamoja region have been left out. This area has National parks but there was no deliberate effort to improve the region.
	What are the strategies for popularising the Master Plan?
	The Master Plan and SEA have timelines and therefore there may be no time for internalising both reports. The two should be merged into one report.



Three alternative spatial structures for the NEC were examined, taking into account the following factors:

- i) *Regional industrial development*: promoting regional industrial development;
- ii) *Urban centers of the region*: centralising urban functions or decentralising; and
- iii) *Transport network*: promoting regional linkage.

The three alternative spatial structures for the NEC are described in this *Chapter*, and include:

- *Alternative A*: Includes a “Super Double-Core Type” for concentrating investments in capitals, which reflects the current situation or the Business As Usual (BAU) situation.
- *Alternative-B*: Includes a “Double-core with Regional Industrial Promotion Type” for expanding exports with industrial promotion; and
- *Alternative-C*: Includes a “Multi-core with Regional Industrial Development Type” for expanding exports with industrial promotion and balanced development.

## 8.1 ALTERNATIVES

### 8.1.1 *Alternative A: Super Double Core Type/Business as usual*

The *Super Double Core Type* alternative relates to concentrating investment in capitals, which reflects the current situation. This spatial structure follows current market demands and concentrates investment especially in Kampala and Nairobi, which are referred to as “Primary Cities”. Existing urban functions including businesses, commerce and services would be centralised in ‘Primary Cities’ and these will grow into much larger consumption areas. The supply of goods will rely heavily on imports and the Primary Cities will become logistic hubs for their surrounding areas and beyond (see *Figure 8.1*).

**Figure 8.1** *Alternative A: Super Double Core Type/Business as usual*

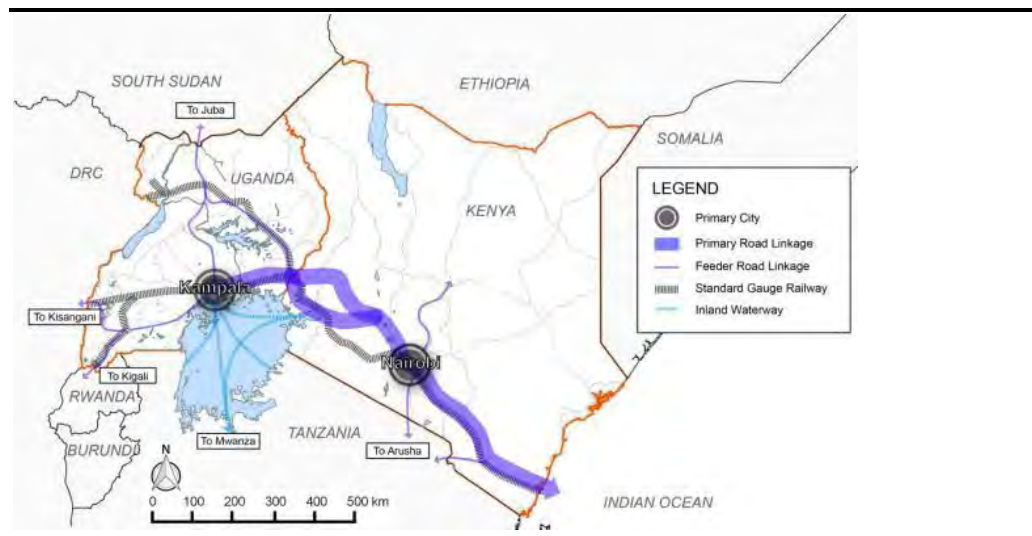


Table 8.1 below discusses the advantages and disadvantages of Alternative A.

**Table 8.1** *Advantages and Disadvantages of the Super Double Core Type*

Advantage	Disadvantage
Lower development cost as it follows current market demands and concentrates investments especially in Primary Cities (such as Kampala and Nairobi)	Excessive imports and imbalanced freight volumes
Relatively short development period	Imbalanced development
Low cost to realise this structure plan as the area to be newly developed is smaller than the other alternatives	-

Source, JST 2016

**8.1.2** *Alternative B: Double Core with Regional Industrial Promotion Type*

Alternative B (*Double Core with Regional Industrial Promotion Type*) relates to the expansion of export services along with industrial promotion. It is similar to *Alternative A* in that urban functions would also be centralised in the two Primary Cities of Kampala and Nairobi. This spatial structure plan aims for developing “Regional Production Centres” which aims to promote their potential regional products including industry, agriculture, mining resources and tourism resources.

Key industries in “Regional Production Centres” will be promoted to produce goods for export through utilising resources as the regional advantage. These products will be transported to Primary Cities and out of the NEC region (see *Figure 8.2*). In this alternative, the involvement of local Governments will be required so as to improve the production of products and goods from the regional production centres. Export of the regional products will be expected lower transportation costs to Mombasa port since it will counter the problem of empty return cargo containers.

**Figure 8.2** *Alternative B: Double Core with Regional Industrial Promotion Type*

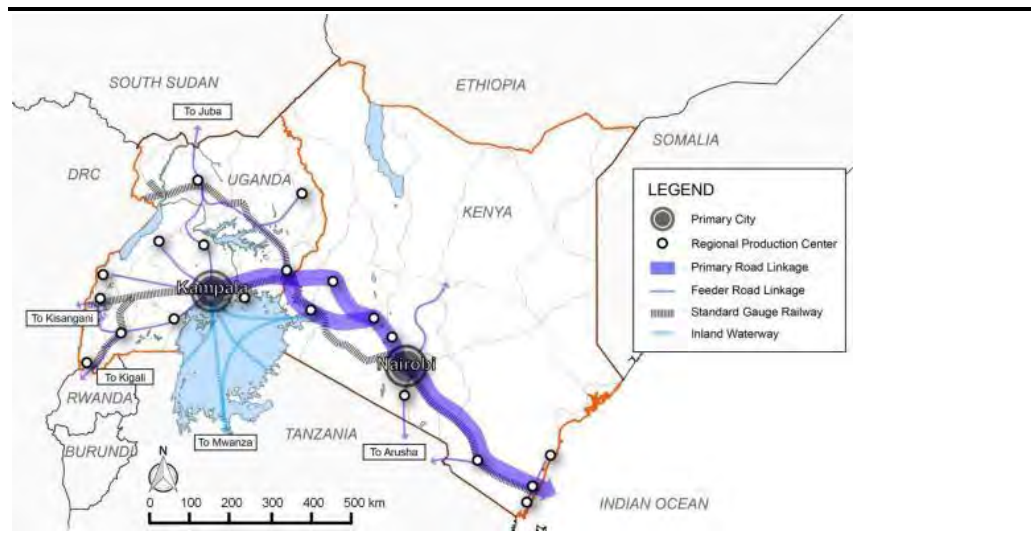


Table 8.2 below discusses the advantages and disadvantages of Alternative B.

**Table 8.2** *Advantages and Disadvantages of Alternative B*

Advantages	Disadvantages
Expansion of exports	Imbalanced development
Replacement of imports by domestic products	High development cost
-	Longer development period

Source, JST 2016

**8.1.3** *Alternative C: Multi-Core with Regional Industrial Development Type*

The *Multi-Core with Regional Industrial Development Type* alternative aims at balanced growth and efficient logistics in the NEC region by promoting urban functions of 18 Secondary Cities in Uganda and Kenya, including 6 Secondary cum Regional Production Centres (see *Figure 8.3*).

This alternative promotes decentralising urban functions to Secondary Cities, urbanisation of them and concentration of the population in them from the surrounding region. Similar to Alternative B, it aims to promote Regional Production Centres, because demand for commercial services in urban areas (which results from surrounding regional area) will promote the demand of Secondary Cities.

These Secondary Cities will serve as regional urban centres supplying urban services and logistics hubs connecting Regional Production Centres and Primary Cities as consumption areas. In this alternative, the involvement of local Governments is also essential. The initial cost to realise this structure plan will be higher than the other alternatives because the area to be newly developed will be larger. This structure plan needs more public engagement and management capacity for urban management and development control to avoid uncontrolled development.

**Figure 8.3** *Alternative C: Multi-Core with Regional Industrial Development Type*

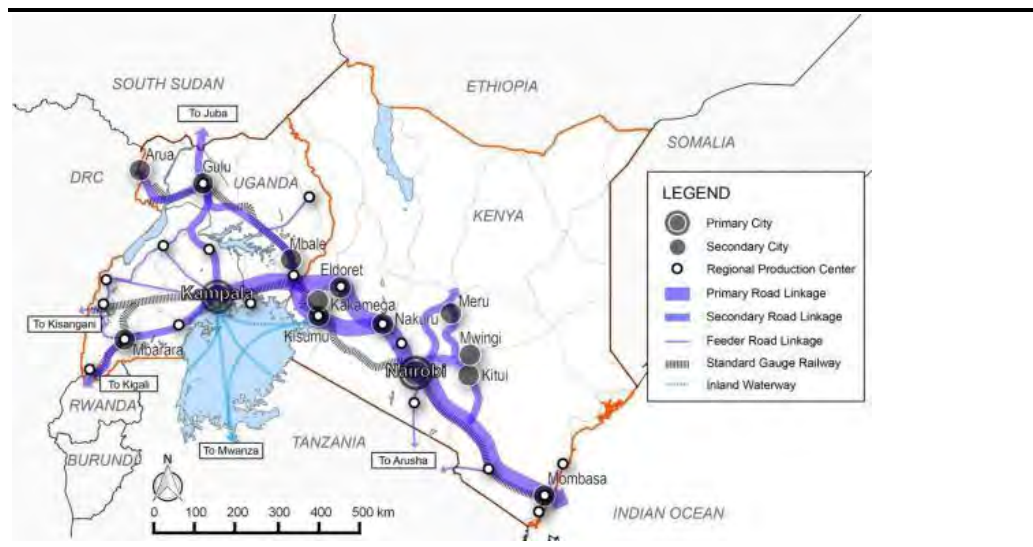


Table 8.3 below discusses the advantages and disadvantages of Alternative C.

**Table 8.3** *Advantages and Disadvantages of Alternative C*

Advantages	Disadvantages
Expansion of exports and replacement of imports by domestic products	Highest development costs
Balanced development	Longest development period

Source, JST 2016

*This is the preferred alternative because it is consistent with Vision 2040 and the goals of the NEC Master Plan, which are to improve logistics for the NEC as well as provide an integrated regional development strategy consistent with sub-regional development plans and national development plans. **This alternative is therefore the basis of this SEA.***

## 8.2 *PREFERRED ALTERNATIVE*

The merits and demerits of the three development alternatives presented above were largely based on economic evaluation of the different alternatives by the JICA Study Team. .

However, from an SEA perspective, it was also prudent that the alternatives are appraised further based on an objectives led approach. Therefore, a set of environmental and social objectives (SEA objectives) that were shaped by the SEA stakeholder engagement process were used to ascertain the environmental and social soundness of the alternatives. The appraisal process took into account the aspirations of the NEC Master Plan. The outcome of the appraisal is as presented in *Table 8.4 Alternatives Assessment*

Following the appraisal of the alternatives, alternative 'C' was deemed to be the preferred alternative because it is consistent with Vision 2040 and the goals of the NEC Master Plan, which are to improve logistics for the NEC as well as provide an integrated regional development strategy consistent with sub-regional development plans and national development plans. **This alternative is therefore the basis of this SEA.**

**Table 8.4 Alternatives Assessment**

SEA Objectives	Alternative A	Alternative B	Alternative C
Maintain the integrity of water bodies	--	-	-
Maintain the integrity of the soils and geology conditions	0	0	--
Maintain and enhance air quality	--	--	-
Minimise noise and vibrations	--	--	-
Minimise impact on protected areas	0	0	--
Conserve and enhance biodiversity outside protected areas	--	--	-
Safeguard public health and safety	--	--	-
Minimise land take and disruption of livelihoods	-	-	--
Well integrated modes of transport	--	--	+
Protect integrity of archaeological and cultural heritage sites	0	-	-
Minimise visual impacts	-	-	--

**Key**

- Minor negative	+ Minor positive	0 Neutral
-- Major negative	++ Major positive	? Uncertain

## 9 *KEY IMPACTS*

### 9.1 *INTRODUCTION*

Following on from the identification of the preferred development alternative for the Master Plan, the respective options of the strategies (*Table 9.1*) that will make up the Master Plan were subjected to a detailed impact assessment.

Table 9.1: Master Plan Strategic Options that were subjected to the Detailed Assessment

Transport strategy			Regional strategy		Industrial strategy		
Strategic options							
Modal shift from truck to rail	Reduction of bottlenecks	Enhancement of infrastructure	Linking agricultural productive areas and mineral resources through development of secondary cities	Linking with LAPSSSET, Central Corridor, and Kampala-Juba-Addis Ababa-Djibouti Corridor	Promotion of growth drivers to increase exports, reduce imports, and develop local economy	Connecting industrial areas to logistic hubs through Cargo Oriented Development (COD)	Establishment of logistic hubs with Inland Container Depot and Logistic Centre
The expected impact is to realise a multimodal transport system including railway, truck, and pipeline for NEC.	In Kampala and Nairobi, it is necessary to expand the capacity of road networks through widening of the roads, bypasses, ring roads, over/under passes.  <b>One Stop Border Post in Malaba:</b> Shorten to	Existing transport infrastructure such as Metre Gauge Railway (MGR), Mombasa port, waterway in Lake Victoria, and international airports should be enhanced.	Major cities and economic activities have been developed along the NEC, and it is essential to link potential agricultural productive areas and mineral resources through feeder roads. The proposed spatial	Inland waterway on Lake Victoria would be a centre for regional trade due to its geographical location, and the Ring Road around the Lake Victoria would serve as an	34 growth drivers consisting of manufacturing, agriculture and livestock, and energy and mining products etc. are has been considered. JICA Study Team deduced that growth drivers have large potentials for: i) increasing	Harmonisation with industrial plans, mineral resource development, and agricultural development can be key for transport and logistics planning. Such developments can be referred to as Cargo-Oriented Development (COD).	A potential logistic hub could have multi-modal facilities such as ICD that connect railway to road, inland water, and airport. In addition to multi-modal facilities, a logistic hub provides a logistic centre with facilities and services



Transport strategy			Regional strategy		Industrial strategy		
Strategic options							
Modal shift from truck to rail	Reduction of bottlenecks	Enhancement of infrastructure	Linking agricultural productive areas and mineral resources through development of secondary cities	Linking with LAPSSET, Central Corridor, and Kampala-Juba-Addis Ababa-Djibouti Corridor	Promotion of growth drivers to increase exports, reduce imports, and develop local economy	Connecting industrial areas to logistic hubs through Cargo Oriented Development (COD)	Establishment of logistic hubs with Inland Container Depot and Logistic Centre
	<p>within 12 hours including driver's rest time by multi-lane border for petro cargo, etc. under full implementation of Single Customs Territory scheme</p> <p><b>Export of goods at port;</b> 1.0 day by proper operation at the Container Yard and reduced time of</p>		<p>structure plan has the following characteristics: i) balanced growth and efficient logistics in the NEC region through promoting urban functions of "12 Secondary Cities", and ii) Secondary Cities that serve as regional urban centres which supply urban</p>	<p>alternative option for Lake transport and facilitate regional trade within East Africa.</p>	<p>exports to the East African region or international market, ii) decreasing imports through expansion of domestic production, and iii) large contribution to add value to the local economy.</p>		<p>such as warehouses, distribution centres, and a one stop shop.</p>

Transport strategy			Regional strategy		Industrial strategy		
Strategic options							
<b>Modal shift from truck to rail</b>	<b>Reduction of bottlenecks</b>	<b>Enhancement of infrastructure</b>	<b>Linking agricultural productive areas and mineral resources through development of secondary cities</b>	<b>Linking with LAPSSET, Central Corridor, and Kampala-Juba-Addis Ababa-Djibouti Corridor</b>	<b>Promotion of growth drivers to increase exports, reduce imports, and develop local economy</b>	<b>Connecting industrial areas to logistic hubs through Cargo Oriented Development (COD)</b>	<b>Establishment of logistic hubs with Inland Container Depot and Logistic Centre</b>
	scanning, etc.  <b>Road danger spots;</b> Improved road traffic safety and reduction of traffic jam caused by accidents.		services and logistic hubs which connect Regional Production Centres and Primary Cities as consumption areas.				

The assessment process was preceded by screening and scoping and it focused on the identification and evaluation of potentially significant environmental and social effects that are likely to be attributed to the implementation of the Master Plan, since it's the significant issues that are the focus of any SEA. A matrix coupled with expert judgments were used in the identification of potentially significant environmental and social aspects of the Master Plan that warranted a detailed assessment. The impact on a set of SEA objectives that were framed largely on feedback from the scoping process, were used as the basis of the assessment. The levels of significance were assigned as below (*see also Section 9.2 for a description of the terminologies*):

- Minor negative (-);
- Minor positive (+);
- Neutral (0);
- Major negative (- -);
- Major positive (++); and
- Uncertain (?)

It's only the options that were deemed to be negative and major in scope that were taken forward for the detailed impact assessment. Those aspects that were likely to be majorly positive could only be enhanced as part of the implementation of the Master Plan.

*Table 9.2, Table 9.3, and Table 9.4 indicate the levels of significance for each of the strategy options (see Section 4.2.2 as well as Section 9.2 for derivation of impact significance). It's worth noting that the organisational and policy strategy, and financial strategy were not evaluated since the two strategies are policy related and are aiming at supporting the first three strategies (regional strategy, industrial strategy and transport strategy). Their indirect impacts are therefore the direct impacts of implementing the three strategies.*

**Table 9.2** *Assessment of the Regional Strategy*

SEA Objectives	Regional Strategy	
	Linking agricultural productive areas and mineral resources through development of secondary cities	Linking with LAPSSET, central corridor and Kampala-Juba-Addis Ababa-Djibouti Corridor
Maintain the integrity of water bodies	--	--
Maintain the integrity of the soils and geology conditions	-	-
Maintain and enhance air quality	-	-
Minimise noise and vibrations	-	-
Minimise impact on protected areas	-	--
Conserve and enhance biodiversity outside protected areas	-	0
Safeguard public health and safety	--	--
Minimise land take and disruption of livelihoods	-	--
Well integrated modes of transport	+	+
Protect integrity of archaeological and cultural heritage sites	?	? (1)
Minimise visual impacts	-	-

(1) Given the scale and nature of the proposed interventions, there is a likelihood that chance finds could be encountered especially as parts of the corridor constitute some of the oldest kingdoms in Africa. However, at this level it is hard to tell with a high degree of certainty what the significance of any finds is likely to be – that can only be determined at the project stage

**Table 9.3** *Assessment of the Industrial Strategy*

SEA Objectives	Industrial Strategy		
	Establishment of logistic hubs with ICD and Logistic Centre	Connecting industrial areas to logistic hubs through Cargo-Oriented Development (COD)	Promotion of growth drivers to increase export, reduce import, and develop local economy
Maintain the integrity of water bodies	-	-	--
Maintain the integrity of the soils and geology conditions	--	-	--
Maintain and enhance air quality	-	-	-
Minimise noise and vibrations	-	-	-
Minimise impact on protected areas	-	0	--
Conserve and enhance biodiversity outside protected areas	-	0	-
Safeguard public health and safety	--	-	-
Minimise land take and disruption of livelihoods	--	-	?
Well integrated modes of transport	++	++	0
Protect integrity of archaeological and cultural heritage sites	?	?	?
Minimise visual impacts	-	-	-

**Table 9.4** *Assessment of the Transport Strategy*

SEA Objectives	Transport strategy		
	Modal shift from truck to rail and pipeline	Reduction of bottlenecks of freight traffic and logistics	Enhancement of transport infrastructure
Maintain the integrity of water bodies	-	--	-
Maintain the integrity of the soils and geology conditions	0	-	-
Maintain and enhance air quality	++	--	+
Minimise noise and vibrations	-	--	+
Minimise impact on protected areas	--	--	--
Conserve and enhance biodiversity outside protected areas	-	-	0
Safeguard public health and safety	++	--	+
Minimise land take and disruption of livelihoods	0	-	-
Well integrated modes of transport	++	++	++
Protect integrity of archaeological and cultural heritage sites	?	?	?
Minimise visual impacts	-	-	0

9.2 **IMPACT ASSESSMENT APPROACH**

The assessment approach was based on determination of the level of impact significance as a result of the interaction between the impact magnitude and receptor sensitivity. Therefore, impact significance is a product of impact magnitude and receptor sensitivity.

Presented below is a brief description of the terminologies used in the categorisation of impacts in this SEA.

**Table 9.5** *Impact Magnitude*

<b>Magnitude</b>	<b>Description</b>
Major	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics and/or features (Adverse). Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality (Beneficial).
Moderate	Loss of resource, but not adversely affecting the integrity; partial loss of/damage of key characteristics and/or features (Adverse). Benefit to, or addition of key characteristics, features or elements; improvement of attributes quality (Beneficial)
Minor	Some measurable change in attributes, quality or vulnerability; minor loss or alteration to, one (may be more) key characteristics, features or elements (Adverse). Minor benefits to, or addition of one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring (Beneficial).
Negligible	Very minor loss or detrimental alteration to one or more characteristics, features or elements (Adverse). Very minor benefit to or positive addition of one or more characteristics, features or elements (Beneficial).
No change	No loss or alteration of characteristics, features or elements; no observable impact in either direction.

**Table 9.6** *Receptor Sensitivity*

<b>Sensitivity</b>	<b>Description</b>
Very High	Very high importance and rarity, international scale and very limited potential for substitution
High	High importance and rarity, national scale, and limited potential for substitution
Medium	High or medium importance and rarity, regional scale, limited potential for substitution.
Low	Medium or low importance and rarity and local scale.
Negligible	Very low importance and rarity, local scale.

**Table 9.7** *Impact Significance*

		Impact magnitude				
		No change	Negligible	Minor	Moderate	Major
Receptor sensitivity	Negligible	Neutral	Neutral	Slight	Moderate	Moderate
	Low	Neutral	Slight	Slight	Moderate	Large
	Medium	Neutral	Slight	Moderate	Large	Large
	High	Neutral	Moderate	Moderate	Large	Very large
	Very high	Neutral	Moderate	Large	Very large	Very large

**Table 9.8** *Description of the Categories of Impact Significance*

Significance Category	Typical descriptor of effects
Very large	Only adverse effects are normally assigned this level of significance. They represent key factors in the decision making process. These effects are generally but not exclusively, associated with sites or features of international, national or regional importance that are likely to suffer a most damaging impact and loss of resources integrity. However, a major change in a site or feature of local importance may also enter this category.
Large	These beneficial or adverse effects are considered to be very important considerations and are likely to be material in the decision-making process.
Moderate	These beneficial or adverse effects may be important, but are not likely to be key decision-making if they lead to an increase in the overall adverse effects on a particular resource or receptor.
Slight	These beneficial or adverse effects may be raised as local factors. They are unlikely to be critical in the decision-making process, but are important in enhancing the subsequent design of the project.
Neutral	No effect or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

Presented in *Sections 9.3 to 9.5* respectively is the assessment of the physical, biological and social impacts likely to arise as a result of implementation of the Master Plan.



### 9.3 ASSESSMENT OF THE PHYSICAL IMPACTS

#### 9.3.1 Regional Strategy

*Linking agricultural productive areas and mineral resource areas through development of secondary cities.*

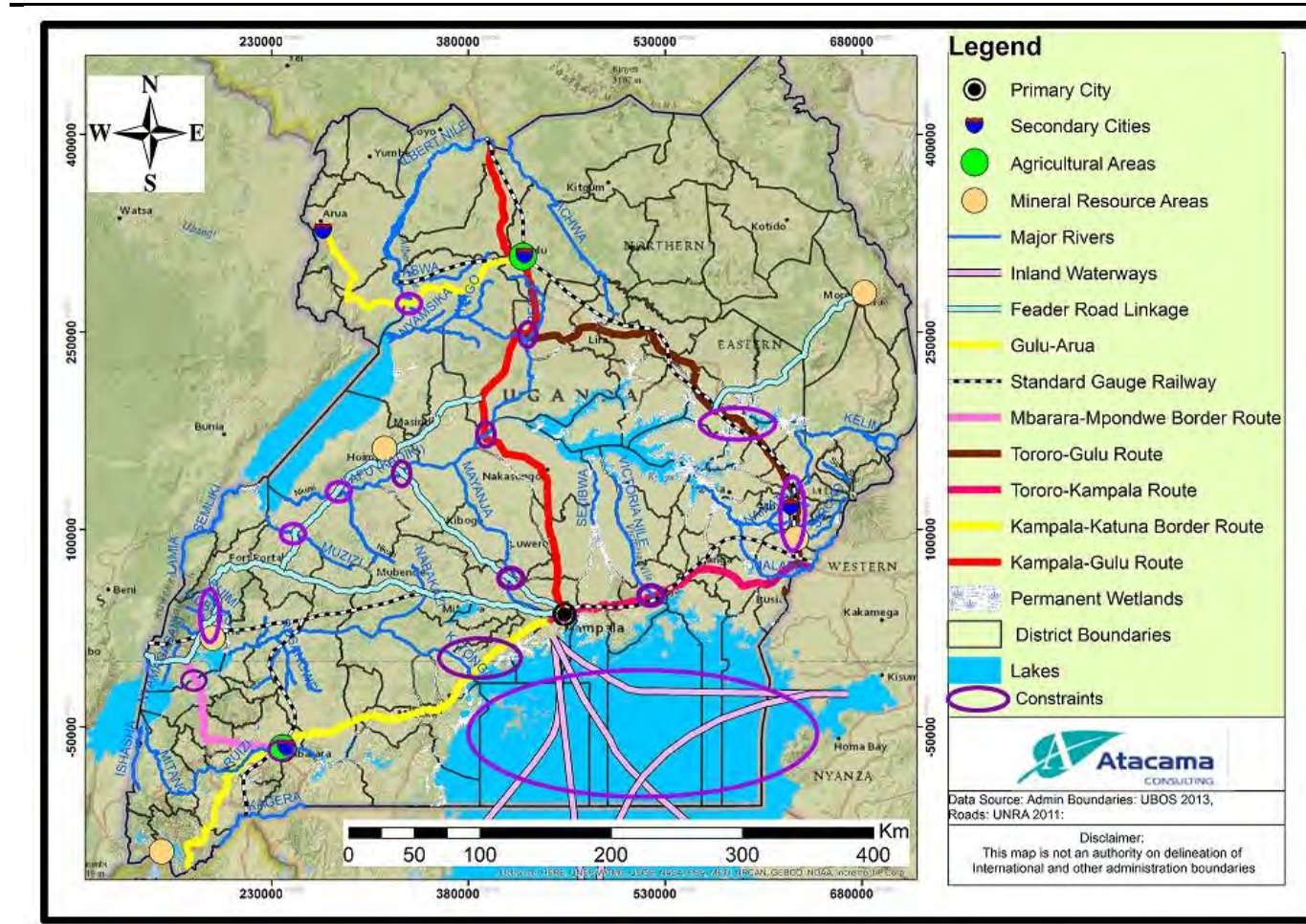
#### **Impacts on the Integrity of Water Bodies**

Water is a key resource in the sustenance of livelihoods and operations of any city as well as for any related production systems. The proposed development of secondary cities (Arua, Gulu, Mbale and Mbarara) and the agricultural (Gulu and Mbarara) and mineral resource areas (Moroto, Hoima, Kasese and Kabale) will exert pressure on that resource not only through its abstraction but more critically through the discharge of municipal and industrial waste waters (including process waters from agricultural and mineral resource areas) into the various water ecosystems (such as Lake Albert and Lake Kyoga) as indicated in *Figure 9.1*. The magnitude of the impact cannot be established at this level due to uncertainty that would be associated with the degree of pollution of such events but the sensitivity of the receiving water bodies (receptors) is **high** and therefore the significance of the impact could be **very large**.

#### **Box 9.1 Constraints**

- Lake Victoria
- R. Nile, River Ruizi, R. Muzizi, R.Kagera, R. Mayanja, R.Katonga, R.Kafu
- Kazinga channel
- Lake Kyoga wetland system

Figure 9.1 Constraint Map of Water Bodies Close to Secondary Cities, Agricultural and Mineral Resource Areas



### **Impacts on the Integrity of Water Bodies**

The Master Plan proposes promotion of inland waterway transport on Lake Victoria which will also link the NEC with the Central Corridor (Figure 9.1). Seven inland waterway linkage routes have been identified and when fully operational and utilised, will cover a great part of the lake (Lake Victoria). More so, three to six ports on the lake will be rehabilitated in the short term.

Marine traffic in particular along Lake Victoria could potentially affect the integrity of that water resource through marine traffic related leakages, spillage of hazardous cargo, and overboard waste disposal. This impact will further be exacerbated if marine vessel accidents occur. The magnitude of this impact will therefore be **major**.

Lake Victoria is the largest freshwater lake in East Africa and Africa in general and shared by the three East African countries (Uganda, Kenya and Tanzania) and is also the source of River Nile, the longest river in Africa. Therefore, reduction in the water quality of this lake will be of local, national, regional and international concern. Therefore, the sensitivity of the receptor is **very high**.

Based on the impact magnitude and receptor sensitivity presented above, the significance of the impact is considered to be **very large** and will occur in the short, medium and long term due to the phased approach since the utilisation of the inland waterway of Lake Victoria will need to be sustained throughout the implementation of the Master Plan.

### **9.3.2 Industrial Strategy**

*Establishment of logistic hubs with Inland Container Depots (ICD) and Logistic Centre*

#### **Impacts on Soils and Geology**

Infrastructural activities related to the establishment of pertinent facilities like ICDs, warehouses, distribution centres, and one stop shops will negatively affect this aspect of the physical environment. Levelling and compaction of soil is important to ensure stability of the infrastructure. Five potential locations for the logistic hubs have been identified in Uganda. These are:

- i. Tororo logistics hub: This will be 56,000m<sup>2</sup> and it is currently under consideration;
- ii. Jinja logistics hub: This will be 163,000m<sup>2</sup> and currently, the railway terminal for the Metre Gauge Railway (MGR) has already been completed;
- iii. Kampala logistics hub: This will be 163,000m<sup>2</sup> and currently, the railway terminal for the MGR has already been completed;
- iv. Mbarara logistics hub: This will be 340,000m<sup>2</sup> and is currently not yet in plan; and
- v. Gulu logistics hub: This will be 95,000m<sup>2</sup> and a trade hub concept has already been proposed by Trade Mark East Africa.

Therefore, given the fact that some of the recommended logistics hubs are already in plan and actually construction activities for some of them are already in progress, the contribution of implementing the Master Plan to the magnitude of this impact is **Minor**. Also, the areas where the logistic hubs will be located will be majorly of a brown field nature whose environmental sensitivity is considered to be **low**.

Therefore, based on the impact magnitude and receptor sensitivity presented above, the significance of this impact is considered to be **slight**.

*Promotion of growth drivers to increase exports, reduce imports, and develop local economy*

### **Impacts on the Integrity of Water Bodies**

Fifteen drivers have been identified for promotion and they include; coffee, oil seeds, crude oil, phosphate, other minerals ( eg, gold, iron ore, wolfram, tin, tantalite, and copper etc.), leather products, construction materials ( eg, iron and steel), consumer goods ( eg, soaps and detergents), palm oil, rice, petroleum, meat production, dairy products, tourism and logistic services. These are distributed over a wider area of the country where a number of freshwater streams, rivers and lakes (such as River Rwizi, Lake Victoria, and Lake Kyoga) are located (*Figure 9.2*).

In addition, the promotion of the growth drivers is likely to be associated with a high water footprint given their high water requirements by way of water for production and not forgetting the inputs (hazardous chemicals that may include pesticides, weed killers, fertilisers etc.) associated with those processes could affect the integrity of the receiving water bodies.

A phased approach is to be used for promoting the growth drivers to cover the short term (three industrial, five agricultural and three manufacturing growth drivers); medium term (one industrial and three agricultural growth drivers) and long term (one agricultural growth driver). However, it is important to note that some of the identified growth drivers like the petroleum industry are already being implemented and their impacts would occur with or without the Master Plan. Nevertheless, the magnitude of this impact will be **major**.

There are a number of freshwater streams, rivers and lakes (Figure 9.2) located within the different parts of the country where promotion of growth drivers will be undertaken and any contamination will potentially affect their integrity. The sensitivity of the receptors is therefore **high**.

Therefore, based on the impact magnitude and receptor sensitivity presented above, the significance of this impact is considered to be **very large** and will occur in the short, medium and long term duration of the Master Plan

### **Box 9.2**

#### **Constraints**

- Lake Victoria, L.Kyoga
- R. Nile, R. Rwizi, R. Mayanja, R.Kafu, R. Mubuku

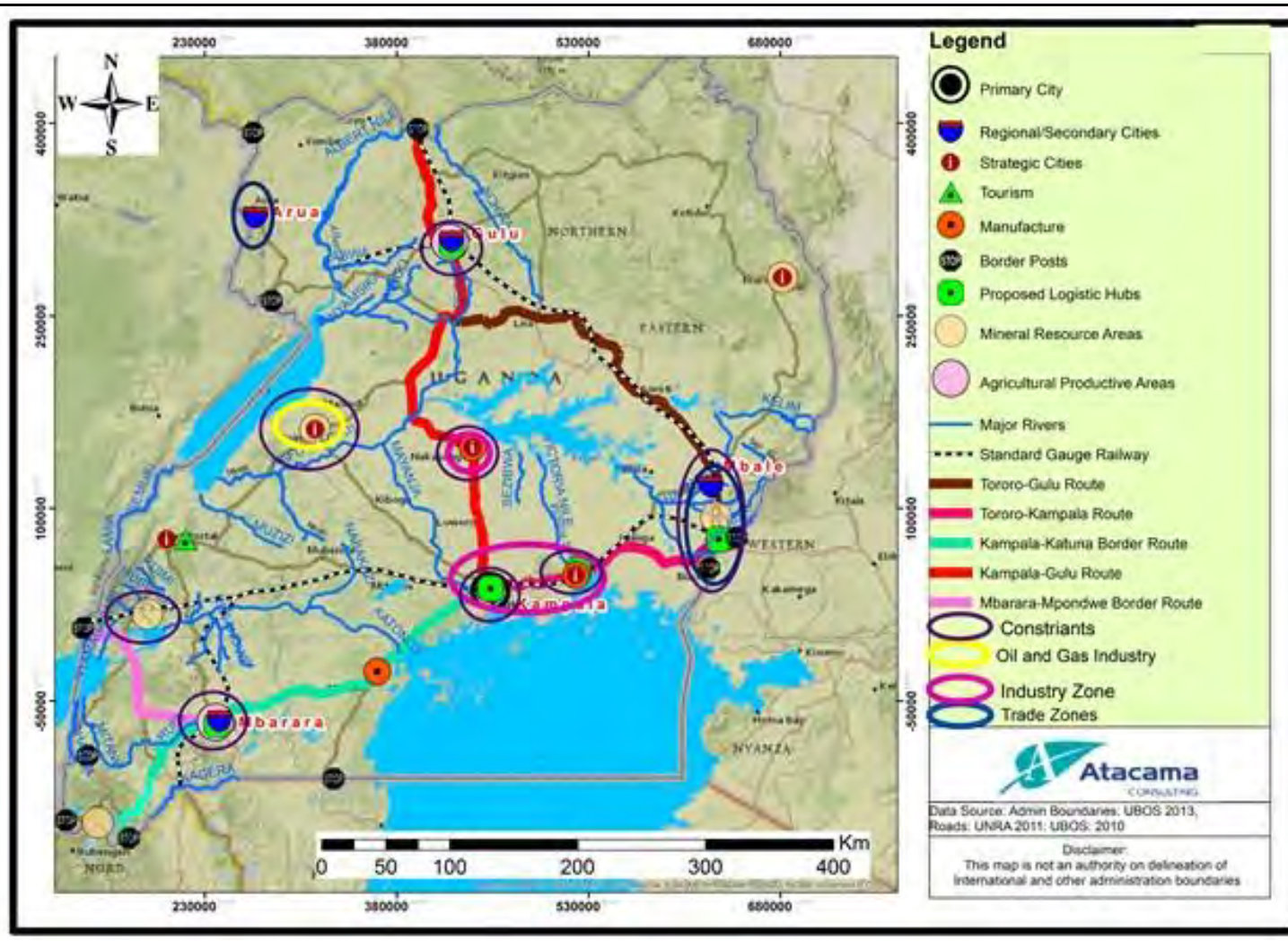
#### **Impacts on Soils and Geology**

The promotion of the growth drivers will call for mechanisation. In the case of agriculture, this will call for intensive agricultural practices aimed at bumping up exports although this could result in the reduction of soil quality due to over-cultivation.

Therefore, the magnitude of this impact will be **major**. The sensitivity of the receptor (soils) will be **high** given the productive nature of soils in the areas (Figure 9.2) where drivers are to be rolled out.

Based on the impact magnitude and receptor sensitivity presented above, the significance of this impact is considered to be **very large** and will occur in the short, medium and long term due to the phased approach of this intervention.

Figure 9.2 Constraints Map of Water Bodies Close of Industrial, Agricultural and Manufacturing Areas



### 9.3.3

## Transport Strategy

### Reduction of bottlenecks of freight traffic and logistics

#### Impacts on the Integrity of Water Bodies

The cause of this impact will be from the construction of the proposed express highways and widening of some of the sections of the main route of the NEC. The Master Plan proposes the following interventions in Uganda:

**Table 9.9 Interventions**

S/N	Project	Brief description	Status	Term
1	Kampala-Jinja Expressway Project	The 77km Expressway section will comprise of 4+4 lanes for the first 3km, 3+3 lanes for the next 14km and 2+2 lanes for the last 57km. It is currently at the planning stage	Planning	Medium
2	New Nile Bridge	New Jinja bridge will carry a four-lane dual highway with pedestrian sidewalks	Under Construction. 10 percent of works completed. The works include construction of a 6km access road	Short
3	Kampala-Mpigi Expressway Project	Widening of the current two-lane road to a four-lane highway (approximately 30km)	Planning	Medium/long
4	Construction of Roadside Service Stations in Uganda	Installation of 2 roadside service stations in Uganda (Bugiri and Masaka)	Planning	Medium
5	Logistics Highway Project (Masaka - Mbarara, L=136km)	Widening from 2 lanes to 4 lanes of existing Northern Corridor in Uganda	Planning	After 2030
6	Logistics Highway Project	Widening from 2 lanes to 4 lanes of existing	Planning	After 2030



S/N	Project	Brief description	Status	Term
	(Mbarara - Kabale, L=141km)	Northern Corridor in Uganda		
7	Logistics Highway Project (Kabale-Katuna, L=25km)	Widening from 2 lanes to 4 lanes of existing Northern Corridor in Uganda	Planning	After 2030
8	Logistics Highway Project (Jinja-Malaba, L=130km)	Widening from 2 lanes to 4 lanes of existing Northern Corridor in Uganda	Planning	After 2030
9	Masaka-Mutukula (L=90km)	Road improvement of existing road	Planning	Medium/long term

These proposed road projects cross a number of rivers and streams (*Figure 9.1*) with the most significant ones being River Nile (Kampala-Jinja Expressway Project and New Nile Bridge), River Katonga and River Rwizi<sup>1</sup> (Mbarara-Kabale highway). In the case of the latter, the River Rwizi catchment is already considered to be water stressed and it's anticipated that agricultural water demand in the catchment could increase to 63 million cubic metres by 2035 from 20 million cubic metres in 2011 (Arup, 2015). Given the scale of the proposed interventions; they could compromise the catchments of some of the water bodies thereby resulting in the deterioration of their quality.

However, it is important to note that some of the road projects proposed are already in plan and actually construction activities for some of them like the New Nile Bridge are already in progress; therefore, with or without the Master Plan, they would be implemented. The magnitude of this impact will therefore be **moderate**. The sensitivity of the receiving environment is considered to be **high**.

Therefore, based on the impact magnitude and receptor sensitivity presented above, the significance of this impact is considered to be **large**.

<sup>1</sup> Sometimes spelt as Ruizi

- R. Nile
- R. Rwizi
- R. Katonga

### Impacts on Air Quality

#### *Greenhouse Gas Emissions*

The rolling out of initiatives that are aimed at reducing bottlenecks of freight traffic and logistics could result in a spike in traffic volumes, especially road traffic that is currently constrained by the bottlenecks. The increase in traffic will go hand-in-hand with an increase in emissions from such traffic and this will affect the ambient air quality within the corridor especially along the roads, a situation made worse by the aging stock or fleet of vehicles that are characteristic of the corridor traffic. Given the fact that the construction activities will be undertaken in a phased approach (short, medium, long term and beyond the implementation period of this Master Plan), the magnitude of this impact will be **moderate**.

Based on the results of a pilot cross – sectional spatial assessment of the state of ambient air quality in two Ugandan urban centres (Kampala and Jinja, also within the NEC) conducted in 2014, the ambient concentrations of gas phase air pollutant levels (NO<sub>2</sub>, SO<sub>2</sub> and O<sub>3</sub>) was low. Therefore, it can be concluded that the sensitivity of the receiving environment is **low**.

Therefore, based on the impact magnitude and receptor sensitivity presented above, the significance of this impact is considered to be **moderate** and will occur in the short, medium, long term and beyond the implementation period of this Master Plan.

#### *Dust Emissions*

The main cause of this impact will be from the construction activities of the proposed road infrastructure projects already described above.

Construction activities like the ones that will be undertaken for the proposed road projects are associated with fugitive dust. Given the number of road projects proposed (9 road projects) and their spatial distribution; the magnitude of the dust levels will be **moderate**.

Based on the results of a pilot cross – sectional spatial assessment of the state of ambient air quality in two Ugandan urban centres (Kampala and Jinja, also within the NEC) conducted in 2014, the ambient concentrations of Particulate Matter (PM) was high.

Given the large concentration of populations along the NEC by way of settlements/small urban centres especially along the roads where construction activities are proposed, increased dust emissions will be a nuisance to the local community members. Therefore, it can be concluded that the sensitivity of the receiving environment is **high**.

Therefore, based on the impact magnitude and receptor sensitivity presented above, the significance of this impact is considered to be **large** and will occur in the short, medium, and long term based on the phasing of projects although its effects will largely be felt during the construction phase of those projects.

Overall, the impact on air quality is likely to be very large in the long term on the balance of increased freight traffic within the corridor coupled with cumulative effects from non-freight/transport related emissions within the NEC.

### **Noise and Vibration Impacts**

The main source of this impact will be from the construction activities of the proposed road projects.

Construction activities are usually associated with high levels of noise and vibrations that are associated with the operation of the associated machinery and equipment. Given the wide spatial distribution of the proposed road projects, although a phased approach will be adopted during the implementation of the Master Plan, the magnitude of the noise levels that will be emitted will be **moderate**.

The noise will mainly be localised and the impacts will be more pronounced near social/communal facilities like places of worship, schools and hospitals where receptor sensitivity is **high**.

Therefore, based on the impact magnitude and receptor sensitivity presented above, the significance of this impact is considered to be **large** and will occur in the short, medium, long term and beyond the implementation period of this Master Plan due to the phased approach of its activities

## 9.4 ASSESSMENT OF BIOLOGICAL IMPACTS

### 9.4.1 Regional Strategy

*Linking with LAPSSSET, central corridor and Kampala-Juba-Addis Ababa-Djibouti Corridor*

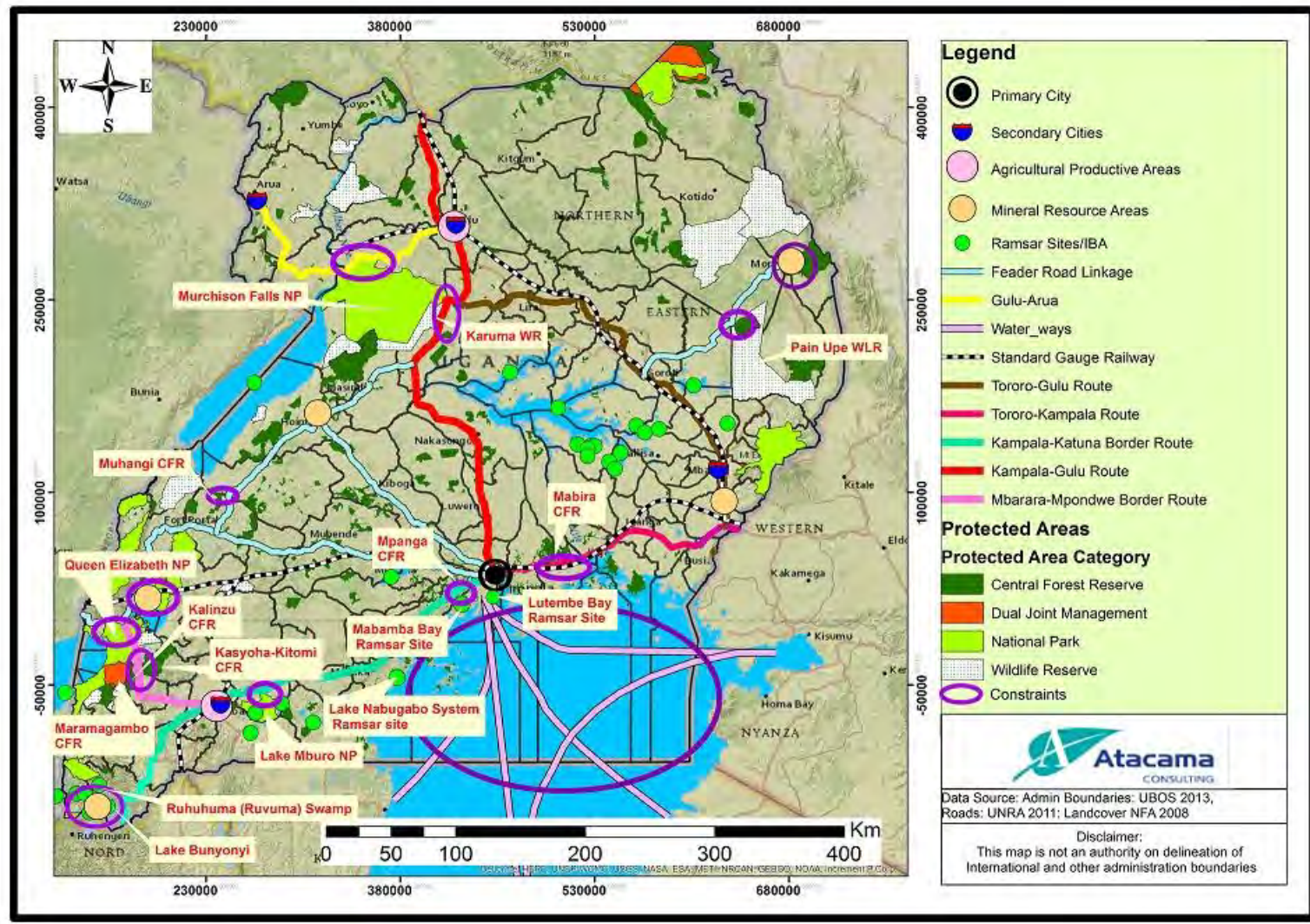
#### **Impacts to Biodiversity within Protected Areas**

Lake Victoria, a fresh water body supports a variety of life forms. Its wetlands also support some unique flora and fauna. Some of these wetlands are of international importance by virtue of their designation as Ramsar sites as well as Important Bird Areas (IBAs) eg Lutembe bay and Mabamba bay (*Figure 9.3*).

#### **Box 9.4 Constraints**

- Pian Upe Wildlife Reserve, Karuma Wildlife Reserve
- Mabira CFR, Mpanga CFR, Maramagambo CFR, Muhangi CFR, Kalinzu CFR, Kashohya-Kitomi CFR
- Mabamba bay Ramsar site, Lutembe bay Ramsar site, Lake Nabugabo system Ramsar site
- Ruhuhuma swamp
- Lake Mburo National Park, Murchison Falls National Park, Queen Elizabeth National Park
- Lake Bunyonyi

Figure 9.3 Constraints Map Highlighting Key Biodiversity Features around Lake Victoria



Turning Lake Victoria into a centre for regional trade will significantly increase marine operations on the water body. Increased activity on the water body could also affect fish breeding grounds on the lake which are key to the sustainability of the economies of the riparian countries (Uganda, Kenya and Tanzania) and also interfere with the breeding patterns of migratory and other birds that use the Lake Victoria wetlands as a sanctuary.

In addition, major water accidents involving pollutants could easily and quickly spread to the entire surface of the water body and depending on the quantities, this could go as far as the Ramsar sites and IBAs whose role in biodiversity protection is recognised internationally. In addition, besides Lake Victoria being the source of R. Nile, it is a transboundary resource, where impacts on it are not localized but could spread to other countries which share the resource.

Based on the anticipated sudden increase in the number of routes as well as water vessels plying those routes coupled with the uncertainty of pollution events, the impact magnitude cannot be assessed with a high degree of certainty although it is likely to be moderate. The sensitivity of the receptor is considered **very high** given its international importance.

The overall impact significance is considered to be **very large**.

*Promotion of growth drivers to increase exports, reduce imports, and develop local economy*

### **Impacts to Biodiversity Within Protected Areas**

Fifteen drivers have been identified for promotion and they include; coffee, oil seeds, crude oil, phosphate, other minerals ( eg, gold, iron ore, wolfram, tin, tantalite, and copper etc.), leather products, construction materials ( eg, iron and steel), consumer goods ( eg, soaps and detergents), palm oil, rice, petroleum, meat production, dairy products, tourism and logistic services.

Promotion of the above growth drivers in some of the selected production areas has the potential to compromise the integrity of some of the protected areas within their catchment area (*Figure 9.4*). The identified mineral resource areas such as Kasese, Hoima, Moroto and Kabale are all located in areas where protected sites such as National Parks, Forest Reserves as well as Ramsar sites are located. Protected areas tend to be resource rich and so the promotion of growth drivers could result in pressure being exerted on the resources contained in such areas (raw materials (such as mineral ores) and related inputs (such as water) that are central to the functioning of ecosystems in the protected areas. The potential for these production areas to expand is high given the scale of the proposed activities that will be taking place, and therefore the magnitude of their impact is **major**.

Protected areas are by virtue of the status warrant a high level of protection and by virtue of that, the sensitivity of the receptor is considered **very high**.

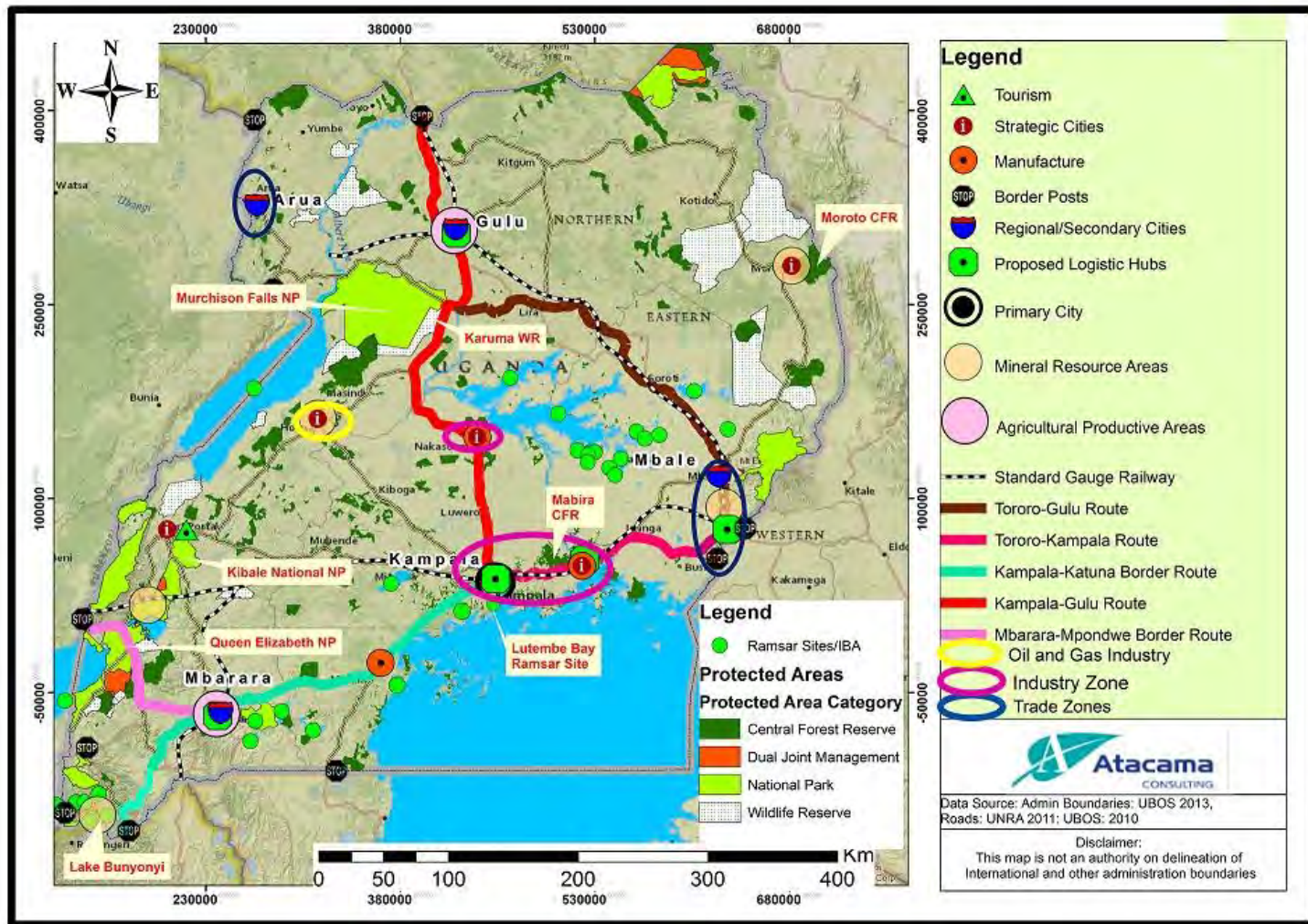
Based on the assessment, the significance of this impact is rated as **very large** in the short, medium and long term duration of the Master Plan.

### **Box 9.5**

#### ***Constraints***

- Karuma Wildlife Reserve
- Mabira CFR, Moroto CFR
- Lutembe bay Ramsar site
- Kibale National Park, Queen Elizabeth National Park, Murchison Falls National Park

Figure 9.4 Constraint Map Showing Protected Areas In Reference to Proposed Growth Driver Centres





*Modal shift from truck to rail and pipeline***Impacts on Biodiversity in Protected Areas**

The assessment of impacts to biodiversity in Protected Areas attributed to the modal shift is related to the possibility that during the movement of cargo through protected areas, uncertain events such as accidents could occur and in the event that such cargo was hazardous, the integrity of such protected areas would be compromised. The oil pipeline is proposed to dissect through a section of Mabira CFR, and at the same time the SGR will dissect through Kibale National Park, both of which are highly sensitive ecosystems and also habitats to IUCN threatened species (*Figure 9.5*). However, the relevant proposed infrastructure (oil pipeline and SGR) are part of the Northern Corridor Infrastructure Projects and thus the impacts of cargo movement as a result of the Master Plan would still happen without the implementation of the Master Plan. The SGR will traverse Mabira forest for 14km, measuring approximately 60m wide and relevant studies have so far been undertaken to ensure that the project does not compromise the forest biodiversity (Saturday Monitor, 2016).

The magnitude of the impact cannot be established at this level due to uncertainty that would be associated with the degree of pollution of such events but the sensitivity of the receiving Protected Areas (receptors) is **high** and therefore the significance of the impact could be **very large**.

*Reduction of bottlenecks of freight traffic and logistics***Impacts on Biodiversity in Protected Areas**

Biodiversity impacts in Protected Areas (*Figure 9.6*) related with reduction of bottlenecks will potentially result from the roads projects within the Protected Areas and this is especially true for Mabira CFR in the medium term and Mpanga CFR in the medium/long term duration of the Master Plan. As indicated in the baseline, the Mabira CFR is of national importance as well as of international importance (IBA as well as containing internationally protected species of flora). Similarly Mpanga CFR on top of being gazetted is also a tourist attraction especially as it contains medium sized primates and birds. Activities within Protected Areas should be in line with the values for which it was set aside and should also maintain the integrity of the protected area.

Vegetation clearance undermines the integrity of the aforementioned protected areas. Road widening will necessitate both temporary and permanent clearance of flora further impacting on the already severed habitat for the fauna as well as destroying the associated flora. Permanent losses may occur in areas occupied by infrastructure while temporary losses of habitat will potentially occur during construction of the proposed infrastructure. The project footprint for both projects is considered small compared to the area of the forests and therefore the impact is considered **minor**.

However, in both cases, the protected areas have already been severed by major highways. The sensitivity of the receptor is therefore considered **medium**.

The overall significance of the impact is therefore considered to be **moderate**.

**Box 9.6**      *Constraints*

- Mabira CFR, Mpanga CFR
- Lake Mbuoro National Park

*Enhancement of transport infrastructure*

**Impacts on Biodiversity in Protected Areas**

The enhancement of infrastructure will involve the rehabilitation of 3-6 ports on Lake Victoria in the short term duration of the Master Plan. The ecosystem of relevance to this strategic option is Lake Victoria and the impact will be realised in the short term duration of the Master Plan. Lake Victoria is a shared resource/habitat (which is transboundary in nature) and the possibility of the negative effects associated with the enhancement of its infrastructure being registered beyond the international boundary is very likely.

Port rehabilitation could involve establishment of new/additional infrastructure potentially reducing the size of habitat available for the fauna. Such sites often provide refuge against predators and improved infrastructure could potentially expose prey to predators.

During construction, there is a potential that undesirable (hazardous in nature) construction materials could end up into the water resource thereby reducing its quality. Such impacts could easily spread due to the transboundary nature of Lake Victoria.

Since the option will involve enhancement of existing infrastructure, the magnitude of the impact is considered moderate and the sensitivity of the receptor is also medium. The impact severity is thus **large**.

Figure 9.5 Constraint Map Showing Effects of the Transport Strategy on Protected Areas

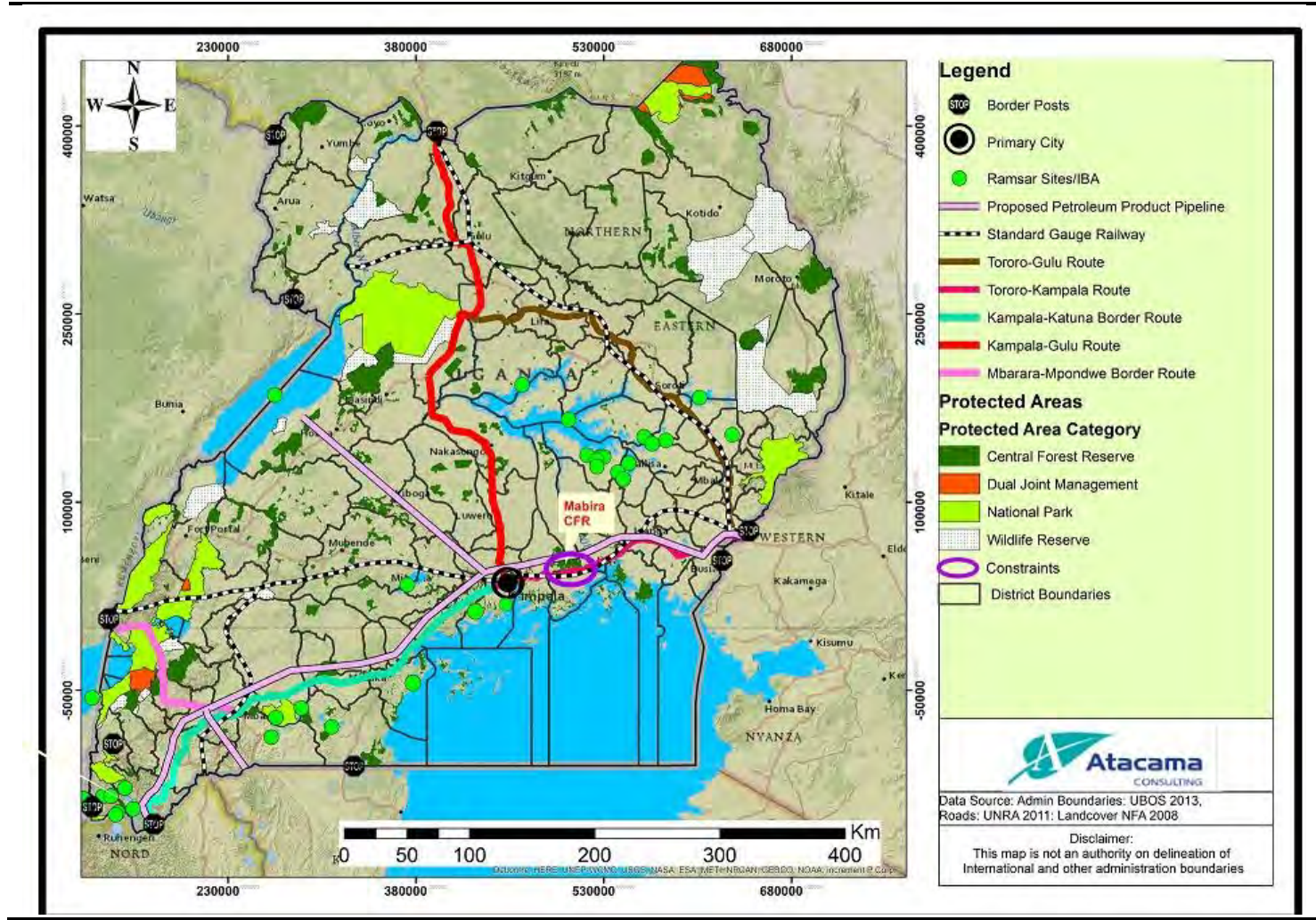
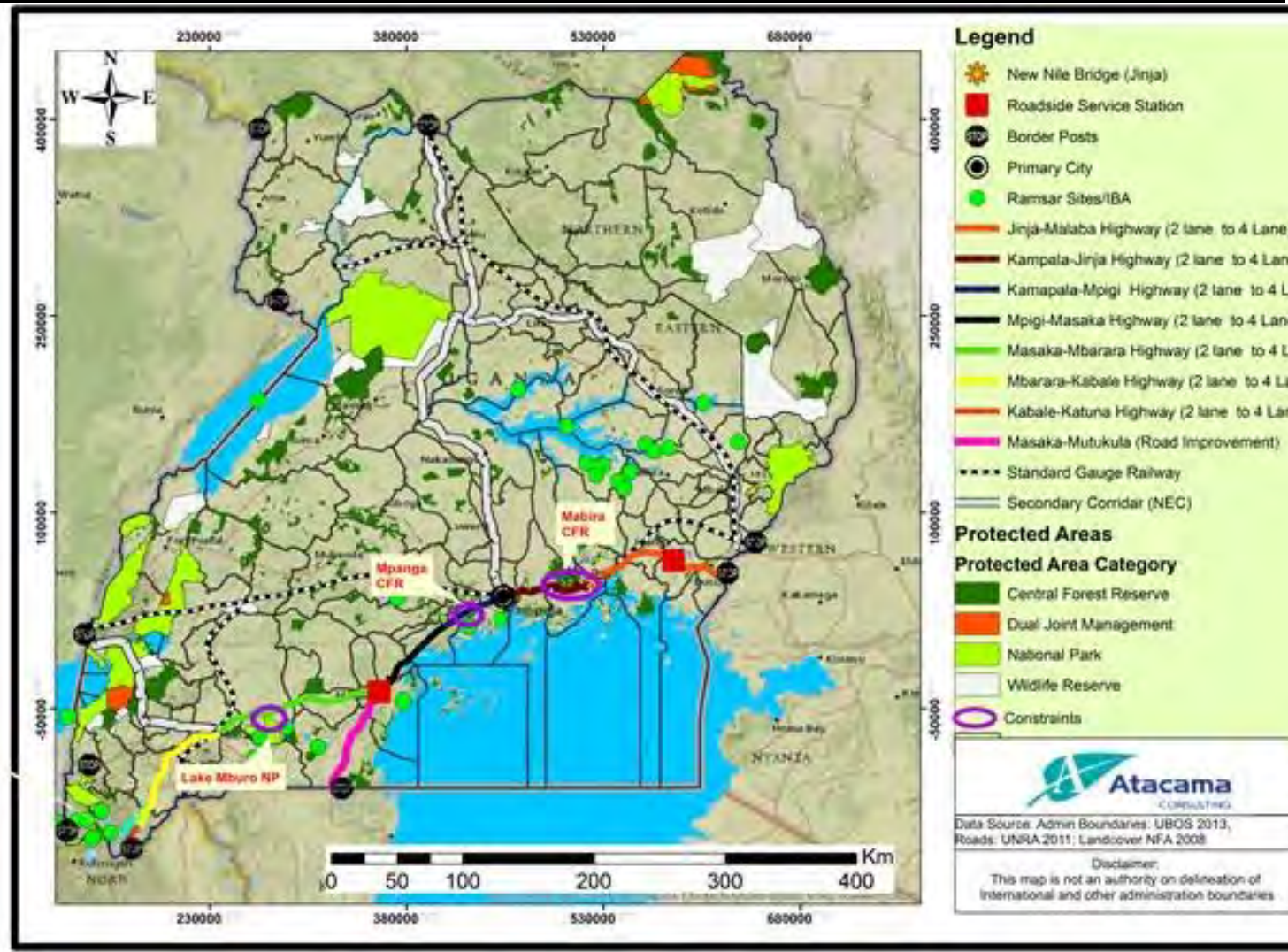


Figure 9.6 Constraint Map Showing Protected Areas in Reference to Proposed Reduction of Bottlenecks



9.5.1 *Regional Strategy*

*Linking agricultural productive areas and mineral resource areas through development of secondary cities*

**Impacts on Public Health and Safety**

Four secondary cities have been recommended for development in Uganda (Mbale, Gulu, Arua and Mbarara) and these will have to be connected to the potential agricultural and mineral resources areas within their vicinity

Secondary cities will lead to in-migration of people along the NEC (in search of work) which may spur physical and social interactions that may lead to an increase in the spread of infectious as well as sexually transmitted diseases including HIV/AIDS.

Increased in-migration to these cities due to perceived employment opportunities could also exert pressure on existing social services such as health care services, access to clean water and sanitation facilities thereby compromising public health. The increased congestion/immigration in the cities could also be associated with poor sanitation due to poor waste disposal which could result in increased spread of sanitary related diseases such as typhoid, diarrhoea and cholera. The establishment of these cities could also be related with certain occupational hazards (such as building collapse, accidents at work place) and increased crime rate that will compromise occupational and community safety, health and security. The magnitude of this impact is considered to be **major**.

Among the four proposed secondary cities, Gulu is known to be an HIV/AIDS hotspot. Based on selected performance indicators used to assess the health performance of various districts in Uganda, Gulu, Mbarara and Mbale are among the fifteen best performing districts in relation to health indicators. On the other hand Mbarara falls under areas considered to have improved sanitary facilities (above 65 percent, see Section 6.4.12) while Gulu, Mbale and Arua fall under areas considered to have poor sanitary facilities (below 47 percent). The sensitivity the receptor is considered to be **medium**.

Based on the impact magnitude and receptor sensitivity presented above, the significance of this impact is considered to be **large**.

### **Impacts Related to Disruption of Livelihood (Fishing Activities on Lake Victoria)**

The Master Plan proposes promotion of inland waterway transport on Lake Victoria which will also link the NEC with the Central Corridor (*Figure 9.1*). Seven inland waterway linkage routes have been identified. When fully operational, these inland waterway transport routes are likely to disrupt fishing activities because the scheduling of the ferry crossing could coincide with fishing time. The magnitude of this impact is considered to be **major**.

Fishing from Lake Victoria is the main economic activity for people living in the fishing villages/islands in and around Lake Victoria and therefore any disruption in fishing activities is likely to affect the livelihood of the inhabitants of the aforementioned areas. It is also worth noting that Lake Victoria is shared by the three East African countries (Uganda, Kenya and Tanzania) and any impact on the lake is likely to be experienced by the transboundary partners. The sensitivity of the receptor is **very high**.

Based on the impact magnitude and receptor sensitivity presented above, the significance of this impact is considered to be **very large**.

### **Impacts on Public Health and Safety**

The Master Plan proposes promotion of inland waterway transport on Lake Victoria which will also link the NEC with the Central Corridor (*Figure 9.1*). Seven inland waterway linkage routes have been identified. The improved connectivity/mobility between the corridors could result in increased spread of STDS including HIV/AIDS not only within Uganda but also in the neighbouring countries. The promotion of the inland waterways may also be associated with vessel accidents (drowning and fire outbreak) which could lead to loss of lives. The inland waterways may also result into increased immigration/congestion at the ports that may be associated with poor sanitation such as poor waste disposal and lack of sanitary facilities that could result into spread of sanitary diseases such as typhoid and cholera. The magnitude of this impact will be considered **major**.

Port Bell (main port in Uganda) is identified as an HIV/AIDS hotspot and coupled with the limited sanitary facilities at Port Bell, the sensitivity of the receptor is **high**.

Based on the impact magnitude and receptor sensitivity presented above, the significance of this impact is considered to be **very large**.

## 9.5.2 *Industrial Strategy*

*Establishment of logistic hubs with Inland Container Depots (ICD) and Logistics Centre*

### **Impacts Related to Land Take and Disruption of Livelihoods**

Five potential locations for logistics hubs have been recommended for development. These are:

- i. Tororo logistics hub: This will be 56,000m<sup>2</sup> and it is currently under consideration;
- ii. Jinja logistics hub: This will be 163,000m<sup>2</sup> and currently, the railway terminal for the Metre Gauge Railway (MGR) has already been completed;
- iii. Kampala logistics hub: This will be 163,000m<sup>2</sup> and currently, the railway terminal for the MGR has already been completed;
- iv. Mbarara logistics hub: This will be 340,000m<sup>2</sup> and is currently not yet in plan; and
- v. Gulu logistics hub: This will be 95,000m<sup>2</sup> and a trade hub concept has already been proposed by Trade Mark East Africa.

The establishment of the logistics hubs in Tororo, Mbarara and Gulu will result in the loss of land to the proposed project interventions but it is not likely to adversely affect livelihood given the proportion of land that is to be taken. The magnitude of this impact is therefore considered to be **moderate**. The areas for which the proposed interventions have been earmarked are already recognised as key centres of commerce in Uganda and as such, the proposed activities are not likely to be inconsistent and so the sensitivity of the receiving environment is therefore **low**.

Based on the impact magnitude and receptor sensitivity presented above, the significance of this impact is considered to be **moderate**.



## Impacts on Public Health and Safety

As discussed above five potential locations for logistics hubs have been recommended for development Kampala, Jinja, Tororo, Mbarara and Gulu.

Establishment of logistic hubs will lead to immigration of people (especially sex workers and truck drivers that are often associated with such transport related logistic hubs) into the logistic centres which may spur physical and social interactions with the local community. This may lead to an increase in the spread of infectious as well as Sexually Transmitted Diseases including HIV/AIDS.

The increased in-migration to the logistic hubs as a result of employment opportunities created by the logistic hubs could additionally exert pressure on social services such as health care services, access to clean water and sanitary facilities thereby compromising public health. Hazardous materials such as fuel, explosives, hazardous chemicals etc. could be stored in these logistic hubs. In the event that the integrity of these hazardous substances is compromised, they could pose a health and safety hazard to communities living around these logistic hubs. Also, the establishment of logistic hubs will be related with certain occupational hazards (such as accidents when undertaking work activities) that have the ability to compromise workers' health and safety. The magnitude of this impact is considered **major**.

All the towns proposed for location of logistic hubs (Tororo, Kampala, Mbarara, Jinja and Gulu) are identified as HIV/AIDS hotspot (*Section 6.4.9*). All the five potential sites for establishment of logistic hubs (Kampala, Jinja, Tororo, Mbarara and Gulu) were among the top fifteen best performing districts based on selected performance indicators that were used to assess the health performance of various districts in Uganda. Additionally, with regards to access to sanitary facilities, Mbarara, Kampala, Jinja, have good access to sanitary facilities while, Mbale and Tororo have moderate access to sanitary facilities while Gulu has poor access to sanitary facilities. The sensitivity of the receptor is therefore considered to be medium.

Based on the impact magnitude and receptor sensitivity presented above, the significance of this impact is considered to be **large**.

*Reduction of bottlenecks of freight traffic and logistics***Impacts on Public Health and Safety**

The Master Plan proposes a number of interventions to reduce bottlenecks of freight traffic along the NEC (see details in *Section 9.2.3* above). Although there will be improved traffic flow along the routes, it could result in high speeding vehicles/trucks along the routes which could pose a danger of traffic accidents to both the motorists and the non-motorists.

Additionally, reduction of the bottlenecks will result into increased mobility (especially of cargo), more job opportunities and in-migration of people along the NEC (in search of work), which increased in-migration in search for work is a catalyst for social interactions that boost prostitution and increase the spread of Sexually Transmitted Diseases including HIV/AIDS. There are several HIV/AIDS hotspots along the NEC (*Figure 6.10*) and hence activities (especially construction activities) undertaken as part of reduction of bottlenecks of freight traffic and logistics are likely to increase the spread of HIV/AIDS. Due to increased mobility, there is a likelihood of increased pressure on social services such as health services and sanitary facilities and which increased pressure has the potential of compromising public health. The magnitude of the impact is considered to be **major**.

Kampala, Jinja, Mbarara, Mpigi, Masaka, Kabale, Malaba Bugiri, and Mutukula (which are some of the areas where the projects that will involve reduction of bottlenecks will be undertaken) are major HIV/AIDS hotspots (*Figure 6.10* in *Section 6.4.9*).

Additionally, the districts along the Kampala-Katuna border route (Kampala, Mbarara, Mpigi, and Kabale) fall primarily within areas with a high record of sanitation facilities. On the other hand, the Tororo-Gulu (Bugiri and Malaba) fall within a low record of sanitation facilities. Therefore, the sensitivity of the receptor is considered to be **high**.

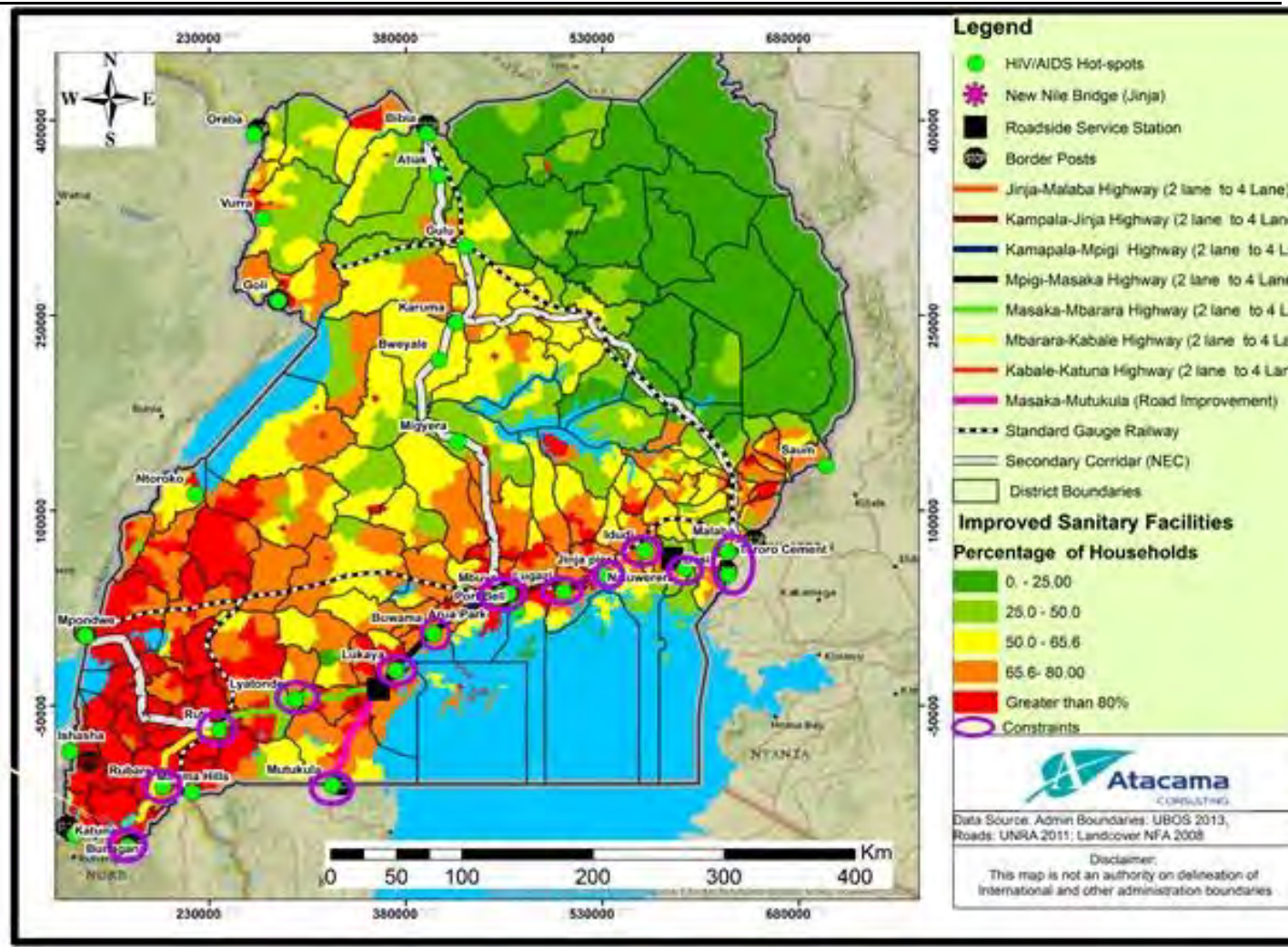
Based on the impact magnitude and receptor sensitivity presented above, the significance of this impact is considered to be **very large**.

**Box 9.7**

**Constraints**

- Population along HIV hotspots located at Tororo, Malaba, Naluwerere, Idudi, Jinja, Lugazi, Portbell, Arua park, Buwama, Lukaya, Lyantonde, Rakai and Mirama hills

Figure 9.7 Constraint Map Showing HIV Hotspots in Relation to the Reduction of Bottlenecks Strategy



Cumulative impacts are changes to the environment that are caused by an action in combination with other past, present and future human actions.

Cumulative Impact Assessment is a systematic procedure for identifying and evaluating the significance of impacts from multiple activities.

Specifically, Cumulative Impact Assessments (CIA) are typically expected to:

- Assess impacts over a larger ( ie "regional") area that may cross jurisdictional boundaries (includes impacts due to natural perturbations affecting environmental components and human actions);
- Assess impacts during a longer period of time into the past and future;
- Consider impacts on Valued Ecosystem Components (VECs) due to interactions with other actions, and not just the impacts of the single action under review;
- Include other past, existing and future ( eg, reasonably foreseeable) actions; and
- Evaluate significance in consideration of other, than just local, direct impacts.

Cumulative impacts are not necessarily that much different from the impacts of a single plan/programme/project, in fact, they may be the same.

Cumulative impacts therefore do not necessarily require mitigation measures different from the ones required to reduce the impact of a single plan/programme/project.

## 9.6.1

### *CIA Approach and Methodology*

There are many definitions for cumulative impacts as well as Cumulative Impact Assessment and management (CIA); however, the one used in the guidelines for Cumulative Effects Assessment in SEA of Plans (Cooper, 2004)<sup>1</sup> has been adopted in this assessment.

According to these guidelines, cumulative impacts<sup>2</sup> are “*the net result of environmental impact from a number of projects and activities*”. On the other hand, Cumulative impact assessment is “*a systematic procedure for identifying and evaluating the significance of impacts from multiple activities*.” The analysis of the causes, pathways and consequences of these impacts is an essential part of the process.

With reference to development plans, cumulative impacts can occur from the combined impacts of policies and proposals on specific areas or sensitive receptors.

Cumulative impacts of the NEC Logistics Master Plan can be considered based on the following perspectives:

- Cumulative impacts from the combined actions of a wider range of interventions on the Master Plan; and
- Cumulative impacts from different interventions or actions within the Master Plan.

Please note the following, about the current cumulative impacts assessment:-

*\* Determination of impact magnitude for the cumulative impacts:*

For impacts whose significance had been preliminarily determined to be major negative (see *Section 9.1* above) and which impacts were therefore, further assessed under *Sections 9.2 to 9.4*, their individual magnitude as indicated under each strategy option in the cumulative impacts tables was similar to that already determined under the aforementioned sections.

<sup>1</sup> Cooper, L. M. (2004), *Guidelines for Cumulative Effects Assessment in SEA of Plans*, EPMG Occasional Paper 04/LMC/CEA, Imperial College London

<sup>2</sup> In the the guidelines for Cumulative Effects Assessment in SEA of plans (Cooper, 2004), the word effects is used instead of impacts.

However, for each strategy option whose impact significance had been determined not to be major negative (ie they fell into the categories of; positive, neutral, minor negative or uncertain) based on the preliminary assessment in *Section 9.1*, and which, therefore were not subjected to further detailed assessment, these were assigned a magnitude rating for the cumulative impacts assessment based on the impact magnitude scale presented in *Section 9.1*.

- *Overall magnitude of cumulative impacts:* The overall magnitude of the cumulative impacts although determined as the sum of the individual magnitudes of the impact under each strategy option, was determined using the scenarios below:

**Table 9.10 Overall Cumulative Impact Magnitude Scale**

Overall magnitude of impact	Typical criteria descriptors/scenarios
Major	Either: At least one impact with a major magnitude for a single strategy option. Or: One impact with moderate magnitude and at least five impacts with moderate magnitudes for single strategy options. Or: At least two impacts with moderate magnitudes for two single strategy options.
Moderate	Either: One impact with moderate magnitude and less than five impacts with minor magnitudes for single strategy options. Or: At least five impacts with minor magnitudes for a single strategy option.
Minor	Either: Less than five impacts with minor magnitudes for single strategy options. Or: At least five impacts with negligible magnitudes for a single strategy option.
Negligible	Less than five impacts with negligible magnitudes for single strategy options.
No change	When the magnitude of the impact for each of the strategy options is "No change."

**Note:** Positive impacts reduce the overall magnitude of a negative impact; therefore, for impacts where some of the strategy options would result in a positive impact, it was taken into consideration when determining the overall cumulative impact magnitude. Provided below is guidance on the resulting reduction of the overall magnitude of negative impacts by positive impacts.

*Effect of a positive magnitude of an impact on the negative magnitude of the same impact caused by another strategy option*

Rating of positive impact that will result in reduction of magnitude of negative impact	Magnitude of negative impact reduced
Major	Either: One major negative impact. Or: Two moderate negative impacts. Or: Four minor negative impacts.
Minor	Either: One minor negative impact. Or: Four negligible negative impacts.

- *Determination of the receptor sensitivity:* For the cumulative impacts assessment, this was determined using the receptor sensitivity scale presented in *Section 9.1*.
- *Determination of impact significance for the cumulative impacts:* This was determined using the impact significance matrix presented in *Section 9.1*).

## 9.6.2

### *Situation Analysis*

Based on the above cumulative impact scenarios, the Master Plan considered the impacts related to the interactions of the different interventions within the Master Plan on the one hand, and the combined actions of a wider range of interactions on the Master Plan. The wider interactions that were considered as part of the cumulative impact assessment for the NEC Master Plan included:

- The Northern Corridor Integration Projects (NCIP) - a set of 14 projects that are being spearheaded by the respective partner states of the East African Community (EAC) aimed at fast tracking the implementation of the EAC infrastructure projects. The projects include; the **Standard Gauge Railway, ICT Infrastructure, Oil refinery development, Fast tracking political Federation, Power generation, transmission and interconnectivity, Crude oil pipeline development, Refined petroleum products pipeline development, Commodities exchange**, Issuance of East Africa Tourist Visa/ Use of National Identity/ Voter/ Student cards as travel documents, **Single customs territory**, Defence cooperation, Peace and security cooperation, Airspace management);



- The Vision 2040 - conceptualised around strengthening the fundamentals of the Ugandan economy to harness the abundant opportunities around the country. The opportunities include; **oil and gas, tourism, minerals, ICT business**, abundant labour force, geographical location and **trade, water resources, industrialisation, and agriculture**, and, the fundamentals include: **infrastructure for (energy, transport, water, oil and gas and ICT)**; Science, Technology, Engineering and Innovation (STEI); land; **urban development**; human resource; and peace, security and defence; and
- The second National Development Plan (NDP II) - designed to propel Uganda towards middle income status by 2020, in line with the aspirations of Uganda's Vision 2040. This Plan aims at strengthening Uganda's competitiveness for sustainable wealth creation, employment and inclusive growth. It prioritises investment in five (5) areas with the greatest multiplier effect on the economy; **Agriculture, Tourism, Minerals, oil and gas, Infrastructure development**, and Human capital development.

**N.B:** Please note that in each of the PPPs outlined above, the projects/ PPPs indicated in **bold** are also included in the NEC Master Plan ie these actions are aimed at promoting developments within the Northern Corridor and are already also an integral part of the NEC Master Plan's interventions. Therefore, even if the NEC Master Plan is not implemented but the PPPs indicated in bold above, are implemented, for example the NCIP or Vision 2040, the impacts associated with these PPPs would still be manifested. However, even if the Master Plan is implemented in addition to the implementation of the other PPPs, the impacts associated with the projects indicated in **bold** would still be manifested, but only once, as there would be no cumulative impacts associated with the implementation of these since they are essentially the same projects referred to by the PPPs under consideration. In other words, the NEC Master Plan complements other existing PPPs (in particular NCIP and Vision 2040) and its full implementation will result in implementation/realisation of some of the other projects (indicated in bold) under already existing PPPs.

### 9.6.3 *Cumulative Impact assessment*

Based on the above, the following cumulative impacts were identified.

#### **(a) Impacts due to interactions of different interventions within the Master Plan**

This impact will arise from the interaction of the following actions:

Strategy	Strategy option	Magnitude
Regional Strategy	Linking agricultural productive areas and mineral resources through development of secondary cities	Uncertain
	Linking with LAPSSET, central corridor and Kampala-Juba-Addis Ababa- Djibouti Corridor	Major
Industrial Strategy	Establishment of logistic hubs with ICD and Logistic Centre	Minor
	Connecting industrial areas to logistic hubs through Cargo-Oriented Development (COD)	Minor
	Promotion of growth drivers to increase export, reduce import, and develop local economy	Major
Transport strategy	Modal shift from truck to rail and pipeline	Minor
	Reduction of bottlenecks of freight traffic and logistics	Moderate
	Enhancement of transport infrastructure	Minor
<b>Cumulative impact magnitude</b>		<b>Major</b>

As already presented in *Figure 9.1* and *Figure 9.2* in *Section 9.1* above, implementation of the proposed strategy options will impact on a number of water bodies with the key ones being; River Nile, River Katonga, River Rwizi, Lake Albert, Lake Kyoga and Lake Victoria as already presented under this impact in *Sections 9.2 to 9.4* for each of the strategy options. These are some of the main fresh water bodies in Uganda with Lake Victoria (shared by Uganda, Kenya and Tanzania) and River Nile (from Uganda, River Nile traverses South Sudan, Sudan and Egypt before entering the Mediterranean Sea) being transboundary resources. As a result, some of these water bodies are stressed – for example, River Rwizi catchment is already considered to be water stressed and it is anticipated that agricultural water demand in the catchment could increase to 63 million cubic metres by 2035 from 20 million cubic metres in 2011 (Arup, 2015). Therefore, the sensitivity of these water bodies is **high**.

Based on the cumulative impact magnitude and receptor sensitivity indicated above, the significance of this impact is considered to be **very large** and will occur in the short, medium and long term since the implementation plan for different interventions within the Master Plan covers the short, medium and long term periods.

*Impact on Soils and Geology*

This impact will arise from the interaction of the following actions:

Strategy	Strategy option	Magnitude
Regional Strategy	Linking agricultural productive areas and mineral resources through development of secondary cities	Minor
	Linking with LAPSSET, central corridor and Kampala-Juba-Addis Ababa- Djibouti Corridor	Minor
Industrial Strategy	Establishment of logistic hubs with ICD and Logistic Centre	Minor
	Connecting industrial areas to logistic hubs through Cargo-Oriented Development (COD)	Minor
	Promotion of growth drivers to increase export, reduce import, and develop local economy	Major
Transport strategy	Modal shift from truck to rail and pipeline	No change
	Reduction of bottlenecks of freight traffic and logistics	Minor
	Enhancement of transport infrastructure	Minor
<b>Cumulative impact magnitude</b>		<b>Major</b>

With the interaction of the above different strategy options, the cause of soil impacts is related to soil compaction and erosion especially where construction activities will be undertaken, and loss of soil fertility mainly as a result of over cultivation and pollution from other development activities like mining and industrialisation.

The soils along the NEC as presented in *Section 6.2.6* above can quickly lose their fertility if over cultivated or contaminated, therefore, their sensitivity is **high**.

Based on the impact magnitude and receptor sensitivity indicated above, the significance of this impact is considered to be **very large** and will occur in the short, medium and long term since the implementation plan for different interventions within the Master Plan covers the short, medium and long term periods.

## Greenhouse Gas Emissions

This impact will arise from the interaction of the following actions:

Strategy	Strategy option	Magnitude
Regional Strategy	Linking agricultural productive areas and mineral resources through development of secondary cities	Minor
	Linking with LAPSET, central corridor and Kampala-Juba-Addis Ababa- Djibouti Corridor	Minor
Industrial Strategy	Establishment of logistic hubs with ICD and Logistic Centre	Minor
	Connecting industrial areas to logistic hubs through Cargo-Oriented Development (COD)	Minor
	Promotion of growth drivers to increase export, reduce import, and develop local economy	Minor
Transport strategy	Modal shift from truck to rail and pipeline	Positive (Major)
	Reduction of bottlenecks of freight traffic and logistics	Moderate
	Enhancement of transport infrastructure	Positive (Minor)
<b>Cumulative impact magnitude</b>		<b>Minor</b>

Drawing upon the results of a pilot cross – sectional spatial assessment of the state of ambient air quality in two Ugandan urban centres (Kampala and Jinja, both within the NEC) conducted in 2014, the ambient concentrations of gas phase air pollutant levels (NO<sub>2</sub>, SO<sub>2</sub> and O<sub>3</sub>) was determined to be low. Therefore, it can be concluded that the sensitivity of the receiving environment is **high**.

Based on the impact magnitude and receptor sensitivity indicated above, the significance of this impact is considered to be **moderate** and will occur in the short, medium and long term since the implementation plan for different interventions within the Master Plan covers the short, medium and long term periods.

## Dust Emissions

This impact will arise from the interaction of the following actions:

Strategy	Strategy option	Magnitude
Regional Strategy	Linking agricultural productive areas and mineral resources through development of secondary cities	Minor
	Linking with LAPSSET, central corridor and Kampala-Juba-Addis Ababa- Djibouti Corridor	Minor
Industrial Strategy	Establishment of logistic hubs with ICD and Logistic Centre	Minor
	Connecting industrial areas to logistic hubs through Cargo-Oriented Development (COD)	Minor
	Promotion of growth drivers to increase export, reduce import, and develop local economy	Minor
Transport strategy	Modal shift from truck to rail and pipeline	Positive (Major)
	Reduction of bottlenecks of freight traffic and logistics	Moderate
	Enhancement of transport infrastructure	Positive (Minor)
<b>Cumulative impact magnitude</b>		<b>Minor</b>

Drawing on the results of a pilot cross - sectional spatial assessment of the state of ambient air quality in two Ugandan urban centres (Kampala and Jinja, both within the NEC) conducted in 2014, the ambient concentrations of Particulate Matter (PM) was determined to be high. Given the large concentration of populations along the NEC by way of settlements/ small urban centres especially along roads where construction activities are proposed, increased dust emissions may pose a nuisance to the local community members. Therefore, it can be concluded that the sensitivity of the receiving environment is **high**.

Based on the impact magnitude and receptor sensitivity indicated above, the significance of this impact is considered to be **moderate** and will occur in the short, medium and long term since the implementation plan for different interventions within the Master Plan covers the short, medium and long term periods

## Noise and Vibration Impact

This impact will arise from the interaction of the following actions:

Strategy	Strategy option	Magnitude
Regional Strategy	Linking agricultural productive areas and mineral resources through development of secondary cities	Minor
	Linking with LAPSSET, central corridor and Kampala-Juba-Addis Ababa- Djibouti Corridor	Minor
Industrial Strategy	Establishment of logistic hubs with ICD and Logistic Centre	Minor
	Connecting industrial areas to logistic hubs through Cargo-Oriented Development (COD)	Minor
	Promotion of growth drivers to increase export, reduce import, and develop local economy	Minor
Transport strategy	Modal shift from truck to rail and pipeline	Minor
	Reduction of bottlenecks of freight traffic and logistics	Moderate
	Enhancement of transport infrastructure	Positive (Minor)
<b>Cumulative impact magnitude</b>		<b>Moderate</b>

Noise emissions interfere with people's communication in addition to being a nuisance. Noise emissions will further be of great concern if activities are taking place near social/communal facilities like places of worship, schools and hospitals where the sensitivity of the receptor is **high**.

Based on the impact magnitude and receptor sensitivity indicated above, the significance of this impact is considered to be **large** and will occur in the short, medium and long term since the implementation plan for different interventions within the Master Plan covers the short, medium and long term periods.

## Impacts Related to Land take and Disruption of Livelihoods

This impact will arise from the interaction of the following actions:

Strategy	Strategy option	Magnitude
Regional Strategy	Linking agricultural productive areas and mineral resources through development of secondary cities	Minor
	Linking with LAPSSSET, central corridor and Kampala-Juba-Addis Ababa- Djibouti Corridor	Major
Industrial Strategy	Establishment of logistic hubs with ICD and Logistic Centre	Moderate
	Connecting industrial areas to logistic hubs through Cargo-Oriented Development (COD)	Minor
	Promotion of growth drivers to increase export, reduce import, and develop local economy	Uncertain
Transport strategy	Modal shift from truck to rail and pipeline	No change
	Reduction of bottlenecks of freight traffic and logistics	Minor
	Enhancement of transport infrastructure	Minor
<b>Cumulative impact magnitude</b>		<b>Major</b>

Although, it is important to note that land is increasingly becoming a scarce resource and the local people are increasingly becoming conscious of losing their land especially when new projects are proposed, the proposed interventions are not alien to the areas where they have been proposed to take place and most of them aim at empowering and involving the local people in the realisation of the Master Plan thus minimising the possibility of land acquisition. Nevertheless, although there may be some livelihood impacts eg on fishing as a result of some of the above mentioned strategies (specifically, the regional strategy of linking with LAPSSSET, central corridor and Kampala-Juba-Addis Ababa- Djibouti Corridor, most of the proposed strategies only affect already designated and acquired reserves eg expansion within road reserves, and majority of the strategies do not require large tracts of land. Therefore, the sensitivity of the receptor is **medium**.

Based on the impact magnitude and receptor sensitivity indicated above, the significance of this impact is considered to be **large** and will occur in the short, medium and long term since the implementation plan for different interventions within the Master Plan covers the short, medium and long term periods.

## Impacts on Public Health and Safety

This impact will arise from the interaction of the following actions:

Strategy	Strategy option	Magnitude
Regional Strategy	Linking agricultural productive areas and mineral resources through development of secondary cities	Major
	Linking with LAPSSSET, central corridor and Kampala-Juba-Addis Ababa- Djibouti Corridor	Major
Industrial Strategy	Establishment of logistic hubs with ICD and Logistic Centre	Major
	Connecting industrial areas to logistic hubs through Cargo-Oriented Development (COD)	Minor
	Promotion of growth drivers to increase export, reduce import, and develop local economy	Minor
Transport strategy	Modal shift from truck to rail and pipeline	Positive (Major)
	Reduction of bottlenecks of freight traffic and logistics	Major
	Enhancement of transport infrastructure	Positive (Minor)
<b>Cumulative impact magnitude</b>		<b>Moderate</b>

Health issues and in particular HIV/ AIDS are of concern along the NEC. For example, Kampala, Jinja, Mbarara, Mpigi, Masaka, Kabale, Malaba, Bugiri, and Mutukula (which are all along the NEC) are major HIV/ AIDS hotspots (*refer to Figure 6.10 in Section 6.4.9 above*).

Additionally, the districts along Tororo-Gulu route fall within an area with a low record of sanitation facilities. Therefore, the sensitivity of the receptor is considered to be **high**.

Based on the impact magnitude and receptor sensitivity indicated above, the significance of this impact is considered to be **large** and will occur in the short, medium and long term since the implementation plan for different interventions within the Master Plan covers the short, medium and long term periods.



## Impacts on Biodiversity within Protected Areas

This impact will arise from the interaction of the following actions:

Strategy	Strategy option	Magnitude
Regional Strategy	Linking agricultural productive areas and mineral resources through development of secondary cities	Minor
	Linking with LAPSSSET, central corridor and Kampala-Juba-Addis Ababa- Djibouti Corridor	Moderate (with a high degree of uncertainty however)
Industrial Strategy	Establishment of logistic hubs with ICD and Logistic Centre	Minor
	Connecting industrial areas to logistic hubs through Cargo-Oriented Development (COD)	Neutral
	Promotion of growth drivers to increase export, reduce import, and develop local economy	Major
Transport strategy	Modal shift from truck to rail and pipeline	Uncertain
	Reduction of bottlenecks of freight traffic and logistics	Minor
	Enhancement of transport infrastructure	Moderate
<b>Cumulative impact magnitude</b>		<b>Major</b>

Protected areas are safeguarded because of their recognised natural, ecological and/or cultural values. The protected areas under consideration in this SEA are those that are of National and/or International importance including but not limited to Central Forest Reserves, National Parks, Ramsar sites, Important Bird Areas, Lake Victoria and the biodiversity within them, among others. Although there is uncertainty on the exact location of all the interventions under each strategy option, a cautious approach has been taken when assessing this impact.

Given the importance accorded to protected areas at the national, regional and international scale, their sensitivity is **very high**.

Based on the impact magnitude and receptor sensitivity indicated above, the significance of this impact is considered to be **very large** and will occur in the short, medium and long term since the implementation plan for different interventions within the Master Plan covers the short, medium and long term periods.

## Visual Intrusion

This impact will arise from the interaction of the following actions:

Strategy	Strategy option	Magnitude
Regional Strategy	Linking agricultural productive areas and mineral resources through development of secondary cities	Minor
	Linking with LAPSSET, central corridor and Kampala-Juba-Addis Ababa- Djibouti Corridor	Minor
Industrial Strategy	Establishment of logistic hubs with ICD and Logistic Centre	Minor
	Connecting industrial areas to logistic hubs through Cargo-Oriented Development (COD)	Minor
	Promotion of growth drivers to increase export, reduce import, and develop local economy	Minor
Transport strategy	Modal shift from truck to rail and pipeline	Minor
	Reduction of bottlenecks of freight traffic and logistics	Minor
	Enhancement of transport infrastructure	Uncertain
<b>Cumulative impact magnitude</b>		<b>Minor</b>

The cause of this impact will be from the establishment of development infrastructure associated with implementation of the Master Plan due to each of the above strategy options. However, with the exception of a few transport routes which will traverse protected areas where the current land use (mainly tourism activities) is largely dependent on visual aesthetics, most of the proposed infrastructure will be in areas where the current land use does not largely depend on visual aesthetics. Therefore, the overall sensitivity of the receptor is **low**.

Based on the impact magnitude and receptor sensitivity indicated above, the significance of this impact is considered to be **slight** and will occur in the short, medium and long term since the implementation plan for different interventions within the Master Plan covers the short, medium and long term periods.

### Impact Due to Combined Actions of a Wider Range Of Interventions

Generally, as described in *Section 9.5.2 above*, all the proposed projects in Uganda's Vision 2040 and the Northern Corridor Integrated Projects (NCIP) that have the potential to cause environmental and social impacts are also included in the Master Plan.

However, the Master Plan implementation period is up to 2030 and it is probable that some of the proposed projects will not have been fully implemented by the end of the year 2030. Therefore, in order to realise the objectives of Vision 2040 and the NCIP, their implementation will continue after the intended duration of the Master Plan.

In this assessment however, it has been assumed that the Master Plan will have been fully implemented as per the proposed schedule (2030) and therefore, the cumulative impacts associated with all the proposed interventions will have occurred by the year 2030 as already assessed above. Beyond 2030, it is expected that the established projects will only be sustained to further realise their potential and would not result in any new cumulative impacts other than the ones already assessed above. Their assessment has therefore not been repeated here.

## 9.7 *VULNERABILITY TO CLIMATE CHANGE*

The proposed interventions of the Master Plan are associated with and also susceptible to climate change risks and impacts. This calls for adaptive capacity of the Master Plan to the impacts of climate change.

### 9.7.1 *Climate Change Risks to the Master Plan*

Uganda is highly vulnerable to climate change and variability since its economy and the well-being of its people rely on natural environment. There are already experienced changes in the frequency or severity of extreme climate events, such as heat waves, prolonged droughts, floods, and storms in some parts of the country which have had negative socio-economic impacts. Identified below are some of the climate risks that the Master Plan is prone to:

Strategy	Strategy Option	Potential Impact of Climate Change Risk
Flooding Risk		
Industrial	Establishment of logistic hubs with ICD and Logistics Centre.	This strategy option will require development of infrastructure such as warehouses, distribution centres and one stop shops. There are two impacts from climate change on infrastructure: one is through lost resilience due to increased temperature and rainfall; and the other is through damage caused by extreme events, including floods. Some of the currently proposed logistics hubs are to be located in flood prone districts (Tororo, Mbarara and Kampala – see Section

Strategy	Strategy Option	Potential Impact of Climate Change Risk
		5.1.4 and Figure 5.9 in above). For Kampala in particular, scientific projections of future climate in the city are imprecise, but suggest there will be a higher incidence of rainfall, putting Kampala at risk of flooding. In addition to the above, since the year 2000, extreme rainfall conditions have been regularly experienced in Eastern Uganda (Tororo, Busia, Bugiri and Mayuge) where there has been an increase of approximately 1500mm of precipitation during the December to January rainy season. El Niño-Southern Oscillation events have also become shorter and more irregular.
	Promotion of growth drivers to increase exports, reduce imports, and develop the local economy.	Necessitates the development of industrial and mineral resource areas. Agricultural production areas such as Mbarara and Gulu, as well as mineral resource areas such as Kabale and Kasese are located within flood prone areas.
Transport strategy	Enhancement of infrastructure	These transport options will involve development of infrastructure such as roads. Some of these developments will be undertaken in some of the flood prone areas such as Kasese, Kampala, Gulu, and Tororo districts. This renders the development of infrastructure in such districts vulnerable to flooding
	Reduction of bottlenecks of freight traffic and logistics	
Regional strategy	Linking agricultural productive areas and mineral resources through development of secondary cities	The proposed secondary cities include Mbale, Mbarara, Gulu and Arua. Floods have been experienced particularly in Mbarara district and there is a likelihood that they could be experienced in Gulu. This could present constraints to the proposed development.
High temperatures and droughts		
Industrial	Promotion of growth drivers to increase exports, reduce imports, and develop the local economy.	Coffee is identified as one of the products selected for promotion to increase exports. A research study conducted by Oxfam (2013) determined that, climate change will have an impact on the suitability of Arabica coffee growing areas in Uganda, including the Rwenzori Mountains, with most areas

Strategy	Strategy Option	Potential Impact of Climate Change Risk
		becoming less suitable for agricultural production, particularly those at lower altitudes (1500masl) which will be severely affected.
		Agriculture is identified as one of the growth drivers. Documented information indicates that increasing temperatures favour the breeding of pests and diseases, and prolonged high temperatures will result in drought (loss of crops).
Unpredictable rainfall		
Industrial	Promotion of growth drivers to increase export, reduce import, and develop local economy.	Climate change is already affecting water availability in Uganda and the trend towards increasing water scarcity is expected to continue. This will affect households, agriculture, fisheries, forestry and tourism as well as the production of energy, water transport, sanitation and health – some of these sectors such as energy, which require water are identified as growth drivers under this strategy.

### 9.7.2 *Impacts of the Master Plan in the context of climate change*

Implementation of the Master Plan strategies could enhance or reduce the impacts of climate change. Some of the potential impacts of the Master Plan on climate change are; emission of greenhouse gases and flooding. These impacts are discussed below.

## Greenhouse Gas Emissions

Strategy	Option	Potential Impact on Climate Change
Transport	Modal shift from truck to rail and pipeline.	This strategy option will reduce greenhouse gas emissions in the long term. The trains to be run on the proposed SGR will be electric and transportation of oil via pipeline is likely to require significantly less energy than trucking or using rail – hence reduced emissions.
	Reduction of bottlenecks of freight traffic and logistics.	This strategy option will increase greenhouse gas emissions. Removal of bottlenecks will most likely result in a spike in traffic volumes, especially road traffic that is currently constrained by these bottlenecks which will result in a corresponding increase in emissions from the increased traffic.
Industrial	Promotion of growth drivers to increase exports, reduce imports, and develop the local economy.	This strategy option will increase greenhouse gas emissions as this option is likely to intensify the supply side of the economy. Processes associated with the development and operation of mineral and agricultural production industries, where GHGs are emitted, may result in the release of these emissions into the atmosphere.

## Flooding

Strategy	Options	Potential Impact on Climate Change
Transport	Enhancement of transport infrastructure	Development of Paved or impervious infrastructure is likely to result in increased surface water runoff, which may lead to flooding in flood prone areas if the drainage systems associated with the infrastructures are not properly developed to contain surface runoff, and prevent flooding.
	Reduction of bottlenecks of freight traffic and logistics	
Regional	Linking agricultural productive areas and mineral resources through development of secondary cities	Development of secondary cities (currently planned for Mbarara, Gulu, Arua and Mbale) will result in major infrastructural development that increase paved surfaces areas – resulting in increased surface water runoff, which is exacerbated if drainage systems are not properly designed, constructed and maintained. Additionally, development of secondary cities could encroach on green field sites such as wetlands which are supposed to regulate water flow thereby exacerbating the flooding situation. This is particularly important for Mbarara and Gulu districts – which are prone to flooding.
Industrial	Establishment of logistic hubs with ICD and Logistic Centre	Establishment of logistic hubs is likely to result in an increase in the pave surface area which can also have an effect on runoff speeds/flooding potential.

### 9.7.3 *Sector Objectives for Climate Change Adaptation Relevant for the Master Plan*

A number of sectors in Uganda have established objectives for climate change adaptation. These sectors according to Uganda’s Intended Nationally Determined Contribution (2015) and Uganda’s Climate Change Policy (2012), are; transport, industry, agriculture, energy, and water.

Provided below is a summary of the identified sector objectives for climate change adaptation deemed relevant for the NEC Master Plan. Please note, that the adaptation measures included below have been tailored to the currently identified projects under the NEC Master Plan.

Sector	Projects of the NEC Master Plan	Climate Change Adaptation Measures
Transport	Kampala-Jinja Expressway Project	<ul style="list-style-type: none"> <li>• Ensuring that land use plans and building codes reflect the need to make public and private buildings more climate-resilient.</li> <li>• Investing in making existing and new buildings more resilient.</li> <li>• Updating transport codes and regulations and implementing measures to ensure compliance with them.</li> <li>• Improving water catchment protection.</li> <li>• Develop and ensure integrated planning and management of transport and other physical infrastructure that build on insights from climate predictions.</li> <li>• Implement a strict vehicular emissions standard in tandem with measures to gradually phase out old, inefficient transport means (such as old vehicles), while encouraging the importation of efficient ones.</li> </ul>
	New Nile Bridge	
	Kampala-Mpigi Expressway Project	
	Construction of Roadside Service Station in Uganda	
	Logistics Highway Project (Mbarara-Kabale/Kabale-Katuna/ Jinja – Malaba)	
	Road improvement of Masaka-Mutukula/ Kampala-Tororo-Malaba/ Tororo-Soroti/ Soroti-Gulu	
	Kampala, Gulu and Tororo marshalling yard and inland terminal	
	Kampala rolling stock and railway equipment maintenance depot	
	Border posts (Malaba, Busia, Mutukula, Katuna, Mirama Hills, Bunagana, Mpondwe, Goli, Oraba, Nimule)	
	Entebbe International Airport (Terminal Expansion and Fuel Farm construction)	
	Rehabilitation of 3-6 ports and introducing a fleet of modern and purpose built freight vessels	
	Logistics hubs (Tororo, Kampala/Jinja, Mbarara, Gulu)	
Mining	Refinery in Uganda	<ul style="list-style-type: none"> <li>• Ensuring that land use plans and building codes reflect the need to make buildings more climate-resilient.</li> <li>• Updating transport codes and regulations and implementing measures to ensure compliance with</li> </ul>



Sector	Projects of the NEC Master Plan	Climate Change Adaptation Measures
		them.
Agriculture	<p>Agricultural union commercialization support program</p> <p>Irrigation Scheme Development project</p> <p>Fertiliser Promotion program</p> <p>Superior seed production enhancement projects for small sesame farmers support</p> <p>Maize promotion support program</p> <p>Specialty coffee export promotion project Agriculture</p> <p>Livestock processed products promotion program</p> <p>Kalangala PPP project</p> <p>Textile industry promotion and market diversification project</p>	<ul style="list-style-type: none"> <li>• Expanding Climate Smart Agriculture (CSA).</li> <li>• Expanding small scale water infrastructure.</li> <li>• Expanding research on climate resilient crops and animal breeds</li> <li>• Expanding extension services.</li> </ul>
Manufacturing	<p>Industrial Operational Base Development Project</p> <p>Upgrading of Leather Industry Supply Chain Project</p>	<ul style="list-style-type: none"> <li>• Promote new technologies in manufacturing industries.</li> <li>• Improve the efficiency of and alternative fuels used in manufacturing industries.</li> <li>• Promote cleaner production.</li> <li>• Review and enforce emission regulations in the sector.</li> </ul>

#### 9.7.4

#### *Projections of Climate Change Variability and the Predicted Impacts*

- Between 2010 and 2050, the demand for water is expected to increase almost ten-fold (Economic assessment of the impacts of climate change in Uganda, November 2013).
- Droughts are set to become more frequent in the decades ahead. These will cause water scarcity (each drought lasts for around three years) and the most hit watersheds will be Lake Victoria, Albert Nile and Lake Kyoga.
- Climate change will have a major impact on the production of Uganda's leading export crops. In particular, production of Arabica and Robusta coffee may fall by 50 percent by 2050 due to contraction of the area that can support its production.
- By contrast, climate change impacts on food crops and livestock are projected to be relatively small – although the specific impacts will vary from crop to crop.
- There will also probably be less potential for hydropower development due to a reduction in rainfall and water availability. The country will need to develop alternative energy sources to meet future demand and there is a major opportunity to develop low-carbon and climate-resilient energy.
- Uganda's infrastructure needs to become more resilient to the effects of the weather and climate, both current and future. Residential buildings are most at risk, but transport systems are also likely to be affected.

#### 9.7.5

#### *Impacts of Climate Change on the Feasibility of the Master Plan*

Based on the information presented above, climate change is inevitable and has a potential of affecting the integrity of any development intervention. The main effect will be prolonged droughts which will ultimately impact on watersheds including Lake Victoria.

It is therefore pertinent that the following key issues are considered as part of efforts aimed at ensuring the Master Plans strategies are climate proof:

- Construct climate change resilient infrastructure to withstand the effects of climate change;
- Water transport along Lake Victoria should be maximised in the short to medium term to avoid the predicted consequences of climate change on this watershed; and

- Climate resilient agriculture should be practiced in the long run since it is predicted that climate change will affect the productivity of most cash crops.

9.7.6 *Summary of Impacts*

Table 9.11 below provides a summary of the environmental impacts that may occur as a result of the Master Plan

**Table 9.11** *Summary of the impacts associated with implementation of the Master Plan*

Impact	Regional Strategy		Industrial Strategy			Transport Strategy			Applicable constraints
	Strategy Options								
	Linking agricultural productive areas and mineral resources areas through development secondary cities	Linking with LAPSSET, central corridor and Kampala-Juba-Addis Ababa-Djibouti Corridor	Establishment of logistic hubs with Inland Container Depots (ICD) and Logistic Centre	Connecting industrial areas to logistic hubs through Cargo-Oriented Development (COD)	Promotion of growth drivers to increase export, reduce import, and develop local economy	Modal shift from truck to rail and pipeline	Reduction of bottlenecks of freight traffic and logistics	Enhancement of transport infrastructure	
Impacts on the integrity of water bodies	Very large	Very large	*	*	Very large	*	Large	*	Rivers; Nile Katonga, Rwizi Lakes; Kyoga, Victoria, Albert Wetlands; Kibimba, Northern shores of Lake Victoria, Lake Kyoga wetlands, Lake Mburo wetlands.
Impacts on soils and	*	*	Slight	*	Very large	*	*	*	Agricultural areas

Impact	Regional Strategy		Industrial Strategy			Transport Strategy			Applicable constraints	
	Strategy Options									
	Linking agricultural productive areas and mineral resources areas through development secondary cities	Linking with LAPSSSET, central corridor and Kampala-Juba-Addis Ababa-Djibouti Corridor	Establishment of logistic hubs with Inland Container Depots (ICD) and Logistic Centre	Connecting industrial areas to logistic hubs through Cargo-Oriented Development (COD)	Promotion of growth drivers to increase export, reduce import, and develop local economy	Modal shift from truck to rail and pipeline	Reduction of bottlenecks of freight traffic and logistics	Enhancement of transport infrastructure		
geology										
Impact on air quality (Greenhouse gas emissions)			*	*		*	Moderate	*	Protected Areas, Internationally Designated Areas, Sensitive ecosystems, Biodiversity (flora and fauna), Rivers, lakes and wetlands, Agricultural areas, Settlements, and Existing infrastructure.	
Impact on air quality (dust emissions)	*	*	*	*	*	*	Large	*	Settlements	

Impact	Regional Strategy		Industrial Strategy			Transport Strategy			Applicable constraints	
	Strategy Options									
	Linking agricultural productive areas and mineral resources areas through development secondary cities	Linking with LAPSSET, central corridor and Kampala-Juba-Addis Ababa-Djibouti Corridor	Establishment of logistic hubs with Inland Container Depots (ICD) and Logistic Centre	Connecting industrial areas to logistic hubs through Cargo-Oriented Development (COD)	Promotion of growth drivers to increase export, reduce import, and develop local economy	Modal shift from truck to rail and pipeline	Reduction of bottlenecks of freight traffic and logistics	Enhancement of transport infrastructure		
Noise and vibration impacts	x	x	x	x	x	x	Large	x	Settlements	
Impacts to Biodiversity in Protected Areas	x	Very large	x	x	Very large	Very large	Moderate	Large	Mabira CFR, Mpanga CFR, Moroto CFR, Murchison Falls National Park, Lake Mburo National Park, Kibale National Park, Queen Elizabeth National park, Lake Victoria, IBAs, Ramsar sites.	
Impacts on public Health and Safety	Moderate	Very large	Large	x	x	x	x	x	Dense settlements, Border points, and	

Impact	Regional Strategy		Industrial Strategy			Transport Strategy			Applicable constraints
	Strategy Options								
	Linking agricultural productive areas and mineral resources areas through development secondary cities	Linking with LAPSSSET, central corridor and Kampala-Juba-Addis Ababa-Djibouti Corridor	Establishment of logistic hubs with Inland Container Depots (ICD) and Logistic Centre	Connecting industrial areas to logistic hubs through Cargo-Oriented Development (COD)	Promotion of growth drivers to increase export, reduce import, and develop local economy	Modal shift from truck to rail and pipeline	Reduction of bottlenecks of freight traffic and logistics	Enhancement of transport infrastructure	
									Existing HIV/AIDS hotspots
Impacts related to Land take and disruption of livelihoods	*	Very large	Moderate	*	*	*	*	*	Mailo land owners, and Customary land owners.

*DESCRIPTION OF MITIGATION MEASURES*

Following on from the assessment of environmental and social impacts attributed to the respective strategies of the Master Plan, it was paramount that the impacts that were identified as likely to be negative and significant are mitigated accordingly.

The process of identification of mitigation measures sought to incorporate measures to avoid or reduce the significant environmental and social impacts following a hierarchical system, where avoidance is always the first mitigation measure or preferred option to be considered as outlined in the various elements of the mitigation hierarchy below:

- a) *Avoidance* – consider and incorporate measures to prevent the impact.
- b) *Reduction* – where avoidance is not possible, then methods to lessen the impact should be considered and incorporated into the Master Plan design.
- c) *Remediation* – where it is not possible to avoid or reduce a significant impact, then measures to offset the impact should be considered.

Other factors that were considered in devising the mitigation measures included potential for changes to the Master Plan by modifying its strategies and the policies informing them where appropriate coupled with changes to the modalities for implementing the Master Plan, among other things.



**Table 10.1** *Proposed Mitigation Measures to Address the identified Impacts Related to the Regional strategy*

Strategy option	Impact	Mitigation
Physical environment		
Linking agricultural productive areas and mineral resource areas through development of secondary cities	Impacts on the integrity of water bodies	<ul style="list-style-type: none"> <li>• If there is need for water abstraction, apply for a water abstraction permit from DWRM as required under Regulation 3 of the Water Resources Regulation S.I. 152-1, and adhere to the conditions stipulated in the permit.</li> <li>• Undertake regular water quality monitoring for key parameters depending on potential project related impacts and ensure that the water quality parameters are within national potable water standards limit.</li> <li>• Where there is a need to discharge wastewater, obtain a Waste Water Discharge Permit as required under the Water Act, Cap 152, Regulation 7 of the Water (Waste Discharge) Regulation, 1998 and Regulation 3 of the Water Resources Regulation S.I. 152-1 and adhere to the conditions stipulated in the permit - with the necessary/required treatment prior to discharge being undertaken.</li> <li>• Map out community water sources and ensure that any project related water abstractions do not affect these community water sources, where this may be the case, alternative community water supplies will need to be provided.</li> <li>• All project planning should be in line with the relevant National/District level Planning authorities</li> </ul>
Linking with LAPSSET, central corridor and Kampala-Juba-Addis Ababa-Djibouti Corridor	Impacts on the integrity of water bodies	<ul style="list-style-type: none"> <li>• Prepare spill contingency plans for each proposed project /inland water way.</li> <li>• Prepare emergency preparedness and response plans for each proposed project /inland water way.</li> <li>• Prepare an integrated waste management plan in line with the waste management hierarchy for each of the proposed projects/inland waterway.</li> <li>• Ensure that any purchased vessel/ship meets the international industry standards.</li> </ul>

Strategy option	Impact	Mitigation
		<ul style="list-style-type: none"> <li>• Consult with key stakeholders involved in the management of Lake Victoria prior to any project implementation for example (the three countries covered by Lake Victoria: Kenya, Uganda and Tanzania, Beach Management Units, Lake Victoria Management Programme, Local authorities and institutions etc.</li> <li>• Ensure that the implementation of any project/inland waterways is in line with Lake Victoria Management plan and Lake Victoria Fisheries Management Plan (plans) developed by the Lake Victoria Management Programmes.</li> <li>• Where there is a need to discharge wastewater, obtain a Waste Water Discharge Permit for discharge of waste water as required under the Water Act, Cap 152, Regulation 7 of the Water (Waste Discharge) Regulation, 1998 and Regulation 3 of the Water Resources Regulation S.I. 152-1 and adhere to the conditions stipulated in the permit - with the necessary/required treatment prior to discharge being undertaken.</li> <li>• Undertake regular water quality monitoring for key parameters depending on project related impacts and ensure that the water quality parameters are within national potable water standards limit.</li> </ul>
<b>Biological environment</b>		
Linking with LAPSSET, central corridor and Kampala-Juba-Addis Ababa-Djibouti Corridor	Impacts to biodiversity within protected areas	<ul style="list-style-type: none"> <li>• Ensure all proposed projects are subject to appropriate planning controls including EIA to establish the location of sensitive habitats such as breeding grounds and Ramsar sites;</li> <li>• Ensure that the rate and location of development does not lead to unacceptable deterioration of water quality;</li> <li>• Ensure acquisition of all requisite permits prior to implementation of any project /inland waterway along Lake Victoria, for example EIA certificate of approval, Wetlands, River Banks and Lake Shores User Permit from NEMA and adhere to the conditions stipulated in those permits;</li> </ul>

Strategy option	Impact	Mitigation
		<ul style="list-style-type: none"> <li>• Engage in stakeholder consultations with environmental organisations that have vested interests in the sustainable use of Lake Victoria such as Nile Basin Initiative and Lake Victoria Basin Commission;</li> <li>• Enforce any environmental conditionality attached to each development project;</li> <li>• Develop biodiversity offsets to enhance, restore and support habitats that may be degraded during project implementation;</li> <li>• All project activities should be in line with the Protected Area Management Plan;</li> <li>• All water vessels should meet the International Industry Standards; to minimise, accidents and pollution leaks;</li> <li>• Incorporate the polluter pays principle or other appropriate mechanisms in relation to damage to protected areas;</li> <li>• Undertake regular water quality monitoring for key parameters depending on project related impacts and ensure that the water quality parameters are within national potable water standards limit;</li> <li>• Develop an action plan for biodiversity conservation, including a detailed list of strategies for abating key threats, a timeline, responsible actors, costs, and indicators for success; and</li> <li>• Have in place a hazardous materials spill contingency plan as a safeguard against accidental large spillages.</li> <li>• All project planning should be in line with the relevant District Development Plan</li> </ul>
Socio-economic environment		
Linking agricultural productive areas and mineral resource areas through development	Impacts on public Health and safety	<ul style="list-style-type: none"> <li>• Undertake awareness and sensitisation campaigns on public health and safety (especially issues to do with HIV/AIDS, water and sanitation management);</li> <li>• Engage the local governments (especially at district and sub-county level) to prepare community members for any influx of in-migrants (for example, by</li> </ul>

Strategy option	Impact	Mitigation
of secondary cities		<p>developing by-laws and community policing systems for effective control of large numbers of in-migrants);</p> <ul style="list-style-type: none"> <li>• Avoid or at least minimise displacement, wherever feasible, by using brown field/already existing commercial sites) and avoid any cause of physical and economic displacement;</li> <li>• Where large construction activities are to be carried out, establish workers' camps mainly to accommodate employees from outside the location of the identified secondary cities. These camps should be fitted with the necessary social service amenities like health, water and sanitation facilities;</li> <li>• Give the local community members the first priority in terms of employment opportunities to minimise the number of migrant workers;</li> <li>• Undertake an Environment, Health and Safety (EHS) induction for all workers, including sub-contractors and casual labourers before commencing work, which should include a full briefing on site safety and rules in order to minimise the occurrence of occupational health and safety related incidents, accidents and occupational diseases; and</li> <li>• Develop and implement waste management plans for all interventions.</li> </ul>
Linking with LAPSSET, central corridor and Kampala-Juba-Addis Ababa-Djibouti Corridor	Impacts related to disruption of livelihood (fishing activities on Lake Victoria)	<ul style="list-style-type: none"> <li>• Avoid locating landing sites/ ports and vessel routes in main fishing grounds and fish breeding locations;</li> <li>• Monitor the fish catchment rates especially for the main commercial fishes caught from Lake Victoria. If a decline is noticed, investigate further to identify the potential causes and mitigate them;</li> <li>• In liaison with the Directorate of Fisheries Resources, support fish farming especially in the fishing communities around Lake Victoria;</li> <li>• Incorporate the plans of the Beach Management Units, the interests of the three countries that share Lake Victoria: Kenya, Uganda and Tanzania; interests of the bodies established to protect the Lake Victoria such as the Nile Basin Initiative, Lake Victoria Basin Commission; interests of Local authorities and</li> </ul>

Strategy option	Impact	Mitigation
		<p>institutions in the design and implementation of all developments on Lake Victoria; and</p> <ul style="list-style-type: none"> <li>• Monitor the fishing effort and fishing gear used by the fishermen. If it is noticed that the fishing effort is increasing or different fishing gear needs to be used to catch the fish; then an investigation into the cause should be undertaken.</li> </ul>
	Impacts on Public health and safety	<ul style="list-style-type: none"> <li>• Undertake awareness and sensitisation campaigns on public health and safety (especially issues to do with HIV/ AIDS, water and sanitation management);</li> <li>• Engage the local governments (especially at district and sub-county level paying particular attention to the fishing communities) to prepare community members for any influx of in-migrants (for example, by developing by-laws and community policing systems for effective control of large numbers of in-migrants);</li> <li>• Where large construction activities are to be carried out, establish workers' camps mainly to accommodate employees from outside the location of the identified ports for rehabilitation. These camps should be fitted with the necessary social service amenities such as health, water and sanitation facilities. Give the local community members the first priority in terms of employment opportunities to minimise the number of migrant workers;</li> <li>• Undertake an Environment, Health and Safety (EHS) induction for all workers, including sub-contractors and casual labourers before commencing work, which should include a full briefing on site safety and rules in order to minimise the occurrence of occupational health and safety incidents, accidents and occupational diseases;</li> <li>• Develop and implement waste management plans for each of the ports;</li> <li>• Establish a community health programme including providing support to existing or new local programmes such as mother and child nutrition, community health awareness, HIV/ AIDS awareness, hygiene and</li> </ul>

Strategy option	Impact	Mitigation
		<p>immunisation, malaria control measures (indoor spraying of insecticides, personal protection measures, and control of mosquito larvae), and local Voluntary Counselling and Testing (VCT) programmes and</p> <ul style="list-style-type: none"> <li>• Prepare and implement an emergency preparedness and response plans especially tailored to spill contingency measures.</li> </ul>

**Table 10.2** *Proposed Mitigation Measures to Address the Identified Impacts Related to the Industrial strategy*

Strategy option	Impact	Mitigation
Physical environment		
Establishment of logistic hubs with ICD and Logistic Centre	Impacts on soils and geology	<ul style="list-style-type: none"> <li>• Demarcate the extent of each logistic hub and limit the construction and operation activities within it.</li> <li>• Where possible, locate logistic hubs on less productive soils/existing brown fields.</li> <li>• Implement good soil conservation practices such as excavating and separately storing the top soil to be used for other purpose eg re-vegetation.</li> <li>• Plant suitable grass/trees to re-vegetate the areas rendered bare upon completion of construction activities and to help enhance aesthetics around the project areas.</li> </ul>
Promotion of growth drivers to increase export, reduce import, and develop local economy	Impacts on the integrity of water bodies	<ul style="list-style-type: none"> <li>• Agrochemicals that are categorised as World Health Organisation Class 1A or 1B, or that are listed by the Stockholm or Rotterdam Convention, should not be used except in specific situations identified in national best practice guidelines.</li> <li>• All agrochemicals should be approved by the Agricultural Chemicals Board of Uganda prior to being used in accordance with the Control of</li> </ul>

Strategy option	Impact	Mitigation
		<p>Agricultural Chemicals Act, Cap 29 (1989).</p> <ul style="list-style-type: none"> <li>• Prepare an integrated waste management plan in line with the waste management hierarchy for each proposed project.</li> <li>• An Integrated pest, disease and weeds management plan combining physical, biological and cultural practices should be implemented to minimise reliance on agrochemicals.</li> <li>• Develop programmes to sensitise farmers on the best farming practices.</li> <li>• If there is need for water abstraction, apply for a water abstraction permit from DWRM as required under Regulation 3 of the Water Resources Regulation S.I. 152-1, and adhere to the conditions stipulated in the permit.</li> <li>• Obtain a Waste Water Discharge Permit for discharge of waste water as required under the Water Act, Cap 152, Regulation 7 of the Water (Waste Discharge) Regulation, 1998 and Regulation 3 of the Water Resources Regulation S.I. 152-1 and adhere to the conditions stipulated in the permit.</li> <li>• Undertake regular water quality monitoring for key parameters depending on project related impacts and ensure that the water quality parameters are within national potable water standards limit.</li> <li>• Ensure that erosion (and sedimentation) control measures are incorporated into project planning.</li> </ul>

Strategy option	Impact	Mitigation
	Impacts on soils and geology	<ul style="list-style-type: none"> <li>• Develop programmes to advise farmers on the best farming practices to enable sustainable utilisation of soils.</li> <li>• Put in place measures to ensure that the quality of the soil is maintained and that the soil quality parameters are within the United States Environmental Protection Agency<sup>1</sup> (USEPA) regulatory limits.</li> <li>• Prepare an integrated waste management plan in line with the waste management hierarchy for each of the proposed projects.</li> <li>• Ensure that an authorised hazardous waste handling company is contracted for handling of hazardous waste materials.</li> <li>• An Integrated pest, disease and weeds management plan combining physical, biological and cultural practices should be implemented to minimise reliance on agrochemicals.</li> <li>• Ensure that erosion (and sedimentation) control measures are incorporated into project planning.</li> <li>• Prepare hazardous spill contingency plans for each proposed project.</li> <li>• Where there is a need to discharge wastewater, obtain a Waste Water Discharge Permit for discharge of waste water as required under the Water Act, Cap 152, Regulation 7 of the Water (Waste Discharge) Regulation, 1998 and Regulation 3 of the Water Resources Regulation S.I. 152-1 and adhere to the conditions stipulated in the permit.</li> </ul>
Biological environment		
Promotion of growth drivers to increase export, reduce import, and develop	Impacts to biodiversity within	<ul style="list-style-type: none"> <li>• Obtain the relevant permits for any activity that may be implemented and has the potential to undermine the integrity of such protected areas;</li> </ul>

<sup>1</sup> Although Uganda soil regulatory limits have been established (National Environment (Minimum Standards for Management of Soil Quality) Regulations, 2001), they do not state the regulatory limits for the specific soil parameters. Therefore, the United States Environmental Protection Agency (USEPA) regulatory limits for the specific soil parameters that were being analysed are referred to for comparison.



Strategy option	Impact	Mitigation
local economy	protected areas	<ul style="list-style-type: none"> <li>• Ensure all proposed projects are subject to appropriate planning controls including EIA, and enforce any environmental conditionality attached to each development project;</li> <li>• Map out and establish the location of sensitive habitats such as fauna corridors within the protected areas;</li> <li>• All project planning should be in line with Protected Area Management Plans;</li> <li>• Exploitation of resources within Protected Areas should be undertaken in accordance with all the legal instruments governing each Protected Area. These include the National Environment Act, 1995 and the National Forestry and Tree Planting Act, 8/2003;</li> <li>• Strengthen institutional cooperation to eliminate illegal activities associated with exploitation of resources from protected areas taking into account sustainable customary resource use;</li> <li>• Develop biodiversity offsets to enhance, restore and support habitats that may be degraded during project implementation;</li> <li>• Sign a memorandum of understanding with the Protected Area Management to guide the sustainable exploitation of any resources identified within the Protected Area, where possible;</li> <li>• Employ the latest available project specific technology at all times, consistent with the objectives of the Protected Area;</li> <li>• Develop an action plan for biodiversity conservation, including a detailed list of strategies for abating key threats, a timeline, responsible actors, costs, and indicators for success;</li> <li>• Have in place a hazardous materials spill contingency plan which should be adhered to in the event of accidental large spillages;</li> <li>• Have in place sector specific emergency response plans to be adhered to in the event of major emergencies;</li> </ul>

Strategy option	Impact	Mitigation
		<ul style="list-style-type: none"> <li>• All project planning should be in line with district physical and sub-county development plans; and</li> <li>• Put in place measures to avoid introduction of invasive species.</li> </ul>
Socio-economic environment		
Establishment of logistic hubs with Inland Container Depots (ICD) and Logistic Centre	Impacts related to land take and disruption of livelihoods.	<ul style="list-style-type: none"> <li>• Maximise the utilisation of the area within each logistic hub to minimise the size of land required;</li> <li>• Avoid heavily settled areas when identifying the potential locations for logistic hubs to minimise physical displacement;</li> <li>• Where physical and/or economic displacement is necessary, agree on compensation with the affected person(s) and in accordance with district rates and guidance from the Office of the Chief Government Valuer prior to the construction phase of the logistic hubs;</li> <li>• Involve stakeholders at all levels such as local council committees, Sub-county committees, and the District committees, CAO, RDC, politicians, and ministries to sensitise the community on the intentions of acquiring the for the establishment of the logistic hubs;</li> <li>• Consider the interests of vulnerable groups in the communities that are likely to be affected by the proposed activities. The groups considered vulnerable include households with very old persons, disabled persons, the poor<sup>1</sup>, female headship and child headship;</li> <li>• Develop and implement livelihood enhancement programmes to help economically and physically displaced persons re-establish their</li> </ul>

<sup>1</sup> The poverty line is described in terms of the cost of obtaining the basic requirements. According to the 2002 Census data, five household items were considered in defining the poverty line and these included; (i) soap to bathe, (ii) sugar consumed by each member of the household at least once a day, (iii) a blanket for each child in the household, (iv) a pair of shoes for every member of the household, and (v) two pairs of clothes for each member of the household.

Strategy option	Impact	Mitigation
		<p>livelihoods or create new ones. Some of the livelihood enhancement programmes include; Financial Management Training Programmes, Agricultural Assistance Programmes, Skills Training and Employment Programmes and Business Development Support Programmes;</p> <ul style="list-style-type: none"> <li>• Develop a grievance mechanism plan to address grievances from local communities around proposed logistic hubs;</li> <li>• Monitor the livelihoods of the affected persons and in case the desired outcomes are not being realised, develop other appropriate interventions to restore their livelihoods; and</li> <li>• In designing the plans for the logistic hubs, put into consideration other existing plans in the areas of interests and these include sub-county and district plans.</li> </ul>
	Impacts on Public Health and Safety.	<ul style="list-style-type: none"> <li>• Undertake awareness and sensitisation campaigns on public health and safety (especially issues to do with HIV/AIDS, water and sanitation);</li> <li>• Engage the local governments (especially at district and sub-county level) to prepare community members for any influx of in-migrants (for example, by developing by-laws and community policing systems for effective control of large numbers of in-migrants);</li> <li>• Avoid or at least minimise displacement, wherever feasible, by using brown field/already existing commercial sites) and avoid any cause of physical and economic displacement;</li> <li>• Where large construction activities are to be carried out, establish workers' camps mainly to accommodate employees from outside the location of the identified logistic hubs. These camps should be fitted with the necessary social service amenities such as health, water and sanitation facilities;</li> <li>• Give the local community members the first priority in terms of employment opportunities to minimise the number of migrant workers;</li> </ul>

Strategy option	Impact	Mitigation
		<ul style="list-style-type: none"> <li>• Undertake an Environment, Health and Safety (EHS) induction for all workers, including sub-contractors and casual labourers before commencing work, which should include a full briefing on site safety and rules in order to minimise the occurrence of occupational health and safety related incidents, accidents and I diseases;</li> <li>• Develop and implement waste management plans for each of the logistic hubs;</li> <li>• Isolate hazardous materials such as fuel, explosives and hazardous chemicals and appropriate safeguards in place for dealing with any eventualities related to them;</li> <li>• Undertake community awareness and sensitisation about the logistic hubs prior to the establishment so that community members become more vigilant and are aware of what to expect in terms of potential nuisances;</li> <li>• Develop a grievance mechanism plan to address grievances from local communities around proposed logistic hubs.</li> </ul>

**Table 10.3 Proposed Mitigation Measures to Address the Identified Impacts Related to the Transport strategy**

Strategy option	Impact	Mitigation
Physical environment		
Reduction of bottlenecks of freight traffic and logistics	Impacts on the integrity of water bodies	<ul style="list-style-type: none"> <li>• Design and implement good construction management practices including, but not limited to, erosion and sediment control measures, appropriate drainage system and waste management practices.</li> <li>• Prepare hazardous spill contingency plans for each proposed project</li> <li>• If there is need for water abstraction ( eg water for suppression of dust during road construction), apply for a water abstraction permit from DWRM as required under Regulation 3 of the Water Resources Regulation S.I. 152-1, and adhere to the conditions stipulated in the permit.</li> <li>• Prepare an integrated waste management plan in line with the waste management hierarchy for each of the proposed projects.</li> <li>• Obtain a Waste Water Discharge Permit for discharge of waste water as required under the Water Act, Cap 152, Regulation 7 of the Water (Waste Discharge) Regulation, 1998 and Regulation 3 of the Water Resources Regulation S.I. 152-1 and adhere to the conditions stipulated in the permit.</li> </ul>
	Noise and vibration impacts	<ul style="list-style-type: none"> <li>• Put in place measures to minimise noise and ensure that the noise levels generated are within limits as stipulated in the National Environment (Noise Standard and Control) Regulations, 2003.</li> <li>• Ensure that sound acoustics is factored into infrastructure design.</li> </ul>
	Impact on air quality (Greenhouse gas emissions)	<ul style="list-style-type: none"> <li>• Encourage planting of trees along the highways to act as carbon sinks;</li> <li>• Encourage use of fuel-efficient vehicles to reduce emissions of greenhouse gases;</li> <li>• Put in place measures to ensure that greenhouse gas emissions from any machinery and vehicles are minimised and that gas emissions are within limits as stipulated in National Environment (Draft Air Quality) Standards 2006;</li> <li>• Undertake regular air quality monitoring of key air pollutants along busy</li> </ul>

Strategy option	Impact	Mitigation
		<p>routes/any identified air pollution hotspot with an aim to reverse any negative trends as per the National Environment (Draft Air Quality) Standards 2006;</p> <ul style="list-style-type: none"> <li>• Limiting vehicle fleet age ie put in place controls to stop importation of very old vehicles which are the major contributors to greenhouse gases;</li> <li>• Carry out periodic health checks on groups that are at risk to the effects of air pollution particularly the young, the elderly for respiratory and eye diseases such as asthma, lung cancer and conjunctivitis that have been associated with air pollution;</li> <li>• Encourage use of rail for freight movement of goods instead of vehicles which are one of the main contributors to GHG emissions from road transport; and</li> <li>• Develop programmes to sensitise truck drivers about efficient use of fuel eg switching off engines when stationary.</li> </ul>
	Impact on air quality (dust emissions)	<ul style="list-style-type: none"> <li>• Ensure that dust abatement techniques are included in each projects planning for example spraying of water on the excavated area, wetting the soil and materials stock piles, minimise height at which materials are dropped to control dust emission, and covering the load carried by the vehicles to ensure that dusty materials do not leak from vehicles etc.;</li> <li>• Establish and enforce speed limits to reduce airborne fugitive dust;</li> <li>• Where possible ( eg along the road side) encourage re-vegetation of the disturbed areas to control fugitive dust; and</li> <li>• Ensure that the road construction activities are limited within the project foot print to minimise the extent of disturbed area.</li> </ul>
<b>Biological environment</b>		
Modal shift from truck to rail and pipeline	Impacts to biodiversity within protected areas	<ul style="list-style-type: none"> <li>• All potential project activities should be consistent with Protected Area Management Plans;</li> <li>• Apply, as appropriate, timely environmental impact assessments to any project with the potential to have effects on protected areas, and ensure timely information flow among all concerned parties to this end;</li> </ul>

Strategy option	Impact	Mitigation
		<ul style="list-style-type: none"> <li>• Assess key threats to protected areas and develop and implement strategies to prevent and/or mitigate such threats;</li> <li>• Incorporate the polluter pays principle or other appropriate mechanisms in relation to damages to protected areas;</li> <li>• Establish IUCN protected species that are likely to be affected by the modal shift and map out their location in relation to intended projects;</li> <li>• Establish and implement measures for the rehabilitation and restoration of the ecological integrity of protected areas;</li> <li>• Have in place sector specific emergency response plans to be adhered to in the event of major emergencies;</li> <li>• Have in place a hazardous materials spill contingency plan which should be adhered to in the event of accidental large spillages; and</li> <li>• Take measures to control risks associated with the introduction and/or spread of invasive alien species in protected areas especially as a result of transit cargo.</li> </ul>
Reduction of bottlenecks of freight traffic and logistics	Impacts to biodiversity within protected areas	<ul style="list-style-type: none"> <li>• Obtain the relevant permits for any activity that may be implemented and has the potential to undermine the integrity of such protected areas;</li> <li>• All potential project activities should be consistent with Protected Area Management Plans;</li> <li>• Apply, as appropriate, timely environmental impact assessments to any project with the potential to have effects on protected areas, and ensure timely information flow among all concerned parties to this end;</li> <li>• Map out and establish the location of sensitive and valuable ecosystems such as fauna corridors and watering areas;</li> <li>• Assess the baseline status of key biodiversity features, including the distribution and viability of IUCN Red listed species, natural communities and ecological systems;</li> </ul>

Strategy option	Impact	Mitigation
		<ul style="list-style-type: none"> <li>• Develop an action plan for biodiversity conservation, including a detailed list of strategies for abating key threats, a timeline, responsible actors, costs, and indicators for success;</li> <li>• Limit the extent of project infrastructure to the required footprint;</li> <li>• Standard controls should be adhered to when setting up infrastructure to minimise the risk of accidents; and</li> <li>• Position infrastructure/development, away from identified sensitive and valuable ecosystems.</li> </ul>
Enhancement of transport infrastructure	Impacts to biodiversity within protected areas	<ul style="list-style-type: none"> <li>• Obtain the relevant permits for any activity that may be implemented and has the potential to undermine the integrity of such protected areas</li> <li>• All potential project activities should be consistent with Lake Victoria Environment Management Plan</li> <li>• Apply, as appropriate, timely environmental impact assessments to any project with the potential to have effects on protected areas such as Ramsar sites, and ensure timely information flow among all concerned parties to this end;</li> <li>• Assess key threats to the protected areas and develop and implement strategies to prevent and/or mitigate such threats;</li> <li>• Map out sensitive habitats such as Ramsar sites, Important Bird Areas and potential breeding grounds;</li> <li>• Establish and implement measures for the rehabilitation and restoration of the ecological integrity of the protected areas;</li> <li>• Position infrastructure/development away from identified and potential sensitive ecosystems such as Ramsar sites;</li> <li>• Take measures to control risks associated with the introduction and/or spread of invasive alien species in protected areas.</li> <li>• Incorporate the polluter pays principle or other appropriate mechanisms in relation to damages to protected areas; and</li> </ul>



Strategy option	Impact	Mitigation
		<ul style="list-style-type: none"> <li>• Standard controls should be adhered to when setting up infrastructure to minimise the risk of accidents; and</li> <li>• Have in place a hazardous material spill contingency plan which should be adhered to in the event of accidental large spillages.</li> </ul>
Socio-economic environment		
Reduction of bottlenecks of freight traffic and logistics	Impacts on Public Health and Safety	<ul style="list-style-type: none"> <li>• Undertake awareness and sensitisation campaigns on public health and safety (especially to do with issues of HIV/AIDS, water and sanitation);</li> <li>• Engage the local governments (especially at district and sub-county level) to prepare community members for any influx of in-migrants (for example, by developing by-laws and community policing systems for effective control of large numbers of in-migrants);</li> <li>• Where large construction activities are to be carried out, establish workers' camps mainly to accommodate employees from outside the location of the identified roads. These camps should be fitted with the necessary social service amenities like health, water and sanitation facilities;</li> <li>• Give the local community members the first priority in terms of employment opportunities to minimise the number of migrant workers;</li> <li>• Undertake Environment, Health and Safety (EHS) induction for all workers, including sub-contractors and casual labourers before commencing work, which should include a full briefing on site safety and rules in order to minimise the occurrence of occupational health and safety related accidents and diseases;</li> <li>• Develop and implement waste management plans for each of the proposed infrastructure under this strategy; and</li> <li>• Install clear and visible signage on all roads especially in community areas, around schools and hospitals to minimise the risk of accidents.</li> </ul>

### **10.1.1** *Mitigation Measures for Cumulative Impacts Associated With Implementation of the Master Plan*

Implementation of the all the proposed interventions proposed under each of the Master Plan strategic options will cause a number of cumulative impacts. Therefore, to ensure that their significance is considerably reduced, mitigation measures must be devised and implemented. Outlined below are the mitigation measures deemed necessary for effective implementation of the Master Plan whilst keeping the negative environmental and social impacts as low as possible.

#### *Align Proposed Projects with the Existing National Planning Framework*

Implementation should be in line with the existing national planning framework. Agriculture related plans/programmes/projects for example, should be implemented in areas set aside for agriculture while infrastructural developments should be in line with the overall national physical development plan. By implementing plans/programmes/projects in areas designated for such activities, the cumulative impact is likely to be reduced. For example, if logistic hubs under the industrial strategy are established on brown field sites (land not ideally suitable for agriculture), the cumulative impact of soil compaction will be reduced since the productivity of such soils will not be compromised but instead put to better use, as these soils were never suitable for agriculture in the first place.

#### *Interagency Coordination*

Different aspects of the biological and physical environments will be subjected to impacts as a result of implementation of the Master Plan. However, during specific project development under the Master Plan, with the proper coordination among regulatory bodies, the cumulative impacts of the proposed projects could be further minimised.

For example, Lake Victoria, a transboundary resource with more than one organisation overseeing specific aspects of it, could benefit from interagency coordination, whereby, the integrity of this water resource can further be maintained, for example in Uganda, with guidance from MAAIF – to manage use of agrochemicals which would otherwise compromise the quality of the resource, minimise impacts on fisheries and similarly, the Lake Victoria Basin Commission could advise on the location and number of navigation routes to be developed on the same resource based on research previously carried out in a bid to protect the resource – with more than one basin state meeting set objectives under a single/similar projects. This should hold true for other publically shared natural resources such as forests.

### *Project Scheduling*

The scheduling of the proposed projects should ensure that the implementation is undertaken sequentially rather than being undertaken concurrently. For example the cumulative impact of reduction in air quality due to dust emissions could be reduced by phasing the construction of the logistics hubs after or before the construction of the access roads to connect to the same. That way, the extended construction period will result in a reduced amount of construction related dust exposure on respective receptors.

### *Project Designs*

The current assessment of cumulative impacts is based on the assumption of using the currently available technology. However, proposed plans/programmes/projects should embrace green economic development or low carbon development models. In addition, since the Master Plan will be implemented over an extended period of time up to 2030, it is necessary that project designs are futuristic in scope to match with evolving changes in technology so as to minimise the cumulative impacts associated with technology overhauls that may not be cost effective from an environmental point of view.

## 10.2 **MONITORING OF IMPLEMENTATION OF THE MASTER PLAN**

Monitoring will be carried out as part of the implementation phase of the Master Plan to specifically address significant environmental effects on certain environmental components. Monitoring will be the responsibility to the Ministry of Works and Transport who are the proponents of the Master Plan although they may not necessarily undertake the monitoring themselves.

Key to the monitoring exercise will be the use of indicators as these are able to show the changes to the certain specific aspects of the environment over time based on a cause – effect relationship.

The SEA monitoring programme for the implementation of the Master Plan is presented in the tables (*Table 10.4, Table 10.5 and Table 10.6*) below that represent the respective components of the Master Plan - Regional strategy, Industrial strategy and the Transport strategy respectively

Table 10.4 Regional Strategy Monitoring Programme

Environmental/social aspect	Driving forces (underlying factors influencing a variety of relevant variables)	Pressure indicators (variables which directly cause (or may cause) environmental problems)	State indicators (show the current condition of the environment)	Extent	Impact indicators (ultimate effects of changes of state)	Mitigation measures	Monitoring frequency	Responsible entity
Impacts on the integrity of water bodies.	Linking agricultural productive areas and mineral resources areas through development of secondary cities.	Surface water abstraction from the available water resources.  Discharge of municipal and industrial waste waters (including process waters from agricultural and mineral resource areas).	Trends in water quality of the respective water bodies ( eg R. Rwizi, R. Nile, R. Malaba, etc), based on poor agricultural practices, poor sanitation practices, Industrial waste discharge and mining activities.	Regional	Water quality parameters and fresh water ecosystem health	<ul style="list-style-type: none"> <li>• If there is need for water abstraction, apply for a water abstraction permit from DWRM as required under Regulation 3 of the Water Resources Regulation S.I. 152-1, and adhere to the conditions stipulated in the permit.</li> <li>• Undertake regular water quality monitoring of key parameters depending on potential project related impacts and ensure that the water quality parameters are within national potable water standards limit.</li> <li>• Where there is a need to discharge wastewater, obtain a Waste Water Discharge Permit as required under the Water Act, Cap 152, Regulation 7 of the Water (Waste Discharge) Regulation, 1998 and Regulation 3 of the Water Resources Regulation S.I. 152-1 and adhere to the conditions stipulated in the permit - with the necessary/required treatment prior to discharge being undertaken.</li> </ul>	Quarterly	Ministry of Works and Transport (MoWT) and Directorate of Water Resources Management (DWRM)
	Linking the NEC with LAPSSET, central corridor	Marine traffic related leakages, spillage of	Trends in water quality of Lake Victoria based on industrial waste	Trans-boundary	Water quality parameters and fresh	<ul style="list-style-type: none"> <li>• Ensure that the implementation of any project/ inland waterways is</li> </ul>	Quarterly	Ministry of Works and Transport (MoWT),

Environmental/social aspect	Driving forces (underlying factors influencing a variety of relevant variables)	Pressure indicators (variables which directly cause (or may cause) environmental problems)	State indicators (show the current condition of the environment)	Extent	Impact indicators (ultimate effects of changes of state)	Mitigation measures	Monitoring frequency	Responsible entity
	and Kampala-Juba-Addis Ababa- Djibouti Corridor.	hazardous cargo, and overboard waste disposal.	discharge, poor sanitation and poor agricultural practices.		water ecosystem health.	<p>in line with Lake Victoria Management plan and Lake Victoria Fisheries Management Plan (plans) developed by the Lake Victoria Management Programmes.</p> <ul style="list-style-type: none"> <li>• Where there is a need to discharge wastewater, obtain a Waste Water Discharge Permit for discharge of waste water as required under the Water Act, Cap 152, Regulation 7 of the Water (Waste Discharge) Regulation, 1998 and Regulation 3 of the Water Resources Regulation S.I. 152-1 and adhere to the conditions stipulated in the permit - with the necessary/required treatment prior to discharge being undertaken.</li> <li>• Undertake regular water quality monitoring for key parameters depending on project related impacts and ensure that the water quality parameters are within national potable water standards limit.</li> </ul>		Directorat of Water Resources Management (DWRM) and Lake Victoria Basin Commission

Environmental/social aspect	Driving forces (underlying factors influencing a variety of relevant variables)	Pressure indicators (variables which directly cause (or may cause) environmental problems)	State indicators (show the current condition of the environment)	Extent	Impact indicators (ultimate effects of changes of state)	Mitigation measures	Monitoring frequency	Responsible entity
Biodiversity within protected areas	Linking with LAPSET, central corridor and Kampala-Juba-Addis Ababa- Djibouti Corridor	Disruptive noise and vibrations from movement of water vessels.  Spillage of hazardous cargo	Lake Victoria is a transboundary resource as well as rich ecosystem. It contains Ramsar sites as well as Important Bird Areas. Lutembe bay particularly supports rare, vulnerable, endangered, or threatened species such as the Shoebill ( <i>Balaeniceps rex</i> )	Transboundary	Presence of habitat areas capable of supporting viable biodiversity populations.	<ul style="list-style-type: none"> <li>• Ensure all proposed projects are subject to appropriate planning controls including EIA to establish the location of sensitive habitats such as breeding grounds and Ramsar sites;</li> <li>• Ensure that the rate and location of development does not lead to unacceptable deterioration of water quality;</li> <li>• Ensure acquisition of all requisite permits prior to implementation of any project / inland waterway along Lake Victoria, for example EIA certificate of approval, Wetlands, River Banks and Lake Shores User Permit from NEMA and adhere to the conditions stipulated in those permits;</li> <li>• Engage in stakeholder consultations with environmental organisations that have vested interests in the sustainable use of Lake Victoria such as Nile Basin Initiative and Lake Victoria Basin Commission;</li> <li>• Enforce any environmental conditionality attached to each development project;</li> <li>• Develop biodiversity offsets to enhance, restore and support habitats that may be degraded during project implementation ;</li> </ul>	Quarterly	Ministry of Works and Transport (MoWT) and Directorate of Water Resources Management (DWRM) and Wetlands Management Department

Environmental/social aspect	Driving forces (underlying factors influencing a variety of relevant variables)	Pressure indicators (variables which directly cause (or may cause) environmental problems)	State indicators (show the current condition of the environment)	Extent	Impact indicators (ultimate effects of changes of state)	Mitigation measures	Monitoring frequency	Responsible entity
						<ul style="list-style-type: none"> <li>All project activities should be in line with the Protected Area Management Plan;</li> <li>All water vessels should meet the International Industry Standards; to minimise, accidents and pollution leaks;</li> <li>Incorporate the polluter pays principle or other appropriate mechanisms in relation to damage to protected areas;</li> <li>Undertake regular water quality monitoring for key parameters depending on project related impacts and ensure that the water quality parameters are within national potable water standards limit;</li> <li>Develop an action plan for biodiversity conservation, including a detailed list of strategies for abating key threats, a timeline, responsible actors, costs, and indicators for success; and Have in place a hazardous materials spill contingency plan as a safeguard against accidental large spillages.</li> </ul>		
Impacts on public health	Linking agricultural productive areas and mineral resource areas through development of secondary cities.	Development of secondary cities and transport linkage between agricultural resource areas as well as mineral resource areas to	Among the four proposed cities, Gulu and Kampala are known to be HIV/AIDS hot-spots.  Kampala and Mbarara fall under areas	Nationwide	Increased prevalence rate for infectious diseases as well as STDs  Access and utilisation of	<ul style="list-style-type: none"> <li>Undertake awareness and sensitisation campaigns on public health and safety (especially issues to do with HIV/AIDS, water and sanitation management);</li> <li>Engage the local</li> </ul>	Annually	Ministry of Works and Transport (MoWT) and Ministry of Health (MoH).



Environmental/social aspect	Driving forces (underlying factors influencing a variety of relevant variables)	Pressure indicators (variables which directly cause (or may cause) environmental problems)	State indicators (show the current condition of the environment)	Extent	Impact indicators (ultimate effects of changes of state)	Mitigation measures	Monitoring frequency	Responsible entity
		secondary cities.	considered to have improved sanitary facilities (above 65 percent) while Gulu, Mbale and Arua fall under areas considered to have poor sanitary facilities (below 47 percent).		health, safe water coverage and sanitation facilities.  Mortality and morbidity rates.  Population influx	governments (especially at district and sub-county level) to prepare community members for any influx of in-migrants (for example, by developing by-laws and community policing systems for effective control of large numbers of in-migrants); <ul style="list-style-type: none"> <li>• Avoid or at least minimise displacement, wherever feasible, by using brown field/already existing commercial sites) and avoid any cause of physical and economic displacement;</li> <li>• Where large construction activities are to be carried out, establish workers' camps mainly to accommodate employees from outside the location of the identified secondary cities. These camps should be fitted with the necessary social service amenities like health, water and sanitation facilities;</li> <li>• Give the local community members the first priority in terms of employment opportunities to minimise the number of migrant workers;</li> <li>• Undertake an Environment, Health and Safety (EHS) induction for all workers, including sub-contractors and casual labourers before</li> </ul>		

Environmental/social aspect	Driving forces (underlying factors influencing a variety of relevant variables)	Pressure indicators (variables which directly cause (or may cause) environmental problems)	State indicators (show the current condition of the environment)	Extent	Impact indicators (ultimate effects of changes of state)	Mitigation measures	Monitoring frequency	Responsible entity
						<p>commencing work, which should include a full briefing on site safety and rules in order to minimise the occurrence of occupational health and safety related incidents, accidents and occupational diseases; and</p> <ul style="list-style-type: none"> <li>• Develop and implement waste management plans for all interventions</li> </ul>		
Impacts related to disruption of livelihoods (fishing activities on Lake Victoria)	Linking with LAPSET, central corridor and Kampala-Juba-Addis Ababa- Djibouti Corridor	Promotion of inland waterway transport on Lake Victoria which will also link the NEC with the Central Corridor	<p>Fishing is a major source of livelihood around Lake Victoria for people living in the fishing villages/islands in and around Lake Victoria.</p> <p>Lake Victoria is considered a special economic zone by the three East African countries (Uganda, Kenya and Tanzania)</p>	Trans boundary	<p>Reduction in water quality</p> <p>Reduction of fish catches rates</p> <p>Change in the fishing schedules</p> <p>Access and utilisation of the lake.</p>	<ul style="list-style-type: none"> <li>• Avoid locating landing sites/ ports and vessel routes in main fishing grounds and fish breeding locations;</li> <li>• Monitor the fish catchment rates especially for the main commercial fishes caught from Lake Victoria. If a decline is noticed, investigate further to identify the potential causes and mitigate them;</li> <li>• In liaison with the Directorate of Fisheries Resources, support fish farming especially in the fishing communities around Lake Victoria;</li> <li>• Incorporate the plans of the Beach Management Units, the interests of the three countries that share Lake Victoria: Kenya, Uganda and Tanzania; interests of the bodies established to protect the Lake Victoria such as the Nile Basin Initiative, Lake Victoria Basin Commission;</li> </ul>	Quarterly	Ministry of Works and Transport (MoWT), Ministry of Agriculture Animal Industry and Fisheries (MAAIF) and Directorate of Water Resources Management (DWRM)

Environmental/social aspect	Driving forces (underlying factors influencing a variety of relevant variables)	Pressure indicators (variables which directly cause (or may cause) environmental problems)	State indicators (show the current condition of the environment)	Extent	Impact indicators (ultimate effects of changes of state)	Mitigation measures	Monitoring frequency	Responsible entity
						<p>interests of Local authorities and institutions in the design and implementation of all developments on Lake Victoria; and</p> <ul style="list-style-type: none"> <li>• Monitor the fishing effort and fishing gear used by the fishermen. If it is noticed that the fishing effort is increasing or different fishing gear needs to be used to catch the fish; then an investigation into the cause should be undertaken.</li> </ul>		
Impacts on Public health and safety			<p>Port Bell (main port in Uganda) is as an HIV/AIDS hot-spot.</p> <p>The port area is characterised by poor sanitation due to inadequate sanitary facilities</p> <p>Kampala district (where Port Bell is located) is one of the top 15 districts in line with health performance.</p>	Regional	<p>Increased prevalence rate for STDs and other diseases.</p> <p>Access and utilisation of health and sanitation facilities.</p> <p>Morbidity and Mortality rates.</p> <p>Incident and accident rates</p> <p>Population influx.</p>	<ul style="list-style-type: none"> <li>• Undertake awareness and sensitisation campaigns on public health and safety (especially issues to do with HIV/AIDS, water and sanitation management);</li> <li>• Engage the local governments (especially at district and sub-county level paying particular attention to the fishing communities) to prepare community members for any influx of in-migrants (for example, by developing by-laws and community policing systems for effective control of large numbers of in-migrants);</li> <li>• Where large construction activities are to be carried out, establish workers' camps mainly to accommodate employees from outside the location of the identified ports for</li> </ul>	Quarterly	Ministry of Works and Transport (MoWT) and Ministry of Health (MoH)

Environmental/social aspect	Driving forces (underlying factors influencing a variety of relevant variables)	Pressure indicators (variables which directly cause (or may cause) environmental problems)	State indicators (show the current condition of the environment)	Extent	Impact indicators (ultimate effects of changes of state)	Mitigation measures	Monitoring frequency	Responsible entity
						<p>rehabilitation. These camps should be fitted with the necessary social service amenities such as health, water and sanitation facilities. Give the local community members the first priority in terms of employment opportunities to minimise the number of migrant workers;</p> <ul style="list-style-type: none"> <li>• Undertake an Environment, Health and Safety (EHS) induction for all workers, including sub-contractors and casual labourers before commencing work, which should include a full briefing on site safety and rules in order to minimise the occurrence of occupational health and safety incidents, accidents and occupational diseases;</li> <li>• Develop and implement waste management plans for each of the ports;</li> <li>• Establish a community health programme including providing support to existing or new local programmes such as mother and child nutrition, community health awareness, HIV/ AIDS awareness, hygiene and immunisation, malaria control measures (indoor spraying of insecticides,</li> </ul>		

Environmental/social aspect	Driving forces (underlying factors influencing a variety of relevant variables)	Pressure indicators (variables which directly cause (or may cause) environmental problems)	State indicators (show the current condition of the environment)	Extent	Impact indicators (ultimate effects of changes of state)	Mitigation measures	Monitoring frequency	Responsible entity
						<p>personal protection measures, and control of mosquito larvae), and local Voluntary Counselling and Testing (VCT) programmes and</p> <ul style="list-style-type: none"> <li>• Prepare and implement an emergency preparedness and response plans especially tailored to spill contingency measures..</li> </ul>		

Table 10.5 Industrial Strategy Monitoring Programme

Environmental/social aspect	Driving forces (underlying factors influencing a variety of relevant variables)	Pressure indicators (variables which directly cause (or may cause) environmental problems)	State indicators (show the current condition of the environment)	Extent	Impact indicators (ultimate effects of changes of state)	Mitigation measures	Monitoring frequency	Responsible entity
Impacts on soils and geology	Establishment of logistics hubs with ICD and Logistics Centre	Site preparation for establishment of permanent facilities like ICDs, warehouses, distribution centres, and one stop shops.	Brown field or Greenfield status	Regional	Infrastructure footprint	<ul style="list-style-type: none"> <li>• Demarcate the extent of each logistic hub and limit the construction and operation activities within it.</li> <li>• Implement good soil conservation practices such as excavating and separately storing the top soil which can be used for other purpose eg re-vegetation.</li> </ul>	Quarterly.	Ministry of Works and Transport (MoWT) and Ministry of Lands Housing, and Urban Development (MLHUD)
Impacts on the integrity of water bodies	Promotion of growth drivers to increase exports, reduce	Use of Agro chemicals (fertilisers and pesticides).	Trends in water quality based on poor agricultural practices	Nationwide	Water quality parameters and freshwater ecosystem health	<ul style="list-style-type: none"> <li>• Agrochemicals that are categorised as World Health Organisation Class 1A or 1B, or that</li> </ul>	Quarterly	Ministry of Works and Transport (MoWT) and Ministry of

Environmental/social aspect	Driving forces (underlying factors influencing a variety of relevant variables)	Pressure indicators (variables which directly cause (or may cause) environmental problems)	State indicators (show the current condition of the environment)	Extent	Impact indicators (ultimate effects of changes of state)	Mitigation measures	Monitoring frequency	Responsible entity
	imports, and develop local economy.					<p>are listed by the Stockholm or Rotterdam Convention, should not be used except in specific situations identified in national best practice guidelines.</p> <ul style="list-style-type: none"> <li>All agrochemicals should be approved by the Agricultural Chemicals Board of Uganda prior to being used in accordance with the Control of Agricultural Chemicals Act, Cap 29 (1989).</li> <li>Undertake regular water quality monitoring for key parameters depending on project related impacts and ensure that the water quality parameters are within national potable water standards limit</li> </ul>		Agriculture, Animal Industry and Fisheries (MAAIF)
Impacts on soils and geology		<p>Over-cultivation.</p> <p>Application of pesticides and weed killers among others,</p> <p>Mining of mineral resources</p>	Fertile soils used for agricultural production (the soils types include: - Acriferralsols, Luvisol. Leptosol and Eutric-greysols)	Regional	Soil/geological quality and condition	<ul style="list-style-type: none"> <li>Develop programmes to advise farmers on the best farming practices to enable sustainable utilisation of soils.</li> <li>Put in place measures to ensure that the quality of the soil is maintained and that the soil quality parameters are within the United States</li> </ul>	Quarterly	Ministry of Works and Transport (MoWT) and Ministry of Agriculture, Animal Industry and Fisheries (MAAIF)

Environmental/social aspect	Driving forces (underlying factors influencing a variety of relevant variables)	Pressure indicators (variables which directly cause (or may cause) environmental problems)	State indicators (show the current condition of the environment)	Extent	Impact indicators (ultimate effects of changes of state)	Mitigation measures	Monitoring frequency	Responsible entity
						Environmental Protection Agency <sup>1</sup> (USEPA) regulatory limits.		
Biodiversity within protected areas	Promotion of growth drivers to increase export, reduce import, and develop local economy	Resource extraction from protected areas and introduction of alien species.	Some of the proposed areas for promotion of the growth drivers such as Kasese, Hoima, Moroto and Kabale are close to protected areas such as Kibale National Parks, Queen Elizabeth National Parks, Moroto central forest reserve, etc. These protected areas are rich in biodiversity and are habitat to IUCN Red listed species such chimpanzees, lions, and elephants	Regional	Presence of habitat areas capable of supporting viable biodiversity populations.	<ul style="list-style-type: none"> <li>• Obtain the relevant permits for any activity that may be implemented and has the potential to undermine the integrity of such protected areas;</li> <li>• Ensure all proposed projects are subject to appropriate planning controls including EIA, and enforce any environmental conditionality attached to each development project;</li> <li>• Map out and establish the location of sensitive habitats such as fauna corridors within the protected areas;</li> <li>• All project planning should be in line with Protected Area Management Plans;</li> <li>• Exploitation of resources within Protected Areas should be undertaken in accordance with all the legal instruments governing each Protected Area. These include the</li> </ul>	Before project implementation and Quarterly thereafter or as considered appropriate	Ministry of Works and Transport (MoWT) and Directorate of Water Resources Management (DWRM), Uganda wildlife Authority (UWA), National Forest Authority (NFA) and Wetlands Management Department (WMD).

<sup>1</sup> Although Uganda soil regulatory limits have been established (National Environment (Minimum Standards for Management of Soil Quality) Regulations, 2001), they do not state the regulatory limits for the specific soil parameters. Therefore, the United States Environmental Protection Agency (USEPA) regulatory limits for the specific soil parameters that were being analysed are referred to for comparison.

Environmental/social aspect	Driving forces (underlying factors influencing a variety of relevant variables)	Pressure indicators (variables which directly cause (or may cause) environmental problems)	State indicators (show the current condition of the environment)	Extent	Impact indicators (ultimate effects of changes of state)	Mitigation measures	Monitoring frequency	Responsible entity
						<p>National Environment Act, 1995 and the National Forestry and Tree Planting Act, 8/2003.</p> <ul style="list-style-type: none"> <li>• Strengthen institutional cooperation to eliminate illegal activities associated with exploitation of such resources taking into account sustainable customary resource use;</li> <li>• Develop biodiversity offsets to enhance, restore and support habitats that may be degraded during project implementation ;</li> <li>• Sign a memorandum of understanding with the Protected Area Management to guide the sustainable exploitation of any resources identified within the Protected Area, where possible;</li> <li>• Employ the latest available mining technology at all times, consistent with the objectives of the Protected Area;</li> <li>• Develop an action plan for biodiversity conservation, including a detailed list of strategies for abating key threats, a timeline, responsible</li> </ul>		



Environmental/social aspect	Driving forces (underlying factors influencing a variety of relevant variables)	Pressure indicators (variables which directly cause (or may cause) environmental problems)	State indicators (show the current condition of the environment)	Extent	Impact indicators (ultimate effects of changes of state)	Mitigation measures	Monitoring frequency	Responsible entity
						<p>actors, costs, and indicators for success;</p> <ul style="list-style-type: none"> <li>• Have in place a hazardous materials spill contingency plan which should be adhered to in the event of accidental large spillages;</li> <li>• Have in place sector specific emergency response plans to be adhered to in the event of major emergencies; and</li> <li>• All project planning should be in line with district physical and sub-county development plans.</li> <li>• Put in place measures to avoid introduction of invasive species.</li> </ul>		
Impact related to Land take and disruption of livelihoods	Establishment of logistic hubs with Inland Container Depots (ICD) and Logistic Centre	Acquisition of land for establishments of five logistic hubs.	Commercial centres/towns ie, Kampala/ Jinja, Tororo Mbarara and Gulu.	Regional	Land holding and Livelihood status of different groups including the vulnerable	<ul style="list-style-type: none"> <li>• Maximise the utilisation of the area within each logistic hub to minimise the size of land required;</li> <li>• Avoid heavily settled areas when identifying the potential locations for logistic hubs to minimise physical displacement;</li> <li>• Where physical and/or economic displacement is necessary, agree on compensation with the affected person(s) and in accordance with district rates and guidance from the Office of the Chief Government Valuer prior</li> </ul>	Annually	Ministry of Works and Transport (MoWT), Ministry of Gender Labour and Social Welfare (MGLSW) and Ministry of Lands, Housing and Urban Development (MLHUD).

Environmental/social aspect	Driving forces (underlying factors influencing a variety of relevant variables)	Pressure indicators (variables which directly cause (or may cause) environmental problems)	State indicators (show the current condition of the environment)	Extent	Impact indicators (ultimate effects of changes of state)	Mitigation measures	Monitoring frequency	Responsible entity
						<p>to the construction phase of the logistic hubs;</p> <ul style="list-style-type: none"> <li>• Involve stakeholders at all levels such as local council committees, Sub-county committees, and the District committees, CAO, RDC, politicians, and ministries to sensitise the community on the intentions of acquiring the for the establishment of the logistic hubs;</li> <li>• Consider the interests of vulnerable groups in the communities that are likely to be affected by the proposed activities. The groups considered vulnerable include households with very old persons, disabled persons, the poor<sup>1</sup>, female headship and child headship;</li> <li>• Develop and implement livelihood enhancement programmes to help economically and physically displaced persons re-establish their livelihoods or create new ones. Some of the livelihood enhancement</li> </ul>		

<sup>1</sup> The poverty line is described in terms of the cost of obtaining the basic requirements. According to the 2002 Census data, five household items were considered in defining the poverty line and these included; (i) soap to bathe, (ii) sugar consumed by each member of the household at least once a day, (iii) a blanket for each child in the household, (iv) a pair of shoes for every member of the household, and (v) two pairs of clothes for each member of the household.

Environmental/social aspect	Driving forces (underlying factors influencing a variety of relevant variables)	Pressure indicators (variables which directly cause (or may cause) environmental problems)	State indicators (show the current condition of the environment)	Extent	Impact indicators (ultimate effects of changes of state)	Mitigation measures	Monitoring frequency	Responsible entity
						<p>programmes include; Financial Management Training Programmes, Agricultural Assistance Programmes, Skills Training and Employment Programmes and Business Development Support Programmes;</p> <ul style="list-style-type: none"> <li>• Develop a grievance mechanism plan to address grievances from local communities around proposed logistic hubs;</li> <li>• Monitor the livelihoods of the affected persons and in case the desired outcomes are not being realised, develop other appropriate interventions to restore their livelihoods; and</li> <li>• In designing the plans for the logistic hubs, put into consideration other existing plans in the areas of interests and these include sub-county and district plans.</li> </ul>		
Impacts on Public Health and Safety			With the exception of Mbarara, all the other towns proposed for locations of logistic hubs (Tororo, Kampala and Gulu) are identified as HIV/ AIDS hotspot.	Regional	<p>Increased prevalence rate for infectious diseases as well as STDs.</p> <p>Access and utilisation of</p>	<ul style="list-style-type: none"> <li>• Undertake awareness and sensitisation campaigns on public health and safety (especially issues to do with HIV/ AIDS, water and sanitation);</li> <li>• Engage the local</li> </ul>	Quarterly	Ministry of Works and Transport (MoWT) and Ministry of Health (MoH).

Environmental/social aspect	Driving forces (underlying factors influencing a variety of relevant variables)	Pressure indicators (variables which directly cause (or may cause) environmental problems)	State indicators (show the current condition of the environment)	Extent	Impact indicators (ultimate effects of changes of state)	Mitigation measures	Monitoring frequency	Responsible entity
			All the five potential sites for establishment of logistic hubs (Kampala/Jinja, Tororo, Mbarara and Gulu) are among the top fifteen performing districts based on selected performance indicators that were used to assess the health performance of various districts in Uganda.		health and sanitation facilities.  Mortality rate.  Population influx.  Number of households displaced.	governments (especially at district and sub-county level) to prepare community members for any influx of in-migrants (for example, by developing by-laws and community policing systems for effective control of large numbers of in-migrants; <ul style="list-style-type: none"> <li>• Avoid or at least minimise displacement, wherever feasible, by using brown field/already existing commercial sites) and avoid any cause of physical and economic displacement;</li> <li>• Where large construction activities are to be carried out, establish workers' camps mainly to accommodate employees from outside the location of the identified logistic hubs. These camps should be fitted with the necessary social service amenities such as health, water and sanitation facilities;</li> <li>• Give the local community members the first priority in terms of employment opportunities to minimise the number of migrant workers;</li> </ul>		

Environmental/social aspect	Driving forces (underlying factors influencing a variety of relevant variables)	Pressure indicators (variables which directly cause (or may cause) environmental problems)	State indicators (show the current condition of the environment)	Extent	Impact indicators (ultimate effects of changes of state)	Mitigation measures	Monitoring frequency	Responsible entity
						<ul style="list-style-type: none"> <li>• Undertake an Environment, Health and Safety (EHS) induction for all workers, including sub-contractors and casual labourers before commencing work, which should include a full briefing on site safety and rules in order to minimise the occurrence of occupational health and safety related incidents, accidents and 1 diseases;</li> <li>• Develop and implement waste management plans for each of the logistic hubs;</li> <li>• Isolate hazardous materials such as fuel, explosives and hazardous chemicals and appropriate safeguards in place for dealing with any eventualities related to them;</li> <li>• Undertake community awareness and sensitisation about the logistic hubs prior to the establishment so that community members become more vigilant and are aware of what to expect in terms of potential nuisances;</li> <li>• Develop a grievance mechanism plan to</li> </ul>		

Environmental/social aspect	Driving forces (underlying factors influencing a variety of relevant variables)	Pressure indicators (variables which directly cause (or may cause) environmental problems)	State indicators (show the current condition of the environment)	Extent	Impact indicators (ultimate effects of changes of state)	Mitigation measures	Monitoring frequency	Responsible entity
						address grievances from local communities around proposed logistic hubs.		

Table 10.6 Transport Strategy Monitoring Programme

Environmental/social aspect	Driving forces (underlying factors influencing a variety of relevant variables)	Pressure indicators (variables which directly cause (or may cause) environmental problems)	State indicators (show the current condition of the environment)	Extent	Impact indicators (ultimate effects of changes of state)	Mitigation measures	Monitoring frequency	Responsible entity
Impacts on the integrity of water bodies	Reduction of bottlenecks of freight traffic and logistics	Road infrastructure development/improvement	Trends in water quality based on transport infrastructure	National	Water quality parameters and freshwater ecosystem health	<ul style="list-style-type: none"> <li>Design and implement good construction management practices including, but not limited to; erosion and sediment control measures, proper drainage system and waste management practices.</li> <li>Undertake regular water quality monitoring for key parameters depending on project related impacts and ensure that the water quality parameters are within national potable water standards limit.</li> </ul>	During the construction period	Ministry of Works and Transport (MoWT) and Directorate of Water Resources Management
Impact on air quality (Greenhouse gas emissions)	Reduction of bottlenecks of freight traffic and logistics.	Emission of Greenhouse gases from vehicles especially from aging or used vehicles.	Based on the results of a pilot cross – sectional spatial assessment of the state of ambient air quality in two	Regional)	Ambient air quality along the NEC (observed exhaust fumes from vehicles)	<ul style="list-style-type: none"> <li>Encourage planting of trees along the highways to act as carbon sinks;</li> <li>Encourage use of fuel-efficient vehicles to reduce emissions of</li> </ul>	Quarterly	Ministry of Works and Transport (MoWT), Ministry of Health (MoH)

Environmental/social aspect	Driving forces (underlying factors influencing a variety of relevant variables)	Pressure indicators (variables which directly cause (or may cause) environmental problems)	State indicators (show the current condition of the environment)	Extent	Impact indicators (ultimate effects of changes of state)	Mitigation measures	Monitoring frequency	Responsible entity
			Ugandan urban centres (Kampala and Jinja, also within the NEC) conducted in 2014, the ambient concentrations of gas phase air pollutant levels (NO <sub>2</sub> , SO <sub>2</sub> and O <sub>3</sub> ) was low.		Air pollution related infections.	greenhouse gases; <ul style="list-style-type: none"> <li>Put in place measures to ensure that greenhouse gas emissions from any machinery and vehicles are minimised and that gas emissions are within limits as stipulated in National Environment (Draft Air Quality) Standards 2006;</li> <li>Undertake regular air quality monitoring of key air pollutants along busy routes/any identified air pollution hotspot with an aim to reverse any negative trends as per the National Environment (Draft Air Quality) Standards 2006;</li> <li>Limiting vehicle fleet age ie put in place controls to stop importation of very old vehicles which are the major contributors to greenhouse gases;</li> <li>Carry out periodic health checks on groups that are at risk to the effects of air pollution particularly the young, the elderly for respiratory and eye diseases such as asthma, lung cancer and conjunctivitis that have been associated with air pollution;</li> <li>Encourage use of rail for freight movement of goods instead of vehicles which are one of the main contributors to GHG emissions from road transport; and.</li> </ul>		and National Environment Management Authority (NEMA)

Environmental/social aspect	Driving forces (underlying factors influencing a variety of relevant variables)	Pressure indicators (variables which directly cause (or may cause) environmental problems)	State indicators (show the current condition of the environment)	Extent	Impact indicators (ultimate effects of changes of state)	Mitigation measures	Monitoring frequency	Responsible entity
						<ul style="list-style-type: none"> <li>Develop programmes to sensitise truck drivers about efficient use of fuel eg switching off engines when stationary.</li> </ul>		
Impact on air quality (dust emissions)	Reduction of bottlenecks of freight traffic and logistics.	Fugitive dust from road construction activities	Based on the results of a pilot cross – section spatial assessment of the state of ambient air quality in two Ugandan urban centres (Kampala and Jinja, also within the NEC) conducted in 2014, the ambient concentrations of Particulate Matter (PM) was high.	Localised (to the project area)	Ambient air quality along the NEC (ambient concentrations of Particulate Matter)	<ul style="list-style-type: none"> <li>Ensure that dust abatement techniques are included in each projects planning for example spraying of water on the excavated area, wetting the soil and materials stock piles, minimise height at which materials are dropped to control dust emission, and covering the load carried by the vehicles to ensure that dusty materials do not leak from vehicles etc.;</li> <li>Establish and enforce speed limits to reduce airborne fugitive dust;</li> <li>Where possible ( eg along the road side) encourage re-vegetation of the disturbed areas to control fugitive dust; and</li> <li>Ensure that the road construction activities are limited within the project foot print to minimise the extent of disturbed area.</li> </ul>	During construction phase	Ministry of Works and Transport (MoWT) and National Environment Management Authority (NEMA)
Noise and vibrations	Reduction of bottlenecks of freight traffic and logistics	Construction activities of the proposed road projects.	Key noise – receptor pathways	Localised	Noise levels exceeding permissible limits set by The National Environment (Noise Standards and	<ul style="list-style-type: none"> <li>Put in place measures to minimise noise and ensure that the noise levels generated are within limits as stipulated in the National Environment (Noise Standard and Control) Regulations, 2003.</li> <li>Ensure that sound acoustics is</li> </ul>	During the construction period	Ministry of Works and Transport (MoWT) and Occupational Safety and Health Department



Environmental/social aspect	Driving forces (underlying factors influencing a variety of relevant variables)	Pressure indicators (variables which directly cause (or may cause) environmental problems)	State indicators (show the current condition of the environment)	Extent	Impact indicators (ultimate effects of changes of state)	Mitigation measures	Monitoring frequency	Responsible entity
					Control) Regulations, 2003.	factored into infrastructure design.		
Biodiversity within protected areas	Modal shift from Truck to rail and pipeline	Spillage of hazardous cargo during transit by rail or pipeline through Kibale National Park and Mabira CFR.	<p>Mabira CFR is a natural habitat of 312 species of trees including the <i>Diphasia angolensis</i> which is not known to exist elsewhere in Uganda and five species which are of international conservation concern. The forest is also an Important Bird Area (IBA) in addition to hosting a wide range of animals, including endangered primates.</p> <p>Kibale National Park is home to a total of 70 mammal species, most famously 13 species of primate including the endangered Chimpanzee in addition to over 325 species of birds. The Park is a major tourist destination in Uganda</p>	localised	Habitat quality/ ecosystem health of the remaining habitat	<ul style="list-style-type: none"> <li>All potential project activities should be consistent with Protected Area Management Plans;</li> <li>Apply, as appropriate, timely environmental impact assessments to any project with the potential to have effects on protected areas, and ensure timely information flow among all concerned parties to this end</li> <li>Assess key threats to protected areas and develop and implement strategies to prevent and/or mitigate such threats</li> <li>Incorporate the polluter pays principle or other appropriate mechanisms in relation to damages to protected areas;</li> <li>Establish IUCN protected species that are likely to be affected by the modal shift and map out their location in relation to intended projects;</li> <li>Establish and implement measures for the rehabilitation and restoration of the ecological integrity of protected areas;</li> <li>Have in place sector specific emergency response plans to be adhered to in the event of major emergencies;</li> <li>Have in place a hazardous materials spill contingency plan which should be adhered to in the event of accidental large</li> </ul>	Before project implementation and Quarterly thereafter or as considered appropriate	Ministry of Works and Transport (MoWT), Directorate of Petroleum, Uganda Wildlife Authority (UWA) and National Forestry Authority (NFA).

Environmental/social aspect	Driving forces (underlying factors influencing a variety of relevant variables)	Pressure indicators (variables which directly cause (or may cause) environmental problems)	State indicators (show the current condition of the environment)	Extent	Impact indicators (ultimate effects of changes of state)	Mitigation measures	Monitoring frequency	Responsible entity
						<p>spillages; and</p> <ul style="list-style-type: none"> <li>Take measures to control risks associated with the introduction and/or spread of invasive alien species in protected areas.</li> </ul>		
	Reduction of bottlenecks of freight traffic and logistics.	Increase in the footprint of linear infrastructure	<p>Mabira CFR is as described above for the modal shift</p> <p>Mpanga CFR contains medium sized primates and birds and is also a tourist attraction.</p>	Localised	Extent of habitat destruction (health of the existing habitat)	<ul style="list-style-type: none"> <li>Obtain the relevant permits for any activity that may be implemented and has the potential to undermine the integrity of such protected areas;</li> <li>All potential project activities should be consistent with Protected Area Management Plans;</li> <li>Apply, as appropriate, timely environmental impact assessments to any project with the potential to have effects on protected areas, and ensure timely information flow among all concerned parties to this end;</li> <li>Map out and establish the location of sensitive and valuable ecosystems such as fauna corridors and watering areas;</li> <li>Assess the baseline status of key biodiversity features, including the distribution and viability of IUCN Red listed species, natural communities and ecological systems;</li> </ul>	Before project implementation and Quarterly thereafter or as considered appropriate	Ministry of Works and Transport (MoWT) and National Forestry Authority (NFA)

Environmental/social aspect	Driving forces (underlying factors influencing a variety of relevant variables)	Pressure indicators (variables which directly cause (or may cause) environmental problems)	State indicators (show the current condition of the environment)	Extent	Impact indicators (ultimate effects of changes of state)	Mitigation measures	Monitoring frequency	Responsible entity
						<ul style="list-style-type: none"> <li>• Develop an action plan for biodiversity conservation, including a detailed list of strategies for abating key threats, a timeline, responsible actors, costs, and indicators for success;</li> <li>• Limit the extent of project infrastructure to the required footprint;</li> <li>• Standard controls should be adhered to when setting up infrastructure to minimise the risk of accidents; and</li> <li>• Position infrastructure/ development, away from identified sensitive and valuable ecosystems.</li> </ul>		
	Enhancement of transport infrastructure	Dredging works along the shores of Lake Victoria (destruction of wetland and potential breeding ground for fish at the shores)	There is already an existing infrastructure at port bell (main port in Uganda) which will be enhanced. Port bell is aligned with a permanent wetland and it is close to Lutembe Bay Ramsar site an important bird area and thus migratory and local birds frequent the site.	Trans-boundary	Extent of habitat destruction (health of the existing habitat)	<ul style="list-style-type: none"> <li>• Obtain the relevant permits for any activity that may be implemented and has the potential to undermine the integrity of such protected areas;</li> <li>• All potential project activities should be consistent with Lake Victoria Environment Management Plan;</li> <li>• Apply, as appropriate, timely environmental impact assessments to any project with the potential to have effects on protected areas such as Ramsar sites, and ensure timely information flow among all concerned parties to this end;</li> <li>• Assess key threats to the protected areas and develop and implement strategies to</li> </ul>	Before project implementation and Quarterly thereafter or as considered appropriate	Ministry of Works and Transport (MoWT), Wetlands Management Department (WMD), NEMA, and Lake Victoria Basin Commission

Environmental/social aspect	Driving forces (underlying factors influencing a variety of relevant variables)	Pressure indicators (variables which directly cause (or may cause) environmental problems)	State indicators (show the current condition of the environment)	Extent	Impact indicators (ultimate effects of changes of state)	Mitigation measures	Monitoring frequency	Responsible entity
						<p>prevent and/or mitigate such threats;</p> <ul style="list-style-type: none"> <li>• Map out sensitive habitats such as Ramsar sites, Important Bird Areas and potential breeding grounds;</li> <li>• Establish and implement measures for the rehabilitation and restoration of the ecological integrity of the protected areas;</li> <li>• Position infrastructure/development away from identified and potential sensitive ecosystems such as Ramsar sites;</li> <li>• Take measures to control risks associated with the introduction and/or spread of invasive alien species in protected areas;</li> <li>• Incorporate the polluter pays principle or other appropriate mechanisms in relation to damages to protected areas;</li> <li>• Standard controls should be adhered to when setting up infrastructure to minimise the risk of accidents; and</li> <li>• Have in place a hazardous material spill contingency plan which should be adhered to in the event of accidental large spillages.</li> </ul>		
Impacts on Public Health and Safety	Reduction of bottlenecks of freight traffic and logistics.	Infrastructure project activities and liaison between project employees and host communities	Densely populated sections along the NEC and also characterised by high accident rates	Regional	Road accident rates  Construction related accidents	<ul style="list-style-type: none"> <li>• Undertake awareness and sensitisation campaigns on public health and safety (especially to do with issues of HIV/AIDS, water and sanitation);</li> </ul>	Quarterly	Ministry of Works and Transport (MoWT), Ministry of Health (MoH)

Environmental/social aspect	Driving forces (underlying factors influencing a variety of relevant variables)	Pressure indicators (variables which directly cause (or may cause) environmental problems)	State indicators (show the current condition of the environment)	Extent	Impact indicators (ultimate effects of changes of state)	Mitigation measures	Monitoring frequency	Responsible entity
					<p>and incidents</p> <p>Prevalence of HIV/AIDS in Project areas of influence.</p> <p>Population influx into project areas.</p>	<ul style="list-style-type: none"> <li>Engage the local governments (especially at district and sub-county level) to prepare community members for any influx of in-migrants (for example, by developing by-laws and community policing systems for effective control of large numbers of in-migrants);</li> <li>Where large construction activities are to be carried out, establish workers' camps mainly to accommodate employees from outside the location of the identified roads. These camps should be fitted with the necessary social service amenities like health, water and sanitation facilities;</li> <li>Give the local community members the first priority in terms of employment opportunities to minimise the number of migrant workers;</li> <li>Undertake Environment, Health and Safety (EHS) induction for all workers, including sub-contractors and casual labourers before commencing work, which should include a full briefing on site safety and rules in order to minimise the occurrence of occupational health and safety related accidents and diseases;</li> <li>Develop and implement waste management plans for each of the proposed infrastructure under this strategy; and</li> </ul>		<p>and Occupational Safety and Health Department.</p>

Environmental/social aspect	Driving forces (underlying factors influencing a variety of relevant variables)	Pressure indicators (variables which directly cause (or may cause) environmental problems)	State indicators (show the current condition of the environment)	Extent	Impact indicators (ultimate effects of changes of state)	Mitigation measures	Monitoring frequency	Responsible entity
						<ul style="list-style-type: none"> <li>• Install clear and visible signage on all roads especially in community areas, around schools and hospitals to minimise the risk of accidents.</li> <li>• Undertake an Environment, Health and Safety (EHS) induction for all workers, including sub-contractors and casual labourers before commencing work, which should include a full briefing on site safety and rules in order to minimise the occurrence of accidents and occupational diseases.</li> <li>• Develop and implement waste management plans for each of the proposed road.</li> <li>• Install clear and visible signage to all roads especially in community areas, around schools and hospitals to minimise the risk of accidents.</li> <li>• Monitor and direct traffic flow by installing traffic controller or signal person.</li> </ul>		

Based on the Strategic Environmental Assessment (SEA) of the Master Plan on Logistics in the Northern Economic Corridor, the following conclusions are made:-

(a) Similar to the findings of the JST, who established that, based on three main criteria (Public Benefit, Public Intervention and Vision), of the combination of alternatives considered as possible development options (A ("Super Double-Core Type" - for concentrating investments on capitals as usual), B ("Double-core with Regional Industrial Promotion Type" - for expanding exports with industrial promotion) and C ("Multi-core with Regional Industrial Development Type" - for expanding exports with industrial promotion and balanced development)) during the Master Plan formulation process, Alternative C was the preferred alternative for the Master Plan, based on the balance of its implications on a set of environmental and social/SEA objectives (specifically: maintain the integrity of water bodies, maintain the integrity of soils and geology conditions, maintain and enhance air quality, minimise noise and vibrations, minimise impact on protected areas, conserve and enhance biodiversity outside protected areas, safeguard public health and safety, minimise land take and disruption of livelihoods, well integrated modes of transport, protect integrity of archaeological and cultural heritage sites and minimise visual impacts), the same alternative was preferred. Alternative C includes strategies for:-

- Expanding exports with industrial promotion and balanced development through the promotion of "Regional Production Centres";
- Promotion of urban and logistics functions of "Secondary Cities" into hubs of business, commerce, service and logistics for surrounding regions with local government involvement; and
- Establishment and enhancement of an efficient transport network.

(b) In line with the SEA appraisal as indicated in (a) above, the impact identification/analysis was therefore based on the preferred Alternative "C", particularly its strategies and respective options.

Only the aspects that were deemed to be negative and 'major' in scope were taken forward for the detailed impact assessment (1)- those aspects that were likely to be majorly positive could only be enhanced as part of the implementation of the Master Plan.

Following assessment of the SEA objectives where major negative impacts will potentially occur during the implementation of the NEC Master Plan, bearing in mind the uncertainties surrounding: the protection of the integrity of archaeological and cultural heritage sites for the regional strategy, industrial strategy and transport strategy, and, minimising land take and disruption of livelihoods for the industrial strategy alternative associated with the promotion of growth drivers to increase exports, reduce imports, and develop local economy, the following findings were made (*Table 11.1*):-

- Despite the strategy to be implemented, the impacts of very large significance are: (i) impacts on the integrity of water bodies and, (ii) impacts on biodiversity in protected areas. This is because:-
- The NEC traverses the Lake Victoria Basin, Lake Edward Basin, Lake Kyoga Basin, Victoria Nile Basin and the Albert Nile Basin. Additionally, due to the interconnected nature of the surface water resources of Uganda, the Corridor (specifically, the road infrastructure associated with it) traverses some of the country's major wetlands (of social and ecological importance) including but not limited to permanent wetlands such as; the Lake Kyoga wetland (Tororo - Gulu -Elegu route) Kibimba wetland in Bugiri along the main Tororo - Kampala - Katuna route and, Lake Mburo wetland along the Kampala - Mbarara route. Also important to consider is the River Nile crossing along the Tororo - Kampala route as well as the Kazinga channel crossing along the Mbarara - Mpondwe route.

(1) As outlined in Section 9 above, the assessment process was preceded by the identification and evaluation of potentially significant environmental impacts likely to be attributed to the implementation of the Master Plan. However, only the significant issues are the focus of any SEA, and the reference point for the level of significance of potential impacts in the current study were the SEA objectives.



- The NEC traverses a number of protected areas including: Lake Mburo National Park along the Kampala - Mbarara - Mpondwe route, Murchison Falls National Park along the Kampala - Gulu route, Central Forest Reserves (Mabira CFR and Busitema CFR along the Tororo - Kampala route, Mpanga CFR along the Kampala-Katuna border, Kalinzu and Maramagambo CFRs along the Mbarara-Mpondwe border) as well as Queen Elizabeth National Park (QENP) along the Mbarara - Mpondwe route. Key avifauna habitats (Important Bird Areas - IBAs) traversed include: R. Nile and Mabira CFR along the Tororo - Kampala route, Lake Mburo National Park along the Kampala - Katuna border route and Queen Elizabeth National park along the Mbarara - Mpondwe route.
- The regional strategy of linking with LAPSSET, Central Corridor and Kampala-Juba-Addis-Ababa-Djibouti Corridor has the highest number of impacts with very large significance (4 impacts), followed by the industrial strategy of promotion of growth drivers to increase export, reduce import and develop local economy (3 impacts), and the transport strategy of reduction of bottlenecks of freight traffic and logistics (2 impacts). This is the case since the proposed projects associated with these options will most likely be implemented in protected areas such as Lake Victoria and CFRs.
- The strategies with the least number of impacts were; the transport strategies of enhancement of transport infrastructure, and, modal shift from truck to rail and pipeline (with 1 impact each), and, the industrial strategy of connecting industrial areas to logistic hubs through Cargo Oriented Development (COD) which had no impacts. This is the case since the shift of cargo to either pipeline or rail transport does not involve direct physical disturbance of the biophysical and social environment other than making use of available infrastructure. The industrial strategy of connecting industrial areas to logistic hubs through Cargo Oriented Development (COD) had no impacts since by its nature it was supporting the establishment of logistics hub strategy.

(c) It is important to note however that, certain strategies within the Master Plan are highly interdependent and one cannot be implemented or realised without the other.

For example, the regional strategy option of linking with LAPSSSET, Central Corridor and Kampala-Juba-Addis-Ababa-Djibouti Corridor, cannot be implemented without the transport strategy option of enhancement of transport infrastructure because, establishment of the inland waterway linkage routes is to some extent, largely dependent on rehabilitation of the ports on the lake, and therefore, the impacts of both these strategies would need to be considered.

(d) The Cumulative Impact Assessment (CIA) - systematic procedure for identifying and evaluating the significance of impacts from multiple activities - as guided by the guidelines for Cumulative Effects Assessment in SEA of Plans (Cooper, 2004) undertaken during this SEA, indicated the following:-

- Cumulative impacts will not be realised in some instances because other actions aimed at promoting developments within the Northern Corridor are already an integral part of the Master Plan interventions.

For example, the following:- under the NCIP (designed to generate sustainable political will to fast track the implementation of the projects identified in the Northern Corridor) - Standard Gauge Railway, ICT Infrastructure, Oil refinery development, Power generation, transmission and interconnectivity, Crude oil pipeline development, Refined petroleum products pipeline development, Commodities exchange, Single customs territory; under Vision 2040 (conceptualised around strengthening the fundamentals of the economy to harness the abundant opportunities around the country) - oil and gas, tourism, minerals, ICT business, trade, water resources, industrialisation, and agriculture. On the other hand, the fundamentals include: infrastructure for (energy, transport, water, oil and gas and ICT), and, under the second National Development Plan (NDPII) (designed to propel Uganda towards middle income status by 2020, in line with the aspirations of Uganda's Vision 2040) - Agriculture, Tourism, Minerals, oil and gas, Infrastructure development.

Therefore, even without implementation of the NEC Master Plan, if these other PPPs are implemented, these impacts will still be realised.

- As indicated in Section 9 above however, there are other PPPs, which if implemented, even within the Master Plan itself alone (eg a combination of different industrial, transport and regional strategy options), will result in cumulative impacts (particularly those affecting the same receptor, or that would need to be implemented at the same time/within a short time period of the other).

This is particularly true for the cumulative impacts arising from the interactions between the following interventions, which would result in the significance ratings indicated in (*Table 11.2*):-

- Linking agricultural productive areas and mineral resources areas through development of secondary cities;
- Linking with LAPSSSET, central corridor and Kampala-Juba-Addis Ababa- Djibouti Corridor;
- Establishment of logistic hubs with ICD and Logistics Centre;
- Connecting industrial areas to logistic hubs through Cargo-Oriented Development (COD);
- Promotion of growth drivers to increase exports, reduce imports, and develop the local economy; and
- Reduction of bottlenecks of freight traffic and logistics; and
  - As is evident from *Table 11.2* the cumulative impacts of very large significance are: impacts on the integrity of water bodies, impacts on soils and geology and impacts on biodiversity within protected areas, mainly as a result of the different strategy options being implemented on the same resource/receptor.

(e) Following the identification of the key environmental and social impacts associated with the implementation of the Master Plan (*Table 11.1*) a number of key recommendations for the minimisation of negative impacts have been identified.

Key among these, based on the components of the environment likely to be most affected by the proposed Master Plan (despite the strategy(ies) chosen for implementation), are the mitigation measures and monitoring recommendations linked to the management of impacts on water resources and biodiversity within protected areas traversed by the NEC.

(f) Linked to (e) above, a number of government Ministries, Departments and Agencies (MDAs) will need to be involved in the monitoring of impacts associated with the implementation of the Master Plan, with the MoWT taking the lead by virtue of its being the proponent of the Master Plan. The monitoring of the implementation of the Master Plan can leverage on the existing monitoring mechanisms (and their associated indicators) of the respective MDAs. It is therefore essential that the SEA capacity is built or strengthened in these institutions, with the same being done with the District Technical Planning Committees (DTPCs) of the NEC districts, so as to allow them to duly undertake their responsibilities during implementation of the Master Plan.

(g) Furthermore, based on a climate change vulnerability assessment, the risks associated with the implementation of the Master Plan were found to include:

**Table 11.1 A. Greenhouse Gas Emissions**

Strategy	Option	Potential Impact on Climate Change
Transport	Modal shift from truck to rail and pipeline.	This strategy option will reduce greenhouse gas emissions in the long term. The trains to be run on the proposed SGR will be electric and transportation of oil via pipeline is likely to require significantly less energy than trucking or using rail – hence reduced emissions.
	Reduction of bottlenecks of freight traffic and logistics.	This strategy option will increase greenhouse gas emissions. Removal of bottlenecks will most likely result in a spike in traffic volumes, especially road traffic that is currently constrained by these bottlenecks which will result in a corresponding increase in emissions from the increased traffic.

Strategy	Option	Potential Impact on Climate Change
Industrial	Promotion of growth drivers to increase exports, reduce imports, and develop the local economy.	This strategy option will increase greenhouse gas emissions as this option is likely to intensify the supply side of the economy. Processes associated with the development and operation of mineral and agricultural production industries, where GHGs are emitted, may result in the release of these emissions into the atmosphere.

Table 11.2 B. Flooding

Strategy	Options	Potential Impact on Climate Change
Transport	Enhancement of transport infrastructure	Development of Paved or impervious infrastructure is likely to result in increased surface water runoff, which may lead to flooding in flood prone areas if the drainage systems associated with the infrastructures are not properly developed to contain surface runoff, and prevent flooding.
	Reduction of bottlenecks of freight traffic and logistics	
Regional	Linking agricultural productive areas and mineral resources through development of secondary cities	Development of secondary cities (currently planned for Mbarara, Gulu, Arua and Mbale) will result in major infrastructural development that increase paved surfaces areas – resulting in increased surface water runoff, which is exacerbated if drainage systems are not properly designed, constructed and maintained. Additionally, development of secondary cities could encroach on green field sites such as wetlands which are supposed to regulate water flow thereby exacerbating the flooding situation.  This is particularly important for Mbarara and Gulu districts – which are prone to flooding.
Industrial	Establishment of logistic hubs with ICD and Logistic Centre	Establishment of logistic hubs is likely to result in an increase in the pave surface area which can also have an effect on runoff speeds/flooding potential.

In light of the above, climate change adaptation strategies such as Sustainable development goal 9 - “Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation” (SDG, 2015), integration of climate into existing infrastructure risk assessments and, climate proof building need to be considered.

With regards to agricultural production areas - promote agricultural best practices, sustainable utilisation of agricultural products and, new technologies in processing and industry to enhance cleaner production.

Traffic management in secondary cities to reduce traffic congestion and emissions and promoting investment in low-carbon emissions, should also be considered.

(h) With regards to the issues raised during stakeholder engagement/consultations – specifically, the questionnaire survey, the following are highlighted, and should therefore be considered during implementation of the Master Plan (issues presented below are applicable to all regions ie along the entire Ugandan section of the NEC):-

<b>Concerns, Issues and Stakeholders Opinion</b>	<b>All meetings (Kampala, Mbarara and Tororo)</b>
Selected socio-economic concerns.	Unemployment and social infrastructure are poor.
How the NEC MP can address the formulation of plans to curb the socio-economic concerns?	Engaging the stakeholders, Physical Planning, Development of infrastructure.
Proposals to address the socio-economic concerns raised.	Stakeholder engagements, Increased funding/mobilisation of funds.
Selected environmental concerns	Soil erosion (moderate), Noise (low).
How can the Master Plan influence formulation of plans to curb environmental concerns?	Through stakeholder consultations.
Selected land use issues.	Industrial accessibility, housing quality, and recreation accessibility are poor.
Proposals to address the identified land use issues.	Majority of the respondents consented to having proposals to address land issues.
Measures being implemented to address the land use issues.	Majority of the respondents were not satisfied with the measures being undertaken to address land issues.
How the Master Plan can address the formulation of plans to curb the land use	Physical planning.

Concerns, Issues and Stakeholders Opinion	All meetings (Kampala, Mbarara and Tororo)
issues.	
Minority groups	Slum dwellers and people with traditional houses, disabled and the poor, Minority groups, specifically the Karamojong.
Preferred mode for cargo transport.	Road transport is the most preferred mode of cargo transport followed by rail transport.
How to improve transport mode efficiencies?	By considering other modes of transport, construction of better roads.
How the NEC MP can influence the formulation of plans to curb the transport mode inefficiencies?	Physical planning, planning to include other modes of transport, and Stakeholder engagement.
Support for the objectives of the Master Plan.	Majority of the respondents consented to supporting the objectives of the NEC MP.
Expectations	Improved infrastructure, Transport, trade, address environmental issues/Climate change, Proper implementation and Physical Planning.

- (i) It is evident from the current report, the key characteristic of SEA is a shifting of focus away from individual projects with local environmental and social impacts to the strategic plans, policies and programmes, with regional and global environmental impacts.

### *Key Recommendations*

In light of the conclusions presented above, it is important to consider the following recommendations as part of the Master Plan interventions:

- i. Establishing linkages between agricultural interventions and agricultural research institutions (such as the Public Agricultural Research Institutes (PARIs) that are under the National Agricultural Research Organisation (NARO)) in the areas that have been earmarked for agricultural interventions. That will foster the transfer of agricultural skills.
- ii. Taking stock of lessons learned from the JICA funded “One Village One Product (OVOP)” programme that was implemented by the Ministry of Trade and Industry, so as to inform the promotion of growth driver’s intervention of the Master Plan.

- iii. Factoring some of the mitigation measures in the supporting strategies (policy strategies) of the Master Plan.
- iv. Ensuring the performance indicators of the Master Plan have environmental and social considerations factored into them in line with the SEA.
- v. Any uncertainties related to the impact assessment should be ironed out at project EIA level or related downstream environmental assessment for projects that will emanate from the Master Plan.
- vi. In light of the finalisation of SEA guidelines for Uganda, sectoral SEA guidelines should be considered building on some of the sector EIA guidelines as a way of contributing to informed environmental decision making at sectoral level.
- vii. The monitoring framework for the SEA and the Master Plan should be harmonised where possible as changes in one could affect the other.
- viii. A multi-agency monitoring committee should be formed so as to ensure efficient monitoring of the Implementation of the Master Plan based on the SEA monitoring programme.
- ix. For agricultural interventions, it would also be useful to take stock of lessons learned from the Community Agricultural Infrastructure Improvement Programmes and form synergies with the recently launched CAIIP-3 that will be focusing on some of the NEC programme districts of Mbarara and Kasese, among others.
- x. Green logistics or green freight programmes such as that promoted by the Global Logistics Emissions Council (GLEC) should be promoted as a way of not only selecting more fuel-efficient modes, routes and carriers but also for identifying modalities of increasing efficiency and reducing costs.

Finally, SEAs are designed to complement, not replace EIAs within the planning process therefore, it is imperative that EIAs for specific infrastructure projects are undertaken and that, these follow the SEA of the NEC Master Plan to ensure that local/project-specific issues are evaluated in detail, and the 'broader' mitigation measures under this Master Plan considered



*ANNEX A      STAKEHOLDER ENGAGEMENT PLAN (SEP)*

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# 1 INTRODUCTION

## 1.1 THE NORTHERN ECONOMIC CORRIDOR

The Northern Corridor is defined as all the transport infrastructures and facilities providing a gateway through Kenya to the landlocked economies of Uganda, Rwanda, Burundi and Eastern DR Congo. It also serves South Sudan since it broke away from Khartoum.

The Corridor is multi-modal: consisting of road, rail, pipeline, and inland waterways transport, and is recognised as a significant corridor for logistics in East Africa.

The main road network runs from Mombasa Sea Port through Kenya and Uganda to Rwanda and Burundi, and to the Democratic Republic of Congo (DRC). The road network also links Kenya and Uganda to Juba in South Sudan.

The importance of the Northern Corridor is increasing, as the current combined transit and trans-shipment traffic through the Corridor has been growing at a rate of 20 percent annually. However, there are some obstacles in the Northern Corridor such as, inadequate infrastructure, poor interconnectivity of transport modes, long delays (stagnation) of cargo at the port and broad post, and lack of goods to transport for the return trip from the inland area to Mombasa port. These obstacles raise the transport cost within the Corridor, which accounts for about 30 percent of the value of the goods. The high transport cost is one of the major obstructive factors that hinders economic development of the region, especially the inland area. In addition, a new Standard Gauge Railway Line and Oil Pipeline from Uganda to Kenya are projects that will significantly have a positive impact on the logistics in the Corridor, and accordingly all the projections of freight movement should be updated in a timely manner.

It is in this context that the Government of Kenya (GoK) and Government of Uganda (GoU) requested the Government of Japan (GOJ) to implement a project to formulate a Master Plan on logistics in the Northern Corridor in order to promote regional development. Concurrently, the GoK and GoU also requested the GOJ for a project on the Northern Corridor which shares the same goal and outputs.

In response to the requests of the GoU and GoK, on behalf of the GoJ, JICA in October and November 2014, dispatched a “Detail Design Formulation Team for the Project”. The team proposed the application of the project concept known as the as the Northern Economic Corridor (NEC) since the Project should cover not only logistics, but also regional development along the Northern Corridor. The GoU and GoK agreed with this concept and signed the Record of Discussion with JICA for implementation of the Project.

The objective of the Project therefore, is to formulate a Master Plan on Logistics for the NEC, along with an integrated regional development strategy consistent with sub-regional development plans and national development plans. The target year of the Master Plan is 2030 and the Target areas for the Master Plan will cover the following routes which are part of NEC and its surrounding areas:

- Main Route
  - Mombasa – Nairobi – Tororo – Kampala – Katuna – Kigali (Rwanda)
- Sub-routes
  - Eldoret - Nadapal – Juba (South Sudan)
  - Tororo - Gulu – Elegu – Juba
  - Kampala- Gulu – Elegu – Juba
  - Mbarara- Mpondwe- Kisangani (DRC)

## **1.2** *PURPOSE OF THE STAKEHOLDER ENGAGEMENT PLAN (SEP)*

The purpose of the SEP is to ensure that a consistent, comprehensive, coordinated and culturally appropriate approach to consultation is undertaken for the SEA that fulfils all of the relevant legal and regulatory commitments. To this end, the SEP:

- Outlines the approach and plans to be adopted and implemented for engagement, showing how the engagement process will integrate into the rest of the SEA process;
- Identifies **stakeholders** and **mechanisms** through which they will be included in the process;
- Serves as a way to **document** the process; and

- Identifies where there will be **requirements for the Ministry of Works and Transport (MoWT)** and their engagement process.

This SEP is intended to be a 'live' document and will be updated throughout the SEA process. Following completion of the SEA it is expected that this document will be updated by the MoWT for subsequent phases based on the principles outlined within this Document.

### 1.3 *STRUCTURE OF THE SEP*

The remainder of the document is structured as follows:

- **Section 2** outlines the key standards and legislation guiding engagement.
- **Section 3** outlines the approach to the engagement process
- **Section 4** presents stakeholders identified to date
- **Section 5** details the engagement activities undertaken to date
- **Section 6** presents an overview of how records of the process will be kept and monitored

### 1.4 *OBJECTIVES OF THE STAKEHOLDER ENGAGEMENT*

The objectives of engaging stakeholders during the SEA process and beyond include:

- **Ensuring understanding:** An open, inclusive and transparent process of appropriate engagement and communication will be undertaken to ensure that stakeholders are well informed about the proposed Master Plan as it develops. Information will be disclosed as early and as comprehensively as possible and appropriate.
- **Involving stakeholders in the assessment:** Stakeholders will be included in the scoping of issues, the assessment of impacts, the generation of mitigation and management measures and the finalisation of the SEA report. They will also play an important role in providing local knowledge and information for the baseline to inform the impact assessment.

- **Building relationships:** Through supporting open dialogue, engagements will help establish and maintain a productive relationship between the Master Plan and stakeholders. This will support not only an effective SEA, but will also strengthen the existing relationships and build new relationships between the MoWT and stakeholders.
- **Ensuring compliance:** The process is designed to ensure compliance with both local regulatory requirements and international best practice.

One of the key outcomes of engagement should be free, prior and informed consultation of stakeholders, where this can be understood to be:

- **Free:** engagement free of external manipulation or coercion and intimidation;
- **Prior:** engagement undertaken in a timely way, for example the timely disclosure of information; and
- **Informed:** engagement enabled by relevant, understandable and accessible information.

## 2 **KEY STANDARDS AND LEGISLATION GUIDING STAKEHOLDER ENGAGEMENT**

### 2.1 **INTRODUCTION**

The stakeholder engagement process has been designed to ensure compliance with Ugandan legislative requirements. This section therefore presents the relevant standards and legislation identifying the key Ugandan and international requirements for engagement.

### 2.2 **UGANDAN LEGISLATIVE REQUIREMENTS**

In Uganda, there is no binding guideline for SEA at the moment. According to the National Environment Management Authority (NEMA) “the National Environment Act” is under review and will include a mandatory provision for SEA and it will probably be enacted in 2016, and NEMA is in the process of hiring a consultant to finalize the draft SEA guidelines (as of July 2015).

Environmental legislation pertinent to stakeholder engagement includes; the Constitution of the Republic of Uganda, 1995 and the National Environment Act, Cap 153.

#### 2.2.1 ***The Constitution of the Republic of Uganda, 1995***

This is the supreme law in the country and it among other things calls on the Government of Uganda to promote sustainable development and public awareness of the need to manage, promote and protect the rational use of natural resources in a balanced and sustainable manner for present and future generations.

#### 2.2.2 ***The National Environment Act, Cap 153***

This is the most significant legislation pertaining to environmental management in the Uganda. The Act sets out the general legal framework and policy objectives for the sustainable management of Uganda’s environment.

Although the Act is silent about SEA, Section 2(b) under the principles of environment management that are addressed in the Act, encourages the maximum participation by the people of Uganda in the development of policies, plans and processes for the management of the environment.

## 2.3 *INTERNATIONAL REQUIREMENTS*

In addition to aligning to national standards, the SEA will be in line with the JICA guidelines (2010).

### 2.3.1 *Japan International Cooperation Agency (JICA) Guidelines for Environmental and Social Considerations, 2010*

Section 2.4, *Consultation with Local Stakeholders*, states that:

- In principle, project proponents etc. consult with local stakeholders through means that induce broad public participation to a reasonable extent, in order to take into consideration the environmental and social factors in a way that is most suitable to local situations, and in order to reach an appropriate consensus. JICA assists project proponents etc. by implementing cooperation projects as needed.
- In an early stage of cooperation projects, JICA holds discussions with project proponents etc. and the two parties reach a consensus on frameworks for consultation with local stakeholders. . In order to have meaningful meetings, JICA encourages project proponents etc. to publicize in advance that they plan to consult with local stakeholders, with particular attention to directly affected people.
- In the case of Category A projects, JICA encourages project proponents etc. to consult with local stakeholders about their understanding of development needs, the likely adverse impacts on the environment and society, and the analysis of alternatives at an early stage of the project, and assists project proponents as needed.
- In the case of Category B projects, JICA encourages project proponents etc. to consult with local stakeholders when necessary.
- JICA encourages project proponents etc. to prepare minutes of their meetings after such consultations occur.



## 2.4 *INTERNATIONAL GUIDELINES*

### 2.4.1 *Organisation for Economic Co-operation and Development (OECD), 2006, Applying Strategic Environmental Assessment*

The Organisation for Economic Co-operation and Development is a unique forum where the governments of 34 democracies with market economies work with each other, as well as with more than 70 non-member economies to promote economic growth, prosperity, and sustainable development. The OECD Guidelines for Multinational Enterprises are far reaching recommendations for responsible business conduct that 44 adhering governments – representing all regions of the world and accounting for 85percent of foreign direct investment – encourage their enterprises to observe wherever they operate.

In line with OECD, (2006), effective and sustained public engagement is vital for policy-level SEA. All relevant stakeholders should be given an opportunity to engage in the SEA process and to identify potential impacts and management measures.

The generic questions for SEAs in relation to stakeholder engagement are:

- Have all relevant stakeholders had an opportunity to engage in the SEA process and to identify potential impacts and management measures?
- In particular, have the views of civil society, particularly affected communities, been included? What has been their influence in the development of the proposed PPP?

This section presents the approach to engagement that has been designed to comply with the national and international standards described in *Chapter 2*.

The SEA engagement process involves four key phases, namely:

- Scoping consultation;
- Baseline data gathering;
- SEA Study; and
- Disclosure

A summary of the objectives and activities for each phase is listed in *Table 3.1* below:

**Table 3.1** *Phases of Engagement*

<b>Phase</b>	<b>Objective</b>	<b>Key Activities</b>	<b>Key Outputs</b>
Scoping Engagement	<ul style="list-style-type: none"> <li>• To meet key stakeholders and inform them about the Master Plan and SEA.</li> <li>• To generate feedback on the SEA Report being developed, including the scope, approach and key issues to be investigated further as part of the SEA.</li> <li>• To consult key stakeholders on the next steps in the SEA process.</li> </ul>	<ul style="list-style-type: none"> <li>• Notification and communication on the Master Plan and associated SEA through:               <ul style="list-style-type: none"> <li>○ meetings and workshops with key stakeholders</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Engagement tools.</li> <li>• Record of engagement undertaken to date.</li> </ul>
Baseline Data Gathering	<ul style="list-style-type: none"> <li>• To collect baseline data through a variety of methods.</li> </ul>	<ul style="list-style-type: none"> <li>• Engagement for the purposes of baseline data gathering through:               <ul style="list-style-type: none"> <li>○ Dissemination of a Background Information Document (BID) and presentation describing the Master Plan.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Records of engagement activities undertaken to date.</li> <li>• Socio-economic baseline chapter of SEA.</li> </ul>
SEA Engagement	<ul style="list-style-type: none"> <li>• To provide stakeholders with updated Master Plan information.</li> <li>• To discuss the identified impacts and proposed mitigation measures with stakeholders.</li> </ul>	<ul style="list-style-type: none"> <li>• Meetings with key stakeholder groups including:               <ul style="list-style-type: none"> <li>○ Local government authorities/ districts traversed by the NEC;</li> <li>○ Industry and Trade Associations;</li> <li>○ NGOs and CSOs;</li> <li>○ Ministries, Departments and Agencies (MDAs); and</li> <li>○ Development Partners, Regional/International bodies.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Draft SEA Report.</li> <li>• Engagement tools.</li> <li>• Record of engagement undertaken to date.</li> </ul>
Disclosure	<ul style="list-style-type: none"> <li>• To notify stakeholders of the submission of the final report to the JICA Study Team and MoWT</li> </ul>	<ul style="list-style-type: none"> <li>• Provide the Final SEA Report to stakeholders.</li> </ul>	<ul style="list-style-type: none"> <li>• Final SEA Report.</li> </ul>

### 3.1 *ON-GOING ENGAGEMENT AND POST SEA ENGAGEMENT*

#### 3.1.1 *On-Going Engagement*

The engagement activities with all stakeholders are necessary for:

- Securing the necessary stakeholder buy-in for the planned interventions;
- Understanding the socio-economic dynamics of the operating environment;
- Shaping the decision making process through inclusivity;
- Establishment of robust communication channels;
- Laying a foundation for sustainable results; and
- Providing the requisite information.

During the scoping phase, detailed SEA phase as well as the validation stage, the stakeholders identified (*Table 3.2*) were grouped into three clusters and a joint stakeholder consultation meeting held for each cluster for both phases respectively. The grouping was based on the physical location of the stakeholders mainly aimed at easing transport to the respective meeting venues.

**Table 3.2: Stakeholder Groups Identified to Date**

Group	Stakeholder group Consulted	Date and venue of Consultation (scoping)	Date and venue of Consultation (Detailed SEA)	Date and venue of Consultation (Validation stage)
Kampala	<ul style="list-style-type: none"> <li>• Industry and Trade associations;</li> <li>• NGOs and CSOs;</li> <li>• Government Ministries, Departments and Agencies (MDAs);</li> <li>• Development Partners;</li> <li>• Professional Bodies;</li> <li>• Chief Administrative Officers (CAOs) and District Natural Resources Officers (DNROs) for districts that are traversed by the NEC (Kampala, Wakiso, Mukono, Buikwe, Jinja, Luwero, Nakasongola, Masindi, Mpigi and Kiryandongo) that are close to Kampala.</li> </ul>	16 <sup>th</sup> November 2015 at Hotel Africana	16 <sup>th</sup> May 2016 at Fairway Hotel	17 <sup>th</sup> Jan 2017 at Fairway Hotel
Mbarara	CAOs and DNROs for districts near Mbarara, traversed by the NEC, specifically Kalungu, Masaka, Lwengo, Lyantonde, Kiruhura, Mbarara, Ntungamo, Kabale, Kisoro, Sheema, Bushenyi, Rubirizi, Kasese, Rukungiri and Isingiro	18 <sup>th</sup> November 2015 at Lake View Hotel	18 <sup>th</sup> May, 2016 at Lake View Hotel	16 <sup>th</sup> Jan 2017 at Lake View Hotel
Tororo	CAOs and DNROs from Districts nearby Tororo Municipality and are traversed by the NEC, namely Tororo, Mbale, Bukedea, Kumi, Ngora, Soroti, Amuria, Alebtong, Lira, Kole, Oyam, Gulu, Amuru, Busia, Bugiri, Mayuge and Iganga.	20 <sup>th</sup> November 2015 at Rock Classic Hotel	20 <sup>th</sup> May, 2016 at Green Meadows Hotel	20 <sup>th</sup> Jan 2017 at Green Meadows Hotel

### 3.1.2

#### *Post SEA Engagement*

MoWT as the PPP Owner is committed to continue engaging actively with stakeholders throughout the life of the Master Plan, from the stages of planning, through implementation.

Plans and activities implemented during the SEP will therefore feed into and inform on-going stakeholder engagement, ensuring that two-way dialogue with those affected, both positively and negatively by the NEC is maintained.

The aim will be to ensure that MoWT remains in contact with all interested parties and cognisant of their concerns, and that these are addressed in an effective and timely manner. At each stage a detailed schedule of activities and events will be developed and disseminated so that people know how to interact with and participate in the Master Plan process.

## 4 MASTER PLAN STAKEHOLDERS

### 4.1 INTRODUCTION

According to the JICA guidelines 2010, “*stakeholders*” are individuals or groups who have views about cooperation projects, including local stakeholders (affected individuals or groups (including illegal dwellers) and local NGOs).

For the purposes of this plan, a stakeholder is defined as any individual or group who is potentially affected by the Master Plan, or who has an interest in the Plan and its potential impacts. It is therefore important to establish which organisations, groups and individuals may be directly or indirectly affected (positively and negatively) by the Master Plan and which might have an interest in the plan.

It should be noted that stakeholder identification is an on-going process, requiring regular review and updating as the Master Plan progresses.

### 4.2 STAKEHOLDER IDENTIFICATION AND MAPPING

In order to develop an effective SEP it is necessary to determine exactly who the stakeholders are and understand their priorities and objectives in relation to the Master Plan. By classifying and analysing the stance, influence, and interests of stakeholders it will be possible to develop an engagement approach for each stakeholder group which is tailored to meet their needs.

For the Master Plan, stakeholders have been, and will continue to be identified on an on-going basis by:

1. Identifying the different categories of stakeholders who may be affected by or interested in the Master Plan; and
2. Identifying specific individuals or organisations within each of these categories taking into account:
  - The geographical area over which the Master Plan may cause impacts (both positive and negative) over its lifetime, and therefore the localities within which stakeholders could be affected; and

- The nature of the impacts that could arise and therefore the types of government bodies, academic and research institutions and other bodies who may have an interest in these issues.

Details of individual stakeholders have been compiled in a stakeholder database (*Annex A1*). The database will be maintained throughout the SEA engagement process and is a 'living document' which will be expanded as the Master Plan formulation process continues to evolve. In particular new stakeholders are also expected to be drawn to the Master Plan through continuous engagement activities and unsolicited contacts made with the Master Plan formulation team (JICA Study Team).

### **4.3**                    *STAKEHOLDERS IDENTIFIED TO DATE*

This section describes the stakeholder identified to date (*Table 4.1*), and reflects information captured in the stakeholder database.



**Table 4.1: Stakeholders Identified to Date**

Stakeholder Category	Stakeholder Group	Connection to the Master Plan	Stakeholders
Government	MDAs	National Government is of primary importance in terms of establishing policies, plans and programmes	Ministry of Works and Transport Ministry of Health Ministry of East African Community Affairs Ministry of Energy and Mineral Development Ministry of Water and Environment Ministry of Finance, Planning and Economic Development Ministry of Trade and Industry Ministry of Gender, Labour and Social Development (MGLSD) Ministry of Local Government Ministry of Tourism, Wildlife and Antiquities Ministry of Agriculture, Animal Industry and Fisheries Uganda National Roads Authority (UNRA) Uganda Revenue Authority (URA) Uganda Police Force Uganda Investment Authority (UIA) Uganda National Bureau of Standards (UNBS) National Environment Management Authority (NEMA) National Planning Authority (NPA) National Forestry Authority (NFA) Directorate of Uganda Immigration Department of Urban Planning Uganda Road Fund (URF) Uganda Railways Corporation (URC) Rift Valley Railways (RVR) Uganda Bureau of Statistics (UBoS) Uganda Export Promotions Board

Stakeholder Category	Stakeholder Group	Connection to the Master Plan	Stakeholders
	Key Local Government Authorities	Local governments are also of primary importance as they are responsible for implementation of legislation, and development plans and policies at the district level	Chief Administrative Officers and District Natural Resource Officers (DNRO) and for the following districts: Tororo, Mbale, Bukedea, Kumi, Ngora, Soroti, Amuria, Alebtong, Lira, Kole, Oyam, Gulu, Amuru, Busia, Bugiri, Mayuge, Iganga, Jinja, Buikwe, Mukono, Wakiso, Kampala, Mpigi, Kalungu, Masaka, Lwengo, Lyantonde, Kiruhura, Mbarara, Ntungamo, Kabale, Kisoro, Sheema, Bushenyi, Rubirizi, Kasese, Kampala, Luwero, Nakasongola, Masindi, and Kiryandongo.
Trade and Industry Associations		Associations with direct interest in the Master Plan, and its social and environmental aspects and that are able to influence the Master Plan through trading activities	Kampala City Traders Association (KACITA) Uganda Small scale Industries Association Uganda National Chamber of Commerce and Industry (UNCCI) Uganda Freight Forwarders Association (UFFA) Uganda Manufacturers Association (UMA) Uganda Importers & Exporters Association (UGIETA)
Civil Society	Community Based Organisations Community of Other Associations Research and Academic Institutions	Organisations with direct interest in the Master Plan, and its social and environmental aspects and that are able to influence the Master Plan directly or through public opinion. Such organisations may also have useful data and insight and may be able to become partners to the Master Plan in areas of common interest.	<ul style="list-style-type: none"> <li>• Safe Way Right Way Uganda</li> <li>• Makerere University Business School</li> </ul>
Professional bodies		Bodies with direct interest in the Master Plan, and its social and environmental aspects and that are able to influence the Master Plan through advocacy	National Association of Professional Environmentalists (NAPE) Uganda Association of Impact Assessment (UAIA) Engineers' Registration Board (ERB) Uganda Association for Impact Assessment (UAIA) <ul style="list-style-type: none"> <li>• Economic Policy Research Centre</li> </ul>
Development Partners,	Regional/International Bodies		JICA Uganda

Stakeholder Category	Stakeholder Group	Connection to the Master Plan	Stakeholders
Non-Governmental Organisations (NGOs)	National Local	NGOs with direct interest in the Master Plan, and its social and environmental aspects and that are able to influence the Master Plan directly or through public opinion.	Trademark East Africa Private Sector Foundation Uganda (PSFU)

This section provides a review of the engagement activities conducted during the Scoping and detailed SEA engagement phases, as well as a summary of the key outcomes.

The objective of engagement was to:

*a) Scoping*

- introduce the Master Plan and PPP Owner;
- introduce the SEA including the stakeholder engagement team and outline the objectives of the SEA and stakeholder engagement process;
- consult stakeholders on the next steps in the SEA process; and
- understand stakeholders concerns regarding the Master Plan as well as opportunities for stakeholders to engage with the Master Plan formulation process.

*b) Detailed SEA*

- To re-introduce the Master Plan as well as the SEA and inform the stakeholders about the proposed Master Plan strategies, subcomponents and potential impacts.
- To obtain stakeholder views, and concerns regarding the proposed Master Plan and potential impacts.
- To integrate stakeholder views and recommendations into measures to minimise and/or mitigate negative impacts and enhance positive impacts as well as improve the Master Plan formulation process.

## **5.1**

### **ENGAGEMENT ACTIVITIES**

The stakeholders interested in the Project are:

- Government ministries that are concerned with the Project or involved in the approval processes;
- Government Departments and Agencies that play a regulatory role among other things;

- Civil society organisations or Non-Governmental Organisations;
- Professional bodies;
- Trade and Industry Associations;
- Local government authorities/ districts traversed by the NEC; and
- Development Partners and Regional/International bodies/ institutions.

As earlier mentioned in *Table 3.1*, the SEA engagement activities involve four key phases, namely:

- scoping consultation;
- baseline data gathering;
- SEA Study; and
- Disclosure.

## 5.2

### *SCOPING AND DETAILED SEA CONSULTATION*

The Scoping and detailed SEA study meetings were held with key stakeholders at the national and regional level (refer to *Annex A2* for detailed minutes, attendance registers and photos taken during stakeholder consultations). The consultations took place between 16<sup>th</sup> and 20<sup>th</sup> November 2015 (scoping) and 16<sup>th</sup> and 20<sup>th</sup> May 2016 (detailed SEA study) (*Table 3.2*) in:

- Kampala for the stakeholders in central Uganda,
- Mbarara for the stakeholders in the western region, and
- Tororo for the Northern and Eastern regions of Uganda.

During these meetings, the stakeholders were introduced to the Master Plan and the SEA. A questionnaire was also administered during the consultative meetings.

A Background Information Document (BID) providing brief details of the Master Plan in a clear and accessible format and invitation for comments was also provided to all stakeholders as a way of collecting the relevant baseline data that would inform the SEA (refer to *Annex A3* for the questionnaire and BID).

The Key outcomes are summarised in *Section 5.3*.

### 5.3

#### *KEY OUTCOMES*

*Table 5.1* and *Table 5.2* below that follow present a summary of key attitudes, concerns and expectations raised during the scoping phase and detailed SEA study rounds of stakeholder consultation meetings. All the issues raised will inform the conduct of detailed studies for the SEA as well as development of the NEC Master Plan.

**Table 5.1 Key Attitudes, Concerns and Expectations Raised During the Scoping Stakeholder Consultations**

Meeting	Key attitudes, concerns and expectations
All	There is a need to present a detailed description of the NEC including: <ul style="list-style-type: none"> <li>• The transport options being considered (road, railway etc.);</li> <li>• Details of each option; for example, will the Standard gauge railway be electrical?</li> <li>• Contents of the Master Plan; for example, does it include design of roads?</li> </ul>
	Engagement with local community members is not included, when will it be considered? The local communities will be directly affected and therefore need to be considered.
	Share project related documents (including presentations) with all key stakeholders
	There is need to consider alternative logistics sub-routes in the assessment; an example is the Kampala – Mpondwe route via Mubende and Fort Portal.
	Need to show how the SEA will be finalised and implemented when Uganda’s SEA guidelines are still in draft form.
Kampala	Relevant literature should be reviewed and used to inform the study.
	Some truck drivers use alternative routes to dodge the weigh bridges; these routes are not designed to handle heavy vehicles like trucks and as a result, the roads get spoilt quickly.
	Confirm all the districts traversed by the corridor.
	Highlight the importance of the NEC Master Plan to the stakeholders.
	The use of a parallel model SEA process will be expensive, explore other models.
	At what stage will NEMA get involved in the SEA?
	The Parallel model SEA approach is good.
	Need to present details of the information that the SEA study team will be collecting.
	The scope of work is not very clear; however, it is better to incorporate in climate change issues.
	Some of the vehicles used on these roads are not in good mechanical condition; this should be considered.
You need to engage political leaders.	
Mbarara	Identification of strategies to ensure that population growth linked with increased number of NEC users is sustainable.
	There is need to periodically review the SEA; possibly during the implementation of the Master Plan.
	It is important to bring all key stakeholders on board.
	It is important to investigate and consider the linkage between electricity infrastructure and the NEC Master Plan.
	It is important to incorporate the railway (standard gauge railway) in the Master Plan.
	How was the name, Northern Economic Corridor arrived at?
	There is need to devise means of addressing trans-boundary issues to ensure successful implementation of the NEC Master Plan.
	There is need to harmonise driving rules in all the countries within the NEC.
	Will the Master Plan/ SEA address the issue of Green House Gas (GHG) emissions?
There is need to support local governments in the development and implementation of the respective District Development Plans	

Meeting	Key attitudes, concerns and expectations
	which are consistent with the contents of the NEC Master Plan.
Tororo	There is a need to present a detailed overview/ history of the NEC to enable people relate it with past developments, for example, the great north road from Mombasa to Juba via Tororo.
	It is important to include sanitary facilities along the NEC in the Master Plan; currently, some people ease themselves in open places along the roads.
	There is need to clearly define the timeframe for the implementation of the Master Plan.
	There is need to clearly present the differences between SEA and EIA to ensure that stakeholders do not confuse the two.
	Clearly define the scope of the SEA; for example, does it cover all the routes?
	The NEC concept is good.
	Consider the ecosystems that will be impacted when carrying out the SEA.
	Consider the requirements of international treaties and conventions that Uganda has ratified when conducting the SEA.
	Investigate the consequences of oil spills.
	Present assumptions for the study, if any.
	Need to assure stakeholders that their views will be considered and influence the design of the Master Plan.
	The issue of drainage should be considered when designing the Master Plan; it is becoming a major issue.
	Other stakeholders like the Bishops and cultural leaders also need to be consulted.
	The linkage between the NEC and African Union (AU) related corridors/networks is not clear.
	Socio-economic issues especially in towns along the NEC should be considered. Other key socio-economic issues include prostitution, local people's attitudes, compensation & resettlement and land ownership.
	The Geopolitical situation in neighbouring countries should be considered as part of the SEA as this could affect the implementation of the Master Plan.
	Many management plans for EIAs have not been implemented; how will the SEA be implemented?
	Expand the scope of the Master Plan to other roads; this will help in achievement of the overall objective of triggering economic growth.
	How will the issue of increased traffic as a result of increased traffic volumes be addressed?
	Impact mitigation needs to be incorporated in the SEA; this did not come out clearly in the presentation.
	Make reference to well-planned towns when designing the Master Plan; for example, Iganga town is well planned.
	The issue of climate change should be considered.
	Environmental interventions like tree planting along the highways need to be considered.
	It is important to harmonise the legal requirements within the countries traversed by the NEC.



**Table 5.2** *Key Attitudes, Concerns and Expectations from the detailed SEA study Stakeholder Consultations*

Meeting Location	Key attitudes, concerns and expectations
Kampala	In line with the proposed secondary cities, adaptation is better since climate change is a reality
	There is need to consider urban mobility plans and also the need to fit satellite cities into the corridor
	Look into vegetation from the physical environment perspective.
	Include recreation centres and leisure parks in the socio-economic baseline.
	Gender responsiveness should also be highlighted in the SEA.
	How integrated is the Corridor? It seems to be focussing on roads and it is not clear what type of pipelines are being referred to since there is also a plan of an oil pipeline from the Albertine Graben to Buloba.
	Include communication in the social baseline.
	There were a lot of uncertainties; is it possible to build different scenarios shaping the Master Plan.
	Will the SEA team come up with a variety of issues which can be grouped into key issues which can be easily digested?
	The routes go as far as the border of other countries but only Uganda and Kenya have been involved and would therefore like to see the involvement of other countries such as Rwanda, Congo and South Sudan.
	Mbarara is being proposed to be an urban city under Uganda support to Municipal Infrastructure Development (USMID) and the physical development plans are being prepared, how this will be harmonised?
	One of the key stakeholders at the Mbarara meeting should be the consultant preparing the physical development plan.
	How will the SEA be able to pick the impact of each development plan in the NEC?
	SEA is not about the final report but how much it guides decision making and the features of the Master Plan that have been informed by the SEA.
	Is each country producing its own SEA and to what extent are these SEAs aligned?
	What is the source of funding for the Master Plan? i.e., is it from the national resources, international resources or pooling of resources?
	What is the timing for implementation of the Master Plan?
	Mombasa port is already congested. Why not consider Lamu port especially along the LAPSSSET corridor?
Mbarara	Looking at the Economic indicators for East Africa, the region is moving forward and at one point we shall have a boom or blast.
	Is it possible at this moment for the Master Plan to give the number of lanes expected along the major highways?
	Local Forest Reserves (LFR) should be taken into consideration during the SEA.
	Since we face a challenge of vandalism especially of metal related infrastructure, planning should consider the safety of this infrastructure in the face of urbanisation.
	The SEA team should consider reviewing literature contained in the Wetland Atlas of Uganda and the Disaster Preparedness Master Plan for Uganda.
	The residents of Kasese are speculating land take as a result of implementing the Master Plan and have therefore started

Meeting Location	Key attitudes, concerns and expectations
	<p>occupying the land under speculation, how this will be handled?</p> <p>The SEA team should shade more light on rural urban migration as a positive impact of the Master Plan.</p> <p>The Master Plan process should consider cascading development in line with the Local Development Plans.</p> <p>The plan gives us the ability to transform, shall we have an idea of what we are aiming at?</p> <p>Consider the undisciplined society which does not respect common user rights.</p> <p>Is there connectivity of the transport strategy i.e. from road to railway and airport?</p> <p>Is the Master Plan looking at increasing production by using fertilisers? We need to look at how the plan will increase production by using fertilisers.</p> <p>Under COMESA arrangements, transboundary markets will be established, the master Plan should take keen interest in this since other African agencies have interest in developing our countries.</p>
Tororo	<p>Increase in traffic demand results in increase in traffic congestion and this can be solved by bypasses. Is there any plan for a bypass in Mbale, Lira and Gulu?</p> <p>Will the Master Plan incorporate tree planting along the highways?</p> <p>What will be done to the population along the railway line especially in highly seismic areas?</p> <p>We can get SEA guidelines to guide future PPPs.</p> <p>We need to look at infrastructure and relate it to production.</p> <p>Unless we relate productivity and planning, the trucks will go back to Mombasa empty.</p> <p>How has the SEA taken into consideration the factors that led to the collapse of the Metre Gauge Railway?</p> <p>With the fragile security system, there is a need to be sure the SGR will be protected.</p> <p>We are concerned about the identification of the key strategic areas by the Master Plan.</p> <p>How has the ministry considered implementation of the Master Plan visa vis District Development Plans?</p> <p>Will the Ugandan section of the NEC remain agricultural or will there be some manufacturing?</p> <p>Would like to see a detailed Master Plan presentation about the Resettlement Action Plan.</p> <p>Cross cutting issues like Gender, HIV/AIDS, the elderly etc. should be incorporated in the SEA.</p> <p>The ministry should design the SEA communication strategies.</p> <p>The study is deliberately ignoring the political dimension which is led by increasing income division and thus the potential for conflict is high. Marginalised groups should be looked into.</p> <p>Myths should be considered.</p> <p>vulnerabilities are left open</p> <p>Beyond GIS, ground truthing should be done.</p> <p>Several plans are being implemented. This should be shown for us to internalise.</p> <p>In regards to flooding, the Master Plan should improve the drainage system such that this water can be tapped for productivity.</p>

Meeting Location	Key attitudes, concerns and expectations
	Registered land is presented as a constraint yet un registered land is more challenging as a constraint due to insecurity.
	Regional production centres such as Karamoja region have been left out. This area has National parks but there was no deliberate effort to improve the region.
	What are the strategies for popularising the Master Plan?
	The Master Plan and SEA have timelines and therefore there may be no time for internalising both reports. The two should be merged into one report.

## 5.4

### VALIDATION ENGAGEMENT

The validation meetings were held with key stakeholders at the national and regional level. The workshops took place between 16<sup>th</sup> and 20<sup>th</sup> Jan 2017 (*Table 3.2*) in:

- Kampala for the stakeholders in central Uganda,
- Mbarara for the stakeholders in the western region, and
- Tororo for the Northern and Eastern regions of Uganda.

During these meetings, the MoWT reintroduced the Master Plan and the findings of the SEA process contained in the SEA report were presented to the stakeholders where the main objective was to review the draft SEA and comments and reviews from the stakeholders at the validation stage are summarised in *Section 5.5*.

## 5.5

### KEY OUTCOMES

*Table 5.3* below that follows present a summary of key concerns and expectations raised at the validation stage of stakeholder consultation meetings (refer to *Annex A4* for detailed minutes, attendance registers and photos taken during stakeholder consultations). The comments and reviews from the stakeholders were used to inform and update the Final SEA report.

**Table 5.1** *Key Attitudes, Concerns and Expectations from the Validation Consultations*

Meeting Location	Key attitudes, concerns and expectations
Kampala	Different Ministries and agencies will be responsible for the implementation of specific projects. Has the Master Plan considered integrating the other stakeholders?
	When shall we have the updated Master Plan available to us?
	The content of National Development Plan II and the Master Plan are similar. Is cabinet not yet aware since the NDP is already implemented?
	Has the plan taken into consideration the improvement of transport within the cities? In planning, strategic stop-overs for Lorries and cargo cars should be identified and developed.
	Stop-over nodes are not emphasised for the comfort of travellers. Note that the desired tourist is the high end traveller but for Uganda, we do not feel their dollar simply because their money is left in the hands of multinationals who own the high end hotels. The desirable traveller is an 18-35 year old who has a tendency to stay with the local people and can buy personal effects from the local people. Can you put in place strategies to attract these people
	The NEC initiative is for three countries i.e. Rwanda, Kenya and Uganda, however, the emphasis in the presentation was on Kenya and Uganda. Most of the projects stop in Kampala. How can we bring on board a partner whom we don't see any immediate benefit in terms of projects? By 2022, the projects will be in Kampala without an extension to Kigali which is part of the NEC. This could force the Rwandese government to look at other options. How can we keep other partners on board? The Master Plan should explore more on how to incorporate and take advantage of governance issues for the various heads of state.
	The SGR is set up to promote imports and evacuate as much as possible from the Mombasa Port. Most of the exports come from areas outside Kampala. SGR will take a long time to get to areas outside Kampala. If we are to promote these exports we need a network to do this along with the MGR. I would wish to see the plans for MGR for Kasese.
	There is need to align the SGR construction timelines for different countries so that the service is used as soon as soon as construction is done rather than wait for other areas to be completed which will leave the resource redundant.
	The Master Plan is silent on the current situation. The MGR has a lot of bottlenecks and the Plan is silent about it. What is RVR doing?
	We expect a big volume of goods with the construction of SGR. The Master Plan should provide a linkage between what volume of goods to expect and the type of ICDs to be built.
	How will the Master Plan be harmonised with other physical development plans such as the existing local government plans and the Regional physical development for the Northern Corridor?
	How will SGR be used? Various companies own many tracks and will be in competition thus rendering the SGR a white elephant project?
	What is the plan for single Vs Dual carriage for the SGR?
	Is there a plan to connect to the LAPSSSET
Is it possible to attach monetary value to the alternative options and the mitigation measures?	

Meeting Location	Key attitudes, concerns and expectations
	<p>Is there a section in the SEA that provides for rehabilitation of the environmental effects that could accrue as a result of implementation of the suggested projects</p> <p>I could not identify a clear linkage between the findings and national and international regulation to include bridging the gap so that they satisfy the international donor performance standards to secure project funding.</p> <p>The Master Plan and the SEA were done concurrently. How can the SEA inform the Master Plan to integrate these environment and management plans at that level?</p> <p>The analysis of the alternatives was biased towards expert judgement basing on available literature or theory yet there are some other kinds of tools and Applications like Multi-criteria Evaluation tools as decision support tools in collaboration with GIS which could be very powerful in coming up with the best option.</p> <p>Some references in the document were made to Kenya. Kenyan laws and international frameworks should be considered and included for reference especially where there are issues of shared resources like water bodies.</p> <p>Concerning GHG emission, Agriculture was not mentioned in the report and yet it is one of the sectors that contribute to GHG emissions according the Climate Change Department. This should be considered due to proposed commercialised agriculture.</p> <p>Technology, equipment and materials for implementing the projects should not be sourced from outside and yet they are available in Uganda which is important for the growth of Uganda’s industries as well as creating employment.</p> <p>There is need to reflect on the due diligence requirements/guidelines for each funding of the funding bodies like World Bank, IFC, African Development Bank, and Arab development Bank to improve on the SEA report.</p> <p>The is need to improve the document to include a section on Environment and Social Management Framework as an appendix or a section in the documents.</p> <p>Some archaeological/cultural sites are the hindrances to development so should be given paramount priority in documentation.</p>
Mbarara	<p>Within the Master Plan framework, is there planned activity for urban growth in the northern corridor?</p> <p>The import export ratio for Uganda is affecting the balance of trade and this is worrying.</p> <p>Have you done a cost benefit analysis of the routes to determine which is the most viable?</p> <p>Previously, the routes were not definite and land speculation was raised as an issue especially in Kasese were people are targeting resettlement compensation.</p> <p>What are the timelines for the Master Plan?</p> <p>The Corridor spans more than one country. Is the Master Plan considered as one single project or each country is responsible for a specific part? Can’t problems in one country derail the whole process?</p> <p>Our economy is characterised by low production levels, dwindling fish stocks, degraded ecosystems, redundant labour e.t.c. Do you envisage the possibility of good returns on the investment into the northern corridor?</p> <p>The physical planning process is very weak. We have no smart towns in Uganda since the roads and the physical layout of buildings is wanting. There is need for proper physical planning so that the policy is followed during town development. No go zone areas should be established.</p> <p>How will the resources be distributed? We as government want the community to come up, can we define means to improve</p>

Meeting Location	Key attitudes, concerns and expectations
	<p>the west and central?</p> <p>The planning of the urban centres should consider the increased production and population increase. The Government should identify and make projections before the problem occurs.</p> <p>Do we have a better plan of water transport within Lake Victoria and other Lakes e.g. Albert and Edward? The recommendations should improve transport between Uganda and the neighbouring countries and improve the minor cities. That way, trade between Congo and Uganda will improve.</p> <p>Have you done a deeper analysis of reduced truck along the road since the tracks are owned by a few individuals who are also politicians?</p> <p>Has the Master Plan looked at developing Solar energy as an alternative?</p> <p>How will the public be protected from the impacts of construction and projects along the corridor?</p> <p>The roads in Uganda are narrow, increasing the cost of transport. We are experiencing a challenge of encroachment on road reserve in Uganda which makes future road expansion difficult. Road reserves need to be protected for easy expansion of the road where need be. What is the MOWT planning to secure the reserves?</p> <p>With regard to public health and safety, transport has an impact on air emissions and health related problems. Why can't we make it a policy that for every kilometre of tarmac constructed, a number of trees should be planted along the road?</p> <p>Has the SEA identified the different industrial activities and analysed the demand for water resources and biodiversity. Are the proposals sustainable?</p> <p>Include Ramsar sites in your assessment of protected areas.</p> <p>There is exclusion of biodiversity outside the protected areas- the document should be guiding the EIAs to come. Recommendation should be given that the EIA should look at biodiversity outside protected areas as well as underground biodiversity.</p> <p>Why isn't the vision of the NEC linked to the National Planning Authority objectives instead?</p>
Tororo	<p>By harmonising the construction phase of the SGR for completion by 2021, does it mean Kenya should slow down?</p> <p>Other sectors that feed into the Master Plan should be fast tracked, for example rice production is impossible with such severe drought and in that case we need to think of irrigation.</p> <p>You make mention of regional coordination, but the emphasis is on Kenya and Uganda, going to DRC and Rwanda. Why is Tanzania left out? Are they failing to cooperate?</p> <p>What is the cost of Master Plan and what is the share of each country?</p> <p>What is the progress of SGR in Uganda?</p> <p>The LAPSEET bypasses Uganda. If it is to benefit the East African countries, it should penetrate Uganda.</p> <p>Industrialisation will result into higher demand for power by the industries and so a strategic plan needs to be put in place to boost power supply in the Northern Corridor.</p> <p>Why hasn't the Master Plan been popularised in Uganda?</p> <p>What happened to the Tororo- Gulu Meter Gauge Railway rehabilitation Plan?</p> <p>This is an approach that is looking at policy and yet we do not have guidelines? How safe is this from the legal perspective?</p> <p>Where there are movement of vehicles, accidents are bound to occur. Can I assume that has been captured under public health</p>

Meeting Location	Key attitudes, concerns and expectations
	and safety?
	You recommend inter-agency coordination between Ministries, Departments and Agencies. Do you mean local governments should be excluded?
	There are a number of urban centres without physical development plans. Your recommendations should suggest development of these physical development plans.
	In the assessment, reference is made to future projects. Is it by inference or observation? Otherwise why wouldn't you restrict the study to what you have seen?
	In your assessment of cumulative impacts, biodiversity outside protected areas was not assessed.
	No mention has been made of political instability yet it could jeopardise the Master Plan. Was this out of scope for the SEA or was it deliberate?
	It would have been important if we had received a copy of the report before this workshop.
	What are the timelines for the Master Plan?



It will be important to monitor and report on the ongoing stakeholder engagement efforts to ensure that the desired outcomes are being achieved, and to maintain a comprehensive record of engagement activities and issues raised.

As part of the SEP the following has been recorded:

- the stakeholder database; and
- records of all consultations held.

These records and outputs are appended to the SEA report and will be updated as the Master Plan progresses and further phases of engagement are undertaken.

## ***ANNEX A1 STAKEHOLDER DATABASE***

**Annex A1: Stakeholder Database**

## Kampala Stakeholders

	Organisation/ Institution	Representative	Contact
1.	Buikwe District	Chief Administrative Officer	Buikwe Kiyindi Road Buikwe Town Council P.O. Box: 03, Lugazi Telephone: +256 776 637145 Email: ramathans@yahoo.co.uk
2.	Department of Urban Planning		Plot 13 – 15 Parliament Avenue P.O BOX 7096 Kampala, Uganda Telephone (256)–414 – 373511 E-mail contactus@muhud.go.ug
3.	Directorate of Citizenship and Immigration Control		Plot 75 Jinja Road P.O. Box 7165/7191 Kampala, UGANDA Email: <a href="mailto:info@mia.go.ug">info@mia.go.ug</a> Tel +256 414258355/+256 414231641 Fax: +256 414 231063
4.	East African Development Bank		EADB Building, Plot 4 Nile Avenue P.O Box 7128, Kampala +256 417 112900/+256 312 30000 Email: <a href="mailto:enquiry@eadb.org">enquiry@eadb.org</a>
5.	Economic Policy Research Centre		Plot 51, Pool Road, Makerere university P.O BOX 7841, Kampala, Uganda Telephone +256-414-541-023/4 E-mail eprc@eprcug.org Fax +256-41-541022
6.	Engineers' Registration Board (ERB)		Plot 2, Gloucester Avenue, Kyambogo P.O. Box 29267, Kampala.

			Email: <a href="mailto:erb@utlonline.co.ug">erb@utlonline.co.ug</a> Web site: <a href="http://www.erb.go.ug">www.erb.go.ug</a>
7.	European Union (EU), Uganda office		Crested Towers Building 15th Floor-20th Floor Plot 17-23 Hannington Road P.O.BOX 5244 Kampala Tel: +256414701000, +256752756911 Telfax: +256(0) 414 233 708 Email: <a href="mailto:Delegation-Uganda@eeas.europa.eu">Delegation-Uganda@eeas.europa.eu</a> Website: <a href="http://www.deluga.ec.europa.eu">www.deluga.ec.europa.eu</a>
8.	Japanese International Corporation Agency (JICA) Uganda		JICA Uganda Office 4th Floor, Course View Towers Plot 21 Yusuf Lule Road, Nakasero, Kampala UGANDA Mailing Address : P.O. Box 12162, Kampala, Uganda Tel : +256-41-4254326 , 4340186 Fax : +256-41-434631
9.	Jinja district	Chief Administrative Officer	Plot No: 1, Busoga Square P.O. Box: 1551, Jinja Telephone: +256 752 891166 Email: <a href="mailto:nansasik.christine@yahoo.com">nansasik.christine@yahoo.com</a>
10.	Kampala City Traders Association (KACITA)		P. O. Box 30794 3 <sup>rd</sup> Floor Royal Complex, Plot 16B, Market Street/Burton Street Kampala, Uganda Landline: +256 (0)414 297 594 Email; <a href="mailto:kctaug2000@yahoo.com">kctaug2000@yahoo.com</a> Website: <a href="http://www.kacita.org">http://www.kacita.org</a>
11.	Kampala district	Chief Administrative Officer	Plot No: 1-3 Floor/Suite No: B114 SIDEA- City Hall Sir Appollo Kagwa Road Telephone: +256-414-231446 P.O. Box: 7010 Email: <a href="mailto:wtinhamu@yahoo.com">wtinhamu@yahoo.com</a>

			Website: <a href="http://www.kcc.go.ug">www.kcc.go.ug</a>
12.	Kiryandongo District	Chief Administrative Officer	Kiirya Street P.O. Box: 137, KIGUMBA Email: <a href="mailto:miriambigirwa@gmail.com">miriambigirwa@gmail.com</a>
13.	Luwero District	Chief Administrative Officer	P.O. Box: 78, Luwero Telephone: +256 712 965944 Email: <a href="mailto:panoramah@yahoo.com">panoramah@yahoo.com</a>
14.	Makerere University Business school		M118 Port Bell Road P.O BOX 1337, Nakawa, Kampala, Uganda Telephone +256 04141 338120 E-mail <a href="mailto:Info@Mubs.Ac.Ug">Info@Mubs.Ac.Ug</a> , Fax +256 0414 505921
15.	Masindi District	Chief Administrative Officer	P.O. Box: 67 Telephone: +256 465 23231 Fax: +256 465 20100 Email: <a href="mailto:godfreybyarugaba@yahoo.com">godfreybyarugaba@yahoo.com</a> Website: <a href="http://www.masindi.go.ug">www.masindi.go.ug</a>
16.	Ministry of Agriculture		Berkely Lane, Entebbe P.O BOX 102, Entebbe, Uganda East Africa Fax +256 414 255183 E-mail <a href="mailto:ps@agriculture.go.ug">ps@agriculture.go.ug</a>
17.	Ministry of East African Community Affairs		2nd & 9th Floor, Postel Building Plot, 67/75 Yusuf Lule Road, Kampala P.O. Box 7343, Kampala, Uganda. General Telephone +256 0414 340100 Telephone +256 0414 348171 <a href="http://www.meaca.go.ug">http://www.meaca.go.ug</a>
18.	Ministry of Energy and Mineral Development		Kampala Road, P.O. Box 7270, Kampala, Uganda Phone; 0414-349342
19.	Ministry of Energy and Mineral Development (MEMD)		Amber House, Plot 29/33, Kampala Road P.O BOX 7270, Kampala, Uganda Phone +256- 414- 311111

			Fax +256 414 234 732 Email psmemd@energy.go
20.	Ministry of Finance, Planning and Economic Development		Ministry of Finance, Planning & Economic Development Plot 2/12 Apollo Kaggwa Road P.O. Box 8147 Kampala TEL: (256)-414-707000 FAX: (256)-414-230163
21.	Ministry of Gender, Labour and Social Development (MGLSD)		Plot 2, Simbamanyo House P.O. Box 7136 George St, Kampala, Uganda +256 256414347854 <a href="mailto:ps@mglsd.go.ug">ps@mglsd.go.ug</a>
22.	Ministry of Health		P.O. Box 7272 Kampala Uganda Plot 6 Lourdel Road, Wandegaya
23.	Ministry of Local Government		Postal Address: P.O Box 7037 Kampala, Uganda. Phone: +256-414-341224 Fax: +256-414-258127/347339 E-mail: <a href="mailto:ps@molg.go.ug">ps@molg.go.ug</a>
24.	Ministry of Tourism, Wildlife and Antiquities		Ministry of Tourism, Wildlife and Antiquities P. O. Box 4241 Kampala Rwenzori Towers 2nd Floor, Plot 6 Nakasero Road. Kampala, Uganda.
25.	Ministry of Trade and Industry		Ministry of Trade, Industry and Cooperatives Plot 6/8, Parliamentary Avenue P.O. Box 7103 Kampala, Tel: 256-41-314000 Uganda +256-414 314 268/0414 314 000
26.	Ministry of Water and Environment (MoWE)		Ministry of Water and Environment P.O BOX 20026, Kampala, Uganda Telephone +256 414 505942 Email <a href="mailto:mwe@mwe.go.ug">mwe@mwe.go.ug</a>

27.	Ministry of Works and Transport		Off Jinja Road/ Old Port Bell Rd, P.O. Box 10, Entebbe Kampala, Uganda Phone: +256 256414320101/9 Email: <a href="mailto:mowt@works.go.ug">mowt@works.go.ug</a>
28.	Mpigi District	Chief Administrative Officer	Mpigi District Local Government P.O BOX 172, Mpigi, Uganda Fax 0392 715 397 Email <a href="mailto:info@mpigi.go.ug">info@mpigi.go.ug</a>
29.	Mukono District	Chief Administrative Officer	Mukono District Local Government P. O. Box 110 Mukono Uganda email Address: <a href="mailto:mukono@mukono.go.ug">mukono@mukono.go.ug</a>
30.	Nakasongola District	Chief Administrative Officer	P.O. Box: 1 Telephone: 0392735604 Fax: 0392254604 Email: <a href="mailto:kaggwarbrt@yahoo.com">kaggwarbrt@yahoo.com</a>
31.	National Association of Professional Environmentalists (NAPE)		Plot 7138 Entebbe Road, Block 256, Zana P. O. Box 29909 Kampala, Uganda Phone +256 414 530181/ +256 772 492362
32.	National Environment Management Authority (NEMA)		Plot 17/19/21, Jinja Road, NEMA House P.O BOX 22255, Jinja Road Kampala Uganda Telephone 256-414-251064 Fax 256-414-257521 Email <a href="mailto:info@nemaug.org">info@nemaug.org</a>
33.	National Forestry Authority		Address: Plot 10/20, Spring Road/P.O. Box 70863, Kampala Spring Rd, Kampala, Uganda Phone: <a href="tel:+256312264035">+256 31 2264035</a>
34.	National Planning Authority (NPA)		Plot 17, Hannington Road, 4th Floor, Short Tower, Crested Towers Building P.O. Box 21434, Kampala Kintu Road (Siad Barre) Avenue, Kampala, Uganda Phone: +256 41 4250212
35.	Private Sector Foundation Uganda (PSFU)		43 Nakasero Hill Road



			Kampala P.O. Box 7683 Uganda Phone: +456 312263850, +256 312261850
36.	Rift Valley Railways (RVR)		Kampala Railway Station, Station Road. P.O. Box 7891, Tel: +256 312 314 700, 312 265 203. Kampala (U).
37.	Safe Way Right Way Uganda	Barbara Mwanje	<a href="mailto:barbara.m@safewayrightway.org">barbara.m@safewayrightway.org</a> Tel: 0772778094
38.	Trademark East Africa		3rd Floor, Course View Towers, Plot 21, Yusuf Lule Road Kampala, Uganda +256 312 223 400 <a href="mailto:infouganda@trademarkea.com">infouganda@trademarkea.com</a>
39.	Uganda Association for Impact Assessment (UAIA)		P.O Box 26553, Kampala-Uganda Uganda House Building 3 <sup>rd</sup> Floor, Office No. 3.11 Tel: +256-312-106678 E-mail: <a href="mailto:Uganda.eia@gmail.com">Uganda.eia@gmail.com</a> / <a href="mailto:info@uaia.or.ug">info@uaia.or.ug</a> Website: <a href="http://www.uaia.or.ug">http://www.uaia.or.ug</a>
40.	Uganda Bureau of Statistics (UBoS)		Plot 9 Colville Street, P. O. Box 7186 Kampala, Uganda Tel: +256-41-706000 Fax: +256-41-237553 Email: <a href="mailto:ubos@ubos.org">ubos@ubos.org</a> Website: <a href="http://www.ubos.org">http://www.ubos.org</a>
41.	Uganda Export Promotions Board (UEPB)		2 <sup>nd</sup> Floor, UEDCL Tower Plot 37, Nakasero Road P.O. Box 5045 Kampala-Uganda <a href="mailto:info@ugandaexports.go.ug">info@ugandaexports.go.ug</a>

			Phone: +256 414230250
42.	Uganda Freight Forwarders Association (UFFA)		Kanjokya House, Second Floor, Suite 11 Plot 90 & 92 Kanjokya Street, Kamwokya P.O. Box 28904 Kampala, Uganda tel; (+256) 0-414-531670 Mail: <a href="mailto:info@ugandafreightforwarders.com">info@ugandafreightforwarders.com</a> , <a href="mailto:uffainfo@gmail.com">uffainfo@gmail.com</a>
43.	Uganda Importers and Exporters Association (UGIETA)		William St P.O. Box 23579 Kampala, Uganda Phone:+256 41 4347398
44.	Uganda Investment Authority (UIA)		Plot 22B Lumumba Avenue, TWED Plaza P O Box 7418 Kampala, Uganda Tel: +256-414-301 000 Fax: +256-414-342 903 Email: <a href="mailto:info@ugandainvest.go.ug">info@ugandainvest.go.ug</a> Web: <a href="http://www.ugandainvest.go.ug">www.ugandainvest.go.ug</a>
45.	Uganda Manufacturers Association (UMA)		28/34 Coronation Avenue UMA Show Ground - Lugogo, Kampala 6966, Uganda
46.	Uganda National Bureau of Standards (UNBS)		Plot M217 Nakawa Industrial Area Bypass Link, Bweyogerere Industrial & Business Park, Kyaliwajala Road, Bweyogerere-Buto P.O Box 6329 Kampala, Uganda Tel: 0414-505995/0414-222369 Toll free: 0800133133 E-mail: <a href="mailto:info@unbs.go.ug">info@unbs.go.ug</a> / <a href="mailto:info@unbs.go.ug">info@unbs.go.ug</a>
47.	Uganda National Chamber of Commerce and Industry (UNCCI)		Plot 1A, Kira Road, P.O. Box 3809, Kampala, Uganda Phone:+256 31 2266323
48.	Uganda National Meteorology Authority (UNMA)		Head office, 3rd and 10th Floor Postel Building Plot 67-75 Clement Hill Road, Kampala, Uganda Telephone +256 414 251 798

			Fax +256 414 251 797 Email <a href="mailto:info@unma.go.ug">info@unma.go.ug</a>
49.	Uganda National Road Authority (UNRA);		Plot 5, Lourdel Road, Nakasero P.O. Box 28487. Kampala, Uganda Telephone +256 312 233 100; +256 414 318 000 Fax +256 414 232 807; +256 414 347616 <a href="http://www.unra.go.ug">Website: http://www.unra.go.ug</a>
50.	Uganda Police Force		Katalima Road, Naguru Telephone: (256) 414233814/ (256) 414250613 Fax: (256) 414255630 Email: <a href="mailto:info@upf.go.ug">info@upf.go.ug</a>
51.	Uganda Railways Corporation (URC)		Plot 53, Nasser Road Kampala Telephone; +25641258051 Fax; +25641344405
52.	Uganda Revenue Authority (URA)		Uganda Revenue Authority (URA) 5th Street Nakawa Industrial Area P.O. Box 7279, Uganda, Kampala Phone; (+256)414 334228
53.	Uganda Road Fund (URF)		5th Floor, Twed Towers, Plot 10, Kafu Road Nakasero, P.O Box 7501, Kampala Tel + 256 (0) 414 257 072 / + 256 (0) 312 229 009 E-mail address: <a href="mailto:info@roadfund.ug">info@roadfund.ug</a>
54.	Uganda Small Scale Industries Association		USSIA Building, UMA Show Grounds Lugogo, Kampala - Uganda P. O. Box 7725 Kampala - Uganda Tel: +256 414 286838 Fax: +256 414 220285 E-mail: <a href="mailto:info@ussia.or.ug">info@ussia.or.ug</a> Website: <a href="http://www.ussia.or.ug">www.ussia.or.ug</a>

55.	Wakiso District	Chief Administrative Officer	Wakiso District Local Government P.O Box 7218, Wakiso-Uganda
56.	World Bank, Uganda Office		Rwenzori House 1 Lumumba Avenue P.O. Box 4463 Kampala, Uganda Contact +256-414-230-094/ +256-414-302-248

### Tororo Stakeholders

	Organisation/ Institution	Representative	Contact
1.	Tororo District	Chief Administrative Officer	Tororo District Local Government P.O. Box 1 Tororo
2.	Mbale District	Chief Administrative Officer	Plot No: 17-35 Lyada Road P.O. Box: 931, Mbale Telephone: 0454 437369 Email: nikipaul@yahoo.com
3.	Bukedea District	Chief Administrative Officer	P.O. Box: 5026, Bukedea Telephone: +256 772 067077 Email: fexamai@gmail.com
4.	Kumi District	Chief Administrative Officer	Kumi District Local Government P.O. Box 1, Kumi <a href="mailto:info@kumi.go.ug">info@kumi.go.ug</a>
5.	Ngora District	Chief Administrative Officer	P.O. Box 31 Ngora
6.	Soroti District	Chief Administrative Officer	Plot No 5, Gweri Road P.O. Box: 61 Telephone: +256-454-461004 Fax: +256-454-461030

			Email: ewenahaggai@yahoo.com
7.	Amuria District	Chief Administrative Officer	Amuria District P.O.Box 1 Amuria
8.	Alebtong District	Chief Administrative Officer	Alebtong District Local Government Office Of The Chief Administrative Officer, P.O. Box 316, Lira. Tel 0772464193
9.	Lira District	Chief Administrative Officer	P.O. Box 49, Lira Telephone: +256(0473) 420219 Fax: 256 (0473) 420219 Uganda, East Africa
10.	Kole District	Chief Administrative Officer	P.O. Box: 419, Lira Telephone: +256 772 520557 Email: sakwir@yahoo.co.uk
11.	Oyam District	Chief Administrative Officer	P.O Box 30 Loro, Oyam. Phone: +256-772-086600 Email: <a href="mailto:info@oyam.go.ug">info@oyam.go.ug</a> , <a href="mailto:planning@oyam.go.ug">planning@oyam.go.ug</a> , <a href="mailto:production@oyam.go.ug">production@oyam.go.ug</a>
12.	Gulu District	Chief Administrative Officer	Gulu District Local Government P.O Box 2, Gulu Plot 4-8 Air Field Road
13.	Amuru District	Chief Administrative Officer	P.O. Box: 1074, Amuru Telephone: +256 392859508 Email: amurulocalgovt@ppdaprovers.ug
14.	Busia District	Chief Administrative Officer	District headquarters, P.O Box 124, Busia.
15.	Bugiri District	Chief Administrative Officer	P.O Box 37, Bugiri-Uganda
16.	Iganga District	Chief Administrative Officer	P.O. Box: 358, Iganga Telephone: +256 782 868692 Email: kmarggie@gmail.com
17.	Mayuge District	Chief Administrative Officer	

## Mbarara Stakeholders

	Organisation/ Institution	Representative	Contact
1.	Bushenyi District	Chief Administrative Officer	P.O. Box: 195 Telephone: +256 701 867866 Email: robertonuwagira@yahoo.com
2.	Kabale District	Chief Administrative Officer	P.O. Box: 5, Kabale Telephone: +256 782 770370 Email: twongyeirwej@yahoo.com
3.	Kalungu District	Chief Administrative Officer	Kalungu District Local Government P.O.Box 1350 Kalungu Uganda
4.	Kasese District	Chief Administrative Officer	Kasese District Local Government P.O Box 250, Rukooki, Kasese, Uganda Tel: 256 392888974 Mob: +256 772 424623/ +256 705 199116/ +256 753 273 329 Email: info@kasese.go.ug / kasese1@gmail.com
5.	Kiruhura District	Chief Administrative Officer	P.O. Box: 5, Rushere Telephone: +256 782 178800 Email: rejedidiah@gmail.com
6.	Kisoro District	Chief Administrative Officer	District Administration HQRS P.O. Box: 123 Telephone: 0486430107 Fax: 048630147 Email: benkwizera@yahoo.com
7.	Lwengo District	Chief Administrative Officer	Lwengo District Headquarters P.O. Box 1396, Masaka Uganda Tel: +256 787 923964 Email: lwengo9@gmail.com
8.	Lyantonde District	Chief Administrative Officer	P.O. Box: 10 Telephone: +256 712 613296 Email: <a href="mailto:kamsben@yahoo.com">kamsben@yahoo.com</a>

			Website: <a href="http://www.lyantonde.go.ug">www.lyantonde.go.ug</a>
9.	Masaka District	Chief Administrative Officer	Telephone: +256 702 382034 P.O. Box: 634, Masaka Email: <a href="mailto:zimazecharles@yahoo.com">zimazecharles@yahoo.com</a> Website: <a href="http://www.masaka.go.ug">www.masaka.go.ug</a>
10.	Mbarara District	Chief Administrative Officer	Floor/Suite No: C/G/2 P.O. Box: 1, Mbarara Telephone: +256 485 214233 Email: <a href="mailto:nkundahbd@gmail.com">nkundahbd@gmail.com</a>
11.	Ntungamo District	Chief Administrative Officer	Telephone: +256-485-424023 P.O. Box: 1, Ntungamo Email: <a href="mailto:m.gertu@yahoo.com">m.gertu@yahoo.com</a> Website: <a href="http://www.Ntungamo.go.ug">www.Ntungamo.go.ug</a>
12.	Rubirizi District	Chief Administrative Officer	PO.BOX 239, Bushenyi Telephone: +2560703399669
13.	Sheema District	Chief Administrative Officer	Sheema District P.O. Box 160, Kabarole

***ANNEX A2 MINUTES OF THE STAKEHOLDER MEETING***



**Annex A2: Stakeholder Meetings Minutes, attendance register and photos**

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1 DETAILED STAKEHOLDER CONSULTATION MEETINGS

1.1 KAMPALA MEETING

1.1.1 KAMPALA MEETING MINUTES

S/N	DETAILS OF THE PERSON RAISING THE QUESTION	QUESTION/COMMENT	ANSWER/RESPONSE
1	Gerald Harry Ekinu, Transport Officer, Ministry of Works	In line with the proposed secondary cities, adaptation is better since climate change is a reality	This was noted as a compliment
2		Consider urban mobility plans and also the need to fit satellite cities into the corridor	This was noted
3	JulietAtino, Senior Environment Officer at the MoWT	The SEA consultants should to look into vegetation from the physical environment perspective.	Vegetation from the physical point of view, i.e. green belts will be looked into.
4		Include recreation centres and leisure parks in the socio-economic baseline.	This was noted
5		Gender responsiveness should also be highlighted in the SEA	Gender responsiveness will also be looked into.
6	Joseph Kobusheshe, Acting Principal Environment Officer at the Ministry of Energy and Mineral Development	How integrated is the Corridor? It seems to be focussing on roads; it is not clear what type of pipelines are being refereed to since there is also a plan of a pipeline from the Albertine Graben to Buloba.	Ryosuke Ogawa explained that the pipeline being referred to the oil pipeline for importation.
7		He also inquired of the possibility of including communication in the social baseline.	This was noted
8		There are a lot of uncertainties; from the Terms of Reference, is it possible to build different scenarios shaping the Master Plan.	Different alternatives have been considered for the Master Plan
9		Will the SEA team come up with a variety of issues which can be grouped into key issues which can be easily digested	Key issues were presented
10	William Tayebwa, Environmental Officer Ministry of East African Affairs	The routes go as a far as the border of other countries but only Uganda and Kenya have been involved. I would like to see the involvement of other countries such as Rwanda, Congo and South Sudan.	Ryosuke Ogawa explained that it is the Government of Uganda and Government of Kenya that requested for the Master Plan. In addition, one of the consultees is the Northern Corridor Transit Transport Authority. There is also a proposal that at the time of validation, different countries have different people involved/present
11	JacquelyneNassuna, Sociologist Ministry of Lands, Housing and Urban development	Mbarara is being proposed to be an urban city under USMID and the physical development plans are being prepared. How this will be harmonised?	The SEA team will get in touch with the physical planner for Mbarara district for enlightenment
12		One of the key stakeholders at the Mbarara meeting should be the consultant preparing the physical development plan	Edgar Mugisha responded that it will be good to interface with the consultant.
13	AbubakerNamaraOchali Concession Manager, Uganda Railways Corporation	How will the SEA be able to pick the impact of each development plan in the NEC?	Edgar explained that the SEA team is looking at the impacts of each strategic option
14	Aidan J Asekenye, Environmental Officer, Kampala Capital City Authority	SEA is not about the final report but how much it guides decision making. What features of the Master Plan have been informed by the SEA?	Edgar responded that once the Master Plan is completed, projects will come up and before September, it will be clear which projects will come up and the SEA will inform the Master Plan then.
15		Is each country producing its own SEA and to what extent tare theses SEAs are aligned?	Every country is producing its own SEA but we are working closely with each other.
16	GodfreySsali, Policy analyst, Uganda Manufacturers Association	What are the source of funding for the Master Plan? i.e., is it from the national resources, international resources or pooling of resources?	Ryosuke Ogawa explained that funding of the Master Plan is a Public Private Partnership.
17		What is the timing for implementation of the Master Plan?	The target year for the Mater Plan is 2030
18		We are going back to Mombasa which is already congested, why not consider Lamu port especially along the LAPSSET corridor?	Ryosuke Ogawa explained that the current study focusses on how to improve the NEC although linkage with other countries is important
19		One of the concerns that was highlighted in the previous meeting was the lack of political will. Does this still hold?	Edgar Mugisha responded that the lack of political will was raised specifically by the Tororo stakeholders during the first round of stakeholder meetings and could just not be overlooked at this time

1.1.3

*Kampala Meeting Photos*



1.2 MBARARA MEETING

1.2.1 MBARARA MEETING MINUTES

S/N	DETAILS OF THE PERSON RAISING THE QUESTION	QUESTION/COMMENT	ANSWER/RESPONSE
1	Turyatunga Patrick, the DNRO for Sheema District	Looking at the Economic indicators for East Africa, the region is moving forward and at one point we shall have a boom blast.	Ryosuke Ogawa explained that the traffic predictions are based on Vision 2040.
2		Is it possible at this moment for the Master Plan to give the number of lanes expected?	
3		Local Forest Reserves (LFR) should be taken care of during the SEA.	
4		Since we face a challenge of vandalism especially of metal related infrastructure, planning should consider the safety of this infrastructure in the face of urbanisation.	
5	The District Natural Resources Officer for Mbarara	The SEA team considers reviewing literature contained in the Wetland Atlas of Uganda and the Disaster Preparedness Master Plan for Uganda.	Edgar welcomed the suggestion.
6	Kanyesigye William, the Chief Administrative officer for Kasese District	The residents of Kasese are speculating land take as a result of implementing the Master Plan and have therefore started occupying the land under speculation, how this will be handled?	Edgar Mugisha explained that the issue of land compensation is clearly understood and at the time of implementing the various projects, this will be considered
7		The SEA team should shade more light on rural urban migration as a positive impact of the Master Plan.	Edgar Mugisha explained that depending on the perspective, rural urban migration can be a positive or negative impact of the Master plan but development of urban centres such as secondary cities will draw people from rural areas and strain the planned social services.
8	CAO Lwengo District	The Master Planning process should consider cascading development in line with the local Development Plans.	Ryosuke Ogawa explained that the Master Plan process is in line with the planning at National level
9		Consider the undisciplined society which does not respect common user rights.	
10		The plan gives us the ability to transform and but what are we aiming at?	The Master Plan is aimed at improving logistics in the Northern Economic.
11		Was there connectivity of the transport strategy i.e. from road to railway and airport?	Ryosuke Ogawa explained that in as much as a modal shift is being planned, roads will still be connected to the railway.
12		Is the Master Plan looking at increasing production by using fertilisers? We need to look at how the plan will increase production by using fertilisers.	Ryosuke Ogawa explained that Master Plan implementation is at the national level
13	The CAO Kisoro District	Under COMESA arrangements, transboundary markets will be established, the master Plan should take keen interest in this since other African agencies have interest in developing our countries.	This has been noted.

1.2.3

*Mbarara Meeting Photos*



1.3 TORORO MEETING

1.3.1 TORORO MEETING MINUTES

S/N	DETAILS OF THE PERSON RAISING THE QUESTION	QUESTION/COMMENT	ANSWER/RESPONSE
1	Joyce Namboozo the CAO Mayuge	CAO was transferred as earlier stated, the DNRO who attended last time have not been transferred and the CAOs who are attending for the first time are policy makers who studied Geography.	Edgar Mugisha responded that it is good to see the engagement. Additionally, CAOs are technocrats and if you still remember Geography, it is a bonus.
2	The Natural Resources Officer for Soroti District.	The Master Plan and SEA are a new phenomenon so the PowerPoint presentations should be shared with the workshop participants.	Edgar Mugisha informed participants that soft copies of the presentation will be sent by email.
3		Increase in traffic demand results in increase in traffic congestion and this can be solved by bypasses. Is there any plan for a bypass in Mbale, Lira and Gulu?	Ryosuke Ogawa explained that several locations were considered as bottlenecks and bypasses will be considered at certain locations especially at the border point
4		Loss of habitat is an issue. In January I was in Rwanda and observed that virtually all roads are aligned with trees but it's the opposite in Uganda. The only trees are in Kakira which were planted by Indians. Will the Master Plan incorporate tree planting?	Edgar Mugisha requested that loss of habitat should be handled at district level by enacting such bylaws and also requested the participant to apply the lessons learnt from Rwanda while taking advantage of the Wildlife Clubs programmes.
5		Teso is particularly prone to flooding which was rear in the 1960s since valley dams which accommodate water were present. The absence of valley dams could be the cause of the current flooding. Could this be explored to keep the water under custody?	Ryosuke Ogawa clarified that the Master Plan is being synchronised with Vision 2040.
6		Peter Henry Wotunya the CAO Kumi District	What will be done to the population along the railway line especially in highly seismic areas?
7	We can get SEA guidelines to guide future PPPs.		
8	Stephen Ouma the CAO Oyam District	Government has said let people produce exports and enough for themselves. However much we improve, the lorries will go back empty to Mombasa. In Oyam, we produce Maize, beans, simsim e.t.c. but cannot even sustain Mukwano. Other areas produce rice but it's not enough for home consumption because of low productivity. We need to look at infrastructure and relate it to production.	Edgar Mugisha advised that the challenge is guaranteed sustainable supply. How much is being produced? In Kanungu for example, Mr. Garuga has advised homesteads to use tea as a hedge to sustain production
9		Almost everyone survives on Mangoes. There is no food, not even cassava. The productivity is low because we are lazy. Back then everybody had to produce food, had a granary and the Chief would authorise the opening of the granary unlike now. Unless we relate productivity and planning, the lorries will go back empty.	
10	Moses Chuna Apoloni the CAO Soroti District	How has the SEA taken into consideration the factors that led to the collapse of the Meter Guage Railway?	Eng. Tony Kavuma explained that the MGR is a standalone project in the ministry and recruitment of capacity is going on. JST in contact with Uganda Railways corporation as the railways expert. The MGR will be rehabilitated.
11		With the fragile security system, there is a need to be sure the SGR will be protected.	Security concerns will be addressed by the SEA.
12	Peter James Malinga, the CAO Bukedea	We are concerned about the identification of the key strategic areas by the Master Plan.	Ryosuke Ogawa explained that Regional productivity is synchronised with Vision 2040. JST also conducted a project on productivity in Northern Uganda giving a benefit for improving productivity.
13		How has the ministry considered implementation of the Master Plan via District development plans?	Eng. Tony Kavuma explained that government is giving more autonomy to the agencies to improve operational efficiency.
14	Simon Peter Achuu, the DNRO for Ngora District	The Ugandan section of the NEC will remain agricultural or there will be some manufacturing?	Ryosuke Ogawa clarified that the Master Plan is being synchronised with Vision 2040.
15	Bernadette Kawuma, the DNRO for Bugiri	Would like to see a detailed MP presentation about the RAP.	Ryosuke Ogawa explained that the RAP is mainly at project level EIA although its necessity was raised at this stage. Recommendations will be given in the Master Plan.

S/N	DETAILS OF THE PERSON RAISING THE QUESTION	QUESTION/COMMENT	ANSWER/RESPONSE
16		Cross cutting issues like Gender, HIV/AIDS, the elderly e.t.c. should be incorporated in the SEA.	Edgar Mugisha responded that the cross cutting issues will be addressed.
17	Elias Byamungu	Among the stakeholders, three parties were not represented i.e. the donors, private sector and civil society. If these members could feature but also the ministry should design communication strategies.	Rhoda Nankabirwa clarified that the donors, private sector and civil society as well as other lead agencies were consulted in the Kampala meeting.  Eng. Tony Kavuma also explained that a communication strategy is as important as is in the civil aviation industry and this should be communicated to our people.
18		The study is deliberately ignoring the political dimension which is led by increasing income division and thus the potential for conflict is high. Marginalised groups should be looked into.	The socio-economic section of the SEA addresses income levels for consideration by the Master Plan.
19		There is a clear distinction and commonalities in Tanzania, Uganda and Kenya. One of the commonalities is the low level of production. In addition, in Tanzania, there is total government control using ICT so corruption can be eliminated. This should be incorporated into government planning.	This was noted
20		In Fort Portal, a road was diverted four times thinking of 'an old woman who was passing' until engineers did a geotechnical survey to reveal a hot spring. Myths should be considered.	This was noted
21	Pabious Otiye	The proposed that vulnerabilities are left open	Edgar Mugisha explained that vulnerabilities may not stand alone but will be considered within.
22		In the methodology I want to propose that beyond GIS, ground truthing should be done	Edgar Mugisha explained that the stakeholders are in a better position to do ground truthing especially at such times although this will be supplemented at project level.
23		Several plans are being implemented. This should be shown for us to internalise.	Ryosuke Ogawa explained that SGR is being implemented by the European Union and this is integrated in the NEC Master Plan.
24		The Master Plan should improve the drainage system such that this water can be tapped for productivity.	Edgar supported the idea that flooding constraints can be turned into opportunities. The Ministry of Water and environment has pointed out the use of underground water. Drainage had not been considered earlier on until in this meeting. This will be added to the final report
25	Musa Lubanga, the DNRO for Mayuge District	In regards to flooding, the Master Plan should improve the drainage system such that this water can be tapped for productivity.	Rhoda Nankabirwa responded that security issues will be considered. However registered land still presents constraints in the form of acquisition due to inflated costs.
26		Monitoring of the SEA should be part of it	The SEA will inform the Master Plan the implementation of which will in turn be monitored.
27	Emmanuel Okalang, the DNRO Kumi District.	Regional production centres such as Karamoja region have been left out. This area has National parks but there was no deliberate effort to improve the region.	Ryosuke Ogawa explained that production centres will be added to the report.
28		What are the strategies for popularising the Master Plan?	
29	James Awula representing the CAO for Alebtong District	The Master Plan and SEA have timelines and therefore there may be no time for internalising both reports. He requested that the two should be merged into one report.	Edgar Mugisha explained that as the Master Plan is being developed, the Master Plan team uses the SEA issues to refine the Master Plan.



1.3.3

*Tororo Meeting Photos*



## 2.1 KAMPALA MEETING

## 2.1.1 KAMPALA MEETING MINUTES

S/N	DETAILS OF THE PERSON RAISING THE QUESTION	QUESTION/COMMENT	ANSWER/RESPONSE
1.	Diana Karimba, National Logistics and Planning coordinator, Private Sector Foundation	Different Ministries and agencies will be responsible for the implementation of specific projects. Has the Master Plan considered integrating the other stakeholders?	The development of this Master Plan was multi-sectorial and there was representation from all the twelve key sectors including the private sector. We had delivery structures, that is, technical working groups, i.e. technical staff from the various ministries. We had a steering committee and a joint steering committee between countries working on this Master Plan as well as vigorous inter-ministry and inter agency consultations with technical staff as well as holding international seminars to disseminate the Master Plan to potential investors.
2.	Mark Tivu, CAO Masindi	The presentation was largely in line with the Master Plan interim report for April 2016. When shall we have the updated Master Plan available to us?	The summary report will be emailed to you. It will also be uploaded on the NEC website.
3.		You say the Master Plan will be forwarded to cabinet. I am aware that Uganda has a development Plan. The content of National Development Plan II and the Master Plan are similar. Is cabinet not yet aware because the NDP is already implemented.	
4.		Has the plan taken into consideration the improvement of transport within the cities? In planning, strategic resting places for Lorries and cargo cars should be identified and developed	
5.	Rosemary Kobutagi, Tourism Expert, Ministry of Tourism, Wildlife and Antiquities	Stop over nodes are not emphasised for the comfort of travellers. Note that the desired tourist is the high end traveller but for Uganda, we do not feel their dollar simply because their money is left in the hands of multinationals who own the high end hotels. The desirable traveller is an 18-35 year old who has a tendency to stay with the local people and can buy personal effects from the local people. Can you put in place strategies to attract these people	
6.	Balaam. M. Asimwe Ministry of Local Government	The NEC initiative is for three countries i.e. Rwanda, Kenya and Uganda. However, the emphasis in the presentation was on Kenya and Uganda. Most of the projects stop in Kampala. How can we bring on board a partner whom we don't see any immediate benefit in terms of projects? By 2022, the projects will be in Kampala without an extension to Kigali which is part of the NEC. This could force the Rwandese government to look at other options. How can we keep other partners on board? The Master Plan should explore more on how to incorporate and take advantage of governance issues for the various heads of state.	The request was between the Government of Uganda and Kenya to the Government of Japan
7.		The SGR is set up to promote imports and evacuate as much as possible from the Mombasa Port. Most of the exports come from areas outside Kampala. SGR will take a long time to get to areas outside Kampala. If we are to promote these exports we need a network to do this along with the MGR. I would wish to see the plans for MGR for Kasese.	Feasibility Studies are ongoing along the route. The European Union is undertaking a study to rehabilitate the MGR up to Gulu.
8.		There is need to align the SGR construction timelines for different countries so that the service is used as soon as soon as construction is done rather than wait for other areas to be completed which will leave the resource redundant.	There is an engagement with Kenya to try to harmonise the timelines.
9.		MGR should supplement SGR	This was noted. That is why it has not been abandoned completely
10.		The Master Plan is silent on the current situation. The MGR has a lot of bottlenecks and the Plan is silent about it. What is RVR doing?	Uganda railways was conceded to RVR in 2006. RVR has not made profit. The performance has not been very good. The GoU has issued a notice of termination of concession but the Government of Kenya has to agree. The Lenders to RVR are not in favour of the termination.
11.		We expect a big volume of goods with the construction of SGR. The Master Plan should provide	Traffic volume surveys were done and it is out of this that the Master Plan came about

		a linkage between what volume of goods to expect and the type of ICDs to be built.	
12.		Network problems at the order posts should be embedded in the Master Plan.	The issue has been noted and will be taken up
13.	Julius Muyizzi, National Environment Management Authority	I expected to see environmental and social considerations that being taken into account.	The Master Plan video presentation was meant to make the participants understand what the Plan is about prepare the stakeholders for the next (SEA) presentation
14.	Paul Buyerah Musumba, National Forestry Authority	How will the proposed infrastructure be maintained/sustained? Can the risks be factored into the Master Plan?	Risk Management will be done at project level
15.	Jackeline Nassuuna, Ministry of Lands, Housing and Urban Development	How will the Master Plan be harmonised with other physical development plans such as the existing local government plans and the Regional physical development for the Northern Corridor?	The study team consulted the Ministry of Lands and they had an input into this for consideration and harmonisation
16.	Godfrey Ssali, Policy Analyst, Uganda Manufacturers Association	Are we looking at an electric train or gasoline train?	SGR will be electrified
17.		How will SGR be used? Various companies own many tracks and will be in competition thus rendering the SGR a white elephant project?	With a liberal economy, you may not necessarily give directives on which mode to use
18.		What is the plan for single Vs Dual carriage for the SGR?	
19.		Is there a plan to connect to the LAPSSET	We are looking at possibilities of connecting to the LAPSSET through Kenya
20.	Private Sector Foundation, National logistics coordinator	Were secondary cities mapped out in the SEA report?	Yes, these were mapped out in the SEA report
21.	Aaron Werikhe, Planner Environment and Natural resources at National Planning Authority	Is it possible to attach monetary value to the alternative options and the mitigation measures?	All the strategies and suggested projects have an economic cost attached to them. The cost of the mitigation measures will be looked into in line with the economic presentation of the same strategies when updating the report
22.		If the SEA is undertaken after a plan is approved, can't this affect the implementation?	If a Plan is in place, an SEA can be done in line with the review cycle, at review stage. Secondly, SEA does not have to stand alone. You can have a document that meets the requirements of an SEA without an independent SEA being carried out. If the entry points for the environmental and social aspects are known and are addressed, an independent SEA does not have to be commissioned for such studies
23.		Is it possible for an SEA to be undertaken for the National Development Plan?	It is possible to do an SEA for the NDP as much it is up and running
24.	Kassim Omar, Uganda Clearing Industry and Forwarding Association	Is there a section in the SEA that provides for rehabilitation of the environmental effects that could accrue as a result of implementation of the suggested projects	Biodiversity offsets can be used to compensate for what has been lost as part the mitigation hierarchy.
25.	Julius, National Environment Management Authority	I could not identify a clear linkage between the findings and national and international regulation to include bridging the gap so that they satisfy the international donor performance standards to secure project funding.	The SEA report goes as far as including AU Agenda 2063, Sustainable Development Goals e.t.c. The key thing is to focus on things that are relevant to inform the decision maker. But there are opportunities for such considerations of various laws and policies at the EIA level.
26.		The Master Plan and the SEA were done concurrently. How can the SEA inform the Master Plan to integrate these environment and management plans at that level?	The SEA was done as the Master Plan was being prepared. The Master Plan that is coming out has to refer to the mitigation measures in the SEA report to refine the strategies in line with what the mitigation measures have pointed out. The Master Plan in that way will have addressed the findings of the SEA
27.		The analysis of the alternatives was biased towards expert judgement basing on available literature or theory yet there are some other kinds of tools and Applications like Multicriteria Evaluation tools as decision support tools in collaboration with GIS which could be very powerful in coming up with the best option.	Usually, with SEA, you look at the budget at hand. Some tools can be used but the budget dictates that you might not be able to use them. However, at EIA level, such tools can be used to rank the various options.
28.	Juliet Atino, Senior Environment Officer, Ministry of Works and Transport	The baseline just gave a general view of environmental properties but did not bring out the specific existing aspects. Vegetation cover wasn't captured in the report. These aspects should also be captured in the SEA report.	SEA only provides information important to the decision maker. However, the point taken into account and we shall see which refinements to make to the document.
29.		Some social aspects like gender did not come out well and yet women are affected during land acquisition; people's livelihoods are also affected.	
30.		Some references in the document were made to Kenya. Kenyan laws and international	The legal framework for Kenya was included in the Kenya SEA report. The Legal

		frameworks should be considered and included for reference especially where there are issues of shared resources like water bodies.	framework for the Uganda SEA dealt with the Key elements such as transboundary aspects which were included in the SEA report. Carrying the Kenya legal section into the Uganda SEA report would be too bulky and could lead to loss of focus.
31.		Concerning GHG emission, Agriculture was not mentioned in the report and yet it is one of the sectors that contribute to GHG emissions according the Climate Change Department. This should be considered due to proposed commercialised agriculture.	Noted
32.	Godfrey Ssali, Policy Analyst, Uganda Manufacturers Association	Technology, equipment and materials for implementing the projects should not be sourced from outside and yet they are available in Uganda which is important for the growth of Uganda's industries as well as creating employment.	Local content aspect is being enforced for example in sectors like the oil and gas industry and this could be extended to other sectors.
33.		There is need to reflect on the due diligence requirements/guidelines for each funding of the funding bodies like World Bank, IFC, African Development Bank, and Arab development Bank to improve on the SEA report	Noted
34.		Can you provide us with the SEA presentation?	Yes, the presentation will be emailed to you
35.		The is need to improve the document to include a section on Environment and Social Management Framework as an appendix or a section in the documents	Within the SEA report, there is a detailed monitoring plan with a whole range of monitoring indicators with a lot of synergies between the Monitoring plan and the ESMF. Have a look at the monitoring plan and if there are more concerns not reflect in the Plan, please send these though and we shall provide feedback
36.		Some archaeological/cultural sites are the hindrances to development so should be given paramount priority in documentation	Edgar mentioned that people working on projects at EIA level should factor the Chance Finds Procedure into account and this was addressed in the SEA report.

2.1.3

*Kampala Meeting Photos*



2.2 MBARARA MEETING

2.2.1 MBARARA MEETING MINUTES

S/N	DETAILS OF THE PERSON RAISING THE QUESTION	QUESTION/COMMENT	ANSWER/RESPONSE
1.		Within the Master Plan framework, is there planned activity for urban growth in the northern corridor?	The regional strategy identifies unbalanced development, thus the approach is to spread out the development through the various options. The negative externalities should be mitigated and this is covered in the SEA
2.		The import export ratio for Uganda is affecting the balance of trade and this is worrying	The Master Plan has a strategy to deal with the problem by way of import substitution so as to export more products, also looking at export expansion in form of minerals and other products so as to balance the trade. Value addition to the local products will also help enhance our exports.
3.		Have you done a cost benefit analysis of the routes to determine which is the most viable?	The corridor is defined with reference to the Sub-Saharan line, i.e. transport routes under the Sahara. Routes were not defined in terms of viability, thus no cost benefit analysis was done.
4.		Previously, the routes were not definite and land speculation was raised as an issue especially in Kasese where people are targeting resettlement compensation.	This is noted and quite unavoidable. This makes the distribution of reports such as the Master Plan a challenge since people get a chance to position themselves
5.		What are the timelines for the Master Plan?	The time horizon for the Master Plan is between 2015 and 2030.
6.		The Corridor spans more than one country. Is the Master Plan considered as one single project or each country is responsible for a specific part? Can't problems in one country derail the whole process?	The project is currently focussing on Uganda and Kenya. Other countries may request for their portion. Some of the projects are to be done jointly for example the Standard Gauge Project and the oil pipeline but each country is responsible for its portion. Conflicts may have an effect but not necessarily stop the process.
7.	Monday Lwanga, DNRO Rubirizi	Our economy is characterised by low production levels, dwindling fish stocks, degraded ecosystems redundant labour e.t.c. Do you envisage the possibility of good returns on the investment into the northern corridor?	This is a broad plan that incorporates so many projects to stimulate growth and development and attract foreign investment to address the imbalances affecting us. Some projects will be public financed, others will be taken in partnership with the private sector while others will be a hybrid between the government and the private sector
8.		The physical planning process is very weak. We have no smart towns in Uganda since the roads and the physical layout of buildings is wanting. There is need for proper physical planning so that the policy is followed during town development. No go zone areas should be established	This was noted and thus one of the reasons for the extensive stakeholder consultation with key stakeholders such as the Ministry of Lands, Housing and Urban Development. In addition, the National physical plan will incorporate all other plans so as to harmonize the required development in any locality and will be made available online hence will act as a guiding document.
9.	Mathias Ndifuna, CAO Kasese	How will the resources be distributed? We as government want the community to come up, can we define means to improve the west and central?	The Master Plan has planned the resources from all areas in Uganda. The SEA has provided the study of different income levels and limitations within different income levels in different areas. Different strategies look at the various issues you have raised, such as growth of small and medium towns.
10.		Mbarara also experiences traffic jams- the planning of the urban centres should consider the increased production and population increase. The Government should identify and make projections before the problem occurs.	The comment is noted. The SEA is looking at the wide issues including congestion in the towns along the corridor.
11.		Do we have a better plan of water transport within Lake Victoria and other Lakes e.g. Albert and Edward? The recommendations should improve transport between the neighbouring countries and improve the minor cities. That way, trade between Congo and	The plan for improving water transport is at National Level by the Ministry of Works and Transport, outside the scope of the Master Plan

S/N	DETAILS OF THE PERSON RAISING THE QUESTION	QUESTION/COMMENT	ANSWER/RESPONSE
		Uganda will improve.	
12	Elias Byamungu, CAO Bushenyi	I attended the workshops in Tororo for the SEA (NEC) as well as other master plans in Uganda, I have a good idea of the transport infrastructure. We have oil, SGR along the corridor e.t.c. Other countries have gone ahead in implementing the projects. Have you done a deeper analysis of reduced truck along the road since the tracks are owned by a few individuals who are also politicians?	The SEA team wasn't responsible for the analysis of what will happen to the already existing tracks. We have taken note of the impacts of the different alternatives in relation to the truck industry. The Master Plan aims at reducing the dependency of the trucks and improving other modes.
13		Has the MP looked at developing Solar energy as an alternative?	At a broad level, The Master Plan has identified projects that have been analysed.
14	James Mugisha, CAO Kabale	How will the public be protected from the impacts of construction and projects along the corridor	All projects will be subjected to EIA that will look at the issues.
15	Ezra Ndyahabwe, Deputy CAO Lyantonde	The roads in Uganda are narrow, increasing the cost of transport. We are experiencing a challenge of encroachment on road reserve in Uganda which makes future road expansion difficult. Road reserves need to be protected for easy expansion of the road where need be. What is the MOWT plan to secure the reserves?	One way to protect the reserves is to build from out -in...that is have a dual carriage and have the reserve between the two roads. The MP has also identified bottlenecks along the corridor. There are areas identified for expansion right from the Port of Mombasa and boarder points. There will be needs to have multiple lanes.
16		With regard to public health and safety, Transport has an impact on air emissions and health related problems. Why can't we make it a policy that for every kilometer of tarmac constructed, a number of trees should be planted along the road?	This is a very good recommendation and it has been noted.
17	Jeconius Musingwire, DNRO Mbarara	Has the SEA identified the different industrial activities and analysed the demand for water resources and biodiversity. Are the proposals sustainable?	Such aspects have been considered in the detailed SEA report
18		Include Ramsar sites in your assessment of protected areas	These were included in the SEA study and subsequently in the report
19	Joseph Katswera, DNRO Kasese	There is exclusion of biodiversity outside the protected- the document should be guiding the EIAs to come. Recommendation should be given that the EIA should look at biodiversity outside protected areas as well as underground biodiversity.	Impacts related to biodiversity outside protected areas were minor at Strategic level and thus recommendations were made for consideration at EIA level.
20		Why isn't the vision of the NEC linked to the National Planning Authority objectives instead?	The SEA assessed the compatibility of the Master Plan and existing policies, plans and programmes plans along with the transport sector guiding documents.

2.3 TORORO MEETING

2.3.1 TORORO MEETING MINUTES

S/N	DETAILS OF THE PERSON RAISING THE QUESTION	QUESTION/COMMENT	ANSWER/RESPONSE
21	Peter Wotunya, CAO Kumi	By harmonising the construction phase of the Standard Gauge railway for completion by 2021, does it mean Kenya should slow down?	Harmonisation is not for Kenya to delay but to consider/prioritise development of the missing link earlier such that Uganda completes when the link is complete too. Otherwise completion of the Ugandan section without the link will affect us. This is the engagement that is ongoing
22		Other sectors that feed into the Master Plan should be fast tracked, for example rice production is impossible with such severe drought and in that case we need to think of irrigation	The Ministry of Agriculture was engaged in the formulation of the Master Plan. The irrigation infrastructure will be implemented at project level. The Ministry of Agriculture should budget for the irrigation project to avail the infrastructure to the farmers. That is why endorsement is being sought at Cabinet level
23		You make mention of regional coordination, but the emphasis is on Kenya and Uganda, going to DR. Congo and Rwanda. Why is Tanzania left out? Are they failing to cooperate?	This is for the Northern Corridor of which Tanzania is not part. The scope right now is for Uganda and Kenya
24		What is the cost of Master Plan and what is the share of each country?	The study has looked at the entire corridor and not specific countries. However Project costs have been provided
25		What is the progress of SGR in Uganda?	Land acquisition has been made upto Kampala, somewhere in Namanve.
26		The LAPSSET bypasses Uganda. If it is to benefit the East African countries, it should penetrate Uganda	There was a plan to pass through the Busia Swamp in order to link up to Ethiopia by road under the joint partnership between Ethiopia and Uganda
27	Jackson Osiedo, for CAO Tororo	Industrialisation will result into higher demand for power by the industries and so a strategic plan needs to be put in place to boost power supply in the Northern Corridor	The infrastructure development to increase power development is in high gear, all in a bid to increase energy projection
28	Paul Edotu, Assistant CAO Amuria	At what point shall we be presented with the proposed secondary cities for validation?	The identified Secondary cities are Gulu, Mbarara, Tororo, Arua. All these have been provided in the report
29	Geoffrey Wanyama, Deputy CAO Bugiri	The Master Plan has been popularised by media in Kenya, yet there is no popular version for this Master Plan. Why hasn't the Master Plan been popularised in Uganda?	The next strategy for the Master Plan is the communication strategy. Right now we are at the stakeholder engagement level.
30		What happened to the Tororo- Gulu Meter Gauge Railway rehabilitation Plan?	The line will be rehabilitated although the SGR sections are being prioritised due to the initial cost of railway infrastructure. The European Union conducted a study and concluded that the MGR is still viable. The MGR and SGR have different alignments.
31		This is an approach that is looking at policy and yet we do not have guidelines? How safe is this from the legal perspective?	SEA is a voluntary endeavour. In the absence of guidelines for SEA as is the case for Uganda, it is a good industry practice that enables looking at the plan and evaluating the key environmental and social implications of implementing a plan such as the Master Plan.
32	Benjamin Ajotu, DNRO Soroti	Where there are movement of vehicles, accidents are bound to occur. Can I assume that has been captured under public health and safety	The SEA considered impacts of major severity at strategic level. Impacts such as accidents associated with the implementation of various transport modes will be assessed at EIA level.
33		You recommend interagency coordination between Ministries, Departments and Agencies. Do you mean local governments should	Consultations have been done with the Ministry of Local Government who are key at decision making in respect of the Master Plan. However, your concern has been noted and at project EIA, the respective local governments should be



S/N	DETAILS OF THE PERSON RAISING THE QUESTION	QUESTION/COMMENT	ANSWER/RESPONSE
		be excluded?	consulted.
34		There are a number of urban centres without physical development plans. Your recommendations should suggest development of these physical development plans	Noted
35		Since the SEA is being done for the first time, these studies should be disseminated.	This is not the first time an SEA is being carried out in Uganda, take for example the SEA that was carried out for the Oil and Gas Activities in the Albertine Graben.
36		In the assessment, reference is made to future projects. Is it by inference or observation? Otherwise why wouldn't you restrict the study to what you have seen?	The different projects have been enumerated from the literature review of documents such as the NDPII, Vision 2040 and others.
37	Abdul Samanya, DNRO Iganga	In your assessment of cumulative impacts, biodiversity outside protected areas was not assessed.	One of the SEA objectives was to conserve and maintain biodiversity outside protected areas. The impacts to biodiversity outside protected areas at strategic level was assessed as minor. Recommendations were given to assess the impact at project EIA level
38		SEA is new in Uganda with no laws for it and during the execution of this plan, emerging issues may come up calling for a precautionary approach. This has not been presented.	The SEA draft guidelines for Uganda are in place. During the assessment, a precautionary approach on how projects should be rolled out was considered and this is reflected especially in the assessment of cumulative impacts bearing in mind what could possibly happen.
39		No mention has been made of political instability yet it could jeopardise the Master Plan. Was this out of scope for the SEA or was it deliberate?	Political instability was discussed in the main report as one of the issues for consideration during the formulation of the Master Plan
40		It would have been important if we had received a copy of the report before this workshop	Unfortunately, the report was uploaded onto the Ministry of Works and Transport Website but not the Northern Economic Corridor Website. However, this is currently being worked upon and very soon the document will be available
41	Loyce J. Namboozo, CAO Mayuge	What are the timelines for the Master Plan?	The time horizon for the Master Plan is 2015-2025. The short term is from 2015-2020, medium term from 2020-2025 and the long term from 2015-2030
42		You mentioned fast tracking of SEA guidelines in Uganda. I don't see it captured well.	The general SEA guidelines for Uganda are being fast tracked and could possibly be ready by Dec 2017. This is not part of the scope of the SEA for the Master Plan
43		By the time of the baseline survey, this type of climate change had not happened. How are you going to factor this in? And don't you think this may call for a change in policy such as water abstraction policies?	Climate change has been an issue for such a long time. It is unfortunate however, that we are experiencing severe drought currently. Otherwise climate change was considered during the assessment. About the policy change, this is out of scope for the SEA but since interagency coordination was recommended, projects arising out of the Master Plan could be aligned with such water needs and any changes that could possibly be made

2.3.3

*Tororo Meeting Photos*



***ANNEX A3 -SEA OPINION SURVEY SHEET AND BID***

**SEA-Related Survey**

**Republic of Uganda  
Master Plan on Logistics in the Northern Economic Corridor (Master Plan)**

**Objectives**

Within the SEA (Strategic Environmental Assessment) of the Logistics in the Northern Economic Corridor Master Plan Study, stakeholder participation from relevant agencies as well as communities plays an important role for the development of integrated urban development strategies. It is essential to examine a variety of aspects of the proposed Master Plan study based on the current needs or priorities of relevant agencies and communities. A questionnaire-based stakeholder analysis is to be carried out in order to grasp the opinions about the Logistics in the Northern Economic Corridor Master Plan process, as well as current concerns therein.

**A. BACKGROUND INFORMATION**

1. Name (Optional): .....
2. E-mail (Optional): .....
3. Occupation: .....
4. Mobile (Optional): .....
5. Age: .....
6. Sex: Male / Female
7. Residence/District: .....
8. Education level: i) Primary ii) Secondary iii) College iv) University
9. a) Have you attended any previous meetings on this Master Plan? Yes / No  
 b) If yes, how many times (this stakeholder meeting excluded)? .....times

**B. SOCIO-ECONOMIC CONCERNS IN YOUR DISTRICT**

10. What are the key socio-economic issues in your area of residence?  
 (Please rank them in order of severity.)

- a) Education Standards
- b) Public Health and Sanitation
- c) Unemployment/Job Opportunities
- d) Crime and Insecurity
- e) Social Values and systems
- f) Social infrastructure (community centres, playgrounds, etc.)
- g) Housing
- h) Other (Please specify): .....

V.Poor		Fair		V.Good
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5

11. What are your proposals for addressing the issues identified above?  
 .....  
 .....

*(Please Turn Over)*

Your response will inform the Master Plan process and will be treated as confidential.

**C. ENVIRONMENTAL CONCERNS IN YOUR DISTRICT**

12. What are the current local environmental concerns in your area?

*(Please rank the environmental concern according to its impact in your area of residence.)*

- a) Environmental Pollution
  - a. Water Quality
  - b. Air Quality
  - c. Noise
  - d. Soil Erosion
- b) Degradation of natural and environmental resources (encroachment)
- c) Solid waste management
- d) Wastewaters management
- e) Others *(Please specify):*

Low					High
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	
1	2	3	4	5	

.....

.....

.....

**D) LAND USE ISSUES IN YOUR DISTRICT**

13. What are the key Land use issues in your center/town?

- a. Industrial area accessibility
- b. Housing quality
- c. Educational availability
- d. Recreational accessibility
- e. Road connectivity
- f. Commercial development
- g. Others *(Please specify)*

V.Poor	Fair		V.Good	
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5

.....

.....

.....

14. Are there proposals for addressing the above identified issues (yes or no)? .....

15. Are you satisfied with the measures being undertaken yes or no .....

16. If no *please specify* .....

*(Please Turn Over)*

Your response will inform the Master Plan process and will be treated as confidential.

**E). EVALUATION**

1. How did you learn of this meeting?:

i) Letter ... ii) Email ... vii) Other (*please specify*) .....

2. How do you evaluate the following? (*Please circle according to level of satisfaction.*)

- a) Preparation for the meeting
- b) Quality of Presentation
- c) Understanding of MP and SEA
- d) Overall evaluation

V.Poor	Fair	V.Good		
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5

3. a) Is this Master Plan Process familiar to you? Yes / No

b) If "No" above, please specify reasons:  
.....

4. What are your expectations in this Master Plan Process? (*Please specify.*)

.....  
.....

5. a) Do you wish to contribute to this Master Plan development process? Yes / No

b) If yes above, in what way? (*Please specify.*)  
.....  
.....

c) If no above, please specify reasons.  
.....  
.....

**THANK YOU FOR YOUR COOPERATION**

Your response will inform the Master Plan process and will be treated as confidential.

## **STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA)**

### **BACKGROUND INFORMATION DOCUMENT AND INVITATION TO COMMENT**

## **NORTHERN ECONOMIC CORRIDOR MASTER PLAN**

**INTRODUCTION:** *Environmental Resources Management (ERM)* in association with *Atacama Consulting* (the “Consultant”), have been appointed by the JICA Study Team/Ministry of Works and Transport on behalf of the Government of Uganda to undertake a Strategic Environmental Assessment (SEA) for the Master Plan on Logistics in the Northern Economic Corridor (NEC) in Uganda.

**AIM OF THIS DOCUMENT:** The aim of this Background Information Document (BID) is to provide stakeholders with information about the project, the process being followed, and to provide them with an opportunity to be involved in the SEA process.



**Return address for comments:**

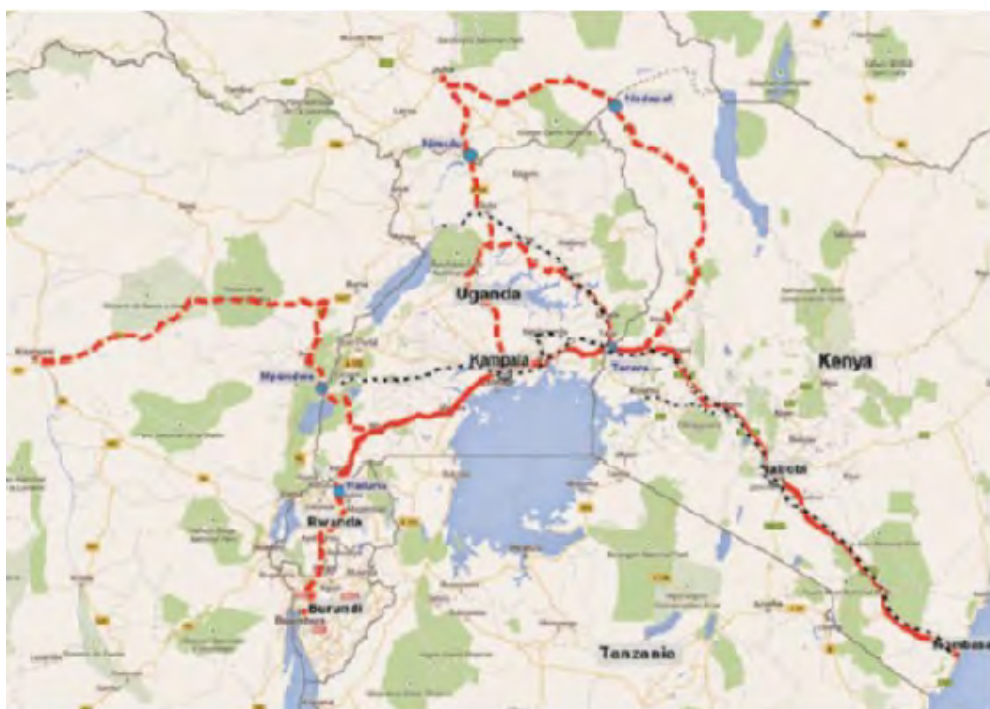
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Email: [admin@atacama.co.ug](mailto:admin@atacama.co.ug)

### **WHAT IS THE PROPOSED PROJECT?**

The proposed project is the Master Plan on Logistics for the Northern Economic Corridor, along with an integrated regional development strategy consistent with sub-regional development plans and national development plans. The target year of the Master Plan is 2030. The Corridor is a multi-modal corridor, consisting of road, rail, pipeline, and inland waterways transport, and is recognized as a significant corridor for logistics in East Africa. The main road network runs from Mombasa Sea Port through Kenya and Uganda, to Rwanda and Burundi, and to the Democratic Republic of Congo (DRC) (Figure 1). The road network also links Kenya and Uganda to Juba in South Sudan. The necessity of the NEC is becoming increasingly important because the current combined transit and trans-shipment traffic through the corridor has been growing at a rate of 20 percent annually.

Your response will inform the Master Plan process and will be treated as confidential.

**Figure 1: Locality map indicating the Northern Economic Corridor**



### **WHY IS THE PROJECT BEING PROPOSED?**

The project is being proposed in order to improve the efficiency of logistics in the NEC thereby spurring economic growth in the NEC region. The NEC is currently faced with a number of logistical bottle necks that include; inadequate infrastructure, poor interconnectivity of various transport modes, long delays (stagnation) of cargo at Mombasa port and border posts, and lack of goods to transport for the return trip from the inland area to Mombasa port. This increases transport costs within the Corridor, accounting for approximately 30 percent of the value of the goods. High transport costs, are one of the major obstructive factors hindering economic development in the region, especially of the inland area. Additionally, the new proposed Standard Gauge Railway Line and Oil Pipeline from Uganda to Kenya projects, will further significantly impact the logistics in the Corridor.

In light of the above, the Government of Uganda (GOU) requested the Government of Japan (GOJ) to implement a project to formulate a master plan on logistics in the Northern Corridor in order to promote regional development. Concurrently, the Government of Kenya (GOK) also requested the GOJ for a project within the Northern Corridor which shares the same goals and outputs.

In response to the requests of the GOU and GOK, the Japan International Cooperation Agency (JICA) dispatched a "Detail Design Formulation Team for the Project" in October and November, 2014. The team proposed application of the project concept as the Northern Economic Corridor, since the project should not only cover logistics, but regional development along the Northern Corridor as well. The GOU and GOK agreed with this concept and signed the Record of Discussion with JICA for the implementation of the Project for Formulation of the Master Plan on Logistics in the Northern Economic Corridor.



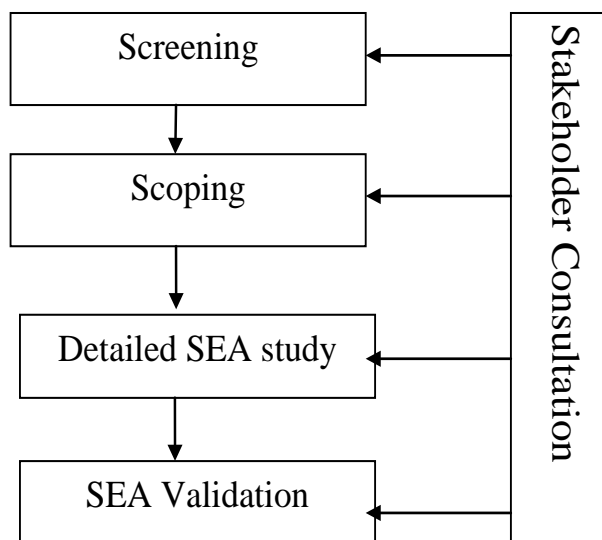
## THE STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA)

### What is an SEA?

Strategic Environmental Assessment (SEA) is an assessment that is implemented at the policy, planning, and program levels, but not a project-level EIA.

Figure 2 indicates the general phases involved in an SEA.

**Figure 2: Phases in an SEA**



### Why is an SEA needed for the proposed project?

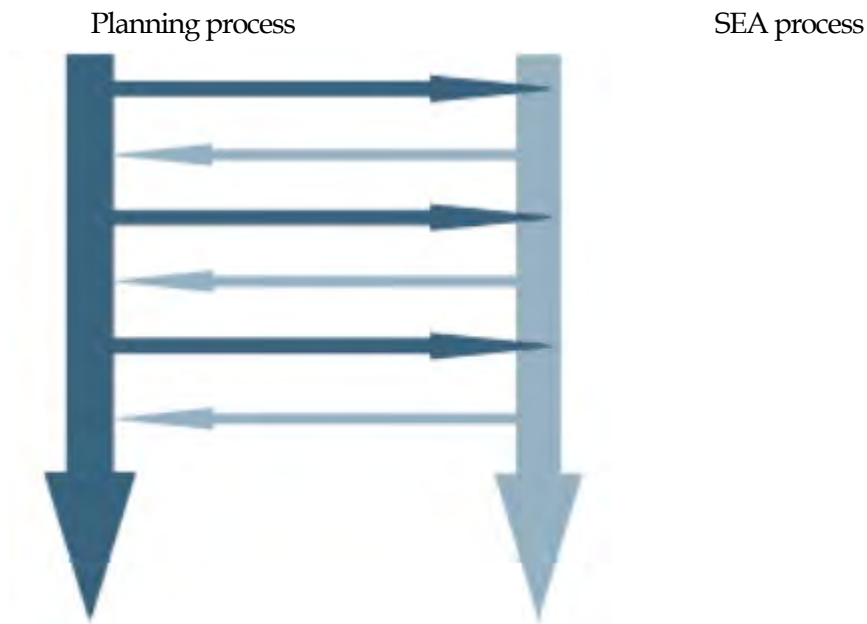
In Uganda, there is no binding guideline for SEA at the moment. According to National Environment Management Authority (NEMA) “the National Environment Act” is under review to include a mandatory provision for SEA and it will probably be enacted next year, and NEMA is in the process of hiring a consultant to finalize the draft SEA guideline as of July 2015. Since there is no binding guideline for SEA, no legal framework exists at the moment for SEA. However, in order to formulate an Environmentally-Friendly Master Plan, consideration of potential environmental and social impacts for the Master Plan will be evaluated through the SEA process.

### What is the purpose of this SEA?

The purpose of the SEA is to integrate the environmental and social considerations into the Master Plan on Logistics in the Northern Economic Corridor.

The integration process will entail the SEA being undertaken in parallel (Figure 3) with the Master Plan formulation process. This way, environmental and social considerations will be addressed in a proactive manner so as to better inform the decision making processes.

**Figure 3: Parallel SEA Model**



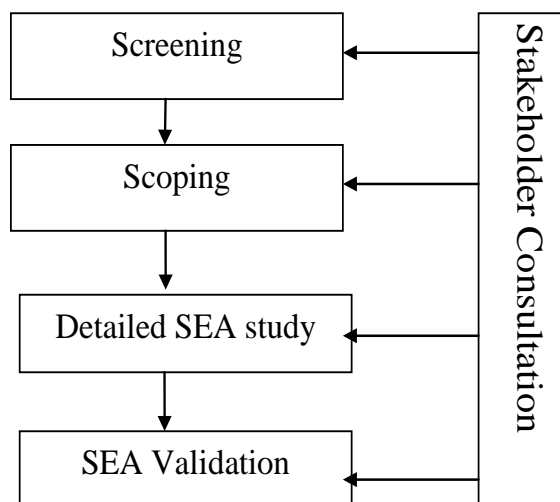
Source: Partidário, 2007

### WHY IS STAKEHOLDER ENGAGEMENT AND CONSULTATION IMPORTANT IN THE SEA PROCESS?

Stakeholder consultation with all the identified stakeholders is necessary in order to:

- Secure the necessary stakeholder buy-in for the planned interventions;
- Understand the socio-economic dynamics of the operating environment;
- Shape the decision making process through inclusivity;
- Establish robust communication channels;
- Lay a foundation for sustainable results, and;
- Provide the requisite information

### AT WHAT STAGES OF THE SEA PROCESS CAN YOU GET INVOLVED?



Your response will inform the Master Plan process and will be treated as confidential.

## HOW CAN YOU GET INVOLVED?

- By responding to our invitation for your involvement and participation in the stakeholder consultation meetings that will be held (Specific meeting dates to be communicated);
- By emailing and/or telephoning the consultant using the details provided on Page 1 of this BID;
- By reviewing the project SEA report that will be generated.

We would highly appreciate it if you could please complete the Consultation Proforma attached herewith and return it, with your comments, via email to Atacama Consulting ([admin@atacama.co.ug](mailto:admin@atacama.co.ug)) by 02<sup>nd</sup> May 2016.

Alternatively, have the completed proforma ready for collection by an Atacama Consulting Employee by 2:00pm on 02<sup>nd</sup> May 2016. **Please inform us either by phone and/or e-mail by Friday 29<sup>th</sup> April 2016 if you need for us to collect your completed proforma so that we can organise accordingly and pick it up in time.**



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 Email: [admin@atacama.co.ug](mailto:admin@atacama.co.ug)

## SEA: DETAILED STUDY CONSULTATION REPLY SLIP

This reply is provided to assist consultee responses. Please complete it and return it with your comments via email to Atacama Consulting ([admin@atacama.co.ug](mailto:admin@atacama.co.ug)) by 02<sup>nd</sup> May 2016. Alternatively, have the completed proforma ready for collection by an Atacama Consulting Employee by 2:00pm on Monday 02<sup>nd</sup> May 2016. Please inform us either by phone and/or e-mail by Friday 29<sup>th</sup> April 2016 if you need for us to collect your completed proforma so that we can organize accordingly and pick it up in time. It will assist the process if comments are received by then.

Please note that this Background Information Document will not be re-issued following receipt of comments.

**NAME OF PROJECT: PROJECT FOR FORMULATION OF MASTER PLAN ON LOGISTICS IN THE NORTHERN ECONOMIC CORRIDOR**

Name of respondent

**Title:**  
**First Name:**  
**Initial:**  
**Surname:**

Organisation

**Name:**  
**Address:**  
**Telephone Number:**  
**Postal address:**

**Email:**

Address of the respondent (*Leave blank if same as for the organisation above*):

**Address:**  
**Telephone Number:**  
**Postal address:**

**Email:**

What are your major interests and concerns with respect to the proposed project?

What would be the five major current and potential environmental/social problems in relation to the Master Plan?

Are there other Alternatives that you would like considered?

Your response will inform the Master Plan process and will be treated as confidential.

What opportunities and constraints does the natural environment provide which should be taken into consideration during formulation of the master plan?
Are there any omissions in the Background Information Document for which you require more information?
Are there additional stakeholders whom you feel should be consulted with regards to the proposed project?  If yes, please list their names and if available, provide their contact details.
Do you hold any data / information which you consider to be of relevance to this study? If so, what type of information is it?
Are there any other comments you would like to make?

**THANK YOU FOR YOUR INPUT**

Your response will inform the Master Plan process and will be treated as confidential.

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Colombia	Puerto Rico
France	Romania
Germany	Russia
Hong Kong	Singapore
Hungary	South Africa
India	South Korea
Indonesia	Spain
Ireland	Sweden
Italy	Taiiwan
Japan	Thailand
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[www.erm.com](http://www.erm.com)



**Data 7:  
List of Data Source  
in the Master Plan**





List of Collected Data

No.	Data	Country	Year	Type of Data	Source	URL
<b>A. General / Plan</b>						
A1	Vision 2030	Kenya	2007	PDF	Vision 2030 Secretariat	<a href="http://www.vision2030.go.ke/">http://www.vision2030.go.ke/</a>
A2	Uganda Vision 2040	Uganda	2013	PDF	Uganda Government	<a href="http://npa.ug/wp-content/themes/npatheme/documents/vision2040.pdf">http://npa.ug/wp-content/themes/npatheme/documents/vision2040.pdf</a>
A3	2nd National Development Plan	Uganda	2015	PDF	National Planning Authority	<a href="http://npa.ug/wp-content/uploads/NDPII-Final.pdf">http://npa.ug/wp-content/uploads/NDPII-Final.pdf</a>
<b>B. Transport / Logistics</b>						
B1	Northern Corridor Infrastructure Master Plan	Kenya, Uganda	2011	PDF	NCTTCA	<a href="http://www.ttcanc.org/documents/The%20Northern%20Corridor%20Infrastructure%20Master%20Plan.pdf">http://www.ttcanc.org/documents/The%20Northern%20Corridor%20Infrastructure%20Master%20Plan.pdf</a>
B2	Northern Corridor Transport Observatory survey	Kenya, Uganda	2014	PDF	NCTTCA	<a href="http://www.ttcanc.org/reports.php">http://www.ttcanc.org/reports.php</a>
B3	East African Railway Master Plan Study-Final Report	Kenya	2009	PDF	EAC	<a href="http://www.eac.int/infrastructure/">http://www.eac.int/infrastructure/</a>
B4	Mombasa Port Master Plan	Kenya	2015	PDF	JICA	<a href="http://open_jicareport.jica.go.jp/pdf/12246674_01.pdf">http://open_jicareport.jica.go.jp/pdf/12246674_01.pdf</a>
B5	Annual Review and Bulletin of Statistics 2015	Kenya	2016	PDF	KPA	<a href="http://www.kpa.co.ke/InforCenter/Performance%20Reports/KPA%20Annual%20Report%202015%20(without%20photos).pdf">http://www.kpa.co.ke/InforCenter/Performance%20Reports/KPA%20Annual%20Report%202015%20(without%20photos).pdf</a>
B6	Uganda Civil Aviation Master Plan	Uganda	2014	PDF	Civil Aviation Authority	<a href="http://www.caa.co.ug/index.php?option=com_phocadownload&amp;view=category&amp;id=18&amp;Itemid=81">http://www.caa.co.ug/index.php?option=com_phocadownload&amp;view=category&amp;id=18&amp;Itemid=81</a>
<b>C. Urban Development</b>						
C1	Nairobi Integrated Urban Development Master Plan (NIUPLAN)	Kenya	2014	PDF	Nairobi County Government & JICA	<a href="http://citymasterplan.nairobi.go.ke/">http://citymasterplan.nairobi.go.ke/</a>
C2	2009 Kenya population and Housing Census	Kenya	2014	PDF	KNBS	<a href="http://www.knbs.or.ke/index.php?option=com_phocadownload&amp;view=category&amp;id=109:population-and-housing-census-2009&amp;Itemid=599">http://www.knbs.or.ke/index.php?option=com_phocadownload&amp;view=category&amp;id=109:population-and-housing-census-2009&amp;Itemid=599</a>
C3	National Population and Housing Census 2014	Uganda	2016	PDF	UBOS	<a href="http://www.ubos.org/onlinefiles/uploads/ubos/NPHC/2014%20National%20Census%20Main%20Report.pdf">http://www.ubos.org/onlinefiles/uploads/ubos/NPHC/2014%20National%20Census%20Main%20Report.pdf</a>
<b>D. Industry</b>						
D1	Mombasa Special Economic Master Plan	Kenya	2015	PDF	JICA	<a href="http://open_jicareport.jica.go.jp/pdf/12245486.pdf">http://open_jicareport.jica.go.jp/pdf/12245486.pdf</a>
D2	Towards a Petroleum Sector Master Plan	Kenya	2015	PDF	The World Bank	<a href="http://ices.or.ke/wp-content/uploads/2015/12/Towards-a-Petroleum-Sector-Master-Plan-for-Kenya_Final_With-WB-Cover..pdf">http://ices.or.ke/wp-content/uploads/2015/12/Towards-a-Petroleum-Sector-Master-Plan-for-Kenya_Final_With-WB-Cover..pdf</a>
D3	UGANDA CENSUS OF AGRICULTURE 2008/2009	Uganda	2010	PDF	UBOS	<a href="http://www.ubos.org/publications/agriculture/">http://www.ubos.org/publications/agriculture/</a>
<b>E. Socio-Economy</b>						
E1	PPP Policy	Kenya	2011	PDF	PPP unit/National Treasury	<a href="http://pppunit.go.ke/index.php/legal-regulatory-framework">http://pppunit.go.ke/index.php/legal-regulatory-framework</a>
E2	PPP Act 2013	Kenya	2013	PDF	PPP unit/National Treasury	<a href="http://pppunit.go.ke/news/view/public-private-partnership-act-2013">http://pppunit.go.ke/news/view/public-private-partnership-act-2013</a>
E3	Statistical Abstract, 2015	Kenya	2015	PDF	KNBS	<a href="http://www.knbs.or.ke/index.php?option=com_phocadownload&amp;view=category&amp;id=106&amp;Itemid=1177">http://www.knbs.or.ke/index.php?option=com_phocadownload&amp;view=category&amp;id=106&amp;Itemid=1177</a>
E4	Statistical Abstract, 2015	Uganda	2015	PDF	UBOS	<a href="http://www.ubos.org/onlinefiles/uploads/ubos/statistical_abstracts/Statistical%20Abstract%202015.pdf">http://www.ubos.org/onlinefiles/uploads/ubos/statistical_abstracts/Statistical%20Abstract%202015.pdf</a>
E5	National Budget Framework Paper 2015/16	Uganda	2015	PDF	MFPEd	<a href="http://budget.go.ug/budget/sites/default/files/National%20Budget%20docs/National%20Budget%20Framework%20Paper%20(NBFP)%20FY%202016-17.pdf">http://budget.go.ug/budget/sites/default/files/National%20Budget%20docs/National%20Budget%20Framework%20Paper%20(NBFP)%20FY%202016-17.pdf</a>
<b>F. Power / Water / Mining</b>						
F1	Least Cost Power Development Plan	Kenya	2011		ERC	<a href="http://www.renewableenergy.go.ke/downloads/studies/LCPDP-2011-2030-Study.pdf">http://www.renewableenergy.go.ke/downloads/studies/LCPDP-2011-2030-Study.pdf</a>
F2	National Water Master Plan (NWMP)	Kenya	2013	PDF	WARMA	<a href="http://www.wrma.or.ke/index.php/projects/nwmp-2030.html">http://www.wrma.or.ke/index.php/projects/nwmp-2030.html</a>
F3	Towards a Petroleum Sector Master Plan for Kenya	Kenya	2015	PDF	The World Bank	<a href="http://ices.or.ke/wp-content/uploads/2015/12/Towards-a-Petroleum-Sector-Master-Plan-for-Kenya_Final_With-WB-Cover..pdf">http://ices.or.ke/wp-content/uploads/2015/12/Towards-a-Petroleum-Sector-Master-Plan-for-Kenya_Final_With-WB-Cover..pdf</a>
F4	National Water Resources Assessment	Uganda	2013	PDF	MoWE	<a href="https://www.google.co.jp/url?sa=t&amp;rct=j&amp;q=&amp;esrc=s&amp;source=web&amp;cd=1&amp;cad=rja&amp;uact=8&amp;ved=0ahUKEwj9YyeyfDSAhVF15QKHU_oDXcQFggfMAA&amp;url=http%3A%2F%2Fwww.mwe.go.ug%2Findex.php%3Foption%3Dcom_docman%26task%3Ddoc_download%26gid%3D819%26Itemid%3D91&amp;usq=AFQjCNFaMZFB8hzYNmVmn8qCMunVmnKyA&amp;sig2=AdbcassXowS6rAVpjaMx6A&amp;bv=1.150729734.d.dGo">https://www.google.co.jp/url?sa=t&amp;rct=j&amp;q=&amp;esrc=s&amp;source=web&amp;cd=1&amp;cad=rja&amp;uact=8&amp;ved=0ahUKEwj9YyeyfDSAhVF15QKHU_oDXcQFggfMAA&amp;url=http%3A%2F%2Fwww.mwe.go.ug%2Findex.php%3Foption%3Dcom_docman%26task%3Ddoc_download%26gid%3D819%26Itemid%3D91&amp;usq=AFQjCNFaMZFB8hzYNmVmn8qCMunVmnKyA&amp;sig2=AdbcassXowS6rAVpjaMx6A&amp;bv=1.150729734.d.dGo</a>
F5	NWSC Corporate Plan July 2015 - June 2018	Uganda	2015	PDF	NWSC	<a href="https://www.nwsc.co.ug/files/corprateplan/NWSC_CORPORATE_PLAN_2015-2018_APPROVED_FINAL.pdf">https://www.nwsc.co.ug/files/corprateplan/NWSC_CORPORATE_PLAN_2015-2018_APPROVED_FINAL.pdf</a>
<b>G. SEA</b>						
G1	National Guidelines for Strategic Environmental Assessment in Kenya	Kenya	2012	PDF	NEMA	<a href="http://www.nema.go.ke/images/Docs/Guidelines/SEA%20guidelines.pdf">http://www.nema.go.ke/images/Docs/Guidelines/SEA%20guidelines.pdf</a>