# Master Plan on Logistics in Northern Economic Corridor

## Progress Report No.1

August 2015

Japan International Corporation Agency


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# *List of Abbreviations*

| | |
|---|---|
| ACA | Athi Catchment Area |
| AEO | Authorized Economic Operator |
| AFDB | Africa Development Bank |
| AFFA | Agriculture, Fisheries & Food Authority. |
| BIDCO | Business & Industrial Corporation |
| BLT | Build-Lease-and-Transfer |
| BOOT | Build-Own-Operate-Transfer |
| BPS | Budget Policy Statement |
| CBM | Cross Border Market |
| CFS | Container Freight Station |
| CM | Common Market |
| CoK | Constitution of Kenya |
| COMESA | Common Market for Eastern and Southern Africa |
| CU | Custom Union |
| CY | Container Yard |
| DFR | Draft Final Report |
| D/O | Delivery Order |
| DOT | Develop-Operate-and-Transfer |
| DRC | Democratic Republic of Congo |
| DWRM | Directorate of Water Resources Management |
| DWP | Department of Water for Production |
| EA | Environment Auditor |
| EAC | East Africa Community |
| EAR&H | East African Railways and Harbors Corporation |
| EARNP | East Africa Road Network Project |
| EBITDA | Earnings Before Interest, Taxes, Depreciation and Amortization |
| ECTS | Electric Cargo Tracking System |
| EIA | Environment Impact Assessor |
| EITI | Extractive Industries Transparency Initiative |
| EL | Exploration License |
| ENNCA | Ewaso Ngiro North Catchment Area |
| EP | Environment Partner |
| EPZ | Export Processing Zone |
| EPZA | Export Processing Zone Authority |
| ERA | Electricity Regulatory Authority |
| ERB | Electricity Regulatory Board |
| ERC | Energy Regulatory Commission |
| ERP | Enterprise resource planning |
| EU | European Union |
| FCL | Full Container Load. |
| FDB | Facilities Database |
| FDI | Foreign Direct Investment |
| FR | Final Report |

| | |
|---|---|
| FTA | Free Trade Area |
| GAP | Global Access Project |
| GDC | Geothermal Development Company |
| GDP | Gross Domestic Product |
| GIS | Geographical Information System |
| GOJ | Government of Japan |
| GOK | Government of Kenya |
| GOTS | Global Organic Textiles |
| GOU | Government of Uganda |
| HACCP | Hazard Analysis & Critical Control Points |
| ICT | Information & Technology |
| IFC | International Finance Corporation. |
| IMF | International Monetary Fund |
| IPPs | Independent Power Producers |
| IRWR | Internal Renewable Water Resources |
| ISO | International Standard of Organization |
| JICA | Japan International Cooperation Agency |
| KAA | Kenya Airports Authority |
| KCCL | Kasese Cobalt Company Ltd |
| KCB | Kenya Commercial Bank |
| KenGen | Kenya Electricity Generation Company |
| KETC | Kenya Electricity Transmission Company |
| KFC | Kenya Fluorspar Company |
| KFRI | Kenya Forest Research Institute |
| KFS | Kenya Forest Service |
| KIFWA | Kenya International Freight & Warehousing Association |
| KNBS | Kenya National Bureau of Statistics |
| KNEB | Kenya Nuclear Electricity Board |
| KOICA | Korea International Corporation Agency |
| KPA | Kenya Ports Authority. |
| KPC | Kenya Pipeline Company |
| KPLC | Kenya Power and Lighting Company |
| KRA | Kenya Revenue Authority |
| KRC | Kenya Railways Corporation |
| KTA | Kenya Truck Association |
| KWS | Kenya Wildlife Service |
| LAPSSET | Lamu Port-South Sudan-Ethiopia Transport |
| LCL | Less than Container Load. |
| LNG | Liquefied Natural Gas |
| LVNCA | Lake Victoria North Catchment Area |
| LVSCA | Lake Victoria South Catchment Area |
| MAAIF | Ministry Of Agriculture Animal Industry and Fisheries |
| MC | Management Contract |
| MEMD | Ministry of Energy and Mineral Development |
| ML | Mining Lease |
| MoEP | Ministry of Energy and Petroleum |
| MOFPED | Ministry of Finance Planning Economic Development |

| | |
|---|---|
| MOIED | Ministry of Industrialization Enterprise Development |
| MOLG | Ministry of Local Government |
| MoLHUD | Ministry of Lands, Housing and Urban Development |
| MOTI | Ministry of Transport & Infrastructure |
| MoU | Memorandum of Understanding |
| MoWI | Ministry of Water and Irrigation |
| MOWT | Ministry of Works & Transport |
| MP | Master Plan |
| MTIC | Ministry of Trade, Industry and Cooperatives |
| MTP | Medium Term Plan |
| MWE | Ministry of Water and Environment |
| NAADS | National Agriculture Advisory Services |
| NARO | National Agriculture Research Organization |
| NCIMP | Northern Corridor Infrastructure Master Plan |
| NCTIP | Northern Corridor Transport Improvement Project |
| NCTTCA | Northern Corridor Transit & Transport Coordination Authority |
| NDP | National Development Policy |
| NEC | Northern Economic Corridor |
| NEMA | National Environment Management Authority |
| NEPAD | The New Partnership for Africa Development |
| NLC | National Land Commission |
| NPA | National Planning Authority |
| NRW | Non-Revenue Water |
| NSP | National Spatial Plan |
| NUCAFE | National Union of Coffee Agribusinesses and Farm Enterprises |
| NUDP | National Urban Development Policy |
| NWSC | National Water and Sewerage Corporation |
| OPBC | Output Performance Based Contract |
| OSBP | One Stop Border Post |
| OVOP | One Village One Product |
| PIBID | Presidential Initiative for Banana Industry Development |
| PPP | Public Private Partnership |
| PSC | Product Sharing Contract |
| PSIP | Power Sector Investment Plan |
| REA | Rural Electrification Authority |
| REA | Rural Electrification Agency |
| REB | Rural Electrification Board |
| REE | Rare Earth Elements |
| REF | Rural Electrification Fund |
| RFQ | Request for Qualification |
| ROT | Rehabilitate-Operate-and-Transfer |
| RTD | Regional Transportation District |
| RVCA | Rift Valley Catchment Area |
| RVR | Rift Valley Railways |
| SADC | Southern African Development Cooperation |
| SCADA | Supervisory Control and Data Acquisition System |
| SCT | Single Customs Territory |

| | |
|---|---|
| SEZs | Special Economic Zones |
| SGR | Standard Gauge Railway |
| SME's | Small Medium Enterprises |
| SPV | Special Purpose Vehicle |
| SW | South West |
| SWOT | Strength Weakness Opportunity and Threats |
| TCA | Tana Catchment Area |
| TFTA | Tripartite Free Trade Area |
| TMP | Transport Master Plan |
| TMWDP | Thwake Multi-purpose Water Development Program |
| TOR | Terms of Reference |
| TWG | Technical Working Group |
| UAE | United Arab Emirates |
| UBOS | Uganda Bureau of Statistics |
| UDC | University of the District of Columbia |
| UEDCL | Uganda Electricity Distributing Company Ltd |
| UEGCL | Uganda Electricity Generating Company Ltd |
| UETCL | Uganda Electricity Transmission Company Ltd |
| UIA | Uganda Investment Authority |
| UMA | Uganda Manufactures Association |
| UNBS | Uganda National Bureau of Standards |
| UNRA | Uganda National Roads Authority |
| URA | Uganda Revenue Authority |
| URC | Uganda Railways Corporation |
| VAT | Value Added Tax |
| VCS | Value Chain Survey |
| WENRECO | West Nile Rural Electrification Company |

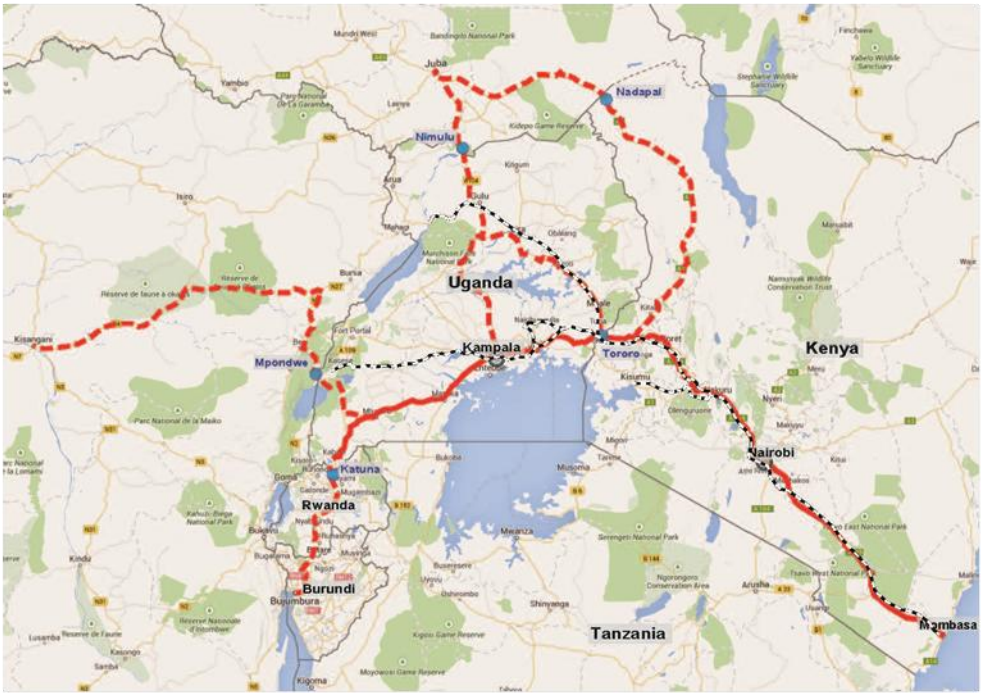
# *Executive Summary*

**(Project Background and Objective)**

The Northern 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 Democratic Republic of Congo (DRC). The road network also links Kenya and Uganda to Juba in South Soudan. Although the importance of the Northern Corridor is increasing, there are some obstacles in Northern Corridor. As the result, the obstacles raise the transport cost within the Corridor and the high transport cost is one of the major obstructive factors that hinder economic development of the region, especially inland area.

In this context, Government of Uganda (GOU) and Government of Kenya (GOK) requested Government of Japan (GOJ) to implement a project to formulate a master plan on logistics in Northern Corridor in order to promote regional development. During the discussion between GOU, GOK and JICA, JICA proposed to apply a project concept as Northern Economic Corridor, since the project should cover not only logistics but also the regional development along the Northern Corridor. The GOU and GOK 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 Northern Economic Corridor (hereafter the Project).

The objective of the Project is to formulate a Master Plan on Logistics for Northern Economic Corridor, along with integrated regional development strategy consistent with sub-regional development plans and national development plans, with year 2030 as the target year. The target areas for the Master Plan covers the routes which are part of Northern Economic Corridor and its surrounding areas illustrated below.




*Source: JICA Study Team*

**Figure 1: Routes of Northern Economic Corridor**

The purpose of the Progress Report No.1 is to show results of the current situation analysis as well as preliminary assessment of the potentials and the current bottlenecks.

**(Profiling of the Corridor)**

The Second Medium Term Plan (MTP, 2013-17) of the Kenya Vision 2030 outlines sixteen (16) priority areas, including, among others, infrastructure, industrialization, improved trade, investment to support growth, and competitiveness and rebalancing growth. In this period, the government focuses on increasing its trade share in the regional and other emerging markets, and expanding infrastructure investment such as roads, railway,

ports, and ICT in order to "make Kenya a top logistic hub". Most of the flagship projects are expected to be implemented through the Public Private Partnership (PPP) arrangement.

In Uganda, the Second National Development Plan (NDP II, 2015/16 – 2019/20) was launched on June 2015, in which three opportunities, namely, 1) agriculture, 2) tourism, and 3) minerals, oil, and gas are identified as a priority. The key vision for infrastructural development is to design infrastructure around production zones and sites, which will underpin agricultural and mineral processing.

In 2015 total population for Kenya is estimated at 45.9 million, with the average growth rate of 2.9% annually. There are seventeen (17) counties and three (3) counties along the Northern Corridor and Secondary Corridor respectively, whose population in 2015 stands at 21.8 million and 2.8 million respectively. A large part of population is distributed along the Northern Corridor and Secondary Corridor. In Uganda, a large population is distributed along the Northern Corridor and the Secondary Corridors. A total of 16.9 million populations reside along the Northern Economic Corridor, which means that around 50 % of the populations in Uganda are distributed along the Corridor.

The Kenyan economy is projected to experience solid growth of 6~7% in the medium term, provided planned infrastructure investments in transport and energy would reduce the cost of business environment, and irrigation and geothermal investments will be implemented to reduce the weather-related risks. The improved competitiveness in the manufacturing sector is also key in expansion of the economy and export to the regional and global markets. The current devaluation of the Kenyan Shilling may tighten the procurement and repayment in the foreign currency, which may slow down the growth of the Kenyan economy. The economy in Uganda is expected to increase by 5 to 6 % of growth rate in the medium term, provided political and exchange rate stability are ensured and planned infrastructure and mineral resource development is implemented. The planned investment in phosphate processing and iron smelting plants may enhance a growth for the agricultural and manufacturing sectors in the medium term, but uncertainties related to neighboring markets, as well as fiscal risk and further shilling devaluation may slow down the growth of the Ugandan economy.

**(EAC: East African Community)**

In 2013 the total population of EAC countries stood at 143.5 million. The average population growth in the region is estimated at 2.9 percent annually. The economy of the region has grown steadily with the average growth rate of 3.8% to 8.2% between 2008 and 2013. During this period the highest average GDP growth was recorded in Rwanda (8.2%) followed by Tanzania (6.7%) and Uganda (6.1%). In terms of per capital income, Kenya became a lower-middle income country in 2013, with per capital income of USD1,055.2, followed by Tanzania (USD742.6) and Rwanda (USD709). Burundi is lowest in per capital income, which accounts to USD294.2 in 2013.

EAC is the largest destination for Kenya's exports, comprising 23.4% of export in 2014. Together with the rest of COMESA countries, around 40% of Kenyan export is destined to the COMESA area. Overall, the growth of import exceeded that of export, which resulted in increased deficit in the current account by Ksh 1,081 billion in 2014. In Uganda, a share of export in EAC market is slightly bigger, with 29% of the total export. Together with the rest of COMESA and other African counties, Uganda is more regional oriented, consisting of 63% of the total export to Africa. Export to Sudan (South Sudan) used to be a largest export destination in 2009, accounting for 26.8 of export, followed by Kenya (11.7%), but due to the civil war in South Sudan, its export volume reduced gradually, which resulted in deteriorating trade deficit in Uganda.

Regional integration in East Africa and along the Northern Corridor has been facilitated, and the following summarizes, among others, the current progress of regional integration:

- *East African Community (EAC)*: Custom Union (2005) and Common Market (2010) were established. Various plans related to transport sector including East African Transport Strategy and Regional Road Sector Development Program (2011) were formulated to facilitate common transport policies and program.
- *Northern Corridor Transit and Transport Coordination Authority (NCTTCA)*: NCTTCA formulated a Northern Corridor Infrastructure Master Plan (2011), and each member state is to implement and finance the identified projects in the Master Plan, while monitoring of the Master Plan has been undertaken by the Permanent Secretariat.
- *Northern Corridor Integration Project (NCIP)*: Fast-track implementation of Single Custom Territory, Standard Gauge Railway, and Crude Oil Pipeline, led by the Presidents of member states.

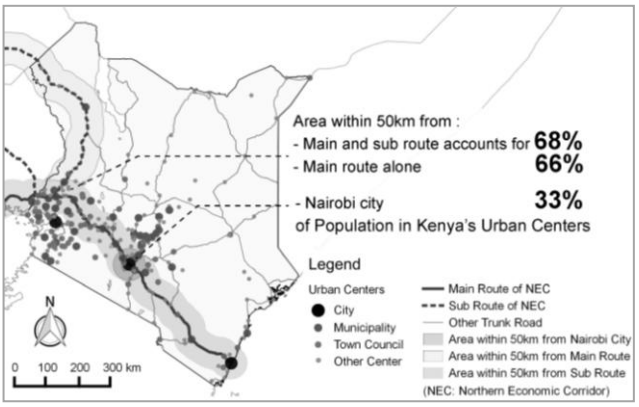
**(Land Use)**

The land around the main route of Northern Economic Corridor in Kenya is covered with agriculture, savannah, shrub/woodland, forest and bare land. Especially agriculture land, which covers only 16% of the entire land in Kenya, is concentrated around the corridor. The lands around the main and secondary corridors in Uganda are covered with several land uses including agriculture, shrub/woodland, urban, mangrove and grassland.

**(Urbanization)**

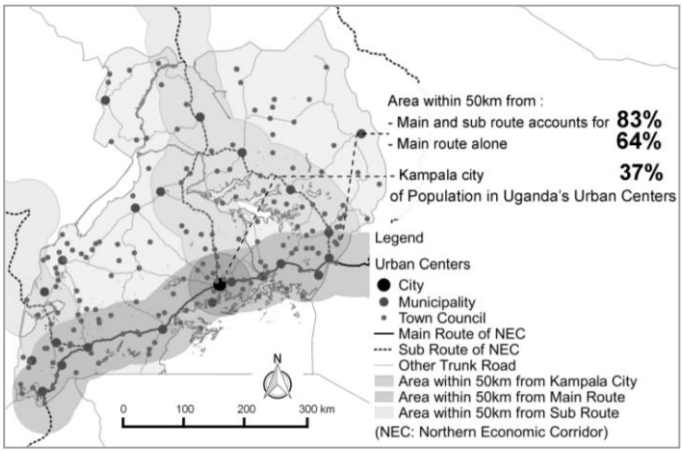
The urban population in Kenya has been increasing. The urban population in Kenya in 2013 was about eleven (11) million, representing more than double of the population in 1993. And the percentage of the total population of urban population (urbanization level) has been increasing, was and in 2013 it was at 25%. The urban centers are concentrated especially around the Northern Economic Corridor and Nairobi City. Kenya's urban centers within 50km from the main route of Northern Economic Corridor consist of the 66% of population in, while the area within 50km from Nairobi City has 33% of the same amount.

The urban population in Uganda is also steadily increasing. The urban population of Uganda in 2014 was about 6.4 million, representing more than two times of the one in 2002. And the urbanization level in Uganda also has been increasing, with 18% in 2014. The urban centers are concentrated especially around Northern Economic Corridor and Kampala City; the area within 50km from the main route has 64% of population in Uganda's urban centers, and the area within 50km from Kampala City has 37% of the same amount.




*Source: JICA Study Team based on data from the 2009 Kenya population and Housing Census*

**Figure 2: Distribution of Urban Centers in Kenya**

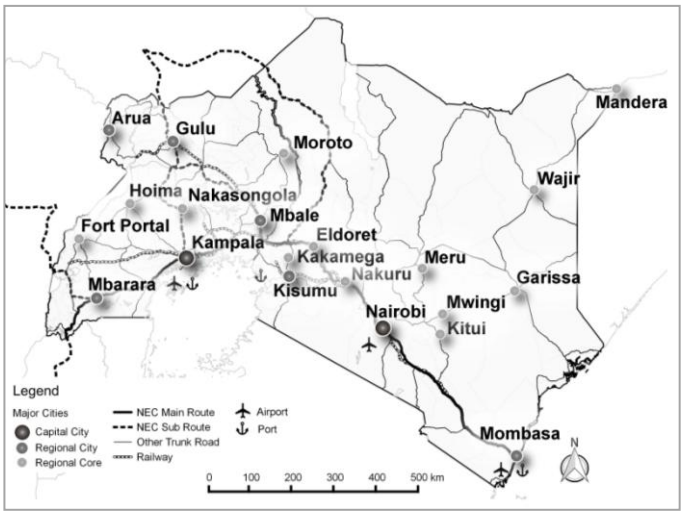



*Source: JICA Study Team based on data from National Population and Housing Census 2014 in Uganda*

**Figure 3: Distribution of Urban Centers in Uganda**

**(Regional Structure Plans)**

The figure on the right describes the current and future major cities in the both countries based on Kenya Vision 2030 and Uganda Vision 2040. The following factors will be considered to make corridor structure plan in this study. Urbanization levels of both countries are still much lower than high and middle income countries. To promote urbanization more efficiently, existing major cities should be prioritized to develop with effective linkages to connect the cities and balanced regional development.

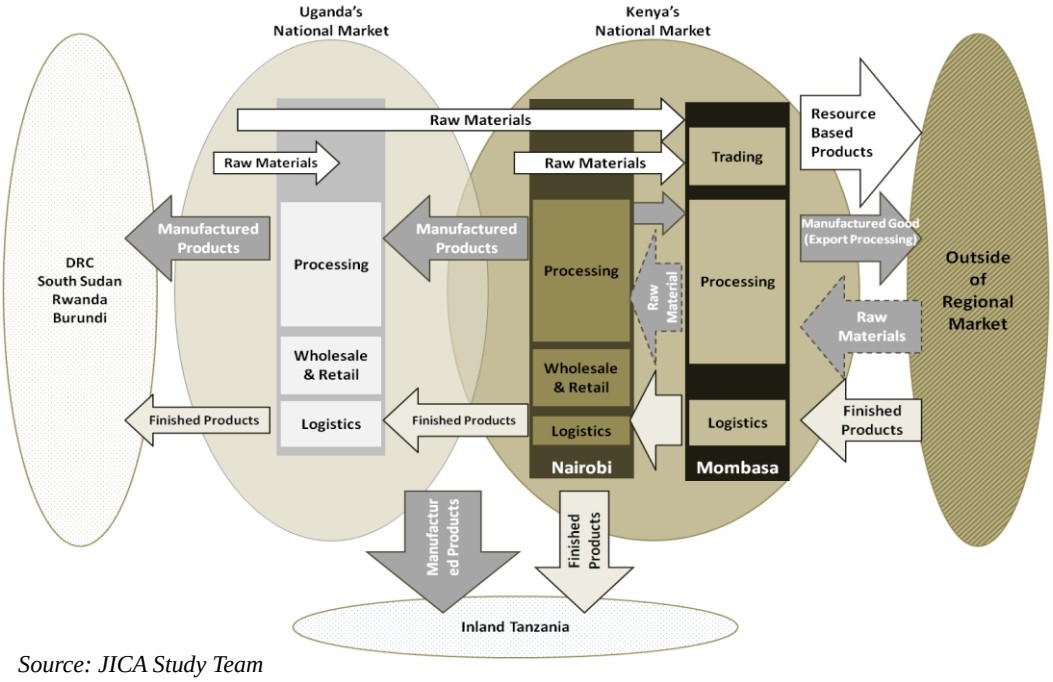



*Source: JICA Study Team based on Kenya Vision 2030 and Uganda Vision 2040*

**Figure 4: Major Cities and Existing Transportation Infrastructures**

**(Structure of Trading and Production)**

The structure of the regional trading and production can be summarized as the Figure below.



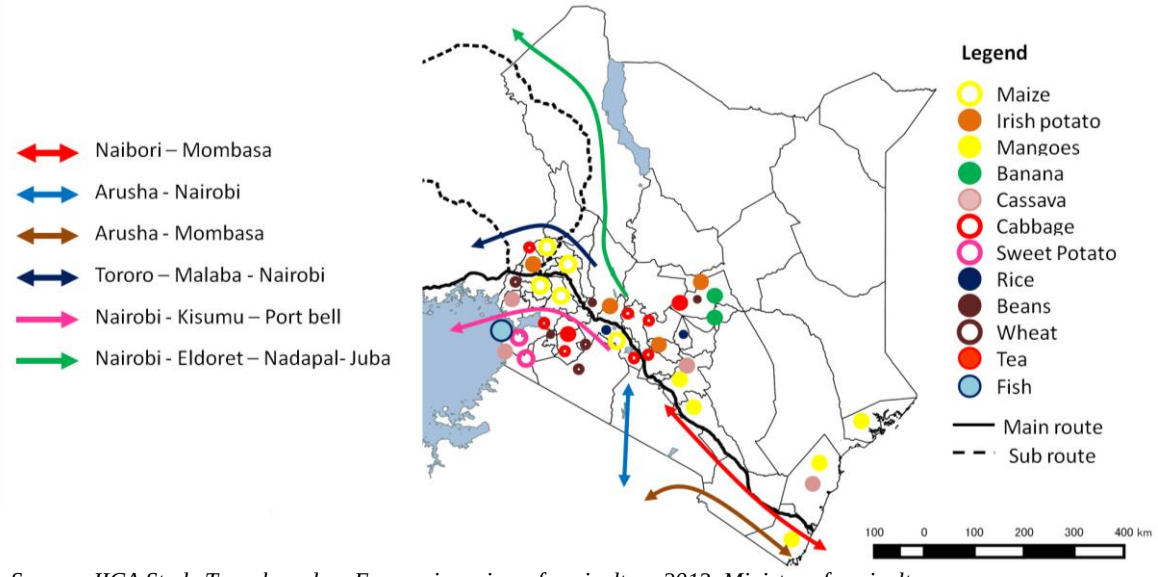

*Source: JICA Study Team*

**Figure 5: Structure of Production, Trade and Logistics in EAC Region**

The current flow of the goods is based on the growing demand of the regional market and deficit of the production capacity of these goods in the region, the areas along the Northern Economic Corridor is endowed with the already emerging hubs for processing the final consumption of various products. On the other hand, the flow of agro-based and resource-based products also requires serious attention as potential opportunity to be exploited.

**(Agribusiness in Kenya)**

In Kenya, although the agricultural area is very limited, this area extends along the Northern Economic Corridor. Production areas of ten (10) types of crops with major production and logistics routes of agricultural crops are shown in the figure below.



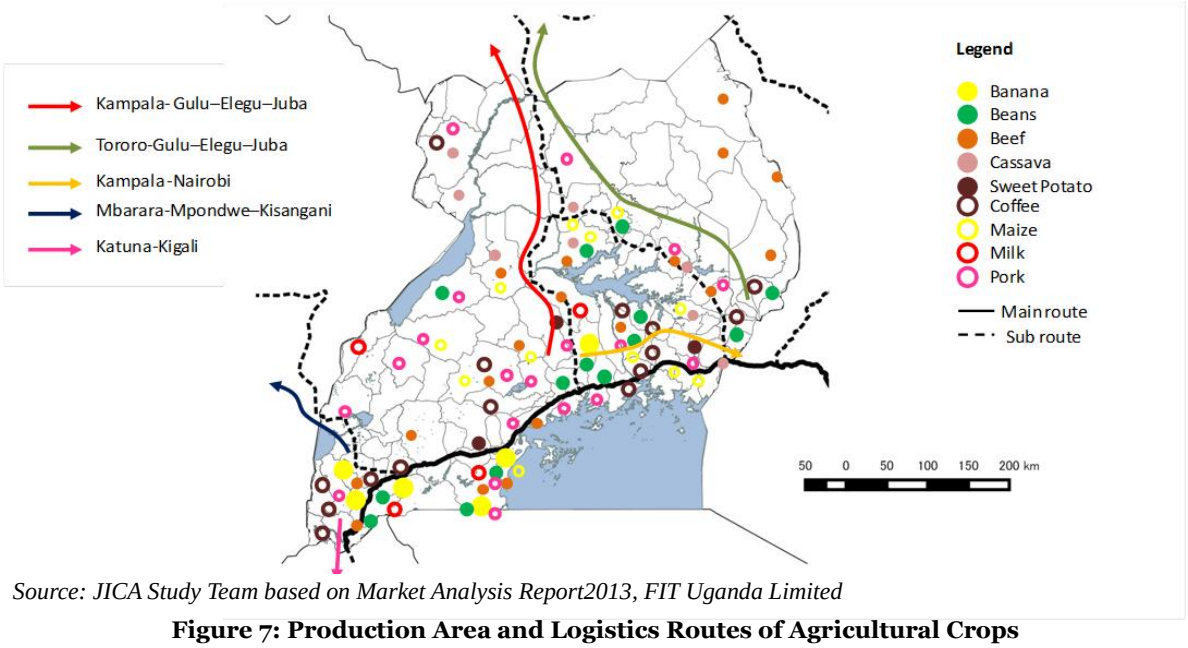

*Source: JICA Study Team based on Economic review of agriculture 2013, Ministry of agriculture*

**Figure 6: Production Areas and Logistics Routes of Agricultural Crops**

Agribusiness in Kenya development is predicated on satisfy demands of European countries and it is therefore important to maintain high quality and stable quantity supply. The following bottlenecks are identified in terms of quality and quantity: 1) scattered production areas with unpaved feeder roads, 2) long time and high charges for issuance of quality certificate, 3) difficulties in expansion of production area and enhancement of productivity due to scarcity of irrigation water and current land ownership, and 4) lack of capacity by farmers in regards to terms and conditions of the contract they make with buyers.

**(Agribusiness in Uganda)**

Almost the whole area is suitable for agriculture. Products produced in the suburbs of Kampala are exported to South Sudan and Kenya through the Northern Economic Corridor. Production areas for five (5) types of crops with major agriculture and livestock products and logistics routes are shown in the figure below.




*Source: JICA Study Team based on Market Analysis Report2013, FIT Uganda Limited*

**Figure 7: Production Area and Logistics Routes of Agricultural Crops**

Uganda is a landlocked country so it does not have a competitive superiority compared to Kenya in terms of export through Mombasa port since a significant transportation cost is added to Ugandan products when exporting through Mombasa Port. To mitigate on this disadvantage, Uganda has to do the following: 1) promote some products that Uganda has but Kenya does not; example minerals, 2) produce more of the products which Kenya cannot secure their cultivation area due to limited water availability; example palm, fish, rice, and cotton, 3) concentrate on some products whose supply in Kenya is not sufficient to meet the growth rate of Kenyan demand; example sugar.

**(Mining and Petroleum Sectors in Kenya)**

In the past years in Kenya there has not been any significant consideration of the potential of metallic resources in the country. The recent discovery of mineral sand enriched with Niobium and Rare Earth Elements (REEs) near Mombasa may direct change towards significant consideration of the potential of metallic resources. The Government of Kenya intends to carry out a nationwide aerial survey to map out the potential mineral deposits with a view to boost the mining sector and attracting foreign investment. According to the Vision 2030, mineral potential in Kenya includes: Soda Ash ($Na_2CO_3$), Fluorspar ($CaF_2$), Limestone, Barite, Gypsum, Diatomite and Vermiculite i.e., non metallic minerals. Among these minerals, Kenya has had Soda Ash and Fluorspar as major export products in mineral resources.

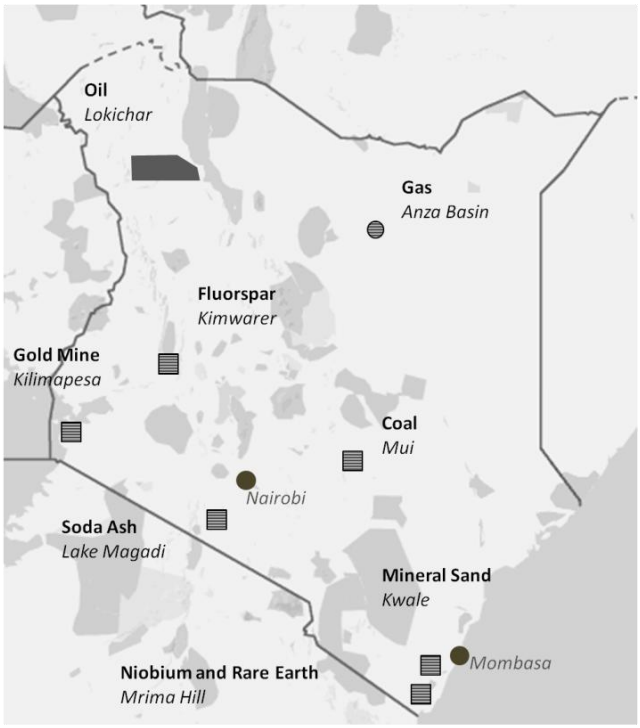
Petroleum was discovered in Tertiary Rift, Lokichar, in March and October 2012 by Tullow Oil plc of the United Kingdom and joint-venture partner Africa Oil Corp. of Canada. This discovery is still under appraisal stage however; gross mean resources in the basin are estimated and 600 million bbl. Produced crude oil will be exported by pipeline via. Hoima-Lamu trunk line. It is also reported that a consortium of African Oil and

Marathon Oil has discovered 1.8 Tcf of gas in Anza Basin in mid 2014, however, it is also still under appraisal stage. The current potential and bottlenecks are summarized below:

Mining Sector: The requirement of local investor participation was introduced in 2012. This requirement was formulated in line with Mining Act 2014. In order to attain the intended objective, there should be adequate capital accumulation and financial infrastructure available to local investors. Legal system need to be streamlined to avoid confusion in mining administration.

Petroleum Sector: Kenya imports all its petroleum requirements, oil product consumption in Kenya in 2010 was 3.95 million ton and the consumption keeps on increasing. Power demand is also increasing and large scale LNG based power plants are planned in Mombasa area. However, recent discovery of gas in Anza Basin will impact the overall energy supply plan.

Coal Exploration: Coal exploration and production will contribute to the economies of Kenyan industries. According to the Statistical Abstract 2011, Kenya imported 346,000 tons of coal from South Africa n 2011. The coals was used by cement industries in Mombasa area alone and therefore the production of coal is advocated for and it can be exported to Uganda and other adjacent countries since there is no coal deposit confirmed in these countries and potential demand therein is considered significantly high.




*Source: JICA Study Team*

**Figure 8: Map Showing the Mining Distribution in Kenya**

**(Mining and Petroleum Sectors in Uganda)**

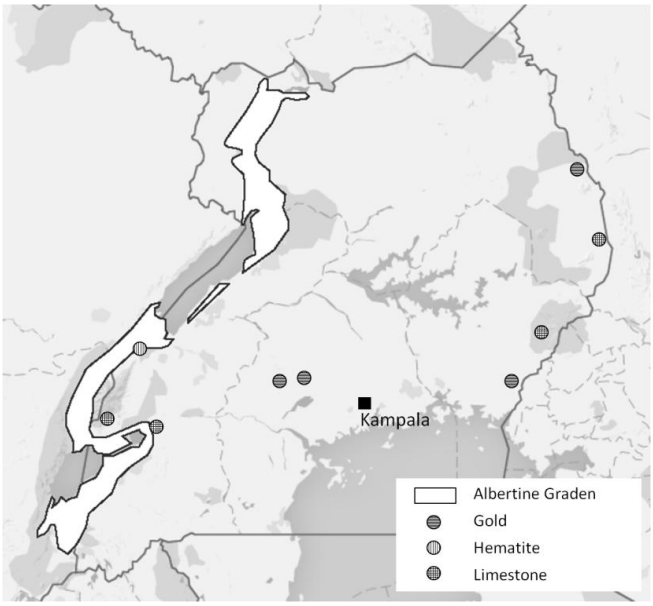
Uganda's mineral industry is currently expanding with the development of mineral mines licensed for exploration and mining of tin, cobalt, copper, lead, zinc, Platinum group metals (PGMs), phosphate, iron ore, niobium (columbium), salt, tantalum, tungsten, limestone, and REEs for the next few years. Mined minerals will be processed and refined in the country in accordance to the legal requirement. Development of primary mining industries represented by cement and steel has been hampered by poor domestic transportation infrastructures and also high cost of freight from/to seaport in Kenya and Tanzania. Consumption of cement and steel products in the county has shown significant growth to meet the growing domestic demand in the construction sectors for the last few years.

Significant growth will also take place in the petroleum sector in the next few years due to a discovery of oil in the Albert Graben. 30,000-60,000 bbl/d. Refinery will be built in Kabaale, Hoima District, and the produced crude oil will be exported via pipeline from Hoima to Lamu, Kenyan port on the Indian Ocean, via Lokichar, oil field in Kenya. The current potential and bottlenecks are summarized below:

Mineral Mining: The electric power generated by hydro power enables to provide stable power to industries as an added advantage to Uganda. Mining industry in general has an extensive environmental impact and this requires establishing community relations to initiate the development of mineral mines. The separation and refining processes are complex and capital intensive, and highly specialized technologies must be introduced. These issues need to be optimized in order for mining industries to be sustainable and minimizing mineral "disposals". "Compact Mining" developed in Japan which has been applied to an assemblage of small and medium scale mines, may be an effective approach to suit the condition of Uganda.

Petroleum: Nature of the crude oil produced in Albertine Graben is reportedly waxy and naphtenitic but low sulphur. Due to a physical property of the oil, i.e., high pour point and high viscosity, transportation of this crude oil by pipeline will face technical challenges that need to be tackled. Construction of domestic refinery in Kabale will benefit the country significantly. Petroleum Product from the refinery may include petroleum coke which will support the economies of scale for cement and other primary industries.

Cost of Freight and Tax: During the interview with the Steel Industry, it was pointed out that improvement of the infrastructure will be a benefit to the industry however, exemption of Import Duty and VAT for imported raw materials such and Molybdenum and Manganese will also be very beneficial not only for the industry but for economy as a whole until these raw materials are domestically manufactured. Economic benefit from tax exemption for some raw materials may worth to be investigated.




*Source: JICA Study Team*

**Figure 9: Map Showing the Mining Distribution in Uganda**

**(Manufacturing Sector in Kenya)**

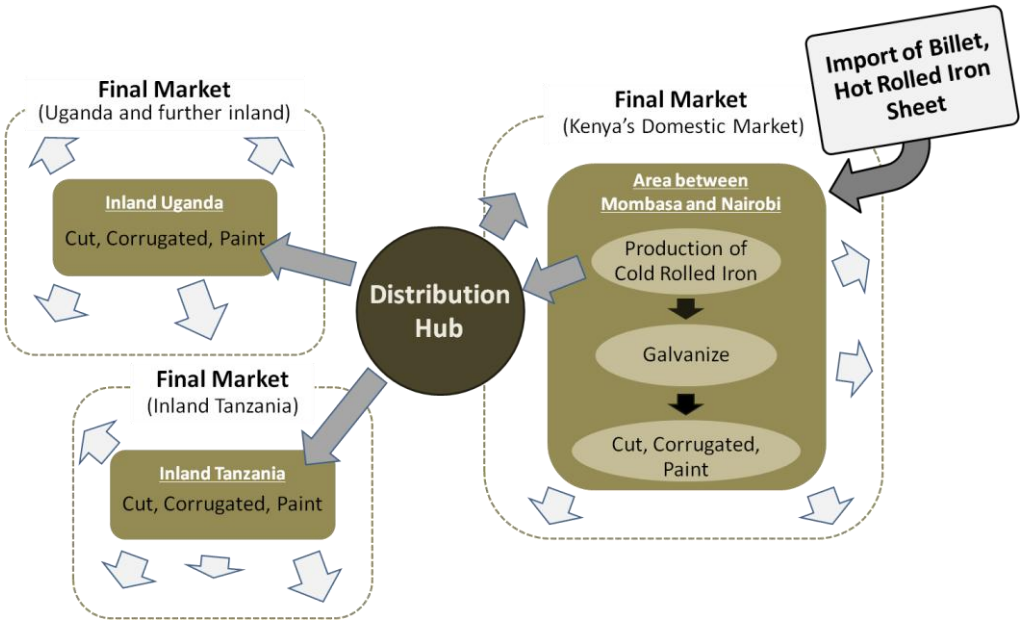
In recent years the manufacturing sector accounts for about ten (10%) of Kenya's GDP. Despite the large expansion of the service sector and gradual growth in agriculture, manufacturing growth rate is rather is still moderate over the years. The manufacturing sector activities are concentrated in Nairobi and its vicinities and the central region and western regions of the country due to the concentration of various economic activities there and population there that provides for work force and also the market.

Cumulative data shows that the manufacturing sector is not the driving force of the investment. Export Processing Zone (EPZ) on the other hand first attracted the garments sector with the duty free access to the US market under AGOA scheme. Other sectors notably agro-processing are gradually expanding their sphere. It should also be noted that forty percent (40%) of the ownership of EPZ enterprises is foreign owned whereas twenty nine percent (29%) is a joint venture with foreign and local investors[1].

The issue to be highlighted as a potential and simultaneously also a future threat is the quality performance issue and technological improvement. It is also important to improve the quality of the industry not only for production growth but also to be enhancing competitiveness. With the exploitation of the domestic and regional market, the share of low-tech and medium –tech products may further increase. The changes in trade regime such as up-coming free trade agreements with EAC, COMESA, and SADC as well as the Economic Partnership Agreement with EU may further introduce stiff competition in the region.

Non-food manufacturing products have been registering growth both in the production and the export with the access to relatively large domestically available market as well as the regional market. The potentials and the effect of currently observed high transportation can be explained by a case example of the iron and steel sector. While some downstream works such as cutting and fabrication may be done in other countries, production of semi-processed materials on a relatively large scale may be centralized in Kenya and which exploit the hub functions to the access to the regional market. The diagram shows the type of business model observed in iron and steel sector.

1 EPZA, Export Processing Zone Programme Annual Performance Report, 2014




*Source: JICA Study Team*

**Figure 10: Simplified Flow of Basic Metals and Roofing Sheets**

In this type of business model, constraints may be found in the price of the raw materials which may surge due to a few factors: Various cost factors including labor, utility and transportation costs can lift the unit costs of the production. Secondly, the taxation and current structure of duty based on EAC common external tariff as well as various levies can burden the industry. It should also be noted that the good warehousing functions in Mombasa and Nairobi to control the building and breaking bulk may also constrain the competitiveness. The issue of warehousing is not only a problem in the private logistics sector, but it's also a requirement under the current EAC Customs Management Act where the duration of the period where the goods can be stored without specifying final destination is limited to 30 days.

The existing leading industries, on the other hand, should seek possible ways to expand the competitiveness to drive their effects on other industries. While existing leading products are predominantly agro-processing or resource-based products with lesser value-addition, the recent changes in the global market indicate both opportunities and threats for the future growth of such products. Tea for example, shows some decline in quality performance during the last decade[2]. On the other hand, the growing attention to the food safety and traceability, packaging at location near origin may also draw the attention of powerful retailers for packaging in Kenya after the auction[3].

**(Manufacturing Sector in Uganda)**

The concentration of the business establishment is found in Kampala and the Central region: both account for 32.3% and 26.8% of the total number of the establishment, respectively. The share of food manufacturing is 18.3%. Within the sub-sectors, manufacturing of textile & wearing apparel takes predominantly a large portion with 42.5%. Furniture (17.2%), metal products (12.5%), grain milling products (8.3%), and bakery products (7.3 %) are also a major sector in terms of the number of establishments. On the other hand, out of 13,501 establishments of the textile and apparel sector, only 31 are with more than 20 employees: it is therefore predominantly consist of micro enterprises.

While domestic market is large enough to consume both locally produced and imported finished products, a part of the finished goods are also exported. The major partners are Kenya, DR Congo, Rwanda and South Sudan for export and Saudi Arabia, Kenya, UAE, China and Korea for import. It indicates that the large flow of raw materials may exist in Kampala whereas the finished goods can divert to Kenya, DRC and Rwanda in the West and to South Sudan in the North apart from those to the major consumption areas in country.

2 Farole and Mukim (2013)

3 A tea company located in Mombasa has been producing tea bags or specially packaged tea under the contract of the major retailers in Europe and Asia.

NDP II lists some critical sectors, namely: Agro-processing (beef and dairy products, leather products, textile and apparel, wood products, food processing), mineral beneficiation (iron and steel, metal fabrication, fertilizer and pesticides, and ceramics) and light manufacturing (pharmaceutical, electronic products, petro-chemicals, packaging, paper and paper products).

The major constraints observed in the type of industries which import raw materials or semi-finished products for the processing or assembling should be found in the cost and quality of transportation. As mentioned in Kenya, the cost burden can affect the competitiveness of the products.

Despite this constraint, it is still observed that the manufacturing investment has been a major driver of FDI in Uganda. The market potential is identified both in the domestic market and further inland countries accessible through Kampala. Other constraints of enjoying the opportunities to exploit the market in these areas may be the development and sophistication of the logistics industry. It is also noted that the quality of logistics divides itself to the extreme end: international logistics company may be able to provide comprehensive services which will be quality, but expensive. They may not prefer serving for those with small quantity[4]. Regarding the size of the production of the manufacturing sector of Uganda, logistics which meet the demand of smaller operators may be also important.

**(Tourism Sector in Kenya)**

Tourism sector is one of the major foreign currency earning industries in Kenya. As a result of fear of insecurity there was a decline the total number of the international visitors and the earnings from tourism in 2014. The number of international tourists arriving in Kenya decreased from 1.519 million persons to 1.35 million. The earnings went down from 94.0 billion USD to 87.1 billion USD[5]. The majority of the international arrivals come through either Jomo Kenyatta International Airport (JKIA) Nairobi or Moi International Airport, Mombasa. In 2014, over sixty percent (60%) of the arrivals were through these two airports.

Opportunities have been identified in untapped potentials such as eco-tourism, culture, conference and cruise. The new set of clienteles should also be targeted, for example, domestic and regional tourists and international tourists from newly emerging economies. On the other hand, current infrastructure, business environment and human resources may be a weakness. In addition, security issues can be one of the major concerns[6]. The positive economic impact is expected largely on the goods and service markets with the visitor export and job creation. The policy captures not only the international but also domestic tourism in order to leverage the expected impact. Further analysis will be done in order to identify the geographical distribution of the economic impact as well as the effects on the goods flows based on the development.

**(Tourism Sector in Uganda)**

The tourism industry in Uganda can be assumed to be steadily growing with increasing visitor arrivals. About sixty five percent (65%) of the visitors arrived by road. Visitors for business and professional purposes as well as those visiting friends and relatives largely lead the growth. NDP II lists the tourism sector as one of the priority sectors. The value chain of the tourism industries comprises pre-visit services, transportation, information and reception, hospitality and tourists' attraction and amenities. The policy indicates its attention to all the processes in the value chain. It also shows the proposed infrastructure for supporting tourism development which mainly consists of transportation and ICT infrastructure.

The impact of the tourism industry to the entire national economy is expected to be distributed due to the large increase in visitor exports. The effects on the goods and service markets as well as the flow of goods shall be analyzed further in the study.

4 In fact, some witness of the enterprises indicates that the freight even for east-bound remains expensive despite west-bound screwed situation

5 KNBS Economic Survey 2015

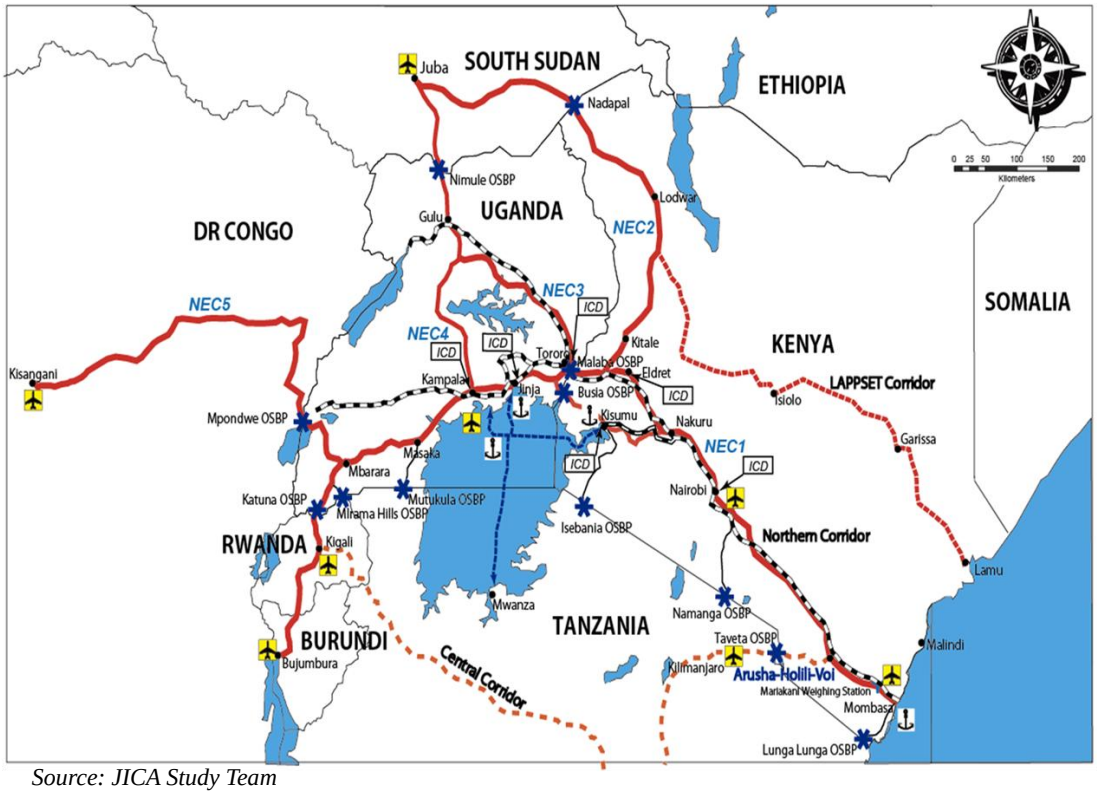
6 GOK, National Tourism Strategy 2013-2018

**(Overview of Transport Infrastructure on Northern Economic Corridor)**

Road is the most fundamental infrastructure on Northern Economic Corridor. Kenya, Uganda, Rwanda, Burundi, D.R.Congo, South Sudan and Tanzania, rely significantly on road transport by heavy trucks and trailers. In addition, road network has a great role for integrating multi transport infrastructures as the link between multiple modes such as railway, airway, waterway and pipeline. Last mile of cargo trip is usually operated by road transport. The following table and figure shows transport infrastructure and road network in Northern Economic Corridor.

**Table 1: List of Major Transport Infrastructures on Northern Economic Corridor**

| Infrastructure | Number | Distance | Notes |
|---|---|---|---|
| Road | 5 routes | 4,830km | Including 4 brunch lines<br>Main line is the route on Mombasa-Nairobi-Kampala-Kigali-Bujumbura with a distance of 1,900km |
| Railway | 6 routes | 3,919km | Including two new lines<br>Not including Lake transport line |
| Port | 4 ports | | Including 3 ports on the Victoria lake<br>(Port Bell, Jinja, Kisumu) |
| Airport | 7 airports | | |
| Border Post | 8 border posts | | Kenya, Uganda, Rwanda, Burundi, DRC, South Sudan |
| Inland Depots | 6 depots | | Kenya, Uganda |
| Pipeline | 3 routes | 1,221km | Mombasa-Nairobi-Eldoret/Kisumu |




*Source: JICA Study Team*

**Figure 11: Major Transport Infrastructures on Northern Economic Corridor**

**(Road in Kenya)**

In Kenya road improvement has been on rapid progress. In particular the section between Nairobi and Eldoret has good surface and well balanced capacity. In the current situation very long queue of trucks and trailers more than 2km can be seen in both of Mombasa urban area and Malaba border's area during day time. Although One Stop Border Posts (OSBPs) have been introduced and contributed to time saving, trucks still take a lot of time around borders like Malaba and Busia. These bottlenecks are clearly generated by cargo traffic. In addition cargo traffic is estimated to increase by three times in 2035 based on Mombasa Port Master Plan Study. It would be crucial to know how to deal with such increasing demand.

As far as weight bridges are concerned, in Mombasa a long queue is there at the weight bridge station. There is cargo traffic of more than five thousand (5,000) per day which is corresponding to fifteen thousand (15,000) pcu per day. It means that cargo traffic has enough demand that can cause a traffic jam on a two-lane-capacity road. It seems difficult to deal with this kind of volumes on alone carriage way.

There are increasing cargo traffic demands and, as the result, heavy trucks cause road surface to deteriorate in relatively short periods of time. Therefore road network should be continuously improved for increasing traffic demand and well maintained for safe and efficient logistic transport as well as passenger transport. In Kenya road's surface on the main route is generally good although many pot holes were noted in Mombasa County during the survey conducted in July 2015.

Traffic accidents at black spots on the Northern Corridor road network can be seen as one of major issues. JICA Study Team came across and saw three traffic accidents between Nairobi and Mombasa in one day excursion trip. Several measures such as additional climbing lanes, speed restriction schemes and pedestrian bridges should be considered.

Basic view on current cargo traffic movement is that too many trailers and heavy trucks requires additional exclusive lane for cargo traffic or new express way which is effectively used by cargo traffic demand. For example, in 2030 the main route on Mombasa- Nairobi-Nakuru-Eldoret-Malaba with a approximate distance of 1,000km could be suggested as a high capacity and high speed logistics highway by expansion of existing roads or new Highway- Bypass construction. The Master plan will examine the possibilities in terms of technical and economic viewpoints.

**(Road in Uganda)**

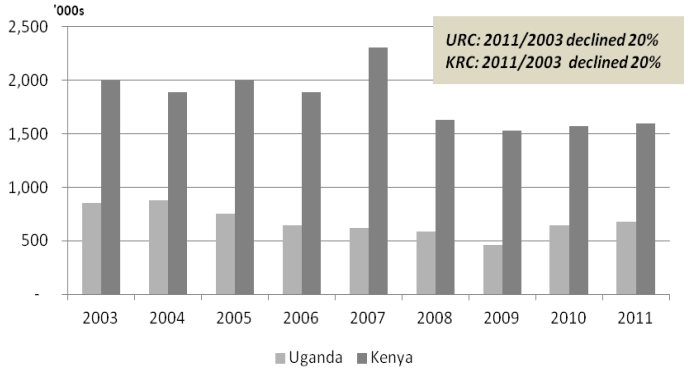
In Uganda, bottlenecks of road traffic can be seen in city centers of Kampala, Entebbe and Jinja. However, it seems different from the case of Mombasa in that passenger car demand is greater than cargo truck demand. Therefore, such bottlenecks should be settled from a viewpoint of urban transport management rather than cargo traffic management.

There are bottlenecks at the borders on Malaba boundary of Kenya, area around Inland Container Depots (ICDs) and railway cargo station in Kampala. There is similarity to Kenya case as Cargo traffic causes the congestion. Parking spaces for cargo traffic are definitely necessary.

The traffic congestion are bottlenecks and traffic accidents at black spots on the Northern Corridor road network are major issues. In order to improve the bottlenecks it is necessary to expand road network capacity through new construction of expressway, bypass, ring road, over/under pass, adding climbing lanes and/or conducting traffic demand management. Effective measures should be selected for each bottleneck and implemented.

**(Railway)**

Kenya Railways Corporation (KRC) and Uganda Railways Corporation (URC) were established in 1978 and 1977, respectively. KRC is the successor to the Kenyan portion of the East African Railways and Harbours Corporation (EAR&H) and URC is the successor to the Ugandan portion. KRC and URC have seen significant volume declines, since the steady growth of trucking industry and railway volume declined resulting in a negative spiral of deferred track and equipment maintenance.




*Source: EAC Statistics*

**Figure 12: URC and KRC Tonnage 2003-2011**

To address the decline in railway cargo and the worsening condition of railway infrastructure, Kenya and Uganda announced in 2003 that they would jointly undertake concession operation and maintenance of the railway to a private sector operator. On November 1, 2006, Rift Valley Railways, Ltd. (RVR) was awarded a concession to operate and maintain the Kenya and Uganda railway networks for 25 years.

The Standard Gauge Railway (SGR) project is planned to largely mirror the mainline of the meter gauge system with possible extensions to Juba, South Sudan and Kigali, Uganda. Total cost estimate for the project would be approximately USD 22.5 billion for Uganda and Kenya. On the other hand, RVR is likely to continue to invest in the meter gauge track as it seeks to continue stabilizing and strengthening the network. In 2010 RVR began a USD287 million capital investment programme to improve infrastructure and turnaround performance. As part of the USD287 million capital programme, RVR hopes to spend USD23.5 million per year for the next five years (2015-2019) to purchase additional locomotives.

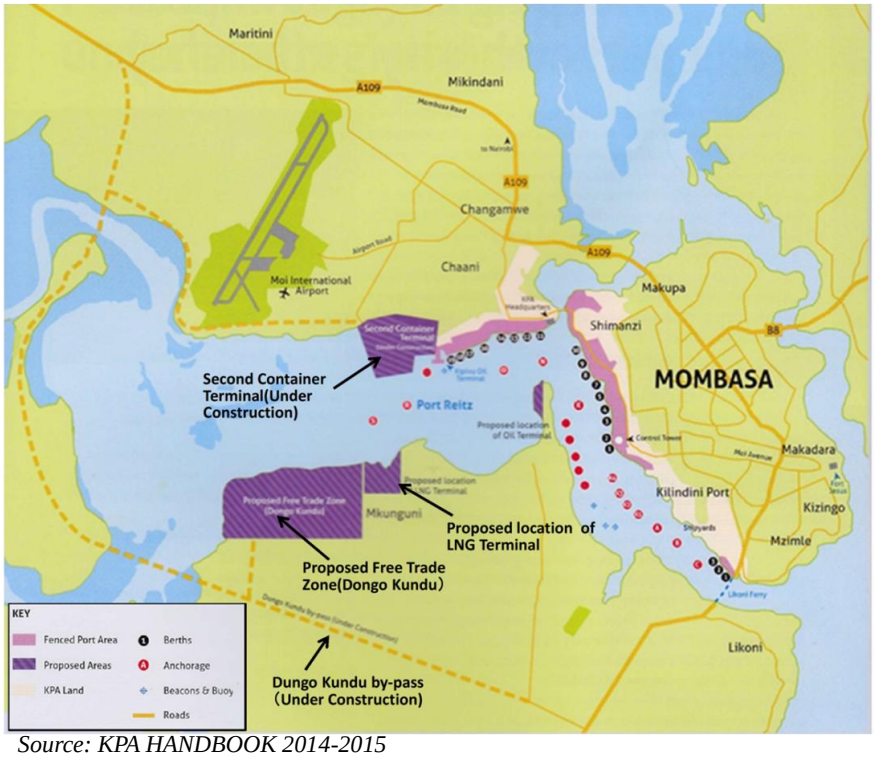
The following gaps and bottlenecks are noted in railway:

- Financial condition of RVR – RVR has made investments in track, locomotives and wagons primarily funded by and with debt. At some point, RVR may struggle to carry its debt load if its operation does not generate cash flow.
- Wagon and locomotive condition and shortages: Prior to RVR taking over the operation of the railway in 2006 and under RVR's operation through 2009, the railway suffered from lack of investment in infrastructure, rolling stock and equipment. This led to a decline in service levels and over time to a drop in volume.
- SGR project: the SGR project is being pursued for its potential to transform railway transportation and change the structure of cargo transportation. At the same time, SGR could potentially create gaps and bottlenecks for the Northern Economic Corridor as follows:
  a. Completion risk: large infrastructure projects like the SGR project are subject to completion risk. Failure to complete the entire system could reduce overall benefits and possibly create new bottlenecks by the addition of new, inefficient modal transfer points.
  b. Estimated cost to construct the system: at an estimated cost of approximately USD 22.5 billion, Kenya and Uganda will borrow significant amounts to finance construction. The strain of this borrowing will put on the national budgets heightens the completion risk.
  c. Ongoing operation and maintenance of the railway: large debt service obligations could potentially lead to inadequate funds to maintain the railway.
  d. RVR meter gauge concession: the Concession contract presumably addresses government supported rail competition with RVR. As over time it may be difficult to operate both the meter gauge and standard gauge systems due to the line duplication, therefore harmonized/integrated operation will be considered and discussion with RVR will be required.

**(Port)**

The seven countries, which are Kenya, Uganda, Rwanda, Burundi, D.R.Congo, South Sudan and Tanzania, rely on their cargo being shipped through Mombasa Port. In 2014 Mombasa Port recorded the highest out through cargo with 24.9 million tons including 1.0 million TEUs of containerized cargo. The annual growth rate of container traffic has been 10% approximately in the past five years due to the rapid economic growth of the East Africa Region. 70% of cargos go to Kenya and remaining 30% of cargos go to inland countries. Uganda has a share of 77% in transit cargo. Almost all importing and exporting cargos from Mombasa port are carried by truck and trailer. The railway has a modal share of 5 % in recent years. The main bottlenecks are:

- It still takes too long for importing cargo to clear custom and move out of the port area although dwell time and loading/unloading time have recently improved to be shorter. It still takes time for exporting cargo.
- The roads inside the urban area of Mombasa are so heavily congested that cargo traffic is usually stuck in the traffic jam during the day time.
- Northern Corridor Logistics should be operated by comprehensive multimodal transport infrastructures consisting of road transport, railway, airway, waterway and pipeline in order to deal with increasing cargo demand. In this regard, several issues on the modal shift at Mombasa Port remain to be tackled.




1) By 2020 the port expects to be handling more than 2.0 million TEUs through Second container terminal LNG terminal construction

2) Free Trade Zone project is proposed

3) Construction of a new standard gauge railway linking Mombasa with Nairobi, Kampala. and other hinterland destinations was began in 2013

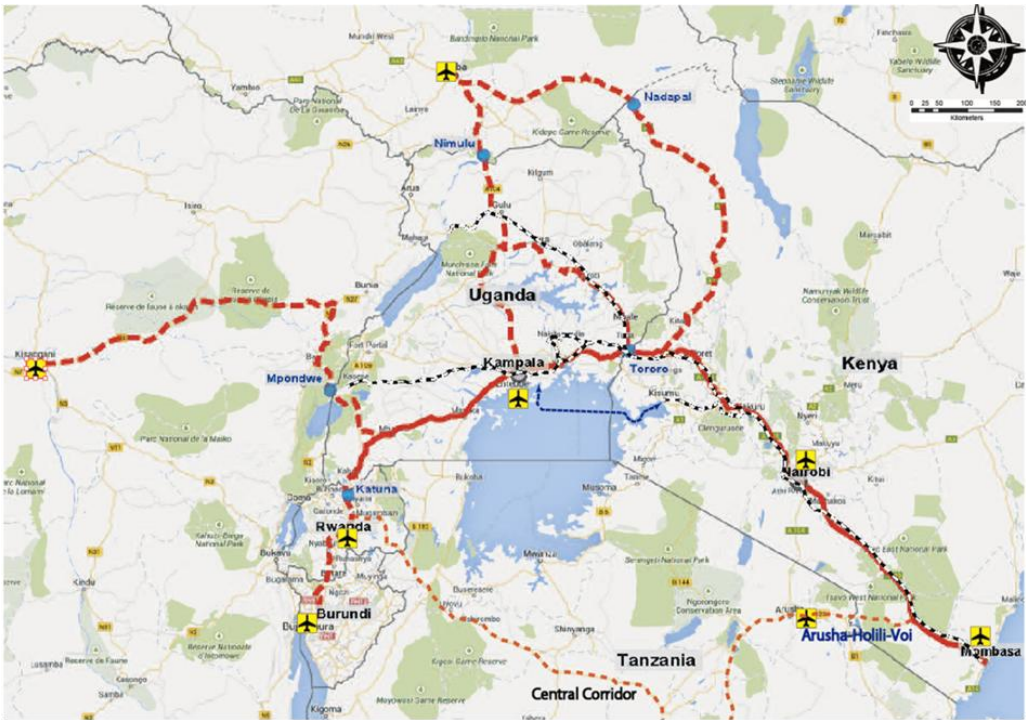
4) Construction of a southern by-pass for Mombasa linking the south to north coasts was began in 2014

*Source: KPA HANDBOOK 2014-2015*

**Figure 13: Existing and Proposed Facilities in Mombasa Port**

**(Airport)**

There are seven major airports around the Northern Economic Corridor as shown in Figure below. These airports are located apart between 700km and 500km. Nairobi airport or Jomo Kenyatta International Airport is expected to be the hub of Africa for both passenger and cargo. Nairobi airport handled the largest cargo volume of 279 thousand tons per year in EACs as was in 2012. Secondly, Entebbe airport handled the cargo volume of 81 thousand tons per year as was in 2012. Air cargos handling at Nairobi and Entebbe airport have not increased in recent years whereas cargos handling at Addis Ababa International Airport have increased rapidly. Both airports of Nairobi and Entebbe have plans to expand the handling capacity and strengthen function of hub for the region.




*Source: JICA Study Team*

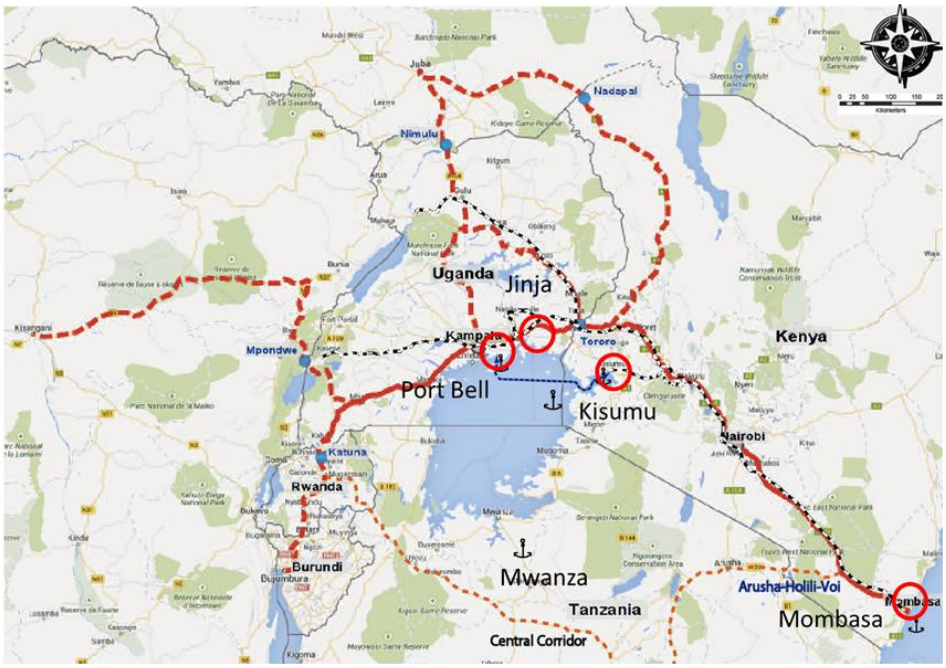
**Figure 14: Location of Major Airports**

In order to promote air cargo handling, strategic targeting of several cargos which have potential demand for export or import goods to Europe and other foreign countries by air, effective reorganizing of airports as a whole in EACs, and systematic integrating of multi transport system on the Northern Economic Corridor should be comprehensively examined. Particularly warehouse function near the airport and land transport services from the airport by truck and railway are both important as logistics infrastructure.

**(Waterway)**

There are six ports around Lake Victoria such as Kisumu in Kenya, Jinja and Port Bell in Uganda, Mwanza and Musoma and Kemondo Bay in Tanzania. On the Northern Economic Corridor Kisumu, Jinja and Port Bell were used for railway cargo transit in the past. The current status at Port Bell is that once a week or several times a month a boat is operating. Under the many constrains such as lack of boats and old port facilities, it is impossible to promote water transport. It is necessary to restore rail services which are additional vessels, rehabilitate rail in port and additional locomotive in order to provide appropriate services to customers.

Waterway is an eco-friendly transport. The Lake transport in the Lake Victoria had a great roll for cargo logistics among Port Bell, Kisumu and Mwanza. Nevertheless, cargo transport has shifted from lake transport to road transport with decline of railway logistics in recent years. It could be possible to revival the Lake Transport after the SGR project is completed and the railway is well operated covering overall the region. There is an argument whether water transport should be promoted or not as a cargo transport from the view point of time-efficient logistics. The argument will be examined in future study.




*Source: JICA Study Team*

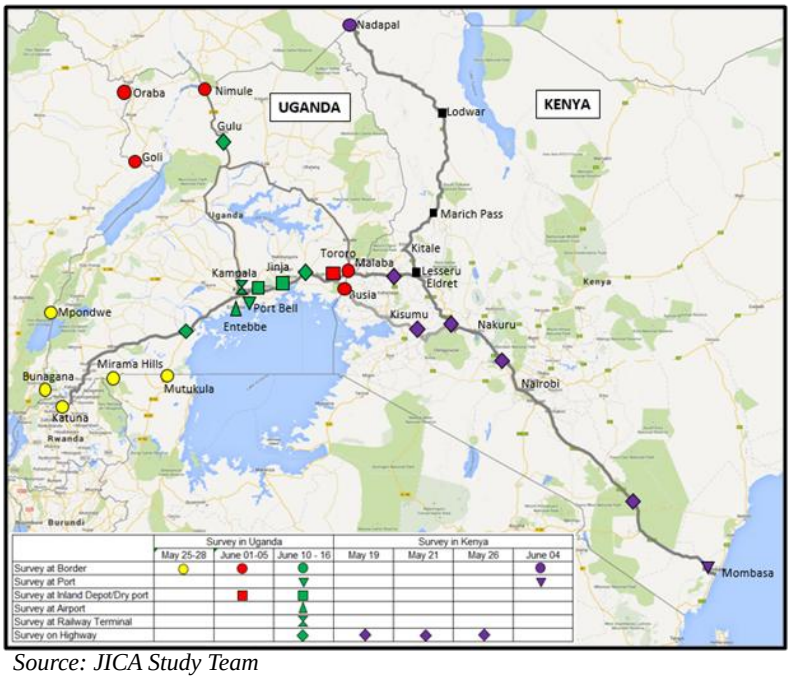
**Figure 15: Location of Ports in Lake Victoria on Northern Corridor**

**(Result of Good Movement and Vehicle Traffic Survey)**

The goods movement and vehicle transport surveys were carried out at sub-contract basis from end of May to middle of June, 2015 in Kenya and Uganda to capture freight movement on road and identify current bottlenecks in Northern Economic Corridor logistics network in Kenya and Uganda. The Traffic Surveys consisted of 2 types: i) Traffic Volume Count Survey, and ii) Roadside OD Interview Survey. Freight OD data collection surveys at railway companies and custom offices were also carried out at sub-contract basic in Kenya and Uganda. Data obtained from the surveys will be used for future traffic demand forecasting along Northern Economic Corridor.

**Table 2: Outline of Traffic Survey**

| Survey Type | Uganda | Kenya |
|---|---|---|
| Traffic Volume Counts Survey | 19 sites<br>3 days, 24hrs<br>Survey: May 25th – June 16th | 7 sites<br>1 day, 24hrs<br>Survey: May 19th – June 4th |
| Roadside OD Interview Survey | 16 sites<br>3 days, 12hrs<br>Survey: May 25th – June 16th | 1 site<br>day, 12hrs<br>Survey: May 26th |



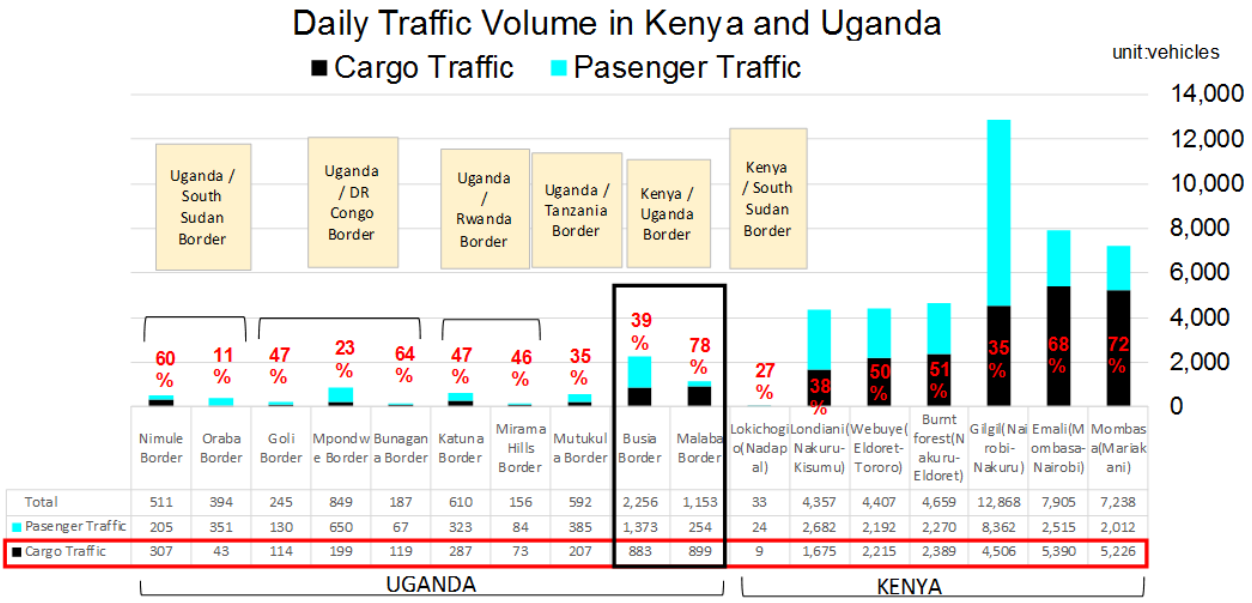

*Source: JICA Study Team*

**Figure 16: Traffic Survey Points in Kenya & Uganda**

Results of the traffic survey are summarized as follows;

- Highest rate of cargo traffic is seventy two percent (72%) of total traffic volume at Mombasa. Cargo traffic volume is 5,226 vehicles/day.
- Highest total traffic volume is 12,868 vehicles/day between Nairobi and Nakuru.
- Rate of cargo traffic at Malaba seventy eight percent (78%) is higher than at Busia thirty nine percent (39%). However the total traffic volume at Malaba (1,153 vehicles) is less than at Busia (2,256 vehicles).
- Cargo traffic volume at Nadapal (Kenya / South Sudan) is 9 vehicles which is 27% of total volume.
- Cargo traffic volume at Katuna (Uganda / Rwanda) is 287 vehicles which is 47% of total volume.

Note: Passenger Traffic is included the traffic volume of passenger cars and buses. Cargo Traffic is included the traffic volume of Light Truck, Medium Goods Vehicle, Heavy Goods Vehicle, Semi-Trailer and Truck Trailer.




*Source: JICA Study Team*

**Figure 17: Result of Traffic Surveys in Kenya & Uganda**

### (Logistics in Kenya)

The introduction of the Container Freight Station (CFS) concept in 2009 has resulted to dramatic improvement of port productivity and leading to reduction of dwell time. However, not all containers at Mombasa Port are moved to CFS. Principally, KPA designates a container to CFS on vessel-basis. Empty Container Deport has been established to enhance port performance. However, Mombasa Port area is narrow in size and therefore empty container storage space is insufficient. Moreover empty container export is not prioritized compared with full export containers or import containers. This implies that empty containers are likely to be dead stock.

Kenya Revenue Authority (KRA) manages the customs procedure and bonded warehouse/area and CFS. The long transit time is caused by non-facilitated customs procedure. The most important role of customs is to collect duty and related taxes, not to facilitate customs procedure. The duty and VAT for import and other taxes on international trade, collected by custom actually accounts for twenty five (25 %) of total tax revenue. Although EAC adopted duty exemption scheme for regional cargo, VAT and other tax (for example, excise tax) are still imposed on all import goods.

Another constrain is the heavy workloads that is tasked on clearing agents. In order to secure the duty and tax revenue, there is a procedural requirement for completion of documentation which is strict and entails heavy volumes of paperwork. Ironically though, customs facilitation program requires improvement of quality of clearing agents' work, there is little or no consideration on increasing remuneration of agents to ease the clearing agents' heavy burden.

### (Import Practice in Kenya)

In past it took long time (over 10 days) for berthing in regards to import transit time. However, current berthing period has been reduced to three (3) days only. The import transit time to Nairobi is summarized in the table below.

**Table 3: Import Transit time**

| Mombasa port | Arrival to CFS | CFS dispatch | To Nairobi | Estimated total lead time |
|---|---|---|---|---|
| 2-3 days | 1 day | 2.7 days | 1 day | 6.7-7.7 days |

*Source: Study team*

Based on the cargo flow, logistics cost consists of three (3) categories: i) port side charge, ii) customs clearance cost (agent charge), and iii) transport charge. Import cost by category is shown below.

**Table 4: Import Cost (USD)**

| Cost items | | | Direct | | CFS(KPA nominated) | |
|---|---|---|---|---|---|---|
| | | | 20 ft. container | 40 ft. container | 20 ft. container | 40 ft. container |
| **Portside charge** | Port charge | Shore handling | 105 | 160 | 65 | 105 |
| | | Wharfage | 70 | 105 | 70 | 105 |
| | CFS charge | Shore handling | Not Applicable | | 80 | 120 |
| | | Wharfage | | | 70 | 105 |
| | | Handling charge | | | 20 | 30 |
| | Shipping line charge | | 200 | 300 | 200 | 300 |
| **Cleaning agent charge at Kenya** | | | 250 | | | |
| **Transport charge** | | **(To Nairobi)** | 700 | 1,000 | 600 | 1,000 |
| | | **(To Eldret)** | 1,200 | 1,600 | 1,200 | 1,600 |
| | | **(To Kisumu)** | 1,350 | 1,700 | 1,350 | 1,700 |
| **Total Charge** | | **(To Nairobi)** | 1,325 | 1,815 | 1,355 | 1,755 |
| | | **(To Eldret)** | 1,825 | 2,415 | 1,955 | 2,355 |
| | | **(To Kisumu)** | 1,975 | 2,515 | 2,105 | 2,455 |

*Source: Interview result conducted by the Study Team*

Remark: "Direct" represents the pattern indicating direct delivery from port after customs clearance at Port.
"CFS" represents the pattern that container is transferred to CFS and customs clearance is conducted at CFS in order to avoid the customs clearance at port.

The sub-items of shipping line charges are terminal handling charges and D/O (Delivery Order) charges. Terminal handling charge and lift on/lift off charges are collected as port charges at the form of shore handling/wharfage charges worldwide. Therefore terminal handling charges seems like overlapping payment. Railway charges is estimated to be USD1000-1100/40 feet container from Mombasa to Nairobi, including lift on/ lifts off and short delivery within the destination (Nairobi) without movement charges from port to rail terminal. Since truck delivery charges is approximately USD1000/40 feet container from above table. This therefore makes railway cargo s not to have cost competitiveness.

**(Export Practice in Kenya)**

For export, factory vanning in remote areas was applicable and customs sealing and staffing are implemented under the supervision of customs officers at the site. On the other hand, declaration can be done using Simba system, which can improve the transit time to couple of hours. Transport time depends on the distance to be covered, but the long queue at the port entry is inevitable. Additionally, it is mandatory for export cargo to go through X-ray scanning check. The long waiting time at the port is necessitated by the limited number of X-ray machines and frequent break-down of these machines. The time for X-ray scanning check takes about 24-28 hours and exporters are forced to deliver export cargo at least three (3) days before CY cut off time, since they have to put in consideration the waiting time due to the long queue and X-ray scanning. This is herein noted as an extremely longer procedure compared to world-practice (which only takes one (1) day before or the same day of CY cut-off day). The export transit time is shown below.

**Table 5: Export Transit Time**

| Location | Action | Time |
|---|---|---|
| **Nairobi-Mombasa- to Export Premises** | Empty container delivery to exporters premises | Depend on distance (1day for Nairobi) |
| **Exporter's premise** | Customs procedure and vanning | 0.5 – 1.0 day |
| **Road transportation** | Delivery to port | 1.0 - 1.5 day |
| **To enter the port** | Port entry (congestion) | 0.5 -1.0 day |
| **Mombasa port** | Container yard operation to load vessel | 3 days (2 days for scanning) |

*Source: Interview result conducted by Study Team*

For the export congestion, there were two practical solutions that are being formulated: one is to promote container stuffing activity by CFS, and another is to increase parking lot area promoted by Mombasa County government.

Port charges and shipping line charges are rather not as expensive as the import tariffs. Large portion in the export cost is the transportation cost. Trucks tend to wait for cargo at importer's destination in order to avoid empty return. In this context, export transport is likely to be cheaper than import. This is the trend in other countries where import volumes exceed export volumes. The export cost is summarized below.

**Table 6: Export Cost (USD)**

| Nairobi Factory Vanning | |
|---|---|
| **Activity** | **Estimated cost (per container)** |
| **Container delivery charge to port** | 700-1,000<br>40 % reduction is applicable when empty container is available |
| **Port Charge** | Shore handling 20 ft. container 40<br>40 ft. container' 65<br>Wharfage 20 ft. container 30<br>40 ft. container 65 |
| **Agent charge** | 250 |
| **Shipping line charge** | B/L fee 60-70/shipment<br>OTHC 20 ft. container' 99<br>40 ft. container 135 |

*Source: Interview result conducted by Study team*

**(Logistics in Uganda)**

The scheme of Single Customs Territory (SCT) in East Africa has been implemented to realize seamless and facilitated cross border transport since 1999. SCT aims at full attainment of the Customs union by the removal of restrictive regulations/or the minimization of internal border controls for goods movement between the Partner States of East Africa with an ultimate realization of free circulation of goods. The target of transit time between Mombasa to Kampala is four (4) days in SCT scheme and this target is almost realized. However, most of general cargo are not transported by SCT practice and bonded procedure is still required. In addition, Kenya and Uganda have different IT system for customs procedures.. It is herein observed that transforming data or information is necessary from one country to another and this should be within requisite limited time.

In 2014 Uganda adopted Electric Cargo Tracking System (ECT) (Kenya had adopted it in 2009) in order to follow up and trace cargo movement to the destination country (to avoid smuggling). Generally the system is operated by installation of GPS equipment on the container door with container seal function. This system is only utilized for customs purpose, although it seems to be useful for transporters and importers as well.

**(Import Practice in Uganda)**

In the year 2009 CFS practice that handles imports was adopted at Mombasa port. Although a large portion of Kenyan local import cargo engage in CFS practice, but containers for transit country does not use CFS with exclusion for only specific cargo like vehicles. Containers' free time for import goods at Mombasa port is two (2) days for CFS and seven (7) days for transit, this implies that the transit procedure takes a longer time. It is possible for current transit procedure to be completed within 2 days if all the processes are properly done. However, the perfect case is very rare and normally, it takes 4-5 days.

GPS survey was done in March 2015 to collect tracking data on physical truck movement from a pick up container at Mombasa port to delivery in Uganda as the final destination. The result includes the night sleeping time and physical transit time for each cargo processes. The total transit time is estimated to be 7.5-8.5 days from vessel arrival to cargo delivery to Kampala as shown below.

**Table 7: Import Transit Time**

| Activity | GPS Survey Result |
|---|---|
| From vessel arrival to cargo dispatch | 4-5 days for transit & dispatch |
| Mombasa to Malaba | 1day and11h44m(incl.1h07m night time sleep) |
| Malaba(Kenya) | 1day and12h49m(incl.1 night sleep) |
| Malaba (Uganda) | |
| Malabar-Kampala | 0day and 15h35m(incl. 5h56m night sleep) |
| ICD clearance | 0day and 3h05m |
| Total | 7.5day -8.5 day(after dispatch at Mombasa, it takes 3.5 days ) |

*Source: JICA Study Team*

The current required time for Malaba border crossing is around 1.5 days and this is considered to be long time. The waiting time at Kenyan side (28 hours) is longer than at Uganda side (7 hours), since the development for parking space at boarder is underway on the Kenya side to reduced congestion at the border while the parking space on the Ugandan side has since been developed. In addition, even though customs offices are opened for twenty four (24) hours basis, but clearing agents operate only on day time basis. Therefore night time cargo crossing the border is not possible.

Total rail cost estimated to be USD 2,800/20 feet container and cheaper than truck (USD 3,000/20 feet container), which means that the rail cost is approximately 10% cheaper compared to truck transport. The import cost of rail and truck transport are showed below.

**Table 8: Import Cost (USD)**

| | | | Direct from Port by Truck | | Rail | |
|---|---|---|---|---|---|---|
| **Container Size** | | | 20 ft. container. | 40 ft. container | 20 ft. container | 40 ft. container |
| **Port side charge** | Port charge | Shore handling | 85 | 125 | 85 | 125 |
| | | Wharfage | 70 | 105 | 70 | 105 |
| | Shipping line charge | | 200 | 300 | 200 | 300 |
| **Cleaning agent charge at Kenya** | | | 300 | | | |
| **Transport charge** | | | 1,995 | 2,420 | 1,825 | 2,120 |
| **Cleaning agent charge at Uganda** | | | 250 | | | |
| **ICD usage charge** | | | 100 | 100 | - | - |
| **Total** | | | 3,000 | 3,500 | 2,800 | 3,200 |

*Source: Interview survey conducted by JICA Study Team*

Re) Rail transport charge includes lift on/liftoff charges and final delivery within short distance. However, port/ rail yard transportation charges are required additionally.,

Taking a look at the cost/km, Mombasa/Kampala route seems to be reasonable. This will show the result of on-going facilitation plans. According to the latest NCTTCA survey, the transport cost has also fallen by sixteen (16%) in comparative of 2009-2010 to 2014 for Mombasa/Kampala.

### (Export Practice in Uganda)

Using the ASYUCDA system it is possible to make declaration at any part of Ugandan territory. Processing works are concentrated in the data center after data entry. It takes only 3 hours from the moment of declaration to the moment that permission is issued in case of the best practice. Factory vanning is allowed under the supervision of customs officers and it requires customs sealing. Then cargo is allowed to go to the border and estimated transit time is 4-5 hours from Kampala. After arrival at border, exit procedure can be completed in the shortest time.

On the Kenyan side, agents entry transit process (T810,and T811) in Simba system is required. Data is transmitted to Nairobi center, approval is issued back to Malaba, thereafter the approval is printed out, and related documents are submitted to Malaba customs on Kenyan side. This process takes about 8 hours. Thus, total required time at the border is around one (1) day in an extreme case. Night time driving is not safe due to lack of safety measures in place along the roads so that the transport time to Mombasa is estimated to be 2-3 days. After arrival at the port, a long queue for port entry is unavoidable. In addition, 100 % scanning using X-Ray machine is implemented and requires at least two (2) days due to the limited number of equipment and also the frequent break down of these machines. It is imperative to note that if the scanning system were installed outside of the port, it would be very convenient for many users.

**Table 9: Export Transit Time**

| Location | Action | Result |
|---|---|---|
| **Kampala** | Declaration to truck departure at Kampala | 1day（customs declaration: 3-4 h） |
| **Kampala to Malaba** | Truck departure from Kampala to Malaba | 4-5 h |
| **Border crossing** | Entry/Exist border gates | 1 day |
| **Malaba-Mombasa** | Malaba departure-Mombasa port | 2-3 day |
| **Mombasa port** | From cargo receipt at CY to vessel departure | 3 day( 2day for scanning) |
| Total | | 7Day 4hours -8day 5 hour |

*Source: Interview survey conducted by JICA Study Team*

The transportation cost is relatively high due to the long distance and limited number of export cargo. If exporters could find the empty containers at any time, the transport cost would be reduced significantly. According to export promotion council in Uganda, it is difficult to find empty containers in Uganda. Therefore empty containers are obtained in Mombasa and this escalates the transport cost. This makes it difficult to promote exports from the viewpoint of cost.

**Table 10: Export Cost (USD)**

| Kampala Factory Vanning | |
|---|---|
| **Activity** | **Estimated cost (per container)** |
| Container delivery charge to Kampala | 2500 (pick up empty at Mombasa)<br>800-1000 ( in the case of return container is available) |
| Customs Clearance charge for Uganda agent | 150 document, clearance |
| Port Charge | Shore handling 20 ft. container 40<br>40 ft. container 65<br>Wharfage 20 ft. container' 30<br>40 ft. container' 65 |
| Agent charge for Kenyan | 250 |
| Shipping line charge | Bill of Lading(B/L) fee 70<br>Origin Terminal Handling Charge(OTHC ) 20 ft. container 99<br>40 ft. container 135 |
| Total | 20 ft. container 1,439-2,935<br>40 ft. container 1,649-3,235 |

*Source: JICA Study Team*

The high cost for container transport (pick up empty container from Mombasa and return it with goods to Mombasa) remains a bottleneck. Therefore, Development of Inland Container Depot (ICD) at Kampala will be proposed as a workable solution.

**(Power in Kenya)**

As per by 2014, electricity provided nine (9%) of overall energy requirements in Kenya, while petroleum and renewable energy provided twenty two (22%) and sixty nine (69%), respectively. Peak demand increased from eight hundred and ninety nine (899) MW in FY 2004/05 to one thousand four hundred and seventy (1,470) MW in FY2013/14 reaching one thousand five hundred and twelve (1,512) MW by December 2014, while the installed capacity is two thousand one hundred and seventy three (2,173)MW in 2014. The number of electricity consumers tripled by more than one million from 735,144 in FY 2004/05 to 2,757,983 by June 2014.

Power generation in Kenya is supplied by Kenya Electricity Generation Company (KenGen), Geothermal Development Company Ltd. (GDC), Independent Power Producers (IPPs) and Kenya Nuclear Electricity Board (KNEB). Kenya Electricity Transmission Company (KETRACO) is a government owned company established to own, operate and maintain new high voltage (132kV and above) electricity transmission. Kenya Power and Lighting Company (KPLC) is the single off-taker in the power market, buying power from all power generators for onward transmission, distribution and supply to consumers (single seller).

It is projected that by 2018, peak demand will be 2,665MW against an installed capacity of 4,554MW. On the other hand the power sector in Kenya is still faced with challenges such as: under voltage in Western Kenya, transmission lines and transformer overloads, delay of implementation progress of projects, high system losses and low electrification rate (about 30% of the total population).

**(Power in Uganda)**

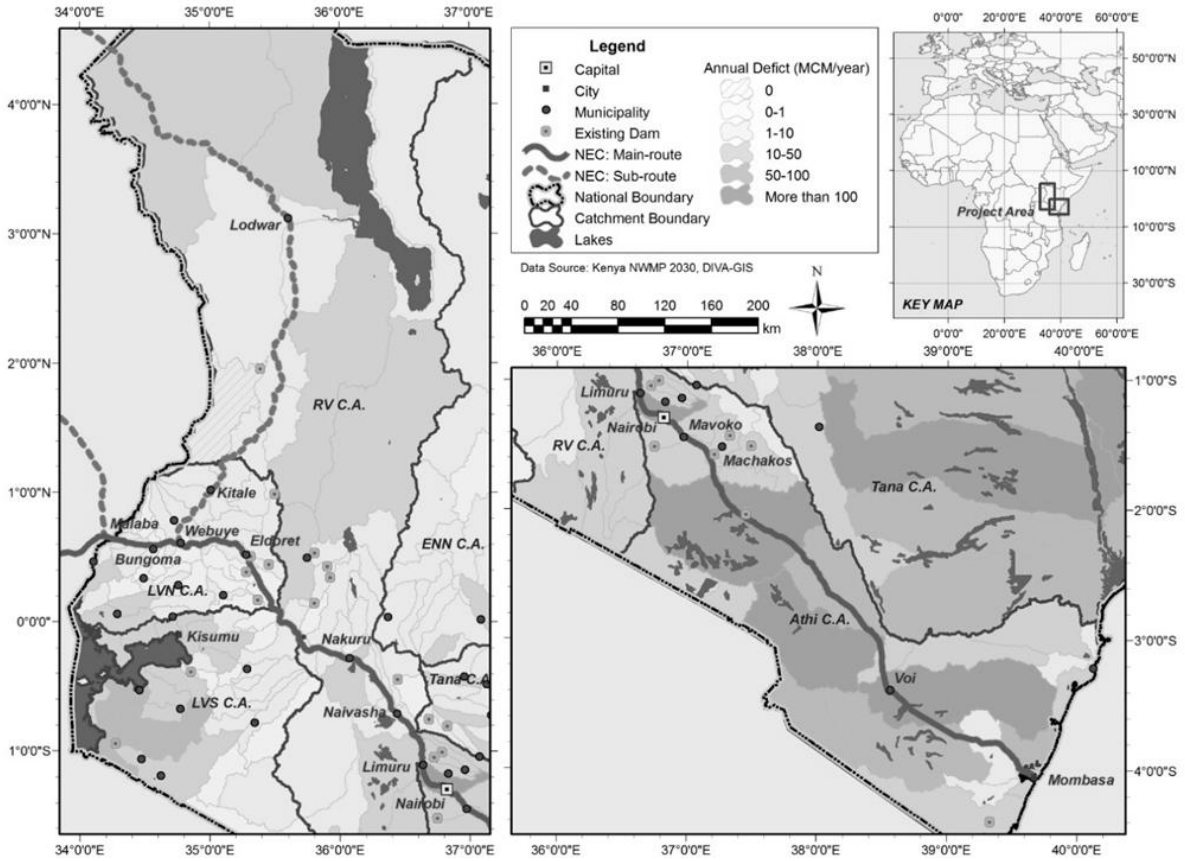
Uganda has an installed capacity of eight hundred and fifty one plus (851.53)MW, mostly consisting of hydro power plants eighty (80%), thermal, mini and micro-hydro power plants which either contribute to the national electricity grid or directly serve specific communities and or individuals. Uganda also imports some electric power from Rwanda as a cost effective measure to serve Kisoro town which is nearer the grid from Rwanda than to the one in Uganda. Some of the generated power is exported to neighboring Kenya, Tanzania and Rwanda. The maximum system peak demand registered in 2014 was about five hundred and forty nine plus (549.78)MW with installed power generation capacity of 851.53MW.

Power generation in Uganda is supplied by Uganda Electricity Generating Company Ltd (UEGCL), Thermal plants, mini hydro power plants and power stations in some factories. Power transmission is managed by Uganda Electricity Transmission Company Ltd (UETCL) and power distribution is managed by nine distribution companies. Among them, Umeme is the biggest distribution company that purchases ninety six (96) % of total energy.

It is projected that the power demand forecast is estimated to be one thousand and thirty (1,030) MW by 2020 with the increase power generation capacity of up to two thousand five hundred (2,500) MW. On the other hand, the power sector in Uganda is still faced with challenges from both the supply and demand sides such as: long time process for land acquisition with high cost, low electrification rates, high tariff and uncompetitive and high system losses.

**(Water in Kenya)**

Kenya is classified as a chronically water-scarce country. Although the UN recommends per capita available water resources of one thousand (1,000) m3/year, Kenya has only five hundred and eight six (586) m3/year as of 2010. To overcome this water stress situation, the National Water Master Plan 2030 (NWMP 2030) was formulated in 2013. From the aspect of water, the most likely bottleneck for the development of the Northern Economic Corridor is considered to be the volume of available water resources in the country. The NWMP 2030 provides the result of water balance study by comparing the years 2010 (present) and 2030 (projection). It indicated that most sub-catchments along the Northern Economic Corridor particularly the areas between Nairobi and Mombasa suffer from water deficit even in 2015.




*Note: The 2015 water deficit was computed with the linear-proportion between 2010 and 2030 data.*
*Source: Computed by JICA Study Team based on the National Water Master Plan 2030 (JICA, October 2013)*

**Figure 18: Annual Deficit by Sun-Catchment in 2015**

It is evident from the result of NWMP 2030 that even present water demands are exceeding available water resources under the conditions of existing water resources structures. The NWMP 2030 provided a clear water resources development plan toward 2030. Based on the recent water sector review report as well as discussions with the MWI, the low development rate against the target is referred to the issue on the supply side: a) social challenges with affected communities within the potential infrastructure sites. On the other hand, key issues on the demand side are analyzed by the NWMP 2030 as follows: b) insufficient water saving, and c) high level of non-revenue water.

**(Water in Uganda)**

With a mean annual rainfall of around one thousand two hundred (1,200) mm, Uganda may be considered endowed with significant freshwater resources. However, their uneven spatial and temporal distribution coupled with the ever increasing pressure on the resource due to rapid population growth, increased urbanization and industrialization, among other factors still remains a big challenge to the sustainable water resources management and development.

From the past relevant studies, the current situation on water resources is not severe in a macro perspective. However, as pointed out by the JICA study in Kyoga catchment, future water demand will exceed the available water resources in some sub-catchments. This implies that water shortage may occur in some specific areas and/or in some limited seasons even though the water resources are enough annually and broadly. In the future study, water balance between available water resources and projected water demand for the year 2030 needs to be studied on a monthly basis per each catchment.

**(Information, Communication and Technology (ICT) in Kenya)**

The National Optic Fiber Backbone Infrastructure (NOFBI) is a countrywide territorial optic fiber network installed by the government and operated and maintained by Telkom Kenya. The network is four thousand three hundred (4300) km long and was installed in 2006 and connects twenty nine (29) counties headquarters, including Nairobi, under phase I of the project. Since its installment, this optic fiber cable network has had numerous beneficial impacts in Kenya. However, there have been a number of challenges and constraints such as poor management, poor access to base stations, so many sites being off the power grid. On 22nd September 2014 the Government of Kenya launched an expansion plan for NOFBI under phase II to cover the remaining 18 counties. This project is funded jointly by the Government of Kenya and a loan from the Chinese Government.

There is need to expand the optic fiber cable network to cover other areas including the Northern Corridor. The Ministries responsible for ICT infrastructure in the member states agreed to incorporate fiber optic access facilities particularly the ducts in regional infrastructure projects. A bill has been drafted in Kenya that will enable ICT infrastructure to be incorporated in the Northern Corridor Integration Projects.

**(Information, Communication and Technology (ICT) in Uganda)**

Over the years, Uganda Government through the ICT sector has put in place policy, legal and regulatory frameworks aiming at providing a conductive environment for private sector participation and investment. Fiber cable network deployment in Uganda is around five thousand one hundred and ten plus (5,110.65) km which was laid by both the Government and Private Sector with connectivity to the Northern Border with South Sudan at Nimule and to the Southern border with Tanzania at Mutukula. This has further enabled border to border connectivity from the East (Busia and Mutukula) to the West (Mpondwe). The number of base transmitters countrywide stands at three thousand five hundred and twenty four (3,524) sites.

The traditional licensing framework that data service providers to deploy their own infrastructure is a barrier to entry for new players into the ICT market. In addition, weak enforcement of infrastructure sharing has led to high costs of network expansion and has limited innovative approaches to expansion. In Uganda, installation of the fiber access facilities particularly the ducts has already been included in the Standard Gauge Railway (SGR), oil pipelines and power lines projects. The ducts will be installed parallel to SGR lines, oil pipelines and power lines. In future, fiber will be installed in such ducts by the Government or private sector.

**(Project Implementation Scheme in Kenya)**

The Government of Kenya has committed to utilize the private financial initiatives for the infrastructural projects development in order to realize the Vision 2030. Kenya's PPP programme is being promoted as a long-term and not as a series of independent programmes. After the promulgation of PPP Act No.15 in February 2013, PPP Unit has been established under the National Treasury and has been efficiently publishing a national priority list of PPP projects. Although PPP agreements of progressing projects should have to be verified at a certain time, the PPP Agreement of one project within a national priority list was signed as the first one in June 2015 and several pipeline projects are under Transaction Advisor stages. Synthesis of the legal frame work has been progressing reasonably well including PPP Project Facilitation Fund and County Government PPP Regulations.

In consideration of participants, while the local commercial financing sectors show the willingness to participate in infrastructural PPP projects subject to the certain government support, Japanese corporations seem to be reluctant on PPP projects. On the other hand, a certain gap exists between the aggressive intention of government and a cautious private business fields. Major gaps are classified into four (4) categories; affordability, politics, legal and economy. First, affordability of the users is key in determining whether a beneficiary charge shall be imposed. Secondly, political risks will obviously discourage private sectors, third contain a number of gaps, such as no time limits for procurement of investor, restriction on the transfer of shares of SPV, contract administration of public sector, etc. Finally, the funding gap between the fiscal budget and required investment amount, a little support and no incentives for investors under PPP Act, among others.

**(Project Implementation Scheme in Uganda)**

After the resolution of PPP Bill 2012 in Parliament on 17 July 2014 and re-resolution on 1st July 2015, and currently waiting for the assent by the President, the Government of Uganda has worked out to establish the provisional PPP Unit in October 2014. The PPP Unit commenced its function in April 2015, and has listed nine (9) in number of priority projects as the National Development Plan which are under review in the current status. Due to the delay of promulgation of PPP Law, the responsible public service ministries have been unable to organize their "PPP Department" to comply with the PPP Law. In Uganda PPP initiative is going just to takeoff. Therefore legal synthesis is under preparation by PPP Unit. Also the government needs to plan and allocate the budgetary provision to support PPP projects.

According to the commercial bank in Uganda, the private industries relating to financing are basically welcome to PPP policy, also the resolution of Parliament for the support will be necessary to cause more credibility.

Although preparation activities are immature in legality and governability, one candidate of the PPP project, "Kampala-Jinja Expressway (project)" has been presented to the business industry to solicit their interests. According to the IFC (Transaction Advisor to the project), a number of investors/financiers showed their interest to participate in the project. The project was designed for Design-Build-Finance-Operate and Transfer with availability based payment scheme. JICA Study Team appreciates the framework of UNRA/IFC of the Project pending detailed PPP Agreement to be verified. Concerning any issues for the coming PPP project, Uganda faces more Gaps than Kenya. Each item can be referred to the case of Kenya since the gaps are almost in similar fields. Particular areas to be paid attention to include capacity building of the staff and organization of government, ministries and any authorities which will be a part of PPP projects.

**(Environmental and Social Consideration in Kenya)**

There is a Strategic Environmental Assessment (SEA) guideline titled "National Guideline for Strategic Environmental Assessment 2012" (hereinafter referred as SEA Guideline in Kenya) and the authority in change is National Environment Management Authority (NEMA).

For the implementation of SEA in Kenya by the Kenyan local consultant firm, the firm shall have "Firm of Experts" license and the team leader of local consultant team shall have "Lead Expert" license. SEA will be implemented based on SEA Guideline in Kenya and "JICA's Guidelines for Environmental and Social Considerations, 2010".

Because of the highly extensive target area of this Master Plan, it is expected that the level of SEA will not be at the sub-county or county level, but region level. This concept is clearly stated in TOR for SEA consultant selection and considered in design of stakeholder meetings. At the detailed SEA study stage, ten (10) stakeholder meetings will be conducted (2 rounds x 5 places).

**(Environmental and Social Consideration in Uganda)**

There is no binding guideline for SEA at the moment in Uganda. 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 in 2016, and NEMA was to hire a consultant to finalize the draft SEA guideline in July 2015.

Since there is no binding guideline for SEA, no legal framework exists at the moment for SEA. SEA in this Master Plan study can be implemented by utilizing the guideline of donor agency or common practice accepted internationally, and NEMA is not in position to give any approval of SEA.

For the implementation of SEA in Uganda shall be by Ugandan local consultant firm, although there is no legal framework for Implementation SEA, the team leader of local consultant team shall have EIA license with condition of "as a Team Leader/Member" as specification of local consultant selection. NEMA shall be one of key stakeholder, and MOWT and the JICA Study Team will approve SEA Final Report as the PPP owner and the employer of the SEA consultant.

Because of so extensive target area of this Master Plan, expected level of SEA is not district level, but regional level. This is clearly stated in TOR for SEA consultant selection and considered in design of stakeholder meetings. At the detailed SEA study stage, six (06) stakeholder meetings will be conducted (2 rounds x 3 places).

**(Way forward)**

The following works will be done by the end of December 2015.

- Detailed analysis of current bottlenecks based on result of Market and Value Chain Survey and Good Movement and Traffic Survey,
- Formulation of Development Vision and Scenario for Master Plan,
- Identification of Future Bottlenecks through establishment of social and economic framework, and preliminary demand freight traffic demand forecasting,
- Formulation of Development Strategy based on potential assessment as well as bottleneck analysis,
- Implementation of SEA for Master Plan,
- Implementation of Study Tour to Mozambique in November, and
- Preparation of Progress Report No.2 in December.

On the other hand, the Study team needs further details from Ministry and Agencies Concerned to establish development scenario including:

- Level of SGR services to be expected in the future,
- Future modal share between railway and truck in NRC,
- Project schedule of SGR,
- Information on Super Highway,
- Current status and implementation plan of oil pipeline to Lamu, and
- Current status and implementation plan of Lamu port.

(End of Executive Summary)

# 1 Introduction

## 1.1 Background & Objective

### 1.1.1 Background

The Northern 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 Democratic Republic of Congo (DRC). The road network also links Kenya and Uganda to Juba in South Soudan. The importance of the Northern Corridor is increasing and the current combined transit and transshipment traffic through the Corridor has been growing at a rate of 20 percent annually.

However, there are some obstacles in Northern Corridor, such as inadequate infrastructure, poor interconnectivity of 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% of the value of the goods. The high transport cost is one of the major obstructive factors that hinder economic development of the region, especially inland area.

In this context, the Government of Uganda (GOU) requested Government of Japan (GOJ) to implement a project to formulate a master plan on logistics in Northern Corridor in order to promote regional development. Concurrently with this, the Government of Kenya (GOK) also requested GOJ for a project on Northern Corridor which shares same goal and outputs.

In response to the request of GOU and GOK, Japan International Cooperation Agency (JICA) dispatched "Detail Design Formulation Team for the project" in October and November, 2014. The team proposed to apply a project concept as Northern Economic Corridor, since the project should cover not only logistics but also the regional development along the Northern Corridor. The GOU and GOK 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 Northern Economic Corridor (hereafter the Project).

### 1.1.2 Objective

The objective of the Project is to formulate a Master Plan on Logistics for Northern Economic Corridor, along with integrated regional development strategy consistent with sub-regional development plans and national development plans.

### 1.1.3 Target Year

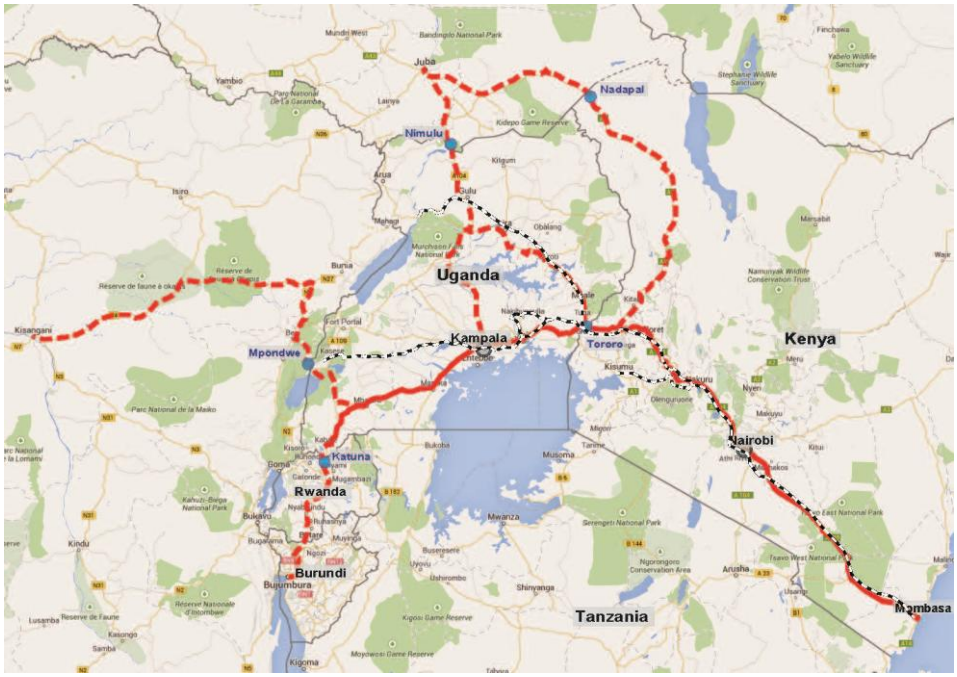
The target year of the Master Plan on Logistics for Northern Economic Corridor (hereafter MP) is 2030.

### 1.1.4 Target Area

The target areas for the MP will cover the following routes which are part of Northern Economic Corridor and its surrounding areas:

- Main route: Mombasa-Nairobi-Tororo-Kampala-Katuna-(Kigali/Rwanda);
- Sub-route: Eldoret - Nadapal – (Juba/South Sudan);
- Sub-route: Tororo - Gulu – Elegu – (Juba/South Sudan);
- Sub-route: Kampala- Gulu – Elegu – (Juba/South Sudan); and
- Sub-route: Mbarara- Mpondwe– (Kisangani/D.R.C).

The above routes are illustrated in the Figure 1.1.1 below.




*Source: JICA Study Team*

**Figure 1.1.1: Routes of Northern Economic Corridor**

# *1.2 Scope of Work and Work Progress*

## 1.2.1 Overall Scope of Work

The project have to cover nine tasks, namely: 1) Understanding of Current Situation and Issues (situational analysis) ; 2) Freight Transport Survey, Market Survey, and Freight Lead Time Survey, 3) Identification of Development Potentials and Bottlenecks, 4) Formulation of Development Vision, 5) Establishment of Social and Economic Framework, 6) Formulation and Comparison of Alterative Development Scenarios, 7) Formulation of Comprehensive Development Strategy, 8) Development of Draft Master Plan on Logistics with Regional Development Strategy, and 9) Technical Support to Strategic Environmental Assessment/Stakeholder Meetings. The main tasks and the current progress are shown below.

| Major Tasks | 2015 | | | 2016 | | |
|---|---|---|---|---|---|---|
| | Mar~June | July~Sept | Oct ~ Dec | Jan~Mar | Apr~June | July~Sept |
| Understanding of current situation and issues (situational analysis) | | | | | | |
| Freight Transport Survey, Market Survey, and Freight Lead Time Survey | | | | | | |
| Identification of Development Potentials and Bottlenecks | | | | | | |
| Formulation of Development Vision | | | | | | |
| Establishment of Social and Economic Framework | | | | | | |
| Formulation and Comparison of Alterative Development Scenarios | | | | | | |
| Formulation of Comprehensive Development Strategy | | | | | | |
| Development of Draft Master Plan on Logistics with Regional Development Strategy | | | | | | |
| Strategic Environmental Assessment/Stakeholder Meetings | | | | | | |
| Deliverables | ICR | PR 1 | PR 2 | ITR | DFR | FR |

**Figure 1.2.1: Main Tasks and the Current Progress**

The purpose of the Progress Report No.1 is to show results of the current situation analysis as well as preliminary assessment of the potentials and the current bottlenecks. In addition, other reports listed in Table below will be or were prepared and submitted as the outputs of the Study.

**Table 1.2.1: Key Deliverables**

| No | Report | Submission Month | Language | No. of Copies |
|---|---|---|---|---|
| 1 | **Inception Report**<br>・Plan and Deliverables | April 2015 | English | 25 copies<br>Submitted |
| 2 | **Progress Report 1**<br>・Situation Analysis and Preliminary Assessment of Current Bottlenecks | August 2015 | English | 25 copies<br>Draft Prepared |
| 3 | **Progress Report 2**<br>・Bottleneck and Potential Assessment<br>・Framework of Regional Economy and Logistics Development | December 2015 | English | 25 copies |
| 4 | **Interim Report**<br>・Comprehensive Development Strategy for Northern Economic Corridor | February 2016 | English | 25 copies |
| 5 | **Draft Final Report (DF/R)**<br>・Draft Logistics Master Plan with Regional Development Strategy | June 2016 | English | 25 copies |
| 6 | **Final Report（F/R）**<br>・Final Logistics Master Plan with Regional Development Strategy | September 2016 | English | 25 copies |

## 1.2.2 Work Done

The following works have been done so far.

**Table 1.2.2: Works Done So Far in Uganda**

| No | Activity | Date | Remarks |
|---|---|---|---|
| 1 | ・Commencement of Work | 17 March 2015 | |
| 2 | ・Arrangement of Office | March and April 2015 | MOWR arranged office space and necessary equipment |
| 3 | ・Meeting with MOWT | 25 March 2015 | Explanation of Outline of the Study |
| 4 | ・Meeting with TWG | 01 April 2015 | Explanation of Inception Report for Comments |
| 5 | ・Tender and Contracting for Market and Value Chain Survey | 24 March – 01 April 2015 | Awarded Contractor is Management Innovations |
| 6 | ・Tender and Contracting for Good Movement and Traffic Survey | 01 – 24 April 2015 | Awarded Contractor is Steward Consultancy |
| 7 | ・Participation to Logistics Platform Workshop | 13 April 2015 | Organized by Trade Mark |
| 8 | ・Steering Committee Meeting for Draft Inception Report | 30 April 2015 | Inception report was approved. |
| 9 | ・Workshop for Market and Value Chain Survey | 19 June 2015 | Sub-Group of TWG for Regional Development was participated. |
| 10 | ・Submission of Progress Report No.1 for Market and Value Chain Survey | 26 June 2015 | Main content is Long list and Selection of 4 VCs. |
| 11 | ・Meeting with for Sub-Group of TWG for Logistics and Related Infrastructure | 15 July 2015 | The purpose is to present findings of JICA Team and discuss those in terms of logistic sector . |
| 12 | ・Submission of Progress Report No.2 for Market and Value Chain Survey | 20 July 2015 | Main content is End Market Analysis for 4 VCs. |

**Table 1.2.3: Works Done So Far in Kenya**

| No | Activity | Date | Remarks |
|---|---|---|---|
| 1 | ・Commencement of Work | 21 March 2015 | |
| 2 | ・Arrangement of Office | March and April 2015 | MOTI arranged office space and necessary equipment |
| 3 | ・Meeting with MOTI | 25 March 2015 | Explanation of Outline of the Study to Chief Engineer |
| 4 | ・Meeting with TWG | 15 April 2015 | Explanation of Inception Report for Comments |
| 5 | ・Tender and Contracting for Market and Value Chain Survey | 16 March – 14 April 2015 | Awarded Contractor is PANAFCON Ltd |
| 6 | ・Tender and Contracting for Good Movement and Traffic Survey | 01 – 28 April 2015 | Awarded Contractor is ITEC Engineering Ltd |
| 7 | ・Participation to Road Side Station (RSS) Investors' Conference | 28 April 2015 | Organized by 26.NCTTCA |
| 8 | ・Steering Committee Meeting for Draft Inception Report | 29 April 2015 | Inception report was approved. |
| 9 | ・Workshop for Market and Value Chain Survey | 19 June 2015 | Sub-Group of TWG for Regional Development was participated. |
| 10 | ・Submission of Progress Report No.1 for Market and Value Chain Survey | 26 June 2015 | Main content is Long list and Selection of 4 VCs. |
| 11 | ・Submission of Progress Report No.2 for Market and Value Chain Survey | 20 July 2015 | Main content is End Market Analysis for 4 VCs. |
| 12 | ・Meeting with for Sub-Group of TWG for Logistics and Related Infrastructure | 23 July 2015 | The purpose is to present findings of JICA Team and discuss those in terms of logistic sector . |

# 2 Regional Profiling of the Corridor

## 2.1 Northern Economic Corridor in Kenya

### 2.1.1 Vision and Development Plan

The Kenya Vision 2030 is a long-term development plan of the country, which aims to transform Kenya into "*a newly-industrializing, middle income country providing a high quality of life by 2030*". The Vision 2030 is planned to be achieved through the five year Medium Term Plan (MTP), and currently Kenya has been implementing the 2nd MTP, which started from 2012 and will end by 2017.

**Table 2.1.1: Flagship Projects in the 2nd MTP (2013-2017) related to Northern Economic Corridor**

| Sector | Flagship Programme | Specific Projects | Source of Fund |
|---|---|---|---|
| Infrastructure | | | |
| 1. Aviation | Expansion and modernization of aviation facilities | (1) Construction of 178,000m2 terminal facilities and second runway in JKIA | PPP |
| | | (2) Kisumi international airport | KAA |
| | | (3) Eldoret international airport | KAA |
| 2. Shipping and Route Network | Improvement of shipping and marine facilities | (1) Second container terminal at KPA | KPA |
| | | (2) Development of Dongo Kundu Free Trade Port | - |
| | | (3) Ferry Services (two new ferries, services in Lake Victoria, etc.) | PPP, GoK |
| 3. Railway Transport | To increase the railway capacity to handle 50 percent of freight cargo (25 million tons) from the Mombasa Port | (1) Development of Standard Gauge Railway Line: between Mombasa through Nairobi to Malaba with connectivity to Kisumu, Uganda and Rwanda to facilitate enhanced trade within EAC | GoK |
| | | (2) Nairobi commuter railway services system: Phase II involves construction of a railway line from JKIA to the Svokimau Railway Station | GoK, PPP |
| | | (3) Kisumu and Mombasa commuter rail systems | GoK, PPP |
| 4. Roads | To introduce the PPP arrangements for roads on Nairobi Bypass and major roads including sections of Mombasa-Nairobi-Malaba | (1) Northern Corridor Transport Improvement Project (NCTIP): Mau Summit – Kericho (57km), Kericho – Nyamasaria (87km), Nyamasaria and Kisumu Bypass (24km), Timboroa – Eldoret (73km), Eldoret – Webuye (60km) and Webuye –Malaba (62km) | GoK, Donor |
| | | (2) East Africa Road Network Project (EARNP): Upgrading of Voi-Mwatate (114km), Malindi-Garsen-Lamu (127km), Rehabilitation/ Expansion of Malindi-Mombasa-Lungalunga (238km), etc. | GoK, Donor |
| | | (3) Kenya Transport Sector Support Project: Rehabilitation of Kisumu-Kakamega-Webuye-Kitale (145km), Dualling of Athi River-Machacos Turnoff A109 (24km), Construction of Fly-overs/interchanges at Nakuru/Nyahuru turnoff, etc. | GoK, Donor |
| | | (4) Construction of Bypass:<br>- Nairobi Southern Bypass (30km)<br>- Development of Greater Eastern Bypass (79km)<br>- Greater Nairobi Southern Bypass (60km)<br>- Mombasa Western/Northern Bypass-Likoni-Mtwapa<br>- Dongo Kundu Bypass (26km)<br>- Nakuru Bypass (20km)<br>- Eldoret Bypass (20km) | GoK, Donor |
| | | (5) Development of a 50 years National Integrated Transport Master Plan (TMP) | - |
| 5. Pipeline | | (1) Development of the Mombasa Petroleum Trading Hub | PPP, GoK |
| | | (2) Construction of a new oil pipeline from Mombasa to Nairobi | KPC |
| | | (3) Kenya-Uganda oil pipeline project | GoK, Donor |
| 6. Lamu Port-Southern Sudan-Ethiopia Transport Corridor (LAPSSET) | | (1) Standard Gauge Railway Line | GoK |
| | | (2) New road network: Merile River-Marsabit (173km), Marsabit-Turbi (121km), Turbi-Moyale (128km), Garsen-Lamu (175km), Lamu-Garissa (250km), etc. | GoK, Donor |

| Sector | Flagship Programme | Specific Projects | Source of Fund |
|---|---|---|---|
| | | (3) Oil pipeline, 1,400km crude oil pipeline and 980km of refined oil pipeline | GoK, PPP |
| | | (4) Oil refinery at Lamu with capacity of 120,000 barrels per day | GoK, PPP |
| | | (5) 3 international airports at Lamu, Isiolo, Lokichoggio | |
| | | (6) Free port at Lamu including 3 berths to handle container, conventional and bulk cargo vessels | GoK |
| Trade | | | |
| 1. Domestic Trade | | (1) Construction of one pilot wholesale hub in Marangua | GoK, PPP |
| | | (2) Construction of one pilot Tier 1 Retail Market in Athi River | GoK, PPP |
| | | (3) Implement the National Electronic Single Window System | GoK/IFC World Bank |
| 2.International Trade | Establish distribution infrastructure | (1) Warehouses and business information centres in Kinshasa and Lubumbashi- DRC, in Juba- South Sudan, and in Dubai- UAE | GOK, Private Sector |
| | Credit guarantee scheme and export development fund | | GOK, PPP, DPs |
| Manufacturing | | | |
| 1. Special Economic Zones (SEZs) | | (1) SEZs to be established in Mombasa (including Dongo Kundu Free Port), Lamu, and Kisumu | GoK, PPP, DPs |
| 2. Development of SME and Industrial Parks | | (1) SMEs and Industrial Parks will be developed in each of the 47 counties to attract new companies, expand employment opportunities to citizens and attract FDI | GoK, PPP, DPs, CGs |
| 3. Development of Industrial Clusters | | (1) Meat and leather cluster through establishment of meat processing plants | GoK, DPs, PPP |
| | | (2) Tanneries and other related industries in Isiolo, Garissa and Kajiado | GoK, DPs, PPP |
| | | (3) Promotion of daily products processing in Kiganjo (Nyeri) | GoK, DPs, PPP |
| 4. Development of Integrated Iron and Mini Steel Mills | | | GoK, DPs, PPP |

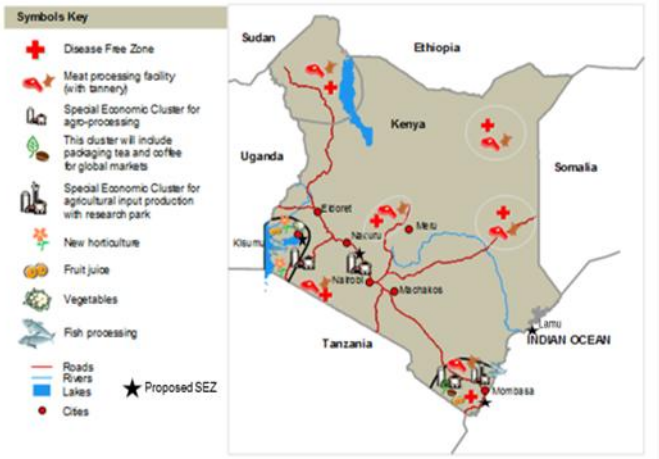
indicates a PPP pipeline project.

*Source: Second Medium Term Plan (2013-2017), Vision 2013; Infrastructure Sector Plan; Trade Sector Plan.*

The 2nd MTP outlines 16 priority areas, including, among others, Infrastructure, Industrialization, Improved trade, Investment to support growth, and Competitiveness and rebalancing growth. In this period, the government focuses on increasing its trade share in the regional and other emerging market, and expanding infrastructure investment such as roads, railway, ports, and ICT in order to "make Kenya a top logistic hub". The development of Lamu Port, Southern Sudan and Ethiopia Transport (LAPSET) corridor and mineral resources sector as well as private sector investment in infrastructure are given a priority in the 2nd MTP. Most of the flagship projects are expected to be implemented by Public Private Partnership (PPP) arrangement, and the government of Kenya established a PPP Unit within the National Treasury to facilitate, coordinate, and monitor the implementation of PPP projects in the country. The Ministry of Transport and Infrastructure has been formulating a 50 years National Integrated Transport Master Plan (TMP), which is one of the flagship projects in Vision 2030 and funded by the World Bank.

The Industrialization and Transformation program consists of the identification of potential areas of development and the establishment of Special Economic Zones (SEZs) in (1) Mombasa, (2) Lamu, (3) Naivasha and (4) Kisumu, three of which are located along the Northern Corridor. A SEZ Bill was presented at the Parliament, which provides institutional and legal framework for SEZ and is expected to provide incentives for investment in the manufacturing sector.

In addition, the Regional Food Hub is planned to be established along the Northern Corridor. A value chain of agro-processing and industrial clusters are being analyzed to process raw material at the food hubs such as




*Source: JICA Study Team Based on Kenya Vision 2030*

**Figure 2.1.1: Potential Industrial Aras Identified by Vision 2030 and Proposed SEZs**

port and agropolis along the Northern Corridor. With the construction of Standard Gauge Railway (SGR) between Mombasa and Nairobi, industrial parks are planned to be established at the stations of SGR, which includes Nairobi, Kisumu, Athi River, and Eldoret.

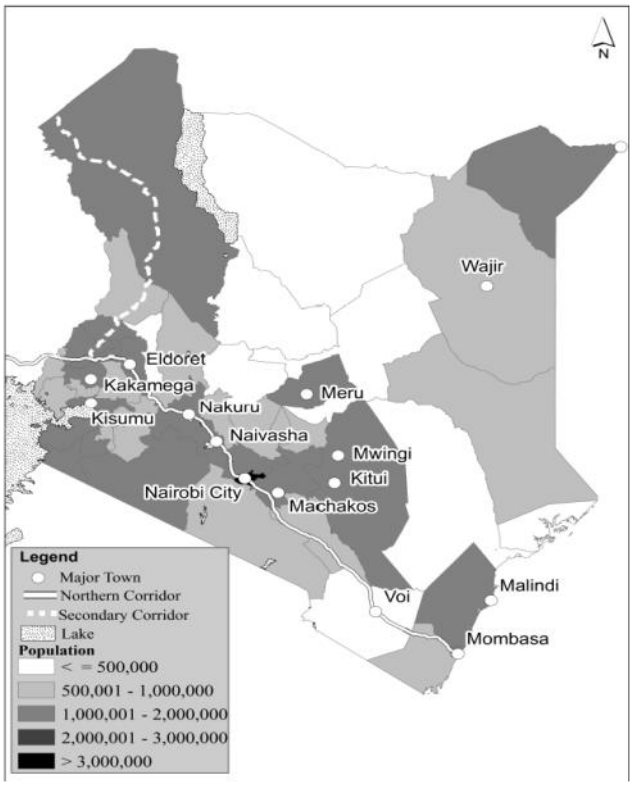
## 2.1.2 Administrative Structure

47 county governments were established under the New Constitution and the country governments generate revenues and deliver public services such as public road transport and ferries and harbour services to citizens. The devolution of governments under the New Constitution became effective after the general election in 2013, and the report uses countries as a basic administration division. The latest Census was conducted in 2009 in which the populations were distributed by the previous administrative division, namely, province and district. There were 8 provinces and 96 districts in the Census 2009, which need to be distributed into 47 counties.

## 2.1.3 Socio-Economic Framework

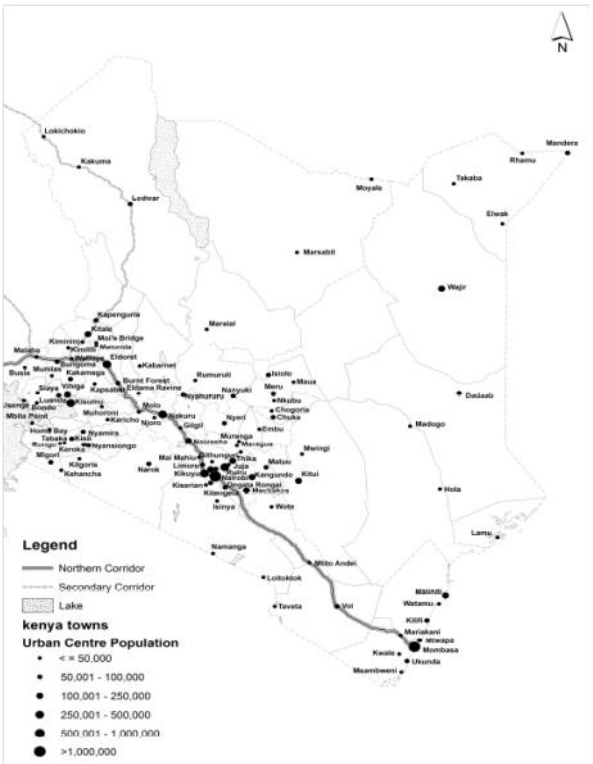
### (1) Population in Kenya

Kenya has a total population of 38.6million as of the 2009 Population and Housing Census, representing an increase of 35% from the 1999 Census (28.7million). During the 1999 – 2009 period, the population of Kenya increased by the average growth rate of 3.0% annually. The average population density in Kenya was calculated at 68/km2. The population projection data by county are available for 2012, 2015, and 2017 in the County Development Profile 2013. These population projection data were based on the 2009 Census and the data from Kenya National Bureau of Statistics (KNBS). This is the latest available information regarding population projection at the county level, and therefore, this study will be based on the population projection in the County Development Profile 2013. There are 17 counties along the Northern Corridor, whose population stands at 21.8 million in 2015. There are three counties along the Secondary Corridor, whose population is estimated at 2.8 million. As shown in Figure 2.1.2, a large part of population is distributed along the Northern Corridor and Secondary Corridor. The most populous county along the Northern Corridor in 2015 is Nairobi City County, which is estimated at around 4 million, followed by Kakamega County (1,929,401) and Nakuru County (1,925,296). A total population in 2015 is estimated at 45.9 million in the country, with the average growth rate of 2.9% annually. The urban centres with more than 10,000 populations are plotted in Figure 2.1.3. As shown in this figure, major urban centres are located and developed along the Northern Corridor, such as Mombasa, Nairobi, Eldora, and Nauru.




*Source: Based on County Development Profile in 2013*

**Figure 2.1.2: Population Distribution by County**



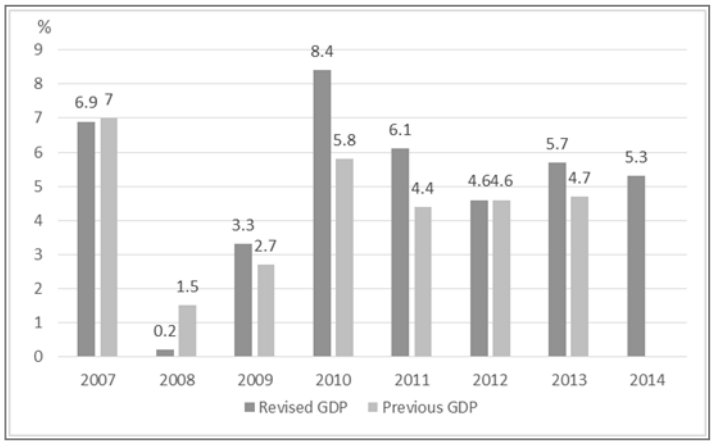

*Source: Based on County Development Profile in 2013*

**Figure 2.1.3: Location of Urban Centres in 2015**

In this Study, the target years for the planning horizon are set as follows: Year 2015; this is the base year of the Study, Year 2020; This is the target year for the medium term plan, and Year 2030; This is the target year for the long term plan in this Study.

### (2) Current Economic Performance

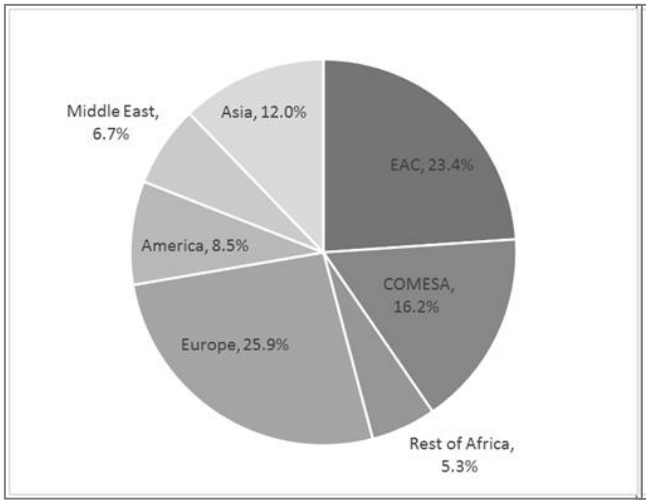
Figure 2.1.4 shows a comparison between previous and rebased GDP growth rates[7]. The economy in Kenya grew by 5.3% in 2014, down from 5.7% in 2013. The growth was supported by economic growth in mining and quarrying (14.2%), construction (13.1%), information and communication (13.4%), and financial and insurance activities (8.3%). The tourism (hotel and restaurant) and manufacturing sectors are, among others, recorded a negative and slow growth rate between 2010 and 2014 (-3.0% and 4.0% respectively). Inflation remains stable within single digit (6% from January to June 2015). Kenya Shilling declined by 11% this year to trade at 102 to the US dollar in July 2015. A significant decline in the tourism earning and a widening trade deficit worked against the Shilling this year. Faced with the devaluation of Shilling, the Central Bank Rate gradually increased from 8.5% in December 2014 to 11.5% in July 2015. The debt to GDP ratio currently stands at 47%, which is slightly above the threshold of 45%.




*Source: Economic Survey in 2014, KNBS*

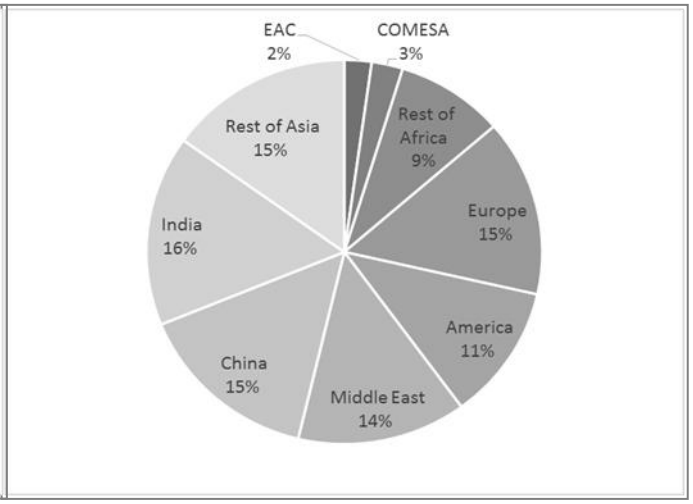
**Figure 2.1.4: GDP Growth in Previous and Revised GDP**

The following figures show a percentage share of export and import of Kenya in 2014. EAC is the biggest destination for export in Kenya, comprising 23.4% of export. Together with the rest of COMESA countries, around 40% of export is destined to the COMESA area. In terms of import, EAC and COMESA countries have a lower share of 2% and 3% respectively, compared to Asian counties such as India (16%), China (15%) and Europe (15%).




*Source: Economic Survey in 2014, KNBS*

**Figure 2.1.5: Export by Destination in 2014**




*Source: Economic Survey in 2014, KNBS*

**Figure 2.1.6: Import by Destination in 2014**

7 Rebasing of national accounts series means replacing the old base year (2001) used for compiling the constant price estimates to a new and more recent base year (2009).

**(3) Review of Economic Outlook/Framework**

The 2nd Medium Term Plan (MTP 2013-2017) forecasts a gradual increase of GDP growth to 10.1% by 2017. The major drive for this high growth is anticipated from increased investments, especially from the recent discovery of oil, gas, rare earth minerals, and coal. In addition, a series of infrastructure investments are anticipated in the 2nd MTP, which includes the LAPSET corridor project, modernization of the Port of Mombasa, Standard Gauge Railway, and power projects.

The National Treasury prepared the medium-term macroeconomic outlook in the 2015 Budget Policy Statement (BPS). Real GDP is expected to expand from 5.3% in 2014 to 6.9% in 2015 and reach 7.0% by 2018. The main underpinning of this growth is expected from infrastructure investment such as Standard Gauge Railway, increased production in agriculture, expansion of building and construction and so on.

Northern Corridor Infrastructure Master Plan (NCIMP) 2011 provided the long-term macroeconomic outlook up to 2030, as shown in Table 2.1.5. The projected growth rate in Kenya is 5.7% between 2011 and 2015 and then slows down to 4.7% between 2016 and 2030. NCIMP saw a slowdown of Kenyan economy due to sporadic rainfall, inflation and poor governance and concludes rather conservative forecast during the 2016 and 2030.

**Table 2.1.2: Macroeconomic Forecast by Kenyan and International Organizations**

| Report | 2013 | 2014 | 2015 | 2016 | 2017 | 2020 | 2030 |
|---|---|---|---|---|---|---|---|
| 2nd Medium Term Plan, 2013 | *6.1* | *7.2* | *8.7* | *9.1* | *10.1* | | |
| Budget Policy Statement, 2015 | | 5.3 | *6.9* | *7.0* | *7.0* | | |
| Northern Corridor Infrastructure M/P, 2011 | *5.7* | *5.7* | *5.7* | *4.7* | *4.7* | *4.7* | *4.7* |
| IMF Article IV, 2014* | 5.0 | *5.8* | *6.3* | *6.5* | *6.5* | - | - |
| Kenya Economic Update: December 2014 (WB) | 5.7 | *5.4* | *6.0* | *6.6* | *7.0* | | |
| World Economic Outlook, 2015, (IMF) | 5.7 | 5.3 | *6.9* | *7.2* | | *6.6* | |

** means fiscal year, starting from 2013/14.*

*** Italic means a projected figure.*

*Source: Kenya Vision 2030, National Treasury, Northern Corridor Transit and Transport Coordination Agency, IMF, the World Bank*

Overall, Kenyan economy is projected to experience solid growth of 6~7% in the medium term, provided planned infrastructure investments in transport and energy would reduce the cost of business environment, and irrigation and geothermal investments will be implemented to reduce the weather-related risks. The improved competitiveness in the manufacturing sector is also a key to expand the economy and export to the regional market. It is noted that the revenue from mineral resources such as oil and coal are not factored in the above macroeconomic forecast. With the current low price of mineral resources, it is quite difficult to project the schedule and revenue from mineral resources in the short-medium terms, but it is considered that these revenues would be available in the long term and needs to be factored in the projection for the long-term macroeconomic framework. In addition, the current devaluation of Shilling may tighten the procurement and repayment in foreign currency, which may slowdown the growth of Kenyan economy.

In this Study, the following macroeconomic scenario will be formulated:

i) Base scenario – mainly based on the current trend and existing macroeconomic outlook,

ii) High scenario – considered factors such as planned mineral resources development and major infrastructure development materialized, and

iii) Low scenario – considered risks of macroeconomic deterioration and non-implementation of planned mineral and infrastructure projects

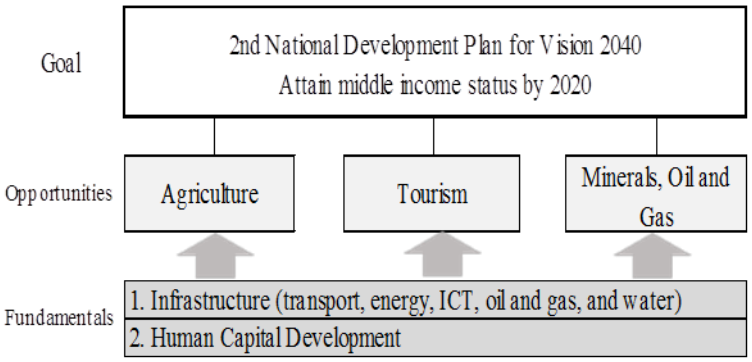
# *2.2 Northern Economic Corridor in Uganda*

## 2.2.1 Vision and Development Plan

The Vision 2040 is to attain "a Transformed Ugandans Society from Peasant to a Modern and Prosperous County within 30 years". This means that the Vision 2040 aim at transforming Uganda from a predominantly low income country of per capital income USD506 to a competitive upper middle income country of per capita income USD9,500 within 30 years. The Vision 2040 details a number of socioeconomic indicators and targets

that are to be developed within 30 years. In the transport sector, the government aims at transforming the current coverage of paved road (4% of total) to the level of 80% of total road network. In addition, a railway is a desired mode of freight transport and it is anticipated to increase the cargo freight by railway from the current 3.5% to 80% within 30 years. The current level of urbanization (13% of population) is expected to increase to 60% of the total population within 30 years.

To achieve the targets set up in the above, the Vision 2040 identifies the key opportunities, which are strengthened by the fundamentals. The strategic approach in the Vision 2040 is based on "harnessing opportunities by strengthening the relevant fundamentals that facilitate maximum returns from the opportunities".

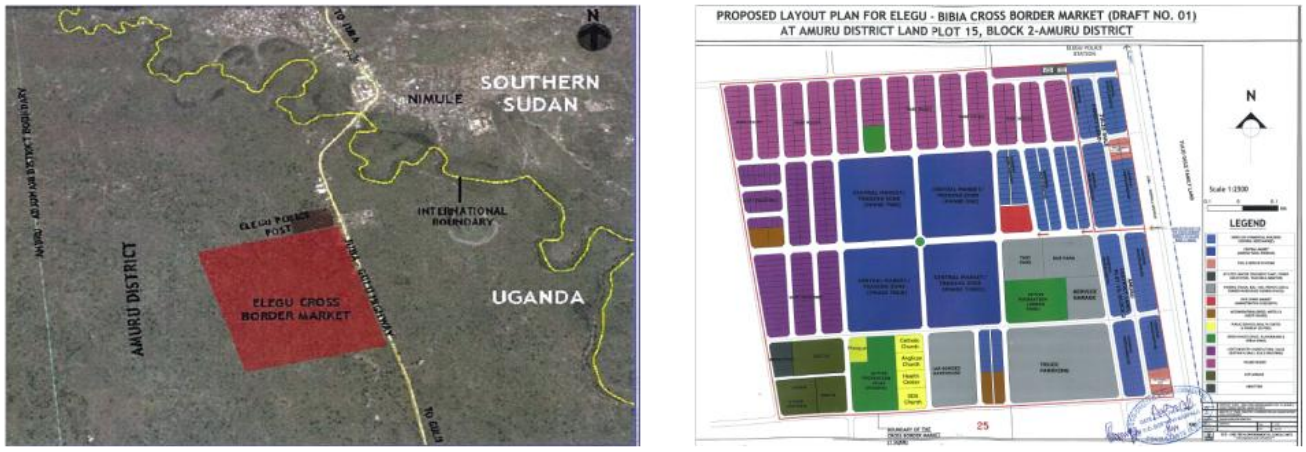



*Source: JICA Study Team based on 2nd NDP (2015/16- 2019/20)*

**Figure 2.2.1: Strategy in NDP II**

The 2nd NDP (2015/16 – 2019/20) was launched on June 2015, in which three opportunities, namely, (1) agriculture, (2) tourism, (3) minerals, oil, and gas, are identified as a priority. These are strengthened by two priority fundamentals, namely, (1) infrastructure and (2) human capital development (Figure 2.2.1). The goal of the 2nd NDP is to "attain middle income status by 2020 through strengthening the country's competitiveness for sustainable wealth creation, employment and inclusive growth". The main target indicator in NDP II is to attain income per capita of USD1,039 by 2019/20.

The key vision for infrastructure development is to design infrastructure around production zones and sites, which will underpin agricultural and mineral processing. Standard Gauge Railway, several express ways near Kampala Metropolitan area, improvement of existing marine transport to reduce the cost of transport and increase connectivity, and crude oil pipeline from Hoima to Lamu in Kenya are among the core projects. In terms of trade and industry, the Cross Border Market (CBM) Master Plan has been implemented by Ministry of Trade, Industry and Cooperatives (MTIC), in which a CBM will be located in (1) Elegu – Nimule border with South Sudan, (2) Kabale near Rwandan border, (3) Mpondwe (Kasese) near DRC border, (4) Busia near Kenyan border, and (5) Lwakhakha (Bubulo) near Kenyan border. The target industries in CBM are general trading, light manufacturing, livestock industry, and warehouse/logistics to facilitate export and import. One Stop Shop will be installed within the CBM. Figure 2.2.2 shows a location and layout of CBM in Elegu, in which markets, warehouses, and light industries are planned. The Free Zone Act was enacted in 2014, and Free Zone Authority was established under Ministry of Finance, Planning and Economic Development. Due to the location of Uganda in East African Countries, the government aims to build a country as an economic and logistic hub in EAC that provides not only agricultural and manufacturing products but also trading and logistic facilitation to neighboring countries.




*Source: Cross Border Market Master Plan, 2013, MTIC*

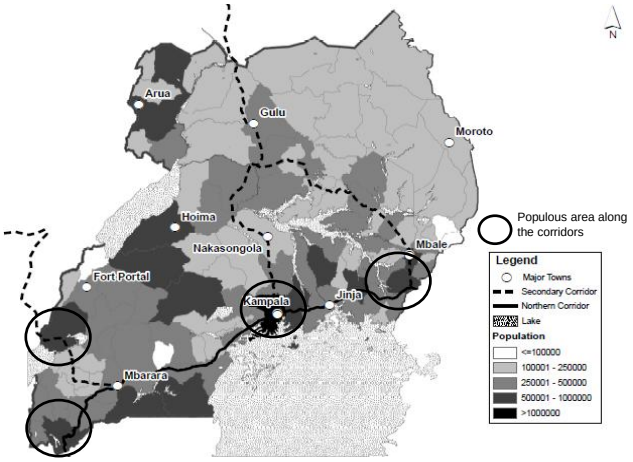
**Figure 2.2.2: Location and Layout of Proposed Cross Border Market in Elegu-Nimule**

## 2.2.2 Administrative Structure

The administrative units in Uganda consist of district, counties, and sub-counties. There are 111 districts and Kampala Capital City in Uganda. The number of districts has increased significantly from 56 at the time of the 2002 Census to 112 in the Census 2014. There is a statistically divided regions, namely, (1) Central Region, (2) Eastern Region, (3) Northern Region, and (4) Western Region. Since the national government interacts directly with the districts, this study uses districts as a basic administrative division.

## 2.2.3 Socio-Economic Framework

Population in Uganda had a total population of 34.9 million according to the 2014 Census. With the total land of 200,523km2, the population density in Uganda is calculated at 147/km2. The population growth in Uganda is highest among the East African counties, which accounts for 3.0% of the average growth rate between the 2002 Census and the 2014 Census.



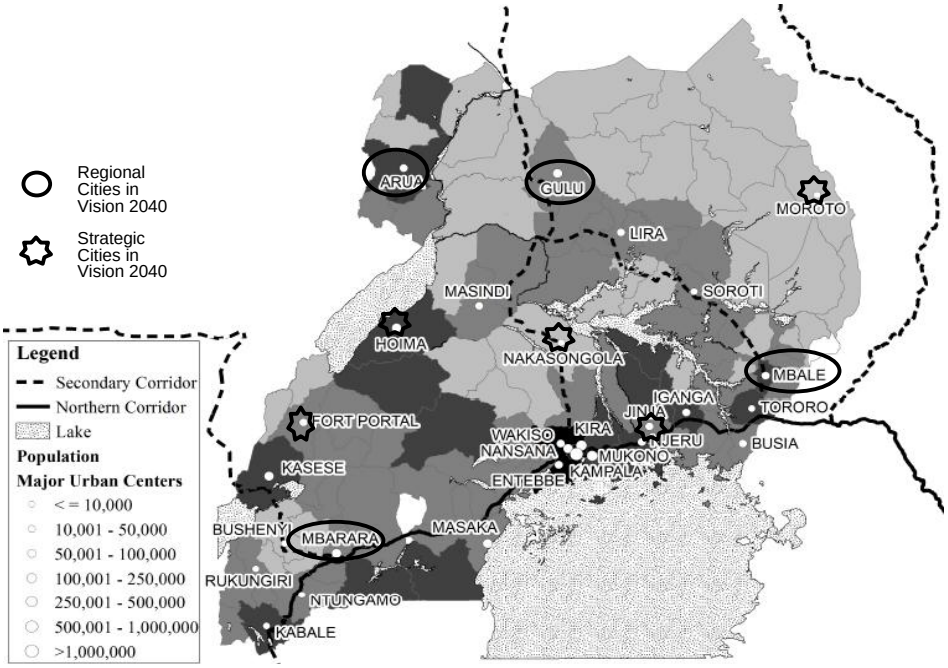

*Source: JICA Study Team based on data from UBOS*

**Figure 2.2.3: Population Distribution by District in Uganda in 2015**

Figure 2.2.3 demonstrates the population distribution by district in 2015. The figure shows the large population along the Northern Corridor, the Secondary Corridor from Tororo to Gulu, Western Region, and West Nile region8. The most populous district on the Northern Corridor and Secondary corridor is Wakiso district, a suburb of Kampala Capital City, which stands at the population of 2.1 million in 2015. Wakiso district is the fastest growing population area, with 6.8% of average growth rate annually between 2002 and 2014. The second largest district along the Northern Corridor is Kampala Capital City, which accounts for 1,5 million, followed by Mukono district with 0.6 million, close to the Capital City. A total of 10.4 million population reside along the Northern Corridor, which means that around 30 % of the population in Uganda are distributed along the Northern Corridor. Together with the Secondary Corridor, around 16.9 million population are distributed in the target area in 2015.

Figure 2.2.4 demonstrates the population in urban centres such as City, Municipality and major Town council. Kampala Capital City is distinct from other urban centres in terms of population size, which is currently 1.5 million with 440, 286 households. There are only 21 urban centres with a population more than 50,000 persons in Uganda, and the urbanization rate of the country is 18.4 % of the total population in the 2014 Census. The low level of urbanization and concentration of the population in Kampala led the government of Uganda to pursue an urban development vision for the establishment of four regional cities, namely, (1) Gulu, (2) Mbale, (3) Mbarara, and (4) Arua, during the Vision 2040 period. In addition, 5 strategic cities are identified in the Vision2040, which include Hoima (oil), Nakasongola (industrial), Fort Portal (tourism), Moroto (mining), and Jinja (industrial).

8 According to Unicef, Uganda has received around 130,000 south Sudanese refugees in West Nile sub-region since December 2013, which may increase the number of population in this sub-region.

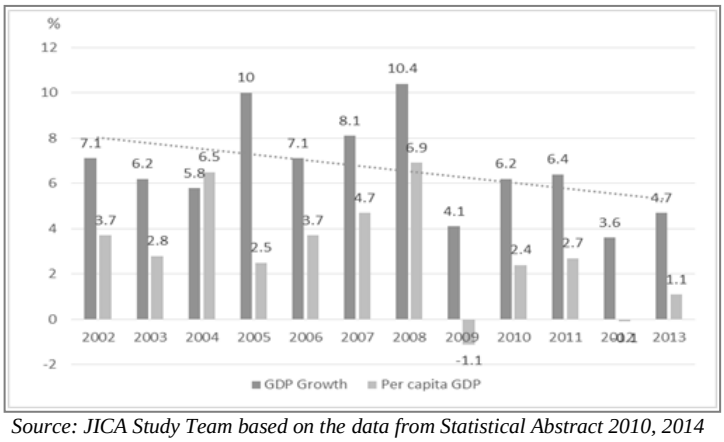



*Source: JICA Study Team based on data from UBOS*

**Figure 2.2.4: Urban Centres and Regional and Strategic Cities in Uganda**

### (1) Current Economic Performance

The economy of Uganda grew rapidly during the past 12 years. The average GDP growth rate was 6.6% between 2002 and 2013, but the GDP growth has reduced gradually recently to the average 5.0% for the past 5 years. Figure 2.2.5 shows the GDP growth rate between 2002 and 2013. Uganda experienced a reduced growth rate recently, mainly due to political instability in neighboring countries that caused the reduced trade and commercial activities, and the reduced growth in the manufacturing sector (4.1%). The agricultural sector, especially food crop and cash crop, have been stagnated throughout the decade.

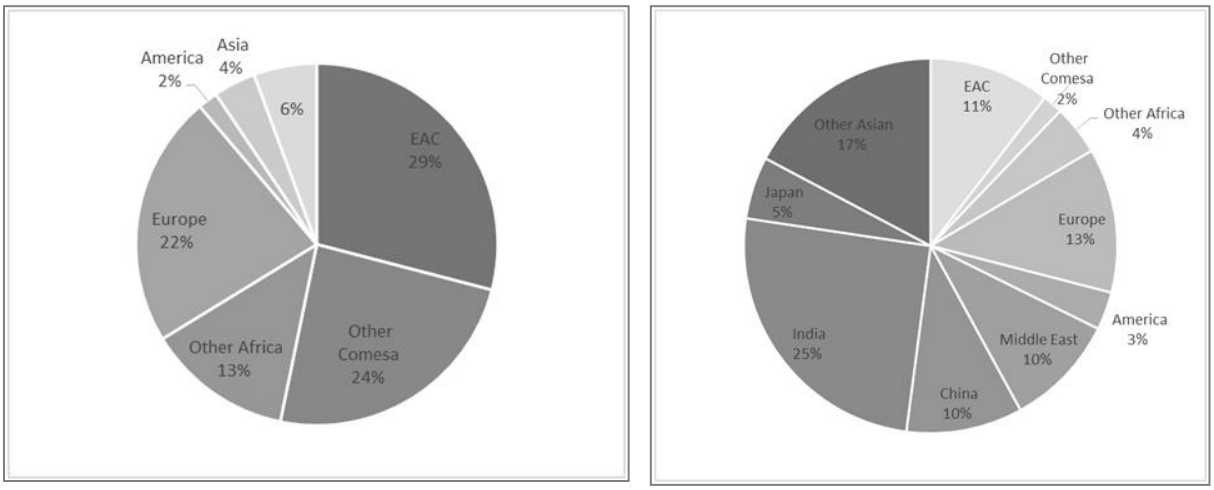



*Source: JICA Study Team based on the data from Statistical Abstract 2010, 2014*

**Figure 2.2.5: GDP Growth in Uganda (2002-2013)**

The Ugandan Shilling has been depreciated by 20-25 percent since early 2015. Inflation has been stable by 6.7% in 2013/14, but the recent higher than expected depreciation of Shilling prompted the Bank of Uganda to raise the central bank rate to 14.5% in order to contain inflational pressure from the currency depreciation.

In regards to export, East African Community (EAC) is the main destination from Uganda, accounting for USD 782 million or 29% of export in 2013. Figure 2.2.6 shows the destination of export and import to Uganda in 2014. Other COMESA countries were the 2nd largest in export destination, and total export to Africa consisted of 63% in 2013. Export to Kenya is the largest among the neighboring countries, standing at 13.6% of the total export, followed by South Sudan (10.8%), DRC (9.5%) and Rwanda (8.6%). The largest Import to Uganda was recorded from India in 2013, which accounted for 26% of the total import, followed by Europe (13%) and EAC (11%). Import from India increased rapidly by 31% annually from USD521 million in 2009 to USD1,559 million in2013. Among the neighboring countries, Kenya was the largest import supplier to Uganda, standing at 10% of import. Compared to export, import from African countries remains to be small, with 17.4% of the total value.




*Source: JICA Study Team based on the data from Statistical Abstruct 2014*

**Figure 2.2.6: Export (Left) and Import (Right) by Country in 2014 (% of Total Trade)**

### (2) Review of Economic Outlook and Framework

The NDP II assumes that stable macroeconomic per performance during the NDPII period will be driven by both public and private investment and increased export growth. GDP is expected to grow 5.8% to 6.8% annually, and per capital GDP is anticipated to attach the lower middle income of USD1,039 by 2018/19. Key sources of growth are identified in each sector, namely, (1) processing of phosphates into fertilizer to boost agricultural productivity, (2) development of iron smelting plant in the mineral sector, which would contribute to 0.5% to GDP growth, (3) Karuma and Isimba dam, (4) oil refinery, (5) crude oil pipeline, (6) standard gauge railway, and (7) key roads in the infrastructure sector. The infrastructure expenditure during the NDP II will increase to 5.0% of GDP in 2016/17, mainly spent by Karuma and Isimba dam (USD545 million) and Standard Gauge Railway (USD 570million). Around half of infrastructure costs are planned to be financed by the private sector from the PPP arrangement, direct private sector investments and so on. This macroeconomic forecast considers the phosphate and iron mineral development, but the revenue from oil is not factored in.

**Table 2.2.1: Medium and Long Term Macroeconomic Forecast by Ugandan and International Organizations (GDP Annual percent change)**

| Report | 2013 | 2014 | 2015 | 2016 | 2017 | 2020 | 2030 |
|---|---|---|---|---|---|---|---|
| 2nd National Development Plan, 2015* | 4.7 | *5.3* | *5.8* | *5.9* | *6.4* | *6.8* | |
| IMF Article IV* | 4.5 | 5.3 | *5.8* | *5.9* | *6.4* | 6.8 | |
| Northern Corridor Infrastructure M/P, 2011 | *7.1* | *7.1* | *7.1* | *5.9* | *5.9* | *5.9* | *5.9* |
| Kenya Economic Update: March 2015 (WB)* | 4.5 | *5.6* | *6.4* | *6.6* | | | |
| World Economic Outlook, 2015, (IMF) | 3.9 | 4.9 | *5.4* | *5.6* | | *6.3* | |

** indicates a fiscal year of 2014/15, and so on*
*Source: Based on the above reports.*

Northern Corridor Infrastructure Master Plan 2011 provides economic outlook relatively favorable with 7.1% of average GDP growth between 2011 and 2015. The growth is expected to slow down to 5.9% between 2016 and 2030 in proportion to the gradual decline of population growth.

The World Bank's Economic Update in March 2015 provide a mix of rebound of Uganda's economy and uncertainties due to elections and fiscal risk. The growth rate of GDP in FY 2015/16 is expected to rebound to 6.4%, driven by growth in the construction and service sectors as a result of the increased investment in public infrastructure development and mining sector. The government plans to procure the large infrastructure program such as Standard Gauge Railway through non-concessional loans, which would increase a fiscal risk.

Overall, economy in Uganda is expected to increase by 5 to 6 % of growth rate, provided political and exchange rate stability are ensured and planned infrastructure and mineral resource development will be implemented.

# 2.3 Regional Integration in East Africa and along the Northern Corridor

## 2.3.1 Outline and Legal Framework

### (1) East African Community

East African Community (EAC) is a regional international organization and was officially established under Article 2 of the *Treaty for the Establishment of the EAC in 2000*. The original member countries were Uganda, Kenya and Tanzania, which were then expanded to include Burundi and Rwanda, comprising 5 member countries. The Article 3 of the Treaty stipulates the objectives of the Partner States to undertake the establishment of "a Custom Union, a Common Market, subsequently a Monetary Union and ultimately a Political Federation in order to strengthen and regulate the industrial, commercial, infrastructural, cultural, social, political and other relations of the Partner State". The EAC has a total area of 1.8 million square kilometres, with a total population of 143.5 million and a combined GDP of USD110 billion in 2013.

A *Protocol for the establishment of Custom Union* (CU) was signed in 2004 and its implementation started in January 2005. Another milestone was the establishment of the EAC Common Market (CM). The *Protocol on the Establishment of the EAC CM* entered into effective in 2010. The Partner States in EAC has currently negotiated with DR Congo and South Sudan for their participation in the Common Market in EAC.

### (2) Common Market for Eastern and Southern Africa (COMESA)

The *Treaty for Establishing the Common Market for Eastern and Southern Africa (COMESA)* was signed on 1993 and was ratified in the following year of 1994. The member states of COMESA comprise 19 African countries, which include Burundi, Comoro, DRC, Djibouti, Egypt, Eritrea, Ethiopia, Kenya, Libya, Madagascar, Malawi, Mauritius, Rwanda, Seychelles, Sudan, Swaziland, Uganda, Zambia, and Zimbabwe.

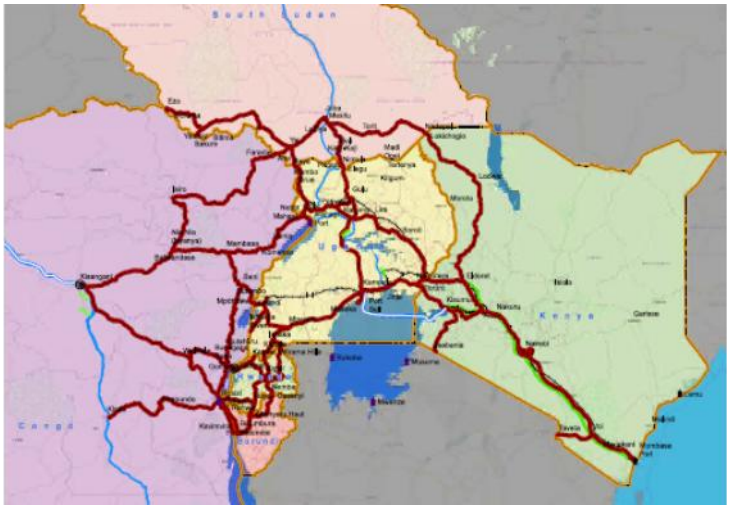
The Free Trade Area (FTA) was established in 2000, when nine of the Member States (Kenya, Madagascar, Malawi, Mauritius, Sudan, Zambia and Zimbabwe) eliminated their tariff on goods originated from COMESA. Burundi and Rwanda joined in the FTA in 2004, which increased the member states to 11. A Custom Union was launched in 2009 and the Member States were to enact several Common Market Legislations such as common external tariff, but not a single Member State has domesticated the Common Market legislation for the Custom Union.

### (3) Tripartite Free Trade Area (FTA)

The Tripartite Free Trade Area (FTA) consists of the member countries of EAC, COMESA, and the Southern African Development Cooperation (SADC). The Tripartite FTA was launched on June 2015 at the third Summit of Heads of State and Government. The Tripartite cooperation covers three aspects, namely; (1) market integration, (2) industrialization, and (3) infrastructure development. The Tripartite FTA comprises 26 countries with a combined population of nearly 600 million and a total GDP of around USD 1.0 trillion.

### (4) Northern Corridor Transit and Transport Coordination Authority (NCTTCA)

The Northern Corridor Transit and Transport Coordination Authority (NCTTCA) is a regional intergovernmental organization that is mandated to facilitate trade and transport in the Member State. The *Northern Corridor Transit and Transport Agreement* was signed in 1985 and ratified in 1986 by 5 member countries, which included Kenya, Uganda, Rwanda, Burundi, and DRC. The membership is increased to 6 countries to include South Sudan in 2012. There are 11 protocols such as road, railway, inland waterways, custom, port, and so on. The revision of the Agreement in 2007 led to the transportation of the corridor into a Development Corridor to spur socio-




*Source: Northern Corridor Transport Observatory Report, December 2014*

**Figure 2.3.1: NCTTCA Member States and Infrastructure**

economic development of the region, which, in addition to offering safe, fast and competitive transport and transit services that secure regional trade, will stimulate investment, encourage sustainable development and poverty reduction.

**(5) Northern Corridor Integration Project (NCIP)**

Northern Corridor Integration Project is a new initiative, led by the Presidents of three countries, namely, Uganda, Rwanda, and Kenya. Three Presidents had a meeting at Entebbe on 2013 to discuss the cooperation and speed-up of development in the region, which was renamed to the Northern Corridor Integration Projects (NCIP). South Sudan became a member of NCIP and each country established a special office to coordinate the initiative. The NNIP is to implement a fast-track project with the leadership from the Heads of the State. A vision of NCIP is *a Northern Corridor that is fully integrated to facilitate the competitiveness of the region in the global market*. While the NNIC facilitates the fast-track projects, the NCTTCA works closely with NCIP in planning, monitoring, and evaluating the transport, trade and other projects along the Northern Corridor.

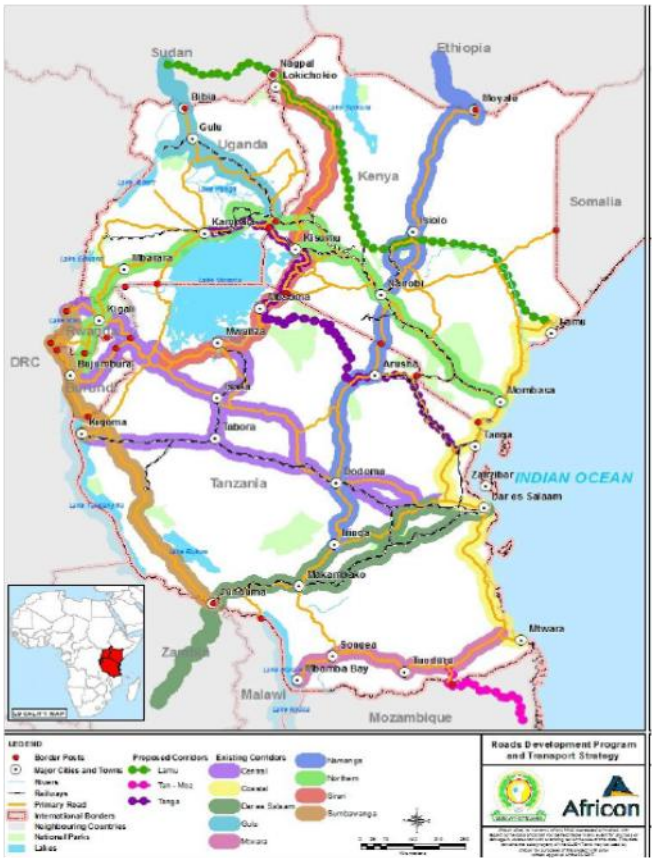
## 2.3.2 Development Plan of Regional Organizations

**(1) EAC**

The EAC formulated a variety of strategic plan, sector plan, and policies for infrastructure and trade facilitation. The EAC Development Strategy is formulated every five years to outline broad strategic goals of the East African Community, and identify priority area and projects. The current Development Strategy is for the period of 2011/12 – 2015/16.

In the transport sector, East African Transport Strategy and Regional Road Sector Development Program was prepared in 2011, in cooperation with the African Development Bank. This development program consists of two main work, namely, (1) EAC Transport Strategy, and (2) EAC Road Sector Development Program. The EAC Road Sector Development Program identified 10 road corridors, with the total network length of 14,460km, as shown in figure 2.3.3. Northern Corridor is linked to several corridors such as (1) Coastal corridor, (2) Namanga corridor, (3) Gulu Corridor, (4) Sirari corridor, (5) Tanga corridor, and (6) Central corridor. Further to the main corridor, EAC identified 24 corridor feeders.

In the railway sector, EAC provides the Railway Master Plan in 2009. The Master Plan considers that the railway sector and associated rail- marine services have the potential to play an important role in the future development of EAC, in particular, for long-distance freight and bulk transport, as well as urban transport and medium distance inter-city passenger transport.




*Source East African Transport Strategy and Regional Road Sector Development Program, 2011*

**Figure 2.3.2: EAC Corridor**

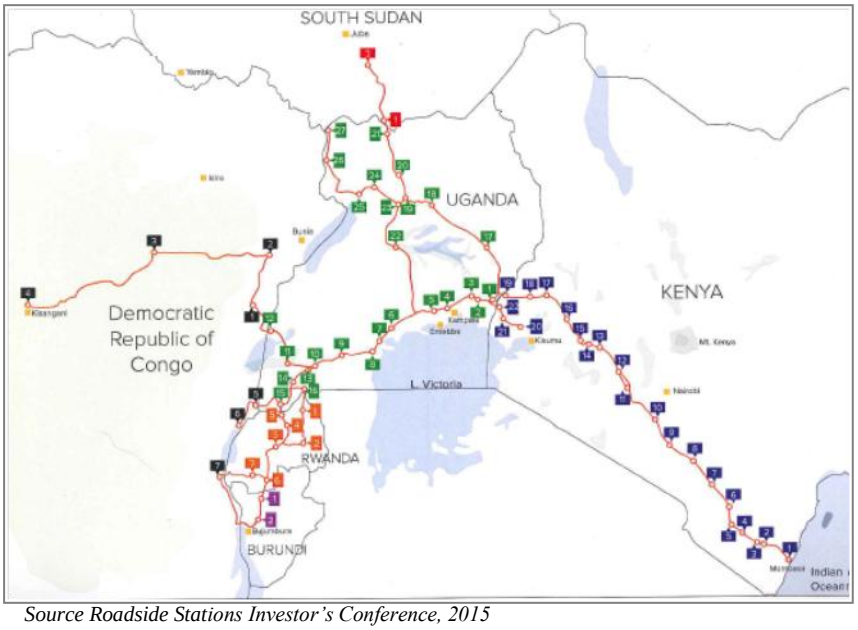
Recently, EAC has launched the Regional Transport Intermodal Strategy and Action Plan, in cooperation with the World Bank. Several development options are analyzed in this strategy, including (1) Corridor Approach, (2) Multimodal/Rail Centric, (3) Meter gauge system vs Standard gauge system. EAC produced a Strategy and Action Plan for Intermodal Development in 2015, which aims to implement an efficient, rail-centric, inter-modal transport system along the Central and Northern Corridors in the EAC countries. The development scenarios in this Strategy includes (1) Rehabilitation scenario, (2) Upgrading central corridor rail infrastructure and services, (3) restoring transport links on Lake Victoria and Lake Tanganyika. The economic analysis on the above development scenarios shows a highest economic return on

the Restoration of transport links on Lakes Victoria and Tanganyika, followed by the Rehabilitation scenario. The restoration of marine transport in Lake Victoria and Lake Tanganyika as well as rehabilitation programs, especially railways, are focused in Action Plan of this Strategy. During the Summit of EAC on December 2014, EAC endorsed a proposed 10 years investment strategy for priority infrastructure projects. The World Bank pledged USD1.2 billion toward intermodal transport infrastructure development for the next 10 years.

**(2) NCTTCA**

The NCTTCA formulated the Northern Corridor Infrastructure Master Plan in 2011, with the support from the African Development Bank. Each member state is to implement and finance the identified projects in the Master Plan. Monitoring of the Master Plan has been undertaken by the Permanent Secretariat, and the Northern Corridor Transport Observatory Portal is used to monitor and measure performance along the corridor (http://top.ttcanc.org) with the support from Trade Mark East Africa.

The Northern Corridor Spatial Development Program was prepared in 2012, with a support from New Partnership for Africa's Development (NEPAD). The Study identified several opportunities for regional development such as Anchor Investment Projects along the Northern Corridor, which includes (1) Kondo iron ore resources in DRC, (2) Oil and gas in Lake Albert in Uganda and DRC, (3) Tororo Phosphate, among others. A business plan for the identified projects is prepared in the Study and a supplementary study, was conducted in June 2015. The business investment profiles are provided by each member country and by sectors (agriculture, mining, industry and services).




*Source Roadside Stations Investor's Conference, 2015*

**Figure 2.3.3: Proposed Roadside Station along the Northern Corridor**

In addition, the NCTTCA has conducted a study on Roadside Station, with support from Trade Mark East Africa. The PPP model for the roadside station was presented at the conference in April 2015. A total of 142 locations were identified, among which 67 priorities were selected (Figure 2.3.3). Around 22 locations are planned to be implemented by the private sector. During the first phase, approximately 20 locations will be constructed. This roadside station is expected to reduce the traffic on the Corridor, and provide social and safety services, and promote commercial activities such as supermarket, restaurant, petrol station, and so on.

**(3) NCIP**

The framework of NCIP promotes the following projects related the Northern Corridor:

- Single Custom Territory
- Crude Oil Pipeline Development
- Standard Gauge Railway

Some of the NCIP projects were identified in Northern Corridor Infrastructure Master Plan, and are expected to be implemented rapidly by fast-track initiative from the Head of the States.

## 2.3.3 Socio-Economic Review

The socio-economic conditions of EAC countries are provided in this section. The total population of EAC countries stands at 143.5 million in 2013, as shown in the following table. The most populous country is

Tanzania with 46.2 million, followed by Kenya (41.8million) and Uganda (35.4million). The average population growth in the region is estimated at 2.9 percent annually. The population density of the region is 83.6 per square kilometre.

**Table 2.3.1: Population in East African Community (million persons)**

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|
| **Burundi** | 8.1 | 8.3 | 8.6 | 8.9 | 9.1 | 9.4 |
| **Tanzania** | 40.7 | 41.9 | 43.9 | 44.5 | 44.9 | 46.2 |
| **Uganda** | 29.6 | 30.7 | 31.8 | 32.9 | 34.1 | 35.4 |
| **Kenya** | 36.7 | 37.7 | 38.5 | 39.5 | 40.7 | 41.8 |
| **Rwanda** | 9.5 | 9.7 | 10.0 | 10.2 | 10.5 | 10.7 |
| **East Africa** | 124.6 | 128.3 | 132.8 | 136.0 | 139.4 | 143.5 |

*Source: EAC Facts and Figures 2014*

The economy of the region has grown steadily with the average growth rate of 3.8% to 8.2% between 2008 and 2013. The highest average GDP growth was recorded in Rwanda (8.2%) followed by Tanzania (6.7%) and Uganda (6.1%) during this period. In terms of per capital income, Kenya became a lower-middle income country in 2013, with per capital income of USD1,055.2, followed by Tanzania (USD742.6) and Rwanda (USD709). Burundi is lowest in per capital income, which accounts for USD294.2 in 2013.

**Table 2.3.2: GDP Growth Rate in EAC between 2008 and 2013**

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | Average |
|---|---|---|---|---|---|---|---|
| **Burundi** | 4.9 | 3.8 | 5.1 | 4.2 | 4.2 | 4.8 | 4.5 |
| **Tanzania** | 7.4 | 6.0 | 7.0 | 6.4 | 6.9 | 7.0- | 6.7 |
| **Uganda** | 10.4 | 4.1 | 6.2 | 6.4 | 3.6 | 4.7- | 6.1 |
| **Kenya** | 1.5 | 2.7 | 5.8 | 4.4 | 4.6 | 4.7- | 3.8 |
| **Rwanda** | 11.2 | 6.2 | 7.2 | 8.2 | 8.0 | 4.6- | 8.2 |
| **East Africa** | - | - | - | - | - | - | |

*Source: EAC Facts and Figures 2014*

# 3 Analyses of Current Land Use and Urban/Regional Plans

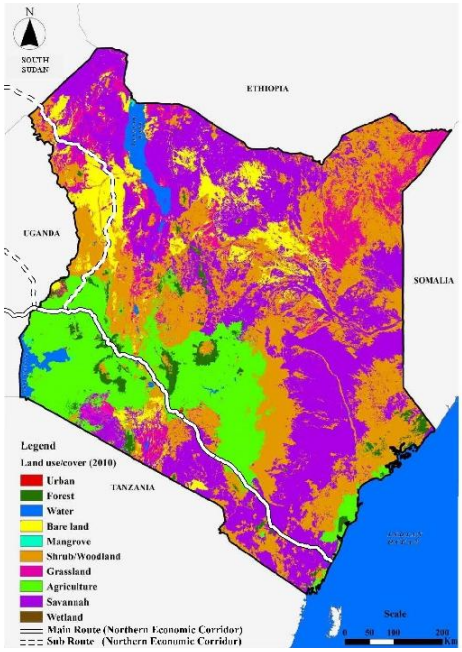
This chapter overviews current condition of land use and urbanization of Kenya and Uganda respectively. And institutional framework and review of existing urban and regional development plans are described. Based on the situation and the plans, core cities and linkage of them around Northern Economic Corridor are identified.

## 3.1 Urban and Regional Plans along Northern Economic Corridor in Kenya

### 3.1.1 Overview of Current Condition

#### (1) Land Use

Figure 3.1.1 shows land use map of Kenya in 2010. The land around the Northern Economic Corridor is covered with agriculture, savannah, shrub/woodland, forest and bare land. Especially agriculture land, which covers 16% of the entire land of Kenya, is concentrated around the corridor. This is because the area, particularly around Lake Victoria, is in a humid climate. On the other hand, the northern portion of Kenya's land mainly consists of arid and semi-arid lands and the land is not utilized actively for agriculture.




*Source: JICA Study Team based on data from the Project on the Development of the National Water Master Plan 2030 in the Republic of Kenya*

**Figure 3.1.1: Land Use Map of Kenya**

#### (2) Urbanization

Urbanization level is defined as the proportion of the population living in urban areas[9].Figure 3.1.2 shows that the urbanization level of Kenya has been increasing and the rate in 2013 was 25%. On the other hand, Kenya Vision 2030 expects the proportion will be 63% in 2030. The expectation of this rapid urbanization is based on the belief that with the right urban-planning strategy, it will be possible to change the lives of millions of Kenyans for the better. And the Vision will guide the realization by programs in urbanization and housing.

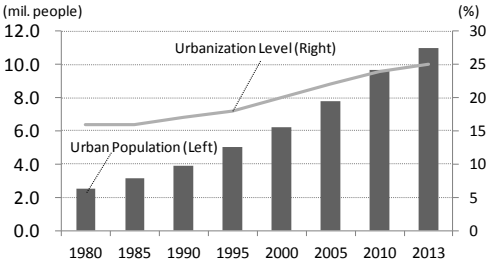
Figure 3.1.3 shows distribution of the urban centers in Kenya. The populations in the urban centers are concentrated around the Northern Economic Corridor as shown in Figure 3.1.3 and .Table 3.1.1

**Table 3.1.1: Share of Population in the Urban Centers around Northern Economic Corridor in Kenya**

| | Share of Total | |
|---|---|---|
| | Population in the Urban Centers | Number of Urban Centers |
| Area within 50km from the NEC | 68% | 48% |
| Area within 50km from main route of the NEC | 66% | 47% |
| Area within 50km from Nairobi | 33% | 8% |

Note: NEC stands for "Northern Economic Corridor".

*Source: JICA Study Team based on data from the 2009 Kenya population and Housing Census*



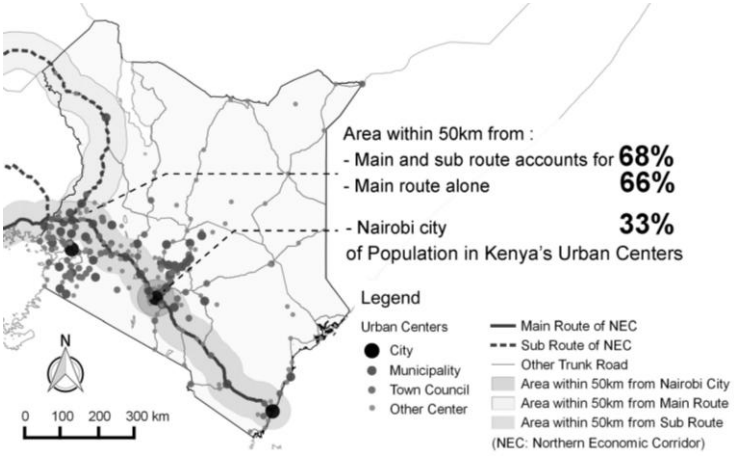

Note: Urban population refers to people living in urban areas as defined by national statistical offices.

*Source: JICA Study Team based on data from World Bank*

**Figure 3.1.2: Trends of Urban Population and its Proportion of Total in Kenya**

9 According to the definition of the Census 2009 in Kenya, urban area is defined as the area having a population of 2,000 and above. In this definition, urban areas include the followings: Cities, Municipalities, Town Councils and Urban Councils.

In general, urbanization is likely to happen around existing urban areas, because it's easier to expand existing infrastructures to cover the additional population than developing a new city. Therefore the future urbanization estimated from the trend shown in Figure 3.1.2 will mainly happen around the Northern Economic Corridor.




*Source: JICA Study Team based on data from the 2009 Kenya population and Housing Census*

**Figure 3.1.3 Distribution of Urban Centers in Kenya**

## 3.1.2 Institutional Framework

### (1) Administrative Agency

The County Government Act has placed the functions of undertaking land use planning and development, and managing urban areas and cities under the County Government. At the national level, the National Government has functions of general principles of land planning and the co-ordination of planning by the counties.

The Directorate of Urban Development operating under the Ministry of Land, Housing and Urban Development is in charge of urban development and provides support services to the national and county governments on urban development issues.

The National Land Commission (NLC) of Kenya is an independent government commission, which was officially established under The National Land Commission Act 2012 to, amongst other things, manage public land on behalf of the national and county governments, monitor and have oversight responsibilities over land use planning throughout the country.

### (2) Policy

**National Land Policy (2009)**

The National Land Policy was formulated to provide an overall framework and define the key measures required to address the critical issues of land administration, access to land, land use planning, restitution of historical injustices, environmental degradation, conflicts, unplanned proliferation of informal urban settlements, outdated legal framework, institutional framework and information management. It also addresses constitutional issues, such as compulsory acquisition and development control as well as tenure.

**National Spatial Plan (Formulating stage)**

Preparation of the National Spatial Plan (NSP) is one of the flagship projects of Kenya Vision 2030 and it aims at guiding physical development activities on space over the next 50 years. It also provides a spatial illustration of the national projects and will identify a national strategy for land development. NSP is spearheaded and coordinated by the Ministry of Lands through the Department of Physical Planning. The Concept Paper on the plan is in place and shared with stakeholders.

**National Urban Development Policy (2013, draft version)**

The Kenya Vision 2030 highlights rapid urbanization and the vision has drawn attention to the critical need for efficient urban centers. To achieve this goal, the Government found it important to formulate a National Urban Development Policy (NUDP) to guide the spatial allocation of resources and to serve as a framework for the governance and management of urban areas in keeping with the management of cities and urban areas in the Country. The draft version of the policy was issued in 2013 by the Directorate of Urban Development under the Ministry of Land, Housing and Urban Development and review and formulation of it is one of the flagship projects of Second Medium Term Plan (2013-2017) of the Kenya Vision 2030.

### (3) Law

**Land Use Planning Bill**

Land Use Planning Bill provides a legal framework for the planning, use, management, regulation and development of land use plans at trans-national, national, trans-county, county, cities and urban areas levels.

The Bill stipulates who shall prepare land use plans and who has power to undertake development control at each area level.

- County Government Act

County Government Act provides for county governments' powers, functions and responsibilities to deliver services and for connected purposes. According to the act, the county government shall make county plans, which shall be the basis for all budgeting and spending in a county, including; a) county integrated development plan (CIDP), b) county sectoral plans, c) county spatial plan and d) cities and urban areas plans. The CIDP guides county budgeting. And the county spatial plan is a component of the CIDP and shall be spatial development framework for the county and shall indicate where public and private land development and infrastructure investment should take place.

- Urban Area and Cities Act

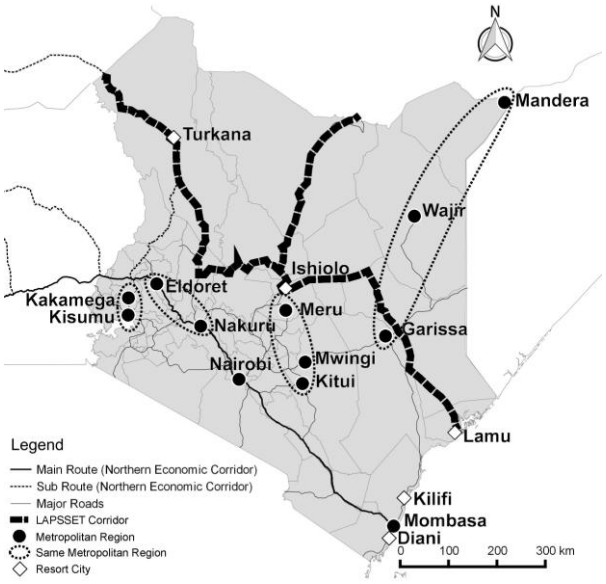
Urban Area and Cities Act provides for the classification, governance and management of urban areas and cities among others. Regarding the criteria only about population, an area shall have a population of at least 500,000, 250,000 and 10,000 to be classified as "city", "municipality" and "town" respectively. This Act defines "urban area" as a municipality or a town. And the act stipulates each categorized area to have the capacity to effectively and efficiently deliver essential services and to have an integrated development plan, which is the basis for provision of physical and social infrastructure and transportation among others.

## 3.1.3 Review of Existing Urban and Regional Plans

Some programs and projects related to urban and regional development have been implemented based on Kenya Vision 2030. The right figure shows the locations and the following table lists the projects.

The cities and urban areas in the six metropolitan regions (Nairobi, Mombasa, Kisumu-Kakamega, Nakuru-Eldoret, Wajir-Garissa-Mandera, Kitui-Mwingi-Meru) have been prioritized to develop and they play the roles as economic centers in each of the regions. The Northern Economic Corridor will still be the most important corridor for five metropolitan regions except for Wajir-Garissa-Mandera after developing the new corridor below.

The LAPSSET (Lamu Port - South Sudan - Ethiopia Transport) Corridor project consists of some component development projects including; Lamu port, Railway line, Highway, crude oil pipeline and product pipeline, oil refinery, resort cities and airport. The construction and improvement works of some parts of Lamu port, highways, and airport has already been launched. Transportation network throughout Kenya will be enhanced by connecting the corridor and the Northern Economic Corridor.




*Source: JICA Study Team based on Kenya Vision 2030*

**Figure 3.1.4: Urban and Regional Development Projects by Kenya Vision 2030**

**Table3.1.2: Urban and Regional Development Programs and Projects by Kenya Vision 2030**

| Program and Project | Location |
|---|---|
| Preparation and implementation of strategic development and investment plans in six metropolitan regions and their respective spatial plans | Nairobi, Mombasa, Kisumu-Kakamega, Nakuru-Eldoret, Wajir-Garissa-Mandera, Kitui-Mwingi-Meru |
| Lamu Port, Southern Sudan and Ethiopia Transport (LAPSSET) Corridor Development | Route from Lamu through Garissa, Isiolo, Mararal, Lodwar and Lokichoggio to branch at Isiolo to Ethiopia and Southern Sudan |
| Finalisation and implementation of Physical Development Plans for Resort Cities | Lamu, Turkana, Isiolo, Kilifi and Diani |

*Source: JICA Study Team based on Kenya Vision 2030*

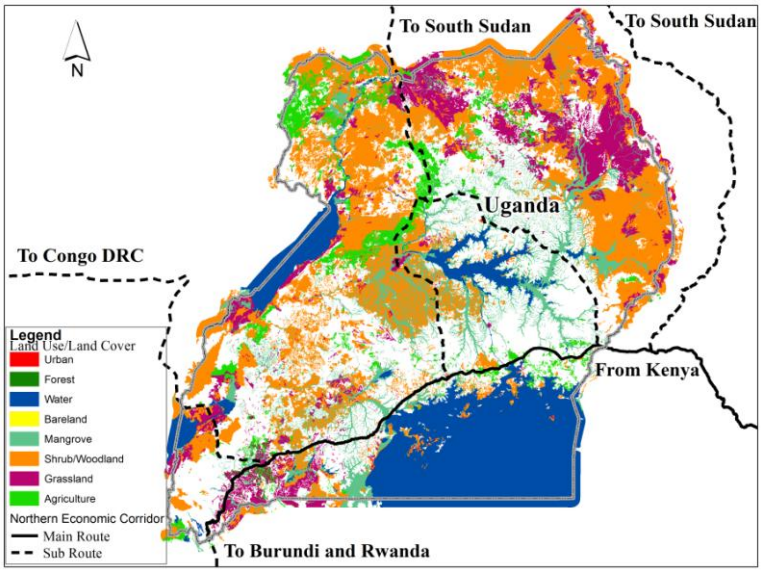
# 3.2 Urban and Regional Plans along Northern Economic Corridor in Uganda

## 3.2.1 Overview of Current Condition

### (1) Land Use

Figure 3.2.1 shows a land use map of Uganda in 2000-2001. The land around the Northern Economic Corridor from Kenya to Kampala is used for agriculture, shrub/woodland and urban. And the land around the route from Kampala to the west is covered with mangrove, shrub/woodland, grassland and agriculture. The land around the route from Kampala to the north is densely covered with shrub/woodland, grassland and agriculture with mangrove scattered around watersides.

Especially, most of urban land in Uganda is located around main and sub route of the corridor.




*Source: JICA Study Team based on data from Africover of Food and Agriculture Organization of the United Nations*

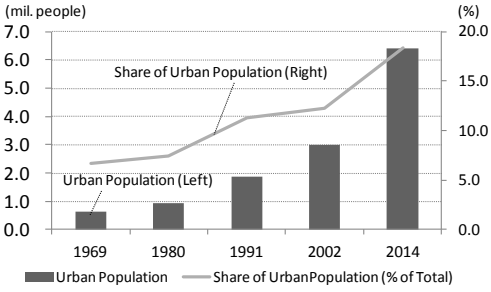
**Figure 3.2.1: Land Use Map of Uganda (2001)**

### (2) Urbanization Level

Figure 3.2.2 shows that the urbanization level in Uganda is steadily increasing and the rate in 2014 was 18%. On the other hand, the Uganda Vision 2040 expects the proportion will be 60% in 2040[10]. The expectation of this rapid urbanization is based on the same belief as mentioned in the part of Kenya.

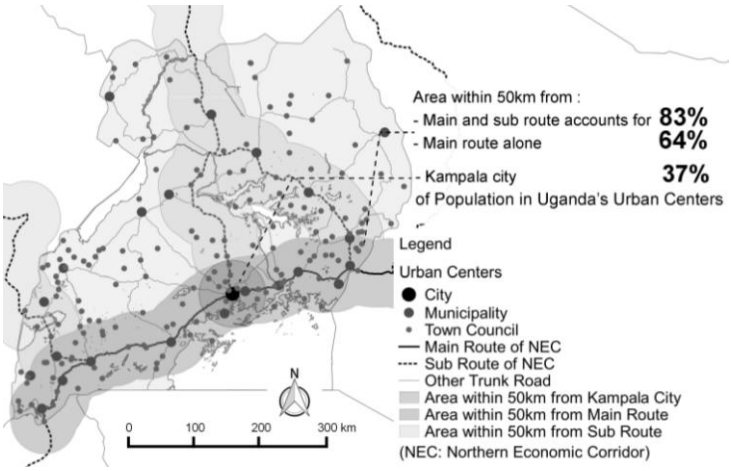
Figure 3.2.3 shows distribution of urban centers in Uganda. Although the urban centers are distributed throughout the entire country, the size of the urban centers varied widely. The populations in the urban centers are concentrated around the Northern Economic Corridor as shown in Figure 3.2.3 and Table 3.2.1.

As estimated in the section of Kenya above, the future urbanization estimated from the trend shown in Figure 3.2.2 will mainly happen in the existing urban areas, especially around the Northern Economic Corridor.




*Source: JICA Study Team based on data from Uganda Bureau of Statistics*

**Figure 3.2.2: Trends of Urban Population and its Proportion of Total in Uganda**




*Source: JICA Study Team based on data from National Population and Housing Census 2014 in Uganda*

**Figure 3.2.3: Distribution of Urban Centers in Uganda (2014)**

10 Uganda Census 2014 defined urban areas to include the gazetted urban centres (City, Municipalities, Town Councils and Town Boards). In 2014, Uganda had 197 urban areas (one City, 22 Municipalities and 174 Town Councils).

**Table 3.2.1: Share of Population in the Urban Centers around Northern Economic Corridor in Uganda**

| | Share of Total | |
|---|---|---|
| | Population in the Urban Centers | Number of Urban Centers |
| Area within 50km from the NEC | 83% | 68% |
| Area within 50km from main route of the NEC | 66% | 41% |
| Area within 50km from Kampala | 33% | 7% |

Note: NEC stands for "Northern Economic Corridor".

*Source: JICA Study Team based on data from National Population and Housing Census 2014 in Uganda*

## 3.2.2 Institutional Framework

### (1) Administrative Agency

According to the Constitution of Uganda (1995), management and governance structures include, District Councils, City/Division Councils, Municipal Councils, Town Councils and Town Boards at the local level. At the national level, the urban councils deal with line Ministries and central agencies such as Ministry of Lands, Housing and Urban Development (MoLHUD), Ministry of Finance, Planning and Economic Development (MoFPED), the Ministry of Local Government (MoLG) and Ministry of Public Service.

The MoLHUD sets their vision as "Sustainable Land Use, Land Tenure Security, Affordable, Decent Housing and Organized Urban Development". The Directorate of Physical Planning and Urban Development of the ministry is responsible for policy making, standard setting, national planning, regulation, coordination, inspection, monitoring and back-up technical support relating to urban and regional planning.

The MoFPED is a key stakeholder that oversees management of the national economy and national development in partnership with the National Planning Authority (NPA), to facilitate economic growth, macro-economic stability, poverty eradication and overall development (MOLG, 2006). The roles of MOFPED are to provide fiscal transfers to local governments, study and analyze financial output information from local governments, and to provide inputs for monitoring, mentoring local governments on accountability and implementation of local government programs.

The MoLG is the main institution responsible for spearheading decentralization in Uganda. Its mandate extends to promoting decentralization, updating the policy and legal instruments, coordinating implementation of sector policies at the local level, and setting policies and service standards. It is also responsible for mentoring, compliance inspection and support supervision of Local Governments.

### (2) Policy

Policies relating to urban development include National Land Use Policy, National Land Policy, National Urban Policy (Draft), Decentralization Policy, Health Policy, and National Environment Policy among others.

**National Land Use Policy (2006)**

The National Land Use policy aims at achieving sustainable and equitable socio-economic development through optimal land management and utilization in Uganda.

**National Land Policy (2013)**

The National Land Policy advocates for observance of land use regulation, adequate physical planning, provision of infrastructure and utilities.

**National Urban Policy (2015, draft version)**

The National Urban Policy has been developed to guide and provide a frame work for organized urban development in Uganda. The latest version of this policy was drafted on April 2015 and it's in the process of submitting to Cabinet as of June 2015. The policy will be the main guiding document for all urban planning and development activities both at central and local government levels.

### (3) Law

The legal framework dealing with physical planning and urban development includes The Physical Planning Act, The Local Government Act, The Land Act, The Condominium Property Act, Kampala Capital City Act, The Access to Roads Act, Public Health Act and the National Environment Act among others.

**Physical Planning Act**

The Physical Planning Act is intended to consolidate the law on physical planning and make the whole country a planning area. The Act provides for the establishment of the National Physical Planning Board and a Secretariat, which shall be responsible for physical planning in the country.

The Act creates and provides operational linkages between the National Physical Planning Board, the District Physical Planning Committees and other lower Physical Planning Committees. In addition, the Act considers the special and specific needs of urban areas where appropriate separate planning structures should be provided, by setting up Urban Planning Committees.

**Local Governments Act**

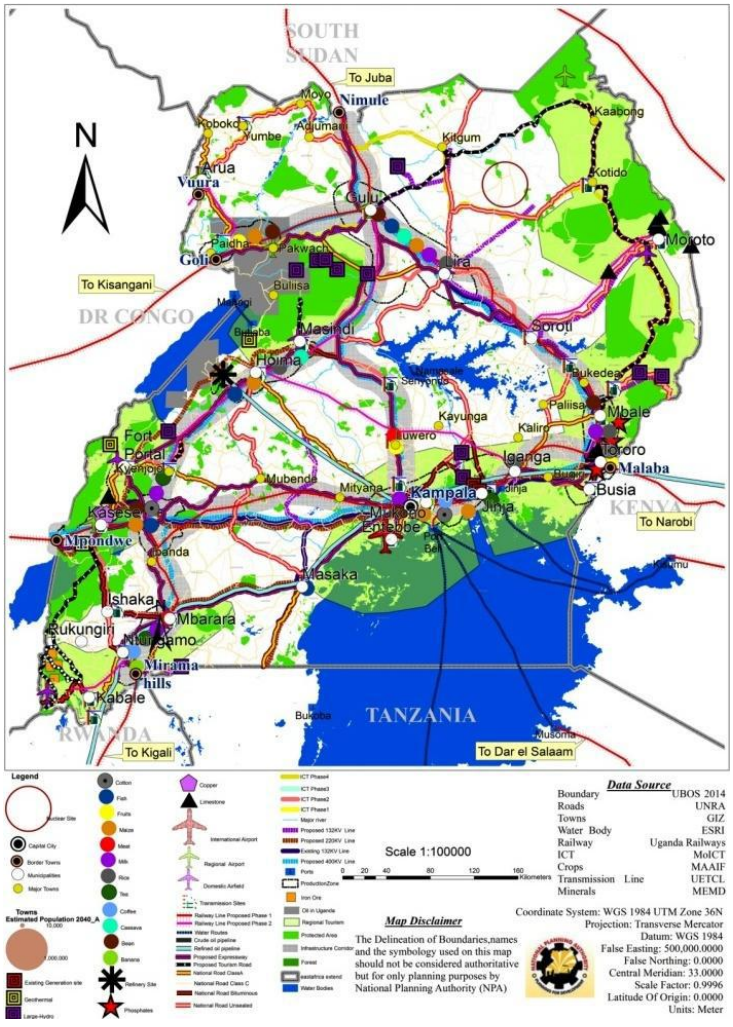
According to the Local Government Act, urban councils include city, municipality, and town councils. The Act gives more powers to the local authorities to manage the development of urban councils, municipalities and the city council while central government comes in to play the guiding role. The Act empowers the Minister for Local Government to declare an urban area when and if it satisfies the following criteria; Minimum population size of 25,000 for a town council, 100,000 for a municipality, and 500,000 for a city, has a master plan for land use, has its own offices, has available water sources, is able to meet the cost of providing services.

## 3.2.3 Review of Existing Urban and Regional Plans

Some key core projects were identified in Uganda vision 2040 and it includes development plan of the identified areas as below; the Greater Kampala Metropolitan Area (Kampala city, Mpigi, Wakiso, Entebbe Municipality, Mukono Municipality and Jinja Municipality), four regional cities (Gulu, Mbale, Mbarara, and Arua), five strategic cities (Hoima (oil), Nakasongola (industry), Fortportal (tourism), Moroto (mining), and Jinja (industry)), Phosphate industry in Tororo and Iron ore industry in Muko, Kabale.

The Second National Development Plan (2015-2019) prepared a Spatial Framework for the Uganda Vision 2040 (Figure 3.2.4) which includes development projects of the area above and network of railway, international expressways, 400KV electricity transmission and fiber between the main cities.

With respect to area developments along the Northern Economic Corridor, Kampala area will promote agriculture including cotton, maize, milk and coffee and fishery. Malaba area will have clusters with Mbale, Tororo and Busia about some industries including phosphorus, milk and rice. And the Kampala and Malaba area will promote regional tourism also with utilizing its lakeside location. The area around Gulu and Lira has a variety of promoting industries including fishery, coffee, maize, milk and rice. Mbarara area will promote especially milk, tea, coffee and banana, and the area provides regional tourism also.




*Source: Second National Development Plan in Republic of Uganda (Draft, 2015)*

**Figure 3.2.4: Spatial Framework for Uganda Vision**

In addition to road network connecting the areas, standard gauge railway is proposed and the line will go through from Kenya through Malaba, Kampala,

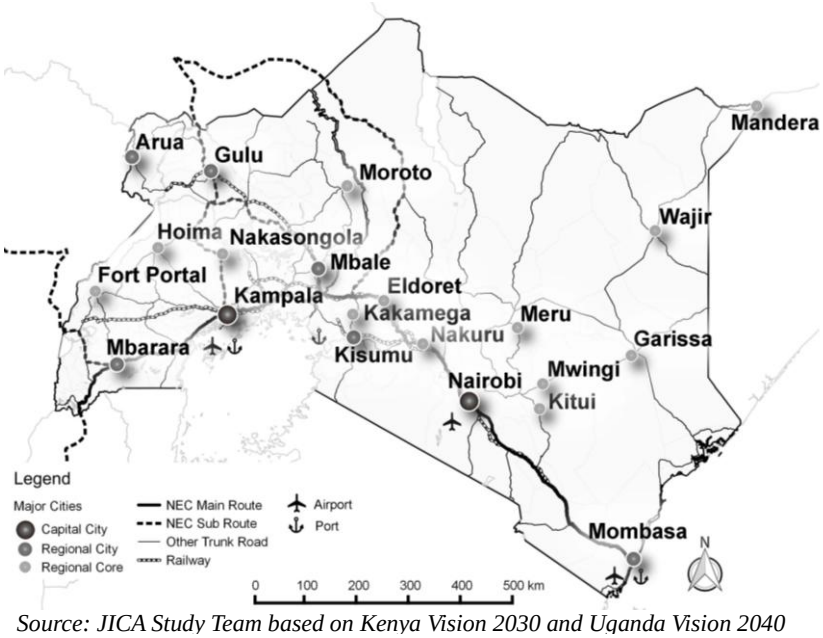
Bihanga, to DRC and to Rwanda. The railway line will connect Malaba, Soroti, Lira, Gulu from Kenya to South Sudan also..

# *3.3 Analysis of Current Regional Structures around Northern Economic Corridor*

## 3.3.1 Current Cores and Linkage

Figure 3.3.1 shows current major cities of which development projects are proposed in Kenya Vision 2030 and Uganda Vision 2040, and existing transportation infrastructures in Kenya and Uganda. As mentioned above, the Northern Economic Corridor has been and will be the most important route connecting a sea port for almost all cities, because five out of six metropolitan regions in Kenya are located around the corridor and it's a single route for every city in Uganda.

Detailed analysis for current situation of linkage between cities on the corridor and between cities on and off the corridor will be mentioned on Progress Report II of this study, after completing the Goods Movement and Vehicle Traffic Survey conducted in this study.




*Source: JICA Study Team based on Kenya Vision 2030 and Uganda Vision 2040*

**Figure 3.3.1: Major Cities and Existing Transportation Infrastructures**

## 3.3.2 Urbanization in Both Countries and Northern Economic Corridor

This section mentions emphasis on importance of promoting urbanization of existing major cities and developing several routes.

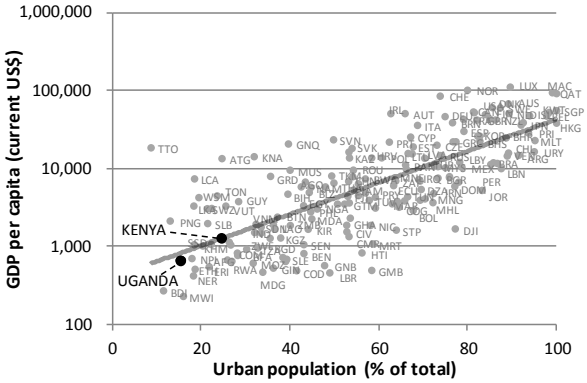
If urbanization is managed well, it can offer great benefits to residents; there is a positive correlation between urbanization and prosperity. This relationship can be explained by two main ways; through the benefits of agglomeration, cities potentially generate higher living standards for all their residents and reduce urban poverty: and through the benefits of scale economies, public services can be provided in urban areas at a lower fixed unit cost.

Urbanization level of Kenya and Uganda in 2013 was 25% and 18% respectively, as mentioned above. Figure 3.3.2 shows the comparison of the level and GDP per capita with other countries, and Figure 3.3.3 shows the comparison of poverty ratio. These figures suggest the urbanization levels of the both countries were categorized as very low and they should promote urbanization to increase GDP and decrease poverty.

Major cities have advantage to boost urbanization and to get more population because they have its development plan and existing infrastructures. To promote urbanization of the both countries more efficiently, existing major cities should be prioritized to be developed.

Regarding current situation about urbanization of both countries, it is concentrated around the Northern Economic Corridor as mentioned above, and too much concentration to the corridor may bring serious problems including regional gap between urban and rural area about income and infrastructures. One of the most effective countermeasures against the imbalanced development is to make a formation of multiaxial national land structure. To take Japan as an example, a main axis which penetrate center of Japan including three biggest cities (Tokyo, Nagoya and Osaka) had most of industrial area in the country and the area on the axis has been mainly developed since around 1950 to catch up more advanced countries. Japan is currently suffering regional gap widening between urban and rural area and it's said that the structure of only one axis is one of the biggest cause of the regional gap in the country. Therefore Japan reviewed the structure and is now

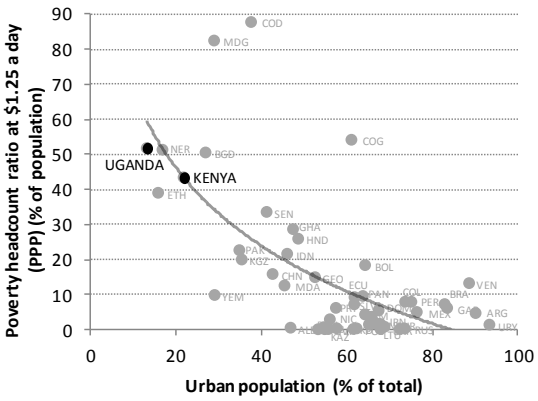
developing four axes to reorganize the structure and to correct regional gap. This example tells importance of developing not only one main route but also other sub routes.




n=183

*Source: JICA Study Team based on data from World Bank (2013)*

**Figure 3.3.2: Comparison of Urbanization Level and GDP per Capita of Countries**




n=51

Note: PPP=Purchasing Power Parity

*Source: JICA Study Team based on data from World Bank (2005)*

**Figure 3.3.3: Comparison of Urbanization Level and Poverty Ratio of Countries**

# 4 Review of Industrial Status

## 4.1 Overview

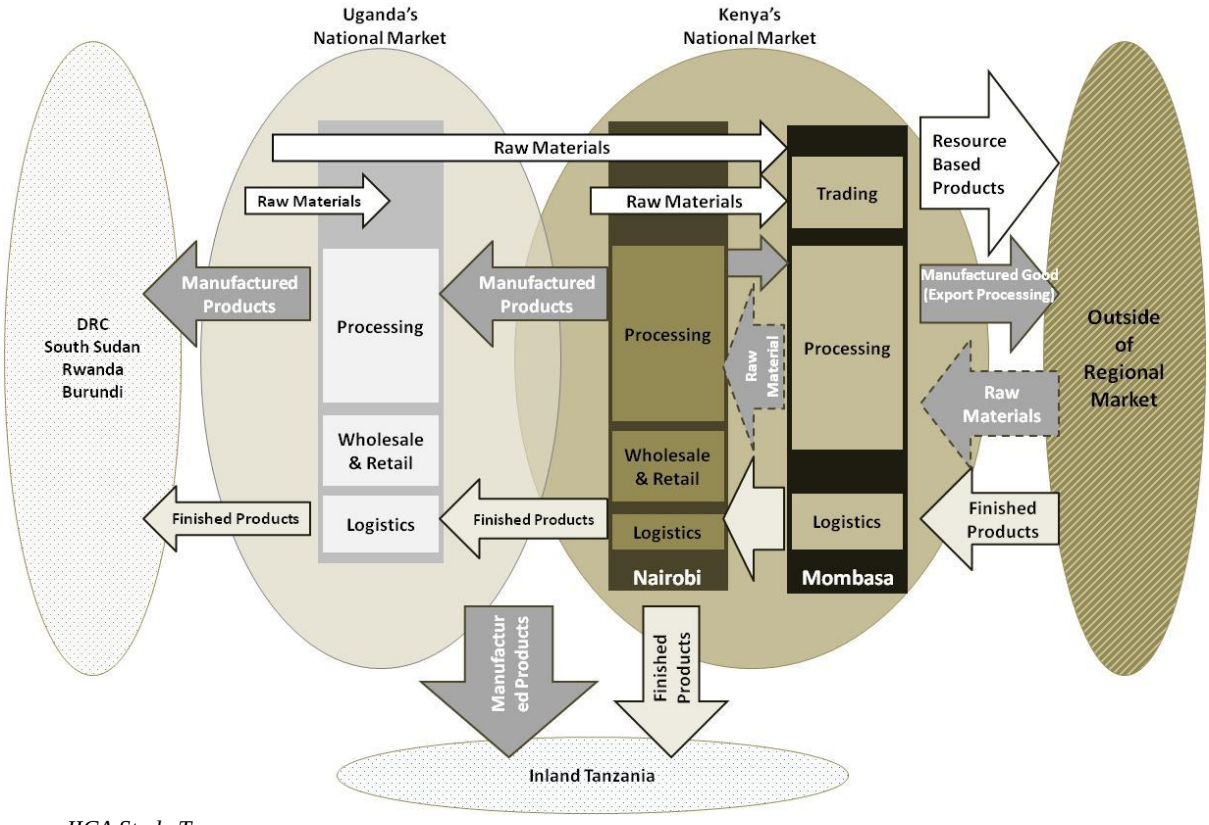
### 4.1.1 Objectives of the Analysis and the Methodology

This section analyses the status of the industrial structure of the area along NEC in order to identify potentials for development of the areas along the corridor which can eventually lead the overall economic development of the corridor countries. The potentials will be further reviewed to identify the bottlenecks and constrains in terms of the logistics as well as the development in general.

The situation of each industrial sector is analyzed from the aspect of current production trend and geographical distribution, identification of the potentials and bottlenecks for development. The analysis are conducted separately for Kenya and Uganda. In order to identify the constraints and bottlenecks of the potential sectors, the detailed information collection is undertaken under the Market and Value Chain Survey (hereinafter referred to as the "Survey"). While the Survey is still on-going at the time of the reporting, the data and information produced through the Survey has been utilized in the analysis. The progress and outcomes of the Survey are also explained latter in this chapter.

### 4.1.2 Overall Concept of Production and the Trade in the Area along NEC

The structure of the regional trading and production can be summarized as the Figure below




*Source: JICA Study Team*

**Figure 4.1.1: Structure of Production, Trade and Logistics in EAC Region**

The major exported goods from the region are resource-based products such as agro and fisheries and their processed products. Some part of the fresh produces is exported through international airports in Entebbe, Eldoret, Kisumu and Nairobi. The port of Mombasa currently serves as the entry point of both raw materials and finished goods more than the port of exit of the goods (see Table 4.1.1).

**Table 4.1.1: Exported and Imported Item handled at the Port of Mombasa**

| Export | 000DWT | Import | 000DWT |
|---|---|---|---|
| General Cargo | | | |
| Tea | 554 | Iron & Steel | 1,367 |
| Soda Ash | 336 | Plastic | 662 |
| Coffee | 256 | Rice | 651 |
| Tinned Fruits | 99 | Paper & Paper Products | 503 |
| Oil Seeds | 39 | Motor Vehicles & Lorries | 463 |
| Tobacco & Cigarettes | 27 | Ceramic | 415 |
| Cloths | 30 | Chemicals & Insecticides | 390 |
| Hide s & Skins | 28 | Clothing | 253 |
| Fish & Crustacean | 20 | Sugar | 207 |
| Rice | 20 | Vehicle Tyres & Spares | 103 |
| Beans, Peas, Pulses | 19 | Fertilizer | 102 |
| Iron & Steel | 12 | Tallow and Oil in Case or Drums | 84 |
| Total General Cargo | 1,998 | Total General Cargo | 8,646 |
| Titanium | 363 | Dry Bulk Total | 4,913 |
| Flourspar in Bulk | 59 | Weat in Bulk | 1,908 |
| Bulk Oil | 62 | POL | 6,286 |

*Source: KPA (2015) Annual Review and Bulletin of Statistics 2014*

The current flow of the goods is largely induced by the growing demand of the regional market and deficit of the production capacity of these goods in the region, the areas along the Northern Economic Corridor is endowed with the already emerging hubs for the processing for the final consumption of various products. On the other hand, the flow of ago-based and resource-based products also requires further attention as an opportunity to be exploited: it may be effectively handled by collecting in such hubs and serviced before departing finally to further destinations. Furthermore, it would be also necessary to exploit the opportunities of value addition in the region. While looking at the potentials in Kenya and Uganda separately, the roles of the particular products and the locations in the regional flow of products will be also analyzed through the Market and Value Chain analysis.

# *4.2 Agriculture and Fishery Sectors in Kenya*

## 4.2.1 Geographical Distribution of Production, Processing and Key Logistic Routes

**Overview**

The agriculture sector in Kenya comprises crop production (food crops, industrial crops and horticulture), livestock production (dairy industry, beef industry, sheep and goats, poultry, pigs, apiculture and camels), aquaculture and Forestry. Over 80 % of the Kenyan population lives in the rural areas. Agriculture remains the backbone of the economy in Kenya, contributing 25 % of the total GDP and employing 75 % of the national labor force. Given the importance of the sector, it is a key factor for the overall performance of the economy.

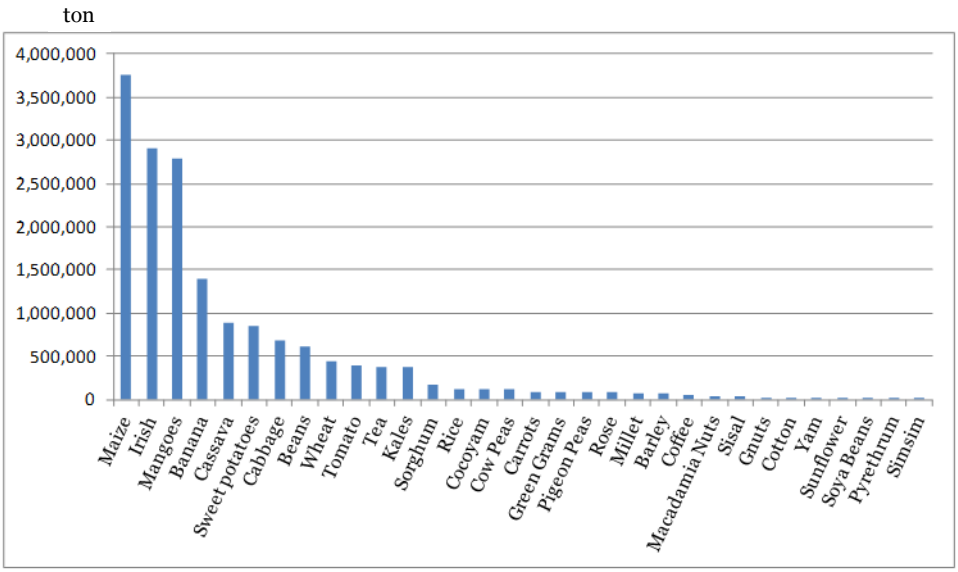
The country's climate is influenced by nearness to the equator, the Indian Ocean, and the Inter-Tropical Convergence Zone. Climate is modified by differences in altitude, so there are various climatic regimes. Generally, long rains occur in March – May, while the short rains occur in October – December. About 17 % of the total area is land with high to medium agricultural potential and supports about 80 % of the country's population. In the high agricultural potential area where, annual rainfall is 750 -1000 mm/year, vegetables and cereals are cultivated. In the middle potential area, where, annual rainfall is less than 750 mm/year, livestock farming is conducted.

Please refer to Figure 3.1.1 for a land use map of Kenya.

Agriculture land spreads along the northern economic corridor. Stockbreeding is performed in the semi-dry and arid places which are spread over the whole area.

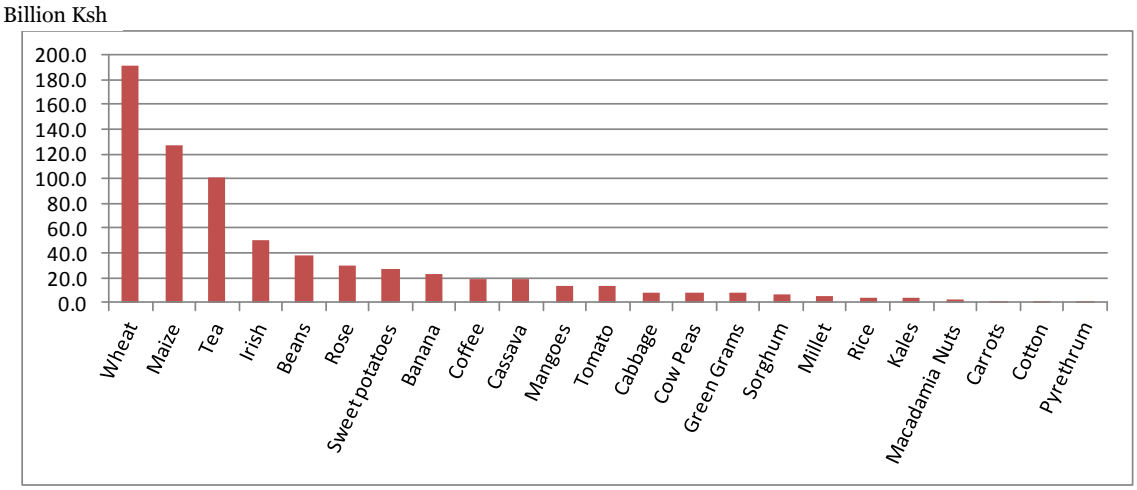
## Crop production

Almost all farmers are small farmer and national average holding size is 0.97ha. They grow about 32 major crops as food crops and also industrial crops. Food crops include Maize, Sorghum, Rice, Wheat, Irish potato, Cassava, Sweet potatoes and industrial crops include coffee, tea, sugar, cotton, pyrethrum and sisal and horticultures include vegetable (Cabbage, Beans, Tomato, Kales), flower, fruits (Mango, Banana) and nuts. Among the agricultural production along the northern economic corridor, some are consumed within the region and some are exported from Nairobi airport, and some are exported from Mombasa Port through the northern economic corridor. The production amounts and production values of the major crops are follows.




*Source: Economic Review of agriculture 2013, Ministry of agriculture.*

**Figure 4.2.1: Production of Major Crops**




*Source: Economic Review of agriculture 2013, Ministry of agriculture.*

**Figure 4.2.2: Production Values of the Major Crops**

## Livestock production

Livestock activity comprises stockbreeding and poultry farming. Domestic varieties include cows, sheep and goats. Stockbreeding is performed over a very vast area. The maintenance of feeder road is more important than maintenance on main roads (in the northern economic corridor).

Purchases for Slaughter by Licensed Abattoirs are shown in the following table.

**Table 4.2.1: Purchases for Slaughter by Licensed Abattoirs**

| Year | Cattle and Calves ('000 heads) | Sheep and Goats ('000 heads) | Pigs ('000 heads) |
|---|---|---|---|
| 2008 | 1,892 | 5,425 | 198 |
| 2009 | 2,057 | 5,716 | 221 |
| 2010 | 1,923 | 6,162 | 217 |
| 2011 | 2,103 | 5,837 | 223 |
| 2012 | 2,194 | 5,924 | 235 |

*Source: STATISTICAL ABSTRACT2013, (Kenya National Bureau of Statistics).*

Demand of dairy products has been expanding with growth of the population, and it is expected that the trend will continue. Since EU abolished milk quotas (EU previously restrained surplus production of raw milk by setting up the production upper limits for the raw milk in every area till March 2015.), it is expected that import volume from the EU will increase. Dairy production in Kenya will have to compete with imports from EU from now. Dairy Production Trend 2008 – 2012 is shown in the following table

**Table4.2.2: Daily Production, 2008 – 2012**

| Year | Milk (mil litre) | Whole milk and cream (mil litre) | Butter and ghee (tons) | Cheese (tons) |
|---|---|---|---|---|
| 2008 | 399 | 262 | 1,218 | 155 |
| 2009 | 407 | 323 | 1080 | 188 |
| 2010 | 516 | 358 | 1,967 | 263 |
| 2011 | 549 | 374 | 1,995 | 290 |
| 2012* | 495 | 332 | 1,801 | 255 |

*Provisional

*Source: STATISTICAL ABSTRACT2013, (Kenya National Bureau of Statistics).*

## Aquaculture

Aquaculture activity comprises wild fisheries and farm fisheries. Fisheries are mainly carried out in open water bodies and major lakes (Victoria, Turkana, Lake Naibasha and Lake Baringo) and Tana River dams. The maintenance of access road from northern economic corridor to the fishery harbour is a necessity. Fish catch by water body is shown in the following table.

**Table 4.2.3: Fish Catch by Water Body, 2009 – 2012** ('oooton)

| | Water body | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| Fresh water fish | LakeVictoria | 109 | 112 | 112 | 107 |
| | Lake Turkana | 9 | 6 | 7 | 5 |
| | Fish Farming | 5 | 12 | 19 | 24 |
| | Other area (Tana River dams, Lake Naibasha, Lake Baringo and others) | 3 | 2 | 2 | 2 |
| | Sub Total | 126 | 132 | 140 | 138 |
| Saltwater fish | Ocean | 7 | 7 | 7 | 7 |
| | Grand Total | 133 | 139 | 147 | 145 |

*Source: Economic Survey 2013, (KNBS).*

Fishery is contributing only 0.5 % of the total GDP. Almost all fishers are small scale one even if it is for saltwater fish. Since 2009 fish catch from fish farming has been increased a lot but its production is still only 16.5 % of total production of fish. Tilapia, Catfish and rainbow trout are cultivated by fish farming and it's conducted in fish ponds, canals and irrigation ponds. Fish farming in the sea is not developed.

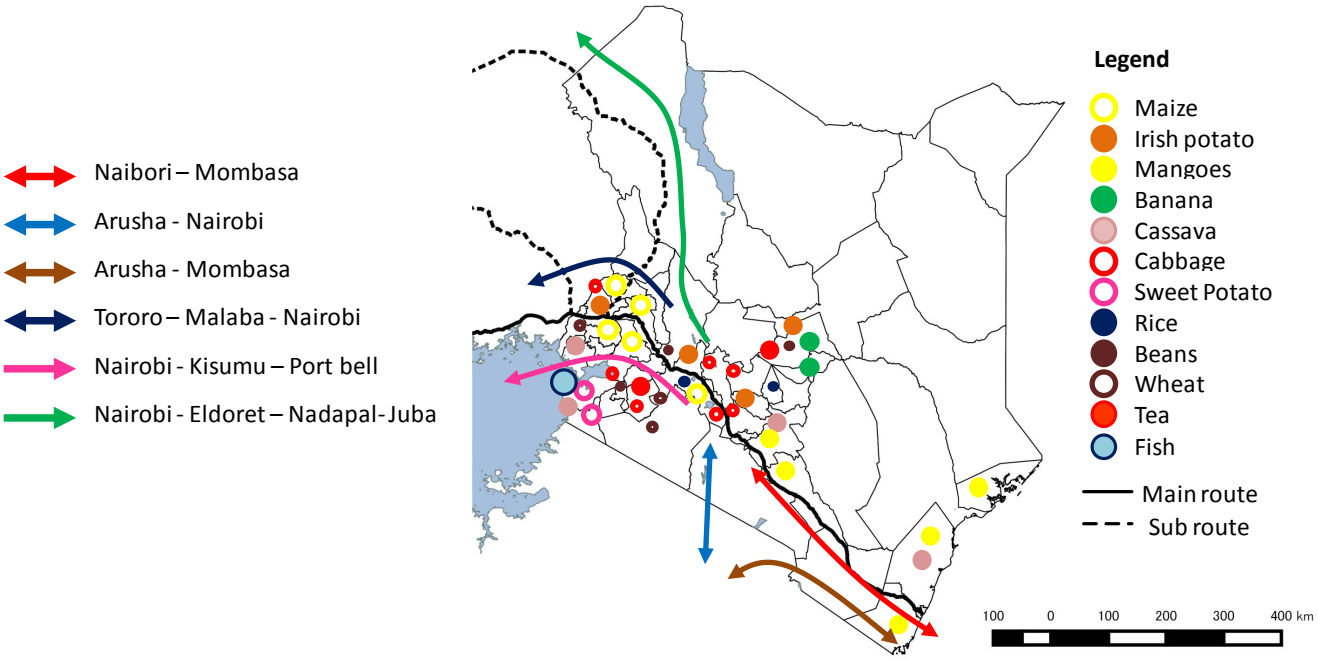
## Forestry

In Kenya potential of forest industry is very limited. Forest coverage is about 6% of the total land area. Vision 2030 requires the country to work towards achieving a forest cover of at least 10% of the land. Government is proceeding with forest plantation.

**Geographical Distribution**

In Kenya agricultural area is very limited. Agricultural area extends near by the Northern Economic corridor. Production areas of 10 crops with major production and logistics routes of agricultural crops are shown in the figure below.

Forestry production isn't included in the figure because forestry production is very small. Livestock is also not shown since it is dispersed nationwide.




*Source: JICA Study Team based on Economic review of agriculture 2013, Ministry of Agriculture*

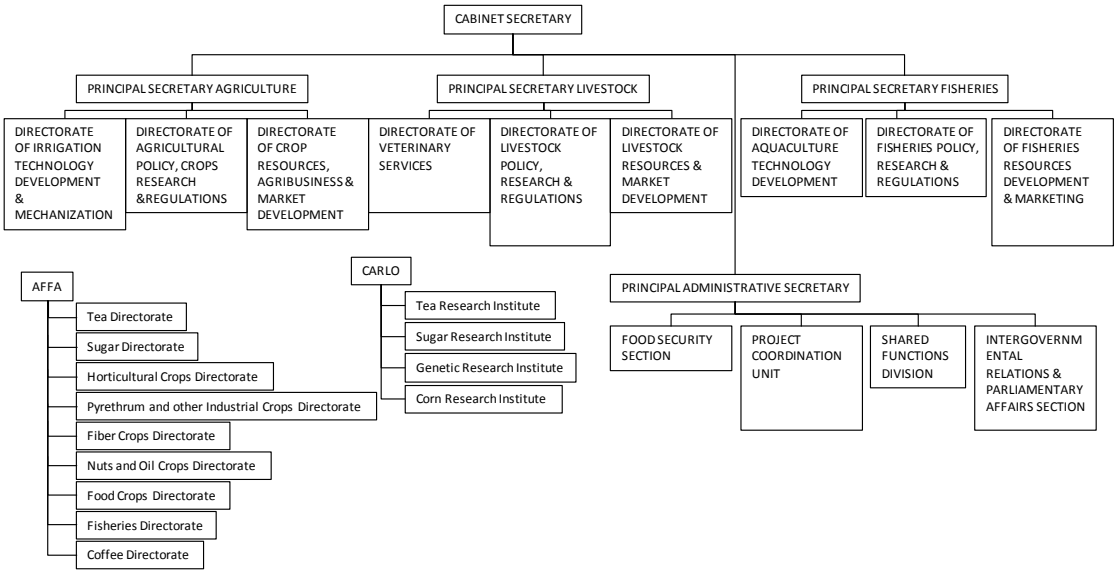
**Figure 4.2.3: Production Areas and Logistics Routes of Agricultural Crops**

## 4.2.2 Policy for Agricultural and Fishery Development

Vision 2030 requires the country to work towards achieving a forest cover of at least 10% of the land area to ensure sustainable resource use. Vision 2030 states that the agriculture sector is one of the pillars for economic growth. It also identifies improvement of productivity and increase of land area under irrigation as important issues for the achievement of the goal. For livestock, implementation of at least four disease free zones is programmed in Vision 2030 in order to enable Kenyan to meet international marketing standards. There will be more domestic processing of these products for regional and international markets, and economic development will be promoted through improving the performance of the livestock sector. Kenya also aims to strategically increase the level of value addition in exports by additional processing of local agriculture products. In the Agricultural Act, Preservation of agricultural land, prevention of soil erosion and prohibition of deforestation in risk area of slope failure are prescribed.

## 4.2.3 Review of Legal Framework and Administrative Structure Relevant to Agriculture and Agri-business Sector

The main agricultural organization is Ministry of Agriculture, Livestock and Fisheries. The organization structures of ministry are described below.




*Source: JICA Study Team based on Economic review of agriculture 2013, Ministry of Agriculture*

**Figure 4.2.4: Organization Structure of Ministry of Agriculture, Livestock and Fisheries.**

Under the Cabinet Secretary, there are three Principal Secretaries for Agriculture, Livestock and Fisheries. Government policy and central government supports are conducted by these agencies. However, after decentralization their activities became very limited. Administration of the Crops Act and the Fisheries Act is conducted by Agriculture, Fisheries and Food Authority (AFFA). The Directorates under AFFA include, Tea Directorate, Sugar Directorate, Coffee Directorate, Horticultural Crops Directorate, Pyrethrum and other Industrial Crops Directorate, Fiber Crops Directorate, Nuts and Oil Crops Directorate, Food Crops Directorate and Fisheries Directorate. Research of agricultural and livestock is conducted under the Kenya agriculture and livestock Research Organization (KALRO).

Forestry is under the jurisdiction of Kenya Forest Service (KFS) and Kenya Forestry Research Institute (KFRI). KFS is a State Corporation established under the Forest Act 2005 to conserve, develop and sustainably manage forest resources for social-economic development. The Kenya Forestry Research Institute (KFRI) was established under the science and Technology Act to carry out research in forestry and allied natural resources.

## 4.2.4 Review of On-going and Planned Projects and Situation of Private Investment for Development

Agriculture sector is identified as a key production sector. On-going and Planned Projects are 28 projects in total and the outline is summarized below.

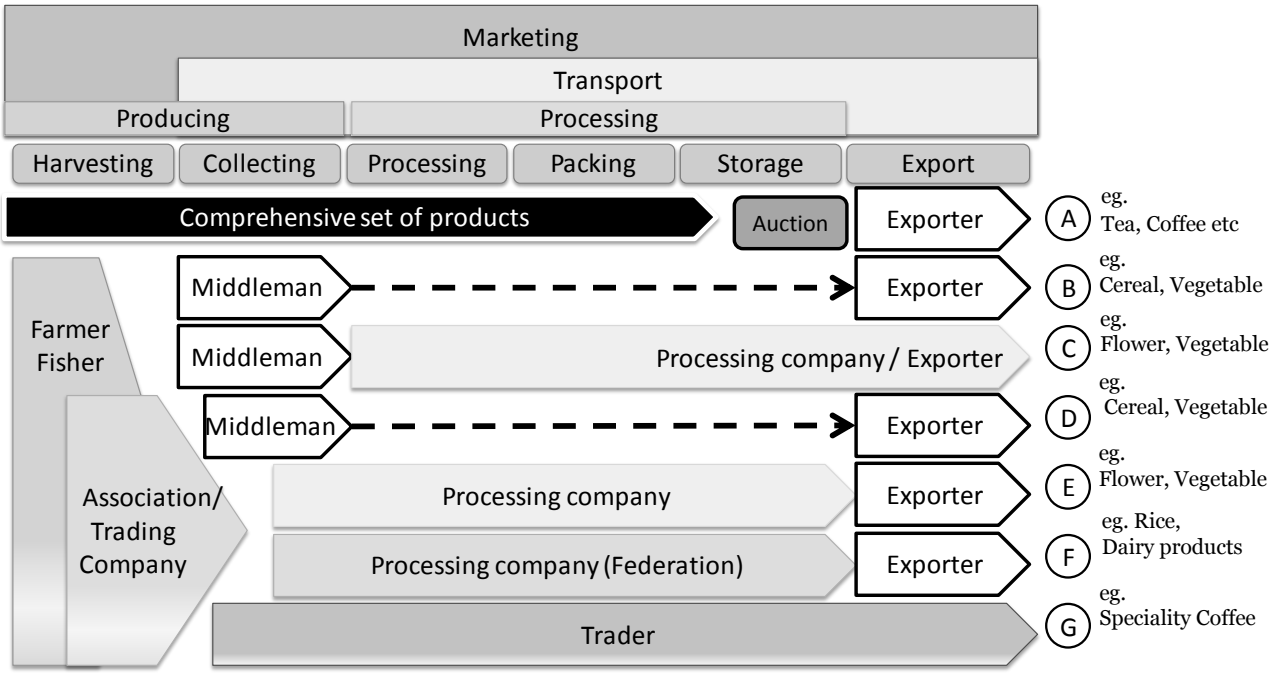
**Table 4.2.4: On-Going and Planned Projects**

| Category | Number | Ratio | Outline |
|---|---|---|---|
| Horticulture crop | 15 | 54% | Support for small scale farmers including agro forestry. Technical cooperation for water saving irrigation practice, Support for organization of farmers association etc. |
| Livestock | 4 | 14% | Technical cooperation for livestock farming practice, Support for the facilities etc. |
| Irrigation | 4 | 14% | Constructing of irrigation facilities, technical support of operation and maintenance, and agriculture practice etc. Major planned irrigation projects are Mwea irrigation scheme and Galana/Kulalu irrigation project. |
| Agri-business | 4 | 14% | Business matching, marketing research and capacity development of management etc. |
| Fishery | 1 | 3% | Technical cooperation for fish farming etc. |
| Total | 28 | | |

*Source: JICA Study Team*

## 4.2.5 Analysis of Selected Commodities and Value Chains

The value chain of selected commodities with production/distribution/processing and trading patterns are outlined in the following figure.




*Source: JICA Study Team*

**Figure 4.2.5: Trading Patterns of Agricultural Commodities**

The details of the above patterns A through G are described below.

**A: Major agricultural production corporation**

One company carries out all processes from production up to selling at auction. Exporters buy the products through auction. The companies own their land and employ farmers to cultivate crops. Some of the tea and coffee companies use this pattern. Most of the product is sold through auction. Currently, however, it is very

difficult to have land and employ farmers because farmers always want higher fees and boycott work. Now major agricultural production corporations have shifted to contract with small scale farmers or farmers associations.

**B: Small Scale Farmers**

Farmers sell their product at farm-yard to middlemen by the offered price. There are several kinds of middlemen. The price will be 10 times higher than the farm gate price by selling through many middle men. Farmers can't choose period for selling their products because they don't have storage. Farmers also can't sell their product to good market because they don't have transportation. These are reason why farmers have to sell their products by cheap farm gate price.

**C: Exporter with processing facility**

Vegetable and flower processing companies operate using this pattern "C". Most all companies own cold chain facilities, refrigerators, trucks for cold cargo and trucks for freezing cargo. Most companies are established with a foreign capital and all processed product are exported to countries that the foreign investors come from. After collection by middleman, products are washed and packed. Almost all processing companies get certified by ISO and HACCP for export. There are requests by export flower producers to get support for Japanese import clearance in order to send their products to Japan. Although Japanese flower markets are very attractive, the import regulations and qualification certification systems are very strict and complicated.

**D: Cooperative shipping**

Some farmers organize into associations/cooperatives for cooperative shipping. Such associations/ cooperatives may be supported by government to subsidize agricultural input and provide technical advices. They can sell at better price to middlemen by cooperative shipping. They have to adjust cropping patterns for cooperative shipping. The Kenyan government also supports to organize such a farmers association/ cooperatives. Vegetables, fruits and dairy companies basically operate through this pattern "D".

**E: General processing company**

General processing companies purchase materials from farmers association. Beverage companies and food processing companies carry out their business through this pattern "E". After collection by transporter employed by the company, products are washed and packed. When they export their products, they have to clear KNBS, HACCP, ISO, Global GAP and the regulations of the export destination countries. As a result, it takes a long time and has high cost. There are requests by export flower producers to get support for Japanese import clearance in order to send their products to Japan.

**F: Evolving system of association**

This pattern "F" is a common patterns in tea, coffee and dairy industries. The Kenyan government has developed farmers association and promoted added-value. The associations provide several kinds of support and technical advice in terms of cultivation, arranging cooperative shipping and matching to exporters. In addition, such associations normally have processing factories. As a result, farmers can get the majority of the profits since they are shareholders in the cooperative

**G: Direct trading to foreign market**

Some trading companies directly contract with farmers association. Trading for specialty varieties of coffee and fair trading of OVOP etc. is carried out through this pattern "G". The trading amount is normally very limited. Product amounts below 500kg are exported by air, and over 500kg is exported by road. The way to improve this trading pattern is to match more good exporters to the good producers.

## 4.2.6 Analysis of Potentials and Current Bottlenecks for Development related to NEC

Agribusiness in Kenya was developed in order to satisfy demands of European countries. So Kenya has a big market of EU countries, for example, for vegetables, fruits, tobacco and livestock. Nowadays Middle Eastern countries with the economic growth of recent years are also their market. To meet the demand, it is necessary to have high quality standard and to supply stable quantity

Bottlenecks of the quality control are as follows:

1) Production area is scattered and feeder roads are almost all not paved. Hence, it takes a lot of time to monitor each farm and collect each product.

2) Procedure of get certification takes a long time and cost is high.

Bottlenecks of stable supply are as follows:

1) For stable supply it is necessary to expand production area or to improve productivity, but this is difficult because water is very limited and almost all area for agriculture is owned by big landowners. It is necessary to develop selective breeding which can reduce the weather risk and to develop biotechnology to increase production with small amounts of water.

2) Farmers sell their products to other buyers by ignoring terms of the contract.

Three cases were examined: one is tea with the most export amount; second is rice with the most import amount among agro crops; and another one is dairy product expected import growth. The challenges in the value chain of these products are summarized in the following table and the details for each challenge are described below the table.

**Table 4.2.5: Challenges to the Value Chain by Product**

| | Potential | Production | Collecting | Processing | Packing | Storage | Export |
|---|---|---|---|---|---|---|---|
| Tea | ◎ | △ | △ | o | o | o | o |
| Rice | ◎ | x | △ | o | o | o | o |
| Daily products | ◎ | △ | △ | △ | o | o | o |

◎= very good, △= average, x=poor, o=good

*Source: JICA Study Team based on Economic review of agriculture 2013, Ministry of agriculture*

**Tea**

Challenges to the tea industry are on the production side. It is difficult to expand cultivated area because agricultural land is very limited. So improvement of agricultural management to increase the unit yield is necessary. For improvement of collecting work, it is difficult to fetch the product because feeder roads are not paved.

**Rice**

Demand of rice is very high and price is also high. Constrain of cultivation are that water requirement is very high and irrigation is necessary. There are not enough adequate storage facilities for farmers and farmers association. Also farmers live scattered in settlements over a wide area, and feeder roads are not paved. These are reasons for quality degradation of rice. For productivity improvement, there is no lending mechanism for improving facilities and electricity and fuel are very expensive.

**Dairy products**

Demand for dairy products in Kenya and neighboring countries is increasing with growth of population. Since EU abolished milk quotas (EU previously restrained surplus production of raw milk by setting up production upper limits for raw milk in every area till March 2015), it is expected that import volume from the EU will increase. Dairy production in Kenya will have to compete with imports from EU from now.

Other challenges are harvesting, collecting and processing. The harvesting feed of animals is very expensive and sometime animal have disease. For collecting feeder roads are not paved. For processing electricity is very expensive and there is no finance scheme for construction of facilities.

# *4.3 Agriculture and Fishery Sectors in Uganda*

## 4.3.1 Geographical Distribution of Production, Processing and Key Logistic Routes

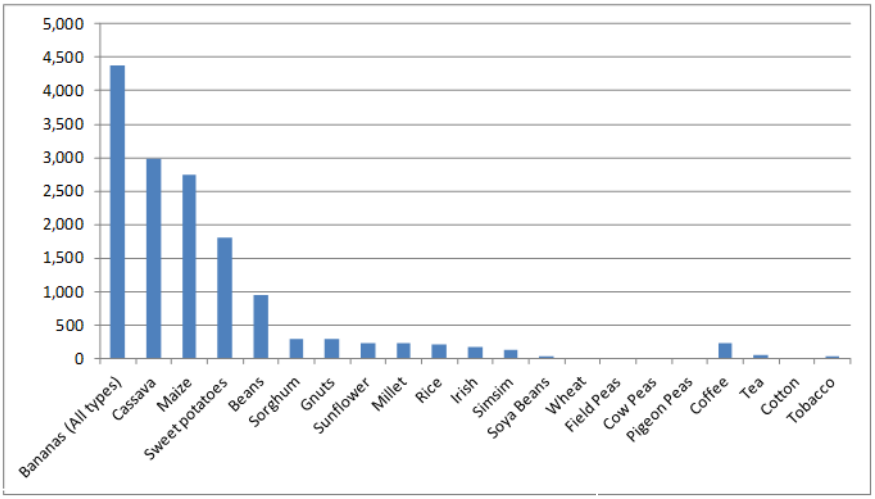
The agriculture sector in Uganda comprises cultivation of crops, fishing, livestock production and forestry. The agricultural sector is still dominant in Uganda, especially in terms of employment, and is therefore a high priority area in the government's National Development Plan. Agriculture is still the main industry of the Ugandan economy, although the contribution was about 24.4% of the total GDP in 2011/2012. Agriculture also provides 71.9 % of the employment and most industries and services in the country are dependent on this sector.

Uganda is endowed with a warm climate, fertile land and regular rainfall. The annual rainfall is 855 -1703 mm/year. There is no clearly-identified rainy season or dry season but usually the highest amount of rainfall is received in April and September while the lowest was received in July. The temperature range is 14-32 ℃.

Almost all area is suited to agriculture. Products produced in the suburbs of Kampala are exported to South Sudan and Kenya through the northern economic corridor. Stockbreeding is performed over the whole area.

**Cultivation of crops**

Almost all farmers are small farmer, who hold less than 2ha. National average holding is 1.1ha. There are about 16 major crops as food crops. These include Cereals (Maize, Millet, Sorghum, Rice); Root crops (Cassava, Sweet potatoes, Irish potatoes); Pulses (Beans, Cow peas, Field peas, Pigeon peas); and Oil crops (Groundnuts, Soya beans, Sim sim). Around 60 % of the production is consumed and 40 % is sold. The major cash crops are Coffee, Tea, Cotton and Tobacco. The production amounts of the major crops are as follows.




*Source: MAAIF and UBOS*

**Figure 4.3.1: Production of Major Crops**

**Fishing**

Fisheries activities are mainly carried out in open water sources and five major lakes (Victoria, Albert, Kyoga, Edward and George). Fish catch by water body is shown in the following table.

**Table 4.3.1: Fish Catch by Water Body, 2009 – 2012**

| Water body | 2009 ('000 ton) | 2010* ('000 ton) | 2011 ('000 ton) | 2012 ('000 ton) |
|---|---|---|---|---|
| Lake Victoria | 221.3 | - | 169.8 | 185.2 |
| Lake Albert | 56.5 | - | 163.6 | 152.6 |
| Lake Kyoga | 60 | - | 63.7 | 44 |
| Lake Edward, George & Kazinga Channel | 8.8 | - | 6.7 | 5.2 |
| Other Waters | 20 | - | ⑦17.8 | 16.5 |
| Total | 366.6 | - | 421.6 | 403.5 |

Note: *Data for 2010 is being verified by MAAIF
*Source: STATISTICAL ABSTRACT2013, (MAAIF).*

Fish catch from Lake Victoria sharply decreased from 1990's to first in 2000's. But now fish catch is increasing again because of the government countermeasures, to regulate processing plants to operate at 30% of installed capacities.

**Livestock production**

Almost all farmers keep their livestock not as income source but as property. Meat production 2008 – 2011 is shown in the following table.

**Table 4.3.2: Meat Production, 2008 – 2011**

| Year | Beef (m ton) | Goat Meat & Mutton (m ton) | Pork (m ton) |
|---|---|---|---|
| 2008 | 175,049 | 32,640 | 19,096 |
| 2009 | 180,300 | 33,619 | 19,669 |
| 2010 | 185,709 | 34,627 | 20,259 |
| 2011 | 191,280 | 35,666 | 20,867 |

*Source: STATISTICAL ABSTRACT2013, (MAAIF).*

The production of milk has been increasing around 3.0 % every year from 2009. Milk Production Trend 2009 – 2012 is shown in the following table

**Table 4.3.3: Milk Production, 2009 – 2012**

| Year | Milk (m litre) |
|---|---|
| 2009 | 1337 |
| 2010 | 1377 |
| 2011 | 1418 |
| 2012 | 1461 |

*Source: STATISTICAL ABSTRACT2013, (MAAIF).*

**Forestry**

In Uganda here is big potential for forest industry. The quantity of round wood produced for the last five years has been increasing. Production of Round-Wood Timber 2009 – 2012 is shown in the following table.

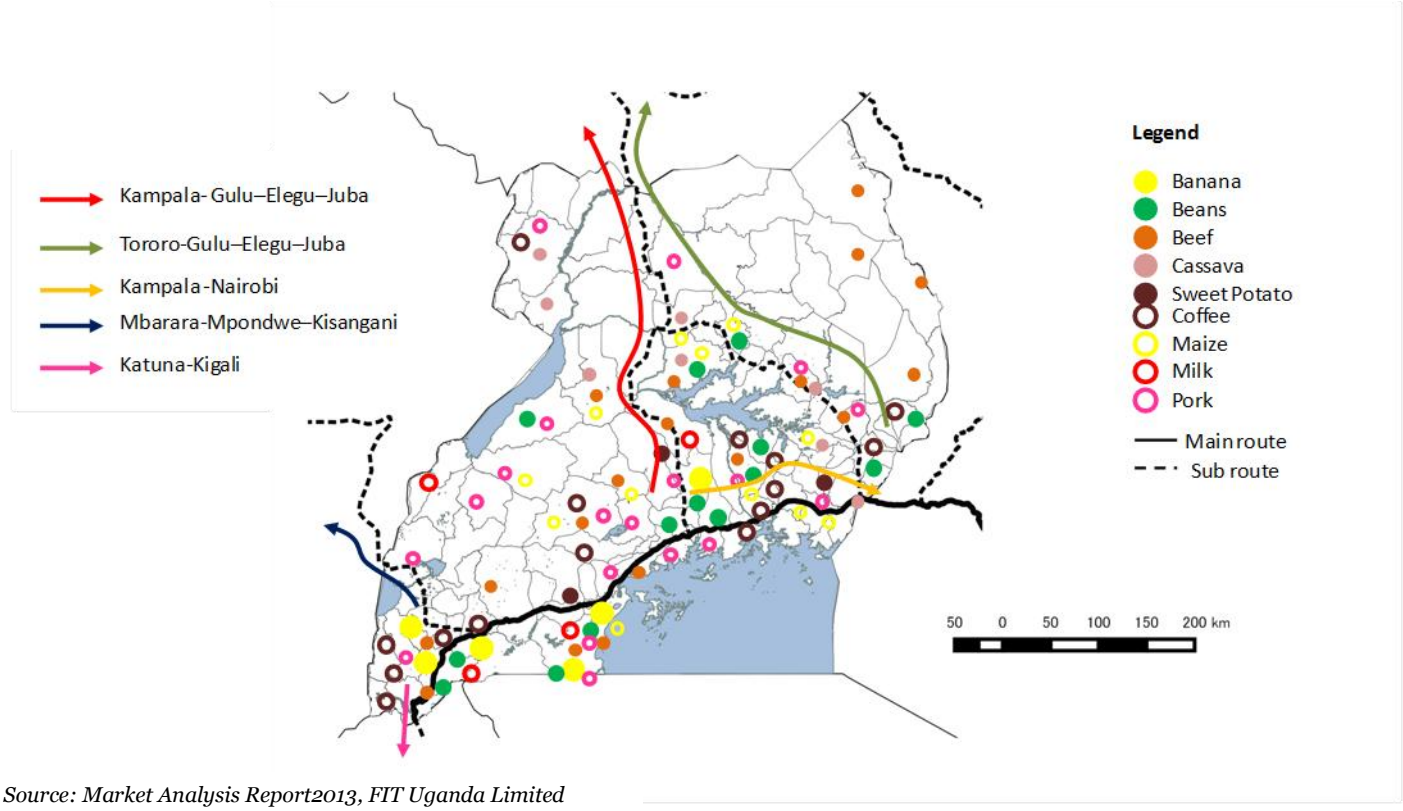
**Table 4.3.4: Production of Round Wood, 2008-2012**

| Year | Round-Wood ('000 Ton) |
|---|---|
| 2008 | 36,324 |
| 2009 | 37,857 |
| 2010 | 39,467 |
| 2011 | 41,161 |
| 2012 | 42,889 |

*Source: STATISTICAL ABSTRACT2013, (MAAIF).*

Production areas for five crops with major agriculture and livestock products and logistics routes are shown in the figure below.

Fishery and forestry production aren't included in the figure because fishery is carried in water bodies and forestry production is very small.




*Source: Market Analysis Report2013, FIT Uganda Limited*

**Figure 4.3.2: Production Area and Logistics Routes of Agricultural Crops**

Chickens are raised over the whole country, and fishing is carried in open water sources and five major lakes. These productions are cover a wide area beyond borders as the following figure shows. Nowadays the distribution amount to the neighboring countries has increased greatly.

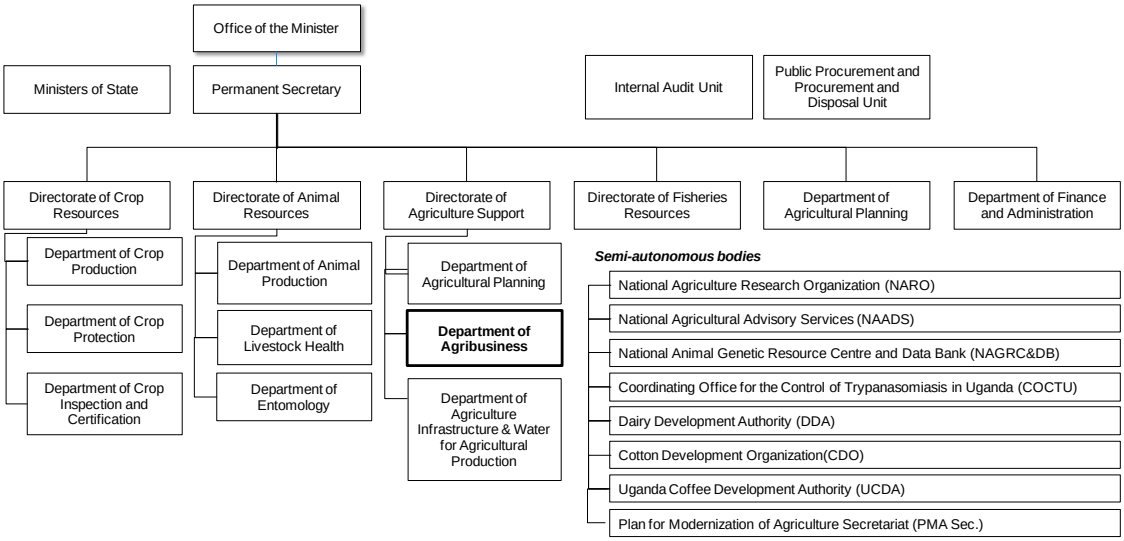
## 4.3.2 Policy for Agricultural and Fishery Development

Over the past decade, agricultural budgeting in Uganda has mainly been guided by the Poverty Eradication Action Plan (PEAP), Plan for Modernization of Agriculture (PMA), Agriculture Sector Development Strategy and Investment Plan (DSIP) and the National Development Plan. Uganda's current five-year National Development Plan (NDP - 2010/11 - 2014/15) identifies agriculture as one of the key production sectors capable of reducing poverty and driving the economic growth. NDP replaced PEAP in 2010/11. It is noted that, unlike earlier policy arrangements, there seems to be some link between DSIP (2010) and NDP (2010). However, budgetary allocations to agriculture sector at the national level aren't matching. DSIP is designed to address these constraints 1) Increasing agricultural production and productivity; 2) Increasing access to markets and value addition; 3) Creating an enabling environment for the private sector in agriculture; and 4) Strengthening agricultural institutions at the centre and in local governments. And livestock and fisheries is targeted as immediate objectives.

## 4.3.3 Review of Legal Framework and Administrative Structure Relevant to Agriculture and Agri-business Sector

The agricultural related organization is Ministry of Agriculture, Animal Industry & Fisheries (MAAIF) and Forestry related organization is Ministry of Water and Environment (MWE). The organization structures of the both are described to below.

(1) MAAIF

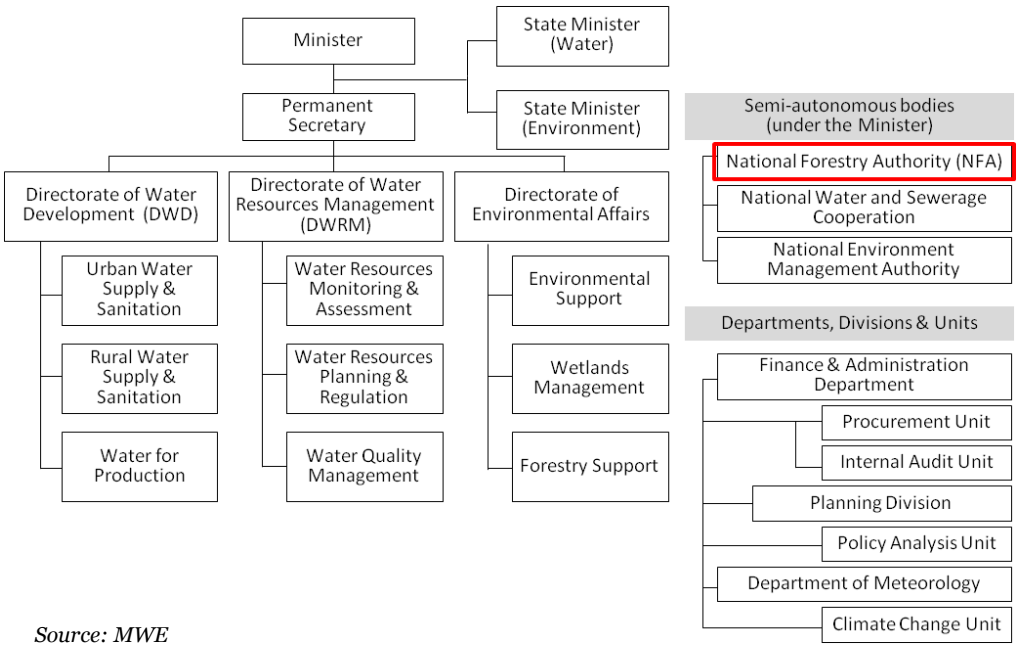



*Source: MAAIF*

**Figure 4.3.3: Organization Structure of MAAIF**

In 2010 organization of MAAIF was reformed. MAAIF have headquarters and eight 'semi-autonomous' agencies. MAAIF HQ consists of three commodity-based Directorates (Animal Resources, Crop Resources) and Directorates of Agriculture Support, and two stand-alone Departments (for Planning and Finance and Administration) and three other specialist units.

(2) MWE




*Source: MWE*

**Figure 4.3.4: Organization Structure of MWE**

The Forestry Department was reorganized to National Forestry Authority (NFA) in 2004. NFA manages only Central Forest Reserve (CFR); Local Forest Reserve (LFR) is managed by local government.

## 4.3.4 Review of On-going and Planned Projects and Situation of Private Investment for Development

Agriculture section is a key production. On-going and Planned Projects are 34 projects in total and the outline is summarized below.

**Table 4.3.5: On-Going and Planned Projects**

| Category | Number | Ratio | Outline |
|---|---|---|---|
| Agri-business | 12 | 35% | Business matching, marketing research and capacity development of management, establishment of fruit processing facility, agribusiness fund etc. |
| Livestock | 8 | 24% | Technical cooperation for livestock farming practice, Support for the facilities etc. |
| Horticulture crop | 7 | 20% | Support for small scale farmers including agro forestry. Technical cooperation for good agriculture practice, support for organization of farmers association, micro finance etc. |
| Irrigation | 3 | 9% | Constructing of irrigation facilities, technical support of operation and maintenance and agriculture practice etc. |
| Climate change | 2 | 6% | Technical cooperation for selecting crops and cropping pattern avoiding damage of climate change. |
| Fishery | 1 | 3% | Technical cooperation for fish farming and establishment of processing facility etc. |
| Oil Palm | 1 | 3% | Technical cooperation for oil palm cultivation, support for organization of farmers association and micro finance etc. |
| **Total** | 34 | | |

*Source: JICA Study Team*

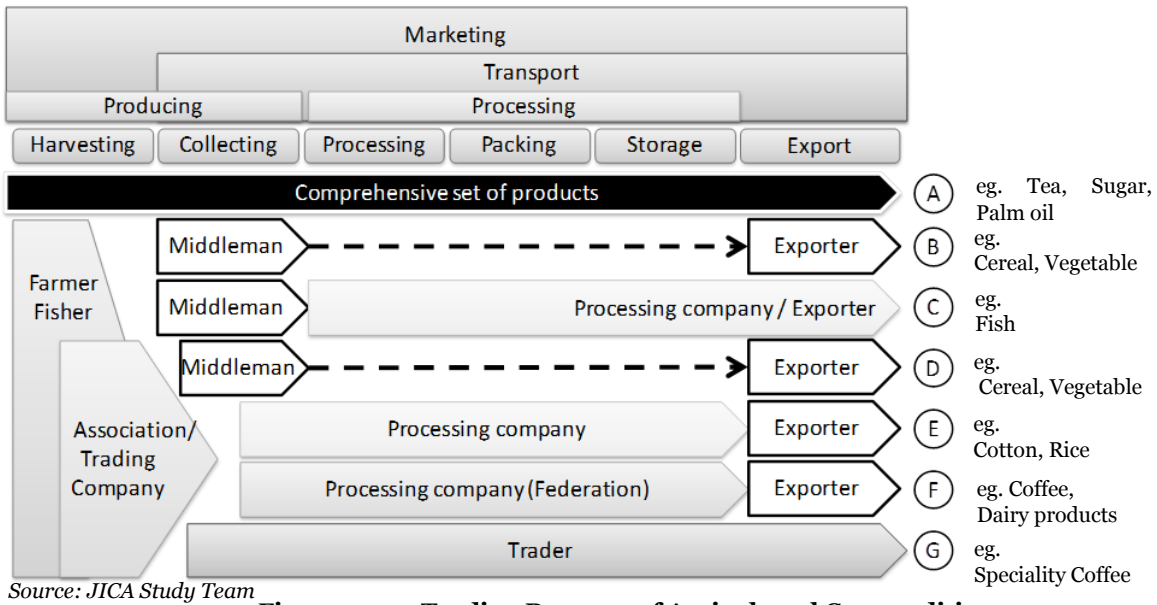
Private Investment situation

BIDCO Uganda Limited invested USD 150 million in edible oil by establishment a palm oil plantation. That plantation, on completion, will cover 40,000 ha of oil palms and produce 140,000 tons of palm kernel oil. In Uganda since 1997 oil palm development project was proceeded financed by IFAD and Government of Uganda with Public-private-producers partnerships. BIDCO collaborated that since 2003.

The Good African Coffee carries out operation system of "Evolution system of association" by private funds. The company is a leading Ugandan coffee exporting company that consists of over 14,000 coffee farmers in more than 240 farmer groups. The company owns processing machines. The coffee is sold as a value-added commodity and 50% of benefit will accrue back to the farmers. This business is started by Ugandan entrepreneur since 2003. He believed that it was time for Africans to process and market their own products globally and use trade as a means to bring about the sustainable development so desperately needed by the farmers and communities.

## 4.3.5 Analysis of Selected Commodities and Value Chains

The Structure of Commodities and their Processing, and Trading Patterns are shown in the following figure.




*Source: JICA Study Team*

**Figure 4.3.5: Trading Patterns of Agricultural Commodities**

Trading pattern details for items A to G are discussed below.

**A: Major agricultural production corporation**

One company carries out all processes from production up to selling to Exporters. The companies own their land and employ farmers to cultivate crops. Some of the tea, sugar cane and palm oil companies use this pattern. Currently, however, it is very difficult to have land and employ farmers because farmers always want higher fees and boycott work. Now major agricultural production corporations have shifted to contract with small scale farmers or farmers associations.

**B: Small Scale Farmers**

Farmers sell their product at farm-yard to middlemen by the offered price. There are several kinds of middlemen. The price will be 10 times higher than the farm gate price by selling through many middle men. Farmers can't choose period for selling their products because they don't have storage. Farmers also can't sell their product to good market because they don't have transportation. These are reason why farmers have to sell their products by cheap farm gate price.

**C: Exporter with processing facility**

Fishery processing companies carry their activity by this pattern. Most all companies own cold chain facilities, refrigerators, trucks for cold cargo and trucks for freezing cargo. Most companies are established with a foreign capital and all processed product are exported to countries that the foreign investors come from. The fish for processing is Nile perch (Lates niloticus); chilled fish is exported by air, and frozen fish is exported by road. All processing companies get certified by ISO and HACCP for export.

**D: Cooperative shipping**

Some farmers organize into associations/cooperatives for cooperative shipping. Such associations/ cooperatives may be supported by government to subsidize agricultural input and provide technical advices. They can sell at better price to middlemen by cooperative shipping. They have to adjust cropping patterns for cooperative shipping. The Ugandan government also supports to organize such a farmers association/ cooperatives. Coffee and palm oil companies basically operate through this pattern "D".

**E: General processing company**

General processing companies purchase materials from farmers association. Beverage companies and food processing companies carry out their business through this pattern "E". After collection by transporter employed by the company, products are washed and packed. When they export their products, they have to clear UNBS, HACCP, ISO, Global GAP and the regulations of the export destination countries. As a result, it takes a long time and has high cost. There are requests by export coffee producers to get support for Japanese import clearance in order to send their products to Japan.

**F: Evolving system of association**

There is particular pattern for the coffee industry. For a long time coffee industry was carried by pattern B or pattern C. Green coffee was sold at cheap price without roasting and grinding. Then the Government developed farmers association and promoted added-value. National Union of Coffee Agribusinesses and Farm Enterprises (NUCAFE) is a federation, which consisted of 155 associations and 150,000 farmers. NUCAFE doesn't buy farmers products but provide several kinds of support, technical advice for coffee cultivation, arranging cooperative shipping and matching to exporters. A processing factory is currently under construction and will start operation from August, 2015.

**G: Direct trading to foreign market**

Some trading companies directly contract farmers associations. Specialty coffee trading and fair trading etc. is carried out through this pattern "G". The trading amount is normally very limited. Product amounts below 500kg are exported by air, and over 500kg is exported by road. The way to improve this trading pattern is to match more good exporters to the good producers.

## 4.3.6 Analysis of Potentials and Current Bottlenecks for Development related to NEC

Uganda is a landlocked state so it doesn't have competitive superiority to Kenya because significant transportation cost is added when Ugandan products is exported from Mombasa Port. For the same reason, Uganda has competitive superiority comparing with Rwanda, DRC and South Sudan. For other products listed below Uganda has superiority:

1) Some products which Uganda has but Kenya doesn't; for example minerals
2) Some products which Kenya can't secure cultivation area because of environmental, mainly water, constraints; this applies to Palm, Fish, Rice, and Cotton and so on.
3) Some products for which supply isn't sufficient to meet the growth rate of Kenya demand; this applies to markets in EU and Mideast countries and products like Sugar.

Considering above, five cases were examined: palm, fish, rice, cotton and sugar. The challenges in the value chain of these products are summarized in the following table. Detailed comments for each challenge are described below the table.

**Table 4.3.6: Challenges to the Value Chain by Product**

| | Potential | Production | Collecting | Processing | Packing | Storage | Export |
|---|---|---|---|---|---|---|---|
| Palm | ◎ | △ | △ | o | o | o | o |
| Fish | ◎ | x | o | o | o | o | o |
| Rice | ◎ | △ | △ | o | o | o | o |
| Cotton | ○ | o | o | x | o | o | △ |
| Sugar | ○ | △ | o | o | o | o | o |

◎ = very good, △ = average, x=poor, o=good

*Source: JICA Study Team based on Economic review of agriculture 2013, Ministry of agriculture*

**Palm**

Palm has been developed by public private partnerships in Kalangala in the last decade. For 10 years 10,000ha was developed. The development of palm will be extended more and more with support of government and private sector. Their challenges are harvesting and collecting. For harvesting it is difficult to purchase land because farmers advocate their rights. So nowadays land expansion is conducted by involving small scale farmers. Lead time of four years is necessary from starting of palm cultivation, because it takes four years to grow palm to get fruit. For collecting it is difficult to fetch each fruits smoothly because feeder roads are not paved.

**Fish**

Fishery value chain for export is almost completed, and demand of fish is very high. Fishery's constrains are Harvesting and the law. There are processing factories but they work at only 30% capacity due to government law for prevention of over fishing in Lake Victoria. Nowadays the government is promoting fish farming and cage fishing. Nile perch (Lates niloticus) is a variety which can't be cultivated. Stocking with nursery fish is necessary.

**Rice**

Demand of rice is very high and price is also high. Constrain of cultivation is that water requirement is very high and irrigation is necessary. There are no enough adequate storage facilities for farmers and farmers association. Also farmers live scattered in settlements over a wide area, and feeder roads are not paved. These are reasons of quality degradation of rice. For productivity, there is no lending mechanism for improving facilities and electricity and fuel are very expensive.

**Cotton**

Cotton industry has a particular trading pattern. Association is organized by ginners who operate ginneries. Ginners contributed money for supporting cotton production into a pool fund managed by Uganda Ginners and Cotton Exporters Association. Funds released by government for supporting cotton production are managed by a government agency responsible for promoting cotton production. The inputs purchased by the ginners'

association are for cotton farmers and they are availed at subsidized rates and on credit in case farmers are not able to pay up front. Part of the ginners fund is used to provide extension services to cotton farmers. Cotton marketing is unregulated; therefore farmers sell their cotton to any ginner directly. Ginners buy cotton seed from farmers and gin it to produce lint. It is the lint which they sell to exporters or directly to spinners. This system work smoothly. But in Uganda there are few spinning factories. They export raw cotton or little yarn. It should be sold as more added-value production like textile or garment. While Uganda has high potential area for organic cotton that the market is growing.

**Organic Farming**
As typified by organic cotton, Uganda has developed the sector of certified organic production in Africa. Uganda is the country with the largest organic area (with more than 220,000 ha) and with the largest number of organic producers. The area accounts for 3% of Uganda's arable land, 6,750,000 ha. Although still small and far below the increasing global demand, the country's export of organic agricultural produce has been growing substantially in recent years. Since no significant domestic market exists, certified organic agriculture targets mainly markets in Europe and North America. There is Global Organic Textile Standard (GOTS) and 16 certification authorities in the world certify the organic farm.

**Sugar**

According to growth of population of Uganda and surrounding countries, high demand of sugar is expected. Sugarcane cultivation is conducted smoothly by major agricultural production corporation. For harvesting, the very high cost of fertilizer is a challenge.

There are problems in each stage of the value chain. It is necessary for investors to consider where to invest and how to get the profit from their business model. It is also important for Government to consider which sectors and which processes should be improved.

# *4.4 Status of Mining Sector in Kenya*

## 4.4.1 Status and Situation of Mineral and Petroleum Production and Processing and the Geographical Locations

**Overview:**

In the past years in Kenya there has not been any significant consideration of the potential of metallic resources in the country. The recent discovery of mineral sand enriched with Niobium and Rare Earth Elements (REEs) near Mombasa may direct change towards significant consideration of the potential of metallic resources in Kenya.

The government of Kenya intends to carry out a nationwide aerial survey to map out the potential mineral deposits with a view to boost the mining sector and attracting foreign investment.

According to the Vision 2030, mineral potential in Kenya includes: Soda Ash ($Na_2CO_3$), Fluorspar ($CaF_2$), Limestone, Barite, Gypsum, Diatomite and Vermiculite i.e., non metallic minerals. Among these minerals, Kenya has had Soda Ash and Fluorspar as major export products in mineral resources.

Petroleum was discovered in Tertiary Rift, Lokichar, in March and October 2012 by Tullow Oil plc of the United Kingdom and joint-venture partner Africa Oil Corp. of Canada. This discovery is still under appraisal stage however; gross mean resources in the basin are estimated and 600 million bbl. Produced crude oil will be exported by pipeline via. Hoima- Lamu trunk line. It is also reported that a consortium of African Oiland Marathon Oil has discovered 1.8 Tcf of gas in Anza Basin in mid 2014, however, it is also still under appraisal stage.

**Mining Activities:**

Current mining development status is reported as follows:

Soda Ash: Tata Chemicals Magadi Ltd. of India (formerly Magadi Soda Ash Ltd.) mined trona from Lake Magadi. Tata Chemicals Magadi planned to increase production capacity at Lake Magadi to 1 million t/yr by the end of 2014. Soda ash was consumed domestically by glass producers and by ARM in the production of sodium silicate, which was used in detergents, soaps, and chemical and metallurgical applications (Tata Chemicals Ltd., 2011, 2012). (USGS 2012)

Fluorspar: In 2012, Kenya Fluorspar Company Ltd. (KFC) produced 110,000 t of fluorspar at its Kimwarer Mine compared with 117,420 t in 2011. KFC's plan to increase production was put on hold in late 2012 because of low worldwide demand for fluorspar. Prices of downstream products declined in 2012 (Hughes, 2012). (USGS 2012)

Kwale Mineral Sand Project: Kwale is located 10 kilometers inland from the coast and 50 km south of Mombasa. The project commenced production in late 2013 The Project is based on a mine life of 13 years, and features a high grade ore body with a high value mineral assemblage. Over the first six years, production is expected to ramp up to produce an annual average of 80,000 tonnes of rutile, 360,000 tonnes of ilmenite and 30,000 tonnes of zircon. (Ollett 2012)

Mrima Hill Project: The Mrima Hill Mine is a world class Niobium and Rare Earth Resource in Kenya, located 70km southwest of Mombasa. The license is on a 21 year Special Mining License held by Cortec Mining Kenya Limited ("Cortec") a private company incorporated in Kenya, Pacific Wildcat's 70% indirect interest in Cortec is held through its two wholly owned UK holding companies. (Pacific Wildcat Resources Corp. 2012)

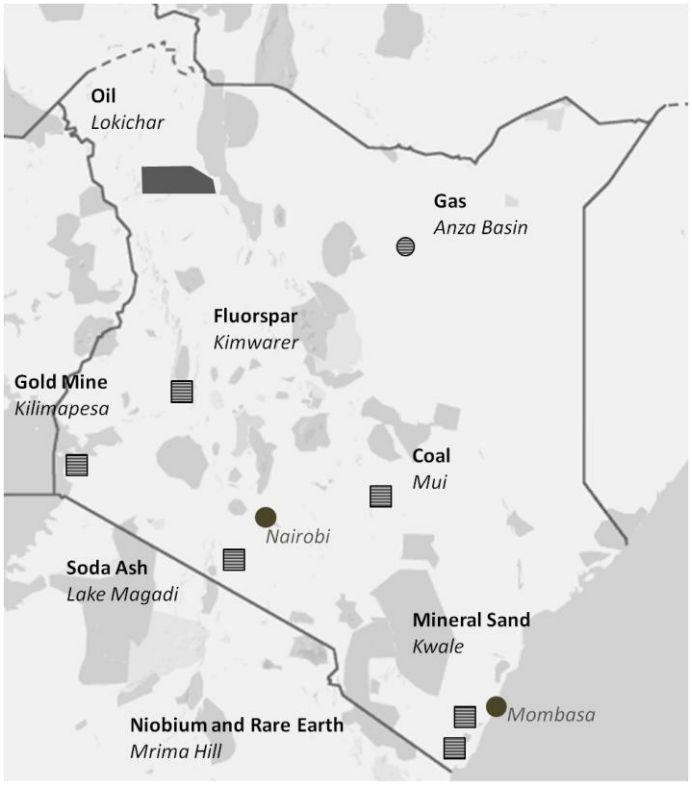
Gold Mine Projects: Most of Kenya's gold productions come from artisanal miners in Nyanza, Rift valley and Western Provinces. Goldplat plc of South Africa has started producing gold at the Kilimapesa project in Jan 2012.

**Coal Exploration:**

Coal deposit was confirmed in the area of Mui sedimentary basin where general geological survey was carried out in 1940s. In order to explore affordable domestic energy resources, Ministry of Energy started coal exploration and divided the area into four blocks and put them to an international tender in 2012, in line with the Sessional Paper No. 5 of 2012 on Energy containing coal development policy. Further tender rounds are planned for 31 blocks.

**Petroleum Sector:**

For the last decade, significant amount of gas and oil resources were discovered in the adjacent countries of Kenya, i.e., Tanzania, Uganda, Ethiopia, and South Sudan. Because of some geological similarities, it is considered that there are high potential of oil and gas to be discovered in the country.




*Source: JICA Study Team*

**Figure 4.4.1: Map Showing the Mining Distribution in Kenya**

To date, 41 acreages are leased out based on Product Sharing Contract (PSC) with 21 companies. Tullow Oil plc of the UK and joint-venture partner Africa Oil Corp. of Canada discovered petroleum at the Ngamia-1 well in Block 10BB in Tertiary Rift in March 2012 and at the Twiga-1 well in Block 13T in October 2012. Gross mean resources in the basin are estimated 600 million bbl of oil. Produced oil will be exported by pipeline, via. trunk line from Hoima to Lamu. It is also reported that a consortium of African Oil and Marathon Oil of USA has discovered 1.8 Tcf of gas in block 9 in Anza Basin in mid 2014.

## 4.4.2 Situations of Market and Export

Soda Ash, Fluorspar and Gold make up major export of the minerals produced in the country. According to Economic Survey 2013, Soda Ash production was 449,269 ton valued at 9,388 KSh million, Fluorspar was 91,000 ton valued at 2,942, KSh million, and Gold was 3.6 ton valued at 13,920 KSh million. These figures account for 0.7% of Kenya's GDP. Other than those minerals mentioned above, currently there are little activities in mining and oil & gas sectors for export.

## 4.4.3 Mining and Petroleum Development Policy

In Kenya Mining and Petroleum are regulated by separate ministries under separate legal frameworks as elaborated below:

**Mining Sector:**

The Mining Act 1940 (chapter 306 of the Laws of Kenya) (the "Mining Act") regulates all mining activities in Kenya. Mining of mineral resources including coal are under the Ministry of Mining, and its departments and agencies. These include: Directorate of Mineral Management and regulations; Directorate of Geological Surveys; Directorate of mineral promotion and value addition; Directorate of Mine health, safety and environment; Directorate of resource surveys and remote sensing; Directorate of corporate affairs; Geo-data centre and minerals certification laboratory; Mineral audit agency; Policy, strategy, research, legal, and capacity building;

The institutional, legal, and regulatory framework for the mining sector in Kenya is guided by the Mining Act, Cap. 306. Under this law, presented in detail below, minerals are vested in government as administered by the Minister (now Cabinet Secretary) in charge of minerals and mining. The mandate of the Ministry includes:

- ✓ Mineral exploration and mining policy and management;
- ✓ Inventory and mapping of mineral resources;
- ✓ Mining and minerals development;
- ✓ Policies on the management of quarrying and mining of rocks and industrial minerals e.g. limestone, building stone, clay, gemstones, cement, sand, coal, etc.
- ✓ Management of health conditions and health and safety in mines;
- ✓ Policy around extractive industry;
- ✓ Resources survey and remote sensing; and
- ✓ Maintenance of geological data (research, collection, collation, analysis).

The Cabinet Secretary (CS) is supported by the Principal Secretary (PS) and as provided in the Mining Act, the Commissioner of Mines and Geology is the chief technical advisor to the Cabinet Secretary. The Commissioner of Mines and Geology conducts the day-to-day operations that realize implementation of the provisions of the Act. The Commissioner is supported by a team of officers as provided by the Act and directed by the Cabinet Secretary. (Mining, 2015)The Commissioner of Mines and Geology (the "Commissioner"), heads the Department of Mines and Geology and is responsible for overseeing mining research and policy as well as implementing the Mining Act.

The legal framework promulgated in 1940 Mining Act, Chapter 306 of the Laws of Kenya has had several revised editions with the most recently being in 2012. It imperative to note that the Mining Act 2014 was passed by the National Assembly and is currently awaiting endorsement by the Senate and presidential assent to become a law. This Mining Act categorically vests ownership of mineral resources to the National Government as the trustee of the people of Kenya. The Cabinet Secretary on the other hand administers the right to explore and exploit mineral resources. The Cabinet Secretary also appoints the Commissioner of Mines and Geology who is tasked with the responsibility of implementing provisions of this Act.

It therefore important to note that the legal framework of Mining Act 1940 will be replaced with the new law. In 2012 when mining was under the Ministry of Environment and Mineral Resources revisions were made and key features included; increased and variable rates for royalties (variable on the type of mineral and value addition), reclassification of certain mining rights, establishing a dedicated "Mining Disputes Resolution Tribunal" and the sharing of benefits by local communities. Under the new Bill, "Kenya Geology, Minerals and Mining Authority" will be founded to look after all the permit associated with mining activities.

According to a new legal framework, acquisition of mining right will be divided into two categories, Small Scale Mining exclusively for Kenyan Citizens, and Large Scale Mining open to international investors.

On 12 October 2012 the Mining (Local Equity Participation) Regulations, was promulgated, aimed at increasing Kenyan participation in mining companies. The Regulation has been interpreted to mean that at least 35% of shareholders in mining companies must be Kenyan nationals. (Mayer Brown April 2013)

**Petroleum and Natural Gas Sector:**

Legal Framework of the Oil and Gas Exploration is provided in The Petroleum Exploration and Production Act Chapter 308, 1986. Energy including oil and gas is governed by the Ministry of Energy and Petroleum and its departments and agencies. These include; the Geo-Exploration Department, Petroleum Energy Department, and National Companies listed as follows: National Oil Corporation of Kenya (Government: 100%), Kenya Petroleum Refineries Ltd. (Government: 100%), Kenya Pipeline Company Ltd. (Government: 100%), Kenya Geothermal Company Ltd. (Government: 100%), Kenya Electricity generating Company Ltd. (Government: 70%), Kenya Power and Lighting Company Ltd. (Government: 50.1%), Kenya Electricity transmission Company ltd. (Government: 100%).

Under the Act, Authority to conduct petroleum operations is vested in the Minister responsible for Energy and Petroleum conducted through the National Oil Corporation of Kenya or contractors.

Sessional Paper No. 4 of 2004 on Energy contains broad and specific policies. This is Sessional paper is currently under review to harmonize it with the provisions of Kenya's new Constitution enforced in 2010, Socio-economic dynamics of Kenya and global energy sector developments into account. Some of the specific objectives include:

- Upstream (Oil and Gas Exploration and Production)

Common terms and conditions for Product Sharing Contract (PSC) have been discussed among the East African Countries to provide common ground for exploration to potential international participants. Kenya will also follow the guide line of Extractive Industries Transparency Initiative (EITI), a global Standard to promote open and accountable management of natural resources, in the event of commercial discovery.

- Downstream (Refining, Product Storage and Distribution)

In order to improve supply & distribution infrastructure, policy addresses the following features:

- Improvement of import and storage facilities should be made by private initiative based on long term (25-30 years) concession arrangement, and similarly for the storage and distribution facilities in upcountry.
- Promotion of power-alcohol and bio-diesel production
- Oil Marketing Companies are required to maintain at least 21 days minimum operational stocks;
- 90 days of strategic storage capacity should be achieved based on PPP scheme
- Development of natural gas distribution grid initially starting with Mombasa and Nairobi.
- Crude Refining, Product Transportation and Storage facilities will be expanded in tandem with economic growth and diversity.
- Crude oil pipeline expected to be developed to serve local and neighboring countries as need arises.
- Development of petro-chemical industry based on comparative costs considerations including technology transfer.

According to the Act, prospective exploration companies apply for and negotiate Production Sharing Contracts (PSC) with respect to specific blocks with Minister for Energy based on a model provided in the Act. Preparation and negotiation of PSC is also governed by The Petroleum (E & P) Regulations, The Income Tax (Amendments) Act, and Environmental Management & Coordination Act 2000 – NEMA.

New Regulation, i.e., Petroleum Exploration and Production Bill 2014, is prepared and awaits cabinet approval. The Bill is intended to revise current Act to reflect issues which are not covered in the current legal system. According to the Bill, all open blocks will be subject to international tender. Authority of granting concessions for oil and gas, and mineral resources will be changed from the current structure where the power is vested in the Cabinet Secretary of Energy and Petroleum and it will be vested to the Parliament. Revenue associated with "profit oil" to be utilized for the economic development and infrastructure arrangement of the country. Field data on open exploration acreage will be posted on the website of the Ministry of Energy and Petroleum for the public to see, fast track and prepare for granting of concessions.

## 4.4.4 Review of Legal Framework and Administrative Structure Relevant to Mineral Extraction and Processing

Introduction of **Great Lakes Initiative** has been discussed among the East African Communities as a common certificate of mineral products. Once this Initiative is accomplished, it will enable to trace minerals from mine sites and stages of trade among the Great Lakes member states which will subsequently minimize conflicts in marketing of the country's minerals.

## 4.4.5 Review of On-going and Planned Projects for Development and Situation of Private Investment for Development

Kenyan Government is intending to accomplish the following projects under PPP scheme:

- A Liquefied Natural Gas import handling, storage and re-gasification facility at Dongo Kundu, Mombasa: The project is intended to construct floating storage and re-gasification unit to supply gas to 700 MW power plant. In April 2014, Kenya Pipeeline Company has signed purchase Agreement with Qatar Gas for the supply of 1 million tons of LNG. According to the Platts in Feb. 2015, Kenyan government is delaying signing the agreement due to the discovery of 1.8 Tcf of gas in Block 9.
- Lamu Port-South Sudan-Ethiopia Transport (LAPSSET) Corridor Petroleum Project: The Project consists of port facilities, oil refinery and power plant in Lamu, Oil Pipline from Uba (South Sudan) to Lamu, Petroleum Product Pipeline from Lamu-Ishiolo-Ethiopia. This project should be designed as part of ongoing crude oil pipeline project from Hima (Uganda) to Lamu.
- A new jetty at Kilindini Harbour and SBM facility for both crude and refined petroleum products: Reports indicates that feasibility study are currently in progress.
- Storage facilities for 90 days stocks and procurement of stocks

## 4.4.6 Analysis of Potentials and Current Bottlenecks for Development related to NEC

**Mining Sector:**

The requirement of local investor participation was introduced in 2012. This requirement is supposed to be formulated in line with Mining Act 2014. In order to attain the intended objective, there should be adequate capital accumulation and financial infrastructure available to local investors. Legal system need to be streamlined to avoid confusion in mining administration. This therefore offer a challenge to Government of Kenya to encourage both Kenyan entities and overseas investors to participate in the large scale mining operations in the near future.

**Petroleum Sector:**

Kenya imports all its petroleum requirements, Oil product consumption in Keya in 2010 was 3.95 million ton and the consumption keeps on increasing. Power Demand is also increasing and large scale LNG based power plants are planned in Mombasa area. However, recent discovery of gas in Anza Basin will impact the overall energy supply plan. To cope with the immediate needs, the following projects should be given priority:

- Import capacity of oil products to be increased. and storage capacity also to be increased to meet the demand growth.
  - Port/Berth capacity in Mombasa to be expanded
  - Oil storage capacity for imported products to be expanded. Old Mombasa Refinery can be utilized as an oil storage terminal exclusively.
  - Oil product transportation by pipeline from Mombasa to Nairobi to be expanded and inland distribution system to be improved. Recent financial closure for the installation of new Oil Product Pipeline will contribute to improvement of the transportation capacity.

- Master Plan for Natural Gas Infrastructure should be prepared as soon as possible. Discovery of 1.8 Tcf gas reserve will impact whole energy supply plan and optimization of domestic and import gas should be studied as soon as possible. Mater plan to be prepared considering the scale of impact to the downstream industries, including power generation, petrochemical option and manufacturing industries.

**Coal Exploration:**

Coal exploration and production will contribute to the economies of Kenyan industries. According to the Statistical Abstract 2011, in 2011 Kenya imported 346,000 tons of coal from South Africa. The coals was used by cement industries in Mombasa area alone and therefore the production of coal is advocated for and it can be exported to Uganda and other adjacent countries since there is no coal deposit confirmed in these countries and potential demand therein is considered significantly high.

# *4.5 Status of Mining Sector in Uganda*

## 4.5.1 Status and Situation of Mineral and Petroleum Production and Processing and the Geographical Locations

**Overview:**

Geological aspect of Uganda is dominated by old rocks up to 3,100 million years old and part of Great Rift Valley, i.e., Albertine Rift, runs in the west part of the county where oil field are being developed in the Tertiary formation. As a result of volcanic activities, isolated pegmatite formation was developed in SW Region and carbonatite formation was developed in the Eastern Region. Aluminous clays enriched in various minerals including REEs are also developed in the SE Region.

Uganda's mineral industry is currently expanding with the development of mineral mines licensed for exploration and mining of tin, cobalt, copper, lead, zinc, PGMs, phosphate, iron ore, niobium (columbium), salt, tantalum, tungsten, limestone, and REEs for the next few years. Mined minerals will be processed and refined in the country in accordance to the legal requirement.

Development of primary mining industries represented by cement and steel has been hampered by poor domestic transportation infrastructures and also high cost of freight from/to seaport in Kenya and Tanzania. These costs are reflected in the domestic production cost.

Consumption of cement and steel products in the county has shown significant growth to meet the growing domestic demand in the construction sectors for the last few years.

Significant growth will also take place in the petroleum sector in the next few years due to a discovery of oil in the Albert Graben. 30,000-60,000 bbl/d Refinery will be built in Kabaale, Hoima District, and produced crude oil will be exported via pipeline from Hoima to Lamu, Kenyan port on the Indian Ocean, via Lokichar, oil field in Kenya.

Government of Uganda is planning to introduce Mineral Certificate in compliance with the Great Lakes Initiative. This will enable minerals to be traced from mine sites and into all stages of trade among the Great Lakes member states subsequently this will minimize conflicts in the marketing of the mineral products.

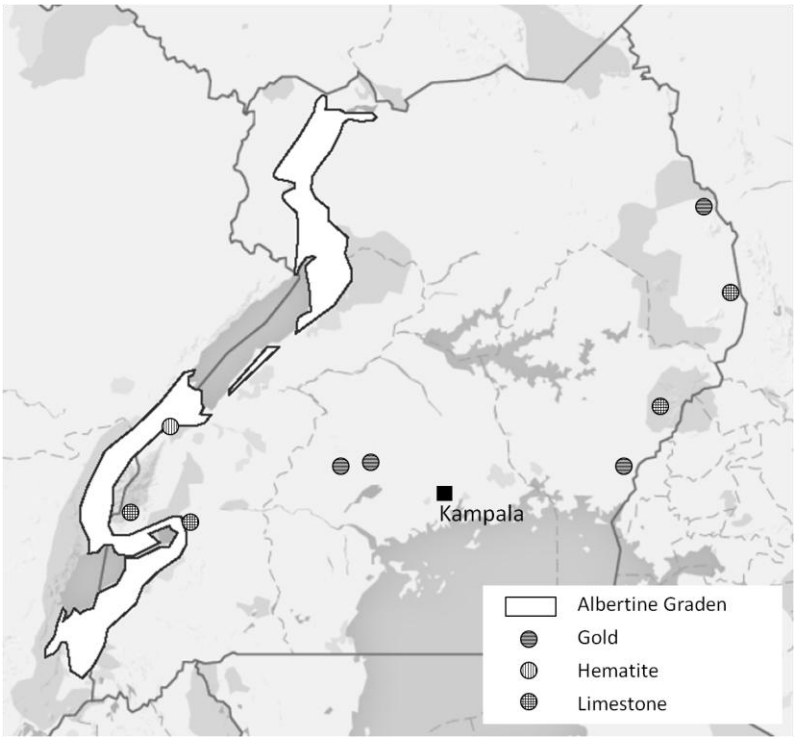
**Activities of Mining Sector:**

Most of Uganda's mining and mineral processing facilities are owned and operated by private companies. New legal framework has been introduced to encourage and support the mining sector, and Exploration License (EL) has been granted to private entities to initiate the exploration. Number of areas where ELs are granted is 508 and Mining Lease (ML) for mining operation is 34 as of September 2014. Among those, fifteen (15) are non-metallic mines and nineteen (19) are metallic mines, i.e., six (6) gold mines, four (4) iron ore mines, three (3) wolfram mines, three (3) tin mines, two (2)Tantalite mines, and one (1) copper mine.

In September 2013, the Government signed an agreement with Guangzhou Dongsong Energy Group of China for the development of the Sukulu phosphate rock deposit. Phosphate rock from Sukulu is expected to manufacture 300,000 t/yr of phosphate fertilizers. The Government also planned to build a sulfuric acid plant with a capacity of 200,000 t/yr. (USGS 2013, Kisige 2013).

**Activities of Petroleum Sector:**

Uganda's first licensing round covering six blocks in the Albertine Graben was announced in February 2015 with a publication of Request for Qualification (RFQ) for the petroleum exploration. The qualified firms will be issued a detailed request for bids together with the Model Production Sharing Agreement (PSA) for the specific blocks. Companies submitting the best evaluated bid for each of the blocks will proceed to negotiations with Government prior to signing the PSA. The licensing round is expected to conclude with the award of licenses by the end of 2015.




*Source: JICA Study Team*

**Figure 4.5.1: Map Showing the Mining Distribution in Uganda**

**Current Development:**

Three international oil companies, Tullow Uganda Operations Pty Limited, Total E&P Uganda and China National Offshore Oil Corporation (CNOOC) Uganda Limited are licensed in EA–1, EA–1A, EA–2 and EA–3A on Lake Albert (Albertine Graben), each held a one-third share. Twenty one (21) oil and gas discoveries have been confirmed in the area to date, four of which were relinquished to government. Appraisal of 17 out of the 21 discoveries has been completed.

Proven oil reserves in EA–1, EA–1A, EA–2, and EA–3A are estimated 3.5 billion bbl in total, and 1.2 billion bbl will be recoverable oil. Planned production rate from these fields are 250,000 bbl/d. 30,000-60,000 bbl/d will be supplied to the domestic refinery in Kabaale, and majority of the crude oil will be exported overseas. Some fields are gas borne formation and the proven gas reserve is estimated 0.5 Tcf.

The Government of Uganda and the licensed companies has entered into a Memorandum of Understanding (MoU) for commercialization of the discovered resources. This MoU includes development of a refinery at Kabaale in Hoima District. The refinery would have an initial capacity of 30,000 bbl/d and expanded to 60,000 bbl/d to the growth of domestic demand.

The Refinery project is being developed on a PPP (public private partnership) basis. The Government hoped to select a joint-venture partner to take a 60% interest in the refinery. Commercial production is expected to commence in 2018.

## 4.5.2 Situations of Market and Export

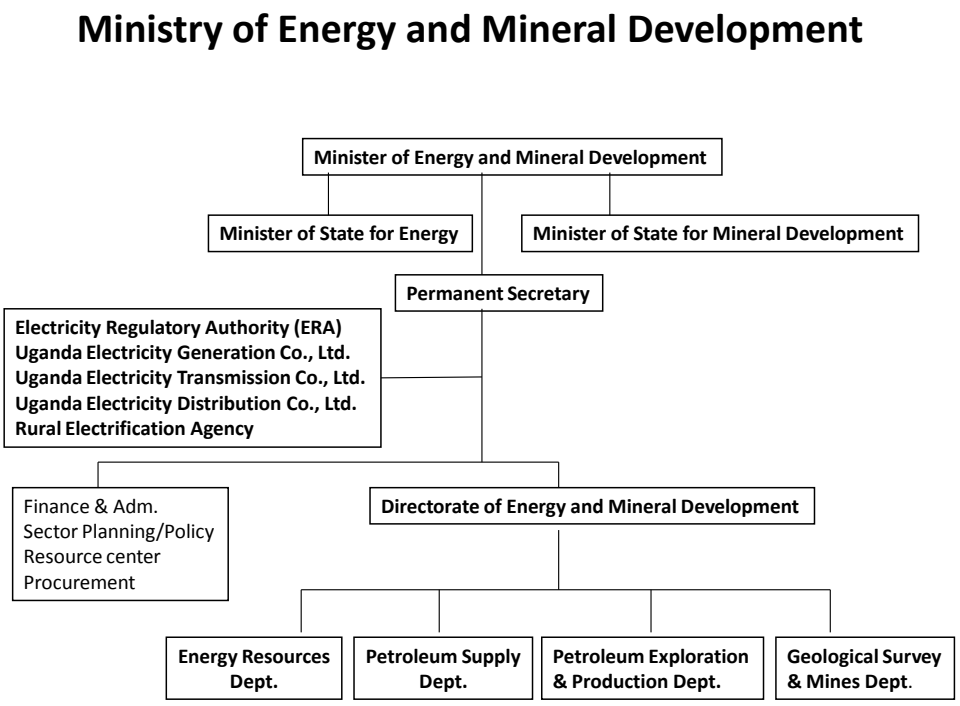
At the moment exported minerals are limited to Cobalt and Vermiculite. There are little activates in marketing and export of mining product. Kasese Cobalt Company Ltd. (KCCL) (MFC Industrial Ltd. of Canada, 75%) produced cobalt metal from a cobalt-rich pyrite stockpile from the Kilembe copper mine tailings near Kasese using a bioleaching and solvent extraction-electro winning process. Production has declined due to a depletion of the stockpile. Gulf Industrials Ltd. of Australia produced 243 t of vermiculite at the Namekara Mine in 2013, compared with 11,251 t in 2012. Mining was limited to samples for prospective buyers. Gulf put the mine on care-and-maintenance status in October 2012. the company that had exclusive purchasing rights for

Namekara's vermiculite stopped the process of purchasing because of adverse economic conditions in Europe (Gulf Industrials Ltd., 2012; 2013, p. 2; 2014).

## 4.5.3 Mining and Petroleum Development Policy

Legal Framework and Administration Structure:

The **Ministry of Energy and Mineral Development** is responsible for geologic mapping, issuing exploration and mining licenses, and administering the Mining Act (2003) and the Petroleum Act 2013, and their accompanying regulations. Current Administration Structure is as follows:




*Source:*

**Figure 4.5.2: Structure of Ministry of Energy and Mineral**

Administration structure of the Ministry will be is re-organized to cope with the rapidly developing petroleum industries, covering upstream, midstream and downstream activities. New organization structure will be launched in the near future.

**Mining Sector:**

The legal framework of the mineral sector consists of the Mineral Policy (2001), Mining Act (2003), and the Mining Regulations (2004)

The Mineral Policy 2001 was put in place to guide the country's Mineral Sector development and The Mining Act 2003 was enacted to operationalize the Mineral Policy. It replaced the Mining Act, 1964 and aimed to be internationally competitive and in line with the current industrial standard practices. The mineral right holder is expected to comply with the National Environmental Management Act also.

**Petroleum and Natural Gas Sector:**

The national oil and gas policy for Uganda 2008 is the key document in guiding the development of oil and gas sector. The goal of the policy is to "Use the country's oil and gas resources to contribute to fast tracking efforts for poverty eradication and create lasting value to society". Based on the Policy, new sets of laws are in place, replacing the Petroleum (Exploration and Production) Act of 1985. New Petroleum Act 2013 consists of:

- Petroleum (Exploration, Development, and Production) Act 2013 (the Upstream Act), and

- Petroleum (Refining, Gas Processing, Transportation, and Storage) Act 2013 (the Midstream Act).

**Foreign Investment:**

Regarding foreign investment, legal framework of Investment Code 1991 is in place to protect and regulate foreign investment in various industrial sectors including energy and mining under the management of the Uganda Investment Authority (UIA), under the Ministry of Finance & Economic Planning and Economic Development.

## 4.5.4 Review of Legal Framework and Administrative Structure Relevant to Mineral Extraction and Processing

All Mineral Right are granted and revoked by the Commissioner, Department of Geological Survey and Mines. The mineral right holders are required to comply with the National Environmental Management Act. Legal Framework and administrative structure relevant to Mineral Extraction and Processing is governed by the Ministry of Water and Environment. Government of Uganda is planning to certify minerals in compliance with the Great Lakes Initiative. When this initiative is accomplished, it will be enable to trace minerals from mine sites and stages of trade among the Great Lakes member states subsequently will minimize conflicts in marketing of the country's minerals.

## 4.5.5 Review of On-going and Planned Projects for Development and Situation of Private Investment for Development

Development of the primary mining industries including cement and steel has been hampered by the poor domestic transportation infrastructures and also high cost of freight from/to seaport in Kenya and Tanzania. Hima cement in Kasese imports petroleum coke from abroad through either port of Dar-es-Saalam or Mombasa. Resulting retail price of cement in Uganda is $ 200 per Metric ton compared with $120 in Kenya in 2015. Uganda Steel Rolling Mill Ltd. In Jinja district produce 150 Mt/day of sponge iron fueled by charcoal primarily, and planed to expand to 300 Mt/day, however, production of charcoal is limited and need to import coal/coke as an alternative of charcoal. It is worth to identify production cost structure in comparison with neighboring countries and also worth to study how the planned refinery can contribute to support the domestic industries.

New legal framework has been introduced to encourage the mining sector for further development, and Exploration License (EL) has been granted to private entities that are registered in Uganda and intend to initiate the exploration for minerals in an area not more than 500 km2. Numbers of area where EL is granted have increased significantly from three (3) in 2007 to 508 in September 2014.

In September 2014 Mining License (ML) for mining operation for twenty one (21) years was granted to thirty four (34) areas as of September 2014. Among those, fifteen (15) areas are non-metallic mines and nineteen (19) are metallic mines.

Government of Uganda is also considering initiating organized approach to develop hematite deposit in southwestern Uganda. The plan includes the construction of a centralized sponge iron production facility in Kabale under PPP, including associated infrastructures such as railway network to transport coal/alloy ingredient via. port of Mombasa and/or Dar-es-saalam, and/or natural gas pipeline from Lake Kivu and/or Albertine Graben, and 1000 MW power plant for induction furnace as part of steel making process.

Significant growth will take place in the petroleum sector due to a discovery of oil in the Albert Graben in 2006. 30,000-60,000 bbl/d Refinery will be built in Kabaale, Hoima District, under PPP. Produced crude oil will be exported via pipeline from Hoima to Lamu, Kenyan port on the Indian Ocean, via Lokichar, oil field in Kenya.

## 4.5.6 Analysis of Potentials and Current Bottlenecks for Development related to NEC

**Mineral Mining:**

Most of electric power in Uganda is generated by hydro power. This enables to provide stable power to industries, and it is considered as an added advantage to Uganda. Mining industry in general has an extensive environmental impactwhich requires establishing community relations and local knowledge which are very important condition to initiate the development of mineral mines. Due to a particular nature of mining industry i.e., "for easy money", stringent regulatory system must be put in place.

Great Lake Initiatives is an international guide, introduced initially to restore the health of the Great Lakes. The Initiatives includes criteria for the government to use when setting water quality standards for twenty nine (29) pollutants including bio-accumulative chemicals of concern, and prohibits the use of mixing zones for these toxic chemicals. Introduction of this initiative is appropriate for Uganda's government to protect the environment of the Lake Victoria from mining effluent. This initiative should be in line with the current legal framework, and need to be authorized to issue the product certificate.

Basic necessity for the development of mining industry in Uganda will be as follows:

- Community relations and local knowledge
- Infrastructure for domestic and cross country transportation
- Environmental monitoring and regulatory system in compliance to Great Lake Initiative

Mineral (metallic) ores in general are in a form amalgamation of various minerals. Composition of minerals and mine life will differ from mine to mine. Separation and refining process are complex and capital intensive, and highly specialized technologies must be introduced. These issues need to be optimized in order for mining industries to be sustainable and minimizing mineral "disposals". "Compact Mining" developed in Japan which has applied to an assemblage of small and medium scale mines, may be an effective approach to suit the condition of Uganda and suit the PPP approach.

**Petroleum:**

Nature of the crude oil produced in Albertine Graben is reportedly waxy and naphtenitic but low sulphur. Due to a physical property of the oil, i.e., high pour point and high viscosity, transportation of this crude oil by pipeline will face technical challenges that need to be overcomed. The pipeline is also designed as an international common carrier; and serves to transport several different crude oils, i.e., from Kenya, South Sudan, and/or Ethiopia on its way to the exporting port. Apart from the technical issues, following issues should be agreed upon among the stakeholders to formulate the project entity: Financial Framework, Operatorship, Capacity Right Ownership, and Quality Bank.

Construction of domestic refinery in Kabaale will benefit the country significantly i.e., improve the trade balance and stabilize the currency value. Product oils, including LPG will be filled in domestic market and also exported to adjacent countries. Petroleum Product from the refinery may include petroleum coke which will support the economics of cement and other primary industries.

Refinery configuration should reflect demand of existing and future potential industries. Uganda's base material industries represented by Cement Industry have imported petroleum coke from abroad through the port of Mombasa or Dar-es-saalam as a primary energy source. Steel Smelting Industry has utilized charcoal in the reduction process. However, production of charcoal in the country is limited due to deforestation concerns. Low sulfur petroleum coke may be an alternative to the charcoal but further investigation is required.

**Cost of Freight and Tax:**

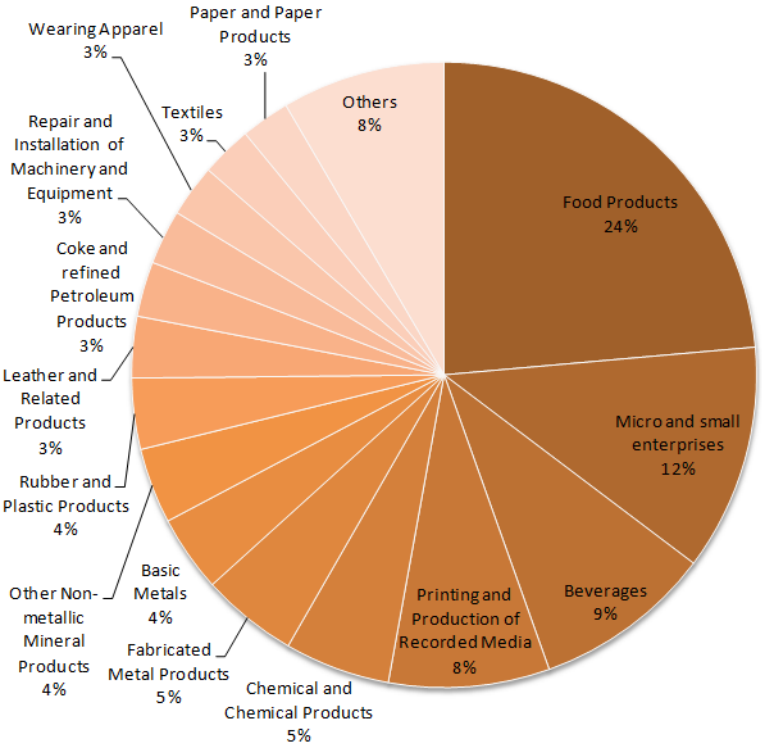
During the interview with the Steel Industry it was pointed out that improvement of the infrastructure will be a benefit to the industry however, exemption of Import Duty and VAT for imported raw materials such and Molybdenum and Manganese will also be very beneficial not only for the industry but for economy as a whole until these raw materials are domestically manufactured. Economic benefit from tax exemption for some raw materials may worth to be investigated.

# *4.6 Status of Manufacturing Sector in Kenya*

## 4.6.1 Geographical Distribution of Production, Processing and Key Logistic Routes

The manufacturing sectors accounts for around 10% of GDP for recent years. Despite the large expansion of service sector and gradual growth in agriculture, manufacturing growth rate is rather moderate over years. The breakdown of the value-added per sub-sector is as shown in the Figure below.

Apart from Food Products, Beverage Printing and Recorded Media which share of value-added in the manufacturing sector in total are 24%, 9%, and 8%, respectively; various sectors appear with the range between 3 to 5% of the share. On the other hand, while the large growth is observed in the sectors such as Basic Metals, Fabricated Metal Products, Non-Metallic Mineral Products and Motor Vehicles, the major export sectors such Processing of Fish, Wearing Apparels apart from Refined Petrol Products.[11]

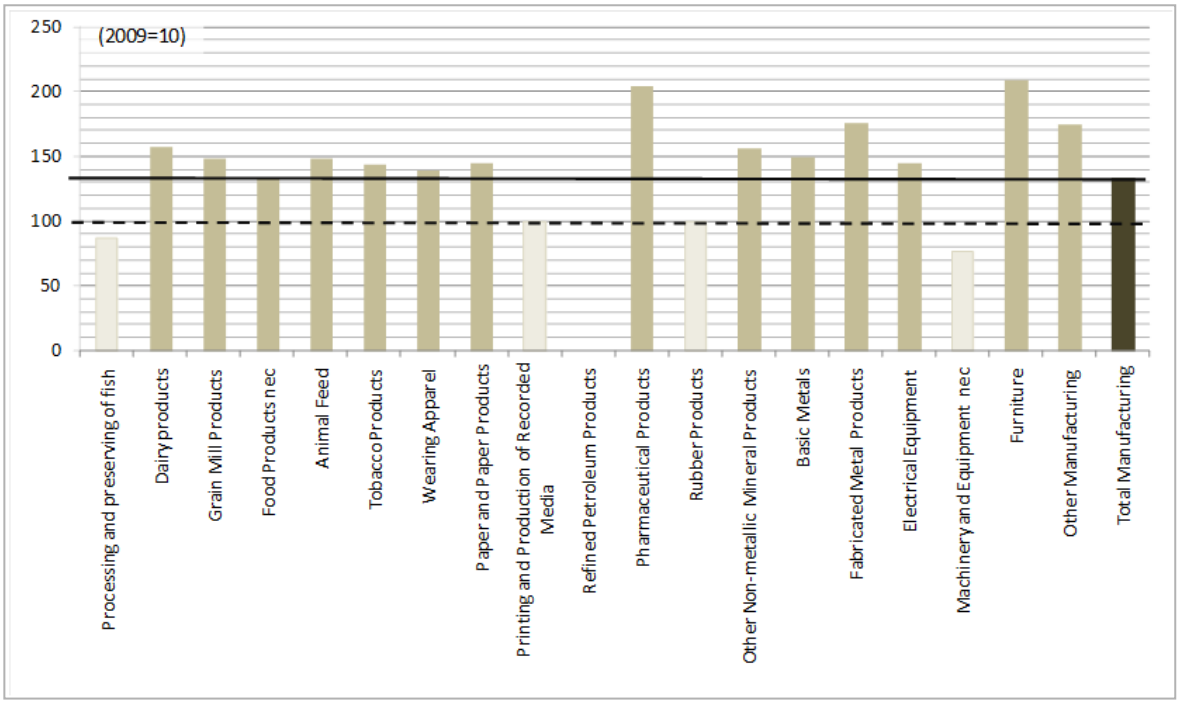



*Source: JICA Study Team based on KNBS "Statistical Abstract 2014"*
*Notes: Provisional data of 2013*

**Figure 4.6.1: Manufacturing Sector Value-Added Breakdown by Sector**

The recent trend of the sub-sector breakdown is shown in the Figure below. It shows the level of production comparing with the one of 2009 as 100. It indicates the large increase in Dairy, Animal Feed, Pharmaceuticals, Basic Metals and Metal Fabrications, Electrical Equipment and Furniture comparing with the total manufacturing production, whereas such sectors as Fish processing, Textile and Wearing Apparel, Petroleum Refinery, and Machinery. The only one petroleum refinery in Mombasa closed and the production was decreased to nil.

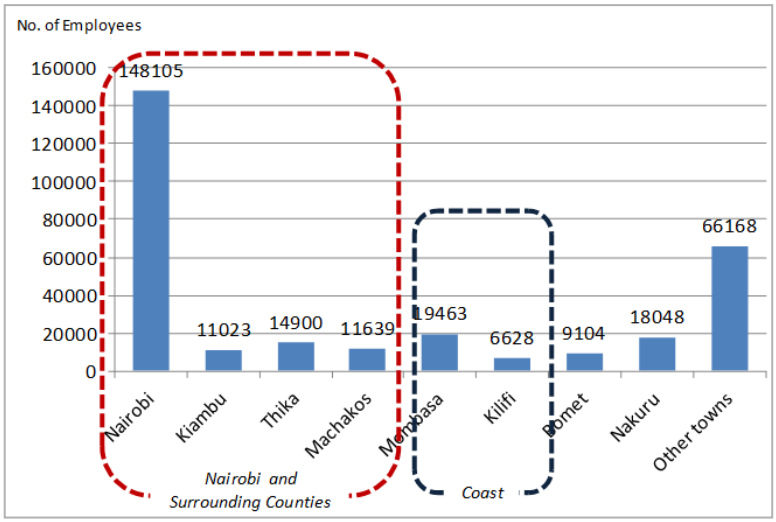
11KNBS (2014) Statistical Abstract




*Source: JICA Study Team based on KNBS "Economic Survey 2014"*

**Figure 4.6.2: Quantity Index of Manufacturing Subsector with Large Increase and Decrease (2014)**

As the recent data on the distribution of manufacturing production was not available, the geographical distribution of the manufacturing sector is analyzed using the number of employees of manufacturing sector in major counties appeared in the Census of Industrial Production. The major concentration can be found in Nairobi which forms further agglomeration with surrounding areas (**Figure 4.6.3**). This can be attributed to the concentration of various economic functions in Nairobi as well as the distribution of population as work force and the market which are rather skewed to the central to western side of the country.




*Source: JICA Study Team based on KNBS (2013) Basic Report on the 2010 Census of Industrial Production*

**Figure 4.6.3: Number of Employees in the Manufacturing Sector in Major Urban Areas**

According to CIP, 49% of the employees for the manufacturing sector are in Nairobi: Nairobi has more than 50% of share in all industries except Food Products, Leather and Related Products, Woods and of Products of Woods, Cokes and Refined Petroleum Products, and Other Transport Equipments. Food Products, Textile, Leather and Related Products, and Woods and of Products, on the other hand, show some dispersion across the sampled towns including "Other Towns". It may be due to either the resource-based nature of the industries or the requirement of being in the proximity to local markets. [12]

12 KNBS (2013) Basic Report on the 2010 Census of Industrial Production

## 4.6.2 Industrial and Manufacturing Development Policy

Based on the overall national policy direction, key industrial policies were developed.

**The Master Plan for Kenyan Industrial Development**

The Master Plan for Kenyan Industrial Development was developed with the support of JICA in 2008 in order to support the national policy initiatives, initially as an Economic Recovery Strategy and later incorporated in the direction provided by the Kenya Vision 2030. It targets three priority sectors for the short-term priority sectors, namely, agro-processing, agro-machinery, and ICT- Electrics and Electronics. The Master Plan emphasizes the importance of the balanced spatial development with strengthening the regional inter-linkage from the Port of Mombasa through Nairobi to other part of the country. It also proposed an initiative to establish SEZ in order to overcome the problems of EPZ.

**Kenya Vision 2030 and the Medium-Term Programmes**

The idea of developing specialized industrial and manufacturing areas was conceived in the Kenya Vision 2030. In the First Mid-Term Programme 2008-2012 envisaged the development of the Special Economic Clusters in Mombasa which were to accommodate such industries as fertilizer, tea, coffee, meat and fish processing. Mombasa was further designated as a location for SME parks for agro-processing targeting fruit juice and vegetable oils.[13]

Under the Second Mid-Term Programme 2013-2017, the concept of SEZ was introduced as a flagship project to fulfil the objective of manufacturing, trade and investment promotion.[14]

**The Sessional Paper No. 9 of 2012 on the National Industrialization Policy Framework for Kenya 2012-2030**

The Sessional Paper No.9 of 2012 "The National Industrialization Policy Framework for Kenya 2012-2030" was published in November 2012 as a policy guideline for the industrialization. The paper sets objectives with some numerical targets as listed below.

- Strengthening local production capacity to increase domestically manufactured goods by focusing on improving the sector's productivity and value addition by 20 percent.
- Raising the share of Kenyan products in the regional market from 7 to 15 per cent.
- Developing niche products through which Kenya can achieve a global competitive advantage
- Increasing the share of Foreign Direct Investment in the industrial sector by 10 per cent.
- Increasing by 25 per cent, the share of locally produced industrial component, spare parts, and machine tools.
- Developing at least 2 Special Economic Zones (SEZs) and 5 SME Industrial Parks
- Establishing an Industrial Development Fund with a minimum of Ksh. 10 billion for long term financing
- Increasing by 20 per cent the share of manufacturing in total MSME output
- Increase the local content of locally manufactured goods for export to at least 60 per cent.
- Increasing the share of industries located outside major urban centres (Nairobi, Mombasa, Kisumu, Nakuru, Eldoret)[15]

The paper identified the priority industrial subsectors based on the criteria, including; i) comparative advantage, ii) competitive advantage, iii) technological innovation, iv) industrial linkages, and v) regional development. They were further categorized for the short, medium and long term development. The priority sectors listed in the policy are agro-processing, textile and clothing, leather and leather goods, iron and steel, machine tools and spares, agromachinery and farm implements, pharmaceutical, and biotechnology and nanotechnology. [16] T

13 Government of Republic of Kenya (2008) First Medium-Term Programme 2008-2012

14 Government of Republic of Kenya (2013) Second Medium-Term Programme 2013-2017

15 MOIED (2012) The Sessional Paper No. 9 of 2012 on The National Industrialization Policy Framework for Kenya 2012-2030

16 MOIED (2012) The Sessional Paper No. 9 of 2012 on The National Industrialization Policy Framework for Kenya 2012-2030

**The Industrial Development Strategy under the Second Mid-Term Programme 2013-2017**

For the implementation of Kenya Vision Mid-Term Programme 2013-2017, the new strategy for industrial development has been under draft. The strategy realizes the constraints of Kenya's industry to propose some policy measures. An important pillar of the strategy is launching the sector-specific projects. Those sectors include textile, leather, construction services and materials and services for oil and gas exploitation. The strategy will be publicized in near future.[17]

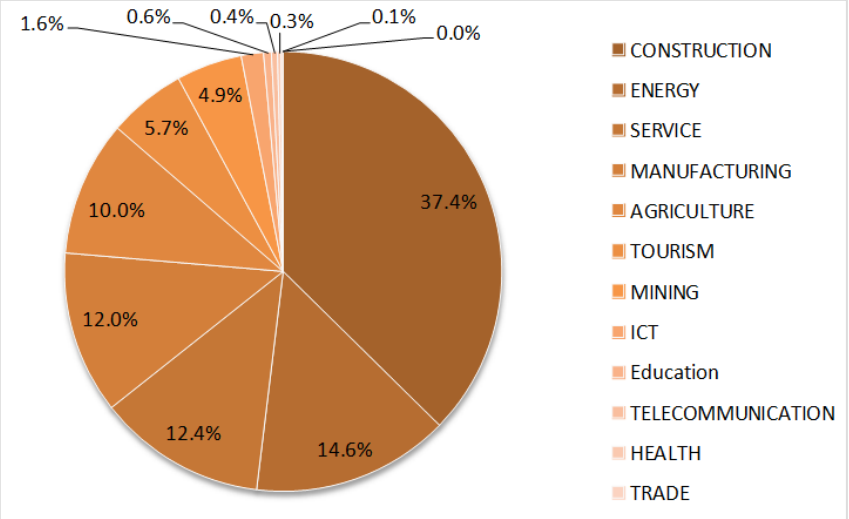
## 4.6.3 Review of Legal Framework and Administrative Structure for Manufacturing Sector Development

The development of the manufacturing sector is mandated to the Ministry of Industrialization and Enterprise Development. However, some key agro-processing sectors which require licensing for processing and trading are regulated by the Ministry of Agriculture, Forest and Fisheries as well as the newly established AFFA. Those industries include horticulture, cash, tea, sisal and other cash crops, nuts and oil seeds and fish.

Application of establishing Export Processing Zone (EPZ) and the acquisition of EPZ Enterprise status are regulated by the Export Processing Zone Authority (EPZ). The establishment of Special Economic Zones (SEZ) is expected upon the promulgation of the SEZ Act which will indicate the regulatory and administrative framework of development and licensing of SEZ.

## 4.6.4 Situation of Private Investment for Development

The breakdown of the investment registered at the KenInvest from 2008 to 2013 is as shown in the figure below. The statistics does not include EPZ firms. Construction takes the large part of the value invested while manufacturing sector account for 12%. The result of 2014 shows large in manufacturing sector: The total investment fell from 42.1 billon Ksh. in 2013 to 7.4billion Ksh. However, it is not purely due to the investment trend, but rather the changes in licensing requirement. Previously, it is mandatory to investors to register at KenInvest, but due to the changes of administrative procedure, it is only single business permit for investors to be obliged. Therefore, the number of the investment registered at KenInvest decreased.[18]




*Source: JICA Study Team based on the data of KenInvest*

**Figure 4.6.4: Share of Industries of Cumulative Investment Projects Registered at KenInvest from 2008 to 2013**

The number of licensed project for EPZ are, on the other hand, shows large increase in 2014 whereas the total number of operating enterprises decreased by one.

**Table 4.6.1: Approved Project, Investment Value and Number of Operating Company of EPZ**

| Year | Number of Project Approved | Investment (Ksh million) | Number of Company Operating |
|---|---|---|---|
| 2010 | 19 | 1,742 | 75 |

1717 Based on the interview with the Industrial Secretary of MoEID

18KNBS(2015)" Economic Survey 2015"

| Year | Number of Project Approved | Investment (Ksh million) | Number of Company Operating |
|---|---|---|---|
| 2011 | 28 | 5,734 | 79 |
| 2012 | 20 | 3,798 | 82 |
| 2013 | 28 | 5,089 | 85 |
| 2014 | 32 | 8,300 | 84 |

*Source: EPZA, Export Processing Zone Programme Annual Performance Report, 2014*

The breakdown of the sectors shows agro-processing and garment are two major sectors with the share of 20.2% and 34.0% in the value invested, respectively. While the number of firm does not reveal a large share (3.5%), Pharmaceuticals also accounts for 9% of the total invested value. It should be also noted that 40% of the ownership of EPZ enterprises is foreign where as 29% is joint venture with foreign and local investors. [19]

## 4.6.5 Review of On-going and Planned Projects for Development

**Export Promotion Zone**

EPZ can be recognized as the most critical tool for promoting FDI and export among the currently available tools. Fiscal incentives as well as other special arrangement are provided under the EPZ scheme as listed in the Table 4.6.5. EPZ Act Cap 517 was established in 1990 and Export Processing Zone Authority was subsequently established.

Targeting export promotion with generous incentive, there is a limit for the sales of the products produced within the zones in the domestic customs territories including other EAC member countries. Only up to 20% of goods and services can be sold within the domestic customs territory upon the approval by the Ministry responsible for industry and payment of the non-COMESA import duty, VAT and other charges. Commercial activities are not eligible for sales in the domestic customs territory. The status of goods and services as well as their handling are in accordance with the EAC Protocol on the Establishment of the East African Customs Union as well as the ANNEX VII Export Processing Zones Regulations.

**Special Economic Zone**

In order to cope with the problems of EPZ as well as to provide the good infrastructure for the operation, establishment of special economic zones (SEZs) have been planned as a flagship project of the Kenya Vision 2030. The 2nd Mid-Term Programme indicates the installation of SEZ in Mombasa, Kisumu and Lamu. The legislative framework for establishing SEZ has not yet finalized and the institutional framework as well as the incentive packages still awaits for the confirmation. The Master Plan for the development of Mombasa SEZ in the KPA-owned land will be finalized near future. Provision of industrial land with good conditions is regarded as critical for manufacturing sector development.

**Cluster development**

The cluster development has been regarded as significant. New strategy will embrace the cluster approach where the leather, textile, agro-processing and engineering services[20].

## 4.6.6 Analysis of Selected Commodities and Value Chains

The Analysis on the commodity value chains will be further elaborated upon the completion of the Market and Value Chain Survey. A few examples are explained in this section.

**Plastics**

Plastics are heavily imported through the Port of Mombasa. The breakdown of the imported plastics varies in terms of it form, whether primary form or finished goods, and the ways of utilization. Various types of plastics in primary forms are imported to be processed for various products from the construction materials (e.g., PVC pipes), household appliances (chairs, kitchen utensils) and packaging. For those packaging materials for the

19 EPZA, Export Processing Zone Programme Annual Performance Report, 2014

20 Based on the interview with the Industrial Secretary of MoIED

export of cut flowers and processed fish are imported and only do some printings if necessary. It was witnessed by many working for food processing for export outside of the region and pharmaceutical industries which have more stringent quality requirement imported packaging as the quality of those domestically available do not meet the quality demand.

**Iron and steel**

The details are to be analyzed based upon the completion of the Market and Value Chain Survey. The preliminary observation shows some findings which may indicate some opportunities and constraints of the sector.

While the raw materials are imported largely from Asian countries, the major processing firms are located in Nairobi and Mombasa. Due to some problems in access to the EAC countries caused by the non-tariff barriers, large companies also establishes metal fabrication companies in other EAC countries such as in Tanzania and Uganda.

It is also noted that the development of metal fabrication may induce further agglomeration of the related sectors. For example, roofing sheets which requires good paints attract manufactures of paints to be located nearby. This kind of sector also uses the same route of transportation as they are mainly depending on the imported raw materials.

On the other hand, some sectors are similar to the assembly industry: pharmaceutical sectors import API and mixes and packs locally.

## 4.6.7 Analysis of Potentials and Current Bottlenecks for Development related to NEC

**Generic features of potentials and constraints of Kenya's manufacturing sector**

Although it is still preliminary stage and requires waiting until the Market and Value Chain Survey to be completed, the following points are raised as important aspects for identification of Kenya's industrial potential.

First, growing market potentials of Kenya and East Africa should be further exploited. Although it may only strengthen the flow of goods to westward, the upgrade of the industrial capacity may be expected by accessing larger demand and building up the production capacity.

Second, still depending on the agro- and resource based industries, these resources may be expected to induce broader economic activities whereby improving their quality and value-addition.

While the above may be explained later through the analysis on "Non-Food Manufactured Goods" and "Existing Leading Industries", another issues to be highlighted as a potential and simultaneously a future threat, namely, the quality performance issue and technological improvement. It is also important to improve the quality of the industry not only for the production growth but also to acquire competitiveness. The World Bank study calculated the ratio of their own categorization of "Primary", "Resource Based", Low Tech", "Medium Tech" and "High Tech" in the exports of Kenya and its peer countries. Though lower than Asian counterparts, low-tech product's share is relatively high. Interestingly, the share of high-tech products is higher than other except Vietnam.

**Table 4.6.2: Technological Classification of Manufacturing Exports of Kenya and Peer Countries (2011)**

| (%) | Primary Products | Resource Based | Low Tech | Medium Tech | High Tech |
|---|---|---|---|---|---|
| **Kenya** | 1.6 | 17.0 | 48.9 | 23.6 | 8.9 |
| **Uganda** | 26.5 | 7.6 | 35.7 | 22.8 | 7.5 |
| **Tanzania** | 14.0 | 45.7 | 19.7 | 17.3 | 3.3 |
| **Cambodia** | 2.0 | 2.8 | 93.5 | 1.8 | 0.2 |
| **Vietnam** | 3.7 | 4.9 | 56.1 | 14.9 | 20.3 |
| **South Africa** | 1.4 | 50.8 | 8.2 | 36.1 | 3.5 |

*Source: Farole and Mukim (2013)" Manufacturing Export Competitiveness in Kenya: Policy Note NOTA on Revitalizing and Diversifying Kenya's Manufacturing Sector", World Bank*

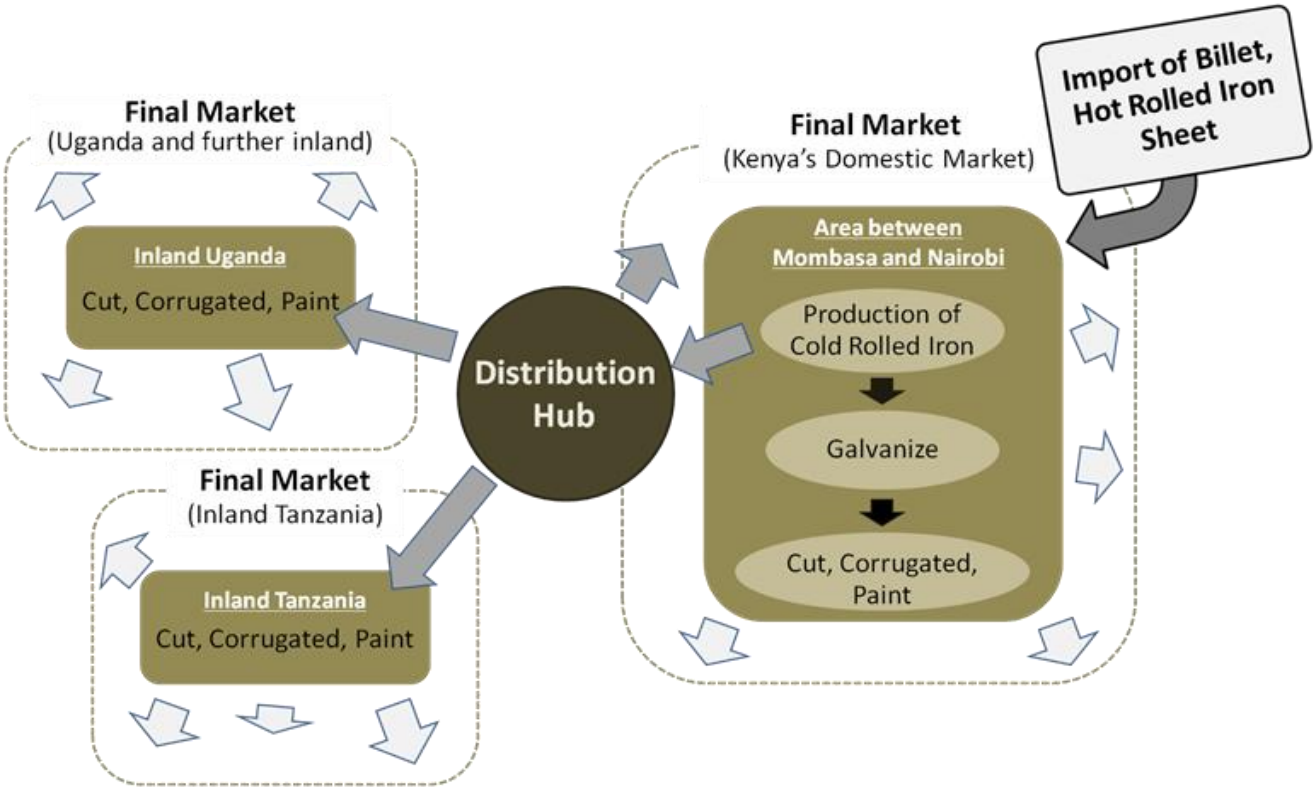
However, the same report points out the quality degradation of Kenyan products in export markets. While the market share of some of the major exported commodities such as tea and cotton yarn may remain the same

relative to other exporters in EU market, the quality performance relatively to the other exporters declined.[21] It is important to note that it is not the matter of the market share, but the competitiveness in terms of the quality relative to the rivals may indicate some concerns. With the exploitation of the domestic and regional market, the share of low-tech and medium –tech products may further increase. However, the quality performance and technological upgrading may be even more important considering Uganda (to be discussed in the next section) and other neighboring countries may be catching up. The changes in trade regime such as up-coming free trade agreements with EAC, COMESA, and SADC as well as the Economic Partnership Agreement with EU may further introduce the competition in the region.

**Potentials in non-food manufactured goods**

Kenya has relatively established manufacturing capacity comparing with the neighboring countries together with the port of Mombasa and the location of a few major cities which are hubs of East Africa transportation network. This is caused the large share of export targeting the regional market. Moreover, it should be also noted that the Kenya's manufacturing sector are naturally depending on the size of domestically available market. While exploiting the opportunities in good access to the domestic and regional market, the competitiveness can be boosted whereby leveraging more demand in the region. One of the significant issues s is the price of the transportation which impact on the competitiveness of the processing sector as a sort of tax to the imported raw materials.

The potentials and the effect of currently observed high transportation can be explained through taking the iron and steel sector as an example. While some downstream works such as cutting and fabrication may be done in other countries, production of semi-processed materials in relatively large scale may be centralized in Kenya and exploit the hub functions to the access to the regional market. The diagram shows the type of business model observed in iron and steel sector.




*Source: JICA Study Team*

**Figure 4.6.5: Simplified Flow of Basic Metals and Roofing Sheets**

21 Farole and Mukim(2013)" Manufacturing Export Competitiiveness in Kenya: Policy Note NOTA on Revitalizing and Diversifying Kenya's Manufacturing Sector", World Bank

The preferred location for processing may be Nairobi rather than Mombasa regarding the size of the already available market as well as the proximity to the larger concentration of the population in the central and western part of the countries in addition to accessibility to the regional markets.

Constraints and bottlenecks of non-food manufactured goods

In this type of business model, constraints may be found in the price of the raw materials which may surge due a few factors: First, various cost factors including labor, utility and transportation costs can lift the unit costs of the production. Second, the taxation and current structure of duty based on EAC common external tariff as well as various levies can burden the industry.

One of the major issues among the cost factors, transportation cost may be one of the major concerns for the manufacturing enterprises especially dealing with the processing of imported materials as well as those exporting their goods. The Table below shows the percentage of enterprises answered that the transportation as a major constraint in the World Bank's Enterprise Survey.

**Table 4.6.3: Firm Perception of Transportation as the Constraint**

| | Kenya (2013) | Uganda (2013) | Tanzania (2013) | Cambodia (2013) | Vietnam (2013) | South Africa (2007) |
|---|---|---|---|---|---|---|
| **Percent of firms identifying transportation as a major constraint (%)** | 21.6 | 15.7 | 36.7 | 9.2 | 11.7 | 39 |

*Note: ( ) indicates the year of the survey.*
*Source: JICA Study Team based on the data of World Bank Enterprise Survey*

The percentage of the respondents who consider transportation as a major constraint is relatively higher among the peers. The available international comparison of the cost of import is seen in the Doing Business. The cost includes inland transportation costs as well as various administrative cost such as port charges, documents fees, and customs booker fees.

**Table 4.6.4: Cost to Import**

| | Kenya | Uganda | Tanzania | Cambodia | Vietnam | South Africa |
|---|---|---|---|---|---|---|
| **Cost to Import (USD)** | 2,350 | 3,375 | 1,615 | 930 | 600 | 2,080 |

*Source: World Bank, Doing Business 2015*

The difference shows the difference in cost burden of the sectors which import and process the raw materials. The potential market for those products with reduced price may be larger than currently available market. Similarly, electricity and fuel prices may be also a key to remove a sort of penalty. Removing the cost of obtaining the raw materials may cut down the cost of the production and entail the competitiveness of Kenyan and East African products against the products from outside.

It should be also noted that the good warehousing functions in Mombasa and Nairobi to control the building and breaking bulk may also constrain the competitiveness. The issue of warehousing is not only the problem in private logistics sector, but requirement under current EAC Customs Management Act where the duration of the period where the goods can be stored without specifying final destination is limited to 30 days. Free port arrangement under SEZ or other major should improve the easiness of managing inventory in Kenya.

Despite the situation, current policy measures does not provide enough measures to the manufacturing sector targeting domestics industries has not been benefited from major promotion policy measures apart from some fiscal incentives for new investment.

**Table 4.6.5: Fiscal Incentives for Investment Promotion**

| Incentive Scheme | Incentives | Remarks |
|---|---|---|
| EPZ | Exemption of the Corporate income tax for the first 10 years from first sales, 25% for the ten years following the expiry of the exemption<br>Exemption of the withholding tax dividends during the time of the exemption of the income tax<br>Exemption of value added tax, excise duties, stamp duty<br>Exemption of import quotas<br>Investment deduction for 20 years | Targeting export-oriented investment, only 20% of the products produced in the zone can be exported into the domestic customs area including Uganda and Tanzania with paying external duty and VAT |
| Wear and tear allowance | Capital Deduction for machinery (12.5%~37.5%) | Deduction made to the corporate |

| Incentive Scheme | Incentives | Remarks |
|---|---|---|
| Industrial building allowance | Capital Deduction for the following investment:<br>Hotel building<br>Other qualified building | income tax. |
| Investment allowance | Once only at the given percentage<br>150% of the capital expenditure for more than Ksh 200 million capital expenditure and qualified investment outside of Nairobi, Mombasa and Kisumu<br>100% for other qualified investment | |
| Import duty set off against Income Tax | Import duty paid on capital goods other than passenger cars is set-off against income tax for an approved project.<br>The project cost should be no less than USD70,000.<br>Prior approval from MOF required. | Note some of the industrial machinery is zero-rated under CET. |

*Source: JICA Study Team based on the information of Income Tax Act (Cap470), KRA website*

The recent policy direction is to upgrade the existing manufacturing activities which are rather easy to start with relatively lower technology requirement. Although the detail shall be reviewed upon the publication of the policy, the newest industrial development strategy under draft is likely to capture the locations of these industries to be developed more clearly than previous policies. It is significant to capture the location where the agglomeration naturally occurs in Nairobi and the vicinities. This type of the policy should require the measures more than fiscal incentives but those which will reduce the cost of production as a whole to anchor some types of industries to be located.

**Potentials in strengthening the existing leading industries**

The existing industries which position themselves in the leading position in the global market should seek the possible ways to expand the competitiveness to drive their effects on other industries.

For example, Tea has been an important commodity handled at the Port of Mombasa. The significance is not only the traded amount and value as a major export commodity, but the type of position Kenya plays within the entire market chain. As pointed out by number of literature, a major value addition of tea comes at the time of packaging for the wholesale and retail in the shape of final consumption. The production and the processing are done in and in the proximity of farms. While trading is done through the Mombasa Tea Auction, a large portion of the tea is exported as a form of bulk. This is mainly due to the nature of the tea which requires blending with multiple types to maintain the homogeneity of the specific bland.

Another characteristic of tea in Kenya is relatively low diversification of the products. In terms of the processing method, it is predominantly CTC which is more popular in Kenya's traditional markets such as Egypt, Pakistan and UK.

As seen in the earlier part, the food commodities including tea have been reducing its quality performance in last decade.[22] On the other hand, growing attention to the food safety and traceability, packaging at location near origin may also draw the attention of powerful retailers for packaging in Kenya after the auction.[23]On the other hand, gradual increase of instant tea, ready–to-drink (RTD) tea started in Japan, but also in US market requires different types of processing. Instant tea, for instance, is a very different type of the products which extract the essence of the tea, and the processing should be located near farm gate.[24]

These changes in the competition environment may be able to give some opportunities for Kenya to expand its basis of the industry. For example, currently, packaging materials for final market such as tea bags and printed boxes are not available in Kenya. Regarding the size of the industry, such related industries are also expected to be based in the proximity to the tea marketing facilities.

Constraints and bottlenecks of the existing leading industries

In the short-run, the stable and smooth transportation and movement of goods from production areas to Mombasa, as well as within Mombasa up to the time of loading at the Port should be a critical issue for the industry. For example, it was mentioned by tea traders about incidence of missing the departure of ship due to the congestion of the city of Mombasa. At the same time, the scanning of the consignment before loading

22 Farole and Mukim (2013)

23 A tea company located in Mombasa has been producing tea bags or specially packaged tea under the contract of the major retailers in Europe and Asia.

24 Based on the interviews with tea producers in Kenya and buyers in Japan.

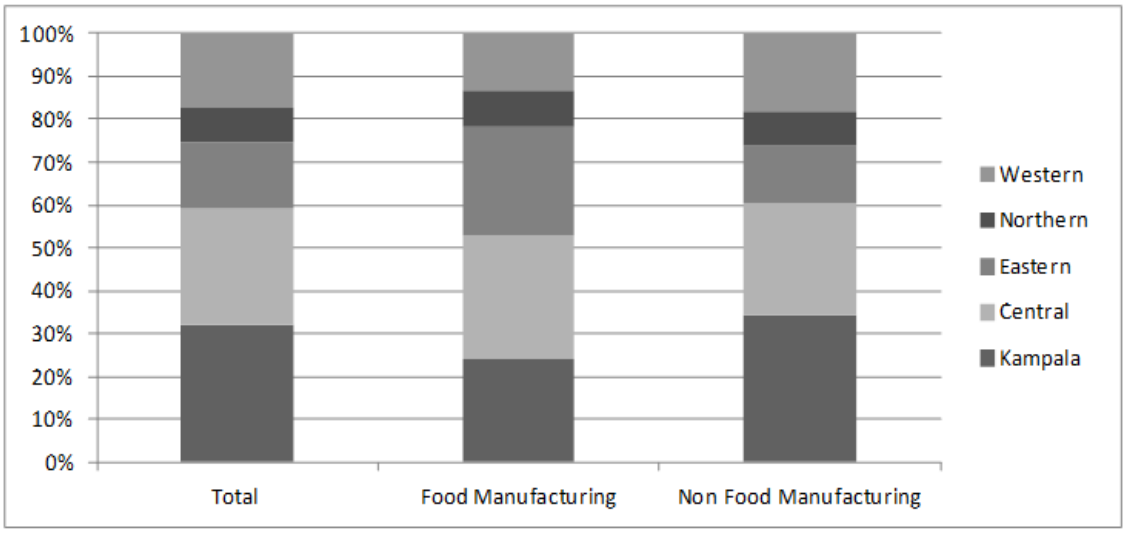
produces a large some of the backlogs at the port. Due to the delay, the collection of the sales from the importers also delayed. This eventually damages the purchasing capacity of the buyers.[25] Moreover, currently observed risk of having only transportation routes from the production areas to almost only one outlet in Mombasa is perceived. The trust toward the route was severely damaged during the post-election violence in 2008.

For the mid- to long-term development of the industrial cluster, it is critical to embrace the types of constrains faced by the specific industries which may be developed by forward and backward linkages. The details shall be researched further, but the similar types of constraints may be observed in the industries such as the plastic industries mentioned before. Food processing industry for export depend largely imported packaging material. As mentioned earlier, the industry seems somehow use the materials from different origin for those exported and those marketed domestically: Whereas the former uses imported materials, the latter uses domestically produced packaging. Paper and paper products, printing and plastic industries may be strengthened in order to serve the same types of commodity exports. The constraints of such industries to upgrade their technical capacity and quality is the key for the cluster development

## *4.7 Status of Manufacturing Sector in Uganda*

### 4.7.1 Geographical Distribution of Production, Processing and Key Logistic Routes

The majority of the business establishments in manufacturing sector in Uganda are with less than 10 employees: 51.2% of the businesses are with one employee. Although the detailed data on the distribution of the businesses especially those with the larger employees along NEC is yet to be obtained, it can be said that the concentration of the business establishment are found in Kampala and the Central region: both account for 32.3% and 26.8% of the total number of the establishment, respectively. The share of food manufacturing is 18.3%. Within the sub-sectors, manufacturing of textile & wearing apparel takes predominantly large portion with 42.5%. Furniture (17.2%), metal products (12.5%), grain milling products (8.3%), and bakery products (7.3% ) are also a major sector in terms of the number of establishment. On the other hand, out of 13,501 establishment of the textile and apparel sector, only 31 are with more than 20 employees: it is predominantly consist of micro enterprises.

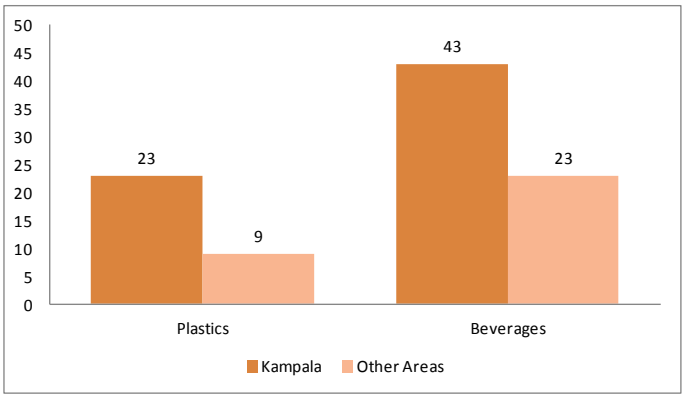



*Source: JICA Study Team based on UBOS (2011) Report on Census of Business Establishments*

**Figure 4.7.1: Distribution of Food and Non-Food Manufacturing Business Establishments**

25 Based on the interviews with tea buyers in Kenya.

The list of members of the Uganda Manufactures Association (UMA) also shows the similar trend. The example of the comparison between plastic industries and beverage industries are as shown in the Figure. The share of Kampala based companies is larger in plastic sector companies.




*Source: JICA Study Team Based on the list of UMA members*

**Figure 4.7.2: Number of UMA Member Companies in Plastic and Beverage Sector and the Location**

While it is not possible to identify the exact location of the production facilities of these industries, industrial sites within and surrounding Kampala can be assumed to have an agglomeration of manufacturing enterprises.

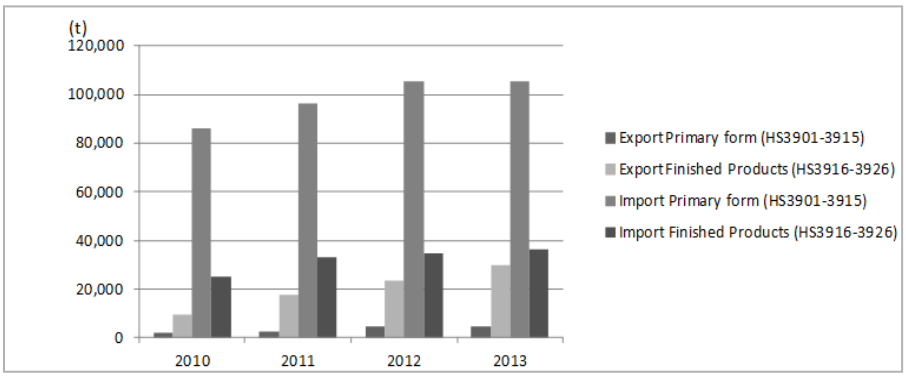
**Table 4.7.1: List of Major Industrial Agglomeration in and Surrounding Kampala**

| Locations | Industrial Sites |
|---|---|
| Kampala | Southern: Kampala Industrial Area, Nalukolongo<br>Eastern: Ntinda (Industrial Area), Luzira (Industrial Park)<br>Western: Nalukolongo,<br>Northern: Kawempe |
| Mukono | Kira, Namanvu (Kampala Industrial Business Park) |
| Jinja | Njeru, Jinja industrial area |

*Source: JICA Study Team based on UMA Directory*

The concentration of the establishments in the area between Kampala and Jinja implies inflow of the raw materials, either sourced nationally or imported.

While the detailed analysis will be done for those surveyed under the Market and Value Chain Survey, the overview of the flow of the goods may be glanced through the example of the plastic products. The net weight of the imported plastics in primary form is outstandingly large comparing with the finished goods. On the other hand, while imported finished products exceed exported ones, diminishing difference is also observed. While domestic consumption is large to consume both locally produced and imported finished products, a part of the finished goods are also exported. The major partners are Kenya, DR Congo, Rwanda and South Sudan for export and Saudi Arabia, Kenya, UAE, China and Korea for import. It indicates that the large flow of raw materials may exist up to Kampala whereas the finished goods can divert to Kenya, DRC and Rwanda in the West and to South Sudan in the North apart from those to the major consumption areas in country.




*Source: Calculated by JICA Study Team based on the data of UN-COMTRADE*

**Figure 4.7.3: Export and Import of Primary and Finished Plastic Products (HS 39)**

## 4.7.2 Industrial and Manufacturing Development Policy

Overall development goal was just set for the period of 2015/16 to 2019/20 by the Second National Development Plan (NDP II). NDP II sets the goal of the percentage of manufacturing sector to GDP from 6% in 2012/13 to 19% in 2019/20 whereas the GDP growth rate is targeted to reach 6.3% per annum in 2019/20 from 5.2% in 2012/13. The dissemination of the new development plan may expedite the development or renewal of the policies which have been in place.

The Industrial Development section list some critical sector, namely: Agro-processing (beef and dairy products, leather products, textile and apparel, wood products, food processing, mineral beneficiation (iron and steel, metal fabrication, fertilizer and pesticides, and ceramics) and light manufacturing (pharmaceutical, electronic products, petro-chemicals, packaging, paper and paper products).

Under industrial development, the following objectives were set:

- Promote the development of value added industries
- Increase the stock of new manufacturing
- Enhance the use of standards and quality infrastructure
- Promote and accelerate the use of research, innovation and applied technology
- Promote green industry and climate smart industries

Under the first objective, development of agro-processing industrial park was mentioned. Industrial park development was also listed as the interventions under the second objective.

**National Industrial Policy: A Framework for Uganda's Transformation, Competitiveness and Prosperity**

The policy was developed in 2008. Policy sets the goal in the 10-year implementation period as listed below:

(i) 25% - contribution of manufactured products to total GDP
(ii) 30% - contribution of manufactured exports to total exports
(iii) 30% - Value added in Industry (as a percentage of GDP)
(iv) 4.2 score - Competitiveness Index

It focuses on exploitation and development of natural and domestic resource-based industries (petroleum, cement, and fertilizer industries), agro-processing (food processing, leather and leather products, textiles and garments, sugar, dairy products, and value addition in niche exports), knowledge-based industries ( ICT, call centres, and pharmaceuticals that exploit knowledge in science, technology and innovation), engineering for capital goods, agricultural implements, construction materials, and fabrication as well as Jua Kali operations

Some of the major policy objectives of the policy are as listed below:

- Create a business friendly environment for private sector-led industrialization
- Improve infrastructure development for effective and efficient industrialization program
- Encourage and foster innovation, entrepreneurship, adjustment and adoption of best management practices in the quest for improved competitiveness.
- Create a framework that supports joint participation of the public and private sectors in the development of scientific and technological competencies for the production of more and higher value added goods and services for domestic consumption and export; widen the tax base; and increase integration with Agriculture
- Facilitate improved supply chain efficiency and market responsive product and brand development.
- Encourage foreign direct investment in industry and industry related services.
- To create jobs for the widest section of the population.

One of the major areas of actions is Infrastructure development including establishment of Export Processing Zones (EPZs) as well as industrial parks where introduction of PPP was sought. The policy highlights cluster development initiatives both for the infrastructure development and strengthening linkages between industries under the same clusters. Value-addition and widening the industrial base are also important aspect of the policy.

**National Industrial Sector Strategic Plan 2010/11-2014/15 (NISSP)**

The plan was developed in order to implement the National Industrial Policy. The concept highlights 7 strategic points as listed below.

- Institutional development;
- Public-Private-Partnership enhancement;
- Infrastructure development;
- Deepening and widening the industrial base and making it internationally competitive,
- Safe and sustainable;
- Science, technology and innovation;
- Financial industrial sector transformation; and,
- Skills and human resource development.

In addition to them, 4 cross-cutting issues are also raised, namely quality standard, occupational health and safety, sustainable development, and gender issue.

The actions proposed comprising the measures acknowledging the importance of cluster development, infrastructure deficit, and public and private partnership. Physical infrastructure to ensure the adequate industrial sites is one of the key actions: Development of industrial and technology parks and EPZ is mentioned. While detail is not clear, development of key sectors such as textile and leather are expected to be directed by cluster development approach.

## 4.7.3 Review of Legal Framework and Administrative Structure for Manufacturing Sector Development

The implementation of NISSP In executing the mandate, the department of Industry and Technology collaborates with other relevant government agencies. The key agencies are UNBS, Uganda Industrial Research Institute Management Training and Advisory Centre, and Uganda Cleaner Production Centre. At the same time, relevant line ministries and agencies are also identified which includes Ministry of Finance, Planning, and Economic Development, Ministry of Works and Transportation, Ministry of Agriculture, Animal Industries, and Fisheries, UIA, UNRA, NAADS, and NARO.

## 4.7.4 Review of On-going and Planned Projects for Development

**Industrial park development**

As for the infrastructure development, construction of industrial parks has been promoted. However, in general, major constraints are observed in securing the land and/or finance for site preparation. UIA has been responsible for development of industrial parks in various locations in the country. Projects identified by JICA Study Team are as listed below:

**Table 4.7.2: Existing Government Project for Establishing Industrial Parks**

| Industrial Park Project | Overviews and Progress |
|---|---|
| Kampala Industrial and Business Park | 886 ha with 4 parts.<br>Established in with the finance of the World Bank in 2002, but the finance was withdrawn in 2012. The physical infrastructure development is yet to be completed due to insufficient allocations of budget. Out of 329 investors who were allocated the land, only 25 started the development.<br>A few key investors (beverage, metal fabrication) has been operational. |
| Bweyogerere Industrial Park | UNBS Headquarters will be located. Site preparation with the basic infrastructure (electricity, water) is yet to be completed. The investors who have started their development draw water and power to their sites by themselves. |
| Soroti IndustrialPark | 219-acre land was secured for 131 plots. UDC with the finance from Korea will install a fruit processing factory. The site preparation is yet to be completed. |
| Jinja Industrial Park | 182 acre in total.<br>The master plan is under the draft. |
| Mbale Industrial Park | Planned to be 619-acre, but compensation to the residents are yet to be completed. |

| Industrial Park Project | Overviews and Progress |
|---|---|
| Kabarole Industrial Park | Planned for 100-acre park of which land formally belongs to the District Agricultural Training Institute. The land title issue has not sorted out. |
| Moroto Industrial Park | 417-acre land has been acquired. |
| Luzira Industrial Park | The park is already operational with power and water drawn. Investors have been operational with more to start. |

*Source: JICA Study Team based on MoFPED (2014)" Industrialisation Sub-Sector Monitoring Report Fiscal Year 2013/14"*

**Direct intervention for setting up the processing facilities**

GOU has been endeavoring into setting up processing plants for some key product. Under the Presidential Initiative for Banana Industry Development (PIBID), Banana processing factories are to be installed with the necessary site preparation. Juice factory in Soroti Industrial Park and Value Addition Luweero Fruits Drying Factory are other examples of the project directly undertaken by the Uganda Development Corporation. The former has been installed some facilities with the access road with the finance from KOICA.[26]

**Warehouse Receipt System**

The system was introduced to reduce the post-harvest loss and to provide collateral finance to farmers. It was planned to install 10 licensed warehouses in nation-wide and 5 existing ones to be refurbished. Each has the capacity of 200 to 300 MT. 60 cooperative stores are also to be improved in addition to 15. However, due to the difficulty in starting the construction of new government warehouses, the project approached to the Uganda Grain Council and agreed to license some of the warehouses under the council to fill the gap of the plan. Financial sector has been commenced the financing as well.[27]

## 4.7.5 Analysis of Selected Commodities and Value Chains

Analysis on the commodity value chains will be further elaborated upon the completion of the Market and Value Chain Survey.

## 4.7.6 Analysis of Potentials and Current Bottlenecks for Development related to NEC

The opportunities of manufacturing sector development shall be identified in two ways: while expanding the range of value-addition of already available export commodities mainly outside of the region, it is also important to serve for available demand within the country and the region. Though the investors' aims and their targeted market should be further clarified, the list of the investment projects shows the preference in establishing the production bases for domestic and regional market to some extent.

**Processing industries with imported raw materials/semi-processed goods**

The major constraints observed in the type of industries which import raw materials or semi-finished products for the processing or assembling should be found in the cost and quality of transportation. As mentioned in Kenya, the cost burden can affect the competitiveness of the products. The degree of the difference of inland transportation cost between Kampala and Nairobi is indicated below.

**Table 4.7.3: Inland Transportation and Possible Burden on the Price of Imported Materials**

| | Inland Transportation Cost (USD/TEU) | | Inland Transportation per Unit Weight (USD/MT) | |
|---|---|---|---|---|
| | Kampala | Nairobi | Kampala | Nairobi |
| From Mombasa | 2,400 | 1,450 | 80.0 | 48.3 |

*Source: Shippers Council of East Africa (2015) "East Africa Logistics Performance Survey 2014"*

26 MoFPED (2014) "Industrialisation Sub-Sector Monitoring Report Fiscal Year 2013/14"

27 Ibid.

Despite of it, it is still observed that the manufacturing investment has been a major driver of FDI in Uganda. The market potential is identified both in domestic market and further inland countries accessible through Kampala. Other constraints of enjoying the opportunities to exploit the market in these areas may be the development and sophistication of the logistics industry. It is also noted that the quality of logistics divides itself to the extreme end: international logistics company may be able to provide comprehensive services with quality, but expensive. They may not prefer serving for those with small quantity. [28] Regarding the size of the production of the manufacturing sector of Uganda, logistics which meet the demand of smaller operators may be also important.

# *4.8 Tourism and Service Sector in Kenya*

## 4.8.1 Overview and Current Status of the Sectors and the Locations

Tourism sector is one of the major foreign currency earning industries of Kenya.

The total number of the international visitor arrival and the earning from tourism declined in 2014 due to the fear of the insecurity. The number of international tourists arriving in Kenya decreased from 1.519 million persons to 1.35 million. The earning went down from 94.0 billion USD to 87.1 billion USD. [29] The majority of the international arrival is found either in Jomo Kenyatta International Airport or Moi International Airport. In 2014, over 60% of the arrival was through these two airports.

Opportunities are identified in untapped potentials such as eco-tourism, culture, conference and cruise. The new set of clienteles should be also targeted, for example, domestic and regional tourists and international tourists from newly emerging economies. On the other hand, current infrastructure, business environment and human resources may be a weakness. In addition, security issues can be one of the major concerns.[30]

Table below shows the estimated impact of tourism sector in 2014. The economic impact is not limited to the direct earning from the transportation, accommodation and food, retail and other recreational services, but induced further external economic activities such as spending and housing of employees of the industries. Table also shows the projection in the 2025 where the amount of industry's direct contribution to GDP grow over 5% per annum.

**Table 4.8.1: Kenya's Tourism Industry's Projection and Impact on the Economy**

| | 2014 | | 2025 | | Projected Annual Growth Rate (2014-2025) |
|---|---|---|---|---|---|
| | Actual | Share in Total (%) | Projection | Share in Total (%) | |
| **Direct Contribution to GDP (USD million)** | 2,507.8 | 4.1 | 4,280.9 | 4.0 | 5.1 |
| **Total contribution to GDP (USD million)** | 6,386.8 | 10.5 | 10,961.9 | 10.3 | 5.2 |
| **Direct contribution to employment ('000 jobs)** | 206.4 | 3.5 | 276.7 | 3.4 | 2.9 |
| **Total contribution to employment ('000 jobs)** | 543.7 | 9.2 | 731.7 | 9.0 | 2.9 |
| **Visitor exports (USD million)** | 1,820.4 | 16.6 | 3,023.5 | 11.1 | 5.1 |
| **Domestic spending (USD million)** | 2,519.9 | 4.1 | 4,396.1 | 4.1 | 5.2 |
| **Leisure spending (USD million)** | 2,712.8 | 2.5 | 4,554.1 | 2.9 | 5.0 |
| **Business spending** | 1,627.5 | 1.5 | 2,865.5 | 1.5 | 5.3 |
| **Capital spending** | 788.4 | 6.4 | 1,375.8 | 6.3 | 5.2 |

*Note: Shares in total indicate the share to the national total of the relevant indicators. Visitor export is shown relative to total export of goods and services. Domestic spending, Leisure spending and Business spending are expressed relative to whole GDP. Capital investment is relative to total domestic investment.*
*Source: World Travel and Tourism Council (2015), Travel & Tourism: Economic Impact 2015 Kenya*

28 In fact, some witness of the enterprises indicates that the freight even for east-bound remains expensive despite west-bound screwed situation

29 KNBS Economic Survey 2015

30 GOK, National Tourism Strategy 2013-2018

### 4.8.2 Development Policy and Administrative Frameworks

National Tourism Strategy 2013-2018 was developed based on the Tourism Act, 2011. It set the objectives as listed below:

- Mainstreaming of domestic tourism as the main source of income to the tourism sector in Kenya.
- Increase international arrival from 1.8 million to 3 million.
- Encourage local/women/youth involvement management of travel and tourism facilities and services
- Increase Kenya's competitiveness in the tourism sector
- Provide a platform for development and sustenance of quality standard/regulations of products and services in the tourism sector

It also covers 5 broad areas, namely, product development, marketing, finance and good business environment, research and information management, and development of human capital, legal and policy and institutional framework.[31]

## *4.9 Status of Tourism and Service Sector in Uganda*

### 4.9.1 Overview and Current Status of the Sectors and the Location

The trend of the arrival of the visitors to Uganda is as summarized in the Table below. The visitor arrival to Uganda shows large increase in recent years. About 65% of the visitors arrives arrive by road. Visitors for business and professional purpose as well as those visiting friends and relatives largely lead the growth.

**Table 4.9.1: Visitor Arrival in Uganda 2009-2013**

| | 2009 | 2010 | 2011 | 2012 | 2013 | Growth Rate (2009-13) (%) |
|---|---|---|---|---|---|---|
| **Visitor Arrivals by Mode of Transport ('000)** | | | | | | |
| **Air** | 271 | 369 | 387 | 416 | 423 | 56,1 |
| **Road** | 535 | 577 | 764 | 781 | 783 | 46,4 |
| **Visitor Arrivals by Purpose of Visit ('000)** | | | | | | |
| **Leisure, Recreation and Holidays** | 126 | 149 | 76 | 148 | 188 | 49,2 |
| **Business and Professional** | 167 | 184 | 160 | 205 | 296 | 77,2 |
| **Visiting Friends and Relatives** | 406 | 357 | 603 | 383 | 528 | 30,0 |
| **Others** | 107 | 256 | 312 | 461 | 194 | 81,3 |
| **TOTAL** | 806 | 946 | 1,151 | 1,197 | 1,206 | 49,6 |

*Source: UBOS, Statistical Abstract 2014*

Major tourist destination may be found in the National Parks. The share of the Murchinson Falls and Queen Elizabeth National Parks are 33% and 32%, respectively.

31 Ministry of East Africa, Commerce and Tourism "National Tourism Strategy 2013-2018"

**Table 4.9.2: Visitors to the Major National Parks**

| | Visitors | Share |
|---|---|---|
| Murchinson Falls | 70,798 | 33% |
| Queen Elizabeth | 69,193 | 32% |
| Lake Mburo | 21,695 | 10% |
| Bwindi Impenetrable | 14,068 | 7% |
| Kibaale | 10,834 | 5% |
| Mgahinga Gorilla | 8,952 | 4% |
| TOTAL | 213,950 | 100% |

*Source: UBOS, Statistical Abstract 2014*

The impact of the tourism industry to the entire national economy is as estimated as below. The sector is expected to growth 6.4% per annum for next 10 years, doubling its size of the value-added.

**Table 4.9.3: Uganda's Tourism Industry's Projection and Impact on the Economy**

| | 2015 | | 2025 | | Projected Annual Growth Rate (2014-2025) |
|---|---|---|---|---|---|
| | Actual | Share in Total (%) | Projection | Share in Total (%) | |
| Direct Contribution to GDP (USD million) | 1,062.5 | 4.3 | 2,133.9 | 4.3 | 6.4 |
| Total contribution to GDP (USD million) | 2,459.8 | 9.9 | 5,032.0 | 10.2 | 6.6 |
| Direct contribution to employment ('000 jobs) | 247.1 | 3.6 | 377.3 | 3.7 | 3.7 |
| Total contribution to employment ('000 jobs) | 592.7 | 8.6 | 921.2 | 8.9 | 3.9 |
| Visitor exports (USD million) | 1,365.1 | 25.3 | 2,758.9 | 18.8 | 6.4 |
| Domestic spending (USD million) | 378.0 | 1.5 | 731.3 | 1.5 | 6.2 |
| Leisure spending (USD million) | 1,176.7 | 2.9 | 2,614.2 | 3.2 | 7.4 |
| Business spending | 556.4 | 1.5 | 876.0 | 1.1 | 3.7 |
| Capital spending | 269.0 | 4.6 | 577.4 | 5.0 | 7.3 |

*Note: Shares in total indicate the share to the national total of the relevant indicators. Visitor export is shown relative to total export of goods and services. Domestic spending, Leisure spending and Business spending are expressed relative to whole GDP. Capital investment is relative to total domestic investment.*
*Source: World Travel and Tourism Council (2015), Travel & Tourism: Economic Impact 2015 Uganda*

## 4.9.2 Development Policy and Administrative Frameworks

The Second National Development Policy (NDP II) lists tourism sector as one of the priority sector. The value chain of the tourism industries comprises pre-visit services, transportation, information and reception, hospitality and tourists' attraction and amenities.

The policy targets the following goals by the end of the planed period.

**Table 4.9.4: Key Result Area 2 Tourism Development Level Indicators**

| Medium-Term Expected Results Outcome Indicators | Baseline 2012/23 | 2015/16 | 2016/17 | 2017/18 | 2018/19 | 2019/20 |
|---|---|---|---|---|---|---|
| Increase in tourism recipients (million USD) | 971 | 1,117 | 1,284 | 1,477 | 1,698 | 1,953 |
| Increase in tourist arrivals | 1,196,765 | 1,316,442 | 1,448,086 | 1,592,894 | 1,752,184 | 1,927,402 |
| Increase in tourism sector contribution to GDP | 8.8 | 8.85 | 9.14 | 9.53 | 10.16 | 10.68 |
| Increase in number of persons employed by the tourism sector | 182,500 | 193,450 | 205,057 | 217,360 | 230,402 | 244,226 |

*Source: NDPII*

The policy indicates its attention to all the process in the value chain. It also shows the proposed infrastructure for supporting tourism development which mainly consists of transportation and ICT infrastructure.

# *4.10 Result of Marketing and Value Chain Survey in Kenya*

## 4.10.1 Outline of the Survey

The Survey specifically has the following objectives:

- To identify key commodities which are expected to grow as major export commodities of the areas along the corridors. The commodities should be export-oriented with the potentials of higher value addition in Kenya along the area of the corridor.
- To estimate the size of export markets of selected commodities produced in Kenya.
- To identify critical issues regarding logistics for the development of the value chain (VCs) of the commodities

The Survey comprises the following 5 components:

- Development of the long-list of commodities
- Selection of the 4 commodities for VC analysis
- End-market analysis
- Detailed VC survey and analysis

## 4.10.2 Long List of Potential Commodities

Before starting the analysis, two tasks were undertaken, namely; a. development of the long-list of the potential industries, literature review of existing value-chain reports, and stakeholder workshop for consultation on the selection criteria for VCs for further analysis.

a. Developing the long-list

The list of the products produced in the area along the NEC was developed using the HS 2-digit categorization. The products were evaluated according to the criteria listed below:

- Current production amount
- Trend of export
- Potential for the contribution to the industrial development in the area along NEC

Based on the analysis, 32 commodities were selected.

b. Review of Existing Literature and Research Reports on Product Value Chains in Kenya

The review of existing literature and reports of VC studies was done. This is a part of prior research for further evaluation. At the same time, it also served as the ways to avoid the duplication of similar studies.

The findings of the review are as listed below:

- Most of the researches deal with the agricultural products.
- Most of them are more focus on the inputs and marketing, rather than production process.
- Limited information available on the geographical distribution of industrial agglomerations and the structure, logistics issues and transportation infrastructure and regulatory frameworks.

c. Stakeholder Workshop for reviewing the long-list

The long-list was shared with the stakeholders, both from GOK and the public sectors and consulted in order to check the adequacy of the list in terms of its consistency with various policies and private sector's views. The workshop was held on 8th May in 2015 in Nairobi. As a result, the list was enlarged with 6 more products added into the original proposal. The participants also reviewed the criteria for selecting 4 VCs for the further detailed survey.

## 4.10.3 Selection of 4 VCs

The stakeholders attended the above-mentioned workshop agreed the as table below.

**Table 4.10.1: Value Chain Selection Criteria and the Weighting**

| Criteria | Weight |
|---|---|
| Trend and availability of export market | 20% |
| Possible range of value addition | 20% |
| Sustainability and social responsibility | 10% |
| Enable legal and policy framework for investment | 10% |
| Investment demand | 10% |
| Technical feasibility for production for export | 10% |
| Availability of already existing VC studies | 10% |
| Traffic volume created by the corridor | 10% |

The result of the calculation is as appeared in the Table.

**Table 4.10.2: Result of Evaluation of Long-Listed Products**

| Selecting the 4VCs | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| No. | Commodity | Sufficient demand for commodity in world export market | Commodity's range of value added products and services | Scope for sustainable and socially responsible local production | Enabling legal/policy framework for investment in the commodity | Demand for investment in producing the commodity | Production complexity and local ability to develop products for exporters | Available information and studies on the commodity's VC | Ability to generate high volume of traffic along the corridor | TOTAL |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| | | 20% | 20% | 10% | 10% | 10% | 10% | 10% | 10% | 100% |
| 24 | Milled Maize | 17 | 16 | 8 | 8 | 9 | 8 | 7 | 8 | **81** |
| 38 | | 18 | 18 | 5 | 5 | 9 | 5 | 8 | 9 | **77** |
| 28 | Coffee | 17 | 14 | 5 | 8 | 8 | 8 | 8 | 8 | **76** |
| 29 | Titanium | 18 | 18 | 5 | 5 | 8 | 5 | 8 | 8 | **75** |
| 2 | Flowers and plantings | 15 | 13 | 8 | 8 | 8 | 9 | 5 | 8 | **74** |
| 22 | Processed milk products | 14 | 17 | 6 | 7 | 8 | 8 | 6 | 8 | **74** |
| 31 | Gold | 18 | 18 | 5 | 5 | 9 | 8 | 5 | 6 | **74** |
| 36 | Veterinary products | 15 | 15 | 6 | 8 | 8 | 8 | 6 | 8 | **74** |
| 37 | Assembly of motorcycles | 15 | 14 | 6 | 8 | 9 | 8 | 6 | 8 | **74** |
| 4 | Edible pulses | 18 | 12 | 8 | 8 | 8 | 8 | 5 | 6 | **73** |
| 8 | Processed fruits | 16 | 14 | 8 | 8 | 8 | 8 | 5 | 6 | **73** |
| 15 | Alminium articles | 15 | 16 | 5 | 8 | 8 | 7 | 8 | 6 | **73** |
| 35 | Pharmaceuticals | 17 | 15 | 5 | 7 | 8 | 7 | 6 | 8 | **73** |
| 5 | Sewed apparel of textibles | 14 | 14 | 8 | 8 | 8 | 7 | 7 | 6 | **72** |
| 10 | Steel products | 14 | 16 | 6 | 6 | 8 | 6 | 8 | 8 | **72** |
| 19 | Fertilizers | 15 | 15 | 6 | 6 | 8 | 6 | 8 | 8 | **72** |
| 23 | Wood and planned articles | 15 | 14 | 6 | 6 | 8 | 7 | 8 | 8 | **72** |
| 6 | Knitted apparel | 14 | 12 | 8 | 8 | 8 | 8 | 7 | 6 | **71** |
| 7 | Cement and lime products | 17 | 13 | 4 | 6 | 9 | 8 | 5 | 9 | **71** |
| 20 | Glass and glassware | 15 | 14 | 6 | 8 | 8 | 6 | 8 | 6 | **71** |
| 25 | Metal tools, implements and cutlery | 15 | 16 | 7 | 7 | 7 | 7 | 6 | 6 | **71** |
| 3 | Mineral fuels and oils | 15 | 15 | 6 | 6 | 8 | 6 | 5 | 9 | **70** |
| 12 | Animal, vegetable fats and oils | 15 | 14 | 6 | 8 | 8 | 8 | 5 | 6 | **70** |
| 33 | Fluorspar | 16 | 16 | 5 | 5 | 8 | 5 | 6 | 9 | **70** |
| 1 | Tea (principally purple tea) | 15 | 10 | 8 | 7 | 8 | 8 | 5 | 8 | **69** |
| 11 | Processed fish | 17 | 13 | 6 | 6 | 8 | 8 | 5 | 6 | **69** |
| 21 | Wooden furniture | 14 | 14 | 6 | 6 | 8 | 7 | 6 | 8 | **69** |
| 17 | Woven fabric | 16 | 12 | 5 | 8 | 8 | 8 | 5 | 6 | **68** |
| 30 | Soda ash | 15 | 15 | 5 | 5 | 8 | 5 | 6 | 9 | **68** |
| 34 | Coal | 13 | 16 | 4 | 4 | 9 | 4 | 8 | 9 | **67** |
| 13 | Beer | 15 | 12 | 6 | 6 | 8 | 6 | 5 | 8 | **66** |
| 16 | Sugar and sugar confectionery | 14 | 14 | 6 | 6 | 6 | 7 | 5 | 8 | **66** |
| 9 | Processed leather products | 15 | 14 | 5 | 6 | 6 | 8 | 5 | 6 | **65** |
| 32 | Carbon dioxide | 14 | 14 | 5 | 5 | 8 | 5 | 5 | 8 | **64** |
| 18 | Footwear and Gaiters | 14 | 12 | 5 | 6 | 6 | 8 | 5 | 6 | **62** |
| 26 | Lead and articles thereof | 14 | 15 | 6 | 4 | 5 | 6 | 5 | 6 | **61** |
| 27 | Zinc and articles thereof | 14 | 14 | 5 | 5 | 5 | 6 | 5 | 6 | **60** |
| 14 | Alcoholic spirits | 14 | 10 | 4 | 5 | 8 | 6 | 5 | 6 | **58** |

*Source: JICA Study Team/Panafcon*

Based on the result above as well as further analysis explained below, four VCs were selected for the detailed survey, namely:

- Flower and plantings
- Titanium

- Processed fruits
- Iron and steel products

The results show outstanding score of Milled Maize. On the other hand, the products below Niobium line up with small differences. First, the products with rather abundant documentation were excluded (maize and coffee.) In addition, Milled Maize was also dropped regarding the objectives of the Survey which prefers exportable products and Kenya as a net importer of Maize. As Niobium and Titanium both are from the Coast and will not travel long distance along NEC despite the high score. Therefore, Titanium with expected investment near future was selected. Looking at the geographical distribution of its production, Processed Fruits are further selected apart from the Titanium and Flowers and Plantings. Final product selected was Iron and Steel. The product is selected though the material is basically imported and processed locally. As seen in the beginning of the section, the type of manufacturing which use imported raw materials or semi-finished good and exported heavily into the regional market is expected to be an important driver of industrial development.

### 4.10.4 Way forward

The detailed value-chain survey has been commenced in July and to be completed in August. Based on the estimation of the market size for the products are also expected to be completed by August.

## *4.11 Result of Marketing and Value Chain Survey in Uganda*

### 4.11.1 Outline of the Survey

The Survey in Uganda is planned and commenced the implementation under the same objectives as listed:

- To identify key commodities which are expected to grow as major export commodities of the areas along the corridors. The commodities should be export-oriented with the potentials of higher value addition in Kenya along the area of the corridor.
- To estimate the size of export markets of selected commodities produced in Kenya.
- To identify critical issues regarding logistics for the development of the value chain (VCs) of the commodities

The Survey comprises the following 5 components which is the same as in Kenya:

- Development of the long-list of commodities
- Selection of the 4 commodities for VC analysis
- End-market analysis
- Detailed VC survey and analysis

### 4.11.2 Long List of Potential Commodities

Using the 4-digit HS, products are sorted according to the evaluation of the following points:

| Criteria | Notes |
|---|---|
| Currently available production capacity in Uganda and its estimated level of feasible expansion | |
| Market availability of products in the regional and global market) | Export performance in EU, Middle East, Southeast Asia, East Asia and US market. The results are rated according to the three categories, namely champion (growth rate of Ugandan export exceeds that of the overseas market), underachiever (growth rate of Ugandan products is positive, but under the degree of the growth of overseas market), and losers. |
| Accordance with Uganda's economic development policy | Checked the accordance with the priority of the National Development Policy and National Export Strategy. |

The export trend of goods was analyzed data obtained from UBOS, the Customs (URA), and the data of informal border trade from the Bank of Uganda and UBOS. The result are as shown in the Table below.

**Table 4.11.1: Selection of Long-Listed Products**

| Supply Capacity Rank | Commodity Description | Performance Category in the Six Markets | | | | | | Champion / Underachiever | Gov't priority | Selection Rank |
|---|---|---|---|---|---|---|---|---|---|---|
| | | (1) | (2) | (3) | (4) | (5) | (6) | | | |
| | | Northern Corridor | North South Corridor | EU | Gulf Countries | South East Asia | USA | Market rank (X/6) | Y/N | |
| **1** | Coffee | Under-achiever | - | Champion | Champion | Champion | Champion | 5 | Yes | **1** |
| **3** | Fish | - | - | Achiever | Under-achiever | Under-achiever | Under-achiever | 3 | Yes | **2** |
| **11** | Dried Leguminous Vegetables | Under-achiever | Achiever | - | Achiever | Champion | Under-achiever | 3 | Yes | **3** |
| **13** | Leather of \bovine or equine | Under-achiever | - | Champion | Loser | Champion | - | 3 | Yes | **4** |
| **4** | Cement | Champion | Under-achiever | - | - | - | - | 2 | Yes | **5** |
| **6** | Cane or beet Sugar | Under-achiever | Under-achiever | - | - | - | - | 2 | Yes | **6** |
| **7** | Maize | Under-achiever | Champion | - | - | - | - | 2 | Yes | **7** |
| **8** | Tobacco | Champion | Loser | Loser | Champion | - | Loser | 2 | No | **8** |
| **9** | Live plants, Cuttings and Slips | - | - | Champion | Achiever | - | Champion | 2 | No | **9** |
| **14** | Palm oil and its fractions | Under-achiever | Champion | - | - | - | - | 2 | Yes | **10** |
| **17** | Wheat or melsin flour | Champion | - | - | Champion | - | - | 2 | No | **11** |
| **18** | Iron/steel bars and rods | Under-achiever | Underachiever | - | - | - | - | 2 | Yes | **12** |
| **12** | Rolled iron or non-alloyed Steel | Under-achiever | Champion | - | - | - | - | 2 | Yes | **13** |
| **2** | Petroleum Oils | - | Champion | - | - | - | - | 1 | Yes | **14** |
| **5** | Tea | Under-achiever | - | - | - | - | - | 1 | Yes | **15** |
| **10** | Animals, vegetable fats and oils | Under-achiever | Loser | - | - | - | - | 1 | Yes | **16** |
| **15** | Soap and detergents | Underachiever | - | - | - | - | - | 1 | No | **17** |
| **19** | Cereal Flours excluding wheat or melsin | Under-achiever | Loser | - | - | - | - | 1 | Yes | **18** |
| **16** | Grain Sorghum | - | - | - | - | - | - | 0 | No | **19** |

## 4.11.3 Selection of 4 VCs

The criteria for selecting 4 VCs for the further detailed survey were set as listed below:

| Criteria | Notes |
|---|---|
| Growth potential of export | Rating according to the Revealed Comparative Advantage (RCA) |
| Possibility in leading overall Uganda's economic growth | Possibility of larger value addition, investment demand and the trend |
| Easiness of access to the export market | Current situation on the free trade agreement in the regional economic integration, availability of preferential access to the specific market |
| Expected positive impact on the logistics system | Possibility in modal shift |

Based on the analysis, 7 products are pre-selected based. The ranks of 7 products are summarized in the Table.

**Table 4.11.2: Short-List of VCs**

| Commodity | | Growth Potential | VA | Market Access | Impact Shift | Overall |
|---|---|---|---|---|---|---|
| | | Rank | Rank | Rank | Rank | RANK |
| 1 | Cement | 2 | 2 | 7 | 1 | 1 |
| 2 | Iron and Steel articles | 1 | 1 | 6 | 6 | 2 |
| 3 | Cereals | 3 | 5 | 4 | 2 | 3 |
| 4 | Coffee | 2 | 10 | 4 | 3 | 4 |
| 5 | Fish | 5 | 3 | 1 | 11 | 4 |

| Commodity | | Growth Potential | VA | Market Access | Impact Shift | Overall |
|---|---|---|---|---|---|---|
| | | Rank | Rank | Rank | Rank | RANK |
| 6 | Livestock and product | 6 | 5 | 3 | 8 | 6 |
| 7 | Petroleum Oils | 4 | 9 | 7 | 4 | 6 |

After the ranking, SWOT analysis was done to check the further market potentials against the threats and the degree of strength against weakness to examine the competitiveness.

The Table below summarizes the final evaluation of the products which selected Iron and Steel Products, Petroleum, Cereal Grains, and Livestock and Products (including leather).

**Table 4.11.3: Summary of the Selection of 4 VCs**

| Indicators | Commodity Scores and Ranking | | | | | | |
|---|---|---|---|---|---|---|---|
| | Cement | Cereal grains | Coffee | Petroleum oils | Fish | Iron/steel products | Livestock & products |
| Existing market demand | 3 | 5 | 3 | 5 | 3 | 5 | 3 |
| Current market growth | 1 | 3 | 1 | 3 | 1 | 3 | 1 |
| Competitive advantage | 3 | 5 | 3 | 3 | 1 | 3 | 3 |
| Existence of market access schemes | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Potential for larger value addition | 1 | 3 | 3 | 3 | 3 | 5 | 5 |
| Public-private investment demand | 1 | 1 | 1 | 5 | 1 | 5 | 1 |
| Technical feasibility of commodity development | 1 | 3 | 5 | 5 | 1 | 5 | 5 |
| Movement of goods via road or railway | 5 | 5 | 3 | 3 | 1 | 5 | 3 |
| **Total Score** | 18 | 28 | 22 | 30 | 14 | 34 | 24 |
| **Rank** | **6** | **3** | **5** | **2** | **7** | **1** | **4** |

Based on the result, four product VC were selected, namely:

- Iron/steel products
- Petrol oils
- Cereal
- Livestock and products

The result was further shared and discussed at the stakeholder workshop held on 18th June in Kampala. Relevant stakeholders were invited from the line ministries and agencies such as the Ministry of Works and Transport, Ministry of Trade, Industry and Cooperatives, Ministry of Energy, Export Promotion Board, Uganda Investment Authority, and private sector (the National Chamber of Commerce and Industry) as well as development partners working for the Northern Economic Corridor (EU and World Bank). Some comments were raised from the participants on such issues attention to the tripartite FTA and grouping of the products. Based on the comment, the selection of 4 products are finalized and agreed with the MoWT,

## 4.11.4 Way forward

The end-market analysis has been commenced and the preliminary result is under being scrutinized. The major component of the work is to identify the existing and potential buyers in the final market. The result shall be reported upon the completion

Subsequently, the detailed value chain survey and estimation of the export market size will be undertaken and completed by the end of August for the reporting.

# 5 Review of Transport and Logistic Infrastructure

## 5.1 Roads along Northern Economic Corridor in Kenya

### 5.1.1 Overview

Roads are the most fundamental infrastructural developments along the Northern Economic Corridor. In fact, cargo logistics from Mombasa Port to seven countries namely Kenya, Uganda, Rwanda, Burundi, D.R.Congo, South Sudan and Tanzania, rely significantly on road transport by heavy trucks and trailers. The dominant share of road transport is said to be more than 95% . In addition, the road network has a great role of integrating multi transport infrastructures as the link between multiple modes such as railway, airway, waterway and pipeline. The last mile of the cargo trip is usually operated by road transport. Road length for the five major routes on the Northern Corridor is 4,830km long.

In Kenya, there are increasing traffic demands and bottlenecks of road traffic in urban areas of Mombasa, Nairobi, Nakuru, Eldoret,Kisumu and those surrounding areas as well as around the borders, Mombasa Port and railway stations. On the other hand, truck roads with high capacity are very limited. In order to reduce the bottlenecks, it is necessary to expand capacity of the network by construction of expressway, bypass, ring road, over/under pass, adding climbing lanes and conducting traffic demand management. Reducing traffic congestion at the bottlenecks and traffic accidents at black spots on the Northern Corridor road network can be seen as one of major issues.

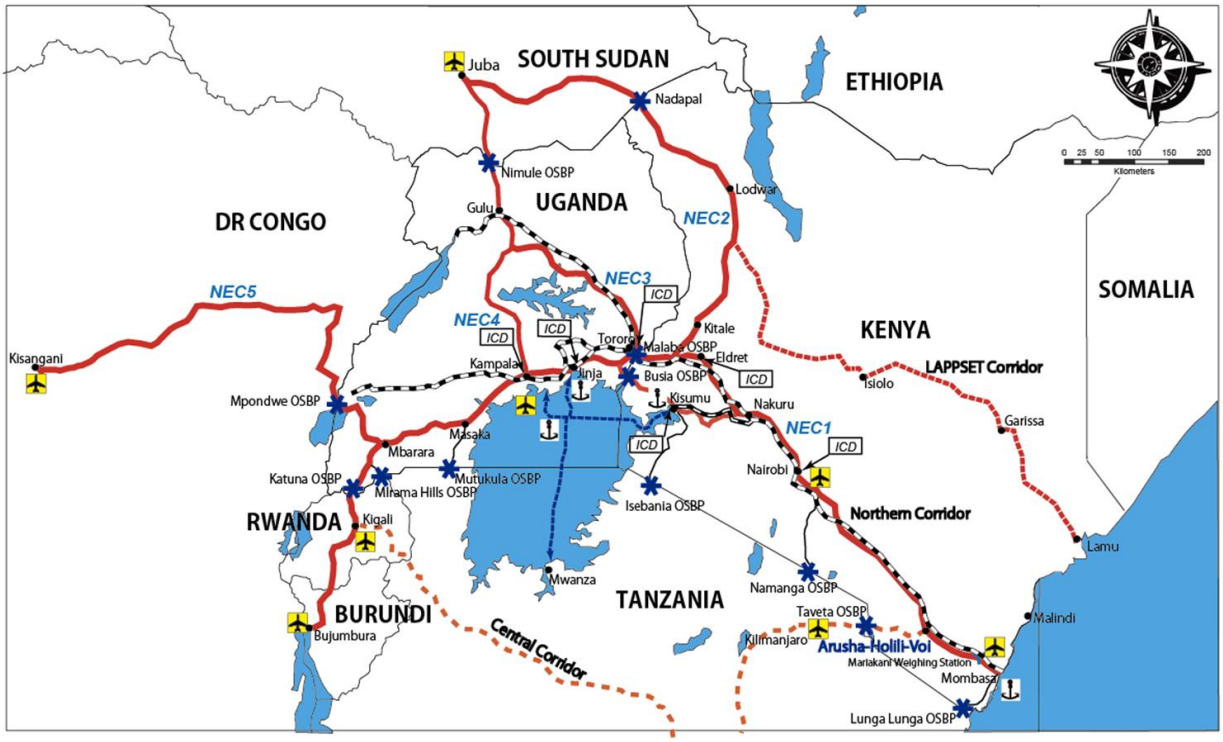
Heavy trucks cause the road surface to deteriorate in relatively short periods. Therefore road network should be continuously improved in order to increase traffic demand and well maintained for safe and efficient logistic transport as well as passenger transport. In Kenya, the road's surface on the main route is generally good although many pot holes are seen in Mombasa County during the survey conducted by JICA Study team in July, 2015.

Based on the above views, existing and new plans through the consideration and opinions among related organizations, the Master plan of the Northern Economic Corridor for road sector could provide solutions for the related problems such as congestion and accidents of road traffic in Kenya. In 2030 the main route on Mombasa- Nairobi-Nakuru-Eldoret-Malaba with a distance of 1,000km approximately could be suggested as a high capacity and high speed logistics highway by expansion of existing roads or Highway- Bypass construction.

**Table 5.1.1: List of Major Transport Infrastructures on Northern Economic Corridor**

| Infrastructure | Number | Distance | Notes |
|---|---|---|---|
| Road | 5 routes | 4,830km | Including 4 brunch lines<br>Main line is the route on Mombasa-Nairobi-Kampala-Kigali-Bujumbura with a distance of 1,900km |
| Railway | 6 routes | 3,919km | Including two new lines<br>Not including Lake transport line |
| Port | 4 ports | | Including 3 ports on the Victoria lake<br>(Port Bell, Jinja, Kisumu) |
| Airport | 7 airports | | |
| Border Post | 8 border posts | | Kenya, Uganda, Rwanda, Burundi, DRC, South Sudan |
| Inland Depots | 6 depots | | Kenya, Uganda |
| Pipeline | 3 routes | 1,221km | Mombasa-Nairobi-Eldoret/Kisumu |

*Source: JICA Study Team*



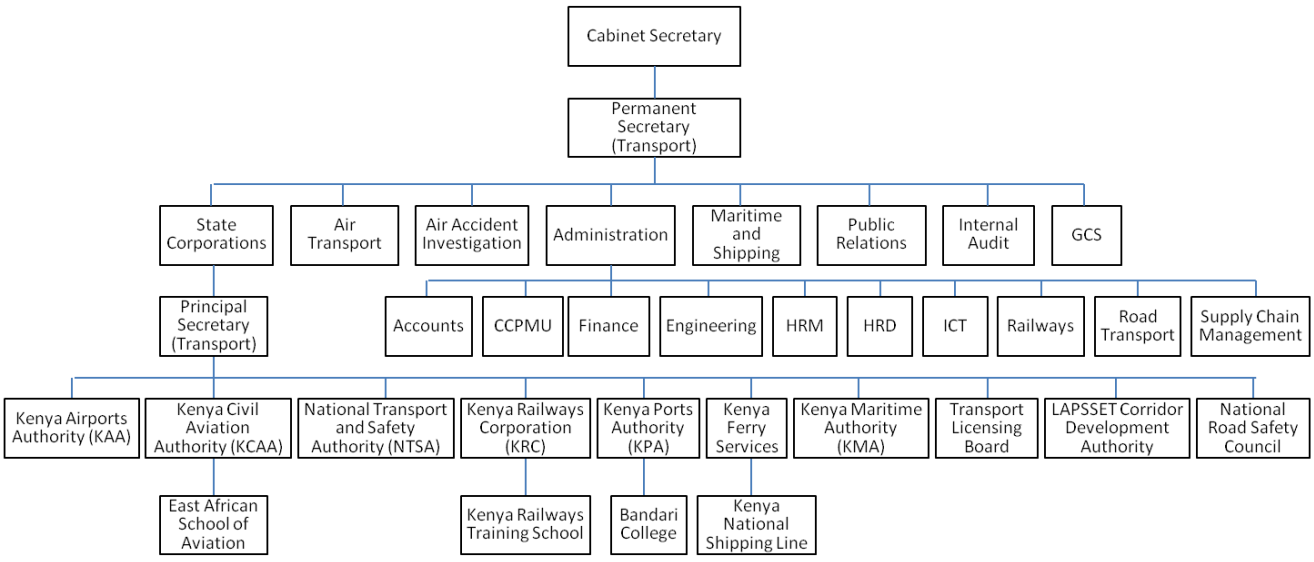

*Source: JICA Study Team*

**Figure 5.1.1: Map of Major Transport Infrastructures on Northern Economic Corridor**

## 5.1.2 Review of Policy, Legal Framework and Administrative Structure

### (1) MoTI

The Ministry of Transport and Infrastructure is a successor to the Ministries of Transport and Roads in Kenya. It has two State Departments: Transport Services and Infrastructure. A key task of this Ministry is to position Kenya as the logistics hub of the East African region by creating a modern and efficient transport system for goods and services within the country and also with other countries in the region. Organization structure is shown in Figure 5.1.2.




*Source: Ministry of Transport and Infrastructure, Kenya*

**Figure 5.1.2: Organizational Structure of Ministry of Transport and Infrastructure, Kenya**

The following institutions related to road administration fall under the Ministry of Transort and Infrastructure.

1) Kenya Roads Board

KRB was established to control the Road Maintenance Levy Fund. The main objective of KRB is to oversee the road network in Kenya and thereby coordinate its development, rehabilitation and maintenance and to be the principal adviser to the Government on all matters related thereto.

2) Kenya National Highways Authority (KeNHA)

An autonomous road agency, responsible for the management, development, rehabilitation and maintenance of international trunk roads linking centres of international importance and crossing international boundaries or terminating at international ports(Class A road), national trunk roads linking internationally important centres (Class B roads), and primarily roads linking provicially important centres to each other or two higher-classroads (Class C roads).

3) Kenya Urban Roads Authority (KURA)

The mandate of KURA is the Management, Development, Rehabilitation and Maintenance of all public roads in the cities and municipalities in Kenya except where those roads are national roads.

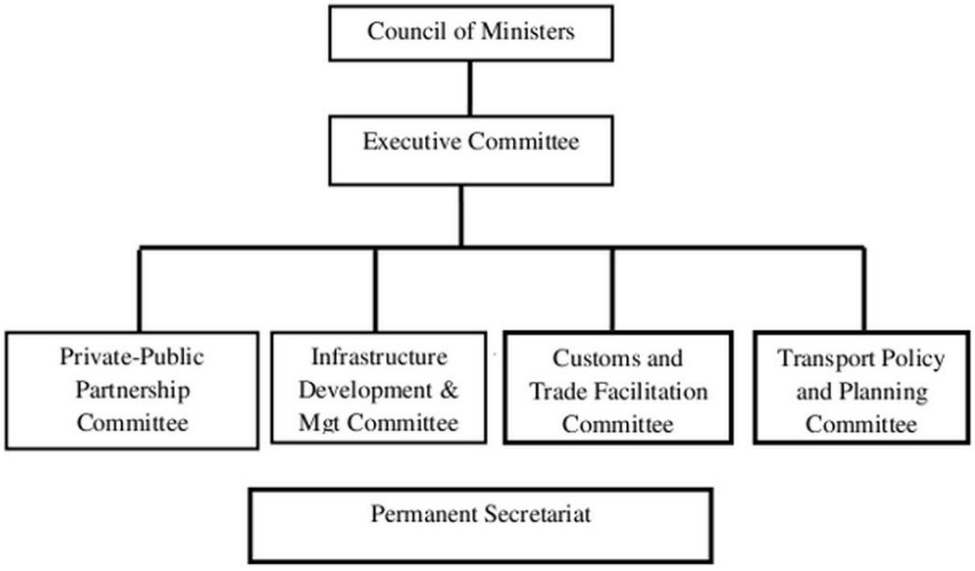
4) Kenya Rural Roads of Highways and Building Technology

KeRRA is a State Corporation whose mandate is to offer guidance in the construction, maintenance and management of the rural road network in the country. KeRRA is responsible for the management, development, rehabilitation and maintenance of rural roads (D, E & Others).

### (2) NCTTCA

There are other organizations related to the Northern Corridor Projects is Northern Corridor Transit and Transport Coordination Authority (NCTTCA). NCTTCA was formed 6 member countries, which are Kenya, Uganda, Rwanda, Burundi, DR Congo and South Sudan and established under the legal framework of NCTTCA to co-ordinate the implementation of the Agreement and to carry out decisions and resolutions reached by policy organs of the Authority. There are 11 protocols such as road, railway, inland waterways, custom, port, etc.

The Authority's three key organs comprise the Council of Ministers, the Executive Board and the Executive Secretariat. In addition there are Specialized Technical Committees as illustrated in Figure 5.1.3.




*Source: NCTTCA*

**Figure 5.1.3: Organizational Structure of NCTTCA**

## 5.1.3 Existing Inventory and Maintenance Condition

There are five major roads on the Northern Economic Corridor as shown in Table 5.1.2. The main route called NEC1 has the longest distance of 1,900 km connecting Mombasa Port with four nations' capital cities. Four branch routes connecting to DRC and South Sudan have a total distance of 2,930km.

In Kenya, there are increasing traffic demands and bottlenecks of road traffic in the urban areas of Mombasa, Nairobi, Nakuru, Eldoret,Kisumu and those surrounding areas as well as around the borders, Mombasa Port and railway stations. On the other hand, truck roads with high capacity are very limited. Road sections with four lane are limited in Mombasa, Nairobi and Nakuru.

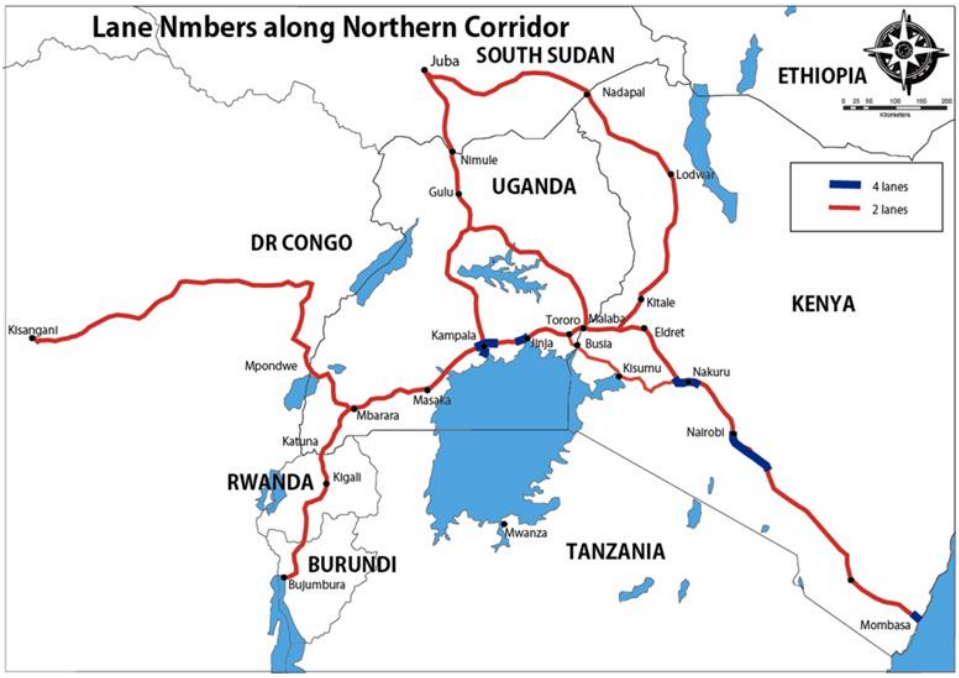
Heavy trucks cause the road surface to deteriorate in relatively short periods. The road condition with a good surface can be said to be at a satisfactory level with less than 4 of IRI which is International Roughness Index. Kenya road's surface on the main route is generally good although many pot holes are seen in Mombasa County during the survey conducted by JICA Study team in July, 2015. Therefore road network should be continuously improved for increasing traffic demand and well maintained for safe and efficient logistic transport as well as passenger transport.

**Table 5.1.2: Existing Five Major Roads on the Northern Corridor**

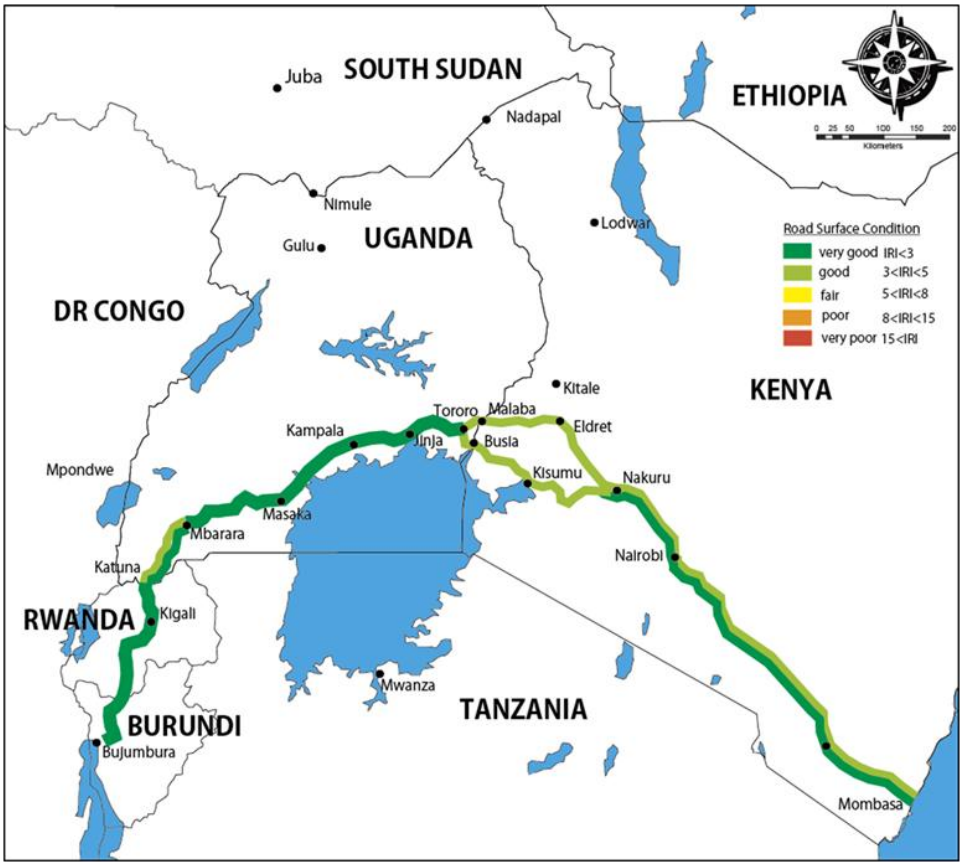
| Roads | Major Towns on the Routes | Distance |
|---|---|---|
| NEC 1: Northern Corridor | Mombasa-Nairobi-Malaba-Tororo-Kampala-Masaka-Mbarara-Kigali (Rwanda)-Bujumbura (Burundi) | Approx. 1,990km |
| NEC 2: Northern Corridor Branch Line (Access to South Soudan) | Eldoret-Nadapal-Juba (South Soudan) | Approx. 920km |
| NEC 3: Northern Corridor Branch Line (Access to South Soudan via Tororo and Gulu) | Tororo-Gulu-Nimule-Juba (South Soudan) | Approx. 690km |
| NEC 4: Northern Corridor Branch Line (Access to South Soudan via Kampala and Gulu) | Kampala-Gulu-[Nimule-Juba (South Soudan)] | Approx. 270km |
| NEC 5: Northern Corridor Branch Line (Access to DR Congo) | Mbarara-Mpondwe-Kisangani (DR Congo) | Approx. 1,050km |
| Total of Five Routes | | Approx. km |

*Source: JICA Study Team*


**Photo at Malaba Border in Kenya, on 16th of July 2015 by JICA Study Team**




(1) Number of Lanes



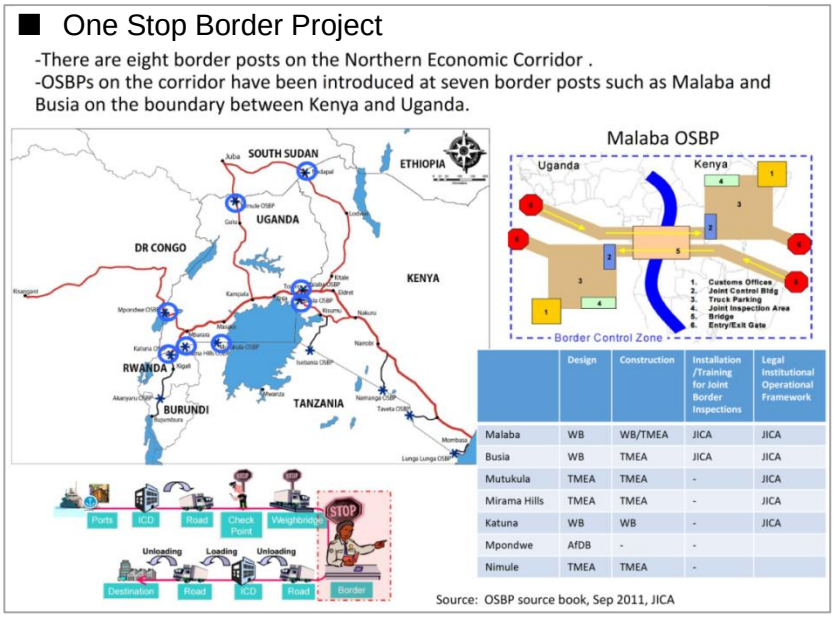

(2) Road Surface Condition

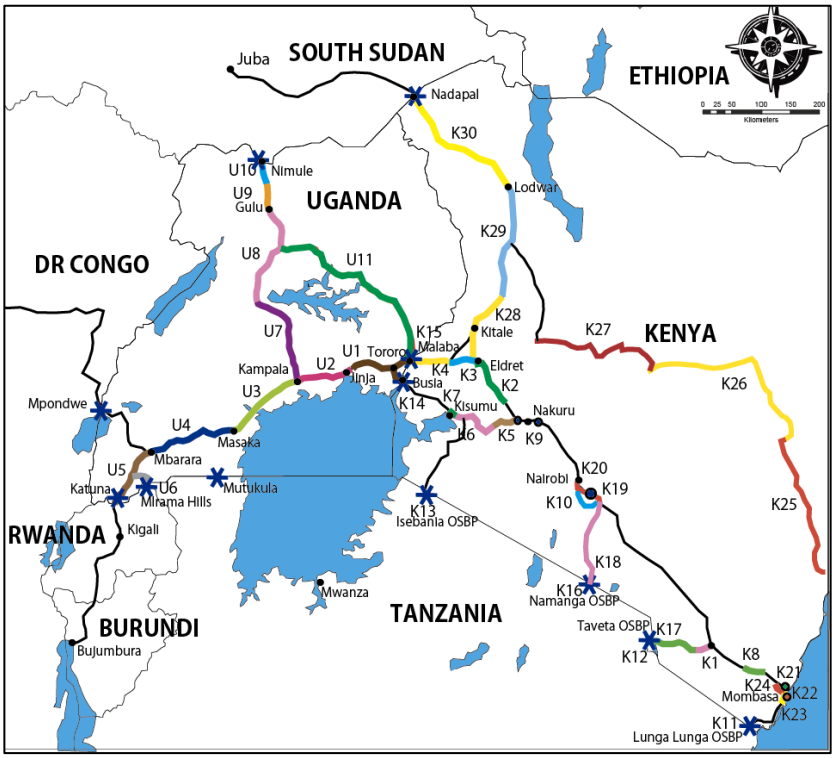
*The Results of IRI survey by using DRIMS (VIMS) by KeNHA from Feb 01 to 14, 2015*
**RI: International Roughness Index*
***DRIMS: Dynamic Response Intelligent Monitoring System*
*Source: JICA Study Team*

**Figure 5.1.4: Existing Road Condition**

## 5.1.4 Review of On-going and Planned Infrastructure Projects

There are 30 road projects in Kenya related to the Northern Economic Corridor. In Kenya, 5 sections in addition to 5 OSBPs have been completed. Congested sections in Nairobi and Mombasa on the main route are on going. Still in Kenya, from the view of road safety improvement, 20 roadside stations will be constructed by PPP. The other information about new road planning and construction projects will follow.




| Ongoing Projects in KENYA | | | |
|---|---|---|---|
| No. | Section | Financer | Status |
| K1 | Voi - Mwatate (A23) - Wundanyi | GoK | Completed |
| K2 | Timboroa - Eldoret (A104) | AfDB/GoK | Completed |
| K3 | Eldoret - Webuye (A104) | EU/GoK | On-going |
| K4 | Webuye - Malaba (A104) | EU/GoK | On-going |
| K5 | Mau Summit - Kericho(B1/A1) | WB/GoK | Completed |
| K6 | Kericho - Nyamasaria (A1) | WB/GoK | Completed |
| K7 | Nyamasaria - Kisumu Kisian (incl. Kisumu Bypass) | WB/GoK | Completed |
| K8 | Maji ya - Chumvi - Bachuma Gate | WB/GoK | On-going |
| K9 | 3 interchange on A104, Nakuru - Njoro Turnoff, Nakuru - Nyahururu Turnoff, mau Summit Kericho Turnoff | WB/GoK | On-going |
| K10 | Southern Bypass | EXIM/GoK | On-going |
| K11 | OSBP at Lunga Lunga | WB/GoK | Completed |
| K12 | OSBP at Taveta | WB/GoK | Completed |
| K13 | OSBP at Isebania | WB/GoK | Completed |
| K14 | OSBP at Busia | WB/GoK | Completed |
| K15 | OSBP at Malaba | WB/GoK | Completed |
| K16 | Athi River - Namanga OSBP | AfDB/GoK | On-going |
| K17 | Mwatate - Taveta | AfDB/GoK | On-going |
| K18 | NUTRIP* - A104 - JKIA junction - Southern Bypass junction | | On-going |
| K19 | NUTRIP - Souhern Bypass junction - James Gichuru road junction | | On-going |
| K20 | NUTRIP - James Gichuru junction - Rironi | | On-going |
| K21 | MPARD** Package 1 Miritini - Kipevu | | On-going |
| K22 | MPARD Package 2 Mwache - Dongo Kundu | | On-going |
| K23 | MPARD Package 3 Dongo Kundu - Kibundani | | On-going |
| K24 | Jn. A109 - Moi Int. Airport MSA (C110) | | On-going |
| K25 | Lamu - Garissa | | On-going |
| K26 | Garissa - Isiolo | | On-going |
| K27 | Isiolo - Nginyang | | On-going |
| K28 | Lesseru - Kitale - Marichpass | WB/GoK | On-going |
| K29 | Marichpass - Lodwar | WB/GoK | On-going |
| K30 | Lodwar - Nandapar | WB/GoK | On-going |

*Source: JICA Study Team*

**Figure 5.1.5: Road Section of On-Going Projects**

## 5.1.5 Analysis of Current Gaps and Bottlenecks

*Roads are the most fundamental infrastructure for logistics in Kenya*. In fact, cargo logistics from Mombasa Port to seven countiries namely Kenya, Uganda, Rwanda, Burundi, D.R.Congo, South Sudan and Tanzania, rely significantly on road transport by heavy trucks and trailers. The dominant share of road transport is said to be more than 95%.

In the future, due to the standard gauged railway project and the pipeline project, road network has increasingly had a great role in integrating multi transport infrastructure as the link between multiple modes such as railway, airway, waterway and pipeline. The last mile of cargo trip is usually operated by road transport.

JICA Study team conducted a Traffic Survey, Data Collection Survey and Road Inventory in June between Kampala and Mombasa in July. However, full results of the Traffic Survey and Data Collection Survey have not finished yet so far. Therefore it is difficult to clearly state the existing traffic problems and their causes. However the following problems are found so far as the agenda which should be deal with:

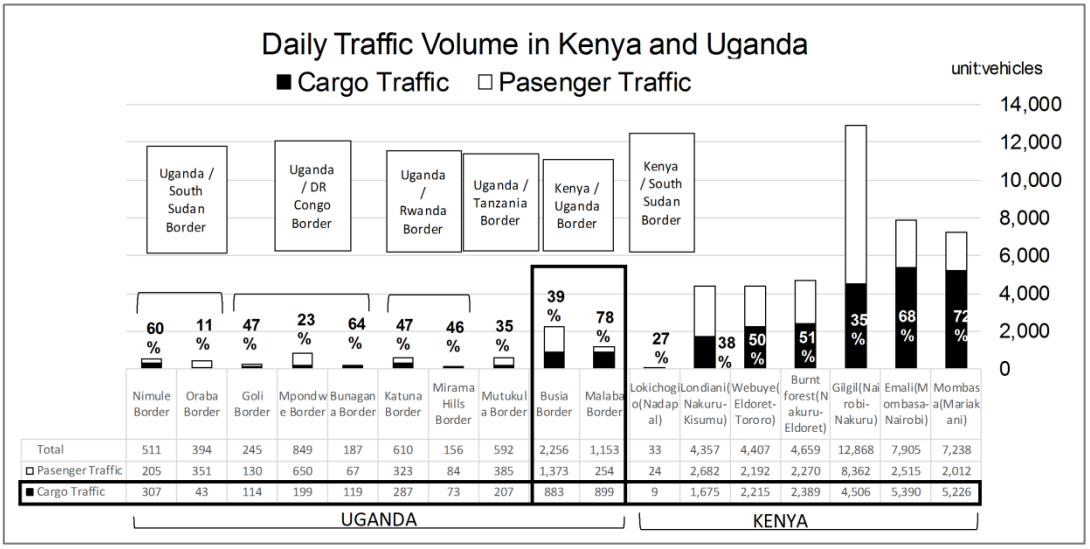
1) In Kenya generally speaking, road improvement has been progressing rapidly. In particular the section between Nairobi and Eldoret can be said to have good surface and well balanced capacity. Nevertheless, bottleneck spots on the road traffic can be seen in city centers of Mombasa, Nairobi, Nakuru, Eldret,Kisumu and those surrounding areas as well as around the borders of Malaba and Busia, Mombasa Port and railway stations. In the current situation very long queues of trucks and trailers (more than 2km) can be seen in both of Mombasa urban area and Malaba border's area during day time. Although One Stop Border Posts (OSBPs) have been introduced and contributed to time saving, trucks still take a lot of time around borders like Malaba and Busia. As an example shown in Figure 5.1.6, these bottlenecks are clearly generated by cargo traffic. In addition cargo traffic is estimated to increase by three times in 2035 based on Mombasa Port Master Plan Study. How to deal with such increasing demand is a crucial discussion point.

2) As far as weight bridges are concerned, in Mombasa a long queue is there on the weight bridge station. There are cargo traffic of more than 5,000 per day which is corresponding to 15,000 pcu per day. It means that cargo traffic has enough demand to make a traffic jam on a two-lane-capacity road. It seems difficult to deal with the volume by one carridge way.

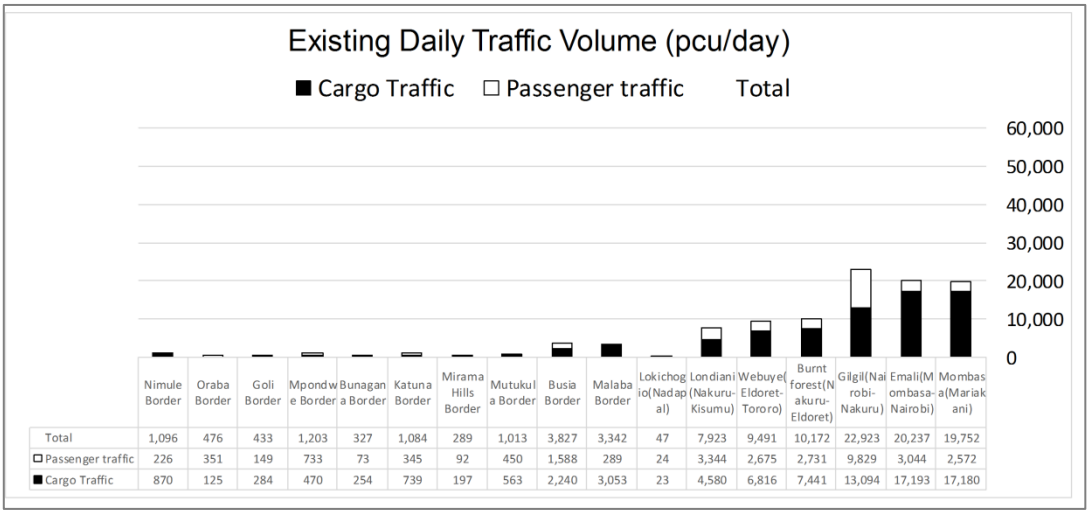
3) In Kenya, there is increasing cargo traffic demand. As a result, heavy trucks cause the road surface to deteriorate in relatively short periods. Therefore road network should be continuously improved for the increasing traffic demand and well maintained for safe and efficient logistic transport as well as passenger transport. Kenya road's surface on the main route is generaly good although many pot holes are seen in Mombasa County during the survey conducted by JICA Study team in July, 2015.

4) Traffic accidents at black spots on the Northern Corridor road network can be seen as one of the major issues. JICA Study Team came across and saw three traffic accidents a day between Nairobi and Mombasa. In order to reduce the black spots, it is necessary to point out the causes of traffic accidents. And for example, several measures such as additional climbing lanes, speed restriction schemes and pedestrian bridges are implemented.

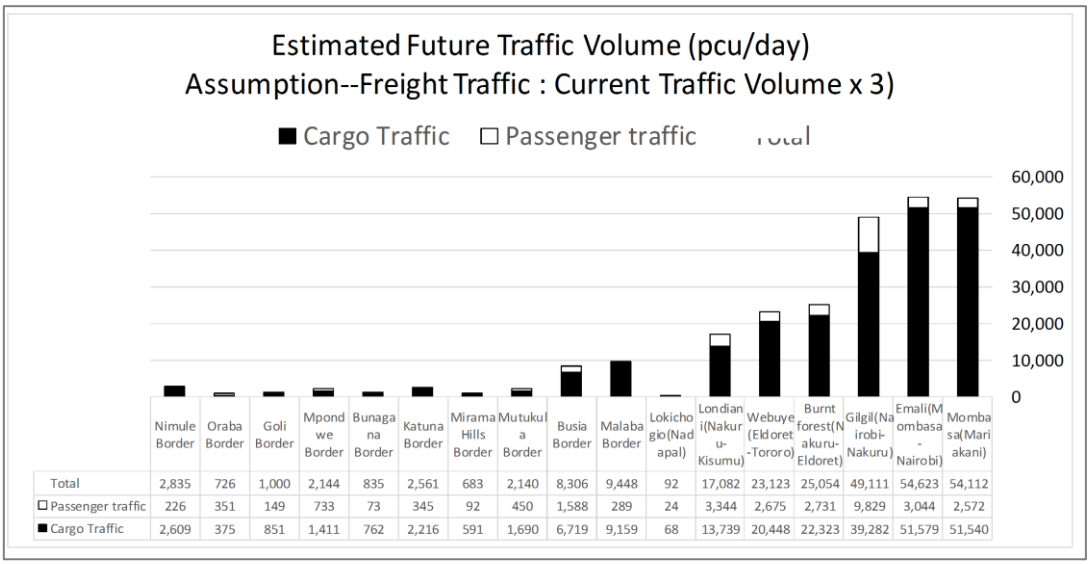
5) The basic view on the current cargo traffic movement is that too many trailers and heavy trucks require additional exclusive lanes for cargo traffic or new express way which is effectively used by cargo traffic demand. For example, in 2030 the main route on Mombasa- Nairobi-Nakuru-Eldret-Maraba with a distance of 1,000km approximately could be suggested as a high capacity and high speed logistics highway by expansion of existing roads or Highway- Bypass construction. The Master plan of the Northern Economic Corridor would tackle with the above arguments by showing solutions.




| | Nimule Border | Oraba Border | Goli Border | Mpondwe Border | Bunagana Border | Katuna Border | Mirama Hills Border | Mutukula Border | Busia Border | Malaba Border | Lokichogio(Nadapal) | Londiani(Nakuru-Kisumu) | Webuye(Eldoret-Tororo) | Burnt forest(Nakuru-Eldoret) | Gilgil(Nairobi-Nakuru) | Emali(Mombasa-Nairobi) | Mombasa(Mariakani) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total | 511 | 394 | 245 | 849 | 187 | 610 | 156 | 592 | 2,256 | 1,153 | 33 | 4,357 | 4,407 | 4,659 | 12,868 | 7,905 | 7,238 |
| Pasenger Traffic | 205 | 351 | 130 | 650 | 67 | 323 | 84 | 385 | 1,373 | 254 | 24 | 2,682 | 2,192 | 2,270 | 8,362 | 2,515 | 2,012 |
| Cargo Traffic | 307 | 43 | 114 | 199 | 119 | 287 | 73 | 207 | 883 | 899 | 9 | 1,675 | 2,215 | 2,389 | 4,506 | 5,390 | 5,226 |




| | Nimule Border | Oraba Border | Goli Border | Mpondwe Border | Bunaganda Border | Katuna Border | Mirama Hills Border | Mutukula Border | Busia Border | Malaba Border | Lokichogio(Nadapal) | Londiani(Nakuru-Kisumu) | Webuye(Eldoret-Tororo) | Burnt forest(Nakuru-Eldoret) | Gilgil(Nairobi-Nakuru) | Emali(Mombasa-Nairobi) | Mombasa(Mariakani) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total | 1,096 | 476 | 433 | 1,203 | 327 | 1,084 | 289 | 1,013 | 3,827 | 3,342 | 47 | 7,923 | 9,491 | 10,172 | 22,923 | 20,237 | 19,752 |
| Passenger traffic | 226 | 351 | 149 | 733 | 73 | 345 | 92 | 450 | 1,588 | 289 | 24 | 3,344 | 2,675 | 2,731 | 9,829 | 3,044 | 2,572 |
| Cargo Traffic | 870 | 125 | 284 | 470 | 254 | 739 | 197 | 563 | 2,240 | 3,053 | 23 | 4,580 | 6,816 | 7,441 | 13,094 | 17,193 | 17,180 |




| | Nimule Border | Oraba Border | Goli Border | Mpondwe Border | Bunaganda Border | Katuna Border | Mirama Hills Border | Mutukula Border | Busia Border | Malaba Border | Lokichogio(Nadapal) | Londiani(Nakuru-Kisumu) | Webuye(Eldoret-Tororo) | Burnt forest(Nakuru-Eldoret) | Gilgil(Nairobi-Nakuru) | Emali(Mombasa-Nairobi) | Mombasa(Mariakani) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total | 2,835 | 726 | 1,000 | 2,144 | 835 | 2,561 | 683 | 2,140 | 8,306 | 9,448 | 92 | 17,082 | 23,123 | 25,054 | 49,111 | 54,623 | 54,112 |
| Passenger traffic | 226 | 351 | 149 | 733 | 73 | 345 | 92 | 450 | 1,588 | 289 | 24 | 3,344 | 2,675 | 2,731 | 9,829 | 3,044 | 2,572 |
| Cargo Traffic | 2,609 | 375 | 851 | 1,411 | 762 | 2,216 | 591 | 1,690 | 6,719 | 9,159 | 68 | 13,739 | 20,448 | 22,323 | 39,282 | 51,579 | 51,540 |

**Figure 5.1.6: Existing Daily Traffic Volumes and Future Traffic Volumes Assumed Increase of Cargo by 3 Times**

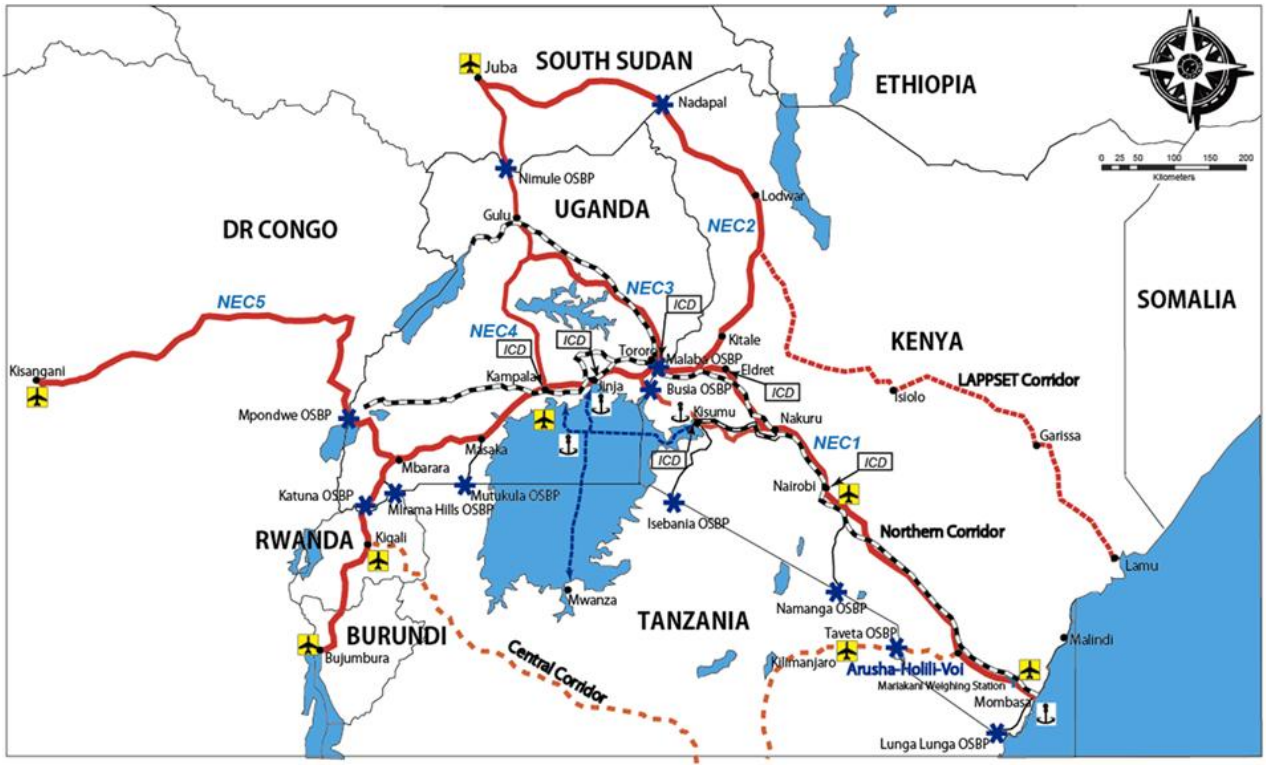
# *5.2 Roads along Northern Economic Corridor in Uganda*

## 5.2.1 Overview

In Uganda, there are increasing traffic demands and bottlenecks on road traffic in the urban areas of Kampala, Entebbe, Jinja and those surrounding areas as well as around the borders, Inland Container Depots (ICDs) and railway stations. On the other hand, truck roads with high capacity are very limited in Kampala and Jinja. In order to reduce the bottlenecks, it is necessary to expand the capacity of the network by construction of expressway, bypass, ring road, over/under pass, adding climbing lanes, relocation of ICDs and conducting traffic demand management. Redusing traffic congestion at the bottlenecks and traffic accidents at black spots on the Northern Corridor road network can be seen as one of the major issues.

Heavy trucks cause the road surface to deteriorate in relatively short periods. Therefore road network should be continuously improved for increasing traffic demand and well maintained for safe and efficient logistics transport as well as passenger transport. In Uganda, the road's surface on the main route is generally good although many under construction road sections such as Entebbe Road and Jinja Bridge were seen by JICA Study team in July, 2015.

Based on the above views, existing and new plans through the consideration and opinions among related organizations, the Master plan of the Northern Economic Corridor for road sector could provide solutions for the related problems such as congestion and accidents of road traffic in Uganda. In 2030 the main route on Malaba-Jinja-Kampala-Entebbe with a distance of 220km approximately could be suggested as a high capacity and high speed logistics highway by expansion of existing roads or Highway- Bypass construction.




*Source: JICA Study Team*

**Figure 5.2.1: Map of Major Transport Infrastructures on Northern Economic Corridor**

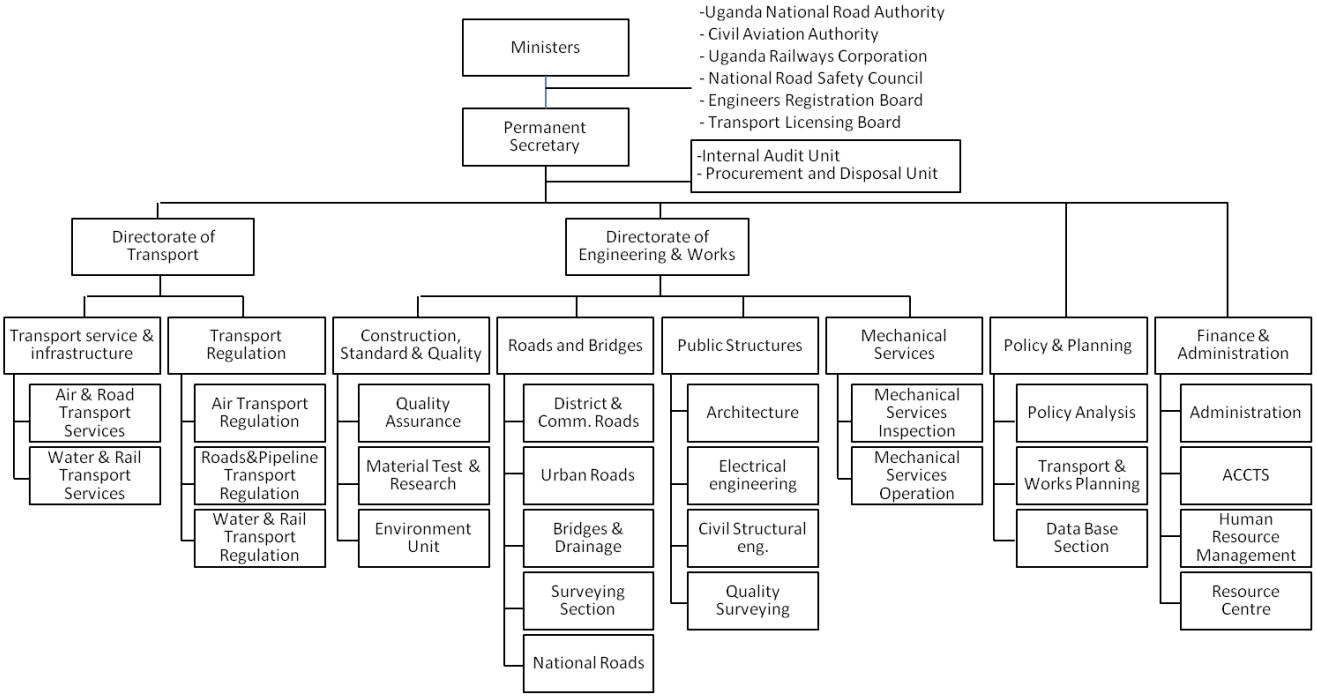
## 5.2.2 Review of Policy, Legal Framework and Administrative Structure

### (1) MoWT

The Ministry of Works and Transport (MoWT) is a Government Ministry responsible for planning, developing and maintaining transport infrastructure and engineering works in Uganda. The Ministry aims to have the highest possible level of an economic, efficient and effective transport and engineering works of infrastructure in the country. Ministry of Works, as it is commonly known, engages in the monitoring and provision of transport infrastructure support functions, regulatory functions and research activities related to roads, rail, water or air transport and other engineering works on behalf of Government of Uganda.

Ministry of Works is comprised of a number of Directorates which include: Transport, Engineering and Works; Finance and Administration. In addition, there are other bodies like National Roads Safety Council and Transport Licensing Board affiliated to this Ministry.

This Ministry deals with specialized transport and engineering works agencies like: Uganda National Roads Authority (UNRA), Civil Aviation Authority (CAA), and Uganda Road Fund (URF). The organizational structure of MoWT is shown in Figure 5.2.2.



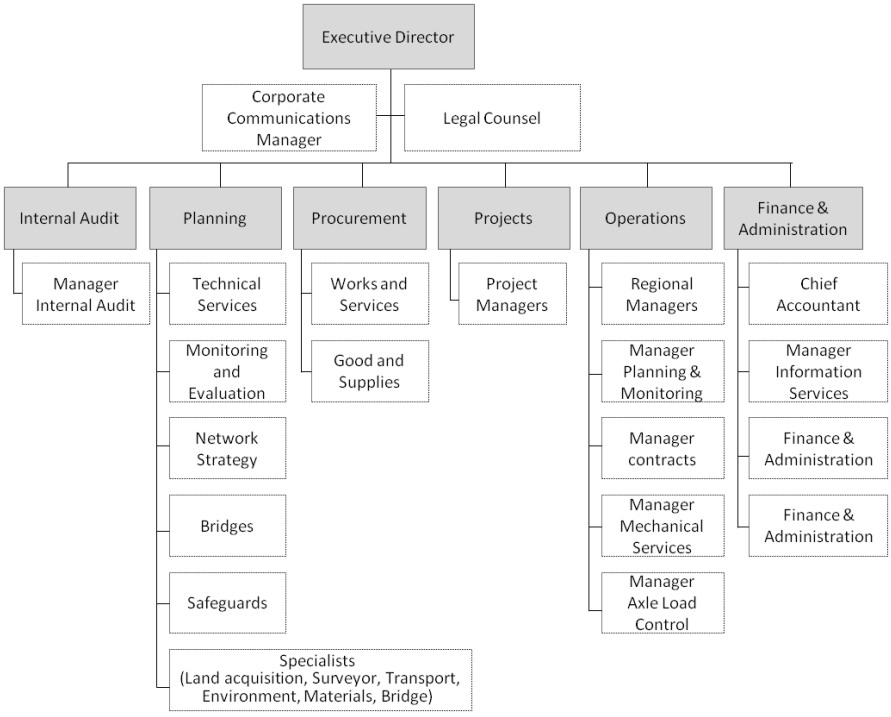

*Source: Ministry of Works and Transport (MoWT), Uganda*

**Figure 5.2.2: Organizational Structure of Ministry of Works and Transport, Uganda**

### (2) UNRA

The Uganda National Roads Authority (UNRA) was inaugurated on July 1, 2008. Its main task is to develop and maintain a national roads network that is responsive to the economic development needs of Uganda, to the safety of all road users, and to the environmental sustainability of the national roads corridors.
Organization chart of UNRA is shown in Figure 5.2.3.

The Authority is headed by an Executive Director (ED) appointed by the Minister of Works and Transport.
In the UNRA organizational structure, there are five Directorates, each headed by a Director who reports to the Executive Director.
The Directorates are: (i) Planning, (ii) Projects, (iii) Operations, (iv) Finance and Administration, and (v) Internal Audit.



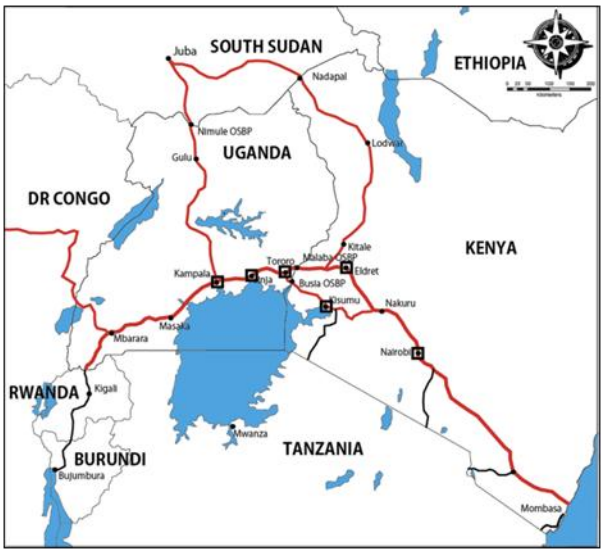

*Source: UNRA*

**Figure 5.2.3: Organizational Structure of UNRA**

## 5.2.3 Existing Inventory and Maintenance Condition

In Uganda, there are increasing traffic demands and bottlenecks of road traffic in the urban areas of Kampala, Entebbe, Jinja and those surrounding areas as well as around the borders, Inland Container Depots (ICDs) and railway stations. On the other hand, truck roads with high capacity are very limited in Kampala and Jinja.

In Uganda, the road's surface on the main route is generally good although many under construction road sections such as Entebbe Road and Jinja Bridge were seen by JICA Study team in July, 2015.

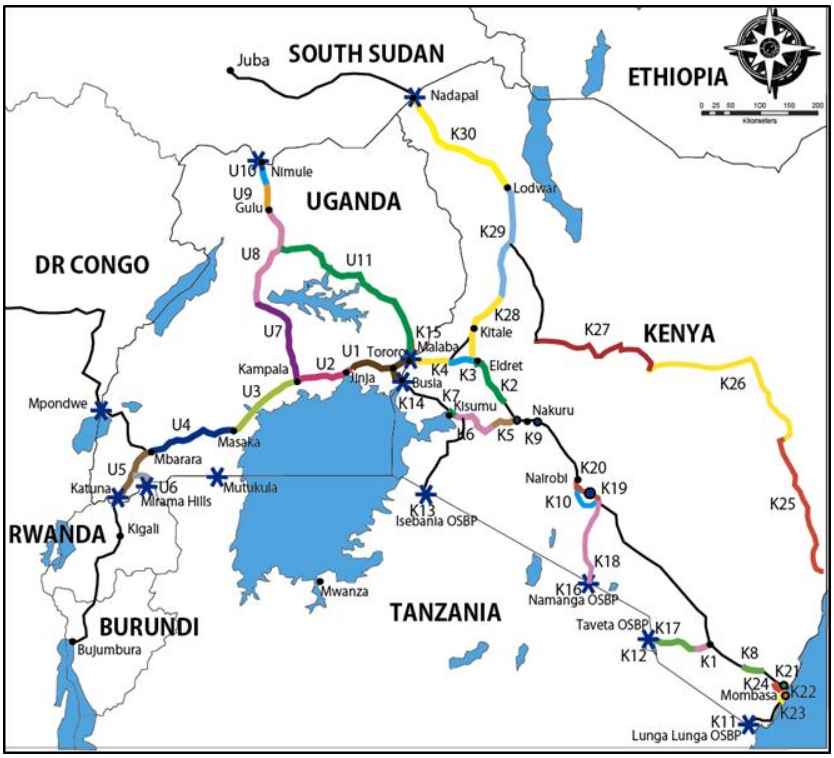



*Source: JICA Study Team*

**Figure 5.2.4: Location of ICDs**

## 5.2.4 Review of On-going and Planned Infrastructure Projects

There are 11 road projects in Uganda related to the Northern Economic Corridor. In Uganda, 5 sections have been completed. Two important sections of Kampala- Jinja and Kampala- Masaka on the main route are on going.




| Ongoing Projects in UGANDA | | | |
|---|---|---|---|
| No. | Section | Financer | Status |
| U1 | Iganga-Tororo-Malaba-Busia-Nammtbe | GoK | Completed |
| U2 | Kampala-Jinja Expressway | PPP | Planning |
| U3 | Kampala-Masaka | GoU/EU | Ongoing |
| U4 | Masaka-Mbarara | EU | Completed |
| U5 | Mbaraba-Ntungamo-Kabale-Border | EU | Ongoing |
| U6 | Ntungamo-Mirama Hills | GoU/TradeMark | Completed |
| U7 | Kampala-Kafu | GoU | Completed |
| U8 | Kafu-Kamudini-Gulu | GoU | Ongoing |
| U9 | Gulu-Atiak | WB | Ongoing |
| U10 | Atiak-Nimule | JICA | Ongoing |
| U11 | Tororo-Soroti-Kamudini | WB/GoU | Ongoing |

*Source: JICA Study Team*

**Figure 5.2.5: Road Section of Ongoing Projects**

## 5.2.5 Analysis of Current Gaps and Bottlenecks

***Roads are the most fundamental infrastructure for logistics in Uganda as same as Kenya.*** In the future, due to the standard gauged railway project and pipeline project, road network increasingly has a great role in integrating comprehensive multi transport infrastructures as the link between multiple modes such as railway, airway, waterway and pipeline. The last mile of the cargo trip is usually operated by road transport.

JICA Study team conducted Traffic Survey in June, Data Collection Survey and Road Inventory between Kampala and Mombasa in July. However, full results of Traffic Survey and Data Collection Survey have not been finished yet. Therefore it is difficult to clearly state the existing traffic problems and their causes. However the following problems are found so far as the agenda which should be dealt with:

1) In Uganda Bottleneck points of road traffic can be seen in city centers of Kampala, Entebbe and Jinja. However, it seems different from the case of Mombasa in that passenger car demand is greater than cargo truck demand. So, from the view of urban transport management such bottlenecks should be dealt with rather than cargo traffic management.

2) Bottleneck points at the borders on Malaba boundary of Kenya and around Inland Container Depots (ICDs) and railway cargo station in Kampala exist. Such seem to be the same causes as Kenya as Cargo traffic is the major cause for congestion. Parking spaces for cargo traffic are definitely necessary.

3) Reducing traffic congestion at the bottlenecks and traffic accidents at black spots on the Northern Corridor road network can be seen as one of the major issues. In order to improve the bottlenecks it is necessary to point out the causes of traffic congestion, and expand capacity of the network by new construction of expressway, bypass, ring road, over/under pass, adding climbing lanes and conducting traffic demand management. Effective measures should be selected for each bottleneck and implemented. For example, In 2030 the main route on Malaba-Jinja-Kampala-Entebbe with a distance of 220km approximately could be

suggested as a high capacity and high speed logistics highway by expansion of existing roads or Highway-Bypass construction.

## *5.3 Railway in Kenya and Uganda*

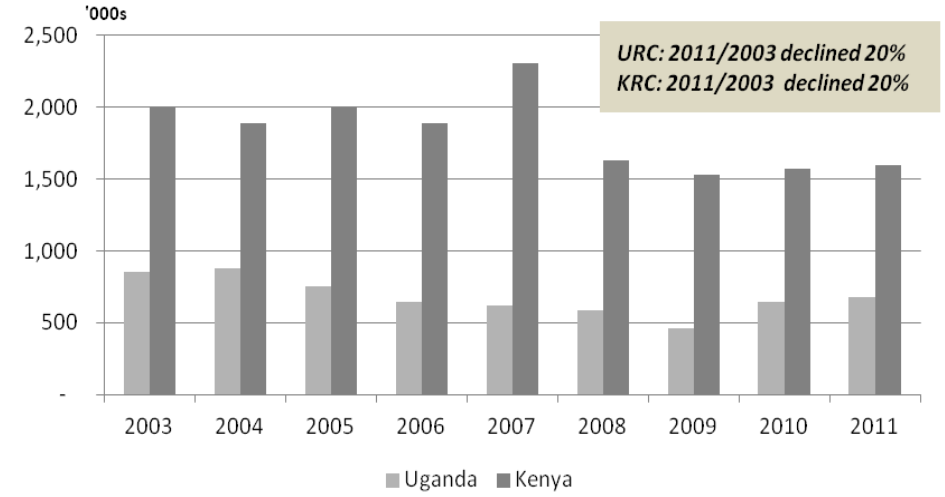
### 5.3.1 Overview

Kenya Railways Corporation (KRC) and Uganda Railways Corporation (URC) were established in 1978 and 1977, respectively, following the breakup of the East African Community.[32] KRC is the successor to the Kenyan portion of the East African Railways and Harbours Corporation (EAR&H) and URC is the successor to the Ugandan portion. EAR&H operated the rail systems of Kenya, Uganda and Tanzania until the 1977 breakup of the EAC.[33]

Construction of the railway line began in 1896 at Mombasa and reached Kisumu on Lake Victoria in 1901. In 1931 the railway was extended to Kampala, Uganda and in 1948 the line was extended again to Kasese, Uganda.[34]

At the time of their formation the task for both national railways was to construct, operate and maintain an integrated railway service coordinated with sea ports, inland waterways and inland ports.

KRC and URC have seen significant volume declines since their days as important elements of the transportation service sector in East Africa. As the trucking industry grew railway volume declined resulting in a negative spiral of deferred track and equipment maintenance.




*Source: EAC statistics*

**Figure 5.3.1: URC and KRC Tonnage 2003-2011**

To address the decline in railway cargo and the worsening condition of railway infrastructure, Kenya and Uganda announced in 2003 that they would jointly concession operation and maintenance of the railway to a private sector operator. On November 1, 2006, Rift Valley Railways, Ltd. (RVR) was awarded a concession to operate and maintain the Kenya and Uganda railway networks for 25 years.[35]

KRC and URC now focus on promoting national and metropolitan railway services, achieving modal balance (moving cargo from truck to rail) and overseeing the Concession. Both organizations have created departments to monitor RVR's performance and compliance with the Concession Agreement.

32 Wikipedia: https://en.wikipedia.org/wiki/East_African_Railways_and_Harbours_Corporation

33 The EAC was revived in 2000

34 Wikipedia: https://en.wikipedia.org/wiki/Uganda_Railway

35 KRC website

Other significant railway projects in progress:

- Construction of a standard gauge railway along the main route of the NEC with potential extensions along selected branch lines.
- Establishing commuter rail service to Kenya's major cities (Nairobi, Mombasa, Nakuru, Eldoret and Kisumu).
- Creating commuter transit services in the Kampala area (bus, rail, or combination).

### 5.3.2 Review of Policy, Legal Framework and Administrative Structure

Kenya's overall policy regarding railway transportation is to achieve a shift from truck transportation to railway transportation to reduce the cost of transportation for commercial and industrial enterprises, mitigate damage to roadways, and relieve congestion at the Port of Mombasa and other key transport nodes.

The government considers private-public-partnership (PPP) arrangements "key to infrastructure development"[36] primarily for their potential contribution to financing major infrastructure projects.

The RVR Concession addressed modal shift through volume requirements and includes stated investments obligations for infrastructure and rolling stock.

The standard gauge railway project is an example of using international borrowing to finance critical infrastructure projects. It is expected that an international tender will be conducted to select an operator or operators for the system. The operating contracts could include requirements to investment in track and equipment to maintain the quality of assets and railway service.

The policy objectives of Uganda in regard to railway transportation are:[37]

- To promote the role of railways in the economic and social development of Uganda.
- To ensure that Government retains ownership of all land comprising the railway infrastructure.
- To safeguard public interest by strengthening the capacity to regulate rail operations with reference to safety and environment standards, arbitrary discriminatory practices, anti-competitive behavior and abuse of monopoly power.
- To ensure that railway safety and environmental standards, practices and procedures are regularly updated and appropriate to the circumstances in Uganda.
- To promote cooperative governance between regulators to avoid duplication and ensure synergy in regulatory practices and procedures.
- To encourage the development of the rail network through the procurement of private investment in a manner that is transparent, prompt and participatory.
- To promote harmonization of regulatory standards, practices and procedures and cooperation among railway operators in the East African region, and
- To encourage seamless operation of transport services in support of multi-modal integration and national growth.

The RVR Concession is expected to support several of these policy objectives including promoting the role of railway in Uganda's economic and social development, securing private investment in the rail network, and supporting multi-modal integration.

The standard gauge railway project should support the same objectives and in addition it may serve to promote harmonization of regulatory standards and practices among rail operators in East Africa.

36 Kenya says private-public-partnerships are 'key to infrastructure development,' Out-Law.com, January 23, 2015 http://www.out-law.com/en/articles/2015/january/kenya-says-private-public-partnerships-are-key-to-infrastructure-development/

37 Comments of Uganda Railways Corporation CEO Emmanuel Iyamulemye, The Independent, October 27, 2009 http://www.independent.co.ug/supplement/109-the-5th-annual-joint-transport-sector-review/1998-government-to-galvanise-the-railway-sub-sector

The current institutional and legal frameworks supporting these efforts are described here.

Kenya

**The Kenya Railways Act (Railways Act):**

- Originally established Kenya Railways Corporation (KRC) in 1978.
- Revised several times, most recently in 2009.
- Designates KRC as exclusive provider of railway transportation services.
- Overall requirement to "provide all reasonable facilities for the carriage of passengers and goods." This specifically includes inland waterway facilities.
- Gives KRC broad authorities to construct, operate and maintain railway with certain authority reserved for the Board or the Minister.
- 2005 amendment gave KRC legal basis to concession the railway. Stipulates concessionaire activity to be in accordance with the Railways Act.

**Kenya Ministry of Transport and Infrastructure**

- Key task to position Kenya as logistics hub of East Africa.
- Executing ministry for the Railways Act.
- KRC a unit of the ministry.

**Safety regulations**

- The Railways Act includes general statements that the railway is to be constructed and operated in a safe manner.
- The Occupational Safety and Health Act (2007) (Safety Act) requires organizations to "ensure the safety, health and welfare at work of all persons working in his workplace" by:
    a. Making arrangements to ensure safety in the handling, use, transport and storage of hazardous materials.
    b. Providing information, instruction, safety, training and supervision to ensure safety of employees.
    c. Carrying out risk assessments and adopting rules and procedures on the basis of the assessments.
    d. Preparing and communicating to employees written policies and guidelines regarding safety.

**PPP authority**

Kenya is pursing public private partnership (PPP) arrangements to revitalize railway transport and support the overall goals of reducing the cost of cargo transportation and realizing a modal shift from truck to rail.

- The 2005 Amendment to the Railways Act (Article 11A. Concessioning of Railways) gave KRC the legal authority to enter into agreements with private organizations for construction, operation and maintenance of railways. Such arrangements can be in the form of a concession, lease or management contract and are subject to the approval of the Minister of Transport and Infrastructure. The Railways Act states that the concession contract will state the functions and powers of KRC and its Board that will be passed to the private party. Further an agreement will state the terms under which current employees can be hired by the private party.

Uganda

**The Uganda Railways Corporation Act (1992) (Uganda Railways Act):**

- Formalized the legal basis of URC.
- Designates URC as exclusive provider of railway transportation services.
- Overall objectives of "construction, operation and maintenance of railway, marine and road services" and to "carry on … such activities as are conducive or incidental to the attainment" of these objectives.
- Obligates URC board to ensure the railway develops in a "manner consistent with the economic policy of the Government," operates "efficiently and economically," maintains its finances "in accordance with sound commercial principles," "provides adequate facilities for the carriage of passengers and goods," and "that no particular person or body is given undue preference or is subject to unique disadvantage."

"In accordance with sound commercial principles" is explained as "revenue is not less than sufficient to meet its outgoings" and net operating income is "not less than sufficient to secure an annual return on the value of the net fixed assets in operation," the percent return to be established by the Minister of Finance.

**Uganda Ministry of Works and Transport**

- Key task to "plan, develop, and maintain an economic, efficient and effective transport infrastructure and transport services by road, rail, water and air."[38]
- Executing ministry for the Railways Act.
- URC a unit of the ministry.

**Safety regulations**

- The Railways Act includes general statements regarding public safety.
- The Occupational Safety and Health Act (2007) (Safety Act) requires organizations to "ensure the safety, health and welfare at work of all persons working in his workplace" by:[39]
    a. Making arrangements to ensure safety in the handling, use, transport and storage of hazardous materials.
    b. Providing information, instruction, safety, training and supervision to ensure safety of employees.
    c. Carrying out risk assessments and adopt rules and procedures on the basis of the assessments.
    d. Preparing and communicating to employees written policies and guidelines regarding safety.

**KRC and URC oversight of RVR performance**

KRC and URC are given the responsibility for oversight of RVR's performance under the concession contract within their respective countries. A joint railway committee has been created to manage system performance and deal with issues that impact both countries. Oversight responsibilities include:

- Monitoring performance based on periodic reports received from RVR.
- Review and recommend to the PPP Committee action on RVR's proposed capital investments:
    a. Capital investments that are approved are added to the "conceded assets" account which is made up of the assets initially transferred to RVR with the Concession and any approved capital investments made during the Concession period. Conceded assets are to be transferred back to KRC at the conclusion of the Concession and RVR is to be compensated (for example,

38 Ministry of Works and Transport website http://www.works.go.ug/

39 Uganda and Kenya Occupational Safety and Health Acts appear to be the same in substance

paid a sum equal to the undepreciated value of the assets. The actual compensation mechanism is specified in the Concession contract).

b. Capital investments that are not approved and do not become part of the conceded assets are RVR's responsibility at conclusion of the Concession. RVR is free to dispose of the assets as it chooses and the Kenya government is not obligated to compensate RVR for the assets.

According to KRC, the 20 GE locomotives purchased by RVR are not an approved capital investment and are not considered conceded assets. KRC explained that approval was withheld because the units are second hand.

- Ensuring compliance with the Concession contract

The Concession contract includes performance and investment targets that RVR is to meet (Kenya and Uganda each have a contract with RVR with performance and investment targets specific to each country). These include investing in infrastructure and rolling stock, rehabilitating the track to eliminate restricted speed areas, opening closed lines and achieving annual volume targets (net tonne kilometers).

RVR failed to perform in returning the track to the specified condition and in reaching the volume target. In 2010 the Concession contract was amended revising the performance targets and giving RVR a specified date by which to achieve the revised targets or risk having the Concession revoked. RVR met the targets and continues to operate the Concession.

### 5.3.3 Existing Inventory

The Kenyan meter gauge system operated by RVR includes approximately 1,320 km of track. This includes the mainline of about 1,185 km from Mombasa to Malaba passing through Nairobi. Branch lines to Thika and Nanyuki complete the system.

The Ugandan meter gauge system operated by RVR includes approximately 832 km of track. This includes the mainline of about 250 km from Malaba to Kampala, 9 km lead to Port Bell, 12 km spur to Port Jinja, 6 km line to the workshops at Nalukolongo, a 55 km branch between Tororo and Mbale and an approximately 500 km branch line extending from the mainline at Tororo to Gulu and from Gulu to Pakwach. When the Concession was awarded in 2006 closed sections of track were excluded. Tororo to Pakwach was closed at the time. The branch was added to the Concession after RVR reopened it in 2013 in anticipation of traffic related to the oil discoveries in the Lake Albert area. A commercial train carrying steel for delivery in South Sudan arrived in Gulu on September 14, 2013.[40] The steel cargo was transloaded to truck for final delivery. However, URC stated that no revenue trains have operated on the line since then.

The table below lists the operating facilities in place on the meter gauge system, including marshalling yards, inland container depots, locomotive and wagon depots and locomotive fueling stations. Several facilities are out of service as various circumstances caused cargo traffic to decline to the point where it is difficult to serve the areas profitably.

SGR facility locations are the Study Team's best estimates. The Master Plan will include recommendations for locating intermodal facilities (ICDs, bulk transfer yards). If that is not possible given the progress of design of the SGR project, the Master Plan will include an evaluation of the planned locations and as necessary suggestions for improvement that can be accomplished at the stage of the project.

**Table 5.3.1: Inventory of Operating Facilities (Meter Gauge System)**

| Marshalling Yards | Inland Container Depot | Locomotive Depot | Wagon Depot | Locomotive Fueling | SGR Location |
|---|---|---|---|---|---|
| Mombasa | Mombasa (port container train yard) | | | | New container terminal; + possibly general cargo area |
| Kipevu | | | | | No |
| Changamwe | | Changamwe | Changamwe | Changamwe | Possibly depots and |

40 Uganda's Northern Line Revived, Railway Gazette, October 9, 2013

| Marshalling Yards | Inland Container Depot | Locomotive Depot | Wagon Depot | Locomotive Fueling | SGR Location |
|---|---|---|---|---|---|
| | | | | | fueling |
| Voi (not operating) | | Voi (not operating) | Voi (not operating) | | No |
| Nairobi | Nairobi | Nairobi | | Nairobi | Yes; possible addition of wagon depot |
| Nakuru | | Nakuru (not operating) | Nakuru (not operating) | Nakuru (not operating) | No |
| Eldoret | Eldoret | Eldoret | Eldoret | Eldoret | Yard if Kisumu branch is built |
| Kisumu (not operating) | Kisumu (not operating) | Kisumu (not operating) | Kisumu (not operating) | Kisumu (not operating) | Yard if Kisumu branch is built |
| Kampala | Kampala | Kampala (Nalukolongo) | Kampala (Nalukolongo) | Kampala | Marshalling Yard/Loco fueling & ICD; possibly rolling stock depots |

*Source: JICA Study Team based on publicly available information and interviews of stakeholders*

Voi Station is closed primarily because the Tanzania rail line that connects through Voi is out of service.

Kisumu is out of service initially because of track condition which led to a drastic decline in cargo volume. Kisumu Port loaded rail wagon ferries to connect Kenya cargo to Mwanza Port in Tanzania and Port Bell in Uganda. The last train and rail wagon ferry to serve Kisumu occurred in 2012. Kisumu Port has since sold or scrapped its rail ferries. One vessel is being converted to a training ship.

There is a marshaling yard at Malaba Kenya.

On the Ugandan section there are marshalling yards at Malaba, Uganda, Tororo, Kasese, Port Bell and Port Jinja. Kasese is not operating because train service was suspended in 1998. A feasibility study to determine the cost of reopening the line was commissioned but the decision to reopen is pending. Port Bell is not operating because its wagon ferries are out of service. A project is in progress to expand and rehabilitate the port. The status of the railway yard and rail wagon ferry service is not yet decided.

URC stated that RVR received with the Concession 43 locomotives and 1,321 wagons of various types. Kenya Railways Corporation (KRC) stated that as of June/July 2015 RVR has 64 locomotives in operation and about 1,000 cargo wagons in operation. The Northern Corridor Transit and Transport Coordination Authority (NCTTCA) collected the following rolling stock data as of approximately October 2014.

**Table 5.3.2: Status of Rail Facilities in the Northern Corridor41**

| Rail Status | Kenya | Uganda | Total |
|---|---|---|---|
| Number of freight and passenger locomotives | 35 | 43 | 78 |
| Number of freight wagons | 803 | 1,447 | 2,250 |
| Number of passenger coaches | 86 | 6 | 92 |

*Source: NCTTCA*

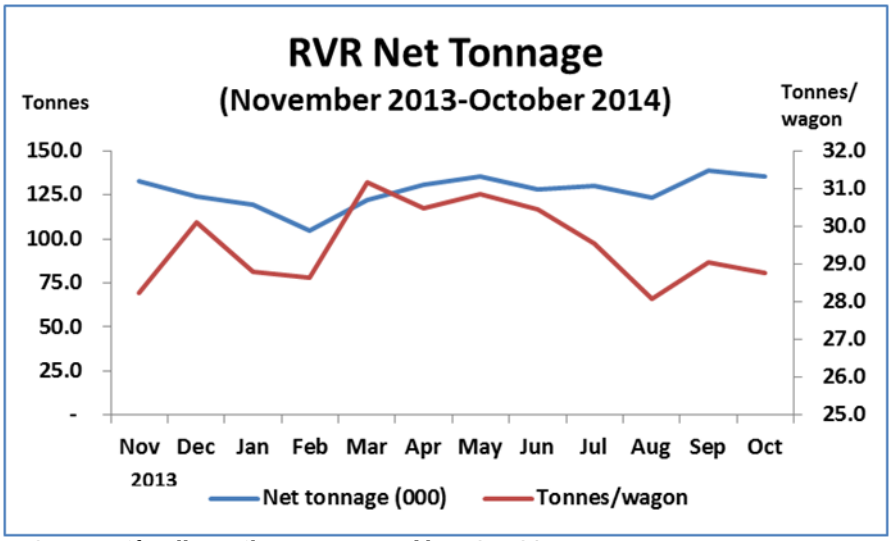
RVR in 2014 purchased 20 second hand GE locomotives which are being modified to operate on meter gauge track.[42] As of July 2015 RVR had taken delivery of approximately 13 locomotives. The 2,250 horsepower GE units are similar to KRC units acquired by RVR with the Concession.

## 5.3.4 Analysis of Operation and Maintenance

For the twelve months ended October 2014, RVR transported a total of 1.5 million net tonnes. Based on the number of wagons used the average wagon load was 29.8 tons.

41 Northern Corridor Transit and Transport Co-ordination Authority (NCTTCA); Northern Corridor Transport Observatory Report, December 2014

42 Change the gauge to meter gauge from standard gauge and reduce the weight




*Source: Rift Valley Railways as reported by NCTTCA[1]*

**Figure 5.3.2: RVR Net Tonnage**

According to KRC and other parties interviewed by the Study Team,[43] RVR's service and cargo volumes are hampered by a lack of available wagons and locomotives. The 20 used GE locomotives purchased in 2014 are being modified to operate on meter gauge track.[44] As of July 2015 RVR had taken delivery of approximately 13 locomotives. Five units will be used in Uganda. The GE locomotives are similar to units acquired by RVR with the Concession and so should easily be incorporated into its train service.

KRC and the Kenya Ports Authority (KPA) both noted that RVR appears to be operating based on demand rather than an established schedule. This means that RVR will usually wait until it has sufficient cargo volume before running a train. KPA stated that RVR is in the Mombasa Port between three and four times a week.

It is not unusual for low volume railways to arrange their operations in this manner. It can be considered prudent management and indicates a focus on profitability. At the same time, such a service may not provide the level of service required by customers shipping in containers. Container cargo is generally more time sensitive than bulk and general cargo.

## 5.3.5 Review of On-going and Planned Infrastructure Projects

The standard gauge railway (SGR) project is planned to largely mirror the mainline of the meter gauge system with possible extensions to Juba, South Sudan and Kigali, Uganda. Uganda has stated that is needs USD 14 billion to invest in all the SGR sections in Uganda.[45] The SGR lines in Kenya can be roughly estimated as approximately USD 8.5 billion including the Kisumu line.[46] Total cost estimate for the project would be approximately USD 22.5 billion.

The SGR project is summarized below.

**Table 5.3.3: Standard Gauge Railway Project**

| SGR Line Segment | Km | Project | Status |
|---|---|---|---|
| Mombasa-Nairobi | 472 | New standard gauge line | Estimated cost USD3.5 billion; ~30% complete;[47] many of the bridge piers are in place; most of the |

43 The Study Team was not able to arrange a meeting with RVR on this trip

44 Change the gauge to meter gauge from standard gauge and reduce the weight

45 Kampala-Kigali railway project derails, The Independent, July 19, 2015 http://www.independent.co.ug/business/business-news/10439-kampala-kigali-railway-project-derails

46 Mombasa-Nairobi USD3.5 billion for 472km = USD 7.4 million/km; 400km Nairobi-Malaba at $7.4 million/km = USD 3.0 billion; 274km Nakuru-Kisumu at $7.4 million/km = $2.0 billion

47 Per KRC

| SGR Line Segment | Km | Project | Status |
|---|---|---|---|
| | | | embankments/earthworks appear to be complete |
| Nairobi-Nakuru-Malaba | 400 | New standard gauge line | Three alternative routes proposed; KRC has recommended one, under consideration by Steering Committee |
| Nakuru-Kisumu | 274 | New standard gauge line | Deciding whether to build out to Kisumu |
| Kampala-Malaba-Nimule | 476 | New standard gauge line | Estimated cost USD3.2 billion; design and construction contract awarded to China Harbour Engineering Company Ltd, though the award is disuputed by another Chinese contractor |
| Kampala-Kasese | 344 | New standard gauge line | No cost estimate found; feasibility study commissioned but status could not be confirmed; may be on hold until after 2020 as Uganda focuses on the line to South Sudan[48] |
| Tororo-Gulu-Pakwach | 500 | New standard gauge line | Feasibility Study (FS) complete; may only be Gulu-Pakwach |
| Gulu-Nimule-Juba-Wau | 140 | New standard gauge line | FS complete Gulu-Nimule; may only be Nimule-Juba-Wau |
| Bihanga-Mirama Hills | 200 | New standard gauge line | FS may be complete |
| Mirama Hills-Kigali | 200 | New standard gauge line | FS may be complete |

*Source: JICA Study Team based on research of publicly available information*

RVR is likely to continue to invest in the meter gauge track as it seeks to continue stabilizing and strengthening the network. According to press reports in 2010 RVR began a USD287 million capital investment programme to improve infrastructure and turnaround performance. Investments noted include purchase of 20 GE locomotives, purchase or rehabilitation of 1,400 wagons, track improvements and purchase of new ballast tampers and regulators. The reopening of Tororo-Gulu-Pakwach may be part of the programme. RVR announced that USD100 million in capital investments was expected for 2014. As part of the USD287 million capital programme, RVR hopes to spend USD23.5 million per year for the next five years (2015-2019) to purchase additional locomotives.[49]

## 5.3.6 Analysis of Current Gaps and Bottlenecks

- Financial condition of RVR – though RVR increased volume (net tonne kilometers) and revenue in 2014 it recorded an operating loss and negative cash flow (earnings before interest, taxes, depreciation and amortization, EBITDA).[50] RVR has made investments in track, locomotives and wagons funded by debt and perhaps cash infusions from its investors. At some point, RVR may struggle to carry its debt load if its operation does not generate cash flow.

**Table 5.3.4: RVR Summary Financial Statements[51]**

| (USD milli0ns) | 2013 | 2014 |
|---|---|---|
| Revenue | 73.9 | 84.2 |
| Operating expense (ex depreciation) | 78.0 | 95.5 |
| Earnings before interest, taxes, depreciation and amortization (EBITDA) | (4.1) | (11.3) |
| Depreciation | | 7.8 |
| Operating income | | (19.1) |
| Interest expense | | (17.0) |

48 Kampala-Kigali railway project derails, The Independent, July 19, 2015 http://www.independent.co.ug/business/business-news/10439-kampala-kigali-railway-project-derails

49 Rail freight traffic increases in Kenya, International Railway Journal, May 29, 2015 http://www.railjournal.com/index.php/freight/rail-freight-traffic-increases-in-kenya.html?channel=000

50 Qalaa Holdings FY14 Business Review, April 29, 2015

51 ibid; FY 14 Business Review provides certain detail for 2014 only

| (USD milli0ns) | 2013 | 2014 |
|---|---|---|
| Income before taxes | | (36.1) |
| | | |
| Cash | | 43.8 |
| Long term debt | | 200.4 |

*Source: FY 14 Business Review*

- Wagon and locomotive condition and shortages – RVR has stated that locomotive and wagon issues are one of the main factors preventing volume increases and improved service.[52] Prior to RVR taking over the operation of the railway in 2006 and under RVR's operation through 2009, the railway suffered from lack of investment in infrastructure, rolling stock and equipment. This led to a decline in service levels and over time to a drop in volume. At the same time Kenya's economy has been growing significantly and cargo throughput at Mombasa Port has grown significantly.[53]

  This resulted in a significant increase in the number of trucks loaded at the Port of Mombasa, increased congestion at the port and excessive wear and tear on the road infrastructure throughout the Northern Economic Corridor (NEC).

- SGR project – the SGR project is being pursued for its potential to transform railway transportation and change the structure of cargo transportation. At the same time, SGR could potentially create gaps and bottlenecks for the NEC:

  a. Completion risk: the planned SGR system will connect Mombasa to Kampala, and continue to Kasese, Uganda and Kigali, Rwanda, a total of approximately 1,900 kilometers. An extension to Gulu, Pakwach, and Juba adds approximately 600 kilometers. Contracts have been awarded for design and construction of SGR sections from Mombasa to Nairobi and Kampala to Nimule (through Malaba). Work on the Mombasa-Nairobi section is underway and Kampala-Nimule is in the planning stage.

     For various reasons, large infrastructure projects like the SGR project are subject to completion risk. The essential link from Nairobi to Kampala is not yet at the contracting stage. Kampala to Kasese and Kigali may not be in the planning stage at this point and may not receive attention before 2020. Failure to complete the entire planned system could reduce the overall benefits gained and possibly create new bottlenecks with the addition of new, inefficient modal transfer points.

  b. Estimated cost to construct the system: at an estimated cost of up to approximately USD 22.5 billion, Kenya and Uganda will borrow significant amounts to finance construction. The strain borrowing will put on the national budgets heightens the completion risk.

  c. Ongoing operation and maintenance of the railway - the large debt service obligations associated with the SGR project could potentially lead to inadequate funds to maintain the railway.

  d. RVR meter gauge concession – the Study Team has not seen a copy of the Concession contract but presumably the contract addresses government supported rail competition with RVR. As over time it is unlikely that both the metre gauge and standard gauge systems will survive, there is potential that RVR will demand some type of consideration. This could add to the financial cost associated with the SGR project.

52 RVR gets loan for 20 new locomotives, Business Daily, September 10, 2014

53 Kenya GDP average annual growth of approximately 12% in the period 2000-2014, World Bank; Mombasa Port volume (containers and general cargo) has grown by an average 7.1% annually since 2010, Kenya Ports Authority, Annual Review and Bulletin of Statistics 2014

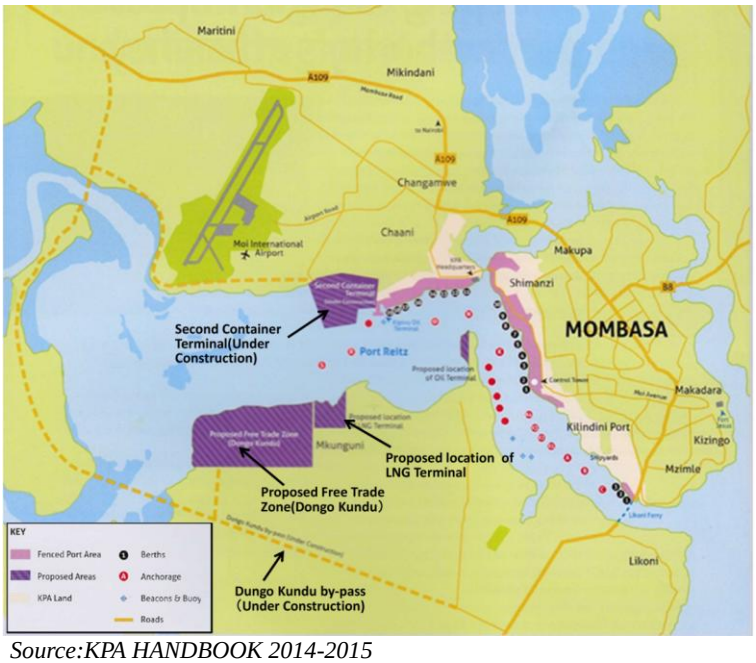
# *5.4 Port*

## 5.4.1 Overview

Mombasa port is the only major seaport facing the Indian Ocean on the Northern Economic Corridor. The seven countries; Kenya, Uganda, Rwanda, Burundi, D.R.Congo, South Sudan and Tanzania, rely on their cargo being shipped through Mombasa Port. The port has mostly dealt with cargo traffic in the East Africa region. In 2014 Mombasa Port recorded the highest outthrough cargo with 24.9 million tons including 1.0 million TEUs of containerized cargo. The year of 2014 was a monumental year in which the port has firstly surpassed one million TEUs. The annual growth rate of container traffic has been 10% approximately in the past five years due to the rapid economic growth of the East Africa Region as shown in Table 5.4.1. Roughly speaking, 70% of cargos go to Kenya and the remaining 30% of cargo goes to inland countries. Uganda has a share of 77% in transit cargo as shown in Table 5.4.2. In order to improve port capacity, Mombasa Port Master Plan study is ongoing by JICA.

Almost all cargo for importing and exporting from Mombasa port are carried by truck and trailer. It is said that railway has a modal share of 5 % in recent years. On the other hand, the standard gauge railway project from Mombasa to Nairobi and the further western nations is now on going. The standard gauge railway project is ongoing by the Chinese government and is expected to lead to significant railway use.

Several kinds of important issues relating to cargo logistics are found. Firstly, it still takes too long a time for importing cargo to clear custom and move out of the port area although dwell time and loading/unloading time have recently improved. It also takes time for exporting cargo. Secondly the roads inside the urban area of Mombasa are so heavily congested that cargo traffic is usually stuck during the day time. Thirdly, the Northern Corridor Logistics should be operated by comprehensive multimodal transport infrastructures consisting of road transport, railway, airway, waterway and pipeline in order to deal with the increasing cargo demand. In this regard several issues on the modal shift at Mombasa Port are remaining.




*Source:KPA HANDBOOK 2014-2015*

**Figure 5.4.1: Existing and Proposed Facilities in Mombasa Port**

**Table 5.4.1: Import, Export & Transshipment Cargo Volume between 2010 and 2014**

**Port Performance ( 000'DWT)** 000'DWT

| *Year* | *2010* | *2011* | *2012* | *2013* | *2014* | *Annual Growth rate* |
|---|---|---|---|---|---|---|
| *Imports* | 16,201 | 16,938 | 18,732 | 19,150 | 20,777 | 6.4% |
| *Exports* | 2,575 | 2,788 | 3,045 | 2,983 | 3,366 | 6.9% |
| *Transshipment* | 158 | 227 | 143 | 174 | 732 | 46.7% |
| *Total* | 18,934 | 19,953 | 21,920 | 22,307 | 24,875 | 7.1% |
| *Including Transit Traffic* | 5,382 | 5,596 | 6,626 | 6,709 | 7,199 | 7.5% |
| *Ratio of Transit Traffic* | 28.4% | 28.0% | 30.2% | 30.1% | 28.9% | 0.5% |

**Port Performance (CONTAINER TRAFFIC)** TEUs

| *year* | *2010* | *2011* | *2012* | *2013* | *2014* | *Annual Growth rate* |
|---|---|---|---|---|---|---|
| *Imports* | 345,314 | 392,647 | 444,772 | 449,389 | 488,672 | 9.1% |
| *Exports* | 335,694 | 358,230 | 446,624 | 428,342 | 462,476 | 8.3% |
| *Transshipment* | 14,592 | 19,927 | 12,067 | 16,269 | 60,854 | 42.9% |
| *Total* | 695,600 | 770,804 | 903,463 | 894,000 | 1,012,002 | 9.8% |

*Source: Kenya Ports Authority*

**Table 5.4.2: Transit Traffic by Nation between 2010 and 2014 (1,000 DWT)**

***Import & Export*** 000'DWT

| *year* | *2014* | *Ratio* |
|---|---|---|
| *UGANDA* | 5,522,119 | 76.7% |
| *SUDAN* | 761,336 | 10.6% |
| *D.R.CONGO* | 407,727 | 5.7% |
| *RWANDA* | 235,912 | 3.3% |
| *TANZANIA* | 187,848 | 2.6% |
| *BURUNJI* | 79,101 | 1.1% |
| *SOMALIA* | 4,611 | 0.1% |
| *OTHERS* | 460 | 0.0% |
| *TOTAL* | 7,199,114 | 100.0% |

***Import*** 000'DWT

| *year* | *2014* | *Ratio* |
|---|---|---|
| *UGANDA* | 5,132,276 | 76.7% |
| *SUDAN* | 696,816 | 10.4% |
| *D.R.CONGO* | 383,461 | 5.7% |
| *RWANDA* | 221,323 | 3.3% |
| *TANZANIA* | 173,022 | 2.6% |
| *BURUNJI* | 78,961 | 1.2% |
| *SOMALIA* | 4,592 | 0.1% |
| *OTHERS* | 387 | 0.0% |
| *TOTAL* | 6,690,837 | 100.0% |

***Export*** 000'DWT

| *year* | *2014* | *Ratio* |
|---|---|---|
| *UGANDA* | 389,844 | 76.7% |
| *SUDAN* | 64,520 | 12.7% |
| *D.R.CONGO* | 24,267 | 4.8% |
| *TANZANIA* | 14,827 | 2.9% |
| *RWANDA* | 14,589 | 2.9% |
| *BURUNJI* | 139 | 0.0% |
| *OTHERS* | 73 | 0.0% |
| *SOMALIA* | 19 | 0.0% |
| *TOTAL* | 508,277 | 100.0% |

*Source: Kenya Ports Authority*

## 5.4.2 Review of Policy, Legal Framework and Administrative Structure

The Kenyan government has invested in Mombasa Port to build a World-class port which is able to facilitate and promote global maritime trade through the provision of competitive port services. From 2007 to 2012 the port's main channel was deepened to 15.0m below the lowest level and widened to 300m. Much of the dredged materials were used in the reclamation of land for a new second container terminal, due for completion between 2016 and 2018. By 2020 the port expects to be handling more than 2.0 million TEUs. Moreover, the following related projects are ongoing:

- Construction of a new standard gauge railway linking Mombasa with Nairobi, Kampala and other hinterland destinations was began in 2013
- Construction of a southern by-pass for Mombasa linking the south to north coasts was began in 2014

Mombasa Port has been managed by the Kenya Ports Authority (KPA). KPA was established in 1977 to run the port after the brief administration of the East African Harbors Corporation under a trinational association consisting of Kenya, Uganda and Tanzania. KPA is a state corporation with the responsibility to "maintain, operate, improve and regulate all scheduled seaports" on the Indian Ocean coastline of Kenya, including principally Kilindini Harbor at Mombasa. Other KPA ports include Lamu, Malindi, Kilifi, Mtwapa, Kiunga,

Shimoni, Funzi and Vanga. KPA is required to provide effective, reliable and efficient maritime services to both Kenya and its neighboring countries. As shown in Figure 5.5.2, KPA has seven divisions, which are:

- Human resources & Adm. Division
- Finance Division
- Corporate Services Division
- Operations Division
- Infrastructure Division
- Engineering Services Division
- Legal Services Division

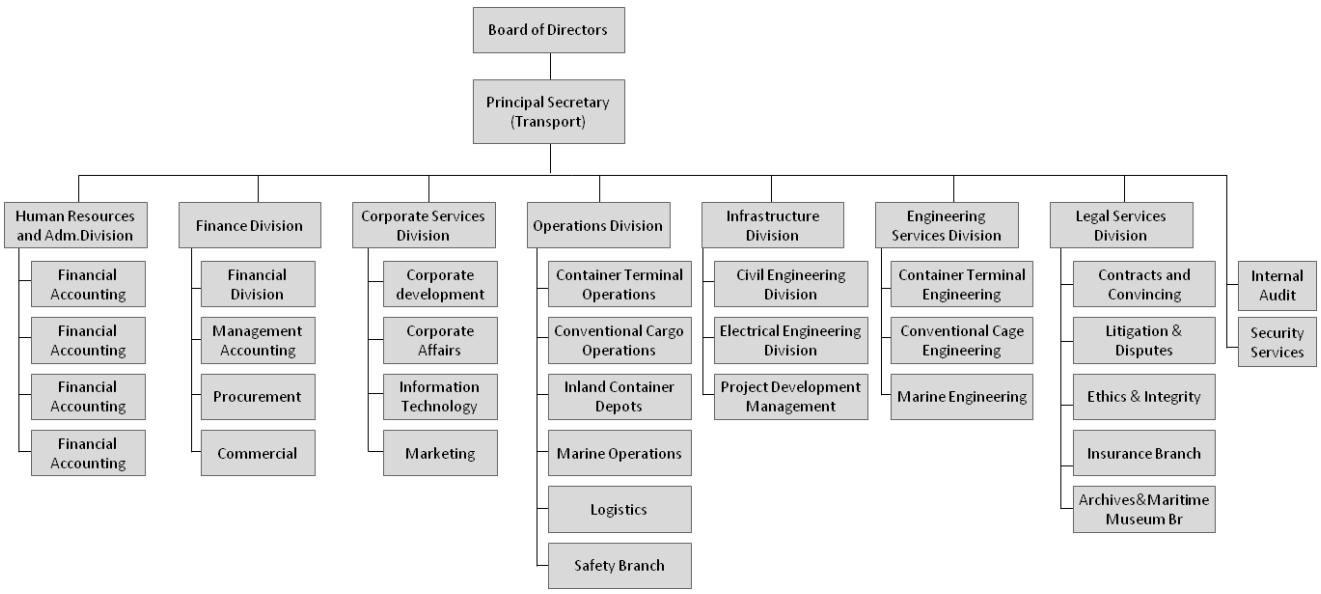
As far as port operation is concerned, other related organizations with KPA are:

- KRA - Kenya Revenue Authority
- KMA - Kenya Maritime Authority
- PMAESA - Port Management Association for Eastern and Southern Africa

## 5.4.3 Existing Inventory

The port of Mombasa is fully developed with modern equipment hence making it the principal port in the East Africa Region. The port is equipped to handle a wide range of cargos including dry bulks such as grain, fertilizers, cement and soda ash and liquid bulks such as crude oil and oil products as well as bagged products (coffee, tea, sugar, etc.),break-bulk (iron and steel, timber),motor vehicles, machinery – and containerized cargo.

After the opening of Berth 19 in 2013 which increases the port's capacity by some 250,000 TEUs a year, the Mombasa Container Terminal has the total length of 840m. As a result, the terminal can now handle three panamax vessels of 250m length at the same time. In addition, the new terminal has been equipped with three ship-to-shore gantry cranes, eight new reach stackers and 27 terminal tractors. The Second Container Terminal is a further expansion of the port's capacity. It will have three additional berths totaling 900m with a depth alongside of 15.0m. Funding for this new terminal project is being provided through JICA.




*Source: KPA website, http://www.kpa.co.ke/*

**Figure 5.4.2: Organizational Structure, KPA**


**Figure 5.4.3: Current Mombasa Port Photos on July 2015**

## 5.4.4 Analysis of Operation and Maintenance

Capacity improvements are also being achieved by improving dwell times for containers in the port. Actual dwell time in 2013 was 5.2 days based on the KPA Handbook 2014-2015. The level of dwell time should be examined whether it is efficient or not through comparing with other international seaports.

Since the introduction of Container Freight Stations (CFS) in 2007, throughout and efficiency have improved and congestion has been reduced in the port. Nevertheless, off-port CFSs along trunk roads can be seen as one of main causes for traffic congestion in the urban area of Mombasa.

KPA operates Mombasa Port 24 hours a day and 365days a year. The engineering division of KPA has the responsibility of keeping the port operational at all times. The engineering division has three main areas of operation: container terminal equipment; conventional terminal equipment; and marine craft. All three departments have their own workshops including machine shops for making components. Most components are fabricated on site, but external contractors are used for some items, such as large motors.

Principal commodities handled at Mombasa Port are shown in Table 5.4.3. Mombasa Port has a wide range of private operations both inside and outside the port area as the follows:

- Tata Chemical Magadi has been exporting soda ash through the port since 1934. Each year the terminal handles about 400,000ton of soda ash, which is the second largest export commodity handled at the port.
- Grain Bulk Handlers Ltd has the towering grain silo outside the port. A conveyor system takes grain from vessels to the company's silos and processing facilities. The company can discharge vessels at rates of up to 900 ton per hour.
- Bamburi Cement Company operates a dedicated facility at the port for loading bulk cement for export. The plant produces up to 1.1 million ton per year and has a concession from KPA to manage its own operations and to carry out its own refurbishment.
- Louis Dreyfus operates a liquid bulk facility within the port. It is equipped with ship-to-shore offloading pipelines as well as overhead loading gantries for rail wagons and road vehicles.

**Table 5.4.3: Import & Export Commodities in 2014 (1,000 DWT)**

000'DWT

| *Import Commodities* | *2014* | *Ratio* |
|---|---|---|
| *Iron & Steal* | 1,367 | 6.3% |
| *Rice* | 651 | 3.0% |
| *Sugar* | 231 | 1.1% |
| *Chemicals & Insecticides* | 390 | 1.8% |
| *Plastic* | 662 | 3.1% |
| *M/Vehicles & lorries* | 463 | 2.1% |
| *Paper & Paper Products* | 503 | 2.3% |
| *Cereal Flour* | 49 | 0.2% |
| *Fertilizer* | 102 | 0.5% |
| *Clothing* | 253 | 1.2% |
| *Ceramic* | 415 | 1.9% |
| *Edible Vegetables* | 57 | 0.3% |
| *Vehicle Tyrese & Spares* | 103 | 0.5% |
| *Tallow & Oil in Cases & Drums* | 84 | 0.4% |
| *Malt* | 2 | 0.0% |
| *Maize in Bags* | 37 | 0.2% |
| *Wheat in Bags* | 9 | 0.0% |
| *Agric. & Other Machinery* | 12 | 0.1% |
| *Other Cereals in Bags* | 19 | 0.1% |
| *Others* | 3,704 | 17.2% |
| *Total General Cargo* | 9,113 | 42.3% |
| *Wheat in Bulk* | 1908 | 8.9% |
| *Clinker* | 2065 | 9.6% |
| *Fertilizer in Bulk* | 360 | 1.7% |
| *Coal* | 436 | 2.0% |
| *Other Cereals in Bulk* | 184 | 0.9% |
| *Maize in Bulk* | - | - |
| *Others* | 278 | 1.3% |
| *Total Dry Bulk* | 5,231 | 24.3% |
| P.O.L（Petroleum, Oil and Lubricants） | 6286 | 29.2% |
| *Other liquid Bulk* | 906 | 4.2% |
| *Total Liquid Bulk* | 7,192 | 33.4% |
| *Grand Total* | 21,536 | 100.0% |

000'DWT

| *Export Commodities* | *2014* | *Ratio* |
|---|---|---|
| *Tea* | 554 | 22.5% |
| *Soda ash* | 336 | 13.6% |
| *Coffee* | 256 | 10.4% |
| *Maize* | 2 | 0.1% |
| *Fish & Crustacean* | 20 | 0.8% |
| *Tobacco &Cigarettes* | 27 | 1.1% |
| *BeansPeas,Pulses* | 19 | 0.8% |
| *Iron&steel* | 12 | 0.5% |
| *Cloths* | 30 | 1.2% |
| *Oilseeds* | 39 | 1.6% |
| *Cotton* | 2 | 0.1% |
| *Hides & Skins* | 28 | 1.1% |
| *Sisal* | 2 | 0.1% |
| *Cement in Bags* | 1 | 0.0% |
| *CashewNuts* | - | - |
| *Rice* | 20 | 0.8% |
| *Tinned Fruit,Vegetabls & juices* | 99 | 4.0% |
| *Titanium in bags* | 7 | 0.3% |
| *Others* | 543 | 22.0% |
| *Total General Cargo* | 1,998 | 81.1% |
| *Titanium* | 363 | 14.7% |
| *Soda Ashine Bulk* | - | - |
| *Cement in Bulk* | - | - |
| *Fluorspar* | 59 | 2.4% |
| *OtherDryBulk* | - | - |
| *Total Dry Bulk* | 422 | 17.1% |
| *Bulk Oils* | 19 | 0.8% |
| *Bunkers* | 26 | 1.1% |
| *Total Liquid Bulk* | 45 | 1.8% |
| *Grand Total* | 2,465 | 100.0% |

*Note: Tonnage shown here are for documented cargo and do not necessarily tally with cargo actually handled*

*Source: Kenya Ports Authority*

## 5.4.5 Review of On-going and Planned Infrastructure Projects

Ongoing and planned projects are:

1) Mombasa Port Development Project/ JICA, Project Schedule: Nov. 2007-Nov. 2015
   (a) Construction of the Second Container Terminal(depth: 15m and 11m; berth ×.2)
   (b) Procurement of cargo handling equipment (SSG cranes and RTG cranes)
   (c) Construction of an access road (approx. 1.6km)
   (d) Dredging works (dredging volume: approx. 3 million cubic meters)
   (e) Consulting services (detailed design, bidding assistance, construction supervision and assistance for selection of terminal operators, etc.)

2) Project on Master Plan for Development of Dongo Kundu, Mombasa Special Economic Zone/ JICA, Project Schedule: Jan. 2014-Mar. 2015
3) The Project for Technical Assistance to Kenya Ports Authority on Dongo Kundu Port, Mombasa Master Plan/ JICA, Project Schedule: Aug. 2014-Oct. 2015
4) Study on the Project for Construction of Mombasa Gate Bridge/ JICA
5) Construction of a new standard gauge railway linking Mombasa with Nairobi, Kampala and other hinterland destinations was bigan in 2013
6) Construction of a southern by-pass for Mombasa linking the south to north coasts was began in 2014

### 5.4.6 Analysis of Current Gaps and Bottlenecks

On the Northern Economic Corridor, Mombasa can be seen as the biggest bottleneck of transport. Several kinds of important issues relating to cargo logistics are found.

1) Time shortening of cargo clearance at the Mombasa Port area: It still takes too long a time for importing cargo to clear custom and move out of the port although dwell time and loading/unloading time have recently improved to be significantly shorter than the past. It also takes time for exporting cargo. Dwell time and loading/unloading time are dominant time for total travel time of cargo. The empirical data of the clearance time should be shown in the following work.

2) Improvement of road capacity on the trunk roads for cargo traffic within the urban area of Mombasa: The roads within the urban area of Mombasa are so heavily congested that cargo traffic is usually stuck during the day time. The most fundamental problem is lack of road network and road capacity of trunk road. Southern by-pass should be constructed urgently. Moreover relocation of CFSs outside the port should be implemented in the short term in order to avoid the concentration of trucks and trailers into the Mombasa road. In the long term based on the trend of increasing demand of cargo and car users, an additional trunk road in Mombasa and between Mombasa Port and Voi town should be examined, designed and constructed.

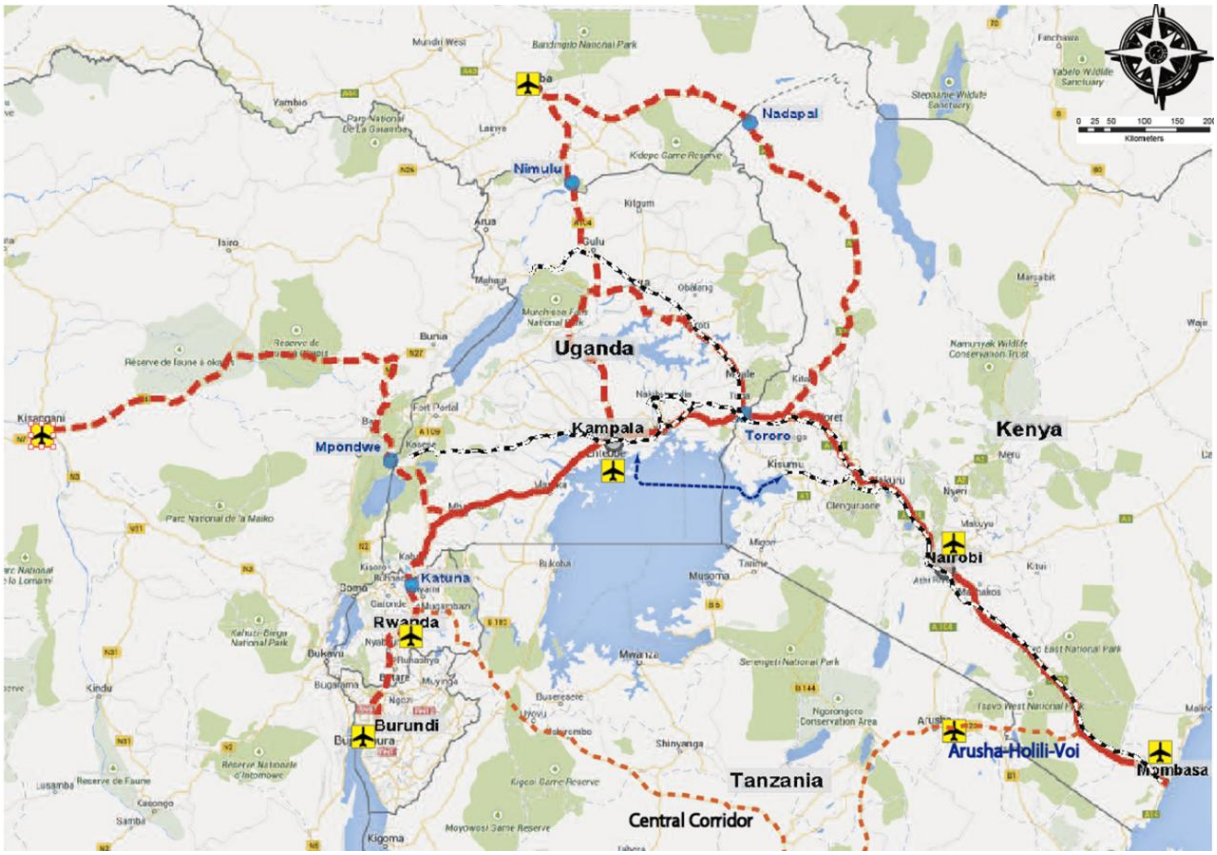
3) Promotion measures for a modal shift from truck and trailer to the standard gauge railway and pipeline: The Northern Corridor Logistics should be operated by comprehensive multimodal transport infrastructures consisting of road transport, railway, airway, waterway and pipeline in order to deal with increasing cargo demand. In this regard Mombasa Port is the most important site. Several issues on the modal shift at Mombasa Port are arguing. For example, how to promote a modal shift from track and trailers to the standard gauge railway for cargo would be still unclear not only at the port but also at the other origins and destinations such as railway terminals.

## *5.5 Airport*

### 5.5.1 Overview

There are seven major airports around the Northern Economic Corridor as shown in Figure 5.5.1. These airports are located away 700km from 500km. Nairobi airport or Jomo Kenyatta International Airport is expected to be the hub of Africa for both passengers and cargo. Nairobi airport handled the largest cargo volume of 279 thousand tons per year in EACs in 2012. Secondly, Entebbe airport handled the cargo volume of 81 thousand tons per year in 2012. Air cargos handling at Nairobi and Entebbe airport have not increased in recent years whereas cargos handling at Addis Ababa International Airport have increased rapidly.

Both airports of Nairobi and Entebbe have plans to expand the handling capacity and strengthen function of hub for the region.




*Source: JICA Study Team*

**Figure 5.5.1: Location of Major Airports**

## 5.5.2 Review of Policy, Legal Framework and Administrative Structure

(1) Kenya

(a) Kenya Airports Authority (KAA)

The Kenya Airports Authority (KAA), established in 1991 under KAA Act, Chapter 395 of the Laws of Kenya, provides facilitative infrastructure for aviation services between Kenya and the outside world. Its main functions are:

- Administer, control and manage aerodromes,
- Provide and maintain facilities necessary for efficient operations of aircrafts,
- Provide rescue and firefighting equipment and services,
- Construct, operate and maintain aerodromes and other related activities,
- Construct or maintain aerodromes on an agency basis on the request of any Government Department,
- Provide such other amenities or facilities for passengers and other persons making use of the services or facilities provided by the Authority as may appear to the Board necessary or desirable; and
- Approve the establishment of private airstrips and control of operations thereof.

The main airports we manage are:
<International Airports>

- Jomo Kenyatta International Airport
- Moi International Airport
- Eldoret International Airport
- Kisumu Airport

<Domestic Airports>

- Wilson Airport
- Malindi Airport

- Lokichoggio Airport
- WajirAirport

Airstrips
- Ukunda Airstrip
- Manda Airstrip

(b) Kenya Civil Aviation Authority (KCAA)

Kenya Civil Aviation Authority (KCAA) is a state corporation of Kenya that is responsible for regulating the aviation industry in Kenya and for providing air navigation services in the Kenya flight region. The KCAA offers training in the aviation professions through its affiliated East African School of Aviation.

(2) Uganda

(a) Civil Aviation Authority (CAA)

The Uganda Civil Aviation Authority (CAA), is the government agency responsible for the licensing, monitoring and regulating civil aviation matters. It is administered by the Ministry of Works and Transport in Uganda. As of January 2015, the CAA works with an administrative and operational structure of six directorates:

- Directorate of Airports and Aviation Security
- Directorate of Air Navigation Services
- Directorate of Safety, Security & Economic Regulation
- Directorate of Finance
- Directorate of Human Resources and Administration
- Directorate of Corporate Affairs

## 5.5.3 Existing Inventory

Nairobi airport handled the largest cargo volume of 279 thousand tons per year in EACs in 2012. Secondly, Entebbe airport handled the cargo volume of 81 thousand tons per year in 2012. Air cargo handling at Nairobi and Entebbe airport has not increased in recent years whereas cargo handling at Addis Ababa International Airport has increased rapidly. Comparing Dubai international airport, the volume of cargo handled at Nairobi is almost 12% of Dubai.

**Table 5.5.1: Cargo Volumes (Unloaded & Loaded) at Airport**

| | 2008 | 2009 | 2010 | 2011 | 2012 | Compound Average Growth Rate |
|---|---|---|---|---|---|---|
| **Nairobi Int'l Airport** | 299 | 262 | 228 | 286 | 279 | -1.7% |
| **Mombasa Int'l Airport** | 6 | 6 | 8 | 8 | 4 | |
| **Entebbe Int'l Airport** | 80 | 75 | 72 | 72 | 81 | -9.6% |
| **Dar es Salaam Int'l Airport** | 23 | 19 | 20 | 24 | 25 | 2.1% |
| **Kigali Int'l Airport** | No data | | 6 | No data | | - |
| **Bujumbura Int'l Airport** | 3 | No data from 2009 to 2012<br>Cargo volume data from 2000 to 2008 are as follows; 3.6 (2000), 3.4 (2001), 2.5 (2002), 2.3 (2003), 3.3 (2004), 3.3 (2005), 2.9 (2006), 2.6 (2007), 2.9 (2008) | | | | 2.8%<br>(2000-2008) |
| **Juba Int'l Airport** | It is difficult to ascertain the total cargo handling figures for JIA. JIA is however the main destination for, and origin of cargo transported by air within South Sudan. The airport has neither a dedicated cargo terminal nor bulk cargo handling facilities. | | | | | |
| **Addis Ababa Int'l Airport** | 73 | 101 | 134 | 160 | 181 | 25.5% |
| **Hong Kong Int'l Airport** | 3,627 | 3,347 | 4,128 | 3,938 | 4,062<br>(Ranking No.1) | 2.9% |
| **Dubai Int'l Airport** | 1,825 | 1,927 | 2,270 | 2,270 | 2,267<br>(Ranking No.1) | 5.6% |

*Source: JICA preliminary study report, Wikipedia, AfDB website*

**Table 5.5.2: Runway in Airport**

| Airport | Runway |
|---|---|
| Nairobi International Airport<br>(Jomo Kenyatta International Airport) | Runway 1: 4,117m |
| Mombasa international Airport<br>(Moi International Airport) | Runway 1: 3,356m<br>Runway 2: 1,359m |
| Entebbe International Airport | Runway 1: 2,408m<br>Runway 2: 3,658m |

*Source: JICA preliminary study report, Wikipedia, AfDB website*

## 5.5.4 Analysis of Operation and Maintenance

In terms of an analysis of operation and maintenance at the airports in EACs, sufficient information has not been collected yet. It is planned to carry out its analysis after collecting the information.

## 5.5.5Review of on-going and Planned Infrastructure Projects

(1) Jomo Kenyatta International Airport Expansion Project

When the airport was first opened in 1958 it had been designed for a maximum capacity of 2.5 million passengers a year. In 2006 the airport handled in excess of 4.4 million passengers. The Kenyan Airport Authority (KAA) declared their intention to expand and improve Jomo Kenyatta International to make it a hub in not only EACs but also in Africa. In addition the airport is a very important cargo hub in EACs. On 7 August 2013, a fire broke out inside the main terminal building at Jomo Kenyatta International Airport in Nairobi, Kenya, destroying two of the three units contained in the building. No one was killed, but two people were hospitalized with non-life-threatening injuries.

An expansion of the cargo handling facilities particularly for horticulture and floriculture produce is also on the agenda. So far, as Airport Expansion Project, a new arrival terminal has been completed in 2015 and new construction of airport runway No.2 is ongoing. A new instrument landing system-equipped runway 5,500 meters in length has been approved for construction at a cost of 12.8 billion Kenyan shillings (USD146.5 million). The runway also will enable direct long haul flights to destinations such as New York City, carrying up to 32 tones. Construction is scheduled to begin in January 2016 and be completed in December 2017. In addition, mmodern cargo facilities with planned and ongoing capacity expansion

(2) Entebbe Airport Expansion and Rebuild Project

The airport was first constructed in 1928/1929. The current passenger terminal building was constructed in the mid to late 1970s, together with runway. It was the scene of a hostage rescue operation by Israeli Sayeret Matkal, in 1976, after an Arab-German hijacking of Air France Flight 139 following a stopover in Athens, Greece, en route to Paris from Tel-Aviv. The scene of that rescue was the old terminal, which was recently demolished except for its control tower. In late 2007, a domestic terminal was constructed at the site of the old airport, leaving the new airport to handle international flights exclusively. In February 2015, the Government of South Korea, through the Korea International Cooperation Agency, gave the Government of Uganda a grant of USh27 billion (USD10 million) towards modernization of the airport.

< Entebbe Airport Expansion and Rebuild Project>

- 20,000 ㎡ extension of passenger terminal
- New 10,000 ㎡ cargo centre as well as apron and road access
- Extension of apron for passenger aircraft
- Major refurbishment of two runways including runway lighting
- Renovation of pavements on remaining aprons
- The project is said to be completed until 2025

### 5.5.6 Analysis of Current Gaps and Bottlenecks

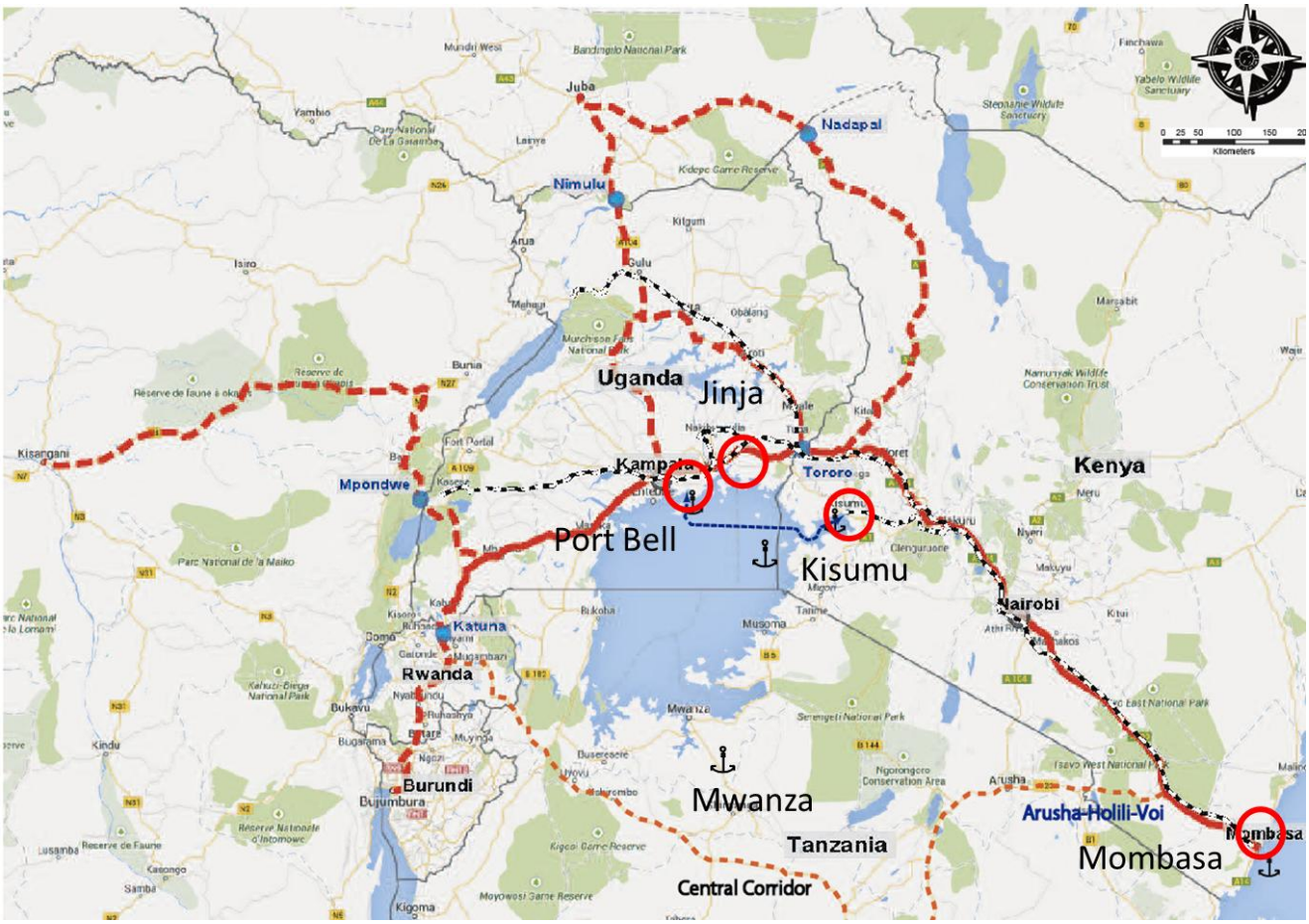
Both Nairobi and Entebbe airports have plans to expand the handling capacity for passengers and cargo, and strengthen the function of hub for the region. For example, flowers and ornamental plants or fishes is said to have a great potential as export goods to Europe by air. In order to promote such types of air cargo handling, the following issues should be examined:

1) Strategic targeting of several cargos which have a potential demand as export or import goods to Europe and other foreign countries by air.
2) Estimating warehouse demand for the goods which has a potential as export or import goods near the airport and providing appropriate warehouse for them.
3) Providing last-mile transport services from the airport to consuming areas or producing areas by truck and railway including long trip closing borders

## *5.6 Waterway*

### 5.6.1 Overview

There are six ports around Lake Victoria such as Kisumu in Kenya, Jinja and Port Bell in Uganda, Mwanza and Musoma and Kemondo Bay in Tanzania. On the Northern Corridor, Kisumu, Jinja and Port Bell were used for railway cargo transit well in the past. In the current at Port Bell once a week or several times a month a boat is operating. Under the many constraints such as lack of boats and old port facilities, it is impossible to promote lake transport more. It is necessary to restore rail services which are additional vessels, rehabilitate rail in port and additional locomotive in order to provide appropriate services to customers.




*Source: JICA Study Team*

**Figure 5.6.1: Location of Ports in Lake Victoria on Northern Corridor**

## 5.6.2 Current Situation

(1) History of Lake Transport at Port Bell

At Port Bell, Uganda Railway Corporation (URC) managed both ports and ships up to mid2005 after which railway and marine services were conceded by Rift Valley Railways (RVR). In 2005, URC operations were concessioner to Rift Valley Railways (RVR). RVR took over management of both ports and ships from 2005 to 2011. In 2012 Government returned management of ports to URC. URC had three wagon-ferry boats until 2005. These boats were operated well on a part of the Central Corridor between Dar as Salaam and Kampala. One of the three stopped operation due to an accident on Victoria Lake, the other one also stopped operation due to troubles. As a result, although one ship has been operated since 2005, as a wagon-ferry it has not been operating by URC. When ships were operated as a wagon-ferry before 2005, the time of loading could be finished within an hour. Port Bell and Jinja Port are part of URC. URC loads ships and handles cargo at the port, RVR operates on Lake Victoria. Only one boat as not a wagon ferry but a general cargo ferry or break-bulk service is operating between Port Bell and Mwanza in Tanzania by URC. Very few boats come to Port Bell from Kisumu port. Furthermore, smaller vessels entered the market after 2005 and competeD with Port Bell rail ferry at a lower cost.

(2) Record of total cargo throughput at Port Bell

- The date of cargo was provided to JICA Study Team between 1993 and 2014 (2002:478,115 tons, peak year - 2005:126,000 tons - 2013:42,300tons - 2014: 8,100 tons)
- Cargo has declined fracturing since the year of 2005.
- Type of Cargo at the current is:
  - Currently 70% of the Cargo through Port Bell is wheat grain as the only sea cargo and the remaining 30% is comprised of inter-regional cargo between Port Bell and Mwanza mainly comprised of the following commodities:
  - Cotton seeds/cake
  - Mineral water (Port bell to Mwanza)
  - Building material
  - Soap and cooking oil
  - Sugar and rice
  - Tobacco
  - Other agricultural products
  - Marine trade is 85% between Port Bell and Mwanza but there are few sailings to other ports of Musoma and Kisumu comprising 15%
  - Fuel and transmission poles are seasonal products
  - The Port employs 22 staffs including security guards

Cargo throughtput at Port bell

| year | tons |
|---|---|
| 1996 | 154,691 |
| 1997 | 131,363 |
| 1998 | 222,232 |
| 1999 | 387,234 |
| 2000 | 323,498 |
| 2001 | 476,726 |
| 2002 | 478,115 |
| 2003 | 402,426 |
| 2004 | 431,335 |
| 2005 | 126,000 |
| 2006 | 89,600 |
| 2007 | 78,500 |
| 2008 | 65,797 |
| 2009 | 40,677 |
| 2010 | 8,634 |
| 2011 | 40,200 |
| 2012 | 88,200 |
| 2013 | 42,300 |
| 2014 | 8,100 |

source: Uganda Railway Corporation

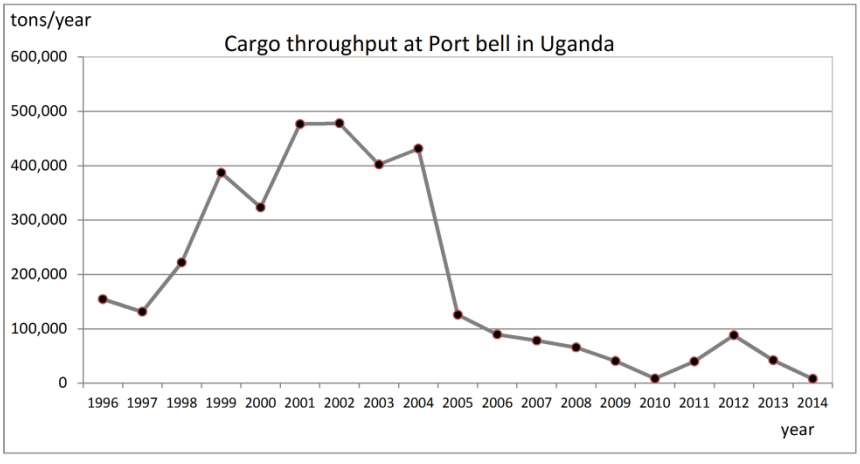



**Figure 5.6.2: Cargo Throughput at Port Bell between 1996 and 2014**

(3) Development Projects at Port Bell

- Bukasa Port development project as the new Port Bell Project was proposed by MOW in the past. The project aimed to realize better port functions, expand port-area, and add not only wagon ferries but

roro boats. In addition, new industrial park near the port. However, it has never implemented at all.

### 5.6.3 Analysis of Current Gaps and Bottlenecks

Waterway is an eco-friendly transport. The Lake transport in the lake of Victoria had a great roll for cargo logistics among Port Bell, Kisumu and Mwanaza. Nevertheless, cargo transport has shifted from lake transport to road transport with decline of railway logistics in recent years. It could be possible to revive the Lake Transport after the standard gauge project is completed and railway is well operated covering overall the region. In order to revival the Lake transport, the following issues are tackled with:

1) Strategic targeting of several cargos which have potential demand by lake transport as a railway system. In this regard, interregional trade or EFCs' trade Uganda and Tanzania should be examined as well as international trade.
2) Flexible operating by not only rail wagon but also track/car ferry should be introduced in order to respond to the demand with shorter distance demand than international cargo. Furthermore, Victoria Lake transport is seen as an attractive sightseeing ship from Kisumu, Port bell and Mwanza.
3) Providing last-mile transport services from the ports around Lake Victoria to consuming areas or producing areas by truck.
4) Kisumu and Port Bell should be well linked with Mwanza port through the improvement of infrastructure of wagon/car ferry port and provision of new vessels including car ferry, passenger vessels.

## *5.7 Logistics in Northern Corridor in Kenya*

### 5.7.1 Overview

There has been steady reduction of transit time in the Northern Economic Corridor but yet the transit time at Mombasa port area represents a large portion of the total transit time of Northern Corridor. The reduction of the transit time at the port area can be achieved through a) reduction of port operation time and b) customs clearance time. This reduced transit time will lead to speedy cargo dispatch from port/ Container Freight Station (CFS) .Although various measures have been undertaken in this regard, it seems though the reduction of transit time had been neglected apart from mitigation efforts for the over work loads by private sectors like CFS and clearing agents.

On the other hand, although the transit time of import cargo has been reduced, there are still long queue s experienced at the road leading to the port as a result of cargoes being scanned during the inspection which also becomes a one of the bottlenecks in the export transit time.

### 5.7.2 Review of Policy, Legal Framework and Administrative Structure

In regard to the international logistics flow the main stakeholders are: i) port (airports), ii) roads (domestic and international corridor), and iii) customs and Kenya Bureau of Standard (KEBS).

Mombasa Port is managed by Kenya Port Authority (KPA) and it is the main gate way not only for Kenya but also for other East and Central Africa countries. Before 2008/09 the container dwell time was averagely 16-18 days which led to introduction of the CFS concept. This has resulted to dramatic improvement of port productivity had and reduction of dwell time. Currently, Empty Container Deport has been established to enhance port performance. In addition, KPA has also set up the Inland Container Depot (ICD) in Nairobi, Kisumu and Eldoret to promote the export activity. However, Kisumu ICD usage ratio is only around 5% of Nairobi ICD usage (according to interview survey to Embakasi ICD on nov.2014).

The other important stakeholder at the Port is Kenya Revenue Authority (KRA) which manages the customs procedure and bonded warehouse/area and CFS is also under the management of KRA. It is imperative to note that the long transit time is caused by non-facilitated customs procedure. The most important role of customs is to collect duty and related taxes, not to facilitate customs procedure. According to statistics, customs collect a large portion of tax revenue. It is estimated that the duty and VAT for import and other taxes on international trade, that is collected by custom actually accounts for 25 % of total tax revenue.

Although EAC adopted duty exemption scheme for regional cargo, VAT and other tax (for example, excise tax) are still imposed on all import goods. This implies that a large portion of national income still depends on customs. It is noted therefore that the relation between facilitation of customs procedure and duty collection is a "trade off" relation, it is therefore difficult to promote customs procedure facilitation while neglecting tax collecting function.

## 5.7.3 Existing Inventory of Logistics Facilities

CFSs were established in the year 2009purposefully to reduce congestion by at least ten kilometres (10km) distance range from the port. The roles of CFS are to provide customs clearance and to store container for consolidation of cargo. Containers are allowed to move to CFS after shipping line manifest had been submitted to and approved by customs. When CFS concept was adopted, it could have been advisable to have dedicated container slots for each CFS at CY yard. This would have enabled pick up of containers from upstairs to bottom, and minimized operation time and time wastage when containers have to be searched for. In Mombasa, CFS operators designate each container with container collection number and the CY must search for it during collection. However, according to CFS Association, the container pick up is available within a day after container discharging at CY yard. (It is possible for Container pick –up a day after container discharge at CY). After delivering to CFS, FCL containers completes the customs clearance process and Less than Container Load (LCL) cargo is stripped after customs clearance. Cargo can thereafter be moved out from CFS after customs clearance process had been completed. However, not all containers at the Port are moved to CFS. Principally, it is KPA that designates a container to CFS on vessel-basis.

In addition, Empty Container Depot is important, due to the fact that Mombasa port is negatively characterized by: i) cargo imbalance: due to small export cargo volume, there is the high possibility to have empty containers at port area, ii) Limited Port space: The Mombasa Port area is narrow in size and therefore empty container storage space is insufficient, and iii) low priority for empty container export: Empty container export does not contribute to shipping line's benefit and therefore empty container export is not prioritized compared with full export containers or import containers. Empty container shipment is more often done only when empty space is available for vessel. In this context, empty containers are likely to be dead stock. In order to mitigate this dilemma vis-à-vis increase of empty containers necessitates the need for empty container depot.

According to the interview held in May, 2015, Mombasa is historically export/import consolidation point from/to inland. This means that direct container delivery between port/inland is not practical with 60-70 % of import cargo is delivered after stripped at Mombasa area. In this regard it seems like Mombasa plays the role of distribution center for Nairobi. It is noted that old fashioned warehouses are located in the port area and the customers in Nairobi mainly pick warehouses in Mombasa as their distribution points. (In terms of export, tea remains the major export commodity and Mombasa has the biggest auction center in the world. Therefore, export-transit warehouse are located near the port. Export containerization is implemented in Mombasa even though the production site is in the inland area. Tea is brought to the port as break bulk cargo under transit goods status to transit warehouse.)

## 5.7.4 Review of Soft Infrastructure

The process/procedure of import cargo release for local import is summarized in table 5.7.1 which highlights long and complex process.

Although one stop border post and IT customs system (Simba) are being implemented, their effects are still limited and there are still a lot of stakeholders involved in the process. This Poor coordination among various governmental authorities' tasks has necessitated forwarding agents to be involved in all the process until final cargos are released. In addition, paperwork and document transfer are still done on manual basis.

**Table5.7.1: Domestic Import Procedure**

| | From | To | Action | Remark |
|---|---|---|---|---|
| 1 | Importer | Cleaning agent | Document preparation | Heavy document requirement |
| 2 | Shipping line | Customs , KPA | Manifest submission | 48 hours before vessel arrival |
| 3 | Shipping line | Cleaning agent | Manifest number/vessel arrival date | 2-3 days before vessel arrival |
| 4 | Cleaning agent | Customs(Nairobi) | Register import entry | By Simba system |

| | From | To | Action | Remark |
|---|---|---|---|---|
| 5 | Cleaning agent | Bank | Duty payment | Bank cheese or RTGS payment |
| 6 | Bank | Customs | Conformation of duty payment | By Simba system |
| 7 | Customs | Cleaning agent | Inform the mode of clearance(red, green or yellow) | By Simba system |
| 8 | Cleaning agent | Cleaning agent | D/O exchange and pay shipping line charge | |
| 9 | Cleaning agent | Customs at port | White holder submission | White holder with necessary documents |
| 10 | Customs at port | KPA | indicating mode of clearance(red, green or yellow) | |
| 11 | KPA | KPA ground staff | Container relocation for physical check | if physical check is not required, Simba system informed that |
| 12 | One stop center officer(customs) | Cleaning agent | Hand back white holder | White holder including the result of physical check being implemented with related authorities |
| 13 | Cleaning agent | KPA officer | Stamped import entry copy and D/O submission | |
| 14 | KPA | Cleaning agent | Confirmation of D/O receipt/ issue release order | By Kato's(port management system) |
| 15 | Cleaning agent | KPA | Container Pick up order | By Kwatos |
| 15 | KPA | Cleaning agent | Ticket for cash payment of port charge | Noticed by on-line |
| 16 | Transporter | Cleaning agent | Obtain the registration number of vehicle | In order to pick up containers |
| 19 | Cleaning agent | KPA(at gate 10 or18) | Submit document for release | Import entry, ticket for cash payment, truck No. and so on |
| 20 | KPA | Cleaning agent | Position slip submission | |
| 21 | Transporters | KPA | Container pick-up truck arrive at port | Cleaning agent observe truck entry to port |
| 22 | KPA | Transporter | Loading containers | Endorsed position slip is handed to cleaning agent |
| 23 | KPA, port office and customs | Transporter | Final check at the port | Endorsed position slip is necessary |
| 24 | KPA | Transporter | CIR(Container Interchange Receipt ) is issued | |

*Source: KIFWA*

## 5.7.5 Review of On-going and Planned Projects

There are various challenges that are being experienced such as Single Customs Territory (SCT ) or One Stop Border Post (OSBP). These activities to facilitate border crossing are reviewed in the next Chapter (Logistics in Uganda).

(1) New port terminal

There is a new terminal that is under construction and this will certainly be added capacity to existing terminals. The new terminal will lead to improved access to Port and therefore reduce congestion on the Port access road. If the new terminal will handle more import containers and empty container storage on-dock basis, then it may reduce the current business ratio that being undertaken by CFS and Empty Container Depot. However, the customs procedure is an important factor for container turnaround ratio. Long procedures for customs clearance leads to longer time which results to higher container storage amount, and such containers becomes a limitation to CY yard productivity even if enough space is provided. As noted in previous sections, current customs systems mainly focus on collection of duty and not speedy customs clearance.

If the new terminal is to be operated successfully, then the role of CFS and Empty Container depot has to be changed and clearly defined. These players are now key in commencement of provision of new service. For example some CFSs are trying to provide user- oriented service (appointed by customers), while others focus on export business. According to KIFWA(clearing agent association), the number of registered warehouse operators has increased from 28 in 2013 to 71 in 2014, mainly focusing on consolidation business.

(2) Pre- customs clearance

In order to speed up customs procedure, measure like pre-customs clearance system should be established. . If pre-customs clearance is available, customs permit will be completed before arrival of vessel. However, the

requirement for shipping manifest is that it has to be submitted at least 4 days before ship arrival in the pre-customs clearance system (currently 2 days).

As for clearing agent, it is necessity to receive completed shipping documents with enough days before ship arrival since the completed documentation is required for customs purposes. It will therefore be required by Customs agency to insist that the capacity of the customs agents be enhanced in order to improve facilitation of customs procedure. Although this opinion may be true, it will increase work volume of agents to input complete data before vessel arrival. For example in developed countries, one HS codes declaration procedure is available using sum up single items' value as a declaration value as long as the commodities are classified as one HS code even the item numbers are different. This can reduce the input time for agents. On the other hand, Kenya customs procedure requires that agents should make detailed input without consolidation of single items' values like carbon-copies of invoice complete declaration and collect duty preciously.

Steps of actions that are required for pre-customs clearance are summarized in the table 5.7.2.

**Table5.7.2: Steps of Actions for Pre-Customs Clearance**

| Concerning party | Action |
|---|---|
| Revenue authority | ✓ Loading of manifest at least 96 hours prior to vessel arrival<br>✓ Enabling Simba system to allow electric import tax on 24/7 basis<br>✓ Strengthen import profiling module of Simba for compliant importers<br>✓ Real time confirmation of payment of import tax<br>✓ Enabling 24/7 verification of cargo<br>✓ Measures to have clearance document sent electronically<br>✓ Promotion of AEO(Authorized Economic Operator) scheme<br>✓ Permission CFSs having extra capacity to store empty containers<br>✓ Arrangement a place for scanning of containers destined to CFS |
| KPA | ✓ Introduction of on-line booking of trucks (after 3month)<br>✓ Downward the minimum periods for cargo transfer from port to CFS, 2day to 1day<br>✓ Integration Kwatos and Simba system<br>✓ Having the waiting area at port for heavy trucks |
| CFS Association | ✓ Enabling collection of containers ex-hook from KPA<br>✓ On- line release of cargo<br>✓ On-line invoicing and collection of charge on 24/7 basis<br>✓ Deployment of senior officers during night and weekend |
| KENTRADE (Kenya Trade Network Agency) | ✓ On- line application for bond cancellation<br>✓ Single window system<br>✓ Paperless clearance development<br>✓ Posting of manifest numbers and sending notification to cleaning agents |

*Source: KIFWA*

(3) Access road congestion

The discussion on the possible solutions for the current enormous congestion on the Port access road is ongoing by the stakeholder committee. One of the factors identified concerning the congestion on the Port access road is that it is caused by export trucks, and not by the import ones. The table 5.7.3 shows the summary of causes and proposed actions the stakeholder committee that was held in April 2015.

**Table 5.7.3: Tackles for Access Road Congestion**

| Stakeholder | Cause of congestion | Actions |
|---|---|---|
| KPA,KRA | Numerous and slow truck checks by KPA, KRA | ✓ Open up more gates |
| KPA | Without relevant documents | ✓ Review current export procedure |
| Police/KTA | Blocking free passage by parked truck along the port entry road | ✓ Stop parking truck alongside the road near gate10,18,5, Jomvu-Mirtini road, Shimanzi<br>✓ Check the situation of Tow trucks |
| Port police | Breakdown trucks along the road | ✓ Round clock presence to control traffic movement Makupa Causeway, Changmu roundabout, airport road |
| Kenya National Highway Authority(KENHA) | Narrow and poor road infrastructure | ✓ Expand road infrastructure |
| KPA, Empty Container Depot (ECD), Shipping agent | Over flow in empty container deport | ✓ KPA investigate the reason<br>✓KPA temporally allows empty container return directly<br>✓KPA increases capacity |

| Stakeholder | Cause of congestion | Actions |
|---|---|---|
| | | ✓On- line communication deport and shipping agent<br>✓Allowing large lot empty van for repatriation |
| Police | Poor traffic management at hot spot | ✓ Routing patrol at Changmwa roundabout |
| Other actions | (KPA)Holding ground at port for dropping export containers<br>(KPA,) On- line booking for trucks port entry<br>(KPA, Shipping agent) Transshipment container should be loaded directory to next vessel after stripping<br>(Kenya Maritime Authority: KMA)Circulate minutes | |

*Source: KIFWA*

## 5.7.6 Preliminary Analysis of Lead Time and Cost for Logistics

### 5.7.6.1 Import

(1) Transit time

Previously the log time (over 10 days) was required for berthing. Currently according to KPA homepage, the berthing period has been reduced to 3 days and 1 day for discharging. This shows dramatic reduction of the transit time.

According to CFS Association concerning the CFS usage, it is pointed out that one (1) day is required for container delivery from the discharge to CFS; and averagely two point seven (2.7) days for container dispatch from CFS (custom clearance). The transit time at CFS depends on the customs clearance time. According to KIFWA, it is estimated that about four (4) days are required from arrival of the ship l to CFS. Import transit time is summarized below.

**Table 5.7.4: Import Transit time**

| Mombasa port | Arrival to CFS | CFS dispatch | To Nairobi | Estimated total lead time |
|---|---|---|---|---|
| 2-3 days | 1 day | 2.7 days | 1 day | 6.7-7.7 days |

*Source: Study team*

(2) Cost

Based on the cargo flow, logistics cost consists of three (3) categories: i) port side charge ii) customs clearance cost (agent charge), and iii) transport charge. Import cost by category is shown below.

**Table 5.7.5: Import Cost (USD)**

| Cost items | | | Direct | | CFS(KPA nominated) | |
|---|---|---|---|---|---|---|
| | | | 20 ft. | 40 ft. | 20 ft. | 40 ft. |
| **Portside charge** | Port charge | Shore handling | 105 | 160 | 65 | 105 |
| | | Wharfage | 70 | 105 | 70 | 105 |
| | CFS charge | Shore handling | No need | | 80 | 120 |
| | | Wharfage | | | 70 | 105 |
| | | Handling charge | | | 20 | 30 |
| | Shipping line charge | | 200 | 300 | 200 | 300 |
| **Cleaning agent charge at Kenya** | | | 250 | | | |
| **Transport charge** | | **(To Nairobi)** | 700 | 1,000 | 600 | 1000 |
| | | **(To Eldret)** | 1,200 | 1,600 | 1,200 | 1,600 |
| | | **(To Kisumu)** | 1,350 | 1,700 | 1,350 | 1,700 |
| **Total** | | **Nairobi** | 1,325 | 1,815 | 1,355 | 1,755 |
| | | **Eldret** | 1,825 | 2,415 | 1,955 | 2,355 |
| | | **Kisumu** | 1,975 | 2,515 | 2,105 | 2,455 |

*Source: JICA Study team*

Remark: "Direct" represents the pattern indicating direct delivery from port i after customs clearance at Port.
"CFS" represents the pattern that container is transferred to CFS and customs clearance is conducted at CFS in order to avoid the customs clearance at port.

- Port side charge Port side charge consists of: a) port charge, b) shipping line charge and c) CFS charge, and in the above mentioned a) & c) they are determined by port tariff, while b) is dependent on each shipping line.
- Typical sub-items of shipping line charges are terminal handling charge and D/O (Delivery Order) charge. Terminal handling charge and lift on/lift off charge are collected as port charge at the form of shore handling/warfare charge in worldwide. This seems like overlapped payment.
- Transport charge

  This charge varies depending on type of business, type of cargo, the frequency, and return cargo availability etc. But the basic charge can be obtained from Truck association. (e.g. interview survey to forwarding agent in July 2015, railway charge is estimated to be USD1000-1100/40from Mombasa to Nairobi, including lift on/ lifts off and short delivery within the destination (Nairobi) without movement charge from port to rail terminal). Since truck delivery charge is assumed to be approximately USD1000/40' from above Table 5.8.5 while rail does not have cost competitiveness. According to interviews survey in July 2015, each CFS has respective transport rate to attract customers.

### 5.7.6.2 Export

(1) Transit time

It was noted that factory vanning in remote areas was possible. The procedure for vanning is as follows customs sealing and staffing are implemented under the supervision of customs officers so that custom officers must come to supervise the vanning operation. On the other hand, declaration can be done using Simba system, which will improve the transit time to couple of hours. Transport time depends on the distance to be covered, but the long queue at the port entry is inevitable. Additionally, it is mandatory for export cargo to go through X-ray scanning check. The long waiting time that is at the port is necessitated by the limited number of X-ray machines and frequent break-down of these machines. According to Interview held in July 2015, the time for x-ray scanning check takes about 24-28 hours.

This therefore implies that exporters are forced to deliver export cargo at least 3 days before CY cut off time, since they have to put in consideration the waiting times for long queue and X-ray scanning. This is herein noted as extremely longer procedure compared to world-practice ( which only takes one (1) day before or the same day of CY cut-off day).

**Table 5.7.6: Export Transit Time**

| Location | Action | Time |
|---|---|---|
| **Nairobi-Mombasa- to Export Premises** | Empty container delivery to exporters premises | Depend on distance (1day for Nairobi) |
| **Exporter's premise** | Customs procedure and vanning | 0.5 – 1.0 day |
| **Road transportation** | Delivery to port | 1.0 - 1.5 day |
| **To enter the port** | Port entry (congestion) | 0.5 -1.0 day |
| **Mombasa port** | Container yard operation to load vessel | 3 day (2 day for scanning) |

*Source: Interview result conducted by Study team*

(2) Cost

Port charges and shipping line charges are rather not expensive as the import tariff. Large portion of the cost is the transportation cost. Trucks tend to wait for cargo at importer's destination in order to avoid empty return. In this context, export transport is likely to be cheaper than import. This is the trend in other countries where import volume exceeds export volume.

The export cost is summarized below.

**Table 5.7.7: Export Cost (USD)**

| **Nairobi Factory vanning** | |
|---|---|
| **Activity** | Estimated cost (per container) |
| **Container delivery charge to port** | 700-1000<br>40 % reduction is practical when empty container is available |
| **Port Charge** | Shore handling 20' 40<br>40' 65<br>Wharfage 20' 30 |

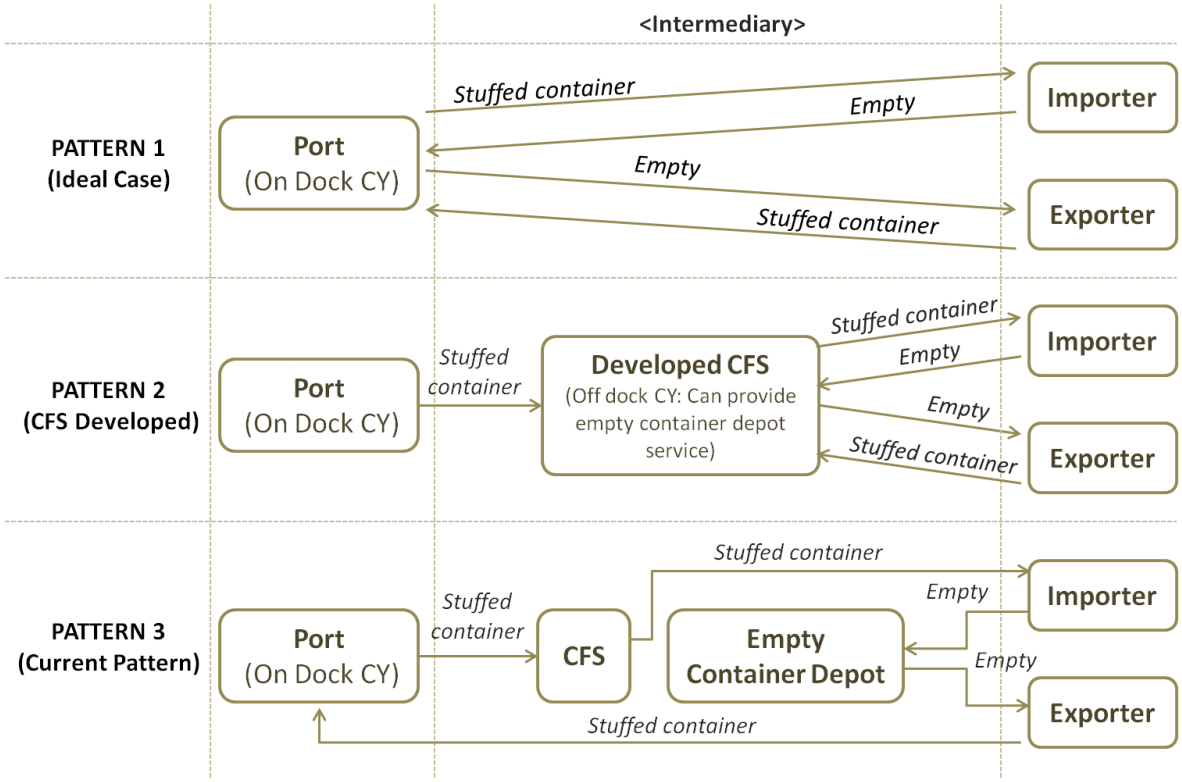
| Nairobi Factory vanning | |
|---|---|
| | 40’ 65 |
| **Agent charge** | 250 |
| **Shipping line charge** | B/L fee 60-70/shipment<br>OTHC 20’ 99<br>40’ 135 |

*Source: Interview result conducted by Study team in July 2015*

## 5.7.7 Analysis of Current Gaps and Bottlenecks

(1) Import

Since the introduction of CFS practice, port congestion and transit time as well as cost for import have dramatically improved. The smooth cargo movement for CFS is being realized. The dispatch time from CFS/of direct deliver pattern depend on the customs clearance time (since dispatch is allowed only after custom clearance is completed). It is imperative to note that even though CFS has improved efficiency there but yet CFS and empty container deport make logistics pattern more complex within Mombasa area.




*Source: Study team*

**Figure 5.7.1: Current Cargo Flow and Other Case Image**

Another constrain is the heavy workloads that is tasked on clearing agent. In order to secure the duty and tax revenue, there is a procedural requirement for completing documentation is strict and heavy volumes of paperwork. Ironically though, customs facilitation program requires improvement of quality of clearing agent work, there is little or no attention on the clearing agent’s heavy burden.

(2) Transportation

According to Kenya Truck Association (KTA), fuel cost accounts for about fourty five percent (45%) of the truck delivery cost; while maintenance cost is also high accounting for about ten percent 10% of truck delivery cost. High cost of transport can also be associated with:

- Lack of cargo for the return trip due to very little export cargo produced. Only limited driver can get export cargo for the return trip e.g. coffee from Uganda or tea from Rwanda.
- High fuel costs.
- Improper driving skills. Drivers cannot save on fuel due to poor driving skill. The Association is looking at setting up a driving school to train operators and drivers on economic driving (economical fuel consumption).

(3) Export

Congestion at the port access road and long waiting time for X-ray scanning are serious constrain to export cargo. Exporters/agents are likely to deliver export cargo at Mombasa port at least 3days before CY cut-off date, resulting in creation of long queue. In comparison to the world standard, where export cargo are allowed to be delivered before CY cut-off date so long as the custom clearance had been completed which also involves X-ray scanning or physical check.

Currently, there are two practical solutions for facilitating export congestion that are being fromulated. One is to promote container stuffing activity by CFS, and another is to increase parking lot area promoted by Mombasa county. ・

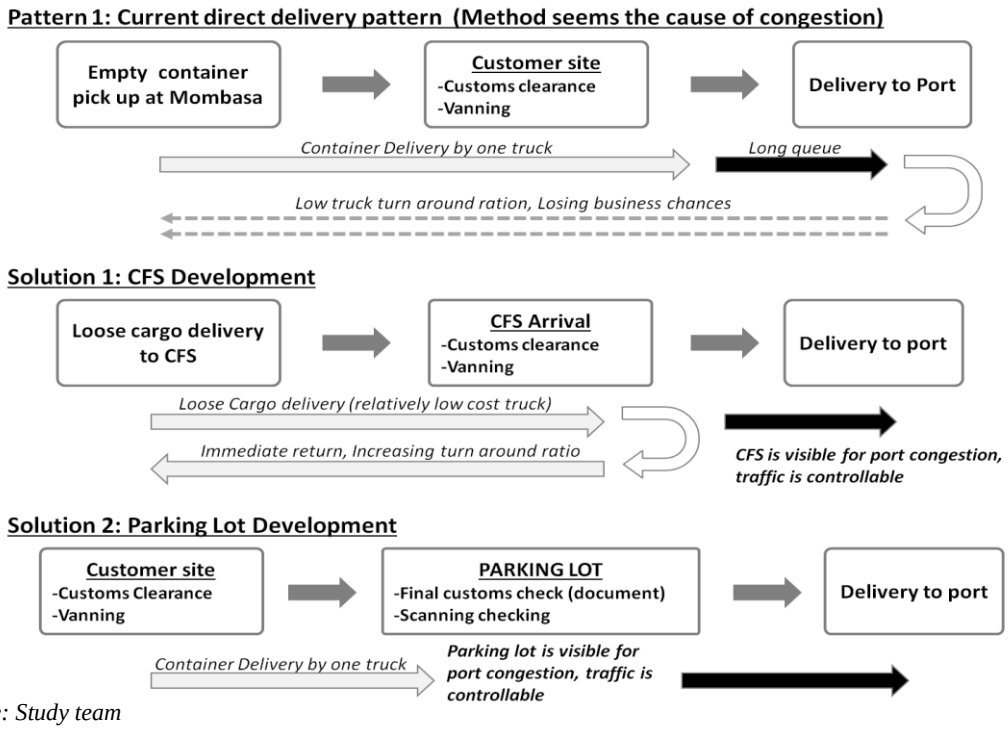
**CFS development plan**

CFS Association and KPA have an intention to promote export vanning/consolidation at CFS site in this manner: i) export cargo should be delivered to CFS as loose cargo, ii) customs clearance and container stuffing, and iii) delivery to port. Since cargo is delivered as the loose cargo to CFS, transportation cost is expected to be cheaper than container delivery. However, loading /offloading, CFS vanning, and delivery to port are factors that can increase cost.

If cost is competitive, CFS can control the traffic between CFS and port easily. Additionally, turnaround ratio will be improved for trucks from remote area, since immediate return comes to be possible.

**Parking lot as captured in the development plan**

Mombasa county has a plan for establishing parking space for export containers. This place will act as a final document check service place and as well as time management service for dispatch of trucks to meet CY cutoff time. The main difference with CFS is the container stuffing wherein it is not clear whether it will be available or not.




*Source: Study team*

**Figure 5.7.2: Current Pattern/CFS Deployment Pattern/Parking Lot Development Plan**

These services will contribute to mitigating long waiting time for port access and inside port congestion. Similarly with above CFS development plan, turnaround ratio will be improved for trucks from remote area if transshipment service is provided. Trans-shipment cost is certainly not expensive because this operation only entails exchanging tractors and not necessarily for cargo loading/offloading

In any case of CFS or parking lot development, it is advisable that X-ray scanning facility should be installed at these facilities and not at the port.

(4) Price comparison with India Chennai/Bangalore corridor

India practices CFS practice in a similar manner with Kenya. In India principally, all import containers are transferred to CFS. So price comparison will always be effective whether Northern corridor cost is affordable or not. In addition, India is also known of its notoriety as “high logistics cost country". This therefore imples that, Indian logistics cost is higher than Northern corridor in terms of truck deliveries while rail is not competitive.

Although rail is not competitive in Mombasa-Nairobi, an Indian railway charge indicates cost competitiveness for even shorter distance compared to the Kenya's distance of between Mombasa-Nairobi. Table 5.8.7 indicates that total cost of railway is approximately US dollars one thousand (USD1000); which is cheaper than total truck transportation estimated at US dollars one thousand four hundred and eighty (USD1480). The difference is by thirty percent (30%) which is US dollars five hundred (USD500).

The railway transportation charges are competitive estimated at US dollars two hundred and seventy (USD270), which is almost half of the cot by trucks which is estimated at US dollars five hundred and fifty (USD550). If additional related charges of US dollars one hundred and ten (USD110) are added to include also final delivery charges of US dollars eighty (USD80) only sums up to eighty five percent (85 %) of truck delivery cost (USD550) In it is noted that particularly that short distanced final delivery is expensive.

It is therefore noted that truck transport cost seems relatively expensive but yet it attracts volume discount which also seems available.

**Table 5.7.8: Transport Cost in India (40’ USD)**

| Road transport | Cost | Rail transport | Cost |
|---|---|---|---|
| Port | 296 | Port | 275 |
| CFS | 217 | Rail | 273 |
| Agent fee for port operation | 167 | Rail additional(LoLo,etc) | 112 |
| Customs clearance | 250 | Customs clearance | 250 |
| Truck delivery | 551 | Final delivery(20km) | 80 |
| **Total cost** | **1481** | **Totalcost** | **980** |
| cost per/km | 4.1 | Cost per/km | 2.9 |
| Northern corridor (truck cost is based on Table 5.8.5) | 3.6. | | 3.6.or so |

*Source: Study team*

# *5.8 Logistics in Northern Corridor in Uganda*

## 5.8.1 Overview

There has been steady reduction of transit time in the Northern Economic Corridor but yet the transit procedure still takes more time and moreover border crossing time still takes long time. Export transit time has not been taken into serious consideration. It therefore prudent for JICA Study Team to focus not only on import but also on export transit time and cost therein. The transport cost is one of the major bottlenecks for promoting export activity.

## 5.8.2 Review of Policy, Legal Framework and Administrative Structure

Uganda is a "land locked" country and as a result it experiences challenges due to long distance from the international gateway, resulting in high logistics cost and uncertainty of transit time. The country’s cooperation

with neighboring countries and a regional cooperation is a necessarily strategy for Uganda. In particular, good connectivity with international ports is a requisite and indesipensible channel. The scheme of Single Customs Territory (SCT) in East Africa has been implemented to realize seamless and facilitated cross border transport since 1999. SCT aims at full attainment of the Customs union by the removal of restrictive regulations/or the minimization of internal border controls for goods movement between the Partner States of East Africa with an ultimate realization of free circulation of goods. This scheme will enable Uganda to access ports more smoothly.

Legally, the following actions are indicated as key factors for success:

- Single customs declaration for goods destined to Uganda for both international and intra clearance;
- Reduced customs documentation and information exchange;
- Mutual recognition of customs officers working together in Partner States; and
- Mutual recognition of clearing agents and granting access rights for use of customs system across the region

Pilot tests have commenced for above elaborated measures in the Northern Corridor comprising: Kenya, Uganda and Rwanda. During the Summit held by Heads of State in Kigali, Rwanda on 28th October, 2013, the Heads of State noted that the SCT successfully launched with the clearance of 15 Petroleum trucks from Mombasa to Uganda and 6 trucks of dry cargo from Mombasa to Kigali. With this recorded success, SCT announced on 1st January 2014 regarding the full implementation date on 1st July 2014. Observing this phenomenon JICA Study Team observation is that the proposedschedule has delayed. It was however noted that the target of transit time between Mombsa to Kampala was 4 days in SCT scheme and this target is almost realized as explained in article 5.9.6 of this report.

## 5.8.3 Existing Inventory of Logistics Facilities

(1) Port

In the year 2009 CFS practice that handles imports was adopted in Mombasa port. Although a large portion of Kenyan local import cargo engage in CFS practice, but containers for transit country do not use CFS with exclusion for only specific cargo like vehicles. Containers' free time for import goods at Mombasa port is two (2) days for CFS and seven (7) days for transit, this implies that the transit procedure takes a long time.

Currently, twenty five percent (25%) of Mombasa port throughput is for Uganda. Uganda currently has its own exclusive CFS: Unifreight CFS for vehicles. However, other transit countries have to nominate their CFSs although the volumes of these countries are also very small. Therefore, CFS collaboration/integration/development among transit countries will be beneficial for all transit countries, and Uganda should take the lead towards realizing this objective.

In terms of exports, transit warehouses have been already deployed at the port area where containers stuffing services for tea/coffee from Uganda and other neighboring countries are provided.

CFS for import
UNIFREIGHT


Export transit house for tea
Loading operation is handled by forklift with palletized cargo.

*Source: JICA Study Team*

**Figure 5.8.1: Port Facility for Uganda**

(2) Road

Road, as the most basic infrastructure along Northern Corridor, are noted to be in good condition and smooth truck movement is currently carried out. The GPS survey carried out by JICA Study Team noted that truck drive was smooth within Uganda territory. Previous JICA survey also indicates good road condition extents to Border of Rwanda (420km from Kampala).However, most road sections have only two (2) lanes and the accident rate of large vehicle has been increasing in comparison with other types of vehicle.

## 5.8.4 Review of Soft Infrastructure

Since 1999 when the Single Customs Territory (SCT) agreement was signed this enabled the inland (Transit) country to implement import clearance at entry port. In order to do this, customs officers from inland countries stay in the country of entry port. Uganda therefore has been able to collect duty which is beneficial for national revenue.

In 2014 Uganda adopted Electric Cargo Tracking System (ECT) (adopted in 2009 in Kenya) in order to follow up and trace cargo movement to the destination country (to avoid smuggling). Generally the system is operated by GPS equipment being installed on the container door with container seal function. This system is only utilized for customs purpose, although it seems to be useful for transporters and importers as well. Currently, general cargo is not transported by SCT practice and bonded procedure is still required.

In order to promote SCT scheme, the following targets should be considered:

i) Scrapping off the Multiple security bonds;

ii) Scrapping off the Multiple customs declaration;

iii) Harmonization of customs laws and legal frameworks in the region;

iv) Need for customs system that is interfaced; and

v) Joint verification by multiple customs verification should be done.

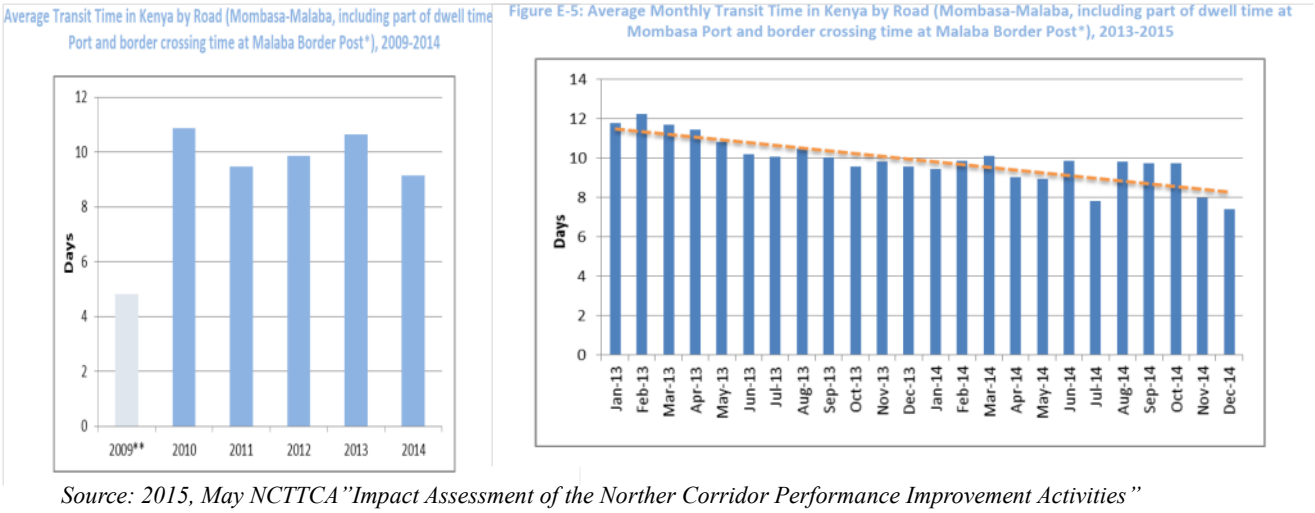
For Uganda, bullet i) and ii) are realized during customs clearance when cargo arrives at the border, which means that it is not necessary to process bonded procedure for good transportation in Uganda. However, Ugandan bonded procedure is still necessary for cargo in the customs clearance at final destination. In any cases, Kenyan transit procedure and import declaration are separately carried out.

Common customs laws were adopted in 2010 in order to realize bullet iii) and iv) in all EAC member countries, and procedures/processes have since been harmonized. Ultimate SCT cargo flow is now being experienced among member countries. However, the IT system for customs procedure is different between Kenya and Uganda. It is herein observed that transforming data or information is necessary from one country to another and this should be within requisite limited time.

Joint verification system in bullet v) has already been achieved at Malaba border since 2010. However, the system still requires a lot of time for nurturing and institutiolization and also infrastructural developments such as bridge and other facilities in the border area. As a result, of the above observation there are still long queues being witnessed at the border.

## 5.8.5 Review of On-going and Planned Projects

Northern Corridor Transit and Transport Coordination Authority (NCTTCA) carried out a survey to access the performance of the improved activities in the Northern Corridor. As such the result of SCT scheme was that the total lead time had improved. According to the latest NCTTCA survey (issued in May 2015), 2013/2014 monthly data indicates the clear decreasing trend for transit time.




*Source: 2015, May NCTTCA"Impact Assessment of the Norther Corridor Performance Improvement Activities"*

**Figure 5.8.2: Improvement of Corridor Transit Time (Mombasa-Kampala)**

- Implementing border crossing

Facilitation of the border procedure is one of the most effective solutions. There has been attempt at Malaba border with wide parking area developed on the Uganda side and One Stop Border Post (OSBP) already established there. On the other hand, the Kenyan side does not have enough parking space which makes long queue inevitable. Kenya currently are constructing the new border bridge and border post facilities after the completion it is expected to decongest the border.

- Activities to customs procedure

In effort to improve the customs procedure, the following variables have been singled out:

✓ IT system

In 2013 the upgrading of ASYCUDA+++ to ASYCUDA World was completed. This aimed at speedy cargo clearance using IT. Imperatively customs declaration can be submitted from anywhere in Uganda using online service via the internet and according to Uganda Revenue Authority (URA) presentation material, the average clearance time could still be reduced from five (5) days to less than two (2) days using the new online service. In addition, paperless clearance is also being promoted.

✓ Authorized Economic Operator(AEO)

The use of better and quicker customs' service to qualified business providers has been proposed. The First phase commenced in September 2013 wherein ten (10) companies including importers and customs agents were authorized as the operators who are eligible to conduct the operation with customs under special arrangements. Now a bonded warehouse management program is being piloted.

On the other hand, transit procedure at port is still complex and is as follows:

i) Clearing agents register transit entry by regime code T810, through Simba system after obtaining Manifest No;

ii) After Transit entry passed by customs data center, agents prepares Pink folder containing appropriate documents and submit to customs;

iii) Customs delivers pink folder to port office and judge whether direct delivery or scanning check;

iv) Agent registers pick-up order to KPA by KWATOS system (port system) and cash payment for port charge;

v) Agents register each vehicle number for pick-up and register Road Transit Declaration (T812) by Simba;

vi) Clearing agents arranges the container seal for customs and bank (for seal charge); and

vii) With cash payment tickets, T810, T812, vehicles make a queue at port gate and pick up container.

## 5.8.6 Preliminary Analysis of Lead Time and Cost for Logistics

(1) Import

**Transit time**

GPS survey was done in March 2015 to collect tracking data on physical truck movement from a pick up container at Mombasa port to delivery in Uganda as the final destination. The result includes the night sleeping time and physical transit time for each cargo processes. Although GPS data was not covered, transit time for port operation, interview survey was conducted for KIFWA in July 2015, CFS association and the forwarding agent were interviewed to collect additional data as well. According to these results total transit time is estimated to be 7.5-8.5 days which is below ten (10) days from vessel arrival to cargo delivery to Kampala.

According to interviews and survey results it shows that it is possible for current transit procedure to be completed within 2 days if all the processes were properly done. However, the perfect case is very rare and normally, it takes 4-5 days.

**Table 5.8.1: Import Transit Time**

| Activity | GPS Survey Result |
|---|---|
| From vessel arrival to cargo dispatch | 4-5 days for transit & dispatch |
| Mombasa to Malaba | 1day and11h44m(incl.1h07m night time sleep) |
| Malaba(Kenya) | 1day and12h49m(incl.1 night sleep) |
| Malaba (Uganda) | |
| Malabar-Kampala | 0day and 15h35m(incl. 5h56m night sleep) |
| ICD clearance | 0day and 3h05m |
| Total | 7.5day -8.5 day(after dispatch at Mombasa, it takes 3.5 days ) |

*Source: JICA Study Team*

**Table 5.8.2: GPS Survey Result**

| Date | Time | GPS Position | Distance (km) | Driving hour | Stoppage time | Remark |
|---|---|---|---|---|---|---|
| Mar.21.2015 | 12:21 | Port start | | | | |
| | 2:21 | Shimanzi | 8 | 1:58 | 10:49 | |
| | 21:30 | Kibwezi | 268 | 7:16 | 0:15 | |
| | | Kibwwz(sleep) | | | 6:25 | |
| Mar.22.2015 | 3:50 | Start at Kibwezi | | | | |
| | 12:00 | Nairobi | 216 | 4:50 | 0:19 | |
| | 19:30 | Malaba | 388 | 9:56 | 0:24 | |
| | | Malaba (sleep) | | | 8:42 | (Kenya) |
| Mar.23.2015 | 4:05 | Start | | | | |
| | | Border | 7 | 1:53 | | |
| | | Border | | | 27:45 | |
| Mar.24.2015 | 9:43 | Start | | | | (Uganda) |
| | 16:54 | Leave Malaba | 0 | 0:09 | 7:03 | |
| | 21:50 | Igana | 121 | 4:50 | 0:06 | |
| | | Igana (Sleep) | | | 5:56 | |
| Mar.25.2015 | 3:46 | Lave Igana | | | | |
| | 8:29 | Kampala | 142 | 4:29 | 0:13 | |
| | 11:34 | Leave Kampala leave | | | 3:05 | (ICD check) |
| | 17:15 | Lyan toned (200km from Kampala) | 203 | 4:32 | 1:08 | |
| Total | | | 1353 | 39:56 | 42:45 | |

*Source: JICA Study Team*

**Border crossing**

The current required time for border crossing is around 1.5 days and this is considered long. . The GPS survey result revealed that border crossing required approximately: 28 hours in Kenya and 7hours in Uganda according to. Another survey result indicates that customs processing time has been dramatically reduced since the adoptipn of custom procedure but it was also noted that long queue iwas still a big problem. The waiting time at Kenyan side (28 hours) is longer than at Uganda side (7 hours) this is because the number of staff on the

Kenyan side is smaller compared to Uganda side that has more staff that handle import procedure. In addition, following findings were noted:

- While on Ugandan side parking lot has been developed, while on the the Kenyan side still lacks enough parking space.
- Although customs offices are opened for twenty four (24) hours/day basis, but yet clearing agents operate only on day time basis. Therefore night time cargo crossing the border is not possible.
- Considering driver's feelings and attitude, ulitimately will also determine the remaining time for destination during border crossing. The drivers sometimes are under pressure at Malaba border due to long queues. On the other hand, they can estimate the time and feel more relaxed after crossing the border.

**Road transport portion**

- Excluding Mombasa area, it is possible to drive smoothly from Mombasa to Kampala. The congestion at Mombasa port area is too much and it takes half a day drive for only 8km distance. In other portions, driving time is only 2.5 hours and remaining 10.5 hours are stoppage time.
- GPS data indicates that weighbridge do not consume so much of the time making waiting time at weighbridges minimal for both Kenya and Uganda although a lot of complaints concerning weighbridges are observed in many related reports.
- Over 3km long queue are often observed at the Malaba border on the Kenyan side.

**Cost**

Containers destined for transit countries do not need to attach CFS and thus such containers are exempted from CFS. Apart from the Kenyan part (Mombasa-Nairobi), rail transport has cost competitiveness. According to the interview survey, the demand for heavy containers is so high.

Total rail cost estimated to be USD 2,800/20' and cheaper than truck (USD3,000/40'), which means that the rail cost is approximately 10% cheaper compared to truck transport. The import cost of rail and truck transport are showed below.

**Table 5.8.3: Import Cost (USD)**

| | | | Direct from port by Truck | | Rail | |
|---|---|---|---|---|---|---|
| **Container Size** | | | 20 ft. | 40 ft. | 20 ft. | 40 ft. |
| **Port side charge** | Port charge | Shore handling | 85 | 125 | 85 | 125 |
| | | Wharfage | 70 | 105 | 70 | 105 |
| | Shipping line charge | | 200 | 300 | 200 | 300 |
| **Cleaning agent charge at Kenya** | | | 300 | | | |
| **Transport charge** | | | 1,995 | 2,420 | 1,825 | 2,120 |
| **Cleaning agent charge at Uganda** | | | 250 | | | |
| **ICD usage charge** | | | 100 | 100 | - | - |
| **Total** | | | 3,000 | 3,500 | 2,800 | 3,200 |

*Source: JICA Study Team*
Re) Rail transport charge includes lift on/liftoff charges and final delivery within short distance. However, port/ rail yard transportation charges are required additionally.,

(1) Export

**Transit time**

Using the ASYUCDA system it is possible to make declaration at any part of Ugandan territory. Processing works are concentrated in the data center after data entry. It takes only 3 hours from the moment of declaration to the moment that permission is issued and this is a case of the best practice, according to interview survey with forwarding agents held in July 2015.

Factory vanning is allowed under the supervision of customs officers and it requires customs sealing. Then cargo is allowed to go to the border and estimated transit time is 4-5 hours from Kampala. After arrival at border, exit procedure can be completed in the shortest time.

On the Kenyan side, agents entry transit process (T810,and T811) in Simba system is required. Data is transmitted to Nairobi center, approval is issued back to Malaba, thereafter the approval is printed out, and related documents are submitted to Malaba customs on Kenyan side. This process takes about 8 hours. Thus, total required time at the border is around one (1) day in an extreme case. Night time driving is not safe due to lack of safety measures in place along the roads so that the transport time to Mombasa is estimated to be 2-3 days. After arrival at the port, a long queue for port entry is unavoidable. In addition, 100 % scanning using X-Ray machine is implemented and requires at least two (2) days due to the limited number of equipment and the machines also encounters frequent break down. It is imperative to note that if the scanning system were installed outside of the port, it would be very convenient for many users.

**Table 5.8.4: Export Transit Time**

| Location | Action | Result |
|---|---|---|
| **Kampala** | Declaration to truck departure at Kampala | 1day（customs declaration: 3-4 h） |
| **Kampala to Malaba** | Truck departure from Kampala to Malaba | 4-5 h |
| **Border crossing** | Entry/Exist border gates | 1 day |
| **Malaba-Mombasa** | Malaba departure-Mombasa port | 2-3 day |
| **Mombasa port** | From cargo receipt at CY to vessel departure | 3 day( 2day for scanning) |
| Total | | 7Day 4hours -8day 5 hour |

*Source: Interview survey (July 2015) by JICA Study Team*

**Cost**

The transportation cost is relatively high due to the long distance and limited number of export cargo. If exporters could find the empty containers at any time, the transport cost would be reduced significantly.

According to export promotion council in Uganda, it is difficult to find empty containers in Uganda. Therefore empty containers are obtained in Mombasa and this escalates the transport cost. Generally, the export transport cost is always cheaper than import where import volume exceeds export. Therefore the situation in Uganda is unique considering the current trend, and this makes it difficult to promote exports from the viewpoint of cost.

**Table 5.8.5: Export Cost (USD)**

| **Kampala Factory vanning** | |
|---|---|
| Activity | Estimated cost(per container) |
| Container delivery charge to Kampala | 2500- '(pick up empty at Mombasa)<br>800-1000 ( in the case of return container is available) |
| Customs Clearance charge for Uganda agent | 150 document, clearance |
| Port Charge | Shore handling 20' 40<br>40' 65<br>Wharfage 20' 30<br>40' 65 |
| Agent charge for Kenyan | 250 |
| Shipping line charge | Bill of Lading(B/L) fee 70<br>Origin Terminal Handling Charge(OTHC )<br>20' 99<br>40' 135 |
| Total | 20' 1,439-2,935<br>40' 1,649-3,235 |

*Source: JICA Study Team*

## 5.8.7 Analysis of Current Gaps and Bottlenecks

(1) Import

Due to the progress that has been achieved both by Kenya and Uganda the transit time from Mombasa to Kampala has certainly been reduced. The main bottleneck now is the border crossing including the customs procedure problem. Despite the SCT scheme regulate and facilitate bonded procedure, the transit time for bonded transport procedure requires a long time (minimum: 2 days, 4-5 days of normal). Malaba border is also still a bottleneck to speedy transportation. Normally, it takes 2days to cross the border. Since the infrastructure development for parking space at boarder is underway, this will lead to reduced congestion at the border. It was noted that parking space on the Ugandan side is quite developed.

(2) Export

The following salient features on export were noted:

i. Factory vanning is available even in remote areas.

ii. Customs declaration is available by ASYUDA.

iii. The border crossing time is shorter than import.

iv. In terms of cost structure, shipping line charge and port charge are adopted at a preferable rate. The problem is high transport charge.

It is imperative to note that Kenya has tried to promote CFS vanning practice, but still some of the coffee/tea products in Uganda are practically stuffed at Mombasa as the transit cargo. Since customs seal is mandatory for crossing of the border, it is therefore difficult to carry coffee/tea as loose cargo in transit status. In this context, the efforts done for export through Mombasa are rather limited. Taking a look at the current coffee/ tea vanning situation at Mombasa, bagged/palletized goods are delivered to Mombasa transit warehouse and stuffed into containers at the backyard of the container port and this causes huge congestions. Therefore, containerization at factory site seems to be practical, since the palletizing operation could be completed when the cargo leaves the production site.

In order to realize the above, the high cost for container transport (pick up empty container from Mombasa and return it with goods to Mombasa) remains a bottleneck. Therefore, Development of Inland Container Depot (ICD) is proposed as a workable solution. Similarly neighboring countries which are like Uganda may face this problem. Since Uganda has ICD and extension plans, establishment of a new similar ICD in neighboring countries seems to be ineffective. Integrated ICDs is the most favorable scenario not only for Uganda but also for the EAC region. It is also noted that the involvement of the Northern-Eastern part of Kenya will be conducive. This is why Kisumu ICD performance is poor even for Kenya as shown below.

**Table 5.8.6: Kisumu ICD Performance (TEUs)**

| | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| Import full | 131 | 66 | 102 | 111 | 32 |
| Export full | 2 | - | - | - | 1 |
| Empty | 95 | 74 | 55 | 93 | 1 |
| Total | 228 | 140 | 156 | 204 | 74 |

*Source: KPA statistics*

(3) Cost comparison with other cases

For purposes of reference, cost comparison with ASEAN region was done. Referred ASEAN rates were preneted as the case for the alternative route of ocean transport to realize speedy transportation. In this context, the port related charge was included in ASEAN case so that the port charge and shipping line charge are deleted from the transport cost in the Northern corridor simulation. As the result, the cost shown in the following table includes import/export, border procedures, and transport costs. Apart from the Mombasa/Kampala route, the ASEAN route needs transshipment operation at the border.

Taking a look at the cost/km, Mombasa/Kampala route seems to be reasonable. This will show the result of on-going facilitation plans. According to the latest NCTTCA survey, the transport cost has also fallen by 16% from 2009-2010 to 2014 for Mombasa/Kampala. However, If 2009/2010 transport had not been adopted, then the cost would not have been competitive with the ASEAN case.

**Table 5.8.7: Cost Comparison with ASEAN (USD)**

| Origin | Destination | Km | Cost | Cost/km |
|---|---|---|---|---|
| Bangkok | Hanoi | 1555 | 3500- | 2.3 |
| Bangkok | Phnom Penh | 670 | 1400- | 2.1 |
| Phnom Penh | Ho Chi Minh | 280 | 650- | 23.8 |
| Mombasa | Kampala | 1250 | 2870 | 2.3 |

RE) Phnom Penh/Ho Chi Minh route is a rather new developed route, and still requires complex border crossing procedure. Therefore, the procedure cost is extremely high. Only transport cost itself is cheap and half of the total cost.

*Source) ASEAN cost: Nittsu research Institute and Consulting, Inc. own calculation*

# *5.9 Result of Good Movement and Vehicle Traffic Survey in Kenya*

## 5.9.1 Outline

The goods movement and vehicle transport surveys were carried out at sub-contract basis to capture freight movement on road and identify current bottlenecks in the NEC logistics network. Data obtained from the surveys will be used for future traffic demand forecasting along NEC.

4 types of surveys were conducted in Kenya as shown in Table 5.9.1.

All the surveys were conducted from mid of May 2015 to the beginning of June 2015.

**Table 5.9.1: Summary of Goods Movement and Vehicle Traffic Survey in Kenya**

| No. | Survey Type | Survey Location in Kenya | Survey Hour | Survey Target | Survey Method |
|---|---|---|---|---|---|
| 1 | Roadside Freight OD Survey | **[1 port]** Mombasa<br>**TOTAL: 1 point (1day Count)** | 12hours<br>(6:00-18:00) | Cargo Transport | Interview to Drivers |
| 2 | Traffic Volume Count Survey | **[1 port]** Mombasa<br>**[5 points on highway]**<br>Mombasa-Nairobi, Nairobi-Nakuru, Nakuru-Eldoret, Eldoret-Tororo, Nakuru-Kisumu<br>**[1 border post]** Nadapal<br>**TOTAL: 7 points (1day Count)** | 24hours<br>(6:00-6:00 next day) | All vehicle type | Manual Classified Count Survey |
| 3 | Data Collection from Railway Companies | KRC | ・ Monthly record of number of freights, OD for freights (last 5 years)<br>・ Time table of railway operation<br>・ Fare of Cargo (for each loading) | Railway Cargo | Data Collection |
| 4 | Survey for Condition of Custom at Border | Custom Office<br>Nadapal, Malaba, Busia (Kenya)<br>or at the Custom Office headquarter | ・ Monthly record of custom clearance, OD for freights (last 5 years)<br>・ Custom system<br>・ Time, cost and materials spent for border crossing | Import/ Export Cargo, Transit Cargo | Data Collection |

*Source: JICA Study Team*

## 5.9.2 Traffic Volume Count Survey

A Traffic Volume Count Survey was carried out at at a total of 7 survey points within Kenya as shown in Table 5.9.3 and Figure 5.9.1.

These surveys were performed for one week between Monday and Friday except public holidays in Kenya.

Type of vehicles for this survey was classified into 10 categories indicated as shown in Table 5.9.2.

**Table 5.9.2: Vehicle Classification**

| No | Vehicle Category |
|---|---|
| 1 | Sedan Cars / Taxis |
| 2 | Utility Vehicles(Pick-ups, Jeeps, 4WDs, Vans) |
| 3 | Minibus / Matatu |
| 4 | Medium bus, Coaster |
| 5 | Large Bus, Coach |
| 6 | Light Goods Vehicles (LGV) |
| 7 | Medium Goods Vehicles (MGV) |
| 8 | Heavy Goods Vehicles |
| 9 | Truck Trailer |

| No | Vehicle Category |
|---|---|
| 10 | Semi-trailer |

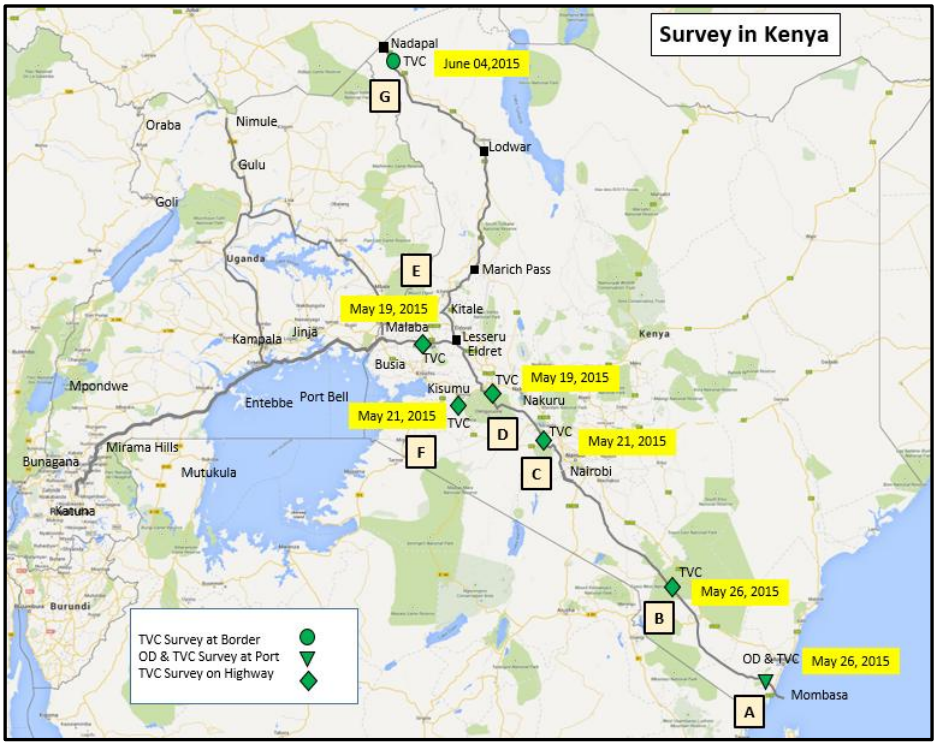
*Source: JICA Study Team*

**Table 5.9.3: Summary of Traffic Volume Count Survey in Kenya**

| No. | Location / Name | Description | Duration of Survey | Date of Survey |
|---|---|---|---|---|
| TVC-K1 | Mombasa / Mariakani Weighing Station | Mombasa Port | 1day (from 6:00 to 6:00 next day) | May 26, 2015 (Tue) |
| TVC-K2 | Mombasa-Nairobi / | on Road | 1day (from 6:00 to 6:00 next day) | May 26, 2015 (Tue) |
| TVC-K3 | Nairobi-Nakuru / | on Road | 1day (from 6:00 to 6:00 next day) | May 21, 2015 (Thu) |
| TVC-K4 | Nakuru-Eldoret / | on Road | 1day (from 6:00 to 6:00 next day) | May 19, 2015 (Tue) |
| TVC-K5 | Eldoret-Tororo / | on Road | 1day (from 6:00 to 6:00 next day) | May 19, 2015 (Tue) |
| TVC-K6 | Nakuru-Kisumu / | on Road | 1day (from 6:00 to 6:00 next day) | May 21, 2015 (Thu) |
| TVC-K7 | Nadapal / | Border Post (South Sudan) | 1day (from 6:00 to 6:00 next day) | June 04 2015 (Thu) |

*Source: JICA Study Team*

The result of traffic volume counts at each survey point is shown in Table 5.9.4 and Table 5.9.5.




*Source: JICA Study Team*

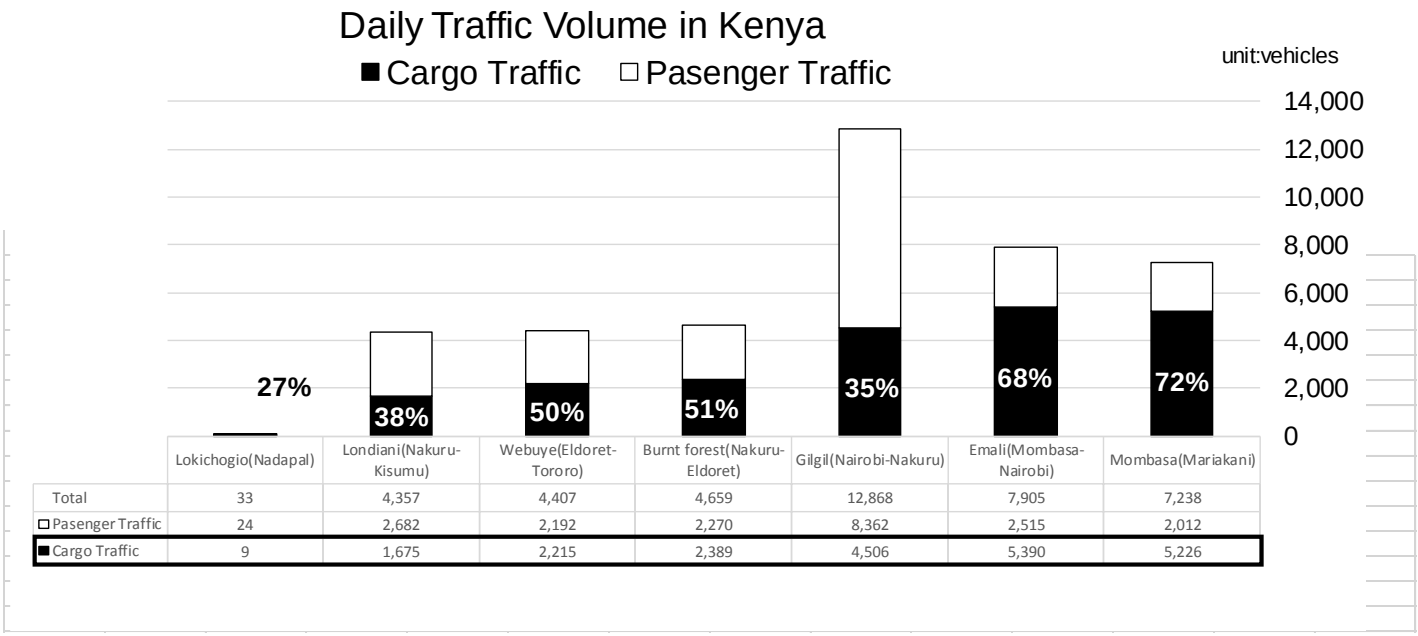
**Figure 5.9.1: Location Map for Traffic Volume Counts and Roadside OD Interview Survey in Kenya**

The highest rate of cargo traffic which consists of light truck, medium goods vehicle, heavy goods vehicle, semi-trailer and truck trailer is around 72% at Mariakani weighing station near Mombasa. Total traffic volumes of cargo traffic were 5,226 vehicles. 79% of cargo traffic at Mariakani weighing station is semi-trailer.

The rate of heavy goods vehicles coming towards Uganda and South Sudan from Mombasa decreased.

The rate of heavy goods vehicles was zero at Nadapal near the border post between Kenya and South Sudan. Cargo traffic volume at Nadapal is 9 vehicles only.

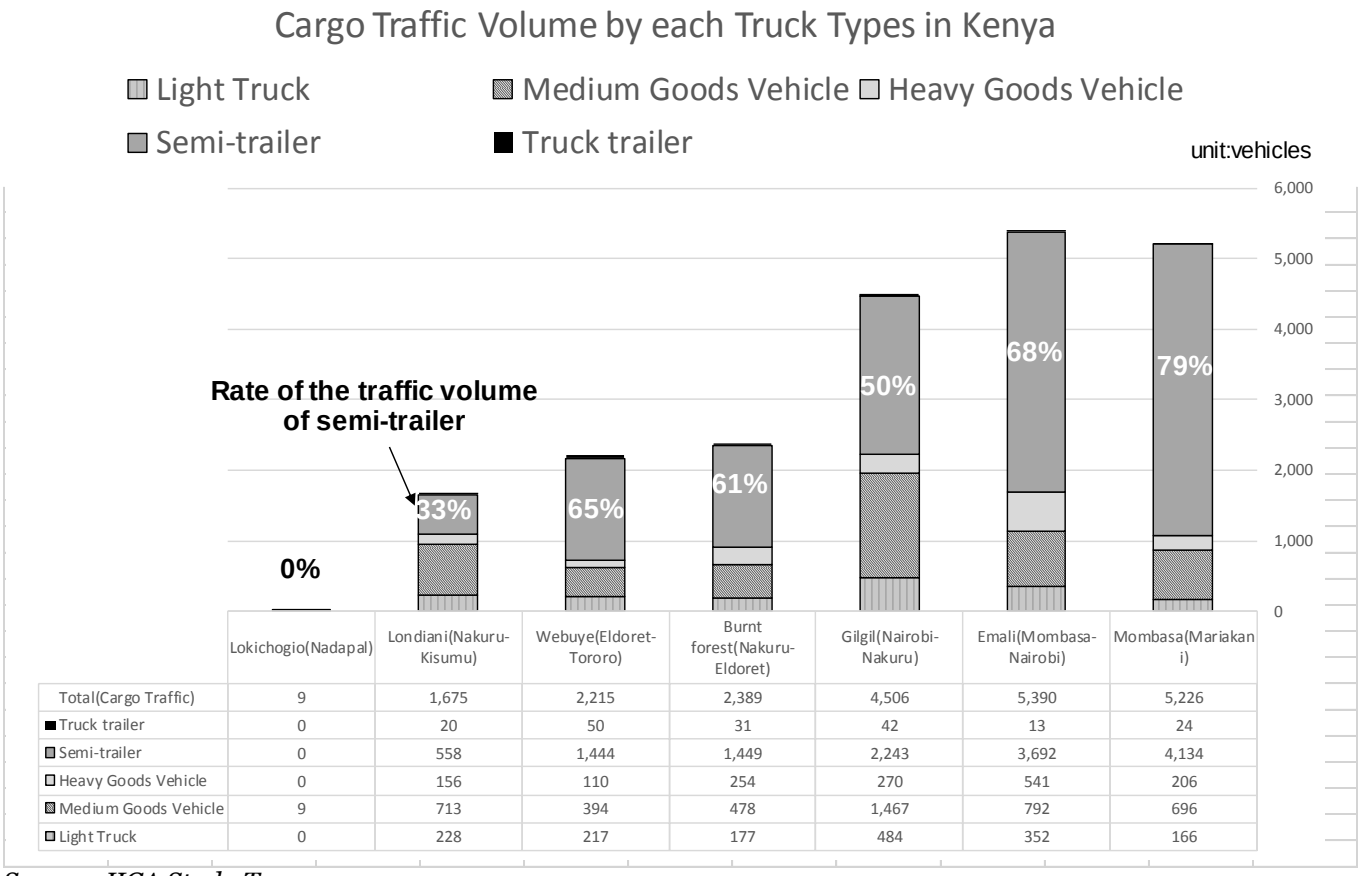
The highest traffic volume is 12,868 vehicles between Nairobi and Nakuru.




| | Lokichogio(Nadapal) | Londiani(Nakuru-Kisumu) | Webuye(Eldoret-Tororo) | Burnt forest(Nakuru-Eldoret) | Gilgil(Nairobi-Nakuru) | Emali(Mombasa-Nairobi) | Mombasa(Mariakani) |
|---|---|---|---|---|---|---|---|
| Total | 33 | 4,357 | 4,407 | 4,659 | 12,868 | 7,905 | 7,238 |
| Pasenger Traffic | 24 | 2,682 | 2,192 | 2,270 | 8,362 | 2,515 | 2,012 |
| Cargo Traffic | 9 | 1,675 | 2,215 | 2,389 | 4,506 | 5,390 | 5,226 |

*Source: JICA Study Team*

**Figure 5.9.2: Result of 24hors Traffic Count Survey in Kenya**




| | Lokichogio(Nadapal) | Londiani(Nakuru-Kisumu) | Webuye(Eldoret-Tororo) | Burnt forest(Nakuru-Eldoret) | Gilgil(Nairobi-Nakuru) | Emali(Mombasa-Nairobi) | Mombasa(Mariakani) |
|---|---|---|---|---|---|---|---|
| Total(Cargo Traffic) | 9 | 1,675 | 2,215 | 2,389 | 4,506 | 5,390 | 5,226 |
| Truck trailer | 0 | 20 | 50 | 31 | 42 | 13 | 24 |
| Semi-trailer | 0 | 558 | 1,444 | 1,449 | 2,243 | 3,692 | 4,134 |
| Heavy Goods Vehicle | 0 | 156 | 110 | 254 | 270 | 541 | 206 |
| Medium Goods Vehicle | 9 | 713 | 394 | 478 | 1,467 | 792 | 696 |
| Light Truck | 0 | 228 | 217 | 177 | 484 | 352 | 166 |

*Source: JICA Study Team*

**Figure 5.9.3: Result of Cargo Traffic Volume Count by Cargo Vehicle Types in Kenya**

**Table 5.9.4: Result of Traffic Volume Counts in Kenya**

| Total(Both direction) | | | | | TVC (Both Direction) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 24hours Traffic Volume (Both Direction) | | | | | | | | | | | | |
| | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | |
| No. | Description | | Survey point | Survey date | Sedan/ Taxis | Utility Vehicles | Minibus / Matatu | Medium Bus, Coaster | Large Bus, Coach | Light Truck | Medium Goods Vehicle | Heavy Goods Vehicle | Semi-trailer | Truck trailer | Total (Passenger Traffic) | Total (Freight Traffic) | Total |
| 1 | Survey at Port | 1 | Mombasa(Mariakani) | 26 May 2015 | 652 | 617 | 365 | 98 | 280 | 166 | 696 | 206 | 4,134 | 24 | 2,012 | 5,226 | 7,238 |
| 2 | Survey on Roa | 1 | Emali(Mombasa-Nairo | 26 May 2015 | 1,046 | 757 | 318 | 178 | 216 | 352 | 792 | 541 | 3,692 | 13 | 2,515 | 5,390 | 7,905 |
| 3 | | 2 | Gilgil(Nairobi-Nakuru) | 21 May 2015 | 3,108 | 2,529 | 2,153 | 202 | 370 | 484 | 1,467 | 270 | 2,243 | 42 | 8,362 | 4,506 | 12,868 |
| 4 | | 3 | Burnt forest(Nakuru-Eld | 19 May 2015 | 904 | 443 | 792 | 33 | 98 | 177 | 478 | 254 | 1,449 | 31 | 2,270 | 2,389 | 4,659 |
| 5 | | 4 | Webuye(Eldoret-Tororo | 19 May 2015 | 771 | 389 | 929 | 31 | 72 | 217 | 394 | 110 | 1,444 | 50 | 2,192 | 2,215 | 4,407 |
| 6 | | 5 | Londiani(Nakuru-Kisun | 21 May 2015 | 1,052 | 475 | 854 | 103 | 198 | 228 | 713 | 156 | 558 | 20 | 2,682 | 1,675 | 4,357 |
| 7 | Survey at Borde | 1 | Lokichogio(Nadapal) | 04 June 2015 | 2 | 22 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 24 | 9 | 33 |

*Source: JICA Study Team*

## 5.9.3 Roadside OD Interview Survey

A roadside OD Interview Survey was carried out at Mariakani Weighing Station which was the same survey point on the Northern Corridor Infrastructure Master Plan by NCTTCA.

The interview was conducted from 6:00am to 6:00pm, to conform to the freight traffic volume data that was collected simultaneously. The survey forms are presented in Apendix F.

Interview survey items to the driver for freight vehicles are as follows;

(a) Information of the trucks
   1) Survey time
   2) Vehicle Type (Light, Middle, Heavy, Truck Trailer and Semi-Trailer)
   3) Registration Plates (Zone, Class)

(b) Information of the freight
   1) Origin and Destination of the trip
   2) Travel Time
   3) Trip Frequency
   4) Contents and volume of freight

**Table 5.9.5: Summary of Roadside OD Interview Survey in Kenya**

| No. | Location / Name | Description | Duration of Survey | Date of Survey |
|---|---|---|---|---|
| OD-K1 | Mombasa / Mariakani Weighing Station | Roadside Interviews | 12hours (from 6:00 to 18:00) | May 26, 2015 (Tue) |

*Source: JICA Study Team*

Total numbers of roadside OD interview was 532 in total of freight vehicles and sampling rate was 10.2%.

Number of interviews and sampling rate for each freight vehicle type are shown in Table 5.9.6

**Table 5.9.6: Number of Interviews and Sampling rate in Kenya**

| Total(Both direction) | | | | | TVC (Both Direction) | | | | | | Roadside OD Interview Survey (Both Direction) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 24hours Traffic Volume (Both Direction) | | | | | | No. of Interview | | | | | | | | | |
| | | | | | 6 | 7 | 8 | 9 | 10 | | 6 | | 7 | | 8 | | 9 | | 10 | |
| No. | Description | | Survey point | Survey date | Light Truck | Medium Goods Vehicle | Heavy Goods Vehicle | Semi-trailer | Truck trailer | Total (Freight Traffic) | Light Truck | Sampling rate | Medium Goods Vehicle | Sampling rate | Heavy Goods Vehicle | Sampling rate | Semi-trailer | Sampling rate | Truck trailer | Sampling rate |
| 1 | Survey at Port | 1 | Mombasa(Mariakani) | 26 May 2015 | 166 | 696 | 206 | 4,134 | 24 | 5,226 | 13 | 7.8% | 68 | 9.8% | 43 | 20.9% | 398 | 9.6% | 10 | 41.7% |

*Source: JICA Study Team*

Current OD table will be prepared after checking the survey data.

### 5.9.4 Freight Traffic OD Data Collection Survey at Railway Companies

A Freight traffic OD data collection survey was carried out at Kenya Railway Corporation (KRC).

Survey items are shown as follows;

- Time table of railway
- Fare for cargo (for each loading)
- Monthly record of contents and volume of freights (last 5 years)
- Monthly record of the Origin-Destination for freights (last 5 years)

Collected data will be submitted from sub-contractor to JICA Study Team on August.

After receiving collected data, freight OD by railways will be created.

### 5.9.5 Freight Traffic OD Data Collection Survey at Custom Offices

A Freight traffic OD data collection survey was carried out at Kenya Revenue Authority (KRA) as custom office.

Survey items are shown as follows;

- Custom system
- Monthly record of contents and volume for custom clearance (last 5 years)
- Time, cost (money) and necessary procedures and documents spent for border

Collected data will be submitted from sub-contractor to JICA Study Team on August.

After receiving collected data, freight OD will be created.

### 5.9.6 Way forward

All surveys and data collections were carried out by sub-consultant in Kenya by the end of July 2015.

Remaining activities are showing as follows.

- Survey report and complete set of data will be received on middle of August.
- Received data will be checked and analyzed from August to the beginning of September by JICA Study Team.
- Current cargo traffic issues will be clarified by the end of September.
- The results will be presented on October.

## *5.10 Result of Good Movement and Vehicle Traffic Survey in Uganda*

### 5.10.1 Outline

The goods movement and vehicle transport surveys were carried out at sub-contract basis to capture freight movement on road and identify current bottlenecks in NEC logistics network. Data obtained from the surveys will be used for future traffic demand forecasting along NEC.

4 types of surveys were conducted as shown in Table 5.10.1 in Uganda as same as goods and vehicle traffic survey in Kenya.

All the surveys were conducted from mid May 2015 to the beginning of June 2015.

Table 5.10.1 Summary of Goods Movement and Vehicle Traffic Survey in Uganda

**Table 5.10.1: Summary of Goods Movement and Vehicle Traffic Survey in Uganda**

| No. | Survey Type | Survey Location in Uganda | Survey Hour | Survey Target | Survey Method |
|---|---|---|---|---|---|
| 1 | Roadside Freight OD Survey | **[10 border posts]** Malaba, Busia, Mutukula, Mitrama hills, Katuna, Bunagana, Mpondwe, Goli, Oraba, Nimule<br>**[ 1 port]** Port Bell<br>**[3 inland depots]** Kampala, Jinja, Tororo<br>**[1 railway terminal]** Kampala<br>**[1 airport]** Entebbe<br>**TOTAL: 16 points (3days Counts)** | 12hours (6:00-18:00) | Cargo Transport | Interview to Drivers |
| 2 | Traffic Volume Count Survey | **[10 border posts]** Malaba, Busia, Mutukula, Mitrama hills, Katuna, Bunagana, Mpondwe, Goli, Oraba, Nimule<br>**[ 1 port]** Port Bell<br>**[3 inland depots]** Kampala, Jinja, Tororo<br>**[1 railway terminal]** Kampala<br>**[1 airport]** Entebbe<br>**[3 points on highway]** Kampala-Gulu, Kampala-Mbarara, Kampala-Tororo<br>**TOTAL: 19 points (3days Counts)** | 24hours (6:00-6:00next day) | All vehicle type | MCC (Manual Classified Count Survey) |
| 3 | Data Collection from Railway Companies | URC/RVR | ・ Monthly record of number of freights, OD for freights (last 5 years)<br>・ Time table of railway operation<br>・ Fare of Cargo (for each loading) | Railway Cargo | Data Collection |
| 4 | Survey for Condition of Custom at Border | Custom Office (Malaba, Busia, Mutukula, Mitrama hills, Katuna, Bunagana, Mpondwe, Goli, Oraba, Nimule or at the Custom Office headquarter) | ・ Monthly record of custom clearance, OD for freights (last 5 years)<br>・ Custom system<br>・ Time, cost and materials spent for border crossing | Import/ Export Cargo, Transit Cargo | Data Collection |

*Source: JICA Study Team*

## 5.10.2 Traffic Volume Count Survey

Traffic Volume Count Survey was carried out at a total of 19 survey points within Uganda as shown in Table 5.10.2 and Figure 5.10.1.

This survey was performed for three weekdays between Monday and Friday except public holidays in Uganda.

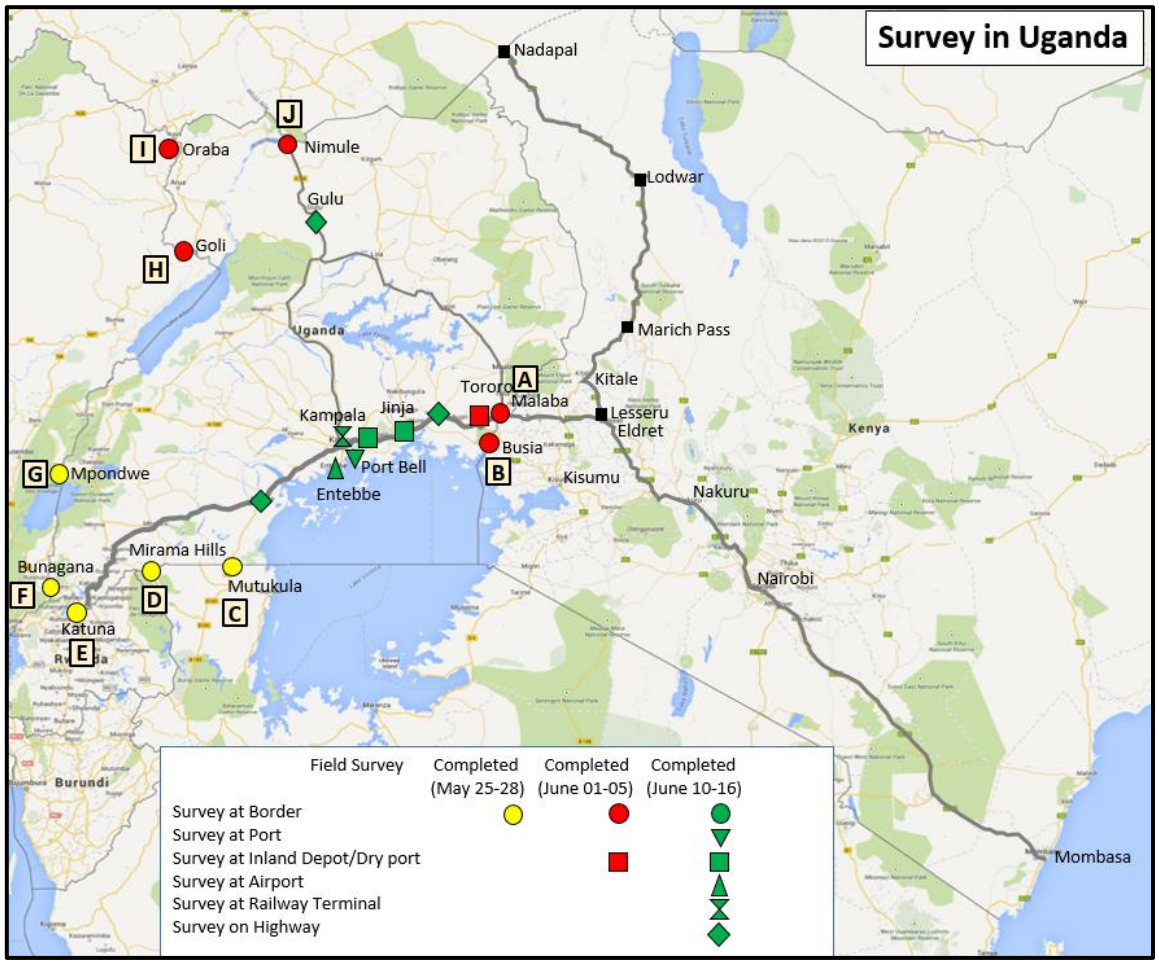
Type of vehicles for this survey was classified into 10 categories same as survey in Kenya.

**Table 5.10.2: Summary of traffic Volume Count Survey in Uganda**

| No. | Location / Name | Description | Duration of Survey | Date of Survey | | |
|---|---|---|---|---|---|---|
| TVC-U1 | Malaba | Border Post(Kenya) | 3days (from 6:00 to 6:00 next day) | 02 June 2015(Tue) | 04 June 2015(Thu) | 05 June 2015(Fri) |
| TVC-U2 | Busia | Border Post(Kenya) | 3days (from 6:00 to 6:00 next day) | 01 June 2015(Mon) | 02 June 2015(Tue) | 04 June 2015(Thu) |
| TVC-U3 | Mutukula | Border Post(Tanzania) | 3days (from 6:00 to 6:00 next day) | 25 May 2015(Mon) | 26 May 2015(Tue) | 27 May 2015(Wed) |
| TVC-U4 | Mirama Hills | Border Post(Tanzania) | 3days (from 6:00 to 6:00 next day) | 25 May 2015(Mon) | 26 May 2015(Tue) | 27 May 2015(Wed) |
| TVC-U5 | Katuna | Border Post(Rwanda) | 3days (from 6:00 to 6:00 next day) | 25 May 2015(Mon) | 26 May 2015(Tue) | 27 May 2015(Wed) |
| TVC-U6 | Bunagana | Border Post (DR Congo) | 3days (from 6:00 to 6:00 next day) | 26 May 2015(Tue) | 27 May 2015(Wed) | 28 May 2015(Thu) |
| TVC-U7 | Mpondwe | Border Post (DR Congo) | 3days (from 6:00 to 6:00 next day) | 26 May 2015(Tue) | 27 May 2015(Wed) | 28 May 2015(Thu) |

| No. | Location / Name | Description | Duration of Survey | Date of Survey | | |
|---|---|---|---|---|---|---|
| TVC-U8 | Goli | Border Post (DR Congo) | 3days (from 6:00 to 6:00 next day) | 02 June 2015(Tue) | 04 June 2015(Thu) | 05 June 2015(Fri) |
| TVC-U9 | Oraba | Border Post (South Sudan) | 3days (from 6:00 to 6:00 next day) | 01 June 2015(Mon) | 02 June 2015(Tue) | 04 June 2015(Thu) |
| TVC-U10 | Nimule | Border Post (South Sudan) | 3days (from 6:00 to 6:00 next day) | 01 June 2015(Mon) | 02 June 2015(Tue) | 04 June 2015(Thu) |
| TVC-U11 | Port Bell | Port | 3days (from 6:00 to 6:00 next day) | 10 June 2015(Wed) | 11 June 2015(Thu) | 12 June 2015(Fri) |
| TVC-U12 | Kampala ICD | Inland Depot | 3days (from 6:00 to 6:00 next day) | 11 June 2015(Thu) | 12 June 2015(Fri) | 15 June 2015(Mon) |
| TVC-U13 | Jinja ICD | Inland Depot | 3days (from 6:00 to 6:00 next day) | 10 June 2015(Wed) | 11 June 2015(Thu) | 12 June 2015(Fri) |
| TVC-U14 | Tororo ICD | Inland Depot | 3days (from 6:00 to 6:00 next day) | 02 June 2015(Tue) | 04 June 2015(Thu) | 05 June 2015(Fri) |
| TVC-U15 | Kampala Railway Terminal | Railway | 3days (from 6:00 to 6:00 next day) | 10 June 2015(Wed) | 11 June 2015(Thu) | 12 June 2015(Fri) |
| TVC-U16 | Entebbe Airport Terminal | Airport | 3days (from 6:00 to 6:00 next day) | 12 June 2015(Fri) | 15 June 2015(Mon) | 16 June 2015(Tue) |
| TVC-U17 | Kampala-Gulu | on Road | 3days (from 6:00 to 6:00 next day) | 10 June 2015(Wed) | 11 June 2015(Thu) | 12 June 2015(Fri) |
| TVC-U18 | Kampala-Mbarara | on Road | 3days (from 6:00 to 6:00 next day) | 10 June 2015(Wed) | 11 June 2015(Thu) | 12 June 2015(Fri) |
| TVC-U19 | Kampala-Tororo | on Road | 3days (from 6:00 to 6:00 next day) | 10 June 2015(Wed) | 11 June 2015(Thu) | 12 June 2015(Fri) |

*Source: JICA Study Team*




*Source: JICA Study Team*

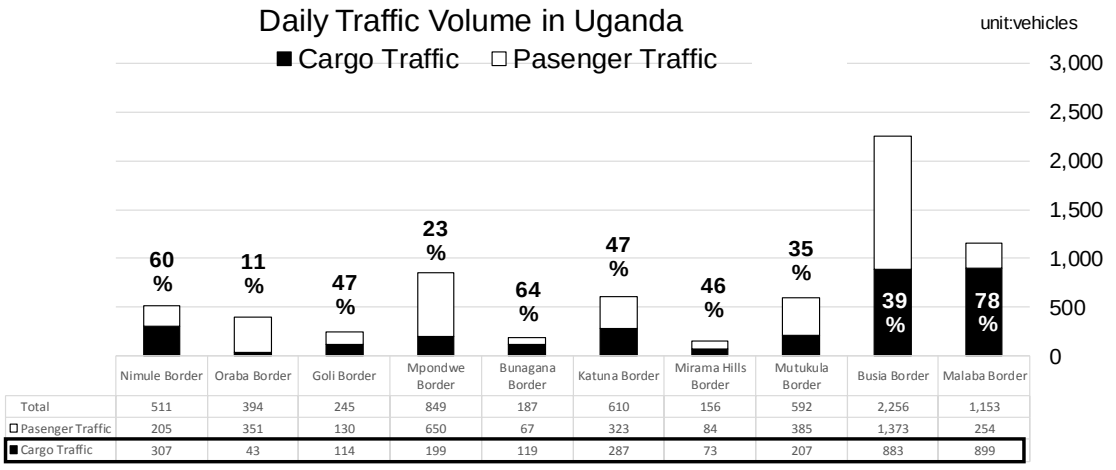
**Figure 5.10.1: Location Map for Traffic Volume Counts and Roadside OD Interview Survey in Uganda**

The highest rate of cargo traffic is around 78% of total traffic at Malaba, which has 899 vehicles of cargo traffic.

Traffic volumes of cargo vehicles at Busia were 883 vehicles which was 39% of total traffic volume for 24hours. Total traffic volume at Busia was 2,256 vehicles which was higher than the total volume at Malaba as 1,153 vehicles. 77% of cargo traffic at Malaba is semi-traler. On the other hand, rate of semi-trailer at Busia is only 24%.

Traffic volume of cargo traffic at Katuna where is the border between Uganda and Rwanda is 610 vehicles and cargo traffic is 287 vehicles is 47% of total traffic volume.

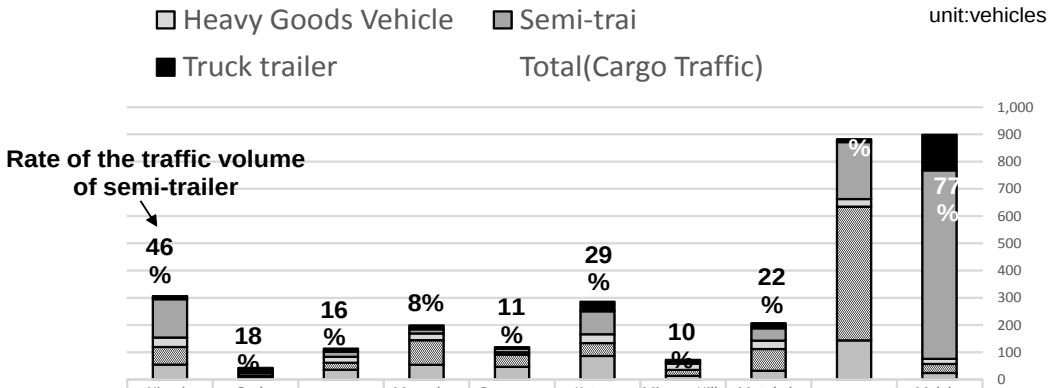
Traffic volume of cargo traffic at Nimule where is the boder between Uganda and South Sudan is 511 vehicles and cargo traffic is 307 vehicles is 60% of total traffic volume. Almost half of cargo traffic at Nimle is semi-trailer.




| | Nimule Border | Oraba Border | Goli Border | Mpondwe Border | Bunagana Border | Katuna Border | Mirama Hills Border | Mutukula Border | Busia Border | Malaba Border |
|---|---|---|---|---|---|---|---|---|---|---|
| Total | 511 | 394 | 245 | 849 | 187 | 610 | 156 | 592 | 2,256 | 1,153 |
| Pasenger Traffic | 205 | 351 | 130 | 650 | 67 | 323 | 84 | 385 | 1,373 | 254 |
| Cargo Traffic | 307 | 43 | 114 | 199 | 119 | 287 | 73 | 207 | 883 | 899 |

*Source: JICA Study Team*

**Figure 5.10.2: Result of 24hors Traffic Count Survey in Uganda**




| | Nimule Border | Oraba Border | Goli Border | Mpondwe Border | Bunagana Border | Katuna Border | Mirama Hills Border | Mutukula Border | Busia Border | Malaba Border |
|---|---|---|---|---|---|---|---|---|---|---|
| Total(Cargo Traffic) | 307 | 43 | 114 | 199 | 119 | 287 | 73 | 207 | 883 | 899 |
| Truck trailer | 12 | 10 | 11 | 14 | 5 | 35 | 7 | 18 | 11 | 131 |
| Semi-trailer | 140 | 8 | 19 | 15 | 13 | 84 | 7 | 45 | 209 | 692 |
| Heavy Goods Vehicle | 35 | 10 | 22 | 25 | 8 | 32 | 23 | 31 | 28 | 19 |
| Medium Goods Vehicle | 65 | 8 | 26 | 90 | 45 | 48 | 22 | 80 | 491 | 33 |
| Light Truck | 56 | 8 | 36 | 54 | 47 | 87 | 14 | 33 | 144 | 25 |

*Source: JICA Study Team*

**Figure 5.10.3: Result of Cargo Traffic Volume Count by Cargo Vehicle Types in Uganda**

**Table 5.10.3: Result of Traffic Volume Counts in Uganda**

| *Both Direction* | | | | TVC 1st day<br>Survey date | TVC 2nd day<br>Survey date | TVC 3rd day<br>Survey date | Average 24hours Traffic Volume |
|---|---|---|---|---|---|---|---|
| 1 | Border Post | 1 | Malaba Border | 02 June 2015 | 04 June 2015 | 05 June 2015 | 1,153 |
| 2 | | 2 | Busia Border | 01 June 2015 | 02 June 2015 | 04 June 2015 | 2,256 |
| 3 | | 3 | Mutukula Border | 25 May 2015 | 26 May 2015 | 27 May 2015 | 592 |
| 4 | | 4 | Mirama Hills Border | 25 May 2015 | 26 May 2015 | 27 May 2015 | 156 |
| 5 | | 5 | Katuna Border | 25 May 2015 | 26 May 2015 | 27 May 2015 | 610 |
| 6 | | 6 | Bunagana Border | 26 May 2015 | 27 May 2015 | 28 May 2015 | 187 |
| 7 | | 7 | Mpondwe Border | 26 May 2015 | 27 May 2015 | 28 May 2015 | 849 |
| 8 | | 8 | Goli Border | 02 June 2015 | 04 June 2015 | 05 June 2015 | 245 |
| 9 | | 9 | Oraba Border | 01 June 2015 | 02 June 2015 | 04 June 2015 | 394 |
| 10 | | 10 | Nimule Border | 01 June 2015 | 02 June 2015 | 04 June 2015 | 511 |
| 11 | Port | | Port Bell | 10 June 2015 | 11 June 2015 | 12 June 2015 | 51 |
| 12 | ICD | 1 | Kampala ICD | 11 June 2015 | 12 June 2015 | 15 June 2015 | 104 |
| 13 | | 2 | Jinja ICD | 10 June 2015 | 11 June 2015 | 12 June 2015 | 51 |
| 14 | | 3 | Tororo ICD | 02 June 2015 | 04 June 2015 | 05 June 2015 | 175 |
| 15 | Railway | | Railway Terminal/Kampala | 10 June 2015 | 11 June 2015 | 12 June 2015 | 127 |
| 16 | Airport | | Entebbe Airport | 12 June 2015 | 15 June 2015 | 16 June 2015 | 3,254 |
| 17 | on Road | 1 | Kampala-Gulu | 10 June 2015 | 11 June 2015 | 12 June 2015 | 3,374 |
| 18 | | 2 | Kampala-Mbarara | 10 June 2015 | 11 June 2015 | 12 June 2015 | 3,467 |
| 19 | | 3 | Kampala-Tororo | 10 June 2015 | 11 June 2015 | 12 June 2015 | 13,560 |

*Source: JICA Study Team*

## 5.10.3 Roadside OD Interview Survey

A roadside OD Interview Survey was carried out at 16 sites which were the same survey points for Traffic Volume Counts Survey at border posts, port, ICD, railway terminal and airport in Uganda.

Survey methodology is the same as survey in Kenya.

Summary of roadside OD interview survey in Uganda is shown in Table 5.10.4.

**Table 5.10.4: Summary of Roadside OD Interview Survey in Uganda**

| No. | Location / Name | Description | Duration of Survey | Date of Survey | | |
|---|---|---|---|---|---|---|
| OD-U1 | Malaba | Border Post(Kenya) | 3days (12 hours from 6:00 to 18:00) | 02 June 2015(Tue) | 04 June 2015(Thu) | 05 June 2015(Fri) |
| OD-U2 | Busia | Border Post(Kenya) | 3days (12 hours from 6:00 to 18:00) | 01 June 2015(Mon) | 02 June 2015(Tue) | 04 June 2015(Thu) |
| OD-U3 | Mutukula | Border Post(Tanzania) | 3days (12 hours from 6:00 to 18:00) | 25 May 2015(Mon) | 26 May 2015(Tue) | 27 May 2015(Wed) |
| OD-U4 | Mirama Hills | Border Post(Tanzania) | 3days (12 hours from 6:00 to 18:00) | 25 May 2015(Mon) | 26 May 2015(Tue) | 27 May 2015(Wed) |
| OD-U5 | Katuna | Border Post(Rwanda) | 3days (12 hours from 6:00 to 18:00) | 25 May 2015(Mon) | 26 May 2015(Tue) | 27 May 2015(Wed) |
| OD-U6 | Bunagana | Border Post (DR Congo) | 3days (12 hours from 6:00 to 18:00) | 26 May 2015(Tue) | 27 May 2015(Wed) | 28 May 2015(Thu) |
| OD-U7 | Mpondwe | Border Post (DR Congo) | 3days (12 hours from 6:00 to 18:00) | 26 May 2015(Tue) | 27 May 2015(Wed) | 28 May 2015(Thu) |
| OD-U8 | Goli | Border Post (DR Congo) | 3days (12 hours from 6:00 to 18:00) | 02 June 2015(Tue) | 04 June 2015(Thu) | 05 June 2015(Fri) |
| OD-U9 | Oraba | Border Post (South Sudan) | 3days (12 hours from 6:00 to 18:00) | 01 June 2015(Mon) | 02 June 2015(Tue) | 04 June 2015(Thu) |
| OD-U10 | Nimule | Border Post (South Sudan) | 3days (12 hours from 6:00 to 18:00) | 01 June 2015(Mon) | 02 June 2015(Tue) | 04 June 2015(Thu) |
| OD-U11 | Port Bell | Port | 3days (12 hours from 6:00 to 18:00) | 10 June 2015(Wed) | 11 June 2015(Thu) | 12 June 2015(Fri) |
| OD-U12 | Kampala ICD | Inland Depot | 3days (12 hours from 6:00 to 18:00) | 11 June 2015(Thu) | 12 June 2015(Fri) | 15 June 2015(Mon) |

| No. | Location / Name | Description | Duration of Survey | Date of Survey | | |
|---|---|---|---|---|---|---|
| OD-U13 | Jinja ICD | Inland Depot | 3days (12 hours from 6:00 to 18:00) | 10 June 2015(Wed) | 11 June 2015(Thu) | 12 June 2015(Fri) |
| OD-U14 | Tororo ICD | Inland Depot | 3days (12 hours from 6:00 to 18:00) | 02 June 2015(Tue) | 04 June 2015(Thu) | 05 June 2015(Fri) |
| OD-U15 | Kampala Railway Terminal | Railway | 3days (12 hours from 6:00 to 18:00) | 10 June 2015(Wed) | 11 June 2015(Thu) | 12 June 2015(Fri) |
| OD-U16 | Entebbe Airport Terminal | Airport | 3days (12 hours from 6:00 to 18:00) | 12 June 2015(Fri) | 15 June 2015(Mon) | 16 June 2015(Tue) |

*Source: JICA Study Team*

Average numbers of roadside OD interview at each survey point and sampling rate were shown in Table 5.10.5.

**Table 5.10.5: Average Numbers of Roadside OD Interview Survey and Sampling Rate**

| | | | | TVC Both direction) Average | | | | | | OD (Both Direction) Average | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Both Direction* | | | | Light Truck | Medium Goods Vehicle | Heavy Goods Vehicle | Semi-trailer | Truck trailer | Total (Cargo Traffic) | Light Truck | Sampling rate | Medium Goods Vehicle | Sampling rate | Heavy Goods Vehicle | Sampling rate | Semi-trailer | Sampling rate | Truck trailer | Sampling rate | Total no. of Intervirews | Average sampling rate |
| 1 | Border Post | 1 | Malaba Border | 25 | 33 | 19 | 692 | 131 | 899 | 1 | 4.1% | 5 | 16.2% | 3 | 17.5% | 271 | 39.1% | 47 | 36.1% | 328 | 36% |
| 2 | | 2 | Busia Border | 144 | 491 | 28 | 209 | 11 | 883 | 43 | 29.9% | 77 | 15.7% | 19 | 67.1% | 116 | 55.8% | 9 | 78.8% | 264 | 30% |
| 3 | | 3 | Mutukula Border | 33 | 80 | 31 | 45 | 18 | 207 | 18 | 54.1% | 16 | 19.7% | 14 | 43.6% | 20 | 44.4% | 9 | 47.3% | 76 | 37% |
| 4 | | 4 | Mirama Hills Border | 14 | 22 | 23 | 7 | 7 | 73 | 10 | 67.4% | 11 | 49.2% | 2 | 8.7% | 5 | 76.2% | 4 | 65.0% | 32 | 44% |
| 5 | | 5 | Katuna Border | 87 | 48 | 32 | 84 | 35 | 287 | 15 | 17.3% | 8 | 17.4% | 9 | 28.9% | 38 | 45.5% | 26 | 72.6% | 97 | 34% |
| 6 | | 6 | Bunagana Border | 47 | 45 | 8 | 13 | 5 | 119 | 22 | 47.2% | 21 | 46.3% | 4 | 54.2% | 8 | 57.5% | 3 | 56.3% | 58 | 49% |
| 7 | | 7 | Mpondwe Border | 54 | 90 | 25 | 15 | 14 | 199 | 23 | 42.9% | 67 | 73.8% | 20 | 78.7% | 8 | 52.2% | 12 | 88.1% | 130 | 65% |
| 8 | | 8 | Goli Border | 36 | 26 | 22 | 19 | 11 | 114 | 2 | 6.4% | 3 | 11.7% | 1 | 4.5% | 5 | 28.6% | 4 | 35.3% | 16 | 14% |
| 9 | | 9 | Oraba Border | 8 | 8 | 10 | 8 | 10 | 43 | 1 | 13.0% | 1 | 17.4% | 7 | 75.9% | 6 | 75.0% | 7 | 67.7% | 23 | 52% |
| 10 | | 10 | Nimule Border | 56 | 65 | 35 | 140 | 12 | 307 | 6 | 11.4% | 26 | 40.2% | 16 | 47.1% | 74 | 52.6% | 6 | 54.3% | 129 | 42% |
| 11 | Port | | Port Bell | 0 | 4 | 0 | 0 | 0 | 4 | 0 | - | 3 | 75.0% | 1 | - | 0 | - | 0 | - | 4 | 92% |
| 12 | ICD | 1 | Kampala ICD | 6 | 6 | 13 | 67 | 12 | 104 | 5 | 77.8% | 6 | 100.0% | 11 | 87.2% | 45 | 67.3% | 4 | 29.7% | 71 | 68% |
| 13 | | 2 | Jinja ICD | 2 | 3 | 3 | 29 | 5 | 43 | 3 | 114.3% | 2 | 50.0% | 2 | 66.7% | 22 | 76.1% | 0 | 0.0% | 29 | 67% |
| 14 | | 3 | Tororo ICD | 0 | 1 | 1 | 172 | 0 | 174 | 0 | - | 1 | 66.7% | 0 | 0.0% | 96 | 55.9% | 9 | - | 106 | 61% |
| 15 | Railway | | Railway Terminal/Kampala | 6 | 22 | 24 | 21 | 2 | 75 | 0 | 0.0% | 17 | 76.9% | 7 | 28.8% | 10 | 46.8% | 1 | 42.9% | 34 | 46% |
| 16 | Airport | | Entebbe Airport | 238 | 43 | 3 | 5 | 0 | 289 | 16 | 6.9% | 31 | 71.5% | 1 | 44.4% | 1 | 14.3% | 0 | 0.0% | 49 | 17% |

*Source: JICA Study Team*

## 5.10.4 Freight Traffic OD Data Collection Survey at Railway Companies

A freight traffic OD data collection survey was carried out at Uganda Railway Corporation (URC).

Survey items are shown as follows;

- Time table of railway
- Fare for cargo (for each loading)
- Monthly record of contents and volume of freights (last 5 years)
- Monthly record of the Origin-Destination for freights (last 5 years)

Collected data will be submitted from sub-contractor to JICA Study Team on end of July.

JICA study team is now checking these data. After checking, current freight OD will be created.

## 5.10.5 Freight Traffic OD Data Collection Survey at Custom Offices

A freight traffic OD data collection survey was carried out at Uganda Revenue Authority (URA ) as custom office.

Survey items are shown as follows;

- Custom system
- Monthly record of contents and volume for custom clearance (last 5 years)
- Time, cost (money) and necessary procedures and documents spent for border

Collected data was submitted from sub-contractor to JICA Study Team on end of July.

JICA study team is now checking these data. After checking, current freight OD will be created.

## 5.10.6 Way forward

All surveys and data collections were carried out by sub-consultant in Uganda by the end of July 2015.

Remaining activities are showing as follows.

- Survey report and complete set of data will be received on the beginning of August.
- Received data will be checked and analyzed from August to the beginning of September by JICA Study Team.
- Current cargo traffic issues will be clarified by the end of September.
- The results will be presented on October.

# 6 Review of Industrial Infrastructure

## 6.1 Power in Kenya

### 6.1.1 Overview

As at 2014, electricity provided 9% of overall energy requirements in Kenya, while petroleum and renewable energy provided 22% and 69%, respectively. Demand for electricity has shown an upward trend since 2004 due to accelerated economic growth. Peak demand increased from 899MW in FY 2004/05 to 1,470MW in FY2013/14 reaching 1,512MW by December 2014, while the number of electricity consumers more than trebled from 735,144 in FY 2004/05 to 2,757,983 by June 2014.

Peak demand is projected to grow from 1,512MW as at December 2014 to 2,665MW by 2018 with Moderate growth scenario. To meet this demand, an additional 5,000 MW project of new generation is to be developed the total installed capacity from 2,173MW by 2014 to 4,554MW by 2018. Annual energy consumption is projected to increase from 8,087 GWh in 2013 to 15,882 GWh in 2018. Major drivers of the demand include industrial parks, resort cities, iron and steel smelting industry, the standard gauge railway and the light rail.

As at 30th June 2014, 35 % of the population was connected to electricity compared to only 15% at 30th June 2004. The existing medium voltage (33 kV and 11 kV) distribution lines already cover areas in which about 63% of Kenya's population of 40 million live. However, the connectivity rate is still low at about 40% in high-density urban areas and 10% in other areas.

### 6.1.2 Policy

The power sector is guided by Sessional Paper No. 4 of 2004 which was to lay the policy framework upon cost effective, affordable, adequate and quality energy services will be made available to the domestic economy on a sustainable basis over the period 2004 - 2023. The agenda for action in the Sessional Paper included enactment of a new and robust Energy Act (Energy Act 2006) to create a common energy sector regulator, the Energy Regulatory Commission.

The Energy Act, No. 12 of 2006 consolidated the Electric Power Act No. 11 of 1997 and the Petroleum Act Cap. 116. The Act provided for the establishment, powers and functions of the Energy Regulatory Commission (ERC) as a successor to Electricity Regulatory Board (ERB).

Beside the principal Acts above, there are several other Acts and Regulations that impact the power sector, including:

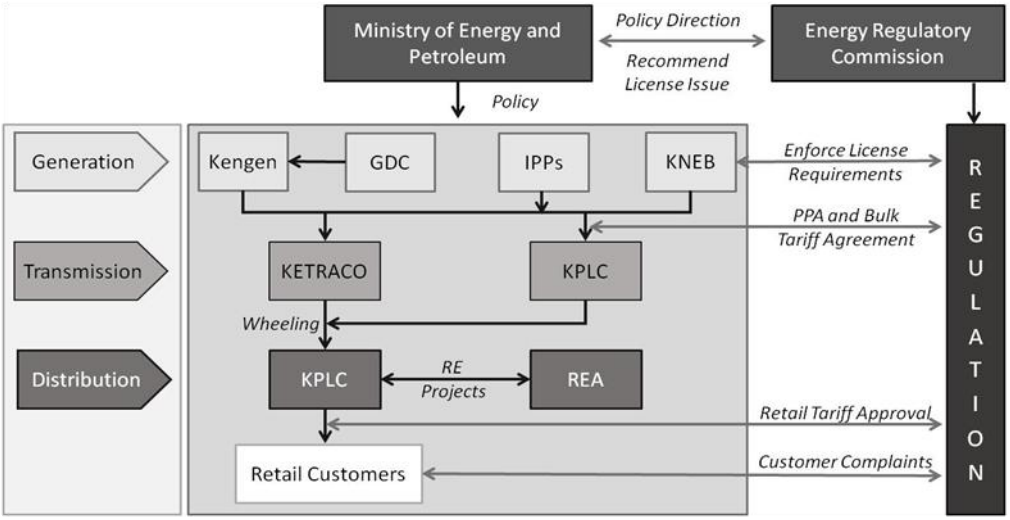
- The Environmental Management and Co-ordination Act, 1999, which regulates the environmental aspect of the power sector.
- The Local Government Act, Chapter 265 of the Laws of Kenya which grants authority for approval by local authorities of sites for construction and installation of levies for electric power poles and way-leaves charges.
- The Physical Planning Act, Chapter 286 of the Laws of Kenya that provides for construction of electric power sub-stations and other infrastructure.
- The Environment and Land Court Act No. 19 of 2011 that established the Environment and Land Court pursuant to Article 162(2)(b) of the Constitution.
- The Kenya Electricity Grid Code is the primary technical document of the Electricity Supply Industry (ESI), collating the majority of the technical regulations covering the generation, transmission, distribution and supply of electrical energy.
- Essentially the Grid Code is a consolidation of existing standards and practices in the Kenyan ESI and is intended to provide a transparent regulatory framework, in line with the principle of non-discriminatory access to the transmission and distribution systems, and is designed to provide technical specifications and procedures that complement the Act.
- The Electric Power (Electrical Installation Work) Rules, 2006, published as Legal Notice No.115, Kenya Gazette Supplement No. 60 (Legislative Supplement No. 34) on September 6, 2006 sets out the requirements for the licensing of electricians and electrical contractors. The licensing is administered and approved by ERC's Electricians' and Electrical Contractors' Licensing Panel set up in 2006.

- The Energy (Complaints and Dispute Resolution) Regulations, 2012, published as Legal Notice No. 42, Kenya Gazette Supplement No.49 (Legislative Supplement No. 15) on May 25, 2012 provides the means by which the Commission can help resolve complaints and disputes between a licensee and its customers where any party remains dissatisfied after exhausting the licensee's complaints resolution procedures.
- The Energy (Electricity Licensing) Regulations, 2012 published as Legal Notice No. 44, Kenya Gazette Supplement No.49 (Legislative Supplement No. 15) on May 25, 2012 sets out requirements to be fulfilled by any person desiring a license or permit authorizing him to carry out any undertaking in the generation, transmission, distribution or supply of electrical energy in Kenya.

## 6.1.3 Review of Legal Framework and Administrative Structure

The power sector is currently structured as defined in the Energy Act 2006 consisting of distinct policy, regulatory, generation, transmission and distribution functions. The institutional structure for electricity sub-sector is as follows:

- Ministry of Energy and Petroleum (MoEP) is responsible for establishing the national energy policy and rural electrification plan, setting the direction for the growth of power sector, and making a long-term vision for the sector.
- Energy Regulatory Commission (ERC) is responsible for enforcing regulations, licensing power companies, customer protection, approving Power Purchase Agreements and Tariff Reviews
- Kenya Electricity Generation Company (KenGen) is the largest electricity generation company that is majority Government owned. While KenGen is a state corporation, IPPs are basically private sector investments. IPPs currently provide about 30% of the whole demand and are expected to continue to play a significant role in power generation. KenGen will remain as a dominant power generation player in the long term.
- Geothermal Development Company Ltd. (GDC) is tasked with developing steam fields to reduce upstream power development risks so as to promote rapid development of geothermal electric power. GDC will underwrite any dry wells sunk by private developers selected through competitive bidding processes.
- Independent Power Producers (IPPs) are private sector power generation companies, which build, own and operate power stations and sell the power in bulk to Kenya Power.
- Kenya Nuclear Electricity Board (KNEB) is charged with the responsibility of developing a comprehensive legal and regulatory framework for nuclear energy use in Kenya.
- Kenya Power was renamed from the Kenya Power and Lighting Company (KPLC) in 2011. It is responsible for generation at off-grid stations, power purchase, transmission, and distribution and retail sales in Kenya.
- Kenya Electricity Transmission Company Ltd. (KETRACO) is responsible to develop and own of new transmission lines.
- Rural Electrification Authority (REA) is responsible for implementation of the Rural Electrification Program (scheme construction).




*Source: Kenya Electricity Transmission Company Ltd. (KETRACO)*

**Figure 6.1.1: Organization of Electricity Sub-Sector in Kenya**

## 6.1.4 Existing Inventory

Power sector existing inventory data has been collected and summary results are shown in following sections.

### (1) Power Generation

Power generation in Kenya is combined installed capacity was 2,173MW as at December 2014. In the FY ended 30th June 2013, 69.1% of the electrical energy was generated using renewable energy sources while 30.9% was generated using fossil fuels as detailed in Table 6.1.1.

**Table 6.1.1: Power Generation Sources and Energy Generated**

| No. | Sources of Power Generation | Installed Capacity (December 2014) | | Annual Generation (FY 2013/14) | |
|---|---|---|---|---|---|
| | | (MW) | Percentage | (GWHrs) | Percentage |
| **1.** | **Renewable Energy** | | | | |
| a. | Hydro | 821 | 37.8 | 3,945 | 44.6 |
| b. | Geothermal | 593.5 | 27.3 | 2,008 | 22.7 |
| c. | Wind | 25 | 1.2 | 18 | 0.2 |
| d. | Cogeneration | 38 | 1.7 | 57 | 0.6 |
| e. | Imports | - | - | 85 | 1.0 |
| | Total | 1477.5 | 68.0 | 6,112 | 69.1 |
| **2.** | **Fossil Fuels** | | | | |
| a. | Medium Speed Diesels (MSD) | 579.5 | 26.7 | 2,533 | 28.6 |
| b. | Gas Turbines | 60 | 2.8 | 41 | 0.5 |
| c. | HSD (Isolated Stations) | 25.8 | 1.2 | 61 | 0.7 |
| d. | Emergency Power Plant | 30 | 1.4 | 94 | 1.1 |
| | Total | 695.3 | 32.0 | 2,729 | 30.9 |
| **Installed Capacity and Units Generated** | | **2,173MW** | | **8,840GWhrs** | |

*Source: Energy Regulatory Commission (ERC)*

### (2) Power Transmission

In Kenya, electricity supply structure is the single buyer model where all generators sell power in bulk to KPLC for dispatch and onward transmission and distribution to consumers. Currently the transmission network is shared between KPLC and KETRACO. The total transmission network (220kV and 132kV) was under KETRACO as shown in table 6.1.2.

**Table 6.1.2: Power Transmission Network**

| No. | Power Transmission Network | Quantity |
|---|---|---|
| 1. | 220kV lines | 1,434 km |
| 2. | 132kV lines<br>(interconnected with Uganda through a 132 kV double circuit line) | 2,513 km |
| 3. | Generation Substations | 9 substations with capacity 1,846 MVA |
| 4. | Transmission Substations | 45 substations |

*Source: Kenya Electricity Transmission Company Ltd. (KETRACO)*

### (3) Power Distribution

Electrical energy was supplied from power plants and transmission system through distribution networks comprising electric supply lines and distribution substations to end user.

As at June 2014, just about 32% of the population had access to electricity. The power distribution network statistics are summarized in Table 6.1.3.

**Table 6.1.3: Power Distribution Network**

| No. | Power Distribution Network | Quantity |
|---|---|---|
| 1. | 66kV lines | 1,212 km |
| 2. | 33kV lines | 20,778 km |
| 3. | 11kV lines and low voltage lines | 30,860 km |
| 4. | Capacity of Primary distribution substations | 3,311MVA |
| 5. | Capacity of distribution transformers | 6,317MVA |

*Source: Kenya Power at June 2014*

## 6.1.5 Analysis of Operation and Maintenance

### (1) Power Generation

There are two players in power generation, such as: Independent Power Producers (IPPs) and Kenya Electricity Generating Company (KenGen).

Independent Power Producers (IPPs): Private investors in the power sector involved in competitively procured large scale generation and the development of renewable energy under the Feed-in -Tariff Policy. Current players comprise: Iberafrica, Tsavo, Or-power4, Rabai, Imenti, and Mumias. Aggreko also generates emergency power in times of deficiency and is currently running a 30MW plant in Nairobi. Collectively, they account for about 30% of the country's installed capacity.

Kenya Electricity Generating Company (KenGen) is the main player inelectricity generation, with about 70% of the country's installed capacity. KenGen will remain as a dominant power generation player in the long term. KenGen owns thirty one (31) power generating plants with a combined installed capacity of 1,337MW from diverse generation modes comprising of hydro, thermal, geothermal and wind technologies. As at 30th June 2014, Kengen had a work force of 2,209 staffs.

Kengen is upgrading the control and protection systems of the old power plants. They implement SCADA to increase efficiency and reduce operational costs. SCADA will provide remote control and visibility of power plants at a central dispatch center. Besides SCADA, Kengen are utilizing the SAP plant management module provided in the recent integrated Enterprise resource planning (ERP) upgrade for the maintenance of power plants.

### (2) Power Transmission

Kenya Electricity Transmission Company (KETRACO) is a government owned company established to plan, design, construct, own, operate and maintain new high voltage (132kV and above) electricity transmission infrastructure that will form the backbone of the National Transmission Grid and regional interconnections.

All transmission lines have been designed incorporating Optical Ground Wire (OPGW) to facilitate the use of SCADA and Energy Management Systems (SCADA/EMS) for automated operations. Excess fire optic capacity will be leased to telecommunication service providers.

In order to integrate cadastral data, Project Affected Persons (PAPs) data and aerial survey data with the Geographical Information System (GIS), and integrate the PAPs data and payments compensation data in one system, KETRACO drafted Terms of Reference for a Wayleaves Management System.

### (3) Power Distribution

Kenya Power and Lighting Company (KPLC) is the single off-taker in the power market, buying power from all power generators on the basis of negotiated Power Purchase Agreements for onward transmission, distribution and supply to consumers (single seller). KPLC is also the system operator in charge of power dispatch and retailing.

KPLC has Supervisory Control and Data Acquisition System (SCADA) which is the backbone of remote management of electricity grid operations and it links the primary National Control Centre with the secondary regional control centers. In additional, the Facilities Database (FDB) system was intensified in all KPLC branches and 80% of the network had been mapped. The FDB system maps out the KPLC's power network using Geographical Information System (GIS), which helps to improve quotation time for new connections by minimizing the need for designers to physically visit customer sites.

KPLC is enhancing service through alternative billing and payment systems. KPLC initiated the issuance of customer bills through email and short messaging services (SMS).This move was informed by research findings which indicate that many customers prefer to receive their bills through these channels. The service also enables customers to check the status of application for new connection.

KPLC installed remote controlled switches on the 11kV and 33kV networks, enabling more efficiency location of faults and facilitating isolation and restoration of power lines.

There was 676,788 prepaid meters serving about 25% of all electricity customer accounts. In future, KPLC plans to install prepaid meters mainly for rural and other customers in remote locations; and to adopt a hybrid system consisting of post-paid and smart metering in urban and semi-urban areas. KPLC also has plans to

install two-way meters in large power premises. This will give customers more flexibility in managing their electricity use, while at the same time intensifying the KPLC's revenue protection

## 6.1.6 Review of on-going and Planned Infrastructure Projects

In 2013-2014, Energy Regulatory Commission (ERC) issued reports for power planning up to 2033, such as: Power Sector Medium Term Plan 2014-2018; 10 year Power Sector Expansion Plan 2014-2024 and Updated Least Cost Power Development Plan Study Period 2013-2033.

With these reports, on-going and planned infrastructure projects was specified in Medium Term Plan 2014-2018, which focused on the nearness period of five years in which the generation plan is largely predictable.

**(1) Power Generation Projects**

In the Medium Term Plan, the Government has issued policy guidelines committing to expand the power generation capacity from an installed capacity of 4,554MW in 2018.

The additional capacity will be developed from Geothermal 1,255.2MW, Natural Gas 750MW, Wind 380.4MW and Coal 480MW, Thermal 163MW, Cogeneration 18MW and Imports 400MW. This gives additional capacity of 3,446.6MW by 2018 and a total capacity of 4,554MW. Of the total additional capacity, 751MW is from KenGen, 1,399MW from IPPs while both will competitively develop 847MW. The remaining 400MW will be imports from Ethiopia. There are 23 power generation projects.

**(2) Power Transmission Projects**

The transmission development plan in the medium term is essential for power evacuation from committed generation plants and system operation. In the period 2013-18, several power transmission projects are under development.

**(3) Power Distribution Projects**

In 2013, KPLC had a power distribution system master plan which prepared by Parsons Brinckerhoff. This master plan guide the road map for implementing the Company's power distribution projects with the aim of accelerating access to quality electricity to more than 50 percent of Kenyans by 2030.

## 6.1.7 Analysis of Current Gaps and Bottlenecks

To ensure implementation of planned projects, the current gaps and bottlenecks should be reduced, there are:

- The current peak demand is 1,512MW as at December 2014 and the projected demand is 2,665MW by 2018 with Moderate growth scenario. To meet this demand, the total installed capacity will be increased from 2,173MW by 2014 to 4,554MW by 2018.
- Under voltage problems in West Kenya. Sections of West Kenya power system has low voltages that may lead to load shedding at system peak especially when part of the hydro generation in the region is not available.
- Transmission lines and transformer overloads. The following transmission lines and substations are expected to be overloaded, such as: (i) Muhoroni Chemosit 132 kV line; (ii) Lessos 132/33 kV substation transformer; (iii) Nairobi North 220/66 kV transformers.
- Implementation Progress of projects was delayed for many reasons, such as: Delays in way leaves acquisition; Delays in land owner's dispute compensation; Delays in approvals from corporate organizations; Delays in getting work permits, shipping and customs clearance;
- Reduce System losses: System losses are dependent on the operation of the transmission and distribution system and the generation power plants among other factors. Loss minimization is reciprocated by financial gains of revenue and trading margin maximization. Transmission losses will be reduced by consideration for energy transmission distances and loss minimization in the economic merit order of generation plant loading; appropriate improvement in reactive compensation in the distribution network; installing reactive compensation equipment in the transmission network. Optimal dispatch of power plants is a key for loss minimization in the transmission.
- Low electrification rate: The current electrification rate in Kenya is about 30% of the total population with rural areas constituting only 13% of the total (predominantly middle and upper income groups).

# 6.2 Power in Uganda

## 6.2.1 Overview

Uganda has an installed capacity of 851.53MW, mostly consisting of hydropower plants (80%), thermal, mini and micro-hydro power plants which either contribute to the national electricity grid or directly serve specific communities and or individuals. These include Kisiizi Hospital, Kihihi generation plant for thermal power, and the West Nile Rural Electrification Company (WENRECO) among others. Electricity is also supplied to the main grid by the thermal generators and some from Bagasse plants. Uganda also imports some electric power from Rwanda as a cost effective measure to serve Kisoro town which is nearer the grid from Rwanda than to the one in Uganda. Some of the generated power is exported to neighboring Kenya, Tanzania and Rwanda.

The performance of the electricity supply industry has steadily improved during recent years with more private sector participation and Government investment. The transmission network has increased up to 1.628,2 km in 2013 and the number of distribution utilities has increased to nine from a single utility at the time of unbundling Energy sales with 2,118GWh in 2013.

Currently, Uganda has stable electricity supply which is provided from large and mini hydropower plants as well as cogeneration plants. The existing supply from renewable energy sources is sufficient to meet the current demand. The maximum system peak demand registered in 2014 was about 549.78MW with installed power generation capacity of 851.53MW. It is projected that by 2020 peak demand will be 1,030 MW with the increase power generation capacity up to 2,500 MW.

## 6.2.2 Policy

Uganda's energy policy was completed in 2002. The policy goal is to meet the energy needs of Uganda's population for social and economic development. The energy policy is premised on policy objectives as follows:

- to establish the availability, potential and demand for the various energy resources in the country;
- to increase access to modern affordable and reliable energy services as a contribution to poverty reduction;
- to improve energy Governance and administration;
- to stimulate economic development;
- to manage energy related environmental impacts.

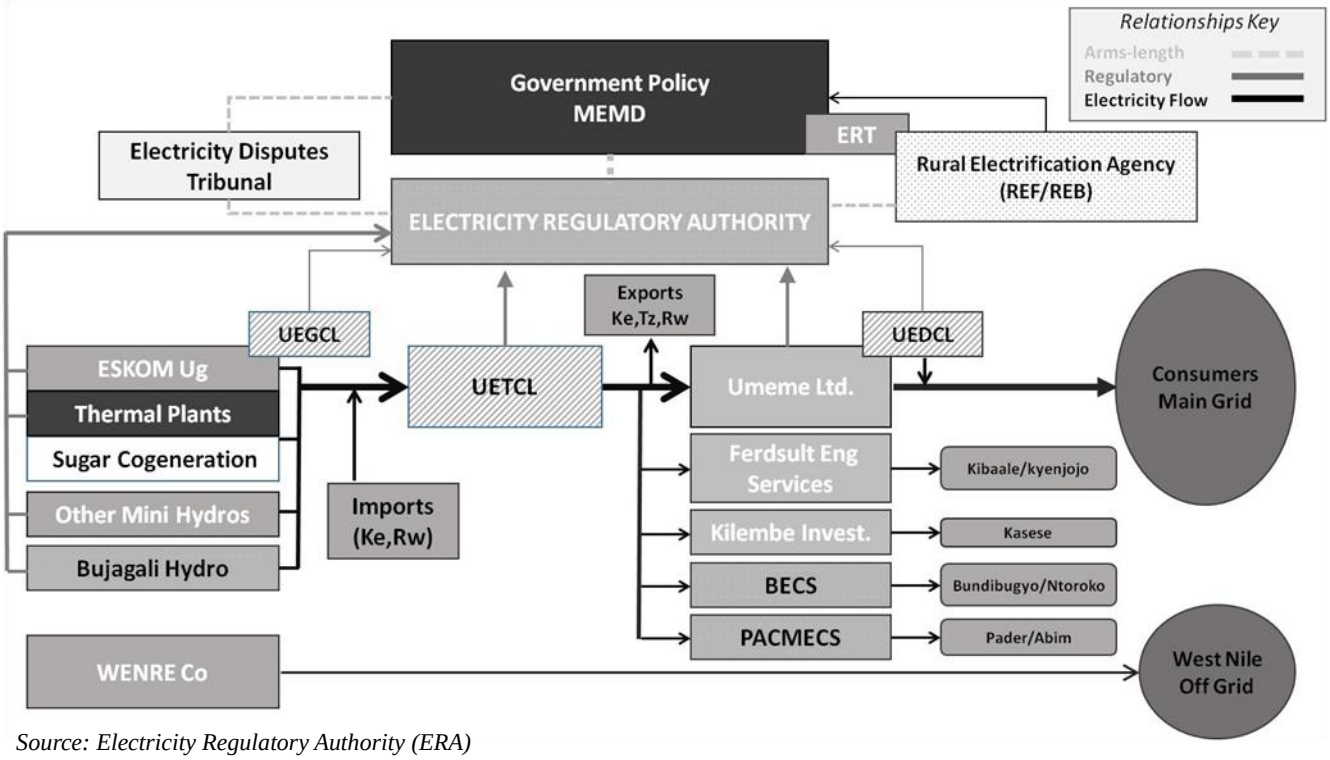
Subsequently, Electricity Regulatory Authority (ERA) formulated guidelines for resolution of sector disputes in respect of electricity consumers, licensees, land acquisition and royalties. Rural Electrification Agency (REA) and Board (REB) were established "to promote, support and provide for rural electrification programs".

## 6.2.3 Review of Legal Framework and Administrative Structure

Under the Energy Policy of 2002, the key role of Government is policy and strategy formulating and implementation. The reform of the reallocated roles and responsibilities between institutions in the sector as follows:

- Ministry of Energy and Mineral Development (MEMD): The ministry is responsible for overall policy framework, strategies, and development of the electricity sector. The ministry is mandated to provide policy guidance in the development of the Energy and Mineral sector.
- Electricity Regulatory Authority (ERA): ERA was established by act of parliament, the Electricity Act of 1999. The regulatory body is mandated with overseeing and regulating the electricity industry. This includes issuing various permits and licenses for generating, distributing and sale of electricity as well as setting of tariff.
- Rural Electrification Agency (REA): This is the Secretariat of the Rural Electrification Board (REB), which was inaugurated in May 2002 and became functional in July 2003. The REA has a broad mandate in rural electrification including providing policy advice to the REB and the Minister responsible for Energy, operationalization of Uganda's Rural Electrification Strategy and Plan, administering the Rural Electrification Fund (REF) on behalf of the Board, and maintaining a reliable and comprehensive database to facilitate RE policy planning and investment decisions.

- Uganda Electricity Generating Company Ltd (UEGCL): UEGCL is a limited liability company limited by guarantee incorporated in March 2001. UEGCL's major functional areas include concessioning and monitoring the concessioned facilities to ensure quality and reliable electricity generating.
- Uganda Electricity Transmission Company Ltd (UETCL): UETCL is a public limited company incorporated in March 2001 after unbundling of Uganda Electricity Board into successor companies. It owns and operates the transmission infrastructure operating above 33kV. It is responsible for the transmission, dispatch, bulk electricity buying from generators and for the export and import of electricity.
- Uganda Electricity Distributing Company Ltd (UEDCL): UEDCL is the state owned distribution company. UEDCL builds, owns distribution network at 33kV and below in the areas where UEB used to operate with a few additions made by REA and Umeme. Umeme is operating UEDCL's distribution network under a concession agreement. UEDCL owns the grid–connected electricity supply infrastructure at 33kv and below. It leased out its assets to Umeme limited. Currently, Umeme Limited is the distribution concessionaire. It is responsible for operating and maintenance of the network as well as the retail function that includes metering and billing.




*Source: Electricity Regulatory Authority (ERA)*

**Figure 6.2.1: Organization of Electricity Sub-Sector in Uganda**

## 6.2.4 Existing Inventory

Power sector existing inventory data has been collected and summary results are shown in following sections.

### (1) Power Generation

As in Grid Development Plan 2014– 2030, the maximum system peak demand registered in 2014 was about 549.78MW with the total electricity generation capacity of Uganda is 851.53MW. Uganda's electricity generation mix is predominantly hydro power (80%) with thermal plants dispatching on a standby basic. There are three largest hydro power plants such as Kiira, Nalubaale and Bujagali which contributed 630MW to the installed generation. The table 6.2.1 shows the existing power generation plants in Uganda.

**Table 6.2.1: Power Generation Plant in Uganda**

| Power Plant | Installed Capacity (MW) | Power Plant | Installed Capacity (MW) |
|---|---|---|---|
| **Grid Connected Power plants** | | **Off-grid Power plants** | |
| Nalubale and Kiira HPP | 380 | Nyagak 1 | 3.5 |

| Power Plant | Installed Capacity (MW) | Power Plant | Installed Capacity (MW) |
|---|---|---|---|
| Bujagali HPP | 250 | Kisizi Small hydropower plant | 0.35 |
| Electromaxx Tororo (Thermal) | 50 | Kuluva Small hydropower plant | 0.12 |
| Jacobsen Namanve ( Thermal) | 50 | Kagando Small hydropower plant | 0.06 |
| Kakira Co-gen | 50 | Off-grids Thermal Power Plants | 2 |
| KCCL | 9 | | |
| Kinyara Co-gen | 5 | | |
| Mobuku 1 | 5 | | |
| Ishasha small hydro | 6.5 | | |
| Mpanga small hydro | 18 | | |
| Bugoye small hydro | 13 | | |
| Kabalega HP | 9 | | |
| **Sub-Total** | **845.5** | **Sub-Total** | **6.03** |
| **Total capacity: 851.53 MW** | | | |

*Source: Ministry of Energy and Mineral Development (MEMD)*

### (2) Power Transmission

Uganda Electricity Transmission Company Limited (UETCL) is a public limited company. UETCL has two core businesses, Transmission System Operator and Single Buyer. They own and operate the High Voltage Transmission Grid (HVTG) above 33kV. The total transmission network was under UETCL as shown in table 6.2.2.

**Table 6.2.2: Power Transmission Network of UETCL**

| No. | Power Transmission Network | Quantity |
|---|---|---|
| 1 | Transmission lines | 220kV (150km)<br>132kV (1443km)<br>66kV (35.2km) |
| 2 | Transformer capacity | 132/33kV = 677.5MVA<br>132/11kV = 220MVA<br>66/11kV = 28MVA<br>33/66kV = 28MVA |
| 3 | Reactive Power Compensation | 98MVArs |

*Source: Uganda Electricity Transmission Company Limited (UETCL)*

### (3) Power Distribution

There are up to nine distribution companies. Among them, Umeme is the biggest distribution company which 96% of total energy purchases. The distribution network of Umeme consists of approximately 26,202km of medium and low-voltage lines covering all major districts and concentrated in the southeast of Uganda. The list of nine distribution companies is shown in table 6.2.3.

**Table 6.2.3: List of Distribution Companies in Uganda**

| No. | Name |
|---|---|
| 1 | Umeme (U) Ltd |
| 2 | Ferdsult Engineering Services Ltd |
| 3 | Kilembe Investments Ltd |
| 4 | Bundibugyo Cooperative Society (BECS) |
| 5 | Pader Abim Community Multi Electric Cooperative Society (PACMECS) |
| 6 | Kalangala Infrastructure Services (KIS) |
| 7 | West Nile Rural Electrification Company (WENRECO) |
| 8 | Kyegegwa Rural Electric Cooperative Society (KRECS) |
| 9 | Uganda Electricity Distribution Company Ltd (UEDCL) |

*Source: Electricity Regulatory Authority (ERA)*

## 6.2.5 Analysis of Operation and Maintenance

### (1) Power Generation

Uganda's power generation was handed over to UEGCL which is a limited liability company incorporated in March 2001 under the Companies Act, and fully owned by the Government of Uganda. UEGCL's key mandate is to carry on the business of electric power generation and sale within Uganda or for export to neighboring countries; build, operate and maintenance of its Concessioned Assets – Nalubaale and Kiira Power Stations; provide Technical Support as and when required by the Government of Uganda through the MEMD; organize, support, encourage and maintain training facilities in technical and related fields.

### (2) Power Transmission

Uganda Electricity Transmission Company Limited (UETCL) is a public limited liability Company incorporated under the Companies Act and commenced operations on March 2001. UETCL has a leading role in developing, operating and maintaining an efficient High Voltage Transmission Grid (HVTG) to meet the national load demand, power evacuation from new generation plants and regional power exchange requirement through regional interconnections within the national and International technical, social-economic and environmental standards.

UETCL currently implements the Optical Fiber with Ground Earth wire (OPGW) as part of every EPC contract for construction of transmission lines and as such the communication infrastructure is expanding at the same pace as the power transmission grid. The telecommunications network by UETCL services comprising of: tele protection, SCADA, telemetering and voice communication.

### (3) Power Distribution

As the biggest distribution company, Umeme operates as the primary electricity distribution company in Uganda, responsible for distributing electricity to Ugandan residents and commercial entities. UEDCL owns the distribution network that has been leased to Umeme under the Privatization Agreements. Umeme purchases electricity from Uganda Electricity Transmission Company Limited (UETCL), which owns and operates the high voltage transmissions network of up to 132kV. The management of the distribution system in Uganda requires Umeme to maintain and operate the distribution network; to collect revenues from customers based on the prevailing tariff set by ERA in accordance with the licenses and the privatization agreements; to make investments in upgrading expansion and maintenance of the assets forming the distribution network; and to return control of the distribution assets, including new investments.

Umeme has a prepayment metering system with alternative payment platforms such as Finance Trust Bank, Ezee mobile money and Orange Money. In addition, Umeme is developing SCADA and GIS systems to manage their Distribution Network.

## 6.2.6 Review of on-going and Planned Infrastructure Projects

In 2011, Ministry of Energy and Mineral Development of Uganda (MEMD) embarked on a process to develop a power sector investment plan (PSIP) which prepared by Parsons Brinckerhoff Africa (Pty) Ltd. The on-going and planned power sectors projects are mainly follow this PSIP.

### (1) Power Generation Projects

Hydro Power Generation Projects are mainly developed by UEGCL which are showed in table 6.2.4 bellows:

**Table 6.2.4: On-Going and Planned Power Generation Projects in Uganda**

| No. | Project | Status |
|---|---|---|
| **I** | **On-going project** | |
| 1 | Karuma Hydropower plant (600MW) | Under Construction |
| 2 | Isimba Hydropower plant (183MW) | Under Construction |
| **II** | **Planned Large project** | |
| 1 | Ayago Hydropower plant (600MW) | Planned |
| 2 | Oriang Hydropower plant (390MW) | Planned |
| 3 | Kiba Hydropower plant (290MW) | Planned |
| 4 | Uhuru Hydropower plant (650MW) | Planned |

| No. | Project | Status |
|---|---|---|
| **III** | **Planned Small project** | |
| 1 | Nyamwamba HPP; Kikagati HPP; Kakaka; Lubilia; Kagando;Sipi;Waki; Nengo Bridge; Nshogenzi; Nyamba B;Muzizi | The feasibility studies have been completed and now at the stage of financial closure. |

*Source: Ministry of Energy and Mineral Development of Uganda (MEMD)*

In addition to the table, the Government of Uganda has more 60 small hydro power plants with a combined generation of 210MW. These are found in the Eastern and Western districts of the country.

**Table 6.2.5: On-Going and Planned solar Power Generation Projects in Uganda**

| No. | Project | Status |
|---|---|---|
| **I** | **On-going project** | |
| 1 | Namungoona solar power station (50MW) | Under Construction |
| 2 | Soroti solar power station (1oMW) | Under Construction |
| 3 | Tororo solar power station (10MW) | |
| **II** | **Planned Large project** | |
| 1 | Uganda solar power project I ,ii, iii, iv (125MW each) | Planned |

*Source: Ministry of Energy and Mineral Development of Uganda (MEMD)*

With the planned and ongoing power generation projects, Uganda will be able to meet the projected power demand of 1,030MW by 2020.

### (2) Power Transmission Projects

Uganda Electricity Transmission Company Limited (UETCL) has Transmission Grid Development Plan which is categorized into: (i) Evacuation Transmission lines: For evacuation of power from the proposed generation sites to the grid; (ii) System extension projects: for improvement of reliability, quality of supply and increase grid area coverage. Facilitate implementation of Government renewable energy policy; (iii) Re-investment projects: For upgrading to enhance transmission capacity; (IV) Regional Interconnection lines: For Regional power trade and security of supply.

### (3) Power Distribution Projects

In Uganda, UEDCL and UMEME are the main power distribution companies. Their on-going and planned projects as follows:

**Table 6.2.6: On-Going and Planned Power Distribution Projects in Uganda**

| No. | Project | Status |
|---|---|---|
| **I** | **UEDCL's projects** | |
| 1 | West Nile grid extension | On-going |
| 2 | Rehabilitation of Maziba hydropower plant (1MW) | On-going |
| 3 | Expansion of the distribution network | On-going |
| 4 | Expansion of the network in Bunyangabu County-Kabarole District | On-going |
| 5 | Network expansion in Masaka & Rakai District | Planned |
| **II** | **UMEME's projects** | |
| 1 | Prepayment metering | On-going |
| 2 | Rural Electrification Programme | On-going |

*Source: Ministry of Energy and Mineral Development of Uganda (MEMD)*

## 6.2.7 Analysis of Current Gaps and Bottlenecks

The power sector in Uganda is still faced with challenges from both the supply and demand sides. As in the Grid Development Plan 2014– 2020, the current system peak demand registered in 2014 was about 549.78MW with the total electricity generation capacity of Uganda is 851.53MW. It is projected that the power demand forecast is estimated to be 1,030MW by 2020 with the increase power generation capacity up to 2,500 MW.

In addition anticipated private sector investments into the sector have been much slower to meet the growing demand for electricity and rural electrification rates. The power sector still faces massive energy deficits and prices have remained high and uncompetitive. To ensure implementation of planned projects, the current gaps and bottlenecks should be reduced, there are:

- Land Acquisition: to acquire land for infrastructure takes a very long time and land is very costly. That delays project development and results into high investment costs implementation.
- Acquisition of way leaves for construction of transmission lines has proved to be horrendous. It has increased project costs by very high margins and in some case led to delay in projects.
- The distribution losses are still high with 25.4% by 2014.
- Low electrification rate: Access to electricity in 2014 at national level in Uganda is low with 16% but only 7% in rural areas.

# *6.3 Water in Kenya*

## 6.3.1 Overview

Kenya is classified as a chronically water-scarce country. Although the UN recommends per capita available water resources of 1,000 m3/year, Kenya has only 586 m3/year as of 2010.


To overcome this water stress situation, the National Water Master Plan 2030 (NWMP 2030) was formulated in 2013. It provides a framework for water resources development and management consistent with the country's social and economic development activities up to the year 2030.

The country consists of the six catchments: a) Lake Victoria North Catchment Area (LVNCA), b) Lake Victoria South Catchment Area (LVSCA), c) Rift Valley Catchment Area (RVCA), d) Athi Catchment Area (ACA), e) Tana Catchment Area (TCA), and f) Ewaso Ngiro North Catchment Area (ENNCA). Although the NEC itself doesn't directly pass through LVSCA, TCA and ENNCA, regional development plans to be proposed in the MP may extend to the parts of those catchments or require water transfer from those catchments to the NEC areas. The following sub-sections will therefore mention all the six catchments.

## 6.3.2 Review of Policy, Legal Framework and Administrative Structure

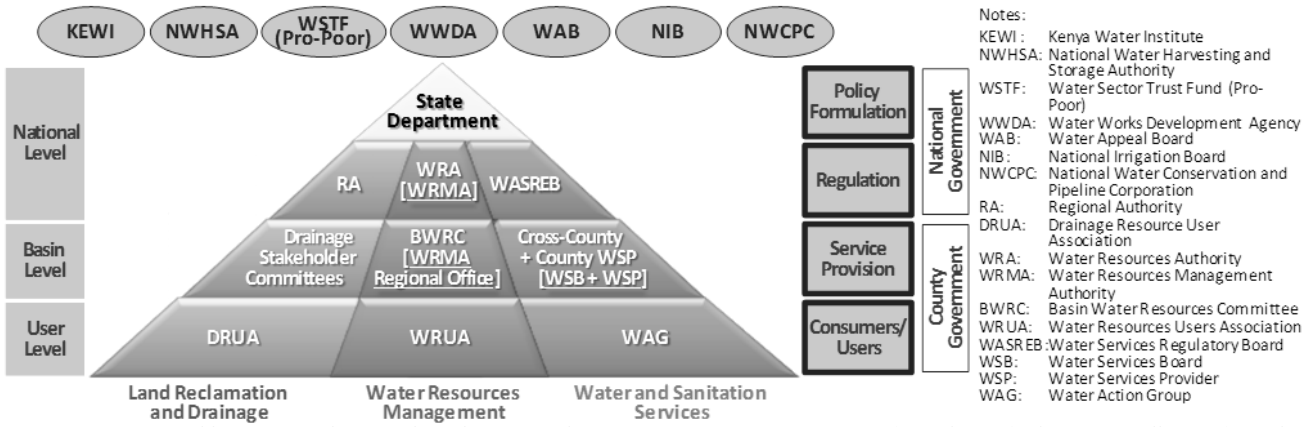
***Policy and Legal Framework***

With the promulgation of the Constitution of Kenya (CoK) 2010, all existing laws and public institutions had to realign to the new provisions. With the realignment, the Ministry of Water and Irrigation (MWI)[54] drafted a Water Policy and Water Bill 2014. As of July 2015, the Bill has gone through two readings in Parliament and is awaiting the final enactment for it to repeal the Water Act 2002. These two documents provide the basic policy direction and legal framework for the sector. They also inform the institutional arrangement.

***Administrative Structure***

Since the Water Bill 2014 has not been enacted, the old institutional setup of Water Act 2002 is still being used with some changes in line with CoK 2010. However the MWI is again in the progress of reconstituting as of July 2015. This report therefore presents a new institutional setup for the water sector that was proposed in the Bill as illustrated in Figure 6.3.1. One of the largest reforms in the water sector is that the county governments have taken up ownership of the water utilities in line with devolution brought by the CoK 2010.

54 The former MWI was reorganized into the Ministry of Environment, Water and Natural Resources (MEWNR) in line with the Constitution of Kenya 2010. However, as of July 2015, it is in a transition period before becoming MWI again by separating environment and natural resources and uniting irrigation. The Cabinet Secretary for the newly created MWI was finally sworn in on July 9, 2015. Following this, the Permanent Secretary and the other important positions will be appointed sequentially.




*Source: Summarized by JICA Study Team based on Annual Water Sector Review 2013-2014 (March 2015), the Water Bill 2014 (March 2014) and its amendment (July 1, 2015)*

Notes: 1. The above setup has been proposed by the MWI. However it has not been finalized yet as of July 2015.
2. The underlined organization name in the illustration means the former name before the enactment of Water Bill 2014.

**Figure 6.3.1: Institutional Setup for the Kenya Water Sector (Proposed by MWI)**

The state departments consist of the sub-sectors: water resources, water services, land reclamation, water storage and flood control, and regional development authority. Out of the national level institutions other than those, NWCPC has the main role for the development of the water resources infrastructures including large scale dam and water transfer. Besides, KenGen is a state-owned company responsible for producing electricity, though it is not shown in the above figure.

## 6.3.3 Existing Inventory

There are 28 existing and operational dams for water resources development in Kenya as of July 2015 as listed in Table 6.3.1. Given that the NWMP 2030 proposed additional 59 dams to be constructed by 2030 with a total effective storage volume of 10,679 MCM, the number and volume of existing dams are obviously insufficient.

**Table 6.3.1: Existing Large Dams**

| Catchment Area | Nos. of Dams | Name of Dams | Total Storage Volume (MCM) |
|---|---|---|---|
| LVNCA | 5 | Moiben, Twin Rivers, Ellegirini, Kipkarren, Lessos | 24 |
| LVSCA | 2 | Gogo Falls, Sondu/Miriu | 1 |
| RVCA | 6 | Turkwel, Chemeron, Kirandich, Turasha, Aram, Chemususu | 1,664 |
| ACA | 8 | Ruiru, Bathi, Mulima, Manooni, Muoni, Kikoneni, Maruba, Kiserian | 11 |
| TCA | 7 | Sasumua, Thika, Masinga, Kamburu, Gitaru, Kindaruma, Kiambere | 2,218 |
| ENNCA | 0 | - | 0 |
| Total | 28 | - | 3,918 |

*Source: Updated by JICA Study Team based on the NWMP 2030, Annual Water Sector Review 2013-2014*

In addition to the large dams, several types of water harvesting facilities including roof catchment, small dam/ water pan, subsurface/ sand dam, and rock catchment have been constructed by various organizations. Out of these, the inventory prepared in 2003 provides the number of small dams and water pans of 4,037 with total original and existing capacities of 173 and 74 MCM, respectively. Although updated information is not available, it can be said that sedimentation into small dams/ water pans is one of the issues to be addressed.

A total of 11 intra-basin and 5 inter-basin bulk water transfer schemes are currently in operation as of July 2015 as listed in Table 6.3.2. The major water transfer into the NEC areas include the schemes from Moiben dam to Eldoret, from Chemususu dam to Nakuru, and from Sasumua and Thika dams to Nairobi.

**Table 6.3.2: Bulk Water Transfer Schemes Currently in Operation**

| Scheme Type | Nos. of Scheme | Name of Scheme | Total Transfer Volume |
|---|---|---|---|
| Intra-basin bulk water transfer | 11 | 1) Scheme for Moiben Dam (LVNCA), 2) Scheme for Chemususu Dam (RVCA), 3) Kikuyu Spring, 4) Ruiru Dam, 5) Nol Turesh, 6) Mzima springs, 7) Marere boreholes, 8) Tiwi boreholes, and 9) Baricho shallow wells (ACA), 10) Kiambere Dam to Mwingi and 11) Masinga Dam to Kitui (TCA) | 75 MCM/year |
| Inter-basin bulk water transfer | 5 | 1) Scheme for Moiben Dam (LVNCA), 2) Scheme for Kirandich Dam (RVCA), 3) Scheme for Maruba Dam (ACA), 4) Schemes for Sasumua and 5) Thika dams (TCA) | 185 MCM/year |

Note: ( ) = Catchment area
*Source: Updated by JICA Study Team based on the NWMP 2030, Annual Water Sector Review 2013-2014*

## 6.3.4 Analysis of Operation and Maintenance

***Water Resources Development Infrastructure***

The operation and maintenance (O&M) for the water resources development infrastructures are performed by different bodies depending on the type of facilities as summarized in Table 6.3.3. The NWMP 2030 pointed out that one of the key issues in O&M is sedimentation in both large dams and small dams/ water pans.

**Table 6.3.3: Organizations in relation to O&M for Water Resources Development Facilities**

| Type of Facility | Organizations |
|---|---|
| Large Scale Dam | RDAs, KenGen, WSBs, NIB |
| Water Transfer | NWCPC, WSBs |
| Small Scale Dam | Community |
| Water Pan/ Rock Catchment/ Subsurface Dam/ Sand Dam | Communities, Individuals |
| Boreholes | WSBs, Communities, Individuals |

*Source: Summarized by JICA Study Team based on the NWMP 2030*

***Water Supply Infrastructure***

Responsibility for water and sanitation service provision is in the hands of counties. However, counties delegate the service provision to commercially-oriented public enterprises, the so-called WSPs. The service provision is regulated by service provision agreements to ensure compliance with the standards on quality, service levels and performance established by WASREB. According to the Impact Report Issue No.7[55], there are 65 urban and 36 rural WSPs registered. Table 6.3.4 presents the performance of WSPs in terms of O&M.

**Table 6.3.4: Key Performance Indicators of WSPs in 2012/2013**

| Key Performance Indicators | Urban WSPs | Rural WSPs | Sector Benchmarks | | | Remarks |
|---|---|---|---|---|---|---|
| | | | Good | Acceptable | Not Acceptable | |
| Hours of Supply (hrs/day) | 16 | 17 | 21-24 | 16-20 | <16 | Population>100,000 |
| | | | 17-24 | 12-16 | <12 | Population<100,000 |
| Non-Revenue Water (%) | 42 | 55 | <20 | 20-25 | >25 | |
| Revenue Collection Efficiency (%) | 85 | 91 | >95 | 85-95 | <85 | |
| O&M Cost Coverage (%) | 113 | 104 | ≥150 | 100-149 | ≤99 | |

*Source: Impact Report No.7*

The Impact Report revealed that only 9 of the 101 WSPs are able to provide water for 24 hours per day basis. The hours of Nairobi and Mombasa WSPs are 16 and 6 hours, respectively. The key challenges are water availability and the high cost of power supply. It is generally recognized that the intermittent nature of system operations is contributing to water quality issues.

Non-Revenue Water (NRW) levels remain unacceptably high. As seen in the above table, the average NRW values of urban and rural WSPs are 42% and 55%, respectively, which far exceed the benchmarks. Most WSB managers, before the devolution to counties, consider that the bulk of NRW is due to commercial losses (illegal connections/ water theft, metering errors and unbilled authorized consumption) rather than technical losses

55 A performance Review of Kenya's Water Services Sector 2012-2013 (WASREB, 2014)

(leakages), although it was recognized that many of the pipe networks are indeed very old. It is also evident that there are a significant number of illegal connections, and in many cases, the water is being used for irrigation.

## 6.3.5 Review of On-going and Planned Infrastructure Projects

As of July 2015, ongoing dam and bulk water transfer schemes whose constructions are in progress or whose D/D, F/S, or other studies are completed or being carried out are enumerated in Tables 6.3.5 and 6.3.6.

**Table 6.3.5: Ongoing Dam Schemes**

| Catchment Area | Under Construction | D/D are Completed | D/D are Ongoing | Pre-Designs or F/S are Done or Ongoing |
|---|---|---|---|---|
| LVNCA | - | Nandi Forest | Siyoi, Nzoia (34B), Nzoia (42A) | - |
| LVSCA | - | Magwagwa, Bunyunyu | - | Itare, Nyando (Koru), Londiani |
| RVCA | - | Arror | Oletukat, Leshota, Oldorko | Upper Narok |
| ACA | - | Ruaka (Kiambaa), Thwake, Mwache, Lake Chala | Rare | Ruiru-A (Ruiru 2), Ndarugu, Munyu, Stony Athi, Kamiti 1 |
| TCA | Umaa | Thiba, High Grand Falls, Yatta | - | Maragua 4, Karimenu 2, Thika 3A |
| ENNCA | Badasa | Lower Ewaso Ngiro | - | Isiolo, Rumuruti, Nayhururu |
| Total No. | 2 | 12 | 7 | 15 |

*Source: Updated by JICA Study Team based on the NWMP 2030, Annual Water Sector Review 2013-2014, Medium Term Expenditure Framework Budget for the Period 2015/16-2017/18*

**Table 6.3.6: Ongoing Bulk Water Transfer Schemes**

| Scheme | Under Construction | D/D are Completed or Ongoing | Pre-Designs or Studies are Done or Ongoing |
|---|---|---|---|
| Intra-basin bulk water transfer | - | Scheme for Bunyunyu Dam (LVSCA), Schemes for Ruaka (Kiambaa) Dam and Rare Dam (ACA) | Scheme for Londiani Dam (LVSCA), Schemes for Ruiru-A, Ndarugu, Munyu, and Mwache dams (ACA) |
| Inter-basin bulk water transfer | Oloibortoto River (RVCA), Scheme for Kiserian Dam (ACA), Scheme for Umaa Dam (TCA), Scheme for Badasa Dam (ENNCA) | Schemes for Siyoi, Nzoia 34B, and Nandi Forest Dam (LVNCA), Scheme for Magwagwa Dam (LVSCA), Northern Collector Tunnel Phase I to Thika Dam (TCA) | Schemes for Itare and Nyando dams (LVSCA), Schemes for Second Mzima and Sabaki Extension (ACA), Scheme for Komu Transfer (TCA) |

Note: ( ) = Catchment area
*Source: Updated by JICA Study Team based on the NWMP 2030, Annual Water Sector Review 2013-2014, and Integrated Urban Development Master Plan for the City of Nairobi (December 2014, JICA)*

In addition, the following are some recent topics in the water resources development along the NEC areas:

1) Thwake Dam: the Thwake Multi-purpose Water Development Program (TMWDP), signed with AfDB in January 2014, comprises a multi-purpose dam for water supply, hydropower and irrigation development. It will provide bulk water to the upcoming ICT city of Konza along the NEC. The construction will be commenced soon.

2) Mwache Dam: the project is part of the second phase of the Water Security and Climate Resilience Program, signed with WB in January 2015. The dam is expected to supply 60 MCM of water to Kwale and Mombasa and support about 2,000 ha of irrigation in Kwale. The construction is expected to be commenced within one year.

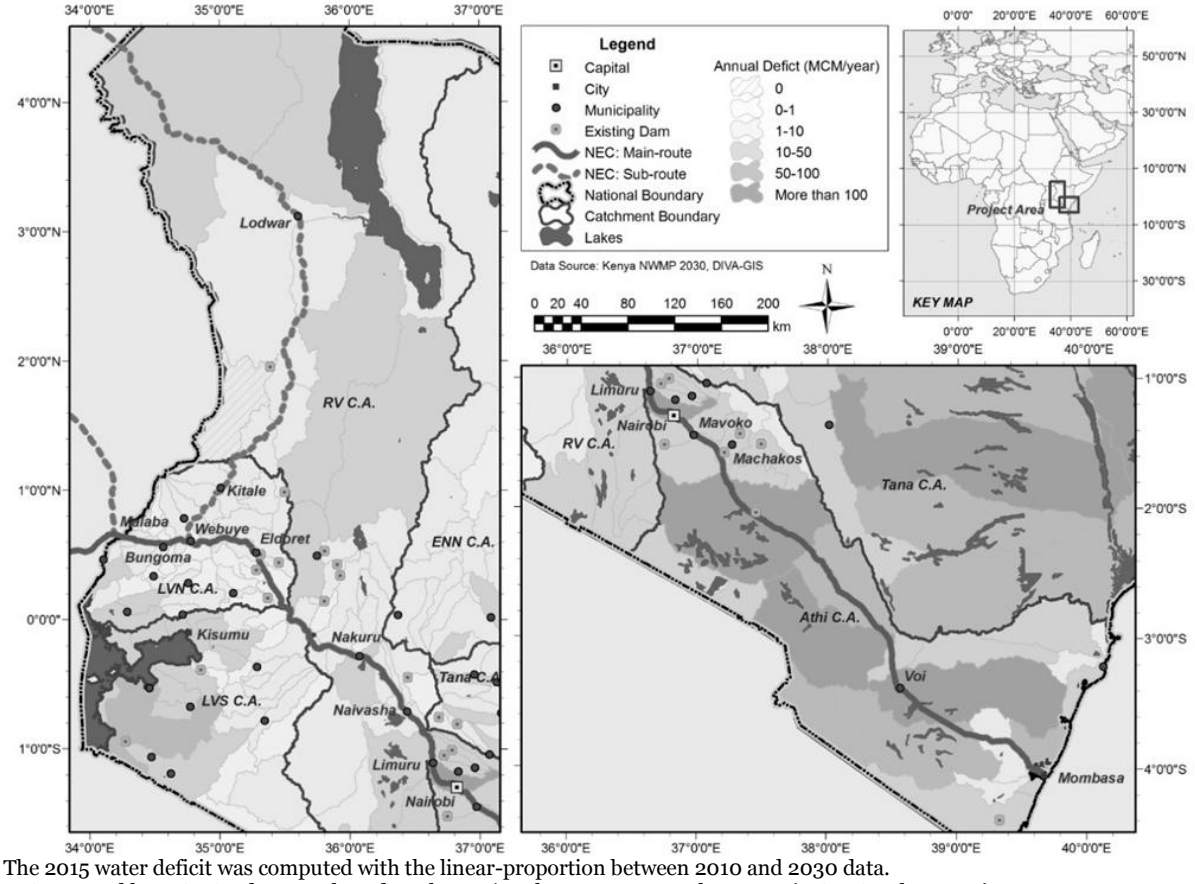
3) Itare Dam: a financing agreement for the construction of Itare dam was signed in July 2015 with Italy's BNP Paribas and Intesa San Paolo banks. Although the Itare dam is located in the LVSCA in terms of river basin, the water is planned to be transferred to Nakuru in the RVCA.

## 6.3.6 Analysis of Current Gaps and Bottlenecks

From the aspect of water, the most likely bottleneck for the development of the NEC is considered to be the volume of available water resources in the country. This section will therefore focus on the current situation in terms of water quantity based on the past relevant study results of water resources assessment.

The NWMP 2030 provides the result of water balance study by comparing the years 2010 (present) and 2030 (projection). Figure 6.3.2 provides the annual total water deficit by sub-catchment with the calculation of monthly basis under present water demands and existing water resources structures conditions. Since the present year of 2010 in the report has been slightly old now, the 2015 water deficit was computed with the

linear-proportion between 2010 and 2030 data. As seen in the figure, most sub-catchments along the NEC particularly the areas between Nairobi and Mombasa suffer from water deficit even in 2015.




Note: The 2015 water deficit was computed with the linear-proportion between 2010 and 2030 data.
*Source: Computed by JICA Study Team based on the National Water Master Plan 2030 (JICA, October 2013)*

**Figure 6.3.2: Annual Deficit by Sun-Catchment in 2015 under the Existing Structures Conditions**

It is evident from the result of NWMP 2030 that even present water demands are exceeding available water resources under the conditions of existing water resources structures. It also revealed that future water deficit will increase even if irrigation efficiency and/or NRW are improved on the demand side. The NWMP 2030 provided a clear water resources development plan toward 2030 taking into account all the issues that were identified at the study stage. The real issue here is whether it will be implemented by 2030.

The initial National Water Master Plan was formulated in 1992 with the target year of 2010. However, only four dams out of the 28 priority dam schemes proposed to be implemented in the NWMP (1992) have been completed as of July 2015, although several dams have their D/D, F/S and/or other studies.

Based on the recent water sector review report as well as discussions with the MWI, the low development rate against the target is mainly referable to the following factor and it could be issues on the supply side:

a) Social Challenges with Affected Communities: although financial arrangements for the water resources development projects have been made, public consensus on the project occasionally become increasingly harder as the project stage goes on. Currently several dam projects including Nyando (Koru), Nzoia, Yatta and Badasa dam schemes have been facing social challenges leading to land use conflicts with communities within the potential infrastructural sites.

On the other hand, key issues on the demand side are analyzed by the NWMP 2030 as follows:

b) Insufficient Water Saving: little mention is made of either water saving measures or the reuse of treated wastewater in the government's strategy or sector planning documents, with discussions being limited to overall philosophy rather than detailed measures.

c) High Level of NRW: the NRW levels are very high in Kenya and in many cases exceed 60%. It is very clear that priority needs to be given to leakage reduction as a precursor to obtaining high investments. Consideration

needs to be given to limiting investments to those areas which have achieved a reduction in NRW to a certain threshold level.

# *6.4 Water in Uganda*

## 6.4.1 Overview

With a mean annual rainfall of around 1,200 mm, Uganda may be considered to be endowed with significant freshwater resources. However, their uneven spatial and temporal distribution coupled with the ever increasing pressure on the resource due to rapid population growth, increased urbanization and industrialization, uncontrolled environmental degradation and pollution still remains a big challenge to the sustainable management and development of country's fresh water resources.

## 6.4.2 Review of Policy, Legal Framework and Administrative Structure

***Policy and Legal Framework***

The National Water Policy (1999) states guiding principles with respect to domestic water supply, development of water for agricultural production, water for industrial development and the discharge of effluent from industrial areas.

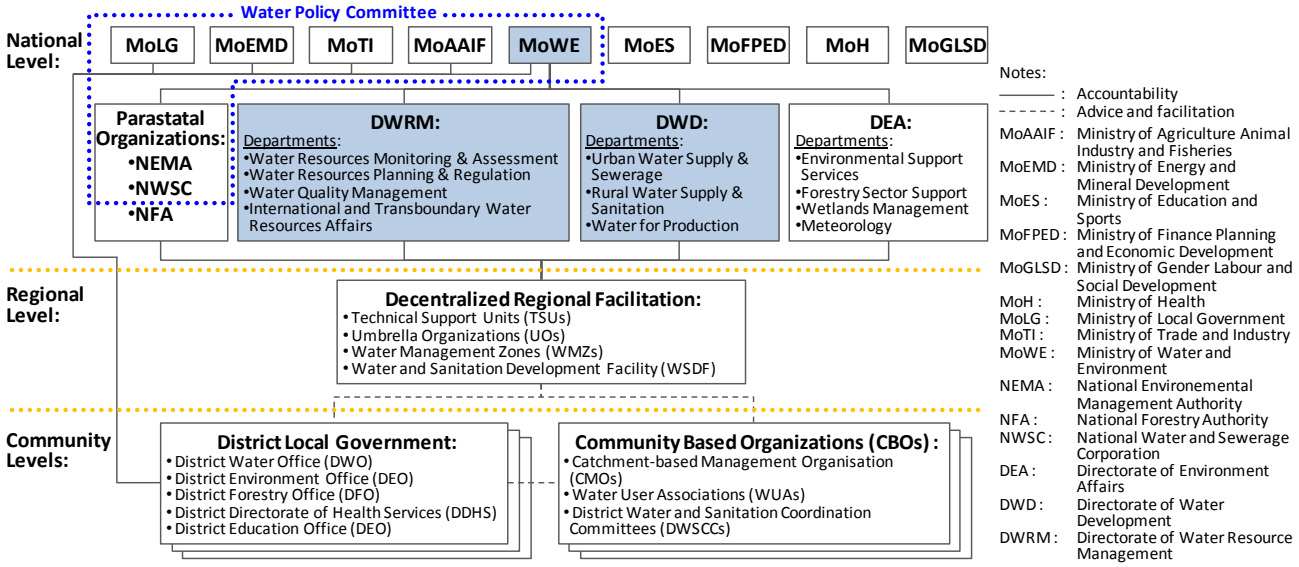
The Water Act (1995) provides the framework for the use, protection and management of water resources and supply. The detailed provisions regarding acquisition of permits for water use are contained in the Water Resources Regulations (1998). As regards industrial and other activities that would result in the generation of effluent and waste water, the provisions for waste water discharge permits and related matters are contained in the Waste Discharge Regulations (1998). And also regarding water supply facilities, the provisions of the Water Supply Regulations (1999) should be followed.

As water-related concerns are growing in recent years, a national water resources assessment was conducted in 2012. Based on the result, the National Water Resources Strategy is being formulated as of July 2015 aiming to provide a framework for integrated management and development of the country's water resources. The strategy sets the stage for the development and management of Uganda's water resources up to the year 2040.

Besides, as one of the international water policies among the neighboring countries, the Nile Treaties interfere in the development of water resources of Victoria Nile River running out of the Lake Victoria.

***Administrative Structure***

The institutional framework for the water sector comprises Ministry of Water and Environment (MoWE) and its three directorates, various parastatal organizations, related government and non-governmental organizations and stakeholders at community, regional and national levels as summarized in Figure 6.4.1.




*Source: Summarized by JICA Study Team based on the NWSC Corporate Plan 2015-2018*

**Figure 6.4.1: Institutional Framework for the Uganda Water Sector**

The Directorate of Water Resources Management (DWRM) is responsible for developing and maintaining national water laws, policies and regulations, managing water resources, coordinating Uganda's participation in joint management of trans-boundary water resources with Nile Basin riparian countries. With the increased interest in the management of international rivers, a new department of International and Transboundary Water Resources Affairs was created under DWRM in mid 2014.

The Directorate of Water Development (DWD) is responsible for the planning, implementation and supervision of the delivery of urban and rural water and sanitation services, including water for production. MoWE through the Department of Water for Production (WfP) undertakes programs for development and utilization of water resources for productive use in crop irrigation, livestock, aquaculture, rural industries and other commercial uses. The National Water and Sewerage Corporation (NWSC) provides water supply and sewerage services for the large towns, while those for the other small towns and rural growth centers are under the mandate of DWD.

For agricultural application, MoWE is responsible for development of off-farm facilities and MoAAIF is responsible for on-farm facilities and activities.

## 6.4.3 Existing Inventory

The major water-related infrastructures under the management of MoWE are summarized in Table 6.4.1 based on the MoWE's water supply database for the financial year of 2013/2014. Although the MoWE have made efforts to update the database, it still seems to have a lot of missing information.

As seen in the table, the ratios of non-functional facilities range from 7% to 23% depending on the type of facilities. The major reasons of non-functionalities include partial failure of facilities (pipe, pump, handle, tap, etc.), blockage and/or leakage of pipe system, vandalism and equipment theft.

**Table 6.4.1: Nos. and Functionality Status of Point Water Sources and Piped Scheme**

| Functionality Status | Point Water Sources (Nos. of Sources) | | | | | | Piped Scheme (Nos. of Schemes) | |
|---|---|---|---|---|---|---|---|---|
| | Protected spring | Shallow well | Deep borehole | Rainwater harvest tank | Dam | Valley tank | Gravity flow system | Pumped pipe system |
| Functional | 23,011 | 14,405 | 26,411 | 15,801 | 297 | 608 | 241 | 175 |
| Non-Functional (Ratio %) | 3,089 (12%) | 4,346 (23%) | 4,317 (14%) | 2,514 (14%) | 78 (21%) | 96 (14%) | 26 (7%) | 49 (17%) |
| Partially Functional | - | - | - | - | - | - | 125 | 58 |
| Total Nos. | 26,100 | 18,751 | 30,728 | 18,315 | 375 | 704 | 436 | 329 |

*Source: Summarized by JICA Study Team based on the Water Supply Database (MoWE), Financial Year of 2013/2014*

In isolation from the said database, DWRM is currently preparing and updating the inventory of multi-purpose dams for the purpose of a dam safety study. The list includes 212 dams as of 2012. However their major features

such as size of dam body, storage capacity, coordinates of location, owner, etc. have not been clearly identified particularly for the old dams that were constructed in the colonial times.

Besides, separately from the MoWE's piped schemes presented in the above table, NWSC provides water supply and sewerage services in the 98 towns as of May 2015. The total lengths of water distributing pipes and sewer pipes are 7,684.6 km and 659.1 km, respectively, according to the NWSC Corporate Plan 2015-2018.

## 6.4.4 Analysis of Operation and Maintenance

The operation and maintenance (O&M) works for the water-related infrastructures are performed in a different manner depending on the type of facilities and responsible organizations.

***Rural Water Facilities (including Point Water Sources)***

In accordance with the description on the community as the owners of a water facility that is specified in the National Water Policy (1999), the O&M of rural water facilities is largely based on the Community Based Maintenance System (CBMS), which has several benefits in terms of sustainability, empowerment of communities and low cost operations. The basic concept of CBMS is provided in the National Framework for O&M of Rural Water Supplies in Uganda (July 2011, MoWE).

The O&M costs of water facilities shall be borne primarily by the users. The community may get external support from lower local governments or NGOs to meet costs beyond their ability. Major repairs can be done by artisans with assistance from the facility caretakers. The more complex repairs will require external contractors, with guidance and supervision from the District Water Office (DWO) and in some cases supervision may be required from DWD.

The types of facilities to be maintained by communities include large-scale dams and valley tanks. Since most infrastructures are neither mechanized nor equipped with gates, any specific operations are not required. The communities are thus responsible only for maintenance works.

***Urban and Rural Water Supply Infrastructure***

The O&M work of infrastructure for large-scale urban water supply is conducted by NWSC, while the O&M for small-scale urban water supply and all rural water supply is performed by private water operators (PWOs) under management contracts with MoWE.

The PWOs are associated into an umbrella organization that unites private water operators, i.e. the Association of Private Water Operators (APWO). As of June 2014, there are a total of 20 independent PWOs managing water supply systems in 48 towns. The number of towns managed by PWOs was declined in FY 2013/14 due to the transfer of some towns to NWSC. APWO members currently serve a population of 1,030,641 in the small towns with a total number of 27,767 connections. The collection efficiency for FY 2013/14 was 89% of the billed revenue and the average percentage Non-Revenue Water (NRW) is at 25%. This NRW is considered relatively low compared to the surrounding countries such as Kenya's 45% in 2010, while it is still much higher than the most developed countries' ratio not exceeding 10%.

Since all the dams in the country have so far been constructed in rural areas, NWSC does not use dams for their water supply services. Therefore, NWSC does not perform the O&M works of dams. Water sources for NWSC's service are basically natural lakes.

## 6.4.5 Review of On-going and Planned Infrastructure Projects

Key projects that may become promotional factors for the regional and industrial developments along the NEC areas are summarized as follows:

***Water for Production (WfP) for Rural Areas:***

MoWE through the WfP department is undertaking several programs to improve the livelihoods of the people in rural areas particularly across the cattle corridor[56] through a) construction of dams and valley tanks, b)

56 Cattle Corridor is the areas where animals are always on the move in search of pasture and water and is known as water-scarce area.

rehabilitation of old dams, c) construction of bulk water transfer scheme, and d) rehabilitation/reconstruction of irrigation schemes. As of July 2015, there are three on-going projects, namely 1) construction of the Ongole dam in Katakwi district, 2) reconstruction of Mabira dam in Mbarara district, and 3) rehabilitation of Olweny irrigation scheme in Lira district. Also, the WfP department plans to implement the construction of dams in 9 districts, rehabilitation of dam in 1 district and bulk water transfer scheme for water use covering 4 districts, though detail studies for those projects have not been commenced yet.

***Multi-purpose Water Resources Projects:***

Studies on multi-purpose water resources development are being conducted in the following NBI-led projects:

Nyimur Multi-purpose Water Resources Project

This is a trans-boundary project conducted through the NBI's Nile Equatorial Lakes Subsidiary Action Program (NELSAP)[57] between Uganda and South Sudan whose amount of funding is EUR 1,975,102 from the African Water Facility of the Africa Development Bank (AfDB). The overall objective of the project is to conduct feasibility studies, Environmental and Social Impact Assessments (ESIA) and Resettlement Action Plans (RAP) within the Aswa River Basin, part of the Upper Nile River Basin, for multipurpose uses including flood mitigation, irrigation, electricity generation, fisheries development as well as water supply and sanitation. The project studies which started in February 2015 will be completed by December 2017.

Nile Cooperation for Results Project

ENTRO[58], NELSAP-CU[58] and Nile-SEC[58] are jointly implementing the project between February 2013 and April 2017 with the fund of World Bank. Out of its three components, the sub-component 2-b aims to undertake feasibility and design studies related to potential cooperative water-resources development investments in the NEL (Nile Equatorial Lakes) region. The project includes two multi-purpose dam sites to be studied in Uganda, namely, Kabuyanda Dam (irrigation 4,300 ha; hydropower 0.1 MW) in Isingiro district and Nyabanja Dam (irrigation 5,500ha; hydropower 47 kW; storage 170 MCM (water supply for 12,000 people)) in Tororo district.

***Water Supply Projects by NWSC***

NWSC intends to implement infrastructural growth projects in the next three years in several towns located along the NEC as enumerated in Table 6.4.2 below.

**Table 6.4.2: Key Infrastructural Growth to be Implemented by NWSC in 2015-2018**

| Undertakings and Deliverables | Time Frame |
|---|---|
| Delivery of Kampala Water (Lake Victoria WATSAN project) including refurbishment of Gaba I & II and limited water network interventions, Katosi water treatment plant, and WATSAN Improvements in urban poor areas | December 2017 |
| Substantial Completion of Uganda Water Management & Development Project in the towns of Gulu, Bushenyi and Mbale | June 2017 |
| Integrated Project to Improve Living Conditions in Gulu (IPILC): substantial completion of phase-1 and work commencement of phase-2 | June 2018 |
| South West Water & Sanitation Project (Mbarara-Masaka Corridor): completion of FS & pre-design, work commencement | June 2018 |
| Completion of New Intake for Soroti | October 2016 |
| Preparation of bankable project proposals for expanding water and sewerage infrastructure in priority towns: Fort portal, Kasese, Lira, Kitgum, Bugiri and Soroti | June 2018 |

*Source: Abstracted by JICA Study Team from the NWSC Corporate Plan July 2015 - June 2018*

***Hydropower Projects:***

In addition to the existing hydropower dams, namely Nalubaale, Kiira and Bujagali, several hydropower dams, namely Karuma, Ayago, Murchison Falls, Kiba, Oriang, Isimba and Semliki, have been proposed, according to MSIOA[59]. All of them are run of river type and therefore this relatively small storage does not need to be taken into account in water resources study because the water storage is negligible compared to the monthly flow of the concerned river.

57 The NELSAP is an investment program under the Nile Basin Initiative (NBI) that promotes investments in power development, power transmission interconnection and power trade, water resources management, management of lakes and fisheries, agricultural development, and control of water hyacinth.

58 ENTRO: Eastern Nile Technical Regional Office, NELSAP-CU: Nile Equatorial Lakes Subsidiary Action Program-Coordinating Unit, Nile-SEC: Nile Basin Initiative Secretariat

59 Nile Equatorial Lakes Multi Sector Investment Opportunity Analysis (MSIOA) under NELSAP (December 2012, NBI)

## 6.4.6 Analysis of Current Gaps and Bottlenecks

As is the case with the section 6.3.6 for Kenya, this section will focus on the current situation in terms of water quantity based on the past relevant study results of water resources assessment. The other general issues in the water sector will be mentioned supplementary.

The National Water Resources Assessment 2012 provides the result of water balance study by comparing the years 2009 (present) and 2030 (projection). The annual balance between demands and internal renewable water resources (IRWR) by catchment area is presented in Table 6.4.3. Since the present year of 2009 in the report has been slightly old now, the 2015 water demand below was computed with the linear-proportion between 2009 and 2030 data.

**Table 6.4.3: Annual Water Balance by Catchment in 2015**

| No. | Catchment Area | Projected Water Demand (MCM) | | | | | | IRWR*1 (MCM) | EI*2 (%) |
|---|---|---|---|---|---|---|---|---|---|
| | | Urban Domestic | Rural Domestic | Industrial | Livestock | Irrigation*3 | Total | | |
| 1 | Lake Victoria | 80.8 | 32.7 | 28.9 | 42.3 | 74.1 | 258.7 | 1,680 | 15.4 |
| 2 | Lake Kyoga | 16.1 | 56.3 | 1.3 | 75.7 | 201.6 | 351.0 | 2,320 | 15.1 |
| 3 | Victoria Nile | 7.3 | 17.7 | 0.8 | 23.2 | - | 49.0 | 1,440 | 3.4 |
| 4 | Lake Edward | 6.3 | 22.2 | 0.9 | 18.1 | 21.0 | 68.6 | 4,470 | 1.5 |
| 5 | Lake Albert | 2.3 | 10.7 | 0.4 | 12.5 | - | 26.0 | 2,890 | 0.9 |
| 6 | Aswa | - | 4.8 | - | 14.2 | - | 19.0 | 1,770 | 1.1 |
| 7 | Albert Nile | 4.9 | 15.2 | 0.3 | 15.6 | - | 36.0 | 450 | 8.0 |
| 8 | Kidepo | - | 1.0 | - | 2.6 | - | 3.6 | 210 | 1.7 |
| - | Miscellaneous | - | 2.5 | - | 8.2 | - | 10.7 | 360 | 3.0 |
| Total | | 117.7 | 163.1 | 32.6 | 212.4 | 296.7 | 822.5 | 15,590 | 5.3 |

Notes: *1. The Internal Renewable Water Resources (IRWR) without adjustment for contribution / losses from major lakes are used.
*2. The Exploitation Index (EI = demand/IRWR) is calculated with the IRWR; whereas in many studies it is considered in relation to the total renewable water resources.
*3. Most HYDROMET[60] potential irrigation concerns converting seasonal or permanent wetlands into irrigated lands. Hence irrigation water consumption will to a large extent be counter-balanced by reduced wetland evaporation losses. The net demand and thereby also the effects on the water balance may therefore by substantially smaller than that the figures indicate, and has to be assessed on a case-by-case basis.

*Source: Computed by JICA Study Team based on the National Water Resources Assessment (May 2012, DWRM, MoWE)*

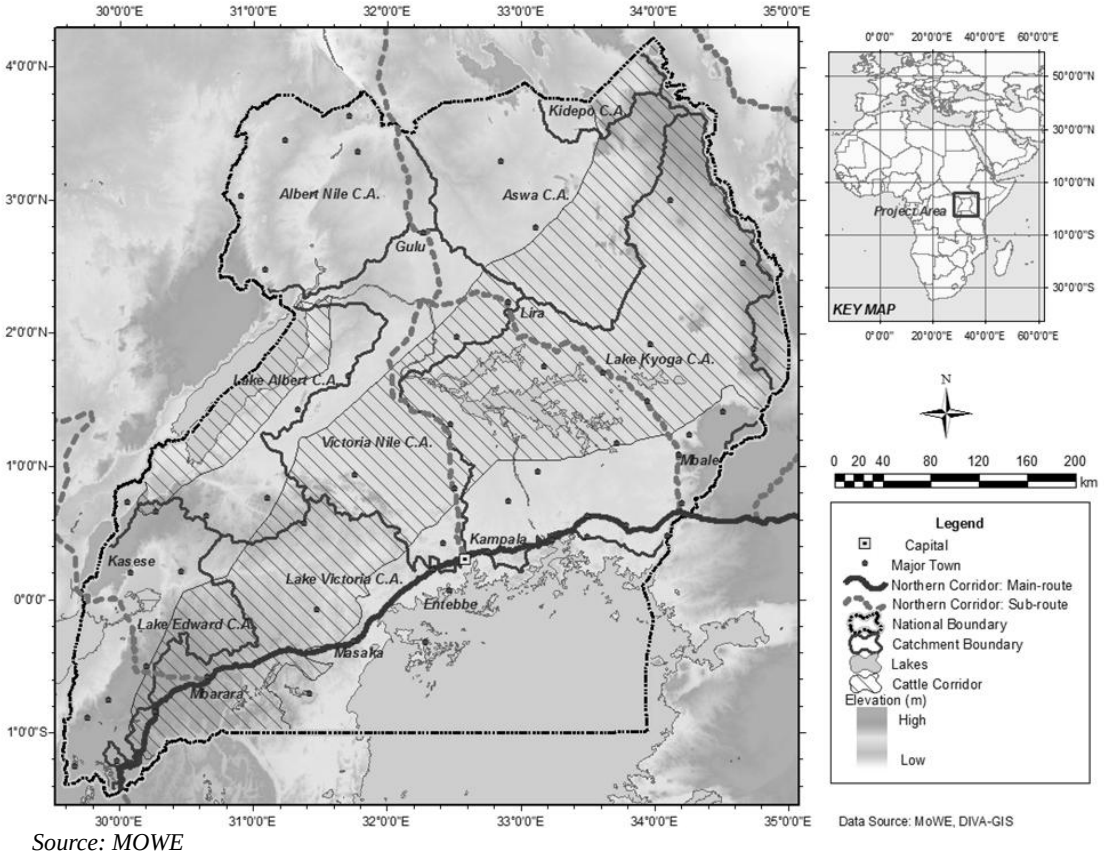
As seen in the table above, the overall water utilization rate (=EI) in 2015 stands at 5.3%. The situation is by no means critical, though shortages can be experienced at local levels at some points in time. Particularly so-called cattle corridor shown in Figure 6.4.2 is considered to be water-scarce area and therefore a lot of dams and valley tanks have been constructed along the cattle corridor.

On the other hand, in the Lake Kyoga basin, which stands at the second highest water utilization rate of 15.1%, a comprehensive study[61] on water resources development and management was conducted in 2009-2011. The study also concluded that the exploitable volume of water resources even for the 1/3 probable drought year of 650.5 MCM meet the water demand in the Lake Kyoga basin until around 2025.

From the above two studies, the current situation on water resources is not severe in a macro perspective. Although water shortage has been reported in the cattle corridor, the situation is still manageable, according to the MoWE. However, as pointed out by the Kyoga study, future water demand will exceed the available water resources in some sub-catchments. This implies that water shortage may occur in some specific areas and/or in some limited seasons even if the water resources are enough annually and broadly. In the progress report No.2, water balance between available water resources and projected water demand for the year 2030 needs to be studied on a monthly basis by catchment.

60 Upper Nile Hydromet Survey Project (1967-1982) supported by UNDP/WMO

61 Development Study on Water Resources Development and Management for Lake Kyoga Basin (JICA, March 2011)




*Source: MOWE*

**Figure 6.4.2: Positional Relation between the NEC, Catchments and Cattle Corridor**

Furthermore, although the following issues may not become crucial bottlenecks in the development of NEC, due considerations will have to be given:

1) Deterioration of water quality: Discharge of raw sewage and untreated industrial effluent into rivers and lakes is a common occurrence in many major towns in Uganda. This is mainly attributed to poor sewerage treatment facilities.

2) Inadequate communities' capacity of O&M: The study findings (MoWE/DWD, 2011) demonstrated that in a number of cases, players in CBMS have inadequately performed their designated roles and responsibilities. In such cases, sustainable O&M of water facility becomes difficult to achieve.

3) Restriction of water development by several international agreements: Since several agreements on the Nile River have been made, careful considerations are required for the planning of water resources development so as not to collide with the existing agreements.

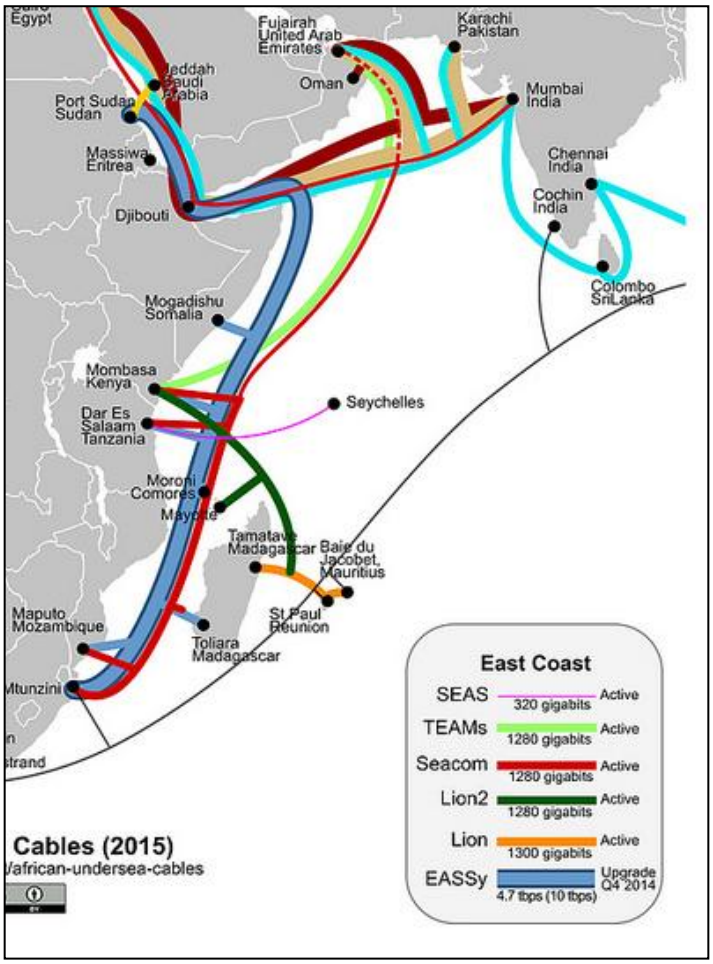
## *6.5 Review of Imformation, Communication and Technology (ICT)*

### 6.5.1 Overview of fiber cable network in Kenya

The telecommunications policy in Kenya is formulated by the Ministry of Information, Communication and Technology (MOICT) in conjunction with the Communications Authority of Kenya, formerly Communications Commission of Kenya (CCK) that officially unveiled its new identity on 24th June, 2014 following the enactment of the Kenya Information and Communications (Amendment) Act 2013.

International communication in Kenya is supported by undersea fibre optic cables and by satellite. Considering the total international communication bandwidth capacity, the capacity of the undersea fibre optic cables accounts for more than 99% while the satellite communication has little share. As for the undersea fibre optic cables, four undersea cable operators are involved namely; SEACOM, TEAMS (The East African Marine

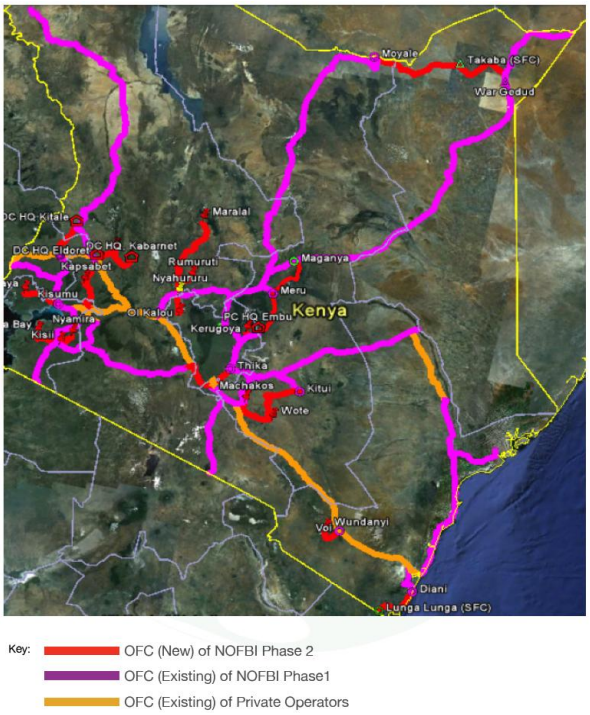
System), EASSY (Eastern Africa Submarine Cable System), and LION2 (Lower Indian Ocean Network) land their undersea cables at Mombasa, on the East Coast of Kenya.




*Source: African undersea Cable (2015)*

**Figure 6.5.1: Internet Submarine Cable System in Kenya**

In addition, the National Optic Fiber Backbone Infrastructure (NOFBI) is a countrywide territorial optic fiber network installed by the government and operated and maintained by Telkom Kenya. The network is 4300km long and was installed in 2006 and connects 29 counties headquarters, including Nairobi, under phase I of the project. Since its installment, this optic fibre cable network has had numerous beneficial impacts on Kenya; it has improved government service delivery to citizens, opened northern part of Kenya to trade with the rest of Kenya, improved safety and security services, increased investment opportunities, improved education and training services. However, there have been a number of challenges and constraints such as poor management, poor access to base stations, so many sites being off the power grid, dynamic and rapid evolutionary nature of technology which renders current infrastructure inadequate and poses a challenge to long term planning of broadband technologies. Therefore there is need to expand the optic fiber cable network to cover other areas including the Northern Corridor. From the Norther Corridor Integration Project summit which was attended by representatives from the member states, the Ministries responsible for infrastructure in the partner states agreed to incorporate fibre optic access facilities particularly the ducts in regional infrastructure projects. A bill has been drafted in Kenya that will enable ICT infrastructure to be incorporated in the Northern Corridor Integration Projects according to consensus reached by the member states in the NCIP Summit. The government also launched an expansion plan for NOFBI under phase II to cover the remaining 18 counties (around 2100 kilometers in all 47 Counties) on 22nd September 2014 . This is funded jointly by the government of Kenya and a loan from the Chinese government coming to a total cost of Ksh.6 billion and it is expected to be fully completed by December 2015.




*Source: National Broadband Strategy 2013*

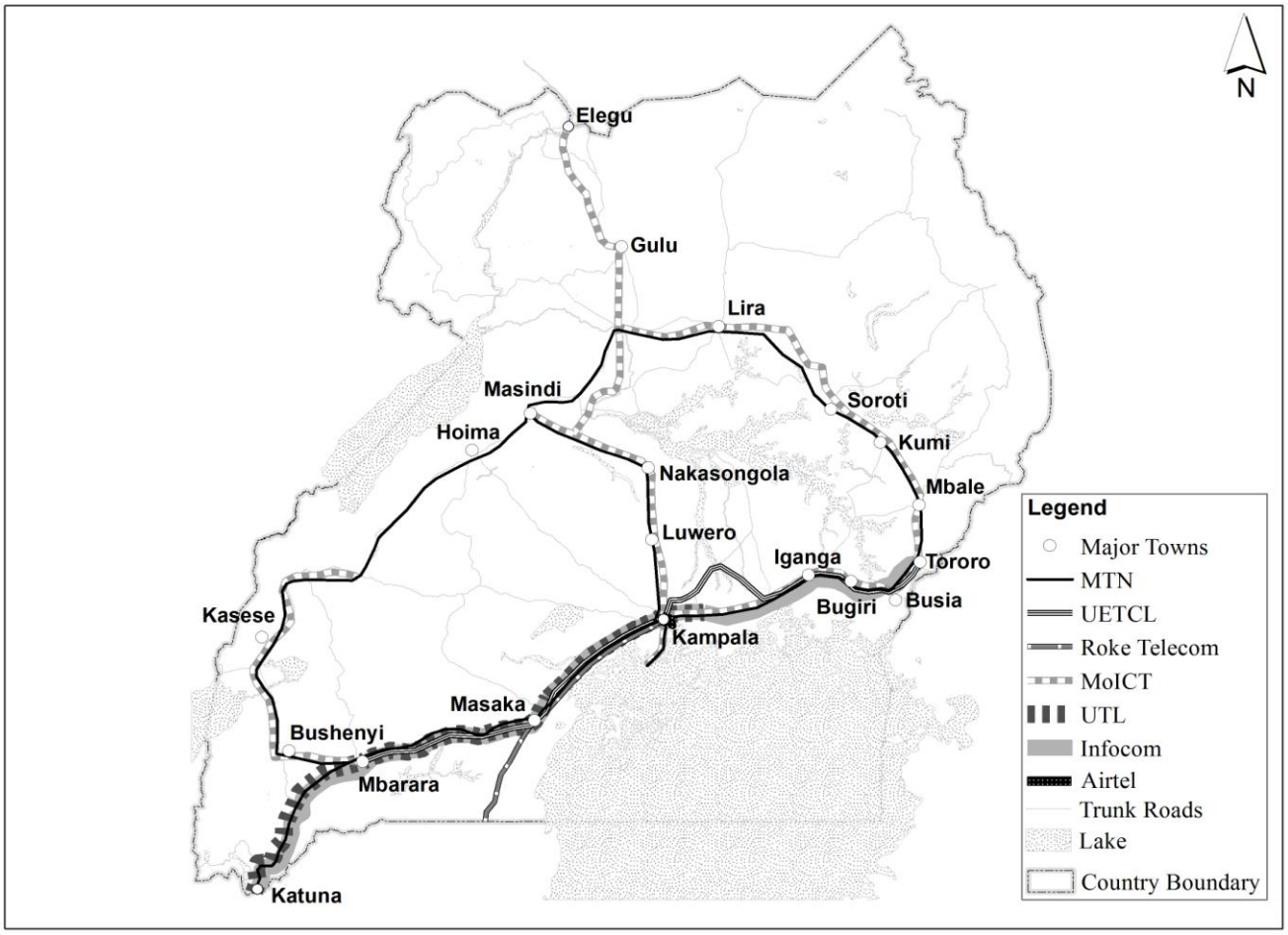
**Figure 6.5.2: National Optic Fiber Backbone Infrastructure of Kenya**

## 6.5.2 Overview of fiber cable network in Uganda

The ICT Sector is composed of telecommunications, postal, information and technology (IT), and broadcasting subsectors. The setup of ICT has two main dimensions- the public and private sector dimensions. It is further organised along 3 functional levels namely Policy, Regulatory, and Service Provision levels. The Ministry of Information and Communications Technolog (MoICT) is responsible for policy developing and/or reviewing policies,laws, regulations and standards to ensure a conducive environment for sustainable growth and development of the ICT sector. It executes its mandate in collaboration with affiliated agencies namely; the Uganda Communications Commission (UCC) and the National Information Technology Authority Uganda (NITA-U). At the service provision level, are theMinistries, Departments and Agencies (MDAs); Local Governments (LGs); Academia; and the Private Sector.

Over the years, government through the ICT sector has put in place policy, legal and regulatory frameworks aiming at providing a conducive environment for private sector participation and investment. At the cornerstone of this policy was liberalisation and privatisation to attract investment, bring competition and consequently spur growth and efficiency in the sector.

Fibre cable network deployment in Uganda is around 5,110.65 kilometres which laid by both the Government and Private Sector with connectivity to the Northern Border with South Sudan at Nimule and to the Southern border with Tanzania at Mutukula. This has further enabled border to border connectivity from the East (Busia and Mutukula) to the West (Mpondwe). The number of base transmitters countrywide stands at 3,524sites.




*Source: ICT Sector Strategy and Investment Plan (2015 – 2020)*

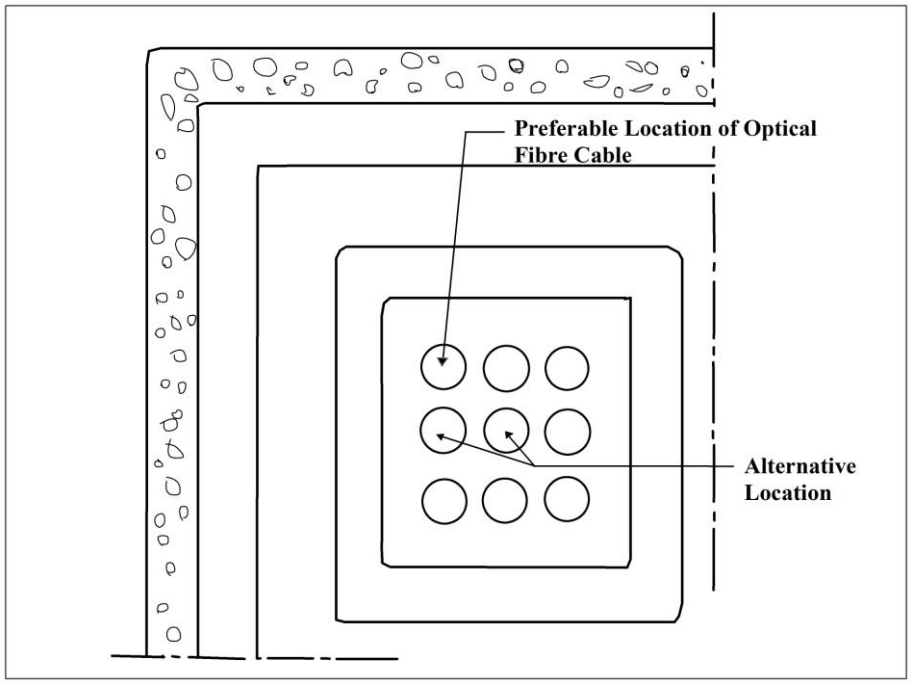
**Figure 6.5.3: Map of Optic Fiber Cable in Uganda**

JST has worked with Mr. Charles Lwanga Auk - Assistant Commissioner, Telecom & Ports under Ministry of Information and Communications Technolog (MoICT) - on the necessity of installing optic fiber cable along the Northern Corridor. Mr. Charles said that he knew and offen attends JICA meetings on this project.

Currently, Uganda's fibre optic cable system is built by both the government and private sectors. This will lead to duplicate and sometime overprovision especially in the urban areas, leaving the rural communities underserved. The traditional licensing framework that required voice an data service providers to deploy their own infrastructure was a barrier to entry for new players into the ICT market. In addition, weak enforcement of infrastructure sharing has led to high costs of network expansion and has limited innovative approaches to expansion.

Therefore, the Government of Uganda (GOU) issued “ICT Sector Strategy and Investment Plan (2015 - 2020)”, which states: "Develop and implement a policy and legal framework for multi-Sectorial infrastructure deployment and sharing". To implement this strategy, GOU is prepairing “Draft National Telecommunications Policy”, which states: "Encourage and promote infrastructure sharing to protect the environment among operators socialeconomic for Sustainable development". This policy is expected to be adopted in February 2015.

From the Northern Corridor Integration project summit which was attended by representatives from the member states, the Ministries responsible for infrastructure in the partner states agreed to incorporate fibre optic access facilities particularly the ducts in regional infrastructure projects as shown below:




*Source: Guidelines for Installation and Maintenance Of external Communication Infrastructure*

**Figure 6.5.4: Typical Spare Space in Duct along the Road**

In Uganda, installation of of the fiber access facilities particularly the ducts has already been included in the Standard Gauge Railway (SGR),oilpipelines and power lines projects. The ducts will be installed parallel to SGR lines, oil pipelines and and powerlines. In future, fiber will be installed in such ducts by goverment or private sctor.

# 7 Review of Implementation Scheme

## 7.1 Project Implementation Scheme in Kenya

### 7.1.1 Overview

Since the objective of this chapter is to identify the possibility of the participation of private sectors into the field of infrastructures, an Implementation Scheme for Public Private Partnership (PPP) has been considered starting from the Kenyan Government policies and the survey of a trend of private sectors. While local private financier shows strong intention to follow the government policy, an opinion from the organization of Japanese companies is rather reluctant to participate. Concerning the pipeline projects under PPP Act No.15 2013, PPP Unit has periodically revised the priority list. The selection of PPP arrangements has been stated using the qualitative selection methodology. Once the features of various projects under the Master Plan become apparent, a quantitative selection methodology will be utilized at a later stage. PPP project in Kenya is reasonably regulated by PPP Act No.15 together with referenced laws. Indispensable draft Project Facilitation Fund Regulations have been issued. There is still a notable "Gap" between the government's desire and the reality of the business industries, such as investors, contractors and financiers.

### 7.1.2 Policy

(1) General and Policy of Kenya

The Government of Kenya has been considering to utilize the private financial initiatives for the infrastructural projects in order to achieve the targets in Vision 2030. Kenya's PPP Programme is being promoted as a long-term programme and not as a series of independent projects. This is evidenced by the Government's focus on PPP as a way of encouraging private sector participation, which has contributed to a healthy pipeline of bankable projects that presently stand at 71 as of June 2015.

(2) Establishment of the PPP Unit

The PPP Unit is the technical arm of the PPP Committee as well as the center of expertise for PPP matters in the country. The PPP Unit is equipped with experts on legal, technical, financial and communication matters to guide contracting authorities keen to undertake PPP projects. PPP Unit was established in 2013 as the promulgation of PPP Act 15, 2013.

According to the PPP Unit, the PPP Act provides a sequential process and regulations. The process of PPP project is shown in section 7.1.3 (2). The PPP Unit has received a credit support from the World Bank (40 million dollars) which will be utilized to promote the PPP projects. The National PPP regulation provides a threshold of more than Ksh 85 million for national PPP projects and less than Ksh 5 million for county PPP projects.

(3) Resources of fund for PPP

Draft PPP Project Facilitation Fund (PFF) Regulations, 2015 was published in March 2015. Its functions are to;

a. Support contracting authorities in preparation and tendering of PPP projects,

b. Support the activities of the Unit,

c. Provide viability gap finance to PPP projects,

d. Provision to any contingent liabilities arising from a PPP project,

e. Settlement of transaction advisory costs, and

Ksh 750 million for Fiscal year 2014/2015 will be allocated for the above purposes.

(4) Participation of private sector

The Local Commercial Bank understood the PPP Act No.15 and PPP Unit well. The Bank is investigating the 2nd Nyali Bridge in National Priority List under a request by several companies. After the evaluation of F/S, the

bank may arrange the syndication loan with other banks. The Bank shall also require the government guarantee and the Top 10 banks in Kenya may be able to participate.

Concerning participation in the infrastructure business, the Japanese trading companies could participate in the operation of ports, IPP projects and pipeline projects in this region. The PPP project under the PPP Act, in general perception, will be not so high profitability. Therefore limited number of Japanese company has shown interest in participating in past and Japanese companies will participate in the self-closure type of projects (conventional construction contract work, and EPC) rather than the investment projects in future. The possible investors for PPP in Kenya may be Kenyan Indian came from India.

## 7.1.3 Review of Legal Framework and Administrative Structure

### (1) General

The governance of the legal framework for the implementation of the public works and PPP are promulgated by the various laws. The items 3, 5 and 6 of Table 7.1.1 will be expected to be promulgated in the near future according to the PPP Unit. The synthesis of the laws between the national level and county level will be verified in the future study. The PPP Act No.15 of 2013 is defined as the nation laws, so that any arrangements under the Act will be fairly sustained.

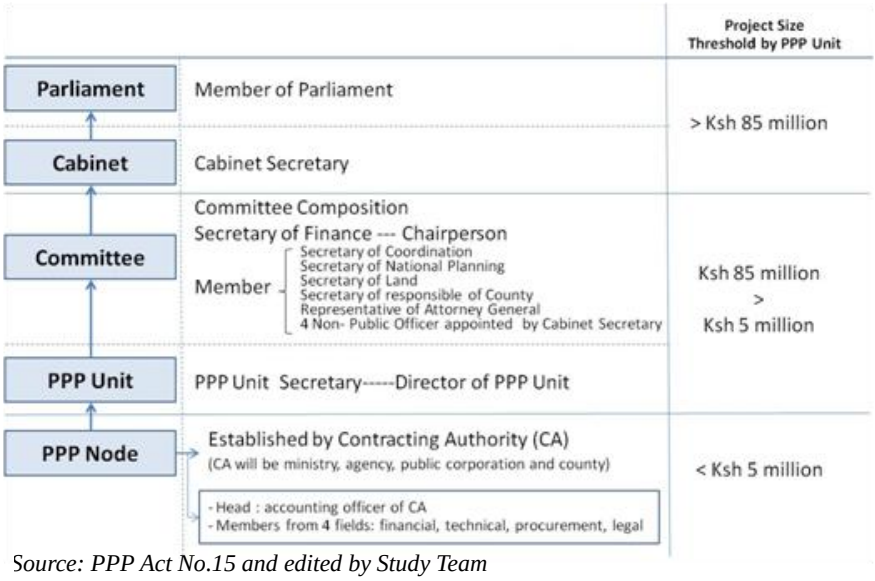
**Table 7.1.1: PPP Related Laws**

| Ref. | Law No. | Law Title |
|---|---|---|
| 1 | No.15/2013 | Public Private Partner Ships |
| 2 | No.15/2013<br>Legislative Supplement No.58 | THE PUBLIC PRIVATE PARTNERSHIPS REGULATIONS, 2014<br>ARRANGEMENT OF REGULATIONS, |
| 3 | NA.(Draft) | Draft County Government PPP Regulations |
| 4 | Procurement manual | Procurement Manual for Works (April 2009) |
| 5 | NA.(Draft) | The Public Private Partnerships (Project Facilitation Fund) Regulations 2015 |
| 6 | NA | PPP Manual |
| 7 | Chapter 518 | Foreign Investment Protection Act |

*Source; JICA Study Team*

### (2) PPP Law No.15 2013

The PPP Act No.15 was promulgated in January 2013 and came into effect on 8th February 2013 in order to achieve the Policy of the Kenyan Government. The PPP Act has been comprehensively written for the implementation of the PPP project. Under the PPP Act 2013, the PPP Unit is mandated to articulate the PPP policy so that its objectives and mechanisms are understood by Contracting Authorities and State agencies, funders, contractors, the press and the general public.




*Source: PPP Act No.15 and edited by Study Team*

**Figure 7.1.1: Approval Procedure of PPP Project under PPP Act No.15**

### (3) Foreign Investment Law

Foreign ownership of shares and land is generally accepted by Kenya's relevant laws according to the description of the law firm article. However there are some restrictions. Non-Kenyan residents or citizens cannot hold more than 75% of the voting power, and a company incorporated in Kenya cannot own agriculture

land unless all shareholders are local citizens, with exception of the application to the president. The detailed investigation should be carried out in case of participation to the PPP project.

**(4) Administrative structure**

PPP arrangement is specified in the Second Schedule of PPP Act. There are: Management Contract (MC), Output Performance based Contract (OPbC), Lease, Concession, Build-Own-Operate-Transfer (BOOT), Build-Own Operate (BOO), Build-Operate-and-Transfer (BOT), Build-Lease-and-Transfer (BLT), Build-Transfer-and-Operate (BTO), Develop-Operate-and-Transfer (DOT), Rehabilitate-Operate-and-Transfer (ROT), Rehabilitate-Own-and-Operate (ROO) and Land Swap (LS). The following figure shows a typical universal classification of PPP arrangement. The following table shows the universal PPP arrangement in addition to the PPP Act No.15.

**Table 7.1.2: Typical Classification of PPP Arrangement**

| No | Modality & Arrangement | Degree of Public Participation | Synthesis of laws & Regulation | Degree of Finance by Public/ Private | Provability of Private Finance | Provability Beneficiary Payment | Main Operator |
|---|---|---|---|---|---|---|---|
| 1) | Public Build & Operate | 100% | Existing laws | 100%/ 0% | None | Possible | Public |
| 2) | Public Build & Private Operate w/risk | 100% for construction | PPP Act | 100%/ α% | Operating capital | Beneficiary payment +Government support | Private |
| 3) | Public Build & Private Operate wo/eisk | 100% for construction | PPP Act | 100%/ α% | Operating capital | Beneficiary payment +government support | Private |
| 4) | Affermage | 100% for construction | NA | 100%/ α% | Operating capital | Beneficiary payment +government support | Private |
| 5) | BT, BLT | 0% Deferred payment | PPP Act | Deferred 100%/ 100% | 100% advance for construction | No beneficiary payment in general | Public |
| 6) | BTO | 0% | PPP Act | 0%/ 100% | 100% + operation capital | Beneficiary payment +government support | Private |
| 7) | BOT, BOO, DOT, ROT | 0% Share % with Hybrid | PPP Act | 0%/ 100% Share % with Hybrid | 100% +Operation Capital share % w/hybrid | Beneficiary payment +government support | Private |
| 8) | Concession, Management Contract | 100% for construction | PPP Act | 100%/ α% | Operation capital | Beneficiary payment +government support | Private |
| 9) | Joint Venture | Shared % | NA | Shared % | Shared % | Beneficiary payment | JV co. Private/Public |
| 10) | Lease | 100% for construction | PPP Act | 100%/0% | Operating capital | Beneficiary payment | Private |
| 11) | Land Swap | Public land to be swapped with private facility | PPP Act | NA | 100 % | NA | Public |

*Source: JICA Study Team*

## 7.1.4 Review of On-going and Planned Projects using Public Private Partnership Scheme

**(1) Existing and on-going PPP projects**

The updated Public Private Partnership Programme has just been announced by PPP Unit in June 2015 as the Kenya PPP Pipeline to apprise its stakeholders on the status and progress of the country's Public Private Partnership (PPP) pipeline.

### (2) Planned project using PPP

**Table 7.1.3: Kenya PPP Pipeline-June 2015**

| Field of Service | Classification | Contracting Authority | Status |
|---|---|---|---|
| Transport and Infrastructure (18 projects) | Road & Bridge (6 projects) | Ministry of Transport and Infrastructure<br>Kenya Urban Road Authority<br>Kenya National Highways Authority<br>Kenya Urban Road Authority<br>Kenya Rural Roads Authority | Transaction Advisor appointed<br>Tender Evaluation |
| | Port (6) | Kenya Port Authority, | Bid evaluation, TA appointment, proposal stage |
| | Railway (1) | Kenya Railway Corporation | Feasibility stage |
| | Airport (3) | Kenya Airport Authority | Proposal Stage |
| | ying School (1) | Kenya Civil Aviation Authority | TOR for TA stage |
| | Multi-Story Terminal (1) | Kenya ferry service Co.,Ltd | Feasibility Stage |
| Energy and Petroleum (11 projects) | Power Generation(10) | Ministry of Energy and Petroleum<br>Kenya Electricity generating Company<br>Geothermal Development Co. | Negotiation (1), Contract signed (1) TOR for TA (2)<br>Proposal Stage (6) |
| | Oil storage(1) | National Oil Corporation of Kenya | Proposal Stage (1) |
| Education Science and Technology (13 projects) | Student Hostel | Kenyatta University+9 Universities | Contact signed (1) TOR for TA (5)<br>Proposal Stage (4) |
| | University project | Pwanl University<br>Kenya medical Training College<br>Jomo Kenyatta University of Agri./Tech | TOR for TA (2)<br>Proposal Stage (1) |
| Environment, Water and Natural Resources (16 projects) | Waste Management | Nairobi City County Government<br>Monbasa County Government<br>Nakuru County Government | TOR for TA<br>Proposal Stage |
| | Water Supply | Athi Water Service Board<br>Murang'a County Government | Proposal Stage<br>TOR for TA |
| | Dam | Coast Development Authority<br>Kerio Valle Development Authority<br>Lake Basin Development Authority | Proposal Stage<br>Feasibility Stage |
| | Irrigation | Tana Athi Water River development Authority | TOR for TA |
| | Housing | Ministry of Land, Housing and Urban Development | Evaluation report approved |
| | Car Park | Mombasa County<br>Nairobi City County Government | Proposal Stage<br>EOI was issued |
| Health Sector (5 projects) | Equipment Lease and Oxygen plant | Ministry of Health | Proposal Stage |
| | Hospital | Kenyatta National Hospital | TA to evaluate EOI |
| | Training shopping facilities | Kenyatta National Hospital | Proposal Stage |
| Interior and coordination of government(1) | Development of Police and Prison Housing Unit | Ministry of Interior and Coordination of National Government | Feasibility study stage |
| Industrial and Coordination of National Government(1) | Special Economic Zone | Ministry of Industrialization and Enterprise Development | Master Plan stage |
| Agriculture(1) | Quarantine Station and Livestock Export Zone | Ministry of Agriculture, Livestock and Fisheries | Proposal Stage |
| East African Affairs, Commerce and Tourism (3) | Mombasa convention centre | Tourism Finance Corporation | Feasibility study stage |
| | Marina inShimoni | Tourism Finance Corporation | Proposal Stage |
| | 1st class Hotel at Bomas | Bomas of Kenya Ltd. | Proposal Stage |
| Information, Communications and Technology (2) | National Data Centre | Ministry of ICT | Proposal Stage |
| | National land information & Spatial Data Base | Kenya ICT Authority | Proposal Stage |
| Total 71 Nos. | | | |

*Source: PPP unit*

### (3) Selection of PPP arrangement

The selection of the arrangement for PPP project will be verified using the evaluation categories as the table 7.1.4 below by a means of qualitative evaluation. Since the characteristics of each project of MP are ambiguous at present, the qualitative evaluation will be adopted for this study.

**Table 7.1.4: Typical Qualitative Selection Methodology**

| No | Evaluation Category | Conformity | | | Adoptable arrange |
|---|---|---|---|---|---|
| | | High | Mid | Low | |
| 1 | Degree of financial burden of Public | ✔ | | | Little chance of private finance, therefore Public Build & Operate or Public Build & Private Operate |
| 2 | Magnitude of economical impact to society | ✔ | | | |
| 3 | Magnitude of Contribution to GDP growth for County/National Government | | ✔ | | |
| 4 | Probability of beneficiary payment | | | ✔ | |
| 5 | Probability of participation of Private Invest | | | ✔ | |
| 6 | Development of local financial market | | | ✔ | |
| 7 | Difficulty to acquire the Right of Way | | ✔ | ✔ | |
| 8 | Importance of EIA and degree of compulsory relocation | | ✔ | | |
| 9 | Magnitude of project cost | | ✔ | | |
| 10 | Degree of accomplishment of Project | ✔ | | | |
| 11 | Credibility to the required technology | ✔ | | | |
| 12 | Legal synthesis | ✔ | | | |

*Source: JICA Study Team*

## 7.1.5 Analysis of Current Gaps and Bottlenecks

**(1) General affordability issues**

Actually, the National Priority List for PPP Projects contains the various fields of business that may attribute to the complicated PPP arrangement in future. In particular, the affordability of the users and society to utilize the projects may become the breaking point for the PPP scheme.

**(2) Political Gap**

According to a publication by the UK government, Kenya has a relatively free press, open politics and functioning market economy. After severe disputes between county governments and the central government, significant power and resources have been devolved to new county government structures. There is therefore an urgent need for specific guidelines including the actual procedures for the PPP project between PPP Unit and PPP node.

**(3) Legal Gap**

The following points may be necessary to check and confirm with the PPP Unit and/or a contracting authority prior to the planning of the PPP project.

1) Procurement time limits and costs: There are no time limits or guidelines regarding matters of timelines for the procurement cycle or procuring decision-making by contracting authorities.

2) Restrictions on assignment or transfer of tenders and successful projects: The PPP Act prohibits the winding-up of any Special Purpose Company (SPC), alteration of their legal structure, and share capital reductions unless the company has obtained prior written approval by the contracting authority.

3) Restriction of Share Transfer: During and after the completion of a PPP project, the majority shareholders of the project company are also expressly prohibited from transferring any of their shares in SPC without prior authority's acceptance certificate.

4) PPP contract standardization across the public sector: Guidelines to standardize procurement practice across the public sector is indispensable.

5) Administrative review of public procurement: Private contractors should be monitored through a multiplicity of public procurement review bodies.

6) Ambiguity of some clause in the PPP Act; There are ambiguity of some clauses which state "or other agreement as may be approved by the Cabinet Secretary" or "the Cabinet Secretary shall prescribe the thresholds for approval and the carrying out of projects by the county governments under this Act".

**(4) Financial Gap**

1) Funding Gap between the plan and the affordable public budget;

Table 7.1.5 shows an amount of the possible financial gap between the total needs of infrastructure of the 59 numbers of national list and available public funds during 2012-2020. The county government together with the central government shall procure the necessary funds totaling up to USD 37 billion from out of direct borrowing, donors, Fiscal budget, CDF and private sectors (see table 7.1.5).

**Table 7.1.5: Magnitude of PPP Financing Needs (unit; USD million)**

| | Sector | Amount |
|---|---|---|
| 1 | Energy | 19,808 |
| 2 | Ports | 4,800 |
| 3 | Roads | 9,000 |
| 4 | Water & sanitation | 4,567 |
| 5 | Railways | 7,248 |
| 6 | Airports | 906 |
| 7 | Tourism | 2,050 |
| 8 | ICT | 7,850 |
| 9 | Local government | 2,000 |
| 10 | Housing | 2,901 |
| 11 | Public Works | 1,000 |
| 12 | Lamu Port Corridor | 3,723 |
| Total Needs | | 62,176 |
| Available(GOK-2012-2020) | | 25,000 |
| Funding Gap | | 37,000 |

*Source: Ministry of Finance*

2) Little provability of the payment by beneficiaries

The issues for the arrangement of PPP project will be the difficult to impose the scheme of beneficiary payment on use the infrastructures as result of a long time habit. Thus the financial burden for the contracting authority/ government/investor will be unavoidable.

3) Insufficient statements for guarantee and support of government under PPP Act-Project Facilitation Fund

The major concern will be the amount of PFF (Ksh 750million for 2014/2015) which may be extremely insufficient to support the PPP project on the List.

4) Insufficient incentives in PPP Act

PPP Act does not have the clause of "Incentive to the private" except item (3) above. In addition to item (2) above, a contracting authority may have to bear almost all the financial burden of PPP projects. In order to encourage the private investors, PPP Act shall include the incentives such as, but not limited to, income tax holiday, exemption of work permit and Visa at once for the employee of the Special Purpose Vehicle (SPV), exemption of import duty, free remittance of proceeds, and so on.

5) Insufficient ability of local financial institutions

Kenya Commercial Bank (KCB), the biggest private bank, has assets worth Ksh 323billion (USD 3.80 billion) and profit worth Ksh 17.74 billion (USD 208 million). Interest rate for lending is 13.0%~19.0% while deposit rate is 3.0%. However their loans for Investment Group charge the interest rate of 15% with 10years maturity and the loan for Estate Development charge the negotiated rate for 85% of the cost with 24 months maturity. During the hearing, KCB said that it shall require the government guarantee for the loan of PPP project.

The size of the financial market may be insufficient to afford the project finance for a certain size of the infrastructure by PPP arrangement. Consequently public initiated finance, both own budget and loans by donors will be indispensable.

6) Issues concerning the Organization/Staff domain

PPP Unit and a contracting authority of PPP projects shall proceed the proper process in order to achieve the development trigger. Since the application of PPP project was made just recently, for the improvement of the capacity of the department/procedure/staff, the so-called "Capacity Building" will be introduced.

# *7.2 Project Implementation Scheme in Uganda*

## 7.2.1 Overview

The project implementation scheme is focused on Public Private Partnership (PPP) arrangement while the conventional procurement methodology is left out from this study. The Government of Uganda has already announced a clear policy for the involvement of private sectors into public service fields. Legal framework to promulgate the PPP Bill 2012 (herein as PPP Law) was passed by Parliament in July 2014 and re-resolved on 1st of July 2015 pending the assent of the President. Administrative structures for PPP project were introduced following the PPP Law. While on-going PPP projects are rare, the Kampala Jinja Expressway project is briefly studied as the case of Uganda. The PPP arrangement for the agreement with the contracting authority is presented utilizing the qualitative selection methodology. Finally, although the issues are similar to Kenya, current gaps and bottlenecks are raised in the fields of affordability, political, legal and economic aspects.

## 7.2.2 Policy

**(1) A tools for the public and infrastructure services**

According to the Public-Private Partnership Framework Policy for Uganda, the Government of Uganda has adopted a policy of Public-Private Partnership (PPP) as a tool for the provision of public services and public infrastructure. The Ministry of Finance Planning and Economic Development shall set up a unit ("the PPP Unit) to advise Government on PPP, ensure best practice and standardize processes and documentation. Its remit includes providing guidance and assistance in the development of projects. It will assess "projects for PPP to confirm that they are affordable and that financial commitments are manageable in terms of the debt management policy and that they are within the Government policies". This may be useful for potential investors concerned about affordability or viability. Its role also extends to advising government on PPP and training public sector staff on PPP.

**(2) Establishment of the PPP Unit**

According to the hearing from PPP Unit, that was established in October 2014 after the Parliament had passed PPP Law in July 2014. However the PPP Unit is still "provisional" status due to no promulgation of PPP Law yet. According to the PPP Unit that the Ministry of Finance is the legal custodian in Uganda for managing PPP and streamline PPP which states that the Ministry of Finance must authorise any construction of any business regarding the nation. It was mentioned that bigger projects consisting of about $1million must first be approved by cabinet. It was also noted that Finance ministry should monitor the project after the investor goes through all series of proceudre. The priority list has been in a process of updating the projects in the Ministry since most of them in 2012 were cleared and moved out according to PPP Unit.

**(3) Resources of fund for PPP**

The Government of Uganda shall have a certain amount of allowance to support the PPP Project. In consideration of the high rate of interest, the difficulty to rely on the beneficiary payment to infrastructure, the private investor shall have the way to reduce its investment burden. The Government of Uganda has to provide the fund to allocate to PPP projects. This will be clarified in the future study.

**(4) Participation of private sector**

The Private Sector Foundation of Uganda has described that they have an interest for the field of agriculture, steel and mining industry by PPP. Regarding to the PPP Law, the government support shall be essential, he added. They concern the way to collect the toll which should not cause any inconvenience to the users. They told

us that the construction of road infrastructure will be the quickest and safest way for a local and foreign investors in Uganda.

The international commercial bank can play for both the structure of financial scheme and the lender for the PPP project according to the Standard Chartered Bank Uganda. Such international banks have a interest to participate PPP infrastructure as they did for hydro power project in past (i.e., Bujaggali and UMEME hydro power projects).

Concerning the foreign investor, any PPP project under the PPP Act will be of low profitability, therefore few Japanese companies have shown interest in participating.

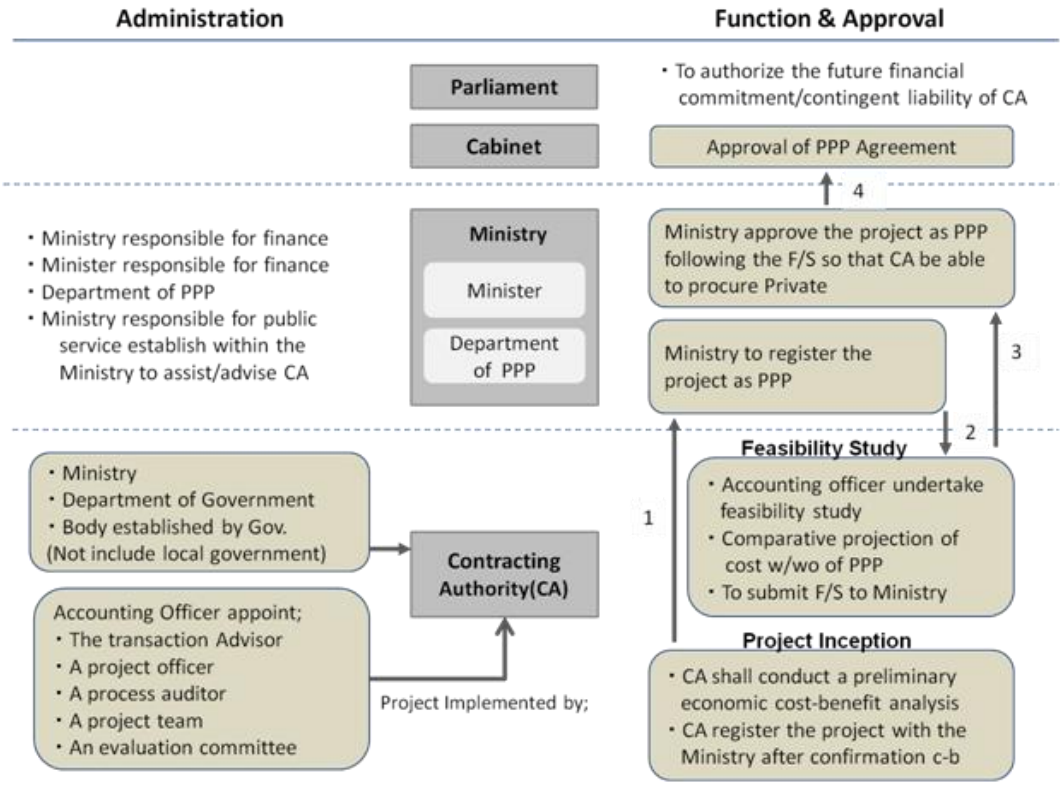
## 7.2.3 Review of Legal Framework and Administrative Structure

**(1) General**

In Uganda, government is committed to establishing a Public Private Partnerships (PPP) legal framework for effective and efficient delivery of public goods and services. However related laws, such as PPP manual, Implementation Rules and Regulations relating to PPP Law, are not available. Therefore the legal framework of PPP is insufficient at present.

**(2) PPP Law**

Notwithstanding the Government of Uganda has been aiming to establish an institutional framework through PPP Law, PPP Law has not been promulgated yet as of July 2015. Any issues and/.or gaps of PPP Law are in item5. Under the current PPP Law, the PPP Unit is mandated to articulate the PPP policy so that its objectives and mechanisms are understood by Contracting Authorities and State agencies, funders, contractors, the press and the general public. Identification process of PPP Project through the relative government bodies is shown on the following figure.




*Source: PPP Law and edited by JICA Study Team*

**Figure 7.2.1: Identification of PPP Project under PPP Bill 2012**

**(3) Foreign Investment Law**

Foreign investor is defined in the Investment Code Act (Cap 92). Main definitions are: a) a person who is not a citizen of Uganda, b) a company in which more than 50 percent of the shares are held by a person who is not a citizen of Uganda, and c) a partnership in which the majority of partners are not citizens of Uganda. Detailed conformity to the Foreign Investment Law shall be identified as the conditions of actual PPP project.

**(4) Administrative structure**

PPP Agreements are specified in PPP Law such as concession, operation and maintenance (OM), lease develop and operate (LDO), build own and maintain (BOM), build own operate and transfer (BOOT), design build finance and operate (DBFO), build own and operate (BOO). Any other universal agreements are subject to the prescription of the Minister of Finance (referring to the section 7.1.3 (4) for "Typical classification of PPP Arrangement").

## 7.2.4 Review of On-going and Planned Projects using Public Private Partnership Scheme

**(1) Existing and on-going PPP projects**

PPP Unit furnish "A Pipeline of Public-Private Partnership Projects in Uganda, March 2012". The National Development Plan-2010/11-2014/15 identified key investments in infrastructure that are required to accelerate the transformation of the economy to a middle income state. The projects that are listed below are derived from the National Development Plan and consultation with Government ministries and departments.

**Table 7.2.1: PPP Priority Project as of June 2015**

| No | Project Name | Mode | Cost (Million) | Schedule | Sponsoring Agency | Project Status |
|---|---|---|---|---|---|---|
| 1 | Kampala-Jinja Road | PPP-DBFO | 800 | 2012/2013 | Uganda National Roads Authority | Preliminary option and design completed. UNRA plan to procure Transaction Advisor |
| 2 | Ayago Hydro Power Station | PPP-DBFO | 1,300 | 2012/1013 | Ministry of Energy and Mineral Development | With construction of Ayago, supply meets the projected national requirement of 1,629MW by 2023. Feasibility on-going |
| 3 | Oil Refinery | PPP-BDFO | 2,000 | 2012/2013 | Ministry of Energy and Mineral development | A mini-F/S complete. Ministry of Energy and Mineral development is process of procurement of TA |
| 4 | Kigo Prison | PPP | Not yet determined | 2012/2013 | Uganda Prison Service/ Ministry of Internal Affairs | Procurement of TA has commenced |
| 5 | Office Accommodation-Ministry of Lands, Housing and Urban Development | PPP-DBFM | 15 | 2012/2013 | Ministry of Lands, Housing and Urban Development | Procurement of TA has commenced |
| 6 | Upgrade of Entebbe Airport | PPP (yet) | 130 | 2012/2013 | Civil Aviation/ Ministry of Works and Transport | F/S being carried out. Preparation for procurement of TA |
| 7 | Malaba-Kampala Standard Gauge Railway | PPP | Not yet determined | 2012/2013 | Ministry of Works and Transport | F/S is underway |
| 8 | Mulago Maternal and Neonatal Hospital | PPP | 34 | 2012/2013 | Ministry of Health | Concept stage. Discussions are ongoing with key stakeholders |
| 9 | Isimba Hydro Power Station | PPP-IPP | 350 | 2012/2013 | Ministry of Energy and Mineral Development | F/S is being carried out |

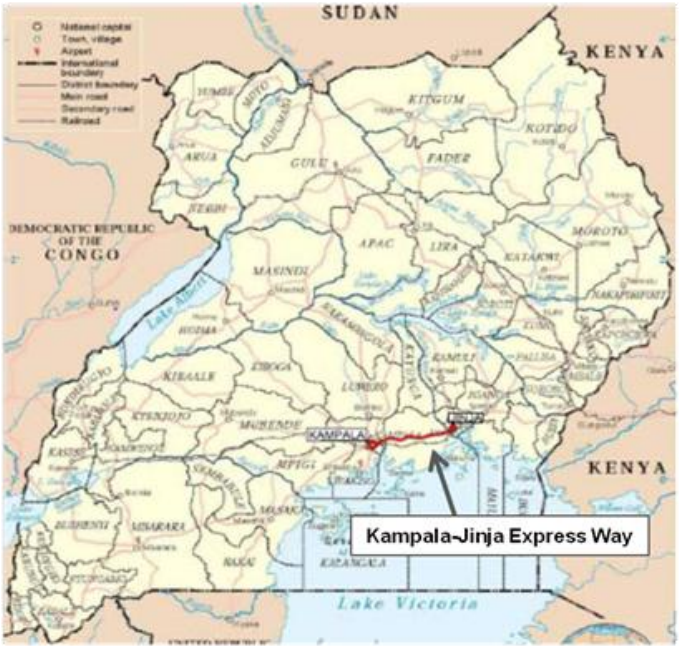
*Source: PPP Unit, edited by JICA Study Team*

### (2) Planned project using PPP – Case Study of Kampala Jinja Expressway

PPP Unit furnished Priority Public-Private Partnership Projects list in 2012 which contain 9 projects as shown on table. However PPP Unit has said that the Priority List has been in a process of updating the projects since most of them were cleared and moved out.

PPP Unit has indicated that Kampala Jinja Expressway PPP Project will be the first PPP pipeline project under the unit. In order to realize the situation and level of PPP project preparation, the study team carried out a preliminary analysis of the Project. "Preliminary Information Memorandum April 2015" was prepared by the Uganda National Road Authority (UNRA) and International Finance Corporation (IFC).

The outline of projects is shown on table.7.2.2. An anticipated negotiation will be commenced in February 2016 with the Preferred Bidder, according to the Memorandum. The project is governed by the PPDAA Act followed by PPP Law once promulgated.




*Source: Information Memorandum of UNRA and IFC*

**Figure 7.2.2: Kampala-Jinja Expressway**

Concerning the revenue structure, the survey of the willingness to pay resulted as $0.023 per km, and value of time is $1.449 as average. In 2030, approximately 60 % of passenger vehicle will use the toll road according to the data in the Memorandum.

After the preliminary analysis taking into account of the IFC's explanation, the study team appreciates the framework of UNRA/IFC of the Project pending the detailed PPP Agreement to be verified and legal synthesis shall be confirmed.

**Table 7.2.2: Kampala-Jinja and Kampala Southern Bypass Expressway, Key Information**

| | |
|---|---|
| **Total Length** | Total 93km (KJ=77km, KSB=16km) |
| **Toll Plaza** | Total 12points (KJ=9 , KSB=3 ) |
| **Investment Costs for Expressway system** | Total $1400M,<br>KJ=$800M,<br>KSB=$400M |
| **Government Contribution** | $ 200M for ROW acquisition<br>$ 300M for grant to private |
| **PPP Type** | DBFOT, 25 years. (Design Build Finance Operation and Transfer) |
| **Revenue of Investor** | Availability based payment<br>(Revenue of investor is irrelevant to actual toll revenue paid by users) |
| **Toll system** | KJ; Closed toll (distance related toll)<br>KSB; Open toll (flat toll) |
| **Currency** | Toll; Uganda shilling<br>Revenue; USD |
| **Exchange Risk** | Government |
| **Equity IRR** | Expected EIRR>20% |

*Source: UNRA-IFC Information Memorandum*

### (3) Implementation Scheme

The selection of PPP arrangement by the Qualitative Evaluation

Since the characteristics of each project of MP are ambiguous at present, the qualitative evaluation will be adopted for the study. Please refer to section 7.1.3 (4) for typical qualitative selection methodology table. Then adoptable arrangement will be identified as the suitable PPP modality.

## 7.2.5 Analysis of Current Gaps and Bottlenecks

### (1) General affordability issues

A PPP can make a project affordable evidenced by the value for money realized through PPP procurement instead of traditional public procurement. Even if PPP projects are off budget, governments should not be tempted to ignore the affordability issue. In general, the government should not use PPP in times of fiscal restraint, but rather undertake PPP projects only if they represent value for money and are in the affordability limit.

### (2) Political Gap

PPP projects are, generally, relatively big size in an amount of investment, influenced area of construction and duration of services so that there are many cracks where the political incidents occur. Apparent prediction of such incidents may discourage the private investor and financiers.

### (3) Legal Gap

In the absence of a promulgation of PPP Law, the ministries which are responsible for public services cannot establish the regulated "PPP department" yet. The following points are concerned items during this study.

i) Government support; Clause 5. (3) of PPP Law states that no borrowing guarantee and/or loan for a PPP except as authorized by Article 159 of the Constitution which require the approval of Parliament. The approval of the Parliament will be in a fog for private investor and financier.

ii) Absence of supporting laws and regulations; Indispensable laws and regulations for the PPP Law are not established yet. As the consequence the inconsistency of conditions for the implementation of the project will be resulting the waste of time, money and credibility gap between the parties.

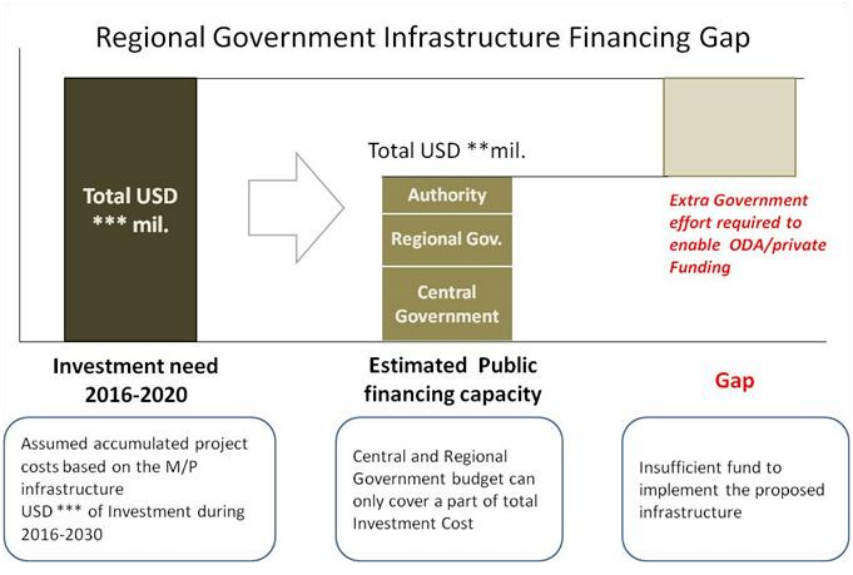
iii) Restrictions on assignment or transfer of share: In respect of special purpose vehicle (SPV), any transfer of shares, increase in share capital or changes in the corporate status of a SPV shall be with the written approval of the Minister and the Minister of the contracting authority.

iv) Regulations; Clause 40 specifies the right to make regulations prescribing the many contents of this Act. The private sector may become skeptical for sustainable continuation of PPP.

### (4) Economical and Financial Gap

i) Financial gaps between plan and the affordable public budget.

Figure 7.2.3 shows a notion of the possible financial gap between the MP infrastructure and available public funds. The district government together with the central government shall procure the necessary funds from out of direct borrowing, donors, CDF and private sectors.




*Source: JICA Study Team*

**Figure 7.2.3: Possible Funding Gap**

ii) Little provability of the payment by beneficiaries

The issues for the arrangement of PPP project will be the difficulty to impose the scheme of beneficiary payment for the use of the infrastructure. According to the Ministry of Works and Transport, government cannot levy a toll for the road users including the ferry between the villages. Thus financial burden for the Government/ Infrastructure Corporation may be indispensable.

iii) Insufficient incentives in PPP Bill 2012

PPP Bill 2012 does not have the clause of "Incentive to the private". As explained in item (2) above, a contracting authority may have to take on almost financial burden of PPP projects. In order to encourage the private investors, PPP Bill 2012 shall include the incentives such as, but not limited to, income tax holiday, exemption of work permit and Visa at once for the employee of the Special Purpose Vehicle (SPV), exemption of import duty, free remittance of proceeds, and so on.

iv) High and unstable financial cost

According to the statistic report of the Bank of Uganda, Interbank Money Market indicates 30.42% as highest while 8.25% as lowest in the past 5 years. It is uncertain whether any PPP project will be able to generate such high returns to recover the financial cost. By the other hand, government subsidy is subject to the approval of the Parliament as stated in 5.4 (1) under this section. This weak financial market situation will discourage the private sector to participate in the PPP project, in particular for foreign investor.

v) Insufficient ability of Local financial institutions

Stanbic Bank Uganda, the biggest private bank, has assets of USD 1,260 million and the top 5 bank's asset is USD 3,919 million with average USD 783 million per bank. These bank's lending rates are ranging between 13.0%~19.0% while deposit rate is 3.0%. However their loans for Investment Group charge the interest rate of 15% with 10years maturity and the loan for Estate Development charge the negotiated rate for 85% of the cost with 24 months maturity. During the hearing, Standard Chartered Uganda said that it shall require the government guarantee for the loan of PPP project.

vi) Issues concerning the Organization/Staff domain

PPP Unit and a contracting authority and PPP department of PPP projects shall proceed the proper process in order to achieve the development goal. For this purpose, it is essential to expedite the capacity buildings throughout the governmental body.

# 8 Environmental and Social Consideration for Master Plan

## 8.1 Strategic Environmental Assessment Approach in Kenya

### 8.1.1 Overview

In Kenya, there is a Strategic Environmental Assessment (SEA) guideline titled "National Guideline for Strategic Environmental Assessment 2012" (hereinafter referred as SEA Guideline in Kenya) and the authority in change is National Environment Management Authority (NEMA).

The 74 pages guideline indicates 1) Outline of SEA, 2) Stages and Steps for Undertaking SEA at Policy, Plan and Program Level, 3) Stage 1: Establish the Need and Context for the SEA, 4) Stage 2: Implementing the SEA, 5) Stage 3: Informing and Influencing Decision Making, and 6) Stage 4: Monitoring and Evaluation.

So far more than 10 SEAs have been conducted in Kenya, according to NEMA.

### 8.1.2 Legal Framework on Strategic Environmental Assessment

NEMA was established based on "The Environmental Management and Co-ordination Act, 1999". The act states that "The object and purpose for which the Authority is established is to exercise general supervision and co-ordination over all matters relating to the environment and to be the principal instrument of Government in the implementation of all policies relating to the environment." (in Article 9 (1)).

MEWNR has Finance and Administration Department, Directorate of Environment and Directorate of Natural Resources and Kenya Meteorological Department. MEWNR also has National Environment Management Authority (NEMA), Kenya Water Towers Agency (KWTA), Kenya Wildlife Service (KWS), Kenya Forest Service (KFS) and Kenya Forest Research Institute (KEFRI) as semi-autonomous government agency under the ministry.

Regarding SEA, "The Environmental (Impact Assessment and Audit) Regulation, 2003", states:

- "strategic environment assessment" means the process of subjecting public policy, programmes and plans to tests for compliance with sound environmental management; (Article 2, in Part I)
- Lead agencies shall in consultation with the Authority Strategic subject all proposals for public policy, plans and programmes for environmental implementation to a strategic environmental assessment to determine which ones are the most environmentally friendly and cost effective when implemented individually or in combination with others. (Article 42(1) in Part VI)
- The Government and all the lead agencies shall in the development of sector or national policies, incorporate principles of strategic environmental assessment. (Article 42(3) in Part VI)

The SEA Guideline in Kenya was established in 2012.

To obtain the approval of SEA from NEMA, licensed environmental consultant shall be working for the assessment. There are three kinds of license namely;

- Associate Experts
- Lead Expert
- Firm of Experts

Both the "Associate Experts" and "Lead Expert" are licenses for individual person and "Lead Expert" is senior level. "Firm of Experts" is a license for the consulting firm.

For the implementation of SEA in Kenya by Kenyan local consultant firm, the firm shall have "Firm of Experts" license and the team leader of local consultant team shall have a "Lead Expert" license.

### 8.1.3 Public Participation in Plan Formulation Process in Current Acts Concerned

Besides stakeholder meetings stipulated in SEA Guideline in Kenya, "Civic Education" is stipulated in "County Government Act, 2012". The act states "(1) The principles of civic education are intended to promote — (a) empowerment and enlightenment of citizens and government; (b) continual and systemic engagement of citizens and government; and (c) values and principles of devolution in the Constitution." in Article 98 in Part X.

Civic education program is under the responsibility of County Governments. However the PPP owner of this master plan is Ministry of Transport and Infrastructure (MOTI). Therefore the civic education program will be implemented under the corroboration of MOTI and relevant county governments. In the acts, method of education is not specified, therefore the county government and PPP owner will discuss and decide how the civic education program is implemented. Since the target area of this master plan is extensive, advertisement through mass-media and providing information on the internet is a realistic option for the program.

In "the Physical Planning Act (Rev. 2010)", public notification is stated, however there is no description regarding public participation or public consultation.

### 8.1.4 Proposed Strategic Environmental Approach

SEA will be implemented following SEA Guideline in Kenya and "JICA's Guidelines for Environmental and Social Considerations, 2010".

TOR for consultant selection is already accepted by the PPP owner (MOTI) and NEMA, however the TOR has not been distributed to the shortlisted consultant because it is planned that SEAs both in Kenya and Uganda will be in one selection and one contract. (Subcontract is permitted and valid license holder in each country shall implement SEA in each country.) Together with this, timing coordination of the selection procedure with other JICA project ("The Project for Formulation of Comprehensive Development Master Plan in the Mombasa Gate City in Republic of Kenya") is required to avoid bid-rigging or any opportunity of coordination/adjustment among bidders.

Following the legal requirement and advice from relevant organizations, the bidder and the team leader of the proposed SEA consultant team in Kenya shall have "Firm of Experts" license and "Lead Expert" license valid in Kenya respectively. This is advice from NEMA and this requirement is mentioned in TOR.

The procedure of the implementation of SEA is shown below.

### 8.1.5 Proposed Design of Stakeholder Meetings

At the detailed SEA study stage, ten (10) stakeholder meetings will be conducted as shown below:

- 1st Round: five (05) times in total:
  Mombasa, Nairobi, Nakuru, Kisumu, Maraba
- 2nd Round: five (05) times in total:
  Mombasa, Nairobi, Nakuru, Kisumu, Maraba

Expected number of participants is around fifty (50) in each meeting and target participants are only high class officials from both public and private sector including community based organizations. This limitation is because of the very extensive target area of this master plan, and such high level officials are expected to collect the opinions from their organization and represent their organizations. Because of the number of stakeholder meetings and expected participants, it is a realistic option to hold the meeting in major city/towns.

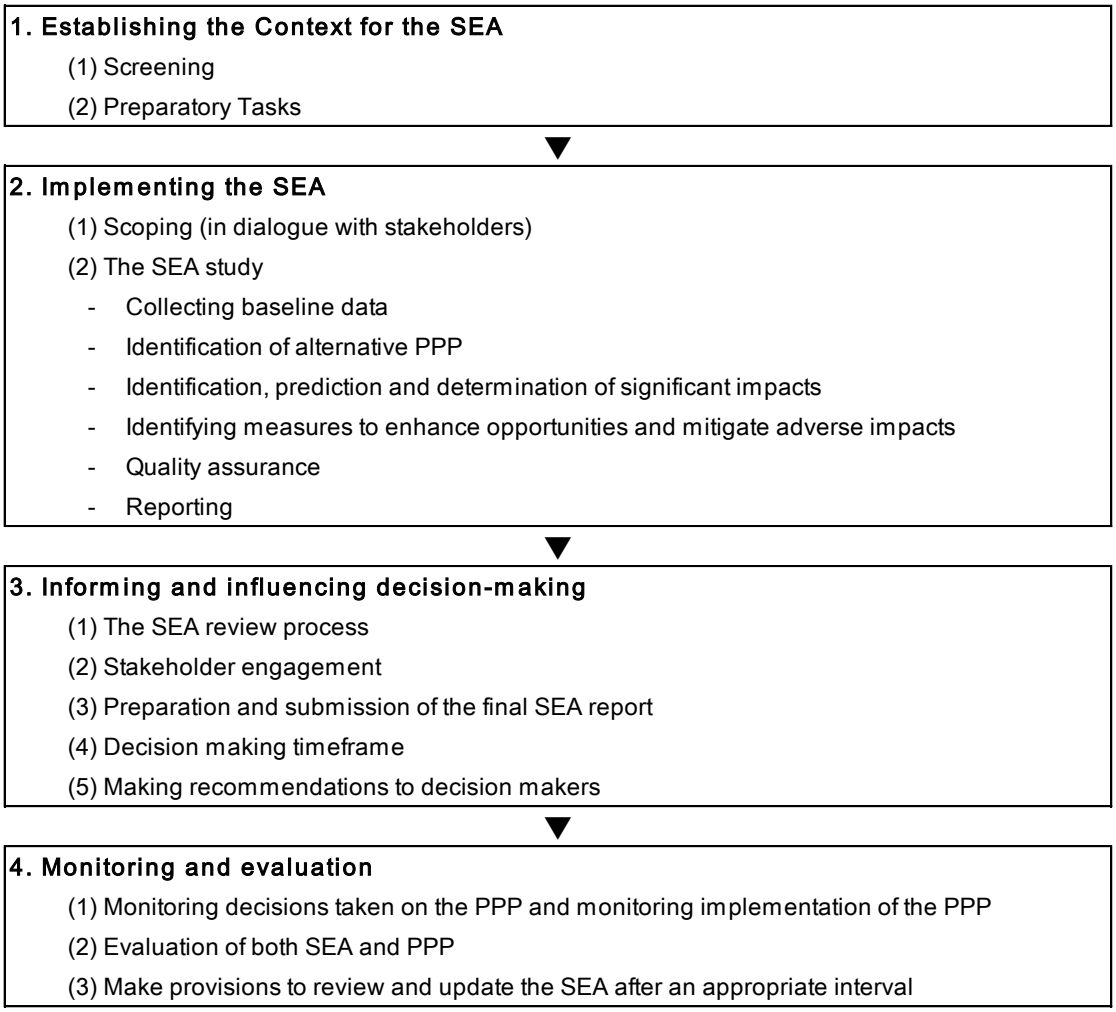
Because of the limitations of a comprehensive study schedule for this project, stakeholder meetings will be held in two (02) rounds. At the first round meetings, outline of this project will be explained, and alternatives also discussed. And then at the second round meetings, major findings of SEA study will be reported and discussion among the participants will be held.

Proposes of stakeholder meetings are shown below:

**Table 8.1.1: Purposes of Stakeholder Meetings (Kenya)**

| Meetings | Purpose |
|---|---|
| 1st Meeting | The purpose of the meeting is to focus on the study by identifying the main issues for analysis and discussion.<br>Project explanation<br>Clarification of lead agency<br>Clarification of the entire process and schedule<br>Clarification of the study |
| | Alternative discussion<br>Policy and institutional issues<br>Assessing the baseline situation and environmental impact<br>Source of information for the study |
| 2nd Meeting | The representatives from Ministry of Transport and Infrastructure and JST shall present the background and purpose of this Master plan Study and the selected consultant shall give a presentation on the outline of the master plan and the major findings of the study.<br>All participants shall be asked to give their comments or ask questions for purposes of giving clarification to the report. |

*Source: JICA Study Team*




*Source: NEMA (Kenya), 2012*

**Figure 8.1.1: Implementation Procedure of SEA in Kenya**

Detailed approach and procedure shall be proposed as Scoping Report of SEA and implemented after approval by NEMA.

Because of the very extensive target area of this master plan, the expected level of SEA is not at sub-county or county level like regional development plan, but at region level. This concept of level was explained to NEMA

and MOTI and they agreed the concept. This concept is clearly stated in TOR for SEA consultant selection and considered in design of stakeholder meetings in next section (Section 8.1.5).

# *8.2 Strategic Environmental Assessment Approach in Uganda*

## 8.2.1 Overview

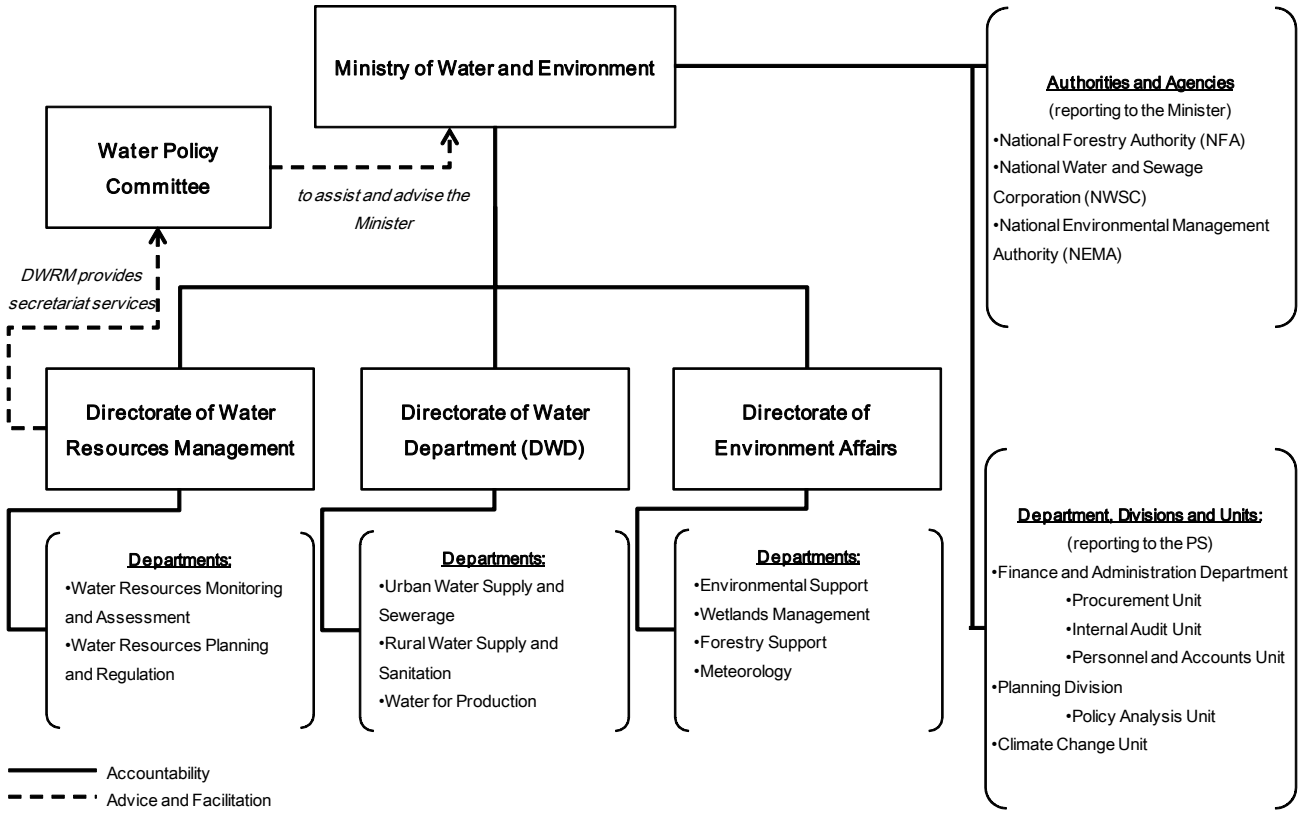
In Uganda, there is no binding guideline for SEA at the moment. According to National Environment Management Authority (NEMA) "the National Environment Act" is under review to include a mandatory provision for SEA and it will probably be enacted next year, and NEMA is in the process of hiring a consultant to finalize the draft SEA guideline as of July 2015.

## 8.2.2 Legal Framework on Strategic Environmental Assessment

NEMA is established based on "The National Environment Act, 1995". The act states that "The authority shall be the principal agency in Uganda for the management of the environment and shall coordinate, monitor and supervise all activities in the field of the environment." in Article 5 of the act.

NEMA is a semi-autonomous institution under Ministry of Water and Environment (MOWE).

Organization chart of MOWE is shown below:




*Source: Prepared by JICA Study Team based on the website of MOWE*

**Figure 8.2.1: Organization Chart of MOWE**

Since there is no binding guideline for SEA, no legal framework exists at the moment for SEA. SEA can be implemented by utilizing the guideline of donor agency or common practice accepted internationally, and NEMA is not in position to give any approval of SEA.

After review and publishing of "the National Environment Act" with a mandatory provision for SEA, legal framework on SEA will be ready and a SEA guideline will be also published.

NEMA recognizes that two (02) SEAs have been implemented so far in Uganda. One is the oil and gas project and the other one is in the road sector (National Road Master Plan).

For this master plan formulation, NEMA advised that the SEA for this plan shall follow the common practice of SEA and the guidelines of international donor agency, and NEMA shall be one of the key stakeholders, not authorizing agency since NEMA is not in position to give any permission or approval to SEA at the moment.

There is well legal frame work of Environmental Impact Assessment (EIA) including sector wise guidelines. "Environmental Impact Assessment Regulations (1998)" and "Environmental Impact Assessment Public Hearing Guidelines (1999)" issued by NEMA are the regulation/guideline for EIA, and for example, the Ministry of Works and Transport has an EIA guideline titled "Environmental Impact Assessment Guideline for Road Project, June 2008". Such regulation/guidelines for EIA shall be a reference document for baseline data collection and implementation procedure of the assessment.

NEMA has a license system of environmental consultants. There are three kinds of licenses namely;

- Environment Impact Assessor (EIA)
- Environment Auditor (EA)
- Environment Partner (EP)

Both of EIA and EA are licenses for individual person. EIA is for impact assessment and EA is for assessment after the completion of project. According to NEMA, most of environment consultants in Uganda have two licenses both of EIA and EA according to NEMA. In the list of license holders, for both EIA and EA, "as a Team Leader/Member" or "as a Team Member" is mentioned for each license holder. EP is a license for partnership or consortium of firms, not for individual persons.

For the implementation of SEA in Uganda by Ugandan local consultant firms, although there is no legal framework for implementation SEA, the team leader of the local consultant team shall have EIA license on condition that he will be refered to "as a Team Leader/Member" as specification of local consultant selection.

### 8.2.3 Public Participation in Plan Formulation Process in Current Acts Concerned

In "The Environmental Impact Assessment Regulation, 1998", there are several articles regarding public participation, public hearing and public comments. Such articles can be regarded as reference information for implementation of SEA.

At the stage of master plan formulation, no public hearing or public comments are regulated in any laws. However as an activity of district government to collect public opinion, district government may make some opportunity through on media or other method.

In "the Physical Planning Act, 2010", public display is regulated. It is said "Upon the completion of a draft national or regional physical development plan, the Board shall publish a notice in the Gazette and in any other manner as it considers expedient, inviting the public to inspect the draft plan at the place and time specified in the notice." in Article 20 (1) of the act.

This procedure will be implemented by the Ugandan side when MOWT publishes the master plan officially as the physical development plan, not timing the submission of the final report by JICA/JST.

Therefore MOWT shall follow the procedure when this master plan submitted by JICA/JST is going to be a master plan officially published by the ministry.

### 8.2.4 Proposed Strategic Environmental Assessment Approach

Since there is no SEA guideline in Uganda and NEMA is not in position to give any approval regarding SEA, SEA will be implemented following the common practice utilized internationally and "JICA's Guidelines for Environmental and Social Considerations, 2010". Since SEA for this project in Kenya and SEA for this project

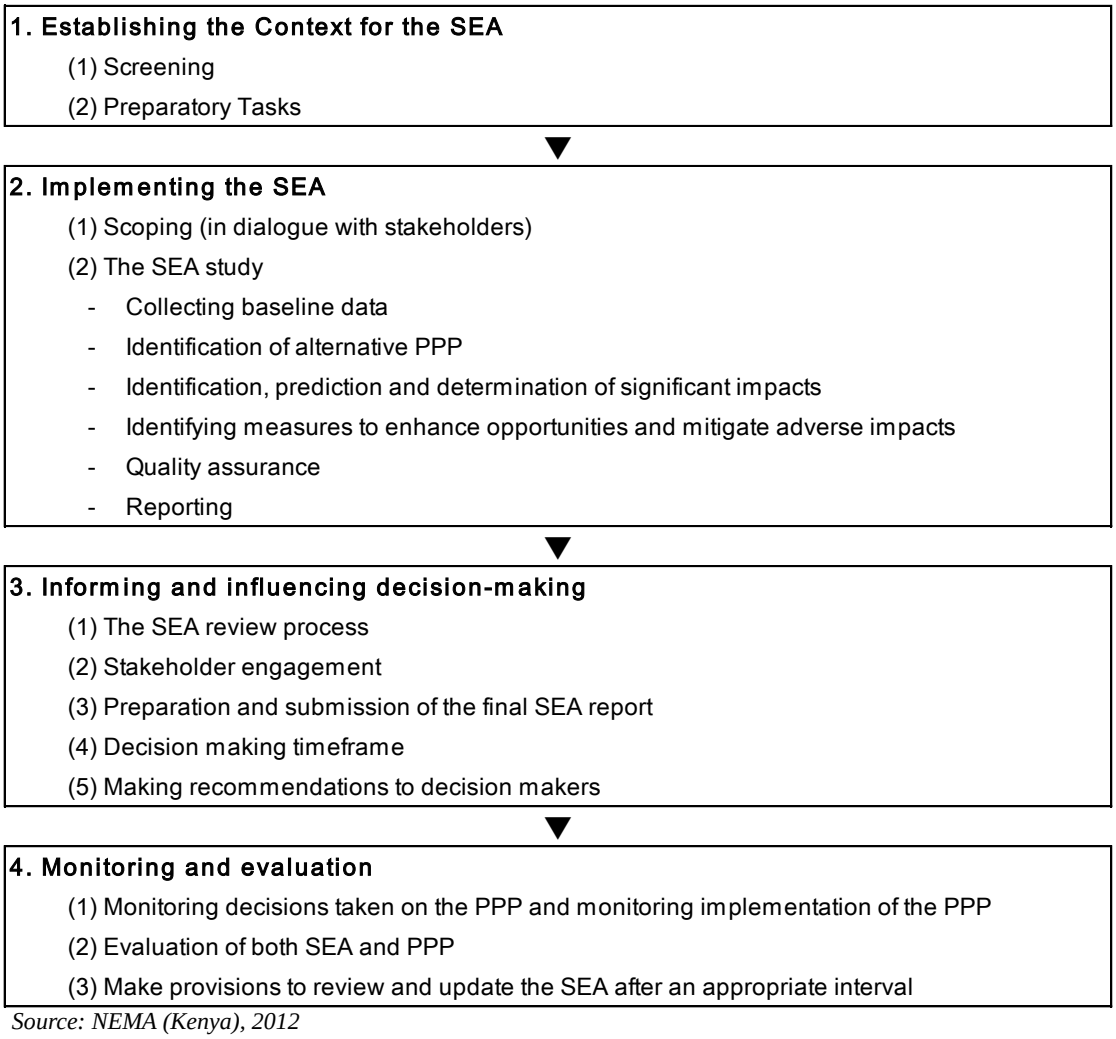
in Uganda are under the same project, therefore both SEAs will be implemented under one team leader to help each other and any necessary coordination.

TOR for consultant selection is currently under consultation by Environment Department of the PPP owner (MOWT).

Following advice from NEMA, the team leader of the proposed SEA consultant team in Uganda shall have both EIA and EA license valid in Uganda.

NEMA advised that there are license systems of EIA consulants and experienced EIA consultants in Uganda, and some of the experience/approach of EIA can be adopted by the implementation of SEA. Therefore in TOR for SEA in Uganda, the team leader of the proposed SEA consultant team in Uganda shall have EIA license valid in Uganda with condition of "as a Team Leader/Member".

The procedure of the implementation of SEA is basically the same as the one in Kenya and shown below. The difference is the position of NEMA. In Uganda, NEMA is considered as one of the important stakeholders, but is not authorized to give approval to SEA. MOWT and JST will approve the SEA final report as the the outcome of SEA study, as the PPP owener and the employer of the SEA consultant respectively.




*Source: NEMA (Kenya), 2012*

**Figure 8.2.2: Implementation Procedure of SEA**

Detailed approach and procedure shall be proposed as Scoping Report of SEA and implemented after approval by MOWT and the JICA Study Team (hereinafter referred as JST).

Because of the very extensive target area of this master plan, expected level of SEA is not at district level like the regional development plan, but region level. This is clearly stated in TOR for SEA consultant selection and considered in the design for stakeholder meetings in the next section (Section 8.2.5).

### 8.2.5 Proposed Design of Stakeholder Meetings

At the detailed SEA study stage, six (06) stakeholder meetings will be conducted as shown below:

- 1st Round: three (03) times in total:
  Gulu, Kampala, and Tororo or Mbarara
- 2nd Round: three (03) times in total:
  Gulu, Kampala, and Tororo or Mbarara

Expected number of participants is around fifty (50) in each meeting and target participants are only high class officials from both public and private sector including community based organizations. This limitation is because of the very extensive target area of this master plan, and such high level officials are expected to collect the opinions from their organizations and represent their organization. Because of the number of stakeholder meetings and expected participants, it is a realistic option to hold the meetings in major city/towns.

Because of limitations to a comprehensive study schedule for this project, stakeholder meetings will be held in two (02) rounds. At the first round meetings, outline of this project is explaned, and also alternatives shall be discussed. And then at the second round meetings, major findings of SEA study will be reported and discussion among the participants shall be held.

Proposes of stakeholder meetings are shown below:

**Table 8.2.1: Purposes of Stakeholder Meetings (Uganda)**

| Meetings | Purpose |
|---|---|
| 1st Meeting | The purpose of the meeting is to focus on the study by identifying the main issues for analysis and discussion.<br>Project explanation<br>Clarification of lead agency<br>Clarification of the entire process and schedule<br>Clarification of the study |
| | Alternative discussion<br>Policy and institutional issues<br>Assessing the baseline situation and environmental impact<br>Source of information for the study |
| 2nd Meeting | The representatives from Ministry of Works and Transport, and JST shall present the background and purpose of this Master plan Study and the selected consultant shall give a presentation on the outline of the master plan and the major findings of the study.<br>All participants shall be asked to give their comments or ask questions for purposes of giving clarification to the report. |

*Source: JICA Study Team*

## *8.3 Outline of PPP (Policies, Plans and Programs) in Kenya*

### 8.3.1 Objective

The objectives are to formulate a Master Plan on Logistics for Northern Economic Corridor, along with integrated regional development strategy consistent with sub-regional development plans and national development plans.

### 8.3.2 Outline

The PPP owner in Kenya is the Ministry of Transport and Infrastructure (MOTI).

This Master Plan covers not only the logistic aspect but also regional development, and, as the result, the concept of “Northern Economic Corridor” was taken up for the project title. For improvement of logistics, the study for MP will examine various aspects such as custom process improvement, reduction of stagnation time of freight at Mombasa Port, infrastructure related to logistics improvement. In addition to logistic

improvement, MP will consider the regional development aspect such as promotion of export oriented commodities, more utilization of mineral resources through the corridor, realization of stable supply of water and power to the industrial development etc. The increasing volume of products along Northern Economic Corridor can contribute to reduction of empty cargo that returns to the Mombasa port and as a result the logistics cost can reduce due to improvement of cargo use ratio as well.

The target areas for the Master Plan will cover the following routes which are part of Northern Economic Corridor and its surrounding areas:

- Main route: **Mombasa-Nairobi-**Tororo-Kampala-Katuna-(Kigali/Rwanda);
- Sub-route: **Eldoret - Nadapal – (Juba/South Sudan)**;
- Sub-route: Tororo - Gulu – Elegu – (Juba/South Sudan);
- Sub-route: Kampala- Gulu – Elegu – (Juba/South Sudan); and
- Sub-route: Mbarara- Mpondwe– (Kisangani/D.R.C).

Applied approaches for formulation of this master plan are:

- Formulate Logistics Master Plan that can contribute to economic and social development along Northern Economic Corridor;
- Formulate Logistics Master Plan that promotes and accelerates outcomes of TICAD V;
- Strengthen function of Mombasa city as gateway to Northern Economic Corridor through JICA project on Comprehensive Development Master Plan for Mombasa (new); and
- Organize working group to promote collaborative mechanism between JICA Study Team, Ministries and Agencies concerned, and other stakeholders.

The target year of the master plan is 2030.

### 8.3.3 Approval Schedule

The schedule for SEA approval is expected as shown below:

- August 2015: Selection of SEA Consultant ("Licensed SEA Expert" in SEA Guideline in Kenya)
- September 2015: Submission of Scoping Report
- October to December 2015: Detailed Study and Preparation of Draft SEA Report
- February 2016: Approval of Draft SEA Report by NEMA
- May 2016: Approval of SEA Final Report by NEMA

Draft SEA Report is expected to be an input of Interim Report of this master plan study, and SEA Final Report is expected to be a Draft Final Report of this master plan study.

## *8.4 Outline of PPP (Policies, Plans and Programs) in Uganda*

### 8.4.1 Objective

The objectives are to formulate a Master Plan on Logistics for Northern Economic Corridor, along with integrated regional development strategy consistent with sub-regional development plans and national development plans.

### 8.4.2 Outline

The PPP owner in Uganda is the Ministry of Works and Transport (MOWT).

This Master Plan covers not only the logistic aspect but also regional development, and, as the result, the concept of "Northern Economic Corridor" was taken up for the project title. For improvement of logistics, the study for MP will examine various aspects such as custom process improvement, reduction of stagnation time of freight at Mombasa Port, infrastructure related to logistics improvement. In addition to logistic

improvement, MP will consider the regional development aspect such as promotion of export oriented commodities, more utilization of mineral resources through the corridor, realization of stable supply of water and power to the industrial development etc. Increasing volume of products along Northern Economic Corridor can contribute to reduction of empty cargo that returns to the Mombasa port and as a result the logistic cost can reduce due to improvement of cargo use ratio as well.

The target areas for the Master Plan will cover the following routes which are part of Northern Economic Corridor and its surrounding areas:

- Main route: Mombasa-Nairobi-**Tororo-Kampala-Katuna-(Kigali/Rwanda);**
- Sub-route: Eldoret - Nadapal – (Juba/South Sudan);
- Sub-route: **Tororo - Gulu – Elegu –** (Juba/South Sudan);
- Sub-route: **Kampala- Gulu – Elegu –** (Juba/South Sudan); and
- Sub-route: **Mbarara- Mpondwe–** (Kisangani/D.R.C).

Applied approaches for formulation of this master plan are:

- Formulate Logistics Master Plan that can contribute to economic and social development along Northern Economic Corridor;
- Formulate Logistics Master Plan that promotes and accelerates outcomes of TICAD V;
- Strengthen the function of Mombasa city as the gateway to Northern Economic Corridor through JICA project on Comprehensive Development Master Plan for Mombasa (new); and
- Organize working groups to promote collaborative mechanism between JICA Study Team, Ministries and Agencies concerned, and other stakeholders.

The target year of the master plan is 2030.

## 8.4.3Approval Schedule

Since NEMA in Uganda is not in position to approve any SEA at the moment, NEMA will be involved as one of important stakeholder. Therefore MOWT and JST will be in the position to approve the outcomes of SEA consultant.

The schedule for SEA approval is expected as shown below:

- August 2015: Selection of SEA Consultant (Team Leader shall be EIA, and “as a Team Leader/Member”)
- September 2015: Submission of Scoping Report
- October to December 2015: Detailed Study and Preparation of Draft SEA Report
- February 2016: Approval of Draft SEA Report by MOWT/JST
- May 2016: Approval of SEA Final Report by MOWT/JST

Draft SEA Report is expected to be an input of Interim Report of this master plan study, and SEA Final Report is expected to be a Draft Final Report of this master plan study.

# 9 Way forward

The following works will be done by the end of December 2015.

- Detailed analysis of current bottlenecks based on result of Market and Value Chain Survey and Good Movement and Traffic Survey,
- Formulation of Development Vision and Scenario for Master Plan,
- Identification of Future Bottlenecks through establishment of social and economic framework, and preliminary demand freight traffic demand forecasting,
- Formulation of Development Strategy based on potential assessment as well as bottleneck analysis,
- Implementation of SEA for Master Plan,
- Implementation of Study Tour to Mozambique in November, and
- Preparation of Progress Report No.2 in December.

On the other hand, the Study team needs further details from Ministry and Agencies Concerned to establish development scenario including:

- Level of SGR services to be expected in the future: operation average speed（km/h）, operation travel time between Nirobi/Kampala and Mombasa (hours minutes), operation frequency ( times/day), operation capacity ( number of containers(TEU) / train), charge USD/40feet,USD/20feet container, and operation hours (24 hours or not ) etc.,
- Future modal share between railway and truck in NRC: modal share of cargos from Mombasa to Nairobi, modal share of cargos from Mombasa to Kampala, and main target items of cargos for modal shift from truck to railway etc.,
- Project schedule of SGR: when completed between Mombasa and Nairobi, between Nairobi and Eldred, between Eldred and Kampala,
- Information on Super Highway: Study made by PwC,
- Current status and implementation plan of oil pipeline to Lamu, and
- Current status and implementation plan of Lamu port.