CIG UGANDA

THE REPUBLIC OF UGANDA
MINISTRY OF WORKS AND TRANSPORT

Situational Analysis Report for the Master Plan and Development Strategy

Inland Water Transport (IWT) Corridor | May 2020

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Cover photos: CIG Uganda

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Acronyms and Abbreviations

AFD	Agence France De Development
AfDB	African Development Bank
CIG	Cities for Infrastructure and Growth
DFID	Department of International Development
GESI	Gender Equality and Social Inclusion
GKMA	Greater Kampala Metropolitan Region
GoU	Government of Uganda
IWT	Inland Water Transport
JKE	Jinja-Kampala-Entebbe City-Region (Urban Corridor)
KCCA	Kampala Capital City Authority
MDA	Ministries, Departments and Agencies
MoFPED	Ministry of Finance, Planning and Economic Development
MoWT	Ministry of Works and Transport
NDP	National Development Plan
NPA	National Planning Authority
PSFU	Private Sector Foundation Uganda
TA	Technical Assistance
UGX	Uganda Shillings
UNRA	Uganda National Roads Agency
WB	World Bank

EXECUTIVE SUMMARY

The Cites and Infrastructure for Growth (CIG) Uganda is a five-year UK Government funded programme implemented by Cardno International Development with partners Genesis, ORI and Riccardo. The programme commenced in June 2018 and is expected to run over a 5-year period to June 2023. CIG delivers the support to MDAs through either TA or support to planning and implementation programmes.

In July 2019, DFID approved the project proposal for the Inland Waterway Transport Corridor Master Plan and Development Strategy (IWT) intervention. The IWT project will work within the JKE focus area, and is expected to play a major role in integrating and connecting various towns and commercial centres and in the sustainable development of the economic opportunities of Lake Victoria. Importantly, a good transport network creates economic opportunities in market access, competitive import and export trade and tourism, all translating into socio-economic transformation. Investments that can help IWT to become a dependable and affordable mode of transportation are vital in fueling economic and social transformation of not only the Jinja-Kampala-Entebbe corridor where Lake Victoria spans, but also Uganda more broadly, given that about two-thirds of the country's GDP is generated there. This is the objective that Inland Waterway Transport Corridor Master Plan and Development Strategy seeks to support.

The objective of this situational analysis report is to present progress on the implementation of the Inland Waterway Transport (IWT) intervention and report on the situational findings that the team has unearthed in so far as the IWT subsector is concerned. The key activities undertaken during this situational assessment stage are summarized as follows:

- Site visits and engagement with island communities took place in November 2019 and important field data was collected and preliminary analysis and conclusions formulated;
- Stakeholder engagement has progressed well with MOWT, UNRA, KCCA to unearth the constraints and challenges of the IWT initiative in the JKE region. It is expected that this report will be presented and discussed with MOWT and other partners;
- This stage of the intervention has identified the gaps in legislation and policies that may need to be improved to support greater and efficient use of IWT. It is noted that MOWT is finalizing the Inland Water Transport Bill due to be submitted to Cabinet by March 2020;
- Critically the team has identified and begun to quantify the infrastructure gaps and persistent impediments to wider use of IWT. Potential investment areas were identified covering infrastructure provision, vessels and rolling stock. These will be further refined using the analytical tools developed in-house to support project financial structuring;
- Gender and Social Inclusion (GESI) and Climate Change considerations have been identified as they relate to the IWT sector;
- The team has reviewed and assessed information on efforts of other Development Partners in IWT sector and noted that efforts to improve communication and connectivity across Lake Victoria are also being supported by other partners and CIG can provide additionality to all these initiatives.

It is anticipated that the next steps in the IWT intervention will entail the following activities:

1. Discussion of this situation analysis report with Ministry of Works and Transport and assessing linkages with the current National Transport Masterplan being prepared;
2. Assessment of long list of projects to formulate a detailed shortlist of potential bankable projects to feed into the Preparation of a Draft Interim Masterplan;
3. Discussion of Draft Interim Masterplan with MOWT;
4. Finalization of Masterplan and discussion on feasibility of financing the identified packages either through public or private sector financing.

Overall the intervention will be carried out in 9 months and will include data research and deeper stakeholder engagement, based on the results of the Initial Assessment Stage. It is expected that the final study deliverables IWT Master Plan will be provided by May 2020.

1.0 INTRODUCTION

The Cites and Infrastructure for Growth (CIG) Uganda is a five-year UK Government funded programme implemented by Cardno International Development with partners Genesis, ORI and Riccardo. The programme commenced in June 2018 and is expected to run over a 5-year period to June 2023.

The CIG Uganda programme aims to enhance the country's economic growth, leading to job creation and poverty reduction through:

- enhanced urban productivity that will allow cities to benefit from the economies of scale, the idea of agglomeration;
- improved access to reliable and affordable power to support the increase in trade, productivity and private sector development;
- improved infrastructure services, and
- better asset and financial management for sustainable investment into services.
- The programme will focus on the Jinja Kampala Entebbe (JKE) corridor, with an initial emphasis on Greater Kampala Metropolitan Area (GKMA). However, it also recognises the strategic importance of Jinja as a key East African trade route and a designated industrial city. The potential to utilise and propel tourism potential of Jinja is also an important focus cluster for this intervention.

In July 2019, DFID approved the project proposal for the Inland Waterway Transport Corridor Master Plan and Development Strategy (IWT). The IWT project will work within the JKE focus area, and is expected to play a major role in integrating and connecting various towns and commercial centres and also lead to the sustainable development of the economic opportunities of Lake Victoria. Importantly, a good transport network creates economic opportunities in market access, competitive import and export trade, and tourism, all translating into socio-economic transformation. Investments that can help IWT to become a dependable and affordable mode of transportation are vital in fueling economic and social transformation of not only the Jinja-Kampala-Entebbe corridor where Lake Victoria spans, but also Uganda more broadly, given that about two-thirds of the country's GDP is generated here. This is the objective that Inland Waterway Transport Corridor Master Plan and Development Strategy seeks to support.

1.1. Lessons from Inception Phase

The inception stage provided a platform for review of existing information and context of IWT, appreciation of the key institutional issues that may affect/support the IWT and provided a channel for engagement with the respective MDAs, i.e. MoWT, MOFPED, KCCA, UNRA, NPA etc. The lessons from the inception stage provided a basis for a recalibration of approach and strategy for the delivery of the assignment.

The following lessons though not exhaustive, will be taken forward to refine the approach and deliver the expected outputs;

- There is a strong focus on revitalization and promotion of IWT. This presents an opportunity to capitalize on this strategic good will to seek maximum development of IWT.
- Preliminary analysis of data from KCCA and MOWT reveals a huge demand for IWT transport movements in the Entebbe, Kampala, Jinja corridor. Efficiency has been hampered by institutional and infrastructure challenges.
- Opportunities exist for investment in IWT in the form of services and supporting physical and economic infrastructure but these would require addressing gaps in regulations and applicable policies. It is worth noting that MOWT is preparing to submit to Cabinet the Inland Water Transport Bill 2019.

1.2. Components of this study phase

This phase of the situational analysis is an important precursor to the eventual preparation of the IWT Masterplan. The initial assessment stage focused on document reviews, gathering data from various sources and field visits to existing infrastructure facilities, landing sites and islands within JKE. Meetings with various stakeholders were held to identify pertinent issues that are critical to the IWT subsector. GESI and Climate Change factors were explicitly considered to ensure total inclusion was factored into downstream planning processes, including stakeholder engagement, evidence gathering and analysis.

Task	Delivery Responsibility	Comments
Task 1: Examine the prospect of introducing reliable, efficient, safe and regular passenger services on Lake Victoria i. Test possibilities of voyages between routes ii. Establish these possibilities from physical routing and market potential perspectives iii. Assess determinants affecting GESI and recommend options for integration and mitigation of effects iv. Assess the current and future climate risks and opportunities for IWT, and the climate smart options	Transport Economist Spatial Planner Gender and Social Inclusion Lead Climate Change Advisor	Ongoing
Task 2: Determine the infrastructure requirements of Inland Water Transport i. Survey port/pier/landing site infrastructure, access roads and other shoreline infrastructure around Lake Victoria ii. Explore the concept of transport interchange possibilities towards local economic development iii. Assess determinants affecting GESI and recommend options for integration and mitigation of effects iv. Incorporate appropriate climate change options to ensure climate resilient and low carbon intensive water transport infrastructure.	Civil Engineer Transport Economist Gender and Social Inclusion Lead Climate change Advisor	Ongoing
Task 3: Assess the present conditions of inland water transport and infrastructure i. Recommend a phased program for development, improvement and reconstruction ii. Estimate the costs involved iii. Estimate the current baseline for inclusion in the CIG Uganda log frame	Financial Specialist Civil Engineer	Ongoing
Task 4: Consider the spatial planning opportunities for lake side development i. In the light of the inland waterway development and infrastructure opportunities, consider land planning issues and relate the spatial planning possibilities to supporting sustainable economic development ii. Identify what and where these opportunities might exist, relating these to the transport interchange opportunity arising above iii. Explore opportunities for climate smart spatial planning and resilient lake side developments.	Spatial Planner Climate change Advisor	Ongoing
Task 5: Prepare an environmental and social impact analysis i. Arising from the spatial planning proposals, conduct an environmental impact statement ii. Assess the possible social consequences whether positive or negative	Climate change Advisor Gender and Social Inclusion Lead	Ongoing

Task	Delivery Responsibility	Comments
Task 6: Prepare a 25-year Inland Water Transport Masterplan for Lake Victoria. i. The Master plan shall be spatially defined with an emphasis on local economic development through water-borne transportation ii. The plan shall include all infrastructure development needs for a successful water based transportation system iii. The plan integrates aspects relating to Gender and Social Inclusion (GESI) iv. The plan shall be Climate Change sensitive incorporating climate resilience and low carbon development aspects. v. Conduct economic appraisal of the Master Plan schemes	Spatial Planner Civil Engineer Climate Change Advisor Gender and Social Inclusion Lead Transport Economist	Ongoing
Task 7: Develop a strategy for implementing the Masterplan i. The plan shall cover programs and projects to be executed, timelines and estimated Investment costs. ii. The programme and supporting projects shall place emphasis on an efficient, effective, resilient and sustainable transportation system, harnessing local economic and business development possibilities, widely defined. iii. The approach will identify at the outset potential investors that could be approached for funding to consider what information they need to progress to financing.	Strategy Review Financial Specialist	Ongoing
iv. Task 8: Identify the bankable opportunities that can be taken to the Private Sector	Financial Specialist	Ongoing

Table 1: *Tasks under the intervention*

1.3. Outline of approach used

The approach adopted benefited from extensive document review, data collection and site inspections to Jinja, Ssese Islands and Luzira. The overall tasks under the intervention are listed in Table 1 and this stage of assignment therefore aligns with the overall technical deliverables expected.

1.4. Objective of this Report

The objective of this report is to present progress on the following aspects of the assignment:

- Preliminary views emerging from information and data reviews;
- Outline the key infrastructure gaps arising from the field visits to Islands within JKE;
- Identify gaps in policies and legislation and how these may affect development of IWT; and
- Highlight potential and plausible emerging investment areas in terms of infrastructure and rolling stock

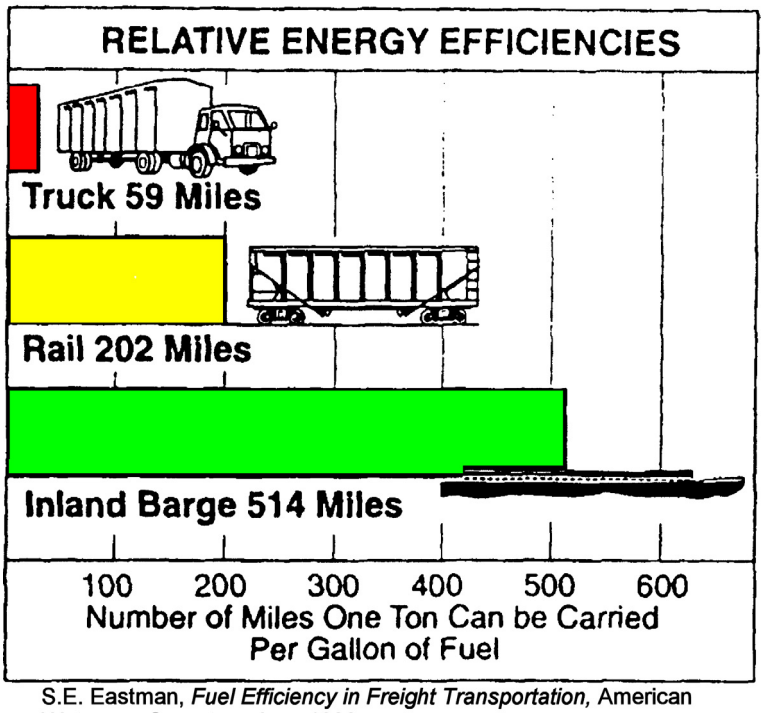
2.0 IMPETUS FOR INLAND WATER TRANSPORT

2.1. What is the current state of affairs?

Inland waterway transport (IWT) is an integral part of the comprehensive transport system of Uganda and the region (East Africa); and this transport mode has many advantages i.e. it is environmentally friendly, reliable and cost-efficient. The potential contribution of IWT to poverty reduction is significant since a substantial portion of the rural population (that lives along the edges of lakes) only has reasonable access to the transport system through IWT, and is directly affected by the availability of IWT services

IWT is often considered the most appropriate means of transportation in the pursuit of a sustainable development strategy. Given the fact that a large proportion of Uganda and EA is covered by water, the creation of a water-highway connecting countries is an opportunity for not only stimulating economic and environmental prosperity in the East African Countries but, combined with a multi modal transportation network making better use of rail in freight transport, can also assist with decongesting the highly trafficked roads like the JKE corridor, reducing carbon emissions and regenerating the local environs within the vicinity of the lake. Sustainable water management will require the integrated use of waterways, thus benefiting a very large number of people because of the significant linear development that occurs alongside the Lake Victoria which is the subject of this study.

Water Transport specifically has a large role to play in integrating and connecting various towns and commercial centres in Uganda, considering that approximately 18 per cent of Uganda's total surface area of 241,000 km is covered by water (World Bank, 2006). Despite the fact that water transport is the most energy efficient means of transport as demonstrated in the figure below, this mode of transport currently handles only three percent of the country's transport demand. At present the cost-effectiveness of water borne freight is limited by the level of service and the speed of transfer, particularly as regards rail ferry-borne freight where railway connections, speed of good transfer by rail and transhipment facilities all require improvements, including to the related infrastructure and its utilisation.



S.E. Eastman, *Fuel Efficiency in Freight Transportation,* American Waterway Operators, Inc., 1980.

Key points regarding Inland Water Transport to be noted are that:

- Formal Inland Water Transport activity currently consists of Passenger Ferries (river crossings that are operated by UNRA, and Island Ferries); cargo transportation (nationally, to and from islands; and internationally, to and from Kenya and Tanzania, including use of roll on-roll off rail ferries); and commercial industry (e.g. fishing and palm oil trade).
- Informal Inland Water Activity also exists, comprising mostly of passenger transportation in dhows between islands and across waterways, and the informal fishing industry.

Passenger Ferries (UNRA Operated River Crossings)

- Water Bridges - UNRA currently operate two river crossing services along JKE Corridor (Nakiwogo and Kiyindi), and three, if Mbulamuti (North of Jinja is included). UNRA ferries are free of charge to the public, making crossings on a scheduled timetable.
- The Kiyindi – Buvuma route length is approximately 7.5 km long and the Ferries make 3-4 return trips during the week and 1-2 return trips on the weekends (19 trips per week). The Ferries can carry 120-15 passengers along with 8 vehicles. According to UNRA approximately 220,000 passengers use the service every year. The waiting areas and access roads to the landing sites are unpaved and lack adequate ticket offices and toilet facilities. The services are typically used by island (Buvuma) residents, traders and shoppers. The goods transported are mainly fish, matooke, clothing, and general supplies. The site uses a naturally engineered landing site which need to be rotated approximately every three months. The existing landing site do not damage ships because the ferries are small. It is anticipated that a new larger ferry will operate on the route in January 2020 – this could raise operational capacity that may need a new / rehabilitated landing site and improved capacity of to be able to manage a more sophisticated ferry on site.
- The Nakiwogo – Kyanvubu route length is approximately 1.4 km long. The ferry makes 10 return trips per day Monday to Saturdays, and 4 return trips per day on Sundays (64 return trips per week). According to UNRA, approximately 720,000 passengers use the service per year – however tis appears to be approximate to the operational capacity of the ferry (i.e. if every ferry was 100% full on every trip). Analysis based on UNRA data shows that approximately 130,000 passengers use the service per annum and that the service transports approximately 106,000 vehicles per year.

Figure 1: *Ferry operating Nakiwogo – Kyanvubu (www.unra.go.ug)*

Figure 2: *Ferry operating Nakiwogo – Kyanvubu (www.unra.go.ug)*

Figure 3: *Ferry Routes across Uganda*

Island Ferries

Figure 4: *Good platform and landing facilities at Bugoma*

Figure 5: *MV Pearl ferry in good condition with life jackets and good cleaning routines*

- Two passenger and vehicular ferry services operate to Bugala Island – MV Kalangala (which is operated by MoWT and runs between Entebbe and Kalangala), and KIS Ltd. (whom operate two ferries back and forth between Bugoma Island and Bukakata).
- The service between Entebbe and Bugala Island is run by MoWT and a one-way trip costs 14,000 UGX (1st class) and 10,000 UGX (2nd class). The service is less frequent with one return journey per day which leaves (Bugala) at 8 am and returns from (Entebbe) at 2pm
- KIS operates two ferries between Bugoma and Bukakata (MV Pearl and MV Ssese) which are in very good condition. 8 return trips are provided between Monday to Saturday, and 4 return trips per day on Sundays (total of 52 return trips). The typical passenger profile using the ferries are business travelers and tourists serving Western Uganda. The ferries are able to carry 200 passengers and 22 vehicles per trip which takes approximately 30 minutes. Ths consultant team were informed that 23,000 passengers use the service per week, however this appears to be the operational capacity (i.e. if the ships are fully loaded on all trips). Analysis of ferry counts received show that annual passengers are approximately 420,000 (approximately 8,000 passengers per week). In addition, two trips per day (one way) are exclusively operated for 'dangerous goods' e.g. fuel and charcoal. There is the potential to increase passenger services to 12 per day.
- Several PPPs have commenced ferry operations on the Lake (KIS Ltd. and Globology).

Cargo Services

- Cargo services operate mainly at Port Bell and Jinja Port. Current annual throughput in Port Bell is approximately 30ktons (2015), down from around 500ktons in the late 1990s (MTBS 2018).

Port Bell:

- Upon the consultant teams site visit to Port Bell it was clear the port was operational but in decline. The port operates under a fill and go system.
- The port has the capacity for one ferry to dock with roll on roll off rail wagons (22 wagons, 1250t in total, each wagon Tare 1.5t, payload of 39.3t and gross of 56.8t).
- The port has a large lorry park which functions at capacity when a ship has docked.
- There was no capacity for containers traffic at the port although an under-utilized Inland Container Depot constructed a World Bank project in 2015 exists at Mukono some 30-35km from Port Bell connected the existing metre gauge railway line.
- The port still operates rail ferries vessels carrying freight to and from Mwanza. The failure by Rift Valley Railways and the Kenyan Government to maintain or rehabilitate the existing MGR line connecting Kisumu to Mombasa means the port has lost up to half its international trade. There is some restoration of trade with the opening of an oil pipeline at Kisumu but this is limited to the transfer of petroleum products to Uganda and other inland countries

in the region. There is no longer a passenger service that operates since MV Bukoba sank (around the year 2000).

- The port has an operational floating dry dock that was recently repaired. A Kenya company (called SECO) is conducting ship repairs at the dry dock.
- Port Bell would be difficult to expand due to resettlement issues in the immediate area and likely land disputes.

Port Bell lorry park area

Roll-on / roll-off ferry with railway tracks

Port Bell crane

Dry port area

Port Bell lorry park area

Roll-on / roll-off ferry with railway tracks

Figure 6: *Port Bell Context*

Jinja Port

- Jinja port is operated by the Uganda Railways Corporation (URC).
- Like Port Bell, Jinja is also operating under capacity and in a typical busy month there would be four ships. There are five ships operating including MV Uhuru (to Kenya), MV Umoja (Tanzania) and MV Indi (Uganda)
- There is a docking area for large (wagon ferry) ships and also Jetty area for fuel tankers.
- Port Jinja is a deep port – at 7 – 8 meters, and is considered an international standard port.
- Typical exports include: wheat, ground nuts and rice. Typical imports include machinery, manufactured goods, fabrics etc. Previously, Jinja used to receive raw palm from Buvuma island.
- The rail line (meter gauge) is not functioning at the Port.
- There is no offloading equipment (cranes, conveyor belts etc.) available and the service is replaced by manual laborers (bimbika) – this does have the benefit of providing labored wage.
- There is a yard with a capacity to hold 100 wagons, and a slipway for ship repairs.
- The port area is 20 hectares with sufficient room for expansion
- The National Fisheries Resource Research Institute (NaFIRRI) and the anti-smuggling unit are operating at the Jinja Port.

Graveled jetty area

Operational signaling posts at Jinja Port

Figure 7: *Jinja Port Context*

Cargo Volumes have declined in Lake Victoria, and MTBS (2018) mainly attributed this to the following;

- Poor access road and rail infrastructure to the ports;
- Competition from improved accessibility of the towns around the lake;
- Regular dredging activities are required at all ports to maintain accessibility;
- Inadequate and dilapidated port machinery and equipment;
- Poor safety standards for lake navigability and maritime safety;
- Poor implementation of Global best practice systems on Lake Victoria; and
- Lack of an integrated Lake Transport Development Plan

2.2. Opportunities for Economic Revival

Uganda is located at a strategic position in the East and Central Africa region – connecting Kenya, Tanzania, South Sudan, Eastern Democratic Republic of Congo, Rwanda and Burundi. Therefore, the development of IWT in Uganda will largely stimulate the development and utility of IWT in the East African (EA) region. Under this circumstance, interest should not only be in the decision-making process of IWT in Uganda since it is not only a domestic activity but also an important regional issue at the EA Community level.

Water transport has a high potential as a transport mode due to its ability to provide low cost access to the islands and remote shoreline locations on Lake Victoria. It can also act as an essential component of the national road network through the provision of 'road bridges' between individual road systems severed by water. Like roads, water transport facilitates the movement of agricultural produce and fish products to markets and processing centres

IWT is an environmentally friendly mode of transport. The use of IWT instead of road transport is estimated to substantially reduce CO2 emissions and lower diesel consumption. The currently designated ports on L. Victoria in Uganda are Jinja, Port Bell and Bukasa (ongoing development, not yet operational). The planned ports are at Ggaba, Bule and Butebo. Prominent landing sites include those on Bukakata, Luku, Nakiwogo, Kyanvubu, Kiyindi and Kirongo.

Although IWT–related elements of policies, regulations and laws have been recently formulated in several Government documents, there remains a lack of genuine Inland Water Transport policy, regulations and laws as would be expected as part of the National Transport Policy, Regulations and Legal Framework. Such provisions would aim at reinstating the role that the IWT Sector can play in the national transport system and beyond that, in the economic and social development of the country. As such, IWT is currently in need of a serious review of soft aspects of policy, laws/regulations and definition of a new overall strategy and preparation of a compelling business case for its promotion.

Within the JKE focus area, traffic congestion is on the rise due to increased urban population growth, increased stock in growth of vehicles and therefore interurban transport movement is riddled with delays and inefficiencies. The advantages of integrating inland water transport in the entire transport spectrum has not been fully progressed nor realised and the potential for IWT transport to turn around congestion is therefore enormous. In terms of cargo movements, it was established that freight traffic arriving in Port Bell in 2015 and 2016 was only an average of 30,000 tones whilst passenger traffic between Entebbe to Kalangala was in the region of 50,000 per year. Both these figures demonstrate the under utilisation of inland water transport.

Tourism potential for IWT is significant with the recorded passenger traffic on Lake Victoria between Entebbe and Kalangala peaking at 80,000 in 2017 using 2 ferries making 4 trips a day. At Port Bell and Jinja passenger traffic and tourism potential is constrained by the lack of operating services and infrastructure to support them. Growth in business and commerce in Kalangala, Entebbe, Jinja and other outlying islands can be boosted through better investment in mass movement to facilitate tourism in such areas.

Inland water services in Uganda has three main components, namely:

- Wagon ferry services on Lake Victoria,
- Short-distance vehicle ferries operating 'road bridges',
- Informal services by small boat or canoe.

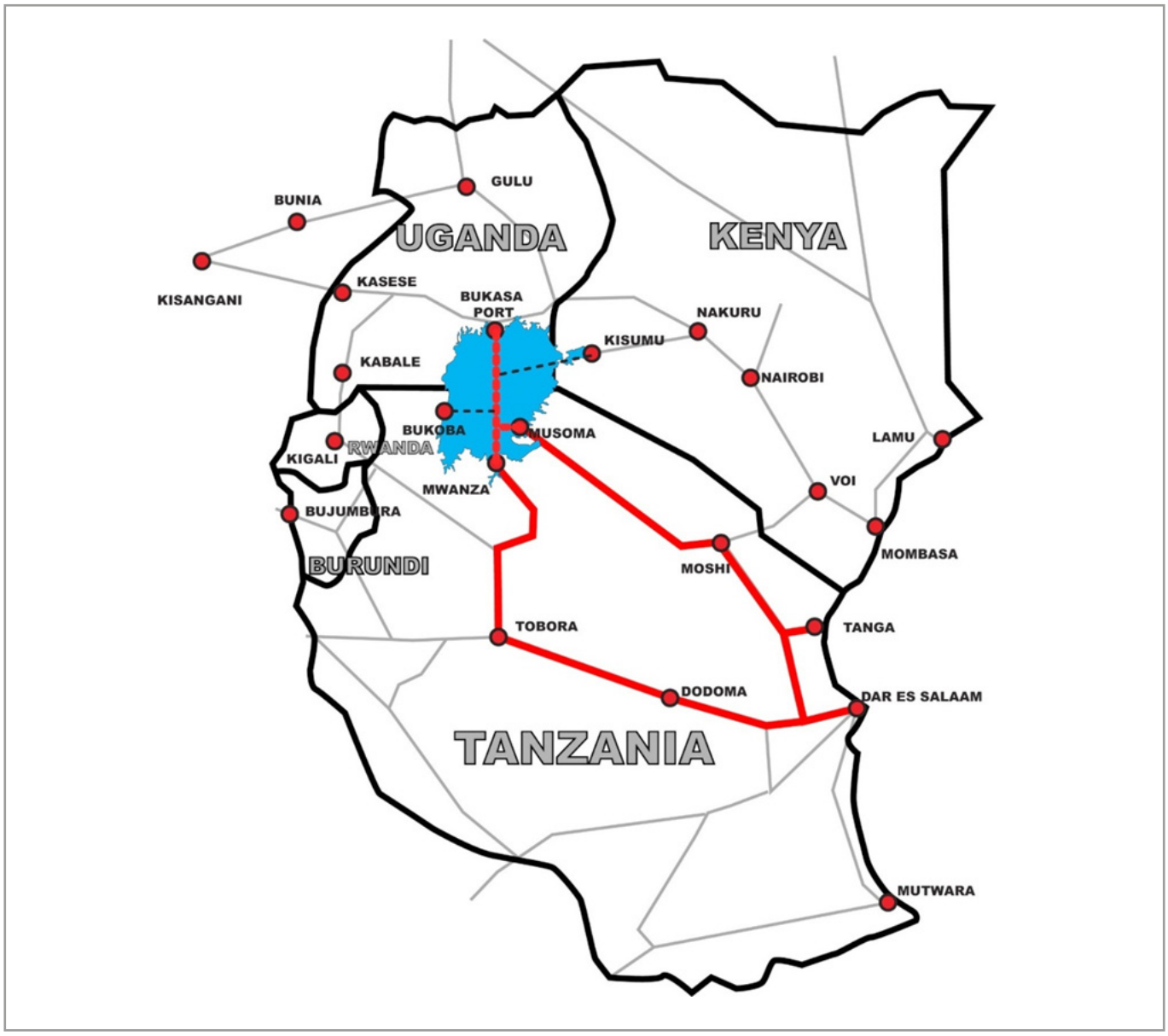


Figure 8: *The map depicts the multi modal nature of the existing lake ports and how they are interlinked with the corridor road system*

The new port that is going to be built in Bukasa will be integrated into the same road corridor system with the following potential benefits.

- Low costs of cargo transport in comparison to rail: as things stand at present, road transport is more cost-effective than rail transport. This is particularly the case if the congested road connection to Mombasa can be avoided. In the longer term, if current efforts at rehabilitating and upgrading the existing railway and associated goods transfer infrastructure are successful, use of the railway could become more cost effective, prevent the buildup of local road congestion and reduce environmental impacts. Therefore, some consideration might be given in the longer term to building a railway spur, whether from the existing MRG, or SRG should funding become available, and maritime transshipment facilities at Bukasa.
- By reviving the Central Corridor routes from Kampala across Lake Victoria, via the Tanzanian lake ports of Mwanza and Musoma, an alternative route will be created to the congested. Mainly road transport-based Northern Corridor from Kampala via Nairobi to Mombasa. This can reduce the over-dependence on the Northern Corridor and the rapidly growing future volumes of transit cargo to and from Uganda can be transported quickly (Gauff GmbH 2017). The development of the Central Corridor via Lake Victoria will also serve as an alternative route for Uganda to mitigate the economic risks of being a land-locked country, enhance regional integration, and promote regional trade in East Africa (Gauff GmbH 2017).
- Marine transport would reduce marginal economic costs derived from reduced road transport – this includes lower infrastructure costs due to maintenance of roads, lower environmental costs and less accidents on the main roads.

- MTBS (2018) identified a number of cargo types that are well suited for lake transport and constitute substantial future import/export flows between Uganda and Tanzania/Kenya.
  - > Mineral Resources
  - > Cement
  - > Oil & Gas
  - > Iron & Steel
  - > Transit Containers
- Growth and revival of Island Transport allows for increased opportunities for islanders to grow businesses, access markets, education, health facilities, and fulfill tourism potential.

2.3. Impediments to Sector Growth

Despite IWT being such an asset for Uganda, during the past three decades, the country's economy has not been able to reap the benefits that it can bring in terms of economic growth and poverty reduction in comparison to other modes of transport. On the contrary, since the 1980s, IWT cargo traffic has largely stagnated or dropped and IWT passenger traffic has only picked up in recent years largely due to private sector interventions.

Over the past three decades, Government has focused on investment in road transport and presently over 95% of the country's trade and people movement is by road. On the other hand, over the same period sub-sectors such as rail and IWT have suffered decline due to under-investment and neglect. As such, both these modes currently provide less than 3.5% of the country's mobility needs yet they have a high potential especially for bulk movements. The continued under-investment in these sub-sectors, specifically IWT, means that road transport is burdened by a disproportionate share of bulk trade movement which results in not only transportation inefficiencies but economic loss from premature road failures.

Empirical evidence shows that no single transport mode has been solely responsible for economic growth of any country. Instead, modes have been linked (multimodality) with the economic functions they support and geography in which growth was taking place. Therefore, an effective multimodal transport system where there is integration, and cross interplay, by the various modes of transport including air transport, marine transport and land transport is what the country needs to develop economically.

Much of the physical infrastructure in the lake ports is currently in a dilapidated state. All the ports are based on traditional general cargo traffic except for the ports of Port Bell, Jinja, Kisumu and Mwanza which were initially developed for rail wagon RoRo traffic and equipped with a link span. None of the ports on Lake Victoria has container handling equipment.

Ferry Services operating in Uganda

Most of the water vessels on the lake are operated by the private sector, except for a few ferries operated by Government. Formal ferry services operated on the lake are summarized in Table 2 below.[1]

Lake/River	Operator	From	To	Vessel
L. Victoria	UNRA[1]	Bukakata (Masaka)	Luku (Ssese Is.)	Pontoon
L. Victoria	UNRA	Nakiwogo (Mpigi)	Kyanvubu (Mpigi)	Pontoon
L. Victoria	UNRA	Kiyindi (Mukono)	Kirongo (Buvuma Is)	Pontoon

Table 2: *Ferry services operating in Uganda*

1 From our field visit, we understand this free service is now operated by Kalangala Infrastructure Services.

Informal services, found on Lake Victoria, are generally operated in open canoes, some with outboard motors, with carrying capacity of up to about thirty passengers. Passengers, goods and livestock are commonly carried together, and overloading is frequent. From time to time these vessels capsize, especially when hit by storms on open lake waters, with consequent loss of life.

Statistical information shows challenges in current transport setup as follows:

- Kampala Capital City Authority (KCCA) estimates that at least 24,000 man-hours are lost every day by commuters due to traffic jams within Kampala, estimated at an economic monetary loss of over UGX3 Trillion (appx GBP 600million) annually;
- Tourism potential for IWT is currently not being realised and would be greatly boosted once passenger services are restored at Port Bell and Jinja;
- In terms of cargo movements, it was established that freight traffic arriving in Port Bell in 2015 and 2016 was only an average of 30,000 tones whilst passenger traffic between Entebbe to Kalangala was in the region of 50,000 per year. Both these figures demonstrate the underutilization of inland water transport.

The following risks were identified by MTBS (2018) as potential impediments to the growth of Inland Water Transport on Lake Victoria.

- **Demand** – Access and subsequent demand for cargo and ferry services are severely impacted by the current constraints in developing large-scale infrastructure projects such as the Standard Gauge Railway (SGR) and connecting port infrastructure.
- **Legal** – Currently no merchant shipping act to organize port and shipping activities in Uganda. This is critical to ensure adherence to international standards and requirements
- **Technical** – potential ferry services and ferry landing sites are determined based on high level water depth assessments, due to the lack of up to date and detailed water data
- **Lack of adequate aids to navigation** and up to date bathymetric charts hampers safe navigation on the lake
- **Legal/Social** – Land ownership of some of the envisaged landing sites may prohibit (cost-efficient) development of the land
- **Social** – Some envisaged landing sites have cultural value and therefore may prohibit their development There may also be land rights issues and associated conflicts and compensation concerns.

3.0 SITUATIONAL ANALYSIS

3.1. Infrastructure and service management gaps, opportunities and needs

A lack of reliable infrastructure provision and timely maintenance of facilities has crucially affected the efficient performance of the IWT sub sector. The summary of immediate gaps in IWT reveals the following: -

Infrastructure issues:

- Port/landing infrastructure and vessels are in poor conditions and there is no funding to develop them;
- Infrastructure to support modal shift / transfer (like roads, storage facilities, cranes, parking yards, etc.) is mostly absent.
- Lake and water transport in general has declined in significance compared to the times when the road network system was completely underdeveloped
- Most of the hard infrastructure is in poor condition due to neglect and lack of maintenance;

Policy and planning concerns:

- The investment plan under the national transport master plan has been largely ignored and is now out of date;
- There is no specific water transport policy as such;

Regulatory and standards issues

- There is no dedicated body or department responsible for IWT Regulation;
- There are numerous disjointed laws regarding IWT that are both obsolete and outdated;
- The enforcement of applicable regulations is lackluster There are no emergency rescue services on the lake;
- There is a lack of safety standards i.e. no way to ensure vessels are fit in design, construction and condition as well as equipment to encounter the ordinary perils of voyage;
- There is a lack of a safety culture in all aspects from Government to users e.g., there are no mandatory inspections;
- There is limited environmental concern about oil spills;

Maritime management and service delivery concerns

- There is an overall perception that that IWT is slow and old fashioned;
- There is a general lack of accountability and corruption is prevalent.
- There are frequent incidences of overcrowding and overloading on most vessels which also lack safety equipment;
- Government involvement in service delivery is limited;
- High cost of transport to persons living near the lake;
- Island dwellers are mostly isolated due to lack of water transport services;

Capacity, skills and information issues

- There is a lack of appropriate human and institutional capacity to manage the sub-sector;
- As overall lack of qualified, skilled and experienced manpower (deck officers) to navigate most vessels using the Lake;
- The advancement in technologies is unexploited;
- There is a lack of an appropriate and up to date database on vessels and infrastructure condition;
- There is no national marine institute to train Ugandans and more so that is not a requirement by law;
- There are limited or no navigation aids (navigation charts);

Environmental concerns

- The invasion of the water hyacinth which hinders navigation on Lake Victoria, despite efforts made to tackle the problem
- Fall in water level on the Lake resulting from reduced rainfall and inflows into the lake as well as increased outflows at Jinja.
- Siltation of the lake, arising from the high deforestation and land degradation in the Lake basin

3.2. Legislative Context

Regulation is the responsibility of MOWT, through the Transport Licensing Board (TLB). All vessels in commercial service are required to be registered with, and regularly inspected by TLB. The Board suffers, however, from serious shortages of personnel and funding, and only very limited activities can in practice be carried out. Although there is also a Marine Police, charged with enforcing regulations, (e.g. on control of over-loading), this force is similarly deficient in capacity and therefore unable to exercise the required level of control. It is worth noting that in Uganda there is no single organization responsible for maritime administration.

TLB is also responsible for domestic implementation of EAC legislation for Lake Victoria, working closely with the Lake Victoria Basin Commission (LVBC).

Much of the inland water sub-sector's legal and regulatory framework, often dating from the 1960s, requires revision.

The relevant laws applicable to IWT in Uganda are: -

- **The Constitution of the Republic of Uganda:** Government shall hold in trust for the people and protect natural lakes, rivers (and) wetlands... and "the state shall ensure that all Ugandans enjoy rights and opportunities and access to clear and safe water.
- **Inland Water Transport (Control) Act Re, 2000:** Sets regulations for licensing of ships (provides for a "Board" to mean TLB which is mandated to license and inspect all vessels including passenger and cargo boats used for IWT.
- **The Ferries Act of 1905 Cap 355 Laws of Uganda:** Provides for the use of special flags, forfeiture of license, fees and auctioning of rights to run a ferry.
- **The Fish Act of 2007 Cap 197 Laws of Uganda**
- **NEMA Act Cap 153 Laws of Uganda**
- **The Traffic and Road Safety Act Cap 361:** Provides for the composition of the Transport Licensing Board (TLB) which is appointed by the Works and Transport Ministry.
- **The Vessel Registration Act of 1904 Cap 349:** Establishes the obligations to register all classes of vessels.
- **The L. Victoria Transport Act of 2007: -**
  - The act has provisions for the construction, survey, registration and licensing of all vessels used on the lake, for the safety of passengers and cargo, for the competency of masters and crew and other related matters.
  - The Act vests specific functions in the L. Victoria Basin Commission and relevant units in partner states with respect to standards, development and regulation of maritime safety and security.
  - Implementation is by the L. Victoria Basin Commission and one of these functions is to formulate policies and programs on maritime safety and security and also to coordinate investigations.
  - The Act also designates TLB as the Maritime Administration Unit whose duties include
    - Enforcing safety of navigation including compliance with construction regulations, safety standards and safety navigation regulations;
    - Conduct investigations relating to accidents on the lake including wrecks and any other maritime causalities.
- **The Rivers Act of 1907 Cap 357**
- **The UNRA Act 2006**
- **The URC Act 1992:** - URC is mandated to provide inland waterway transport services. This law was enacted to facilitate the construction, operation and maintenance of railways in Uganda, including marine and road services. The Act also provides for the establishment and management of the URC which is vested with powers of inspection of both master and vessels. The Act further prohibits the embarking and disembarking of any passengers or goods at any place other than on islands, waterways, ports declared under Section 71. However, the same Act exempts small boats from provisions of this section.
- **The Water Act Cap 152**
- **The URF Act**
- **The Nile Basin Initiative:** - is a legal entity designed to promote development and enforce regulations on projects utilizing the R. Nile water.
- **The Water Act:** - provides for the use, protection and management of water resources; the constitution of water and sewerage authorities; and the development of water supply and sewerage undertakings.

The relevant regulations applicable to IWT in Uganda are: -

- The Lake Victoria (Maritime Safety Reg) 2010
- The Inland Water Transport (Safety Navigation) Rules 1959
- The Fish (Beach Management) Rules 2003 Statutory instrument No. 35 of 2003

The relevant Regional Instruments applicable to IWT in Uganda are: -

- Treat for the Establishment of the EAC 1999.
- Tripartite Agreement on IWT between the Government of Uganda, the Government of Tanzania and the Government of Kenya.
- Protocol for the sustainable development of Lake Victoria Basin.

The International Instruments applicable to IWT in Uganda are: -

- International Convention for the Safety of life at sea and its protocol, 1978.
- International Convention or Standards for Training, Certification and Watch Keeping for seafarers, 1978.
- International Safety Management Code.
- United Nations Convention on the law of the Sea, 1982.
- The revised Africa Maritime charter of 2006.

The policies and strategies that relate to IWT in Uganda are: -

- The Uganda Water Action Plan (1995): - provides the overall guidelines and strategies for the management, development and protection of water resources;
- The National Water Policy (1999): - whose objective is to "manage and develop the water resources in Uganda in an integrated and sustainable manner, so as to secure and provide water of adequate quantity and quality for all social and economic needs of the present and future generations with full participation of all stakeholders.

The main public institutions in the sector responsible for IWT are:

- The Ministry of Works and Transport (MoWT), which has overall responsibility of the sector;
- The Transport Licensing Board (TLB), which is a department under the MoWT primarily responsible for IWT vessel licensing.

3.3. Spatial Planning and Urban Linkages

This section provides an overview from a spatial planning perspective of the environment of the ports and key landing sites as identified from an inspection of the satellite imagery. It is based on a desk review of available documentation, mapping of the study area using satellite imagery and other data sources and a field visit by the study team. Accepting some data constraints, this part of the study looks in some detail at the existing conditions of the identified sites, the specific and immediate area in which the littoral infrastructure sits and with which it engages. This context analysis covers issues such as site location, natural features, land uses, land and water traffic routes and local livelihoods.

Providing some understanding of this wider context is intended to facilitate informed decisions on how to capitalise on the opportunities each site provides and minimise the constraints to its potential development. These concerns are particularly challenging in urban settings, characterised by high population density and a variety of social and economic activities in close proximity to one another (IRC, 2017),[2] The type of urban context is also important. The urban environment in Port Bell in the Kampala City area is significantly different from the area surrounding the ferry terminal in Kalangala, a small town on Bugala Island, for example.

2 International Rescue Committee (2017) Urban context analysis toolkit. Guidance note for humanitarian practitioners. IIED, London

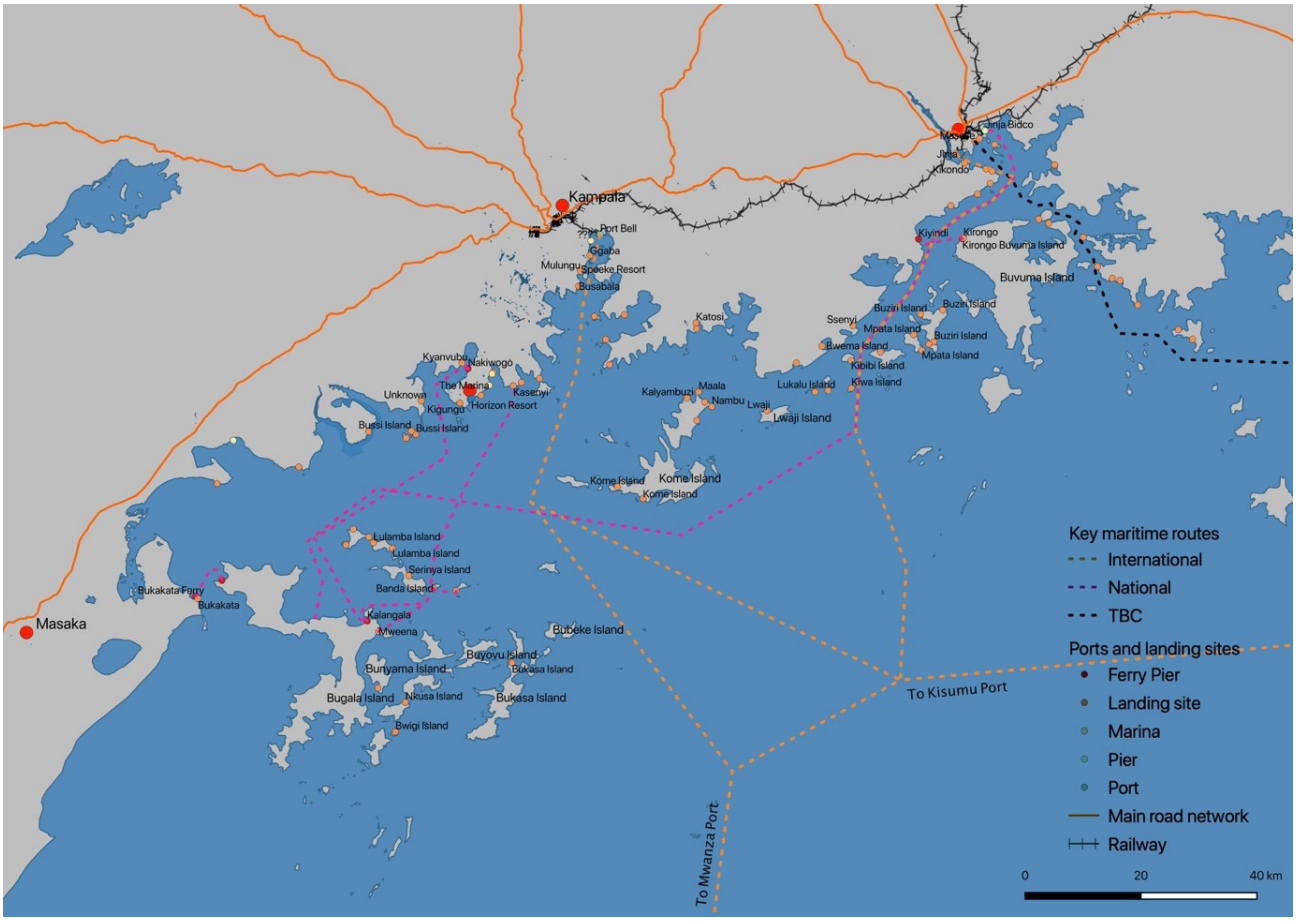


Figure 9: ***Landing sites and key water transport routes in the study and adjacent area***

The initial exercise consisted of mapping existing ports and landing sites based on available data and inspection of the satellite imagery. A wide variety of infrastructure facilities and context has been identified, from small ports such as Port Bell to landing sites without any infrastructure, including marinas and piers for ferry passengers. Figure 10 shows the location of sites identified through the initial mapping exercise. The preliminary mapping identified both the major and smaller landings sites with further information gathered during the field visit.

The key sites included different types of facilities in different existing physical and geographical contexts, with varying current and potential importance for each local area. For example, the rehabilitation of Port Bell (or the construction of the proposed Bukasa Port nearby in Kampala) will have a significant impact at both local level and beyond. Consequently, each facility is subject to further analysis at an appropriate spatial scale.

There is a particular focus here on the two largest ports in the country, Port Bell in Kampala and Jinja port. However, terminals at each end of significant ferry routes also need to be highlighted. For example, the ferry service between the Nakiwogo landing site in Entebbe and Kalangala on Bugala Island is a key route serving the Ssese Islands with significant potential to support the growing tourism sector. Both ferry terminals are analysed here. The fishing industry plays a strong role in the economy of the region. Two large landing sites that are key fish markets hubs are examined: Ggaba in Kampala, and the landing site in Kiyindi, south of Jinja, again with varying geographical contexts.

We also provide an overview of the site of the proposed Bukasa Port based on the location identified in the Draft Final Master Plan Report published by the Ministry of Works and Transport in 2017.

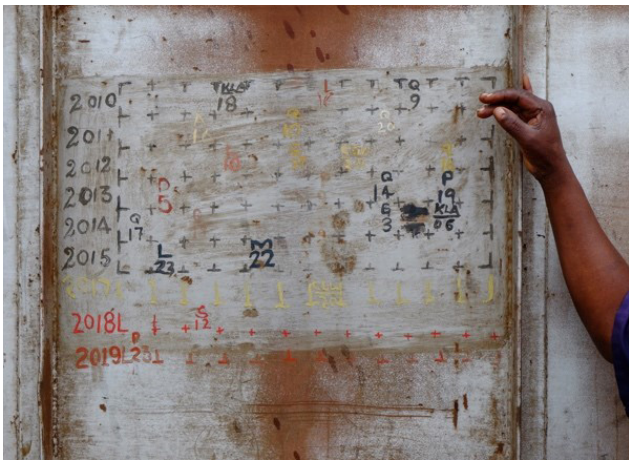






Figure 10: ***Port Bell Context***

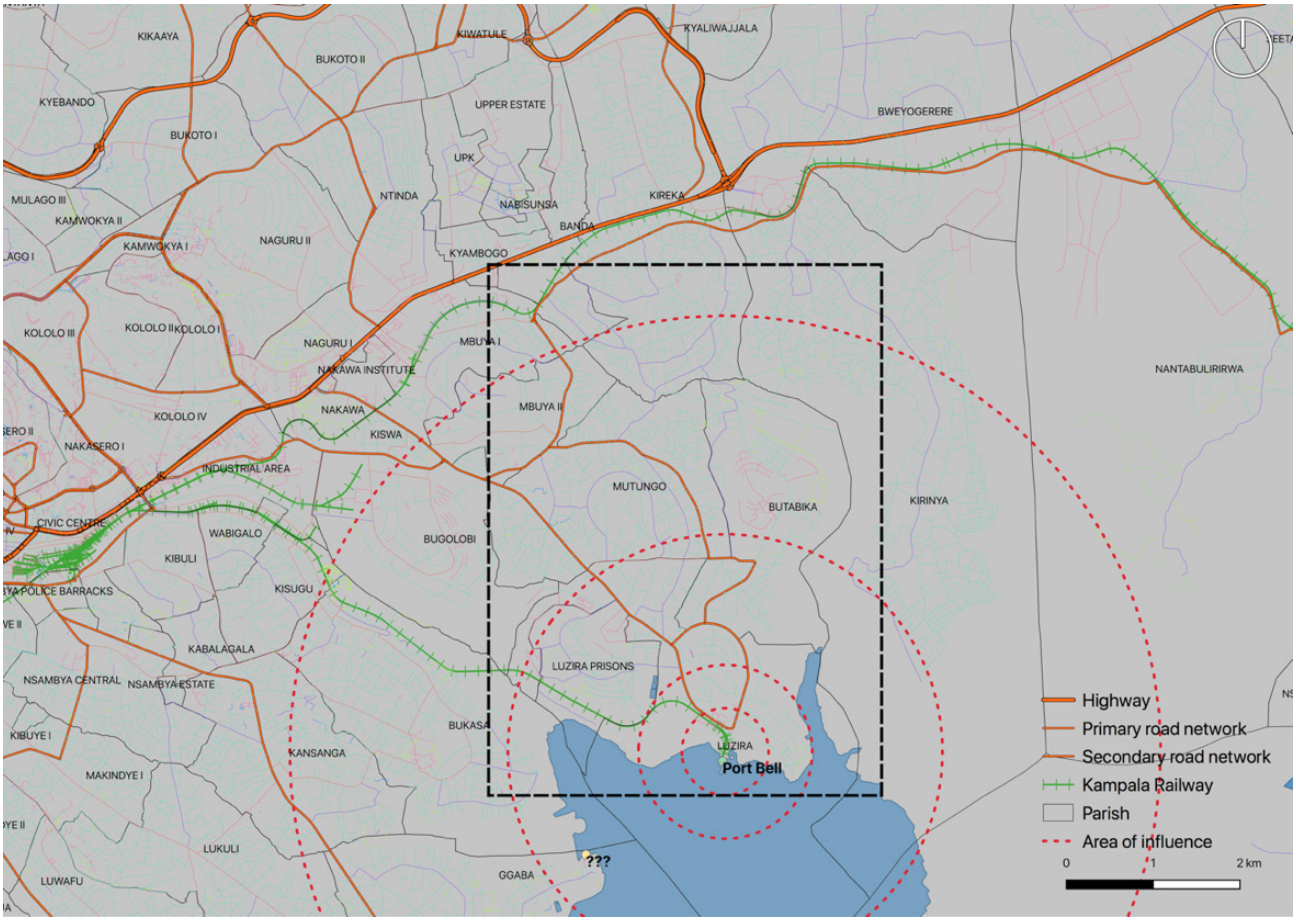


Figure 11: ***Location map with key transport links***

Port Bell, the main port of Uganda, lies in the eastern part of Kampala Capital City Administration, 11 km east of the city centre. It is located at the south end of a narrow peninsula in Luzira Parish, part of Nakawa Division, one of the five administrative divisions of KCCA.

The Port Bell pier was first opened in 1908 as an air/sea port and used by the Imperial Airways as a flying boat stopover between Southampton and Johannesburg (Vision Reporter, 2012).[3] It mainly served as a landing port for goods between Kisumu and Kampala. In 1913, a six-mile direct rail link to Kampala main train station was built, with the railway serving to increase the role of Kampala as a commercial centre (O'Connor[4], 1965). In 1960s the pier was developed into a rail-wagon terminal. The port also has one cargo berth (World Bank, 2015).

The pier, once served by five wagon ferries carrying up to 45,000 tons per month. Apart from the more limited rail-wagon services, today it only serves small private boats carrying fuel and general cargo (Vision Reporter, 2012). According to a World Bank Project Information Document (World Bank, 2015), the port handled over 400,000 tons of cargo in 2004 while a decade later handled a range of 10,000 to 80,000 tons per annum, depending on the needs of clients.

3 Vision Reporter (2012) Port Bell rehabilitation to ease water transport. New Vision, 24th March. In: https://www.newvision.co.ug/new_vision/news/1300449/port-bell-rehabilitation-ease-water-transport

4 Railways and Development in Uganda - A Study in Economic Geography; The East African Institute of Social Research; A. M O'Connor, 1965

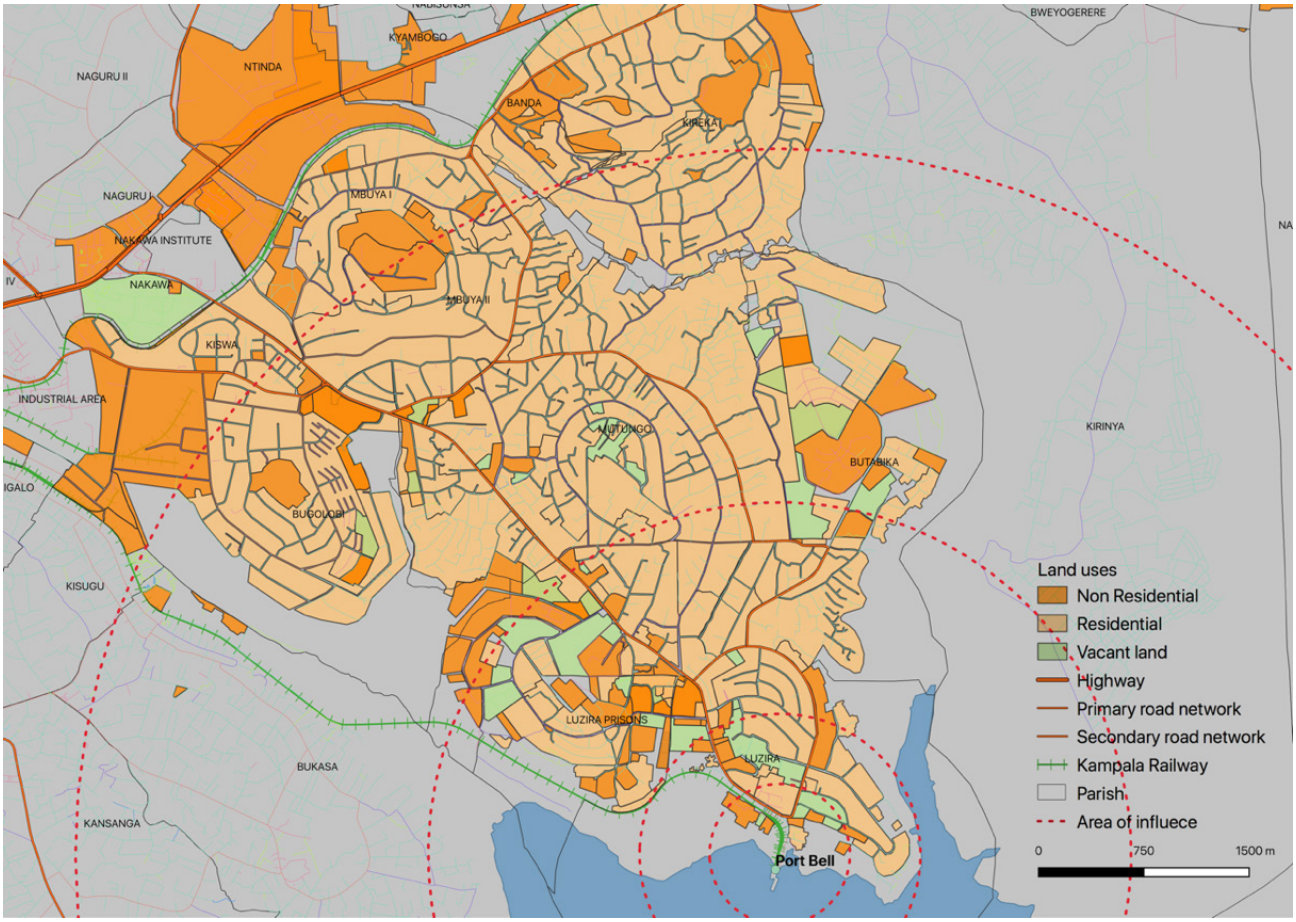


Figure 12: ***Port Bell – context analysis of catchment areas of Port Bell up to 1 km from the port***

The railway was disused for more than ten years and described in the 2018 MTBS final report as derelict and being encroached upon (MTBS, 2018:30). However, following a recent government investment of UGX 1 billion (Muwanga, 2018),[5] it has been rehabilitated. The rehabilitation of the railway is part of the Central Corridor Project. This aims 'to improve movement of cargo to and from the port of Dar es Salaam through Mwanza port in Tanzania.' (Muwanga, 2018). The rail line carried 40,000 tons of goods between Kampala and Port Bell in the fourth month period after it was reopened (The Independent, 2018).[6] While goods movement continues between Port Bell and Mwanza, the earlier very intensive use of the port depended on the additional ferry traffic to Kisumu. This has been curtailed because of the failure at the Kenya end to maintain and keep open the existing metre gauge railway in anticipation of the extension of the new standard gauge line from Nairobi.

Port site and immediate context: According to a World Bank document (2015), the port site covers about 0.7 ha 'including buildings and the pier but excluding the rail shunting yard located north west of the port.' The MTBS report (2018) states that the port includes more than 2 ha of land under the control and management of Uganda Railways Corporation. This report highlights the lack of operating space (especially for trucks) as the main problem facing the facility (MTBS, 2018).

The port is 6 km away from the Kampala-Jinja Highway, connected by Port Bell/New Port Bell Road, a two lane surfaced road that meets the expressway at a marked busy junction (without traffic control devices). The road terminates at the port entrance without a clear turning point for trucks. When the team visited the port facilities in late October 2019, the road was waterlogged, with the surface breaking up in places and in clear need of improvement. As in many places in Kampala, traffic congestion is major issue that needs to be addressed if the port is to flourish. Road rehabilitation and upgrading and better public transport would help considerably.

5 Muwanga, D. (2018) Uganda: Port Bell to Kampala Rail Line Due to Re-Open. The Observer, 23rd April. In: https://www.observer.ug/news/headlines/57532-port-bell-to-kampala-rail-line-due-to-re-open.

6 The Independent (2018) Kampala-Port bell railway line profitable – URC. The Independent, 14th December. In: https://www.independent.co.ug/kampala-portbell-railway-line-profitable-urc/

Figure 13: *Port Bell – context analysis of catchment area within 500m from the port*

Near to the port, on the east side of Port Bell Road, there is an informal settlement with busy roadside commercial activities. The settlement occupies an area of 1.5 ha with an estimated population of around five hundred inhabitants. The village has doubled in size in the last ten years relying on port-related activities for its commercial survival and thus linked to the lake for its livelihoods. Informal ship repair activities were found next to the port as well as sand transshipment. Sand is extracted and brought to the port by informal boats and loaded on trucks for its commercial disposal. A large number of youths were engaged in the business. Any potential port expansion into the area currently occupied by informal residents and businesses should involve discussions and agreement with the local residents for their relocation.

Immediately adjacent to the north of the settlement is a private parking area for trucks, with spaces for 20+ large lorries. Other buildings identified in the immediate area around the port is a large DHL warehouse complex, located 350m along the main road. This is the only site developed between the railway and the lake shore. On the north side of Port Bell Road lies a large industrial site (Uganda Breweries Limited), established in the area in 1950 (O'Connor, 1965).

East of the Brewery site and northeast of the port there is a large vacant site of about 4 ha, between this site and the lorry park lies another vacant plot of 0.8 ha with a group of building to its east (Figure ... provides a detailed map of the area).

The area between 500 m and 1 km around the port is mainly characterised by industrial and commercial developments along the main road with some pockets of informal housing areas. The remaining area within the 1 km radius is dominated by high income housing, mostly one or two storied villas.

The catchment area within 1 km of the port lies entirely within Luzira Parish which has a total population of around 19,500 (UBOS, 2015), with only about one third of that living within one kilometer from the port. The population living within a wider catchment area of 2.5 km radius from the port is estimated at 43,000 inhabitants (UBOS, 2015) across three parishes: Luzira Prisons and Butabika, about half the population of which within the catchment area.

Both commercial and industrial activities continue along the Port Bell Road to the north with a mixture of low and high income residential areas, mostly east of the road.

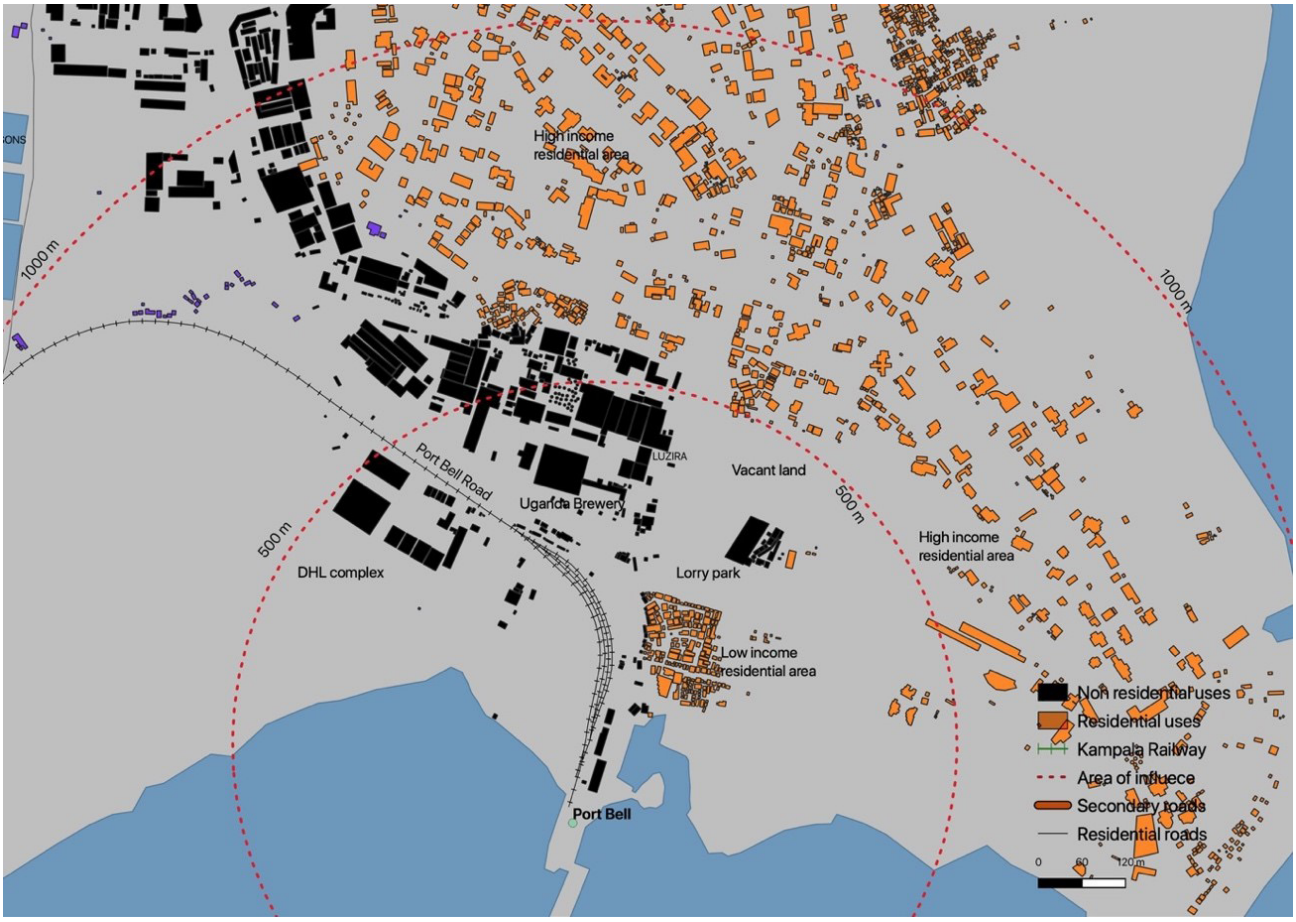


Figure 14: *Port Bell – catchment area within a 1 km radius of the port*

1. Jinja Pier and Port

Jinja town is located in Jinja District, about 80 km east of Kampala, on the north shore of Lake Victoria, close to the source of the White Nile. As per the 2014 Census (UBOS, 2015), Jinja Municipality had a population of 76,000 inhabitants. However, the continuous urban area now extends beyond both the municipality and Jinja District. It has spilled over into Buikwe Division to the northeast of Jinja municipality and onto the west bank of the Nile River, engulfing towns such as Mbiko and Njeru, both located in Butembe District. The total population of the continuous urban area exceeds 300,000 inhabitants (UBOS, 2015).

Jinja is located in an agriculturally prosperous zone and is well connected to Kampala by Kampala-Jinja Highway, a single carriageway, two lane road due to be supplanted by a new Kampala-Jinja Expressway to be constructed through a Private-Public Partnership. Prospective funders including the African Development Bank, the French Development Agency (AFP) and led by the World Bank's International Finance Corporation. Firms and consortia from China, France, Portugal, South Korea, Austria, South Africa, India and Turkey are amongst the bidders for this $1 billion+ project, at the time of writing said to be in disarray because of claims of bribes and corruption.

Jinja has also good road connections to the northeast region of Uganda and is two hours' drive from the Kenyan border. According to Fallon (2016),[7] 'JInja, which has two existing hydropower plants, four steel companies, two international hospitals, and one international school, as well as the first shipyard in East Africa and a car assembly plant that is under construction, is poised to grow rapidly'.

Jinja Pier is 4 km from the highway that connects the city with Kampala. It is also linked by rail to Jinja Railway Station, at a similar distance. Jinja Pier was built in 1912 and it was the main station and end of route of the Busoga Railway, Uganda's first. In 1928 a second station was built, now Jinja main railway station. In 1965, O'Connor noted that the port in Jinja was once the busiest port in Uganda but was closed soon after the city was linked by rail to Kenya.

7 Fallon, A. (2016) In Uganda's Small but Fast-Growing Cities, 'One Planner Is Not Enough.' Citylab, 27 April. In: https://www.citylab.com/design/2016/04/in-ugandas-small-but-fast-growing-cities-one-planner-is-not-enough/480141/
8 https://crossculturalfoundation.or.ug/wp-content/uploads/2019/05/Jinja-Historical-Buildings-and-Sites-Map-May-2019.pdf

There is no available data on the port activities during the following decades. However, a 2015 document from Jinja District Local Government[9] noted that the pier was non-operational with sources indicating that the port had not been in use since 2007 (The East African[10], 2018). Before 2006, the then Mayor of Jinja Mr. B. Kezaala, noted that both the municipality and the district were collecting considerable revenue from the pier but the transfer of ferry services to Kampala caused a drastic fall in revenue collections (Mukyala, 2006).[11]

Figure 15: *General view of Port Jinja*

Figure 16: *Pier at Jinja*

Figure 17: *Unused railway at Jinja Port*

Water hyacinth at Port Jinja

Port manager showing hand-made plan of the port

Figure 18: *Port Bell Context*

9 https://jinja.go.ug/sites/default/files/JINJA%20DISTRICT%20DDP%20II%202015%20to%202020%20%282%29.pdf
10 https://www.theeastafrican.co.ke/business/Uganda-now-moving-to-revive-transport-and-trade-on-Lake-Victoria/2560-4852682-64cfe2z/index.html
11 Mukyala, E. (2006) Mayor wants ferry services in Jinja. New Vision, 11th December. In: https://www.newvision.co.ug/new_vision/news/1135144/mayor-ferry-services-jinja

Although not now completely disused, there is very little traffic currently using the port. The MTBS report (2018) describes the port and its railway infrastructure as in very poor condition. There are several reports of plans to rehabilitate Jinja Pier (MoWT, 2013;[12] Budget Framework 2019/20;[13] World Bank, 2015[14]) but improvements are yet to be carried out.

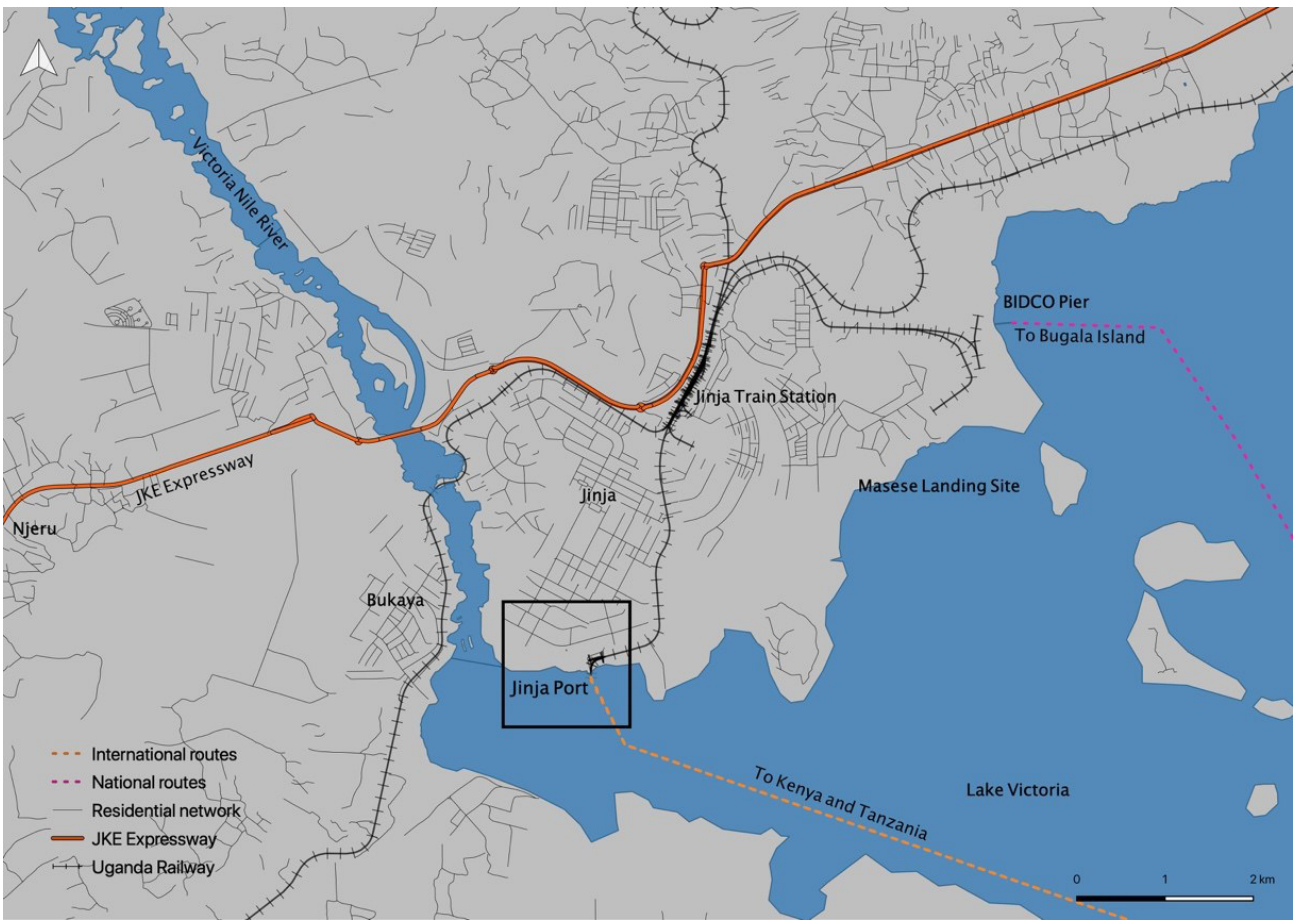


Figure 19: ***Jinja Port – map of pier and its wider area***

Jinja Port site and immediate context: The rail-wagon terminal is located on the estuary of the Victoria Nile. The area of the port is around 0.4 ha excluding the rail shunting yard located to the north east (MTBS, 2018). However, a URC official at the port stated that the total area of the port covers 20 hectares. An analysis of satellite imagery (given that certain plot boundaries are unclear) estimates the maximum size at 15 hectares.

12 http://www.comcec.org/en/wp-content/uploads/2016/05/7.pdf
13 https://budget.go.ug/sites/default/files/Sector%20Budget%20Docs/2019-2020_SectorBFP_04_WorksandTransport_12_14_201811_17_44AM%20%281%29.pdf
14 World Bank (2015) Lake Victoria Transport Program – SOP1. In: https://projects.worldbank.org/en/projects-operations/procurement-detail/OP00034858?id=OP00034858&lang=en&print=Y

Figure 20: ***Satellite image of Jinja Pier***

Jinja Pier is in Old Boma Parish, in the southwest corner of the municipality of Jinja. The parish is one of the four parishes that form the Central Division. Old Boma Parish has a population of 6,750 inhabitants (UBOS, 2014) with about 1,000 people living within a 500 m radius of the pier.

The pier is accessed by an unpaved road with no construction within a 100 m radius from the port entrance. The is a large strip of vacant land adjacent to the pier (to the east of the site) covering about 5 ha, about half located between the railway and the lake shore. The rail line finishes at the pier but is not functioning. At the entrance to the port there is an office building of the Uganda Railway Corporation (URC), the operator of the port, and a small police building. Warehouses are located south of Nile Crescent Road, which runs parallel to the lake coastline, within the port site area.

A small fishing settlement lies about 150 m to the west, next to the Jinja Sailing Club. The remaining area within the 500 m radius catchment area is occupied by high end residential properties. The wider context within a 1 km radius is not significantly different, with high income housing covering most of the area north of Nile Crescent Road. About 800 m east of the port lies a small industrial/commercial area including the local fishing industry.

The old town of Jinja is a bit more than 1 km from the port. The road that connects the pier with the main highway runs along its border. The road separates the old town from an industrial area located about 2.5 km from the pier. This section of the road is very congested with trucks and minibuses parking along it.

BIDCO oil refinery is located 6 km away, in the northeast corner of Jinja Municipality. Jinja pier used to receive crude palm oil from Buvuma and Bugala islands which was then transported to be processed in BIDCO's refinery. The raw material is now delivered directly by boat to BIDCO's own pier located next to the refinery, built in 2018.

Figure 21: *Satellite image of BIDCO palm oil refinery and its pier.*

2. Nakiwogo landing site, Entebbe

Nakiwogo landing site is located in Entebbe, on the north-western side of the peninsula. The landing site is the docking point for the ferry service to the Ssese Islands and also connects Entebbe with Kyanvubu, located 2 km across the water inlet, a mainland to mainland service mainly used by vehicles. The Nakiwogo-Kyanvubu route has a frequency of at least nine trips per day reduced to four on Sundays. It can carry up to 120 people and eight vehicles per crossing (Mufumba, 2018).[15] The ferry route to Bugala Island has a one round trip a day.

View of the landing site from the ferry

15 Mufumba, I. (2016) Water transport growing as ferries double in 10 years. Daily Monitor, 18th August. In: https://www.monitor.co.ug/SpecialReports/Water-transport-growing-ferries-double-10-years/688342-4717316-688ss8z/index.html.

Access to ferry

Ticket office at Nakiwogo landing site

View of the pier from the fishing landing site

Logging trade in Nakiwogo

Figure 22: *Nakiwogo Pier Context*

The landing site is located 3.5 km away from the Entebbe-Kampala Road via Nakiwogo Road or Kiwafu Road, with a similar distance separate the landing site from the international airport. Both access roads are narrow, paved and in good condition with several semi-permanent (mainly commercial) buildings located on both sides of the road; with an increasing activity on the approach to the site.

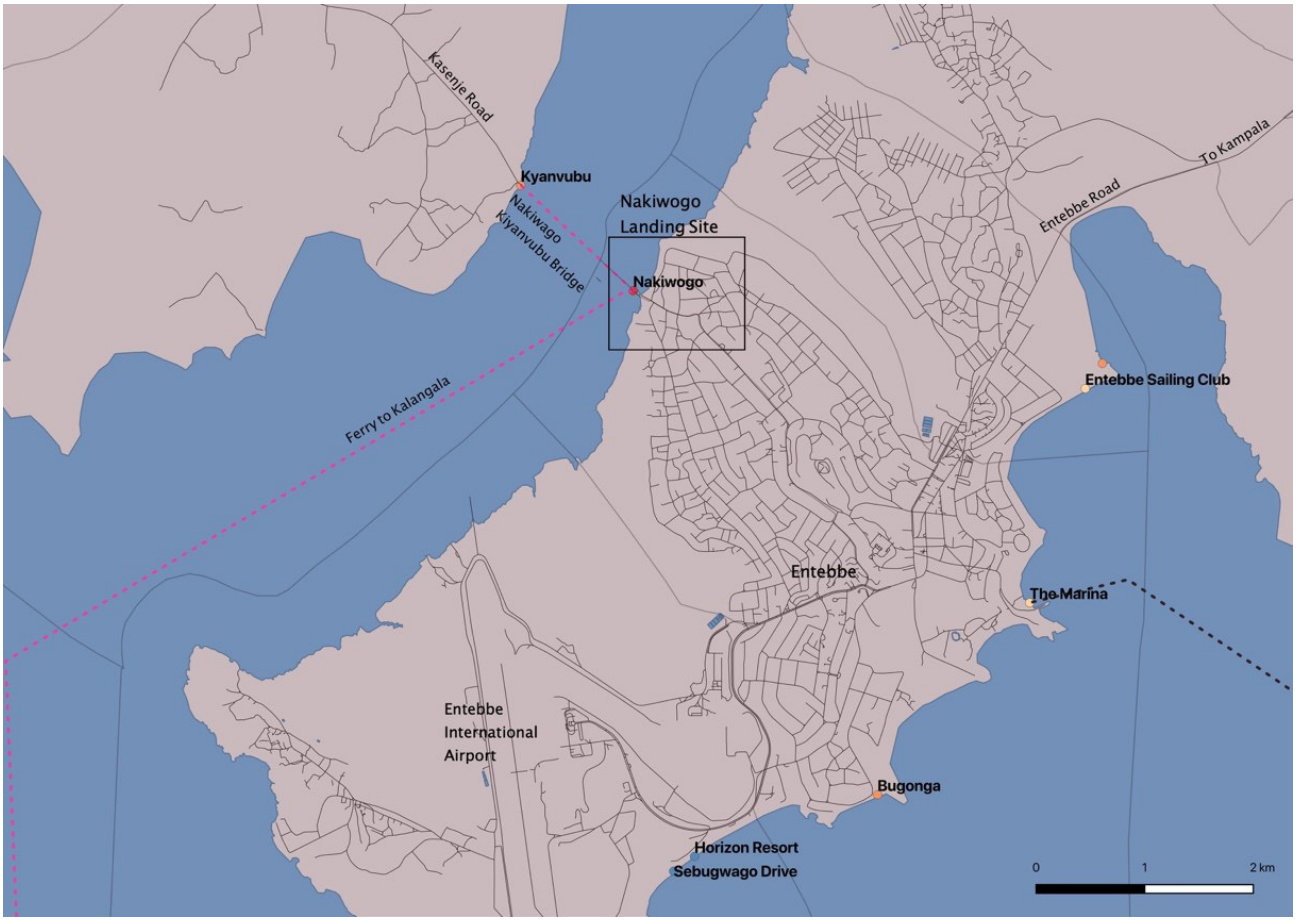


Figure 23: ***Nakiwogo Landing site – location map and context analysis***

The landing site covers about 1,200 sq. m and consists of the pier and a covered passenger area next to the entrance. A small ticket office is located outside the fenced area. The pier is surfaced with gravel and is in good condition. The area north of the pier is occupied by a fishing landing site and a busy market area. According to MTBS (2016), the fishing landing site caters for 90 active boats, 40 of them for transport and 50 fishing canoes, more than double the 40 active canoes estimated in 1991 by FAO.[16] The same report (MTBS, 2016), states that the landing site belongs to the Uganda Government, although it is administered by Entebbe Municipal Council.

A large plot of land immediately south of the landing site is used as a parking for passenger cars and taxis. A sign identifies this as Ssehab Frontline Beach Nakiwogo.

16 Kitakule J.S. and Reynolds, J.E. (1991) ORGANISATION AND CONDUCT OF A FISHING COMMUNITY SURVEY, LAKE VICTORIA-UGANDA, 1991. Socio-Economic Field Reports No. 20, FAO. In: http://www.fao.org/3/AD142E/AD142E00.htm#TOC.

Figure 24: *Satellite image of Nakiwogo Landing site*

3. Lutoboka landing site, Kalangala, Bugala Island

The Ssese Archipelago comprises 84 islands (20 of them uninhabited). Bugala is the largest island in the archipelago and covers an area of 296 sq. km[17] with a population of more than 26,000 inhabitants (UBOS, 2014). Fishing is most important economic activity on the island, , followed by subsistence agriculture, livestock rearing, logging and charcoal making (Ssemmanda and Opige, 2018).[18] According to Kalangala District Government (no date), 80% of the population of the district (covering all the 84 islands of the archipelago) are engaged mainly in artisanal fishing and agriculture for their livelihoods. The fishing industry in Bugala supplies about 7% of all total fish catch of the country (Eleqtra, no date).[19] The tourism sector is becoming increasingly important, although tourist facilities are still fairly rudimentary in most areas (Ssemmanda and Opige, 2018). According to Kalangala District website (no date), service workers represent 8% of the employment.

Ssemmanda and Opige (2018) highlight the growing importance of commercial oil palm cultivation on the island. This was first introduced in 2003, when the Ministry of Agriculture, Animal Industry and Fisheries implemented a Public Private Producer Partnership (PPPP) to develop a commercial oil palm scheme on the island as a new form of economic activity. Currently, oil palm plantations cover almost 11,000 ha or one third of the total territory of the island (New Vision[20] , 2019). The reduction of forest areas due to the expansion of oil palm plantations has had a major impact on the local habitat, and is said to have resulted in fewer tourist visiting the island (Ssemmanda and Opige, 2018).

Oil Palm Uganda Limited (OPUL) manages 6,500 hectares while 4,424 hectares are managed by smallholder farmers. OPUL 'has established 2 Palm Oil Mills in Kalangala and a processing plant in Jinja and guarantees market for all the oil palm fresh fruit bunches (FFB) produced by farmers.' Crude palm oil is transported by boat to the BIDCO oil refinery in Jinja to be processed into a range of final products such as vegetable oil, fat and soap. The production of crude oil in Kalangala only meet two days of the 3,000 tons average month's processing capacity.[21]

17 Kalangala District (no date) Overview. The District Profile. In: https://kalangala.go.ug/lg/overview
18 Ssemmanda R. and Opige M.O. (eds.). 2018. Oil palm plantations in forest landscapes: impacts, aspirations and ways forward in Uganda. Wageningen, the Netherlands: Tropenbos International
19 https://eleqtra.com/projects/kalangala-infrastructure/
20 New Vision (2019) Progress of oil palm farming in Kalangala. New Vision, 18th February. In: https://www.newvision.co.ug/new_vision/news/1494374/progress-oil-palm-farming-kalangala
21 Ssemmanda R. and Opige M.O. (eds.). 2018

The Ssese Islands are entirely reliant on water transportation for movement of people and goods. There are only two ferry landing sites in the archipelago, both on Bugala Island: Lutoboka on the north shore and Luku in the west of the island. Luku is linked to mainland through Bukakata, 30 minutes away by ferry. The MV Kalangala provides transportation from Lutoboka to Nakiwogo landing site in Entebbe, a journey of approximately 3.5 hours.

The Kalangala District website indicates that Kasenyi and Kitubulu landing sites near Entebbe are also major gateways to Bugala Island using private boats. According to the GOPA[22] report (2018), the limited transport services between the islands and the mainland has made the delivery of basic public services extremely expensive, resulting in limited their access in all sectors. The 2016 Statistical Abstract (UBOS, 2017; cited in Ssemmanda and Opige, 2018) indicates that only 27% of households had access to safe drinking water and almost a quarter of the population has no access to toilet facilities.

Since 2006, Kalangala Infrastructure Services Ltd (KIS) has been implementing infrastructure improvements on Bugala Island. KIS was established as a partnership between the Government of Uganda and InfraCo Africa, a publicly funded company which is part of the Private Infrastructure Development Group (PIDG). Other agencies involved in the joint venture include Nedbank of South Africa, Emerging Africa Infrastructure Fund, United States Agency for International Development (USAID) and the Department for International Development of the United Kingdom (DFID).

KIS is a mixed utility company involved on the provisions of safe drinking water, road development (upgrade of the island's 66 km main road from a dirt road to a gravel road completed in December 2015), power supply and also ferry services between the island and mainland. The integration of the services in one commercial enterprise was designed to achieve the economies of scope and scale, taking account of the geographic and accessibility characteristics of the island. The company has been fully operational since 2016 and has delivered almost 700 safe water connections across the island, including 65 public standpipe taps. KIS claims that water related diseases have fallen more than fivefold from 2013 to 2015/16 (InfraCo,2018).[23]

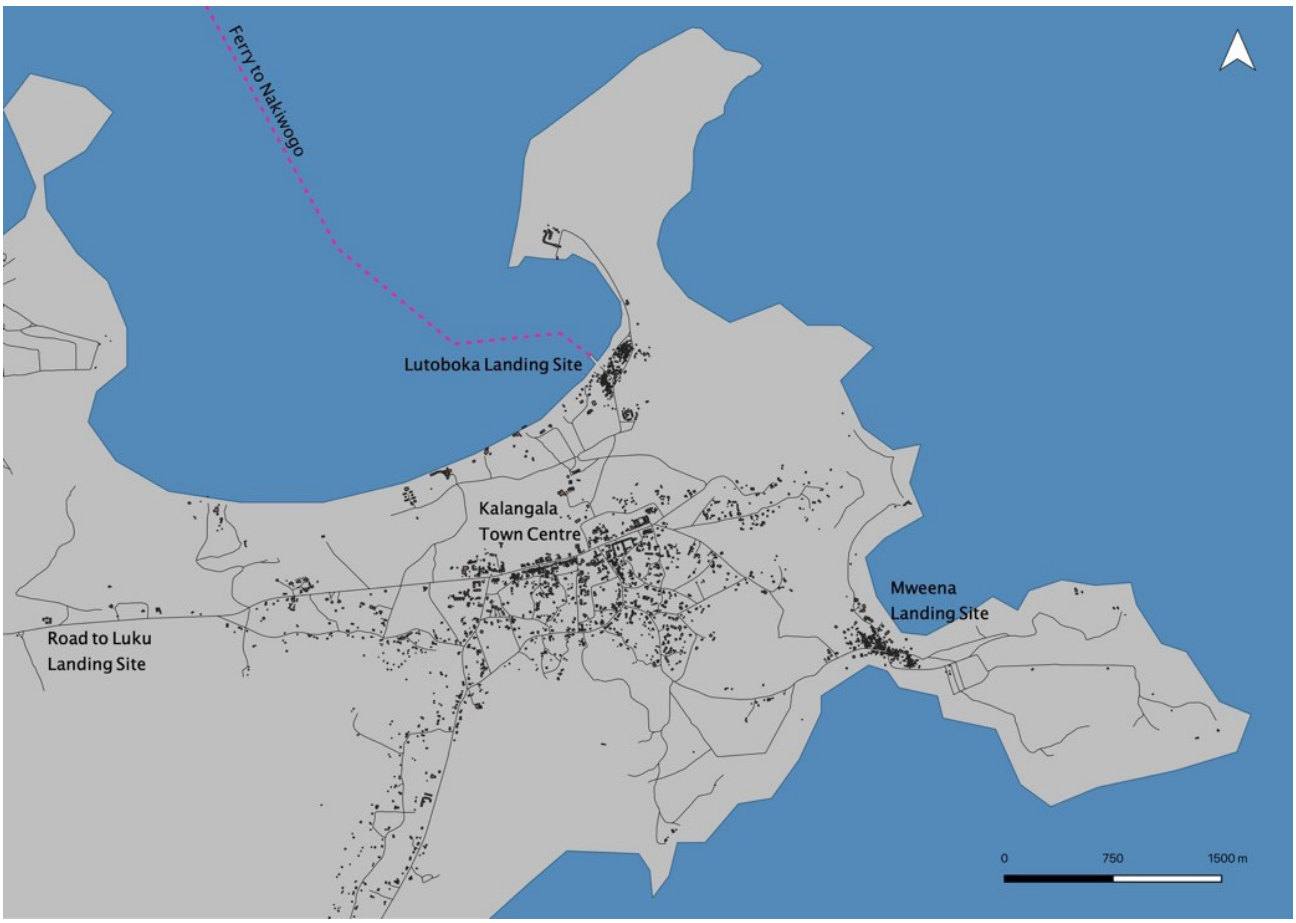


Figure 25: ***Lutoboka landing site – location map and context analysis***

22 GOPA (2018) External Evaluation of District Development Cooperation Programmes in Kalangala District in Uganda - Final Report. In: https://www.stjornarradid.is/lisalib/getfile.aspx?itemid=65fe2dd7-fe27-11e8-942f-005056bc530c

23 InfraCo Africa (2018) KIS brings clean water to fishing communities on Bugala Island. InfraCo Africa, 22nd March. In: http://www.infracoafrica.com/kis-brings-clean-water-fishing-communities-bugala-island/

Lutoboka landing site and immediate context: As previously noted, Lutoboka is the landing site of the ferry service from Entebbe. The site is located in Kalangala Town Council, on the eastern side of Bugala Island. The island is part of the Bujumba County and its territory is divided in three sub-counties: Bujumba, Mugoye and Kalangala Town Council. The latter sub-county is further divided in two parishes: Kalangala A and B. The population of the town council was 4,920 in 2014 (UBOS, 2014).

The landing site is located in Lutoboka Bay and consists of a pier for the ferry and a ticket office. A fishing landing site is located next to it. A fishing village lies next to the site with a population of about 300 inhabitants (MTBS, 2016). The pier marks the beginning of Kalangala Beach to the south where several tourist resorts are located. The landing site is 3 km away from Kalangala Town, the main town in the island. There is another fishing landing site in the Mweena Town Council area, located about 2 km to the east of Kalangala town centre (see below).

MV Kalangala connects Lutoboka with Nakiwogo landing site in Entebbe. The ferry is owned by the government and managed by Nation Oil Distributors Ltd (NODL). It has a capacity of 100 passengers and 8 vehicles and makes a single daily return journey, arriving at 5:30 pm and leaving for Entebbe each morning at 8 am. During the field trip the team was informally advised that a second ferry would start making the same journey in the opposite direction of MV Kalangala. This will certainly make this crossing route more attractive and improve the accessibility of the islands.'

NODL website confirms that a second vessel, MV NODL, would be in services soon. The vessel is privately owned and would be managed by NODL (NODL, no date).[24] The Daily Monitor (2018)[25], however, states that the vessel would be acquired by the Ugandan Government. The vessel has been assembled in Turkey by Elkon and will have a seating capacity of up to 200 people along with cargo and would cover several routes to other islands of the archipelago, including Buwuvu and Kachanga landing sites, as well as the Bukasa-Entebbe route, among others. This would provide a much-needed safe means of transportation between the islands and between the mainland and the islands.

MV Kalangala landing at Lutobaka

View of Lutoboka landing site

Lutoboka's pier with MV Kalangala docked

Lutoboka landing site context

Figure 26: *Lutoboka Landing Site Context*

24 NODL (no date) About us. In: https://nodltoursandtravel.com/about-us/
25 Daily Monitor (2018) Kalangala gets fourth ferry. Daily Monitor, November 22nd. In: https://www.monitor.co.ug/News/National/Kalangala-gets-fourth-ferry/688334-4862466-fpb1qr/index.html

A recent press article (The Observer,2019)[26] raised environmental concerns about the disposing human wastes directly into Lake Victoria from the MV Kalangala. Although the Ministry of Works and Transport set aside a monthly fee of up to Shs 80 million to empty the septic tank every time the vessel reaches Nakiwogo, passengers complain that waste is disposed in the lake rather than on land. NODL have admitted disponing waste in the lake, though after treatment with aluminum chloride (The Observer, 2019).

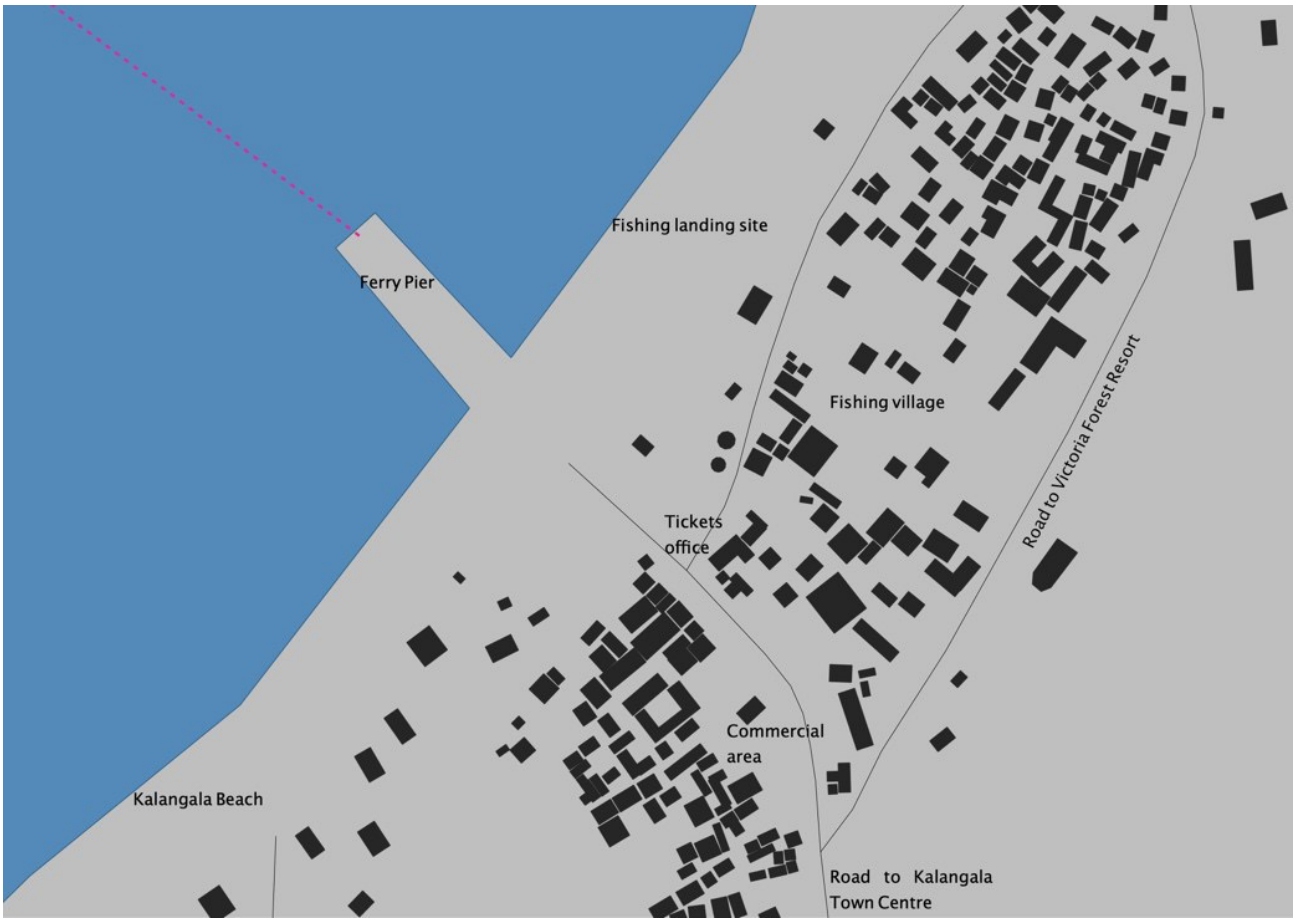


Figure 27: *The immediate context of Lutoboka landing site*

Mweena landing site is primarily a fishing landing site located about 2 km from Kalangala town, as noted, at the centre of a small commercial complex. Inter-island services are informally provided to nearby islands such as Banda Island. Facilities are quite well developed with an ice production plant to facilitate the transportation of refrigerated fish.

General view of Mweena landing site

Fishermen at Mweena landing site

Figure 28: *Lutoboka Landing Site Context*

26 The Observer (2019) Kalangala ferry disposes human waste into L. Victoria, The Observer, July 1st. In: https://www.observer.ug/news/headlines/61199-kalangala-ferry-disposes-human-waste-into-l-victoria

Luku landing site is located on the Western end of the island, about 5 km from Bukakata landing site in Masaka District, a crossing that takes 30 minutes by ferry. The ferry service and the landing sites at Bukakata and Luku are operated by KIS. The company runs 16 services per day[27] operating two ferries simultaneously, accounting for 5,200 crossings per year, a significant increase from 2,000 crossings provided before KIS started operating the service (KIS, no date).[28] The ferry services transport up to 23,000 passengers and 2,240 vehicles a week (InfroCo Africa, no date).[29]

Luku is located 32 km west of Kalangala town, about an hour by car. The road has been upgraded to a gravel road by KIS and in 2016 was handed over to UNRA, which is responsible for its maintenance. Although navigable, the road is in need of major repair over most of its length.

Luku landing site pier

Luku landing site passenger shelter

Figure 29: *Lutoboka Landing Site Context*

The landing site, completed in 2011, is in excellent condition with a concrete platform and a covered area for passengers waiting to board together with a kiosk where tickets are sold. Luku landing site presented the best facilities of all the landing sites visited during the field trip. The ferry observed landing during the team visit (MV Pearl launched in 2012) was in good condition, while the second ferry, MV Ssese, was launched three years later.

Figure 30: *The immediate context of Lutoboka landing site*

27 On Sunday there are only eight services
28 KIS (no date) Ferry services. In: http://www.kis.co.ug/pages/view-page/Ferry-Services
29 InfroCo Africa (no date) In: Uganda: Kalangala Infrastructure Services I & II - Making connections for a brighter future. In: http://www.infracoafrica.com/project/kalangala-infrastructure-services/

There is market activity as well as some artisan fishing around the landing site. According to the site manager, market activity has significantly increased as a consequence of the increasing numbers of crossings since KIS took charge of the ferry service. The nearest town is located about one km south of the site. KIS argues that the improvement of the ferry services had had a positive impact on local residents, as safer and more reliable transport has increased trade between Bugala and mainland boosting economic growth. It has also increased tourism while improving accessibility to public services (KIS, no date).[30] The development of key infrastructure should also bring improvements in the management of fishing landing sites. [31]

4. Ggaba landing site, Kampala

Ggaba landing site lies within the urban area of KCCA in Ggaba Parish, Makindye Division, about 10 km from central Kampala. KCCA Strategic Plan 2014/15-2018/19[32] highlights the role of the fishing industry as a potential economic sector that has not yet been fully exploited. It estimates that about 1,200 people are directly involved in fishing within the boundaries of KCCA in the three landing sites at Port Bell, Ggaba and Munyonyo. The Strategic Plan suggests gazetting Ggaba as a fishing landing site.

Figure 31: ***Ggaba landing site – location map and detailed context analysis of catchment area***

30 http://www.kis.co.ug/pages/view-page/Ferry-Services
31 Understanding changing land access issues for the rural poor in Uganda
32 KCCA (2014) Laying the Foundation for Kampala City Transformation - Strategic Plan 2014/15-2018/19. In: https://www.kcca.go.ug/uploads/KCCA_STRATEGI_PLAN_2015-2016.pdf

Ggaba BMU, the unit that manage the landing site, is credited with a key role supporting the construction of the fish market as well as the landing site, along with its own office. The site consists of a boat landing site with two docks and a large and busy fish and food market (Ggaba market). South of the landing site lies a walled tourist resort. The landing site has 60 boats, with three fishermen per boat (Lundström and Nordlund, 2016). The Lundström and Nordlund study (2016) also identifies Ggaba as a reselling fish market, where the local fishmongers act as intermediators between fishermen from several other neighboring landing sites and bigger companies. In 2006, Malaba[33] stated that 2,000 fish dealers visit the site on a daily basis while Sawa (2009)[34] notes that 6,000 people live and work in the landing site. Trade at Ggaba is supported by the easy access it has to the city larger markets via the Ggaba Bypass that connects the site with Ggaba Road and central Kampala.

5. Kiyindi landing site

Kiyindi landing site lies south of Jinja in Kiyindi Parish, Buikwe District, about 20 km by road from the Kampala-Jinja Highway. There are 52 fishing communities in the district, an average of one community every 3 km of shoreline (Ssebisubi, 2013).[35] Only two are gazetted landing sites, Kiyindi and Ssenyi.[36] A given site requires a minimum of seven boats to be categorized as a landing site by the Beach Management Unit (BMU).

Ssebisubi (2013:6) describes BMU as 'the functional unit for management of the fishing activities for a given landing site(s) by law.' BMUs were established in 2003 by the government 'to encourage local management of sustainable practices at all publicly managed landing sites' (UNCTAD, no date:43).[37] Each unit consists of stakeholders such as local fishermen, boat owners and crew, traders and processors who, in partnership with the local government, have the power to influence the decisions made regarding the planning and management of the fisheries (Lundström and Nordlund, 2016).[38] 28 out of the existing 52 landing sites in Buikwe District are organised in BMUs. At country level there are 355 BMUs, while the number of units all around Lake Victoria goes up to 1,087 units (Lundström and Nordlund, 2016).

The town of Kiyindi has an estimated population of more than 10,000 inhabitants (Ssebisubi, 2013), comprising more than 60% of the population of the parish (16,000 inhabitants according to UBOS, 2015). Kiyindi has a with significant silver fish (mukeni) fishing community, where catching (mostly silver) fish is conducted by men and drying and storage activity is mostly conducted by women. Kiyindi is a lively village developed along the lake shore with a higher density of population and commercial activity to the northern side of the town, where the main road turns inland towards the main highway. Intense land use is found along the road for up to 800 m from the centre of the town, although the sprawl of the town extends well beyond that. Generally speaking, islanders come to the island to access services and shopping. Kiyindi also acts as a fish market hub for the region, where fisherman from nearby landing site trade their own catch in the village which is later on transported to larger markets.

33 Malaba, T. (2006) Hygiene Critical to Fish Trading at Ggaba Landing Site. Uganda Radio Network, 9th April. In: https://ugandaradionetwork.net/story/hygiene-critical-to-fish-trading-at-ggaba-landing-site

34 In: http://www.ipsnews.net/2009/10/water-uganda-reducing-run-off-to-protect-lake-victoria/

35 Ssebisubi, M. (2013) The Status Fishing Communities in Buikwe District Uganda. Iceida. In: https://www.government.is/library/01-Ministries/Ministry-for-Foreign-Affairs/Iceida/Publications/Report-on-the-Status-Fishing-Communities-in-Buikwe-District,-Uganda—Final-Version.pdf

36 A gazetted landing site is a site with basic facilities of handling and transportation.

37 UNCTAD (2017) Fishery Exports and the Economic Development of Least Developed Countries: Bangladesh, Cambodia, The Comoros, Mozambique, Myanmar and Uganda. In: https://unctad.org/en/PublicationsLibrary/aldc2017d2_en.pdf.

38 Lundström, L. and Nordlund, S. (2016) Exploring Co-management. A Minor Field Study on Lake Victoria Beach Management Unit in Ggaba, Kampala, Uganda. Bachelor of Science Thesis, Environmental Science Programme, Department of Thematic Studies, Linköpings universitet, Campus Norrköping. In: https://pdfs.semanticscholar.org/60a3/8baa3286ab2c7ce09f49a8c208ef4dab673a.pdf.

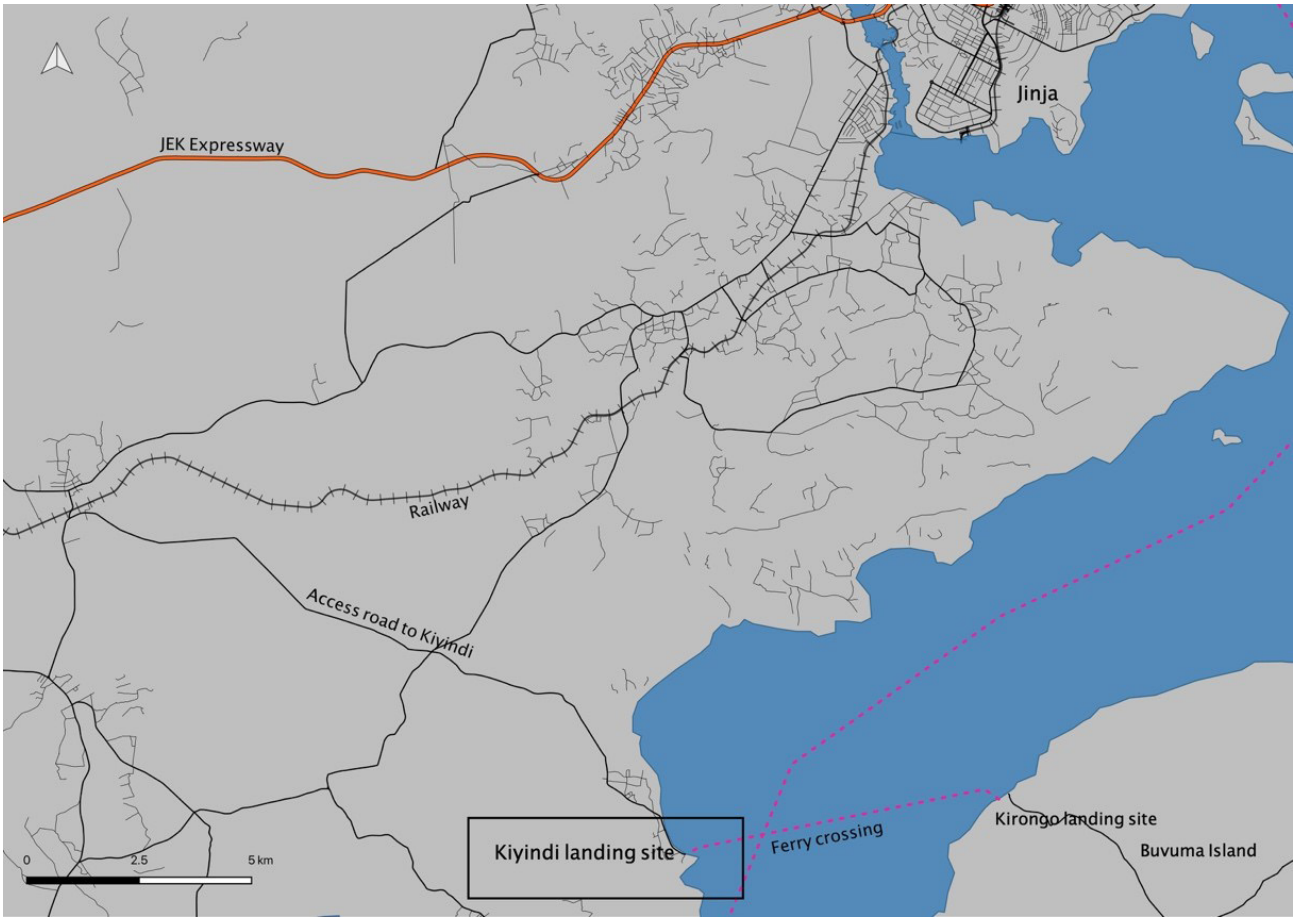


Figure 32: ***Kiyindi Landing Site location map***

Kiyindi landing site is one of the largest sites in the country and is one of the five sites in the district that is accessible by road in both wet and dry seasons, although the condition of the road is poor. The landing site extends for more than 1.2 km along the coast and is the departure point for the ferry service that links Kiyindi with the island of Buvuma. The service runs up to three times per day from Monday to Saturday and once on Sundays. The crossing to Buvuma takes one hour and is operated by UNRA. The ferry has a capacity for 120 passengers and eight vehicles.

The ferry landing site is located at the southern end of the main road. The landing site is naturally engineered, located few metres apart from the old landing site that consists of a concrete structure that used to damage the ferries on impact. The site manager recognises that the landing site would need to be relocated in the future some metres along the coast. The site consists of a small office and a covered area with seating area for passengers waiting to board.

Figure 33: *Satellite image of Kiyindi landing site*

Kiyindi landing site

Drying fish

Police check at Kiyindi landing site

Passenger transporting goods to Buvuma Island

A damaged section of the access road to Kiyindi

Figure 34: *Lutoboka Landing Site Context*

6. Bukasa Port

This final section provides a contextual analysis of the proposed site of Bukasa port as identified in the Draft Final Master Plan Report (GAUFF, 2017). The report addresses the site context providing a detailed analysis of its environmental situation, topographic characteristics, existing and planned infrastructure and the site connectivity. Nowhere in the five volumes of this report is any significant analysis of the population currently resident in the proposed area of the port who will be affected by the development of the related buildings and infrastructure.

The proposed site is located in the southern portion of the Bukasa Peninsula, in Kira Municipality, Wakiso District. Kira Municipality has a population of over 48,000 covering a total area of 18.2 sq. km. The overall density of the administrative area is 26.5 inhabitants per hectare. However, about 10 sq. km of the municipality is swamp resulting giving a net density of about 60 inhabitants per hectare. The most densely populated areas are located in the north while the south of the peninsula is less populated.

According to figure 9-6 of the Volume 1 of the Draft Master plan report (p145), the greater Port Area will occupy 480 hectares, about 120 hectares in the southern portion of the Bukasa Peninsula and the rest in the adjacent swamp areas. Assuming a density of half of the municipality, the current population living in the Greater Port Planning area is estimated at around 3,600 inhabitants, or just under 900 households.

The area was unoccupied just eight years ago but a rapid process of land occupation and sub division has occurred in the last five years. According to the master plan report, most of the land where the port and associated infrastructure is planned is under ownership and administration of the National Forest Authority, while the remainder is intended to be acquired for the project.

The project is designed to be built in three phases over 20 years. The initial phase, due to be completed by 2020 (according to the report issued in 2017) would require small amount of the land that is already occupied. However, the infrastructure corridor will present a huge challenge as the number of people currently living within the proposed corridor increases dramatically. In order to develop both the final stages of the core port and the Greater Port Area would require the displacement of several thousand people. It could be expected that the construction phase of the port would also attract a large number of people that would need to be housed in the surrounding areas. This suggests a major regeneration project allowing for rehousing the existing population and accommodating a large new residential population.

Figure 35: *Satellite images of the proposed area for the development of Bukasa port in 2013 and 2019*

7. Logistics Space

The key logistics space for Inland Water Transport is freight traffic through the Northern Corridor (Kenya) and the Central Corridor (Tanzania)

Key logistics nodes in the Central corridor include the Port of Mombasa, the Standard Gauge Railway Line between Mombasa to Nairobi and to Naivasha. The SGR also runs parallel with the historic narrow-gauge railway line. The extension between Nairobi and Naivasha was completed in 2019 (and according to discussions with freight forwarders, the Kenyan government is encouraging logistics through Naivasha). Phase 2 of SGR expansion is expected to link Naivasha to Malaba and Kisumu, however, currently, there is only the narrow gauge railway. The Port of Kisumu is the final node on the Lake Victoria (rail/ferry). Road freight is the obvious alternative and is generally preferred as a freight route for Ugandan exports for freight forwarders – this is due to the trade imbalance between Kenya and Uganda with cheaper road freight costs (versus rail). Overall road freight is preferred because the rail network is regarded as 'patchy' i.e. with high-quality SGR between Mombasa and Nairobi / Naivasha but weak on the Eastern links to Kisumu / Malaba.

The Central corridor, from the perspective of this Kampala IWT, starts with Dar es Salaam port, with road and rail links leading to Mwanza port. The Central corridor is currently less attractive for freighters in Uganda because of the generically weak rail infrastructure in Tanzania and the long road distances. Current rail freight capacity in Tanzania is 20,000 tonnes per month. Going forward there are plans to improve the SGR in Tanzania, with a 205 km Dar es Salaam to Morogoro, 336 km Morogoro – Dodoma, 294 km link between Dodoma to Tabora, 133 km Tabora to Isaka and 248 km Isaka – Mwanza. This is expected to increase the capacity to 120,000 tonnes per month, However, for the time being, using the railways through Tanzania is notoriously unreliable and can take a prohibitive amount of time from a commercial perspective (approximately 6 months). For the reasons clarified above, only 3 % of Uganda exports are cleared through Dar es Salaam port (with the vast majority using Mombasa port).

Therefore, to summarise, from the perspective of Uganda / Kampala, the Northern Corridor is preferred (over the Central Corridor) and road freight is preferred by freighters because of the higher level of reliability and better time performance. Below is a summary of costs and time for transporting Ugandan freight through the Northern and Central corridors using the road infrastructure. As can be seen, logistics using the road through Northern corridor is both cheaper and quicker. Due to the trade imbalance between exports and imports, exporting through Kenyans roads is extremely competitive.

	Cost	Time	
Northern Corridor	Imports: approx. $100- 110 / tonne Exports: approx. $55-60 / tonne +	Imports: 3 days Exports: 2 days	Approx. $100 clearance costs, takes 3 hours
Central Corridor	Approx. $170 – 180 / tonne	7 days	

Source: Consultants discussions with stakeholders

Table 3: *Road Freight Costs and Time through Central and Northern Corridors.*

The logistics weaknesses outlined above have been identified in the JICA Master Plan on Logistics in Northern Corridor (2016) which concluded the following projects and key themes:

- Authorisation of a Master plan that should be prioritised by all concerned governments and establishment of a task force
- Improved SGR network
- Further development of the road sector (as the SGR alone will not be able to accommodate all demand), including widening and continued maintenace
- Establishment of logistics hubs in cities to reduce costs
- Industrial development

8. Existing Urban Development Plans

We have been unable to access local and metropolitan urban development plans relating to all the location reviewed in this section. The relevant sections of those that were available to use are summarized as follows. Further reference will be made to development plans at the Draft IWT Master Plan stage.

Greater Kampala Economic Development Strategy. United towards job creation, improved livability and sustainable development in Greater Kampala 2017-2025. Final Draft - September 2017.

The Greater Kampala Economic Development Strategy 2017-2025 suggests developing a public transport policy for GKMA, with water transport as part of it. It highlights the need for infrastructure improvement on several landing sites (Ggaba, Kasenyi, Nakiwogo-Kyanvubu, etc) and also at Port Bell and Bukasa Port. Water transport is described as an important contribution to help develop Lake Victoria's tourism circuit. The report suggests undertaking feasibilities studies to explore PPP opportunities such as the Entebbe-Kampala ferry, upgrading key landing sites for fishing and tourism and lakefront development.

KCCA Strategic Plan 2014/15 – 2018/19. Laying the Foundation for Kampala City Transformation.

This plan recognises the importance of the fishing industry and notes that it is a sector that has not been fully exploited. The strategy aims to improve the fisheries sector in the city which employs about 1,200 people located at the three landing sites at Port Bell, Ggaba and Munyonyo. The strategy only describes soft projects to improve the sector.

In Annex. 2 the report suggests developing an 'Integrated Multimodal public transportation system'. However, water transport is not mentioned in this or in the remainder of the report.

Kampala Capital City Authority. Updating Kampala Structure Plan and Upgrading the Kampala GIS Unit. Draft Final Report. September 2012

This Sectoral and Physical Development Plans includes waterfront development (and its preservation) within its first priorities. The report promotes the development of Kampala as a lakefront city and that 'Kampala should be seen as a City of the Lake and there is need to develop water transport and waterfront areas' (Annex 3). Kampala's lakefront is described as the city's resource with the greatest unfulfilled potential.

The report recommends the development of sports and recreation facilities in the lakefront, including opportunities for yachting jetties in Munyonyo, Entebbe, Kaazi, Port Bell and Nakisunga-Ntenjeru New Town; private development.

The urban transport system should integrate different modes by offering alternatives for travelers to choose from, including road, water and air transport modes. Annex 3 also suggest to transport planners not to discard the option of water transport from Entebbe to Port Bell.

Port Bell Road is identified as one of the eight most attractive corridors for the proposed integrated Bus-Rapid Transit System for the Greater Kampala Metropolitan Area. The BRT, if built, could improve Port Bell's potential to be developed as a passenger port with faster links to Central Kampala. The recently upgraded rail link to the Central Station could

support new passenger services though a bus-based system will be more financially feasible even with a major increase in passenger demand[39]. The report also identifies the wetland area between Luzira and Makindye as a potential public park and the shoreline of Luzira as an area with potential lakefront development opportunities. These projects could significantly improve the area and its potential as a tourist and recreational attraction.

Wakiso District Local Government. Physical Development Plan (2018-2040) Draft Report - May 2017.

Wakiso Development Plan identifies the district as the gateway to Uganda by land, water and air, with Uganda's international airport and all major internal and international public transportation services passing through the district. The report includes water transportation as part of the public transport system, with ferry services as part of the network as well as the provision of informal water transport in canoes carrying passengers, goods and livestock, with the attendant risk of capsizing. It notes the needs for infrastructure improvements in 5 landing sites including Nakiwogo in Entebbe, Kyanvubu and Busabala among other.

The plan highlights the 'potential for attracting investments at beach resorts and high end accommodation facilities like hotels and housing estates. It recommends the acquisition of land such investments highlighting its huge potential. It also suggests the 'construction of a port at Bukasa to attract water transport from Entebbe to Jinja, Kampala, Mukono and Ssese Islands, Kisumu, Mwanza, Musoma and Bukoba (that) will support investment. Leisure boats and cruise ships have high potential for income generation and job creation for the local people'.

The report concludes that IWT in the district 'was considered inadequate and was characterized by poor landing infrastructure and facilities, disjointed laws and regulations and inadequate planning and monitoring'. (p153) Landing sites are poorly governed by the local governments in Wakiso.

Fishing is identified as an important employment generator in settlements located near the lake. The landing sites are where most activities of fish trade take place, recommending taking into account current availability of transport and storage infrastructure. The Plan states that 'Currently all the landing sites in Wakiso District are connected to existing road network with seasonal gravel roads that are characterized with poor road surface conditions making mobility very difficult'.

Jinja Municipality Structure Plan 2009 - 2019

We have access to maps showing existing and proposed land uses in the vicinity of the ferry port in Jinja, although no any accompanying Municipality Structure Plan report. The lake shore area, which is the city's major physical and economic asset, is characterized by a wide ranging mix of different land uses some of which may be in conflict with one another and point to different strategies for its future development. One is focused on industrial development associated with its function as a port, in line with the direction of government policy. A second is based on its draw as a tourist attraction given its association with the source of the Nile and white water rafting on the associated rapids.

A well laid out central city area with a mix of residential, civic, institutional, recreational and commercial uses lies to the west of the old and now disused colonial metre gauge railway line terminating at the ferry port. A large industrial estate spans the railway line running north-south to the area of the port with a spur to the principal developed industrial hub on the Nyanza Road headland. Navigational factors permitting, this would have proved a better location for the ferry port jetty, forming a single north-south industrial axis, and allowing for the extension of the tourism related land uses continuously along the coast to the east, towards the mouth of the Nile.

In the plan, this is taken on board with all land surrounding the port earmarked as commercial land and linked to the west across the shoreline to the extended green area (land designated as recreational), but with the ferry port remaining in its existing location. Due to the low volumes of both cargo and passengers and the development of Bukasa Port as a competitor, the option of creating a profitable lakefront mixed use development could improve the tourist offer of Jinja in the short term, including hotels and recreational uses and possibly a marina. This would suggest that passenger-based ferry development could be as important as freight in the short term. These various aspects affecting the future of Port Jinja need further in-depth consideration.

3.4. Environmental aspects

3.4.1 Environmental Impact Assessment

Lake Victoria, covering 68,800 sq. km, is shared by Kenya (6%), Uganda (43%) and Tanzania (51%) and is the largest freshwater body in Africa, and is the second largest fresh water lake in the world.[40] It is fed by a number of west-flowing rivers, and by the east-flowing Kagera River. The lake is the source of the White Nile at Jinja.[41] It has a mean depth of 40 m, maximum depth of 84 m, a shoreline of 3,450 km, a water retention time of 140 years and a catchment area of 193 000 sq. km extending into Rwanda and Burundi (see figure). [42]

40 https://www.newvision.co.ug/new_vision/news/1316577/lake-victoria-soon-history

41 https://journeysbydesign.com/destinations/uganda/lake-victoria-uganda

42 Kolding, Jeppe & Medard, M. & Mkumbo, O. & Zwieten, Paul A.M. (2014). Status, trends and management of the Lake Victoria Fisheries. https://www.researchgate.net/publication/283069905_Status_trends_and_management_of_the_Lake_Victoria_Fisheries

It is a tremendous natural asset to the three countries that border it, and to the wider East Africa Great Lakes Region, but it is also a finally balanced and sensitive ecosystem, with the natural system and the human socio-economic system that depends on it highly vulnerable to the interplay of many factors. It is critical that is protected from the environmental challenges that now threaten its future. [43]

Lake Victoria is shallow, making it more vulnerable to surface water dangers. While the lake gains water through precipitation, 80% of its water loss is through evaporation, and indication that water levels on the lake are climate sensitive.[44] Recent falls in rainfall, and the impacts of hydroelectric dams and activities of the millions of people living in the vicinity of the lake and its wider basin have resulted in substantially reduced water levels.[45] Historically, the lake has been protected by wetland buffer zones, but farming practices and population growth have reduced these, and increased flow of nutrients into the lake has resulted in a decreasing volume of oxygenated water. [46]

The principle pollutants have been noted as: [47]

- Domestic waste and human excreta, untreated raw sewage
- Urban run-off
- Industrial waste
- Solid waste disposal sites
- Pesticides and herbicides from farming communities within the catchment
- Toxic chemicals used by fishermen.

In addition, siltation of Lake Victoria also a growing environmental challenge that results in shrinkage of the water way, making navigation on the lake hazardous. The siltation is a result of land degradation in the lake basin/catchments, caused by deforestation, wetland encroachment, poor agricultural practices. The intense rainfall events in the region are triggering soil erosion, run-off and flooding that is also drivers to siltation of the lake.

Urbanisation impacts: Pollution hotspots on the lake include Murchison Bay in Kampala, Kitubulu south of Kampala, Bukoba, Mwanza and Musoma in Tanzania, and Kisumu in Kenya.[48] Unregulated urbanisation of the shoreline and its wider river basin is an emerging challenge that is likely to be a key threat to the lake in the future. By 2050, the urban population is all three countries is expected to more than triple. Kampala in Uganda, Kisumu in Kenya and Mwanza in Tanzania are all likely to have doubled in population within 15 years. The population of Greater Kampala will increase from 3.2 million to more than 7 million by 2035.[49]

Lake Victoria is a critical resource supplying water to these cities. Kampala gets it water from Murchison Bay, as do Entebbe and Jinja. In 2017 President Museveni commissioned the new Ggaba Water Works that will increase water supply in Kampala from 200 million litres to 250 million litres per day. This is part of the Kampala Water Lake Victoria WatSan Project (LV-WATSAN) aimed at addressing water supply challenges in Greater Kampala metropolitan area up to the year 2035. [50]

However, urban pollution threats remain and will grow. They include wastewater from factories, sewage outlets and effluent from septic tanks and pit latrines leaking into stormwater drains. Poor sanitation and pollution of the lakes is an even greater concern in rural and peri-urban coastal areas as leakage from latrines in wet weather into the lake is common with villagers that depend on polluted lake water for drinking and with less opportunity than urban dwellers to improve sanitation or get access to treated water.

43 https://www.newworldencyclopedia.org/entry/Lake_Victoria#Economy
44 Ibid.
45 Ibid.
46 Ibid.
47 S M Tibatemwa, 2002, Inner murchison bay – water quality trends, 28th WEDC Conference, Kolkata (Calcutta), India, 2002
48 https://www.newvision.co.ug/new_vision/news/1316577/lake-victoria-soon-history
49 UNDESA: 2018 Revision of World Urbanization Prospects. https://population.un.org/wup/
50 https://www.independent.co.ug/new-ggaba-commissioned-50-million-litres-water-kampala↗

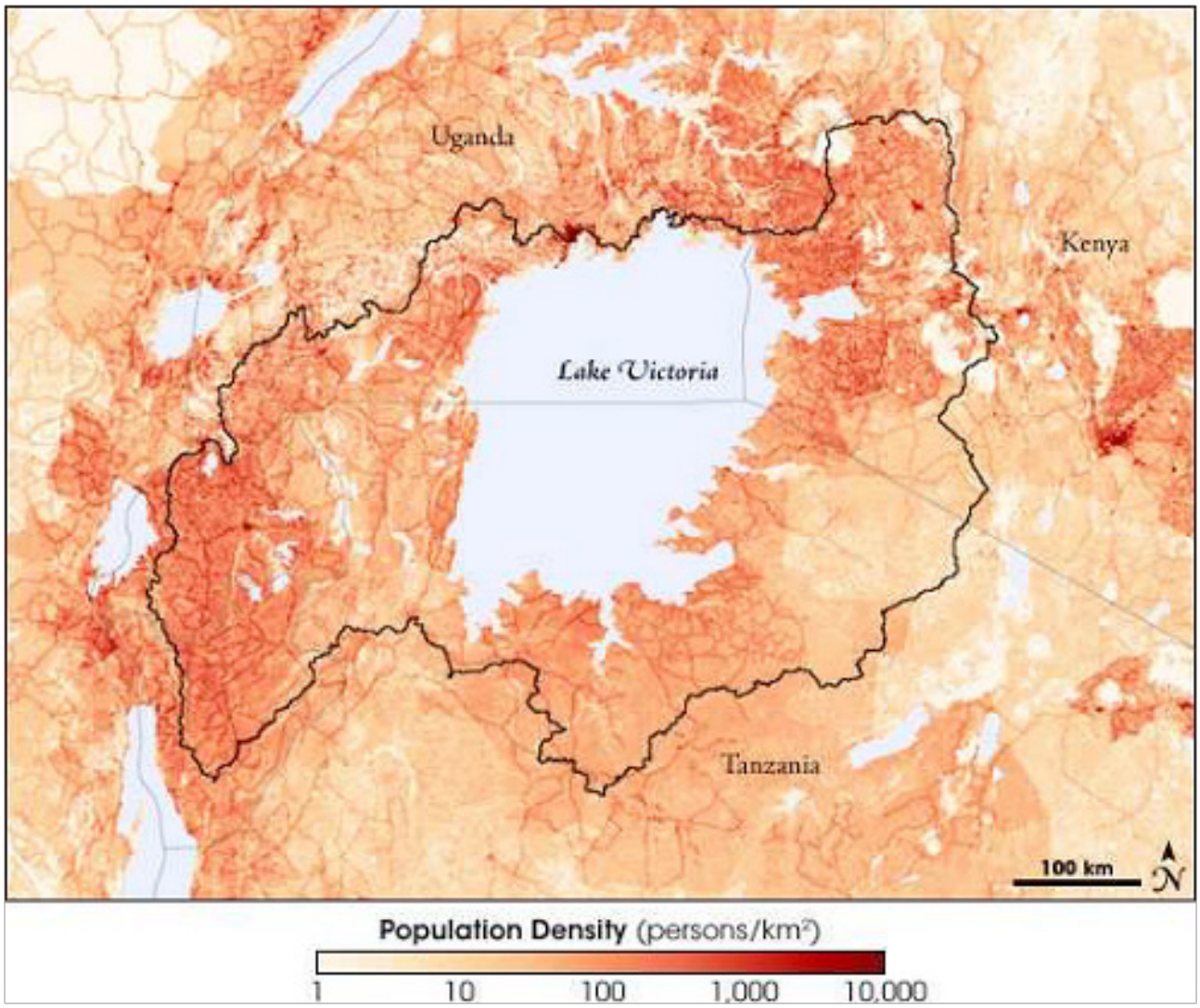


Figure 36: *Satellite image of Kiyindi landing site*

This was noted during the team's visit to Kalangala where Kalangala Infrastructure Services has been addressing the problem through water treatment to provide drinking water to the population. However, this investment is focused in the main population centre and in some of the main fishing landing areas with the less accessible and less densely populated areas more vulnerable to the ongoing risks.

The main dangers to the lake are thus from shore-based activity and the fishing industry that faces ongoing management challenges. However, the pollution threats from water-borne traffic through the discharge of oil, rubbish and sanitary waste are likely to intensify in the future unless properly monitored and regulated. There are recent reports that this has not been the case to date with the operators of operators of MV Kalangala, running between Entebbe and the Ssese Islands, accused of disposing wastes directly into the lake. [51]

Ecological impacts of the fishing industry: According to the World Bank, Lake Victoria is the largest inland fishery in the world, serving over 40 million inhabitants with nearly half living on less than $1.25/day. Its fisheries support more than 3 million livelihoods and bring in $500 million in revenues annually.[52] Uganda, Kenya and Tanzania produce up to 1,000,000 metric tonnes of fish annually.[53] This is aimed at both domestic consumption and international export but with the growth of the industry has come "some of the most extreme ecological perturbations ever observed in a large freshwater environment." [54]

51 https://allafrica.com/stories/201907010583.html
52 https://www.worldbank.org/en/news/feature/2016/02/29/reviving-lake-victoria-by-restoring-livelihoods
53 https://www.newvision.co.ug/new_vision/news/1316577/lake-victoria-soon-history
54 Kolding, Jeppe & Medard, M. & Mkumbo, O. & Zwieten, Paul A.M.. (2014). Status, trends and management of the Lake Victoria Fisheries. https://www.researchgate.net/publication/283069905_Status_trends_and_management_of_the_Lake_Victoria_Fisheries

The introduction of non-indigenous fish species has been a major factor both in boosting the fish production and disrupting the natural ecosystem of the lake. Nile tilapia and Nile perch were first introduced into Lake Victoria in the 1950s and 1960s, [55] tilapia to boost the local declining tilapiine fishery, and the invasive predatory Nile perch to feed on the then abundant haplochromine chichlids fish. [56]

The explosion of the lake's Nile perch population in the 1980s coincided with a fivefold increase in the economic value of the fishery but also with a reduction of the lake's 500 haplochromine species by half. This reduction in species disrupted the lake's ecology.[57] The key chiclid species are vital to the lake's well-being and ability to self-clean, and the extinction of a significant number of species is likely to be a contributing factor to the water hyacinth invasion that has threatened to smothers the lake.[58] Although attributed to other factors, such as climate change, overfishing and eutrophication more generally, the Nile perch population explosion was seen to be a major contributor.[59] The depletion of fish biomass by Nile perch may have been the source of extra phosphorus responsible for the eutrophication of the lake.[60]

By the early 1990s, what had been a diverse multispecies fishery focused on only three species: The Nile perch, the Nile tilapia and the native, sardine-like cyprinid, R. argentea (silverfish). Overfishing from the late 1990s sent both perch and tilapia into decline, resulting in some recovery in chichlid stock.[61] While things are better now than they were 20 years ago, though conditions that existed before the 1960s have yet to be restored.[62] By 2013, an estimated 51% of the recent catch was Nile perch, with tilapia estimated at about 24%, with the remainder being silver fish.[63]

The instability in the balance of fish species resulted in a more recent increase in Nile tilapia catch relative to the Nile perch and its spread into deeper waters. This is seen as a consequence of declining stocks of the perch, availability of suitable food and the occupation of vacant niches by the tilapia left by declining stocks of indigenous species, especially the haplochromines.[64] The tilapia, previously herbivorous, now includes insects and fish in its diet. Unless the ongoing reduction in Nile perch exploitation is better managed the Nile tilapia is predicted to eventually replace the multimillion-dollar export industry of Nile perch. Apart from the economic consequences, however, biodiversity in the lake is expected to increase and with it the availability of protein to local communities.[65] The condition of the lake appears to have stabilised since the early 2000s, partly because of a rise the fish biomass and correction to the ecosystem functioning.

Fishery and ecological management: the current fishery management system was developed to control fishing and address overfishing concerns. It is based on co-management, working through community organizations called Beach Management Units (BMUs) to actively manage the fishery in partnership with the central government. The main concern that it is 'fishery-based', taking no account of ecological conditions in the lake, nor species other than the Nile perch. Challenges to implementing a "holistic" approach include the lack of a coherent objectives of the Lake Victoria fishery, and incorporating and implementing concepts of nutrient information and multiple species into a practical fishery management program. "What is needed on Lake Victoria are clear objectives and a management plan that will enable those objectives to be achieved, utilizing both ecological and fisheries data where appropriate." [66]

Ongoing interventions intended to better manage the lake's ecology include the World Bank-funded Lake Victoria Environmental Management Program (LVEMP), now in its second phase.[67] Its environmental interventions are underlined by broader goals of poverty reduction and sustainable growth and the project aims simultaneously to address the environmental challenges of the Lake Victoria Basin and improve the welfare of millions of inhabitants that depend on its resources. "There are over 600 Community Driven Development (CDD) projects that support environment-friendly livelihoods – stall feeding to reduce dependence on grazing, fish farming to reduce pressure on Lake Victoria wild fisheries, using biogas to lower their dependence on fuel wood."[68]

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55 M. Njiru, J. Ojuok, A. Getabu, T. Jembe, M. Owili & C. Ngugi (2008) Increasing dominance of Nile tilapia, Oreochromis niloticus (L) in Lake Victoria, Kenya: Consequences for the Nile perch Lates niloticus (L) fishery, Aquatic Ecosystem Health & Management, 11:1, 42-49

56 S Nagl, H Tichy, W E Mayer, N Takezaki, N Takahata, J Klein The origin and age of haplochromine fishes in Lake Victoria, east Africa. Proc Biol Sci. 2000 May 22; 267(1447): 1049–1061

57 Pringle, Robert. (2009). The Origins of the Nile Perch in Lake Victoria. BioScience. 55. 780-787. 10.1641/0006-3568(2005)055[0780:TOOTN-P]2.0.CO;2.

58 https://www.newworldencyclopedia.org/entry/Lake_Victoria#Economy

59 When a body of water becomes overly enriched with minerals and nutrients which can induce excessive growth of algae and oxygen depletion

60 A Taabu-Munyaho, BE Marshall, T Tomasson & G Marteinsdottir (2016) Nile perch and the transformation of Lake Victoria, African Journal of Aquatic Science, 41:2, 127-142

61 https://www.newworldencyclopedia.org/entry/Lake_Victoria#Economy

62 Ibid.

63 https://www.newvision.co.ug/new_vision/news/1316577/lake-victoria-soon-history

64 M. Njiru, J. Ojuok, A. Getabu, T. Jembe, M. Owili & C. Ngugi (2008) Increasing dominance of Nile tilapia, Oreochromis niloticus (L) in Lake Victoria, Kenya: Consequences for the Nile perch Lates niloticus (L) fishery, Aquatic Ecosystem Health & Management, 11:1, 42-49

65According to Okurut, fish was the cheapest source of proteins, but increasing prices meant local consumers had to compete with the export markets. https://www.newvision.co.ug/new_vision/news/1316577/lake-victoria-soon-history

66 M. Njiru, M. Van der Knaap, A. Taabu-Munyaho, C. S. Nyamweya, R. J. Kayanda & B. E. Marshall (2014) Management of Lake Victoria fishery: Are we looking for easy solutions? Aquatic Ecosystem Health & Management, 17:1, 70-79

67 https://www.worldbank.org/en/news/feature/2016/02/29/reviving-lake-victoria-by-restoring-livelihoods

68 Ibid.

A Chinese not-for-profit environmental conservation organisation, Save the Wild Fund, has started operations to encourage companies to fund conservation projects around Lake Victoria. The strategy involves providing fruit and wood tree seedlings to local authorities around Lake Victoria to plant them on the borders of wetlands to segregate the land, while the fruits will provide income for communities in the area.

Impacts on the fishing communities: The five populated fishery regions of Lake Victoria lakeshore and islands are Entebbe, Jinja, Tororo, Masaka and Kalangala. Nucleated settlements at or very near a landing site are the most common type of fishing community.[69] Dispersed fishing communities associated with sites which are used only for the purposes of landing catches and beaching canoes are less common. Most of the Lake Victoria fishing communities are situated on private land, the remainder being on Government land, including Forest Reserve areas or mailo land, former 'crown' land of the traditional Buganda kingdom now largely treated as freehold. Many settlements are the result of encroachment on either private or public land. The consequent lack of security of tenure for community residents constrains investments in housing and service improvements.[70]

Malaria is the main disease/health problems affecting fishing communities, with 'dysentery' and 'diarrhea' also being common. This is a consequence the local conditions with marshes, papyrus swamps, and pools of stagnant water that are a commonly found offer nearby ideal breeding habitats for mosquitoes to which the population is exposed.[71] Landing beaches often serve simultaneously as drinking water sources, bathing and laundry places, and fish cleaning and rubbish/waste disposal sites. Extremely poor sanitary facilities and lack of safe sources of drinking water in most places must be seen as the root causes of diarrhoeal illnesses. [72]

It is predicted that the disease burden on Uganda's economy is likely to increase if the degradation of the lake continues unchecked.[73] Diseases such as cholera, bilharzia and malaria are increasing, especially where the water has become polluted. In addition to this, conflicts over resources such as fishing grounds, wetlands and forests within Uganda and across the country are likely to increase.

Although blame is placed on NEMA (National Environment Management Authority) and fishing activities, the underlying cause pushing Lake Victoria towards degradation, according to Okurut, is the unregulated access by all.[74] In his view, underlying factors include lack of knowledge of environmental management, lack of effective urban planning, a poor compliance culture, poor policies and systems, lack of research and poor coordination among government agencies.

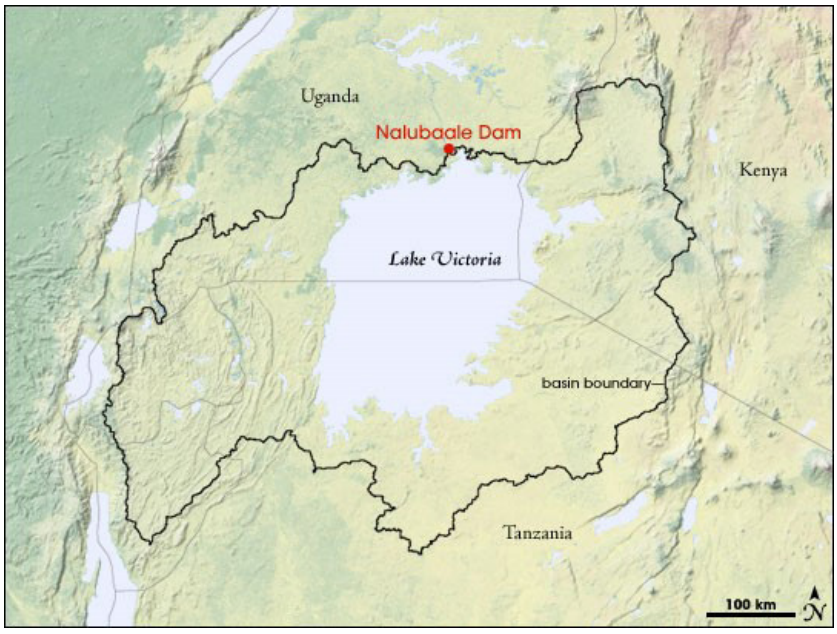


Figure 37: ***Lake Victoria River Basin and Nalubaale Dam. The basin is small relative to the size of the lake, leading to rapid fluctuations in lake level. (NASA image by Robert Simmon, based on the National Park Service Natural Earth map***

69 http://www.fao.org/3/AD152E/AD152E01.html
70 Ibid.
71 Ibid.
72 Ibid.
73 Okurut, quoted in https://www.newvision.co.ug/new_vision/news/1316577/lake-victoria-soon-history. In 2013, executive director of the National Environment Management Authority (NEMA), formerly of Lake Victoria Basin Commission, Dr. Tom Okurut, presented a paper entitled, "Lake Victoria, a matter of survival for Uganda". Noted are the threats from human activities such as overfishing, pollution, conversion of forests and wetlands into farmland that remove the vegetation cover from soil, resulting in massive silting. Climate change is also contributing to the slow death of the lake.
74 Okurut, op. cit.

Hydropower concerns: The lake and its catchment provide 90 percent of Uganda's hydropower.[75] This represents about 80% of Uganda's electricity supply currently reaching just under 30% of the population.[76] Uganda's hydro-electric power at Nalubaale and Kiira, with a potential of 388MW and Bujagali's 250MW, respectively, is produced using water from Lake Victoria, while the potential power production along the Nile, including Kalagala and Murchison Falls, estimated at 3 GW, depends on Lake Victoria. The more water that is available, the more hydro-electric power that is produced, while less water means load shedding and slower economic growth.[77]

The Kiira power station was added to the Nalubaale Dam in 2000. However, drought struck with both less water to generate power and a rising demand for electricity. According to news reports in January 2006, Uganda's Directorate of Water Development (DWD) reported that the primary cause for falling lake waters was the power company's failure to adhere to the 1954 water release policy, though officials later denied these allegations, with the drought being given as the only reason water levels were falling. [78]

The oil industry: The lake already serves to transport fuel oil and this activity is seen as increasing with attendant dangers of oil spills. At the same time, realising the plans to drill and transport oil from fields in the west of Uganda to Tanzania's Indian Ocean port of Tanga, via a 1,445 km, $3.6 billion pipeline, is seen as vital to developing the country's oil reserves and attendant economic development.

The pipeline will cross rivers and swampland that act as a catchment for Lake Victoria and areas rich in wildlife, and is expected to transport about 200,000 barrels per day (bpd) when oil production peaks. This has prompted concerns from both international and Ugandan environmental NGOs.[79]

A 2017 World Wildlife discussion paper lists the following concerns mainly affecting Tanzania: [80]

- Nearly 2000 sq. km of protected wildlife habitat (Biharamulo Game Reserve and Wembere Steppe Key Biodiversity Area) will be affected by significant habitat disturbance, fragmentation and increased risk of wildlife poaching due to the EACOP project.
- Approximately 500 sq. km of important wildlife corridors for the Eastern Chimpanzee and the African Elephant species are likely to be severely degraded. This will add to already existing severe pressure on these species from illegal wildlife trade and poaching for bush meat and ivory respectively.
- High risk of fresh water pollution and degradation especially in the over 400 km stretch of the Lake Victoria basin through which the pipeline is planned to traverse. This lake basin currently supports the direct livelihoods of more than 30 million people in the region.

It hardly needs pointing that, although Uganda may benefit in the short term, such a heavy investment in an industry that has a very limited future if, and when fossil fuel use is finally curbed in response to the growing climate change challenge may prove a future burden as the country struggles to manage the attendant debt and climate change.

Tourism potential and impacts: Despite the ecological concerns, Lake Victoria continues to support a range of fish species, amphibians, reptiles, birds and animals. Given the high levels of human activity, the mammals appear in low numbers but other non-fish related wildlife includes crocodile, hippo, elephant, buffalo, chimpanzee and wildebeest.[81]Situated on a major migratory route, and home to many a resident species, the lake also supports high numbers of bird species. The Ssese Islands host a chimpanzee reserve and, with Uganda's growing tourist industry, there is clearly potential for lake cruises to form part of a wider transnational safari experience, with linking itineraries to Kenyan and Tanzanian destinations. Given Entebbe's strategic location as an international airport and potential international ferry hub, the already burgeoning urban centre could see major expansion.

However, any such development should be tempered by ecological concerns, both with careful environmental planning and management of related lakeshore developments and port facilities and with controls and implementation of environmental regulations on the increased lake traffic that is likely to result. It should be noted that the role of beach resorts will continue to be constrained by the ongoing heavy lake pollution making swimming a precarious activity.

75 https://www.newvision.co.ug/new_vision/news/1316577/lake-victoria-soon-history
76 https://en.wikipedia.org/wiki/Energy_in_Uganda
77 https://www.newvision.co.ug/new_vision/news/1316577/lake-victoria-soon-history
78 https://earthobservatory.nasa.gov/features/Victoria/victoria2.php
79 https://www.reuters.com/article/us-uganda-oil-pipeline/activists-urge-banks-not-to-finance-ugandan-oil-pipeline-idUSKCN1T818C
80 https://wwf-sight.org/wp-content/uploads/2017/07/Safeguarding-Nature-and-People-Oil-and-Gas-Pipeline_Factsheet.pdf.
81 https://www.newworldencyclopedia.org/entry/Lake_Victoria#Economy

3.5. Climate change

Although IWT is considered to be an environmentally friendly and energy efficient transport mode when compared to other transport modes such road, rail or air, it is still climate sensitive. The Lake Victoria basin is experiencing variations in rainfall and temperature which affect the lake levels. Temperatures have increased by 1^{O}C over the last 50 years, and are projected to increase by between 1.5 - 3^{O}C by 2100. Although there has been no significant change in rainfall amounts between 1950 to 2010, rainfall projections indicate a high likelihood of reduction in average annual rainfall in the Lake Victoria basin by between 10-20% from present. With the changing climate, droughts and prolonged dry seasons are increasing in frequency and intensity and are highly likely to intensity with a changing future climate. More intense rainy seasons are reported and will intensify in the future leading to increased run-off, soil erosion and flooding. A combined increase in temperature and drought occurrences will result in reduced water levels.

Lake Victoria has a long history of significant water fluctuations, with low water levels resulting from regional drought and high-water levels indicating high rainfall and regional flooding[82]. This fluctuation in water level results in reduced reliability and efficiency of navigation on the lake and is reducing its navigation potential. For example, the strong 1997-1998 El Niño was followed by a prolonged drought led to the lowest water levels in Lake Victoria since the 1960s[83] as the lake also experienced receding water levels from 2001 to 2006.

Although no detailed study has been done to document the likely impacts of climate change on Uganda's water transport, the predicted heavy/high intensity rainfall could trigger flooding that could cause damage to the lake shorelines and riverbanks. This could cause damage to the water transport infrastructure (e.g. terminals, inland ports, landing stations, and navigation equipment), resulting in the suspension of navigation and. The floods could also damage property and affect health of population living in areas exposed to flooding. On the other hand, the long periods of drought/reduced rainfall in the region may lead to reduce water levels in the lakes and rivers that could limit big water vessels from navigating. This could in turn result into increased water transportation costs (cost per ton) which could reduce IWT competitiveness. If water levels in lakes reduce, some IWT facilities could, with time, become offshore i.e. they will be away from lakes or rivers i.e. without any shore connection.

Water transport is known to be a low carbon intensive transport mode. For example, the consumption of fuel in IWT is four to eight times lower than that in roads and the CO_2 emission by engines of inland ships is also lower. Nonetheless, the CO_2 emissions from Uganda's IWT have not been assessed, and are therefore unknown. But, there are three possible sources of GHG emissions from a well-developed and extensively used IWT (in future) that could apply to Uganda, including:

i. Emissions associated with the generation of energy to operate the IWT network and/or navigation infrastructure e.g. lighting, water supply, back pumping, landing station/bridge operation, service/maintenance vehicles, etc.;

ii. The CO_2 emissions from vessels themselves, and;

iii. Unsustainably managed solid wastes generated at the terminal/ports.

Therefore, an assessment of climate risks and GHG emissions from IWT/navigation is required before key strategic decisions on investment for IWT can be made. It will be essential to invest in climate friendly IWT taking into account resilience and low carbon technologies for the navigation itself, but also for spatial planning and urban development aspects on the landing sites and inland ports.

3.6. Gender and Social Inclusion

Inland water transport can make a big difference in increasing women and other vulnerable group's productivity contributing to economic growth. IWT plays a crucial role in socially sustainable development by broadening access to health and education services, employment, improving the exchange of information, and promoting social cohesion. Gender and social inclusion (GESI) considerations have not featured in the inland water transport space in Uganda, meaning exclusion is taking place, costs are being incurred and opportunities missed. There are concerns regarding possible inequitable social norms and discriminatory practices in IWT-related economic activities. Women and other vulnerable groups of people are frequently constrained in their access to transport and this often translates in limited access to labour markets, increases production costs and reduces the amount of goods which can be taken to market.

The existing national strategic implementation Plan for the National Transport Master Plan (2015-2023) defines the general orientations of the Government of Uganda in terms of transport infrastructure. However, it does not reflect gender equality and social inclusion in the planning and implementation process. The existing policies, programs and actions do not fully address the barriers of women, the poor, and other vulnerable groups of people, (children, PWDs and others). For example, in some instances, the provision of ferry services in some cases is free and therefore accessible to the poor but in other cases fares may exclude the very poor and vulnerable people; in some locations the vulnerable poor living on more remote islands suffer from poor access to services and transport can be expensive. Making transport

82 Yin, X. & Nicholson, S. (1998), 'The water balance of Lake Victoria', Journal of Hydrological Sciences 43, 798-811.

83 There is also disputed evidence that increased outflows via the extended hydroelectric scheme, Kiira, at Jinja affected the Lake's water levels.

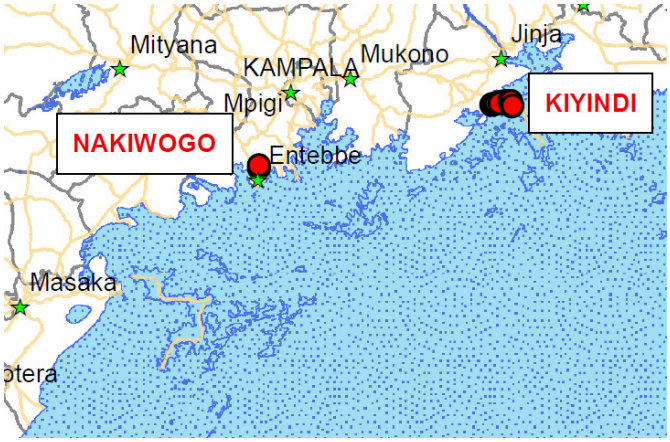
policy inclusive and more responsive to the needs of vulnerable persons, requires a structured approach to understand their needs, identifying instruments to address the needs, analyzing the costs and benefits of those instruments, and establishing an appropriate policy framework.

In the polices the effects on divergent vulnerable groups usage of transportation; their specific needs, interests, cost considerations, user friendly facilities, safety and opportunities in using inland water transportation should be prioritized. To efficiently address the above, there should be disaggregated beneficiary data for the communities being served by the Inland Water Transport Services. Currently there may be data available for Kalangala District which cover the Ssese Islands but that does not cover the entire country to contribute to the improvement of IWT in the country-wide.

3.7. Travel Supply and Demand

As part of this Situational Analysis, the IWT team have conducted a demand analysis of the current status of urban and island ferries on Lake Victoria around Kampala. The primary data used for this was provided by UNRA as they had conducted five-day week surveys at each of the ferry landing sites in the period of July-August 2019. The ferry services surveyed (and subsequently analysed by CIG) are as follows:

- Bugoma – Bukakata – Operated by Kalangala Infrastructure Services (KIS) Ltd.
- Buwaya – Nakiwogo – Operated by UNRA (shown right)
- Buvuma – Kiyindi – Operated by UNRA (shown right)
- Kalangala – Nakiwogo – Operated by MoWT



The surveys collected data on ferry departure time and arrival time, passengers boarding and alighting, the mode and quantity of vehicles boarding the ferry; and the type and quantity (in tonnage weight) of the produce cargo being transported on the ferries. The data was cleaned to correct any obvious errors. The data from each route was examined to determine which days of the week the surveys took place. Most routes were surveyed between Wednesday – Sunday, or Tuesday – Saturday. The only exception to this was the Kalangala-Nakiwogo route, whereby data was only collected for two days. When standardising the data, it was ensured that all data labels were formatted the same way (to avoid segregation in the analysis), and that the units of measurement were standardised across all types of produce. ;;

The summary of the data analysis is presented on the figure (right) which shows that the average number of passengers using the ferries in a given five-day period is 10,926, from a total of 174 trips.

Observed							
Route	**Days Surveyed (n)**	**Owner**	**Number of Trips**	**Average Route Length**	**Total Boarding**	**Total Alighting**	**Average Passengers**
Bugoma - Bukakata	**5**	**KIS**	**30**	**0:30**	**3136**	**3027**	**3081.5**
Bukakata - Bugoma	**5**	**KIS**	**26**	**0:32**	**2759**	**2927**	**2843**
Buwaya-Nakiwogo	**5**	**UNRA**	**45**	**0:21**	**1035**	**1078**	**1056.5**
Nakiwogo-Buwaya	**5**	**UNRA**	**39**	**0:19**	**793**	**772**	**782.5**
Buvuma-Kiyindi	**5**	**UNRA**	**16**	**1:07**	**1440**	**1440**	**1440**
Kiyindi-Buvuma	**5**	**UNRA**	**15**	**1:00**	**1560**	**1560**	**1560**
Kalangala-Nakiwogo	**1**	**MoWT**	**1**	**3:30**	**94**	**69**	**81.5**
Nakiwogo-Kalangala	**2**	**MoWT**	**2**	**1:00**	**78**	**83**	**80.5**
TOTALS			**174**		**10,895**	**10,956**	**10,926**

This cumulated observed data was then scaled up to provide estimated annual figures for demand of the ferries by applying an annualization factor. The estimated current demand is presented in the table below.

Route	Passengers	Cargo (tonnes)	Vehicles
Bugoma - Bukakata	420,640	44,107.00	85,271
Buwaya-Nakiwogo	130,569	71,348.61	106,358
Buvuma-Kiyindi	213,000	47,971.98	28,613
Kalangala-Nakiwogo	43,221	8,963.75	7,988

Source: Consultants' estimates based on UNRA data

Table 4: *Current Passenger, Vehicle and Freight Demand on Key Ferry Routes*

Focusing on the vehicles, the data indicates that the most common vehicle mode passengers bring on the ferries are motorcycles, although cars and freight make up a significant portion of vehicles on the Buwaya-Nakiwogo, and Kalangala-Nakiwogo routes.

Route	Cars / 4WD	Motorcycles	Buses	Freight	Other (3-Wheeler, NMT)
Bugoma - Bukakata	**28,897**	**41,322**	**5,112**	**9,940**	**0**
Buwaya-Nakiwogo	**21,726**	**63,971**	**142**	**19,099**	**1,420**
Buvuma-Kiyindi	**5,467**	**18,105**	**426**	**4,615**	**0**
Kalangala-Nakiwogo	**1,420**	**3,373**	**710**	**2,485**	**0**
TOTAL	**57,510**	**126,771**	**6,390**	**36,139**	**1,420**

Source: Consultants' estimates based on UNRA data

Table 5: *Vehicle Types Transported on Key Ferry Routes*

In terms of produce, most cargo carried on the ferries (41%) is transported on the Buwaya-Nakiwogo route, as it takes cargo in and out of Kampala. The most popular produce carried on this route (in tonnage) is equipment, which is also the most common form of cargo carried on the ferries overall (this is to be expected when measuring quantity of cargo on weight).

Produce	Bugoma - Bukakata	Buwaya-Nakiwogo	Buvuma-Kiyindi	Kalangala-Nakiwogo	TOTAL
Agricultural Produce	**2,698.00**	**25,702.00**	**4,118.00**	**1,420.00**	**33,938.00**
Building Materials/Hardware	**6,102.47**	**4,009.37**	**142.00**	**0.00**	**10,253.84**
Equipment	**3,455.93**	**31,850.60**	**2,251.06**	**0.00**	**37,557.58**
Fertilizer & Chemicals	**2,158.40**	**1,093.40**	**7,081.26**	**0.00**	**10,333.06**
Fuels (Gas & Liquid)	**1,476.80**	**2,964.25**	**25,265.63**	**0.00**	**29,706.68**
Livestock	**7,494.48**	**426.00**	**1,479.19**	**0.00**	**9,399.66**
Mineral Rocks	**4,409.38**	**397.60**	**75.76**	**0.00**	**4,882.74**
Processed Food and Beverages	**951.40**	**14.20**	**143.28**	**0.00**	**1,108.88**
Shop Items	**10,110.40**	**1,671.34**	**6,361.75**	**7,543.75**	**25,687.24**
Others	**5,249.74**	**3,219.85**	**1,054.07**	**0.00**	**9,523.66**

Source: Consultants' estimates based on UNRA data

Table 6: *Freight Transported on Key Ferry Routes*

The data was then used to conduct demand forecasting over the next twenty years by applying the observed figures for 2019 on each ferry route (see above) and applying growth factors and assumed elasticity factors to demand. For the first ten years (2020 – 2030), historic rates of growth for each 'origin' and 'destination' zone was identified and used as a basis for future population growth figures and combined with a population elasticity of demand of 1.14. For years 11 – 20, consistent with the UNRA Economic Manual Guidance, a maximum growth rate of 3% per annum has been imposed (i.e. in cases where the aforementioned adjustments yielded per annum growth rates of more than 3% beyond the first 10 years of analysis, the 3% ceiling was imposed).

The estimated demand forecasts are presented below.

Route	Current	2025	2030	2035	2040
Bugoma - Bukakata	421,000	459,000	491,000	519,000	548,000
Buwaya-Nakiwogo	131,000	171,000	211,000	244,000	283,000
Buvuma-Kiyindi	213,000	459,000	790,000	916,000	1,062,000
Kalangala-Nakiwogo	43,000	57,000	70,000	81,000	94,000

Source: Consultants estimates (current based on data received from UNRA)

Table 7: *Passenger Demand Forecasts on Key Ferry Routes*

The table below presents a summary of the overall demand and supply data that has been received through a combination of primary (see above regarding UNRA data analysis) and secondary sources.

UNRA Ferry crossing	
Kiyindi - Buvuma	213,000 pax p/ annum (UNRA data) – fare 0 UGX
Nakiwogo – Kyanvubu	720,000 pax / annum capacity (UNRA), 130,000 pax per annum (actual) (UNRA data) – fare 0 UGX
Bugoma – Bukakata	23,000 pax / week capacity (KIS), 420,000 pax per annum (actual) (UNRA data), – fare 0 UGX
MoWT Ferry Entebbe and Bugala Island (Kalangala – Nakiwogo)	43,000 pax per annum (UNRA data), Fare 14,000 UGX (1st class), 10,000 UGX (2nd class)
Private Dhows	Typical cost 2,000 UGX for 1.4 km trip Capacity 15 pax Petrol running costs: 5,000 UGX per km Cost of new dhow - 2 million UGX + 8 million UGX (for engine)
Port Bell	Zero passenger transport One cargo ferry operates from Port Bell (capacity of 1250 tones) Cargo traffic has been declining: 2005 = 500,000 tones (National Transport Master Plan Including a Transport Master Plan for Greater Kampala Metropolitan Area 2008-23).) ,2012 = 90,000 tones, 2015 = 30,000 tones (2017 Statistical Abstract).
Road Transport competition	More than 90% of all cargo in Uganda is transported by road (National Transport Policy 2014).
Port Jinja	Typically, four cargo ships per month The port charges the following fee: i) 4500 UGX per tonne, ii) 6000- 8000 UGX per tonne for fuel, iii) docking fee of $200 per month for ships greater than 200 tones and iv) $150 for ships less than 200 tones, $20 per landing for passenger ships

Table 8: *Passenger Demand Forecasts on Key Ferry Routes*

- MTBS (2018) conducted a passenger survey at each of the landing sites to collect information such as origin and destination; landing site of origin or destination, frequency of trip, total journey time on boat, transfer time, costs of trip, trip purpose, modes of access to landing sites, goods and value of goods transported. 600 people were surveyed, of which 363 were males and 232 were females.
  - > Only 39 people interviewed had a car – the main access mode of transport is by motorbike or 14-seater taxi.
  - > Among the respondents, 121 people travel for business – no other travel purpose response exceeded 30 people
  - > The results of the survey suggest the many travelers are commuters that make the same trip multiple times a week
  - > The reported journey times vary between 5 minutes and 17 hours, with an average of 3 hours and 45 minutes. Most of the respondents using the ferried make a journey of between 2 and 4 hours
  - > From this survey, there was not clear peak of passenger traffic during the day, and seasonality was not measured
  - > Most people appeared to travel with commodities of a value of around USD 10 to 50. 14% of respondents reported carrying fish, whilst 40% of people did not report any commodity at all.
  - > The majority of respondents were willing to pay around UGX 10,000 for 1 and 2 hours' faster transport. 106 were not willing to pay to travel 1hr faster, and 100 were not willing to pay to travel 2 hours faster.
  - > The figures below show an overview of the traffic counts (average daily passenger volumes, comprising both arriving and departing passengers) at each of the landing sites. Figure 3 depicts the passenger traffic modelled routes from the MTBS (2018) survey, made up of "official" ferry services, "unofficial" ferry services (usually dhows), and "unsurveyed" ferry services which were not identified in the survey but would be necessary to connect isolated pockets of the population.

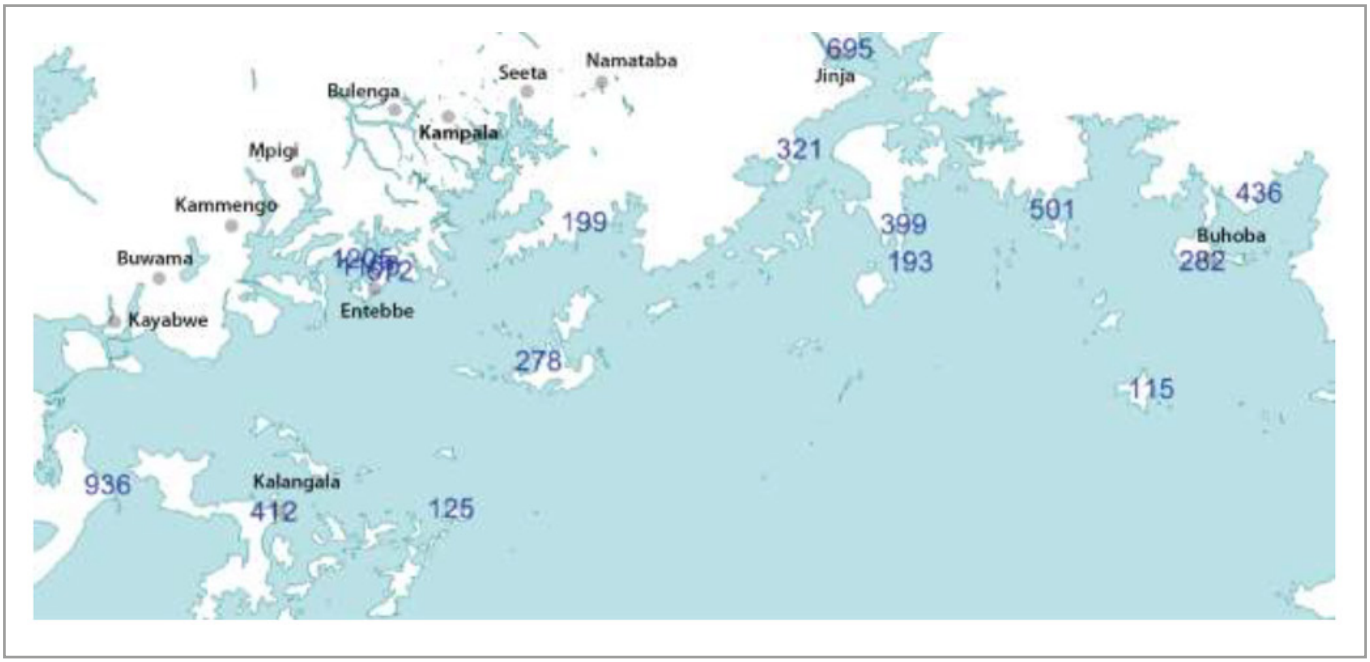


Figure 38: *Satellite image of Kiyindi landing site*

Figure 39: *Passenger Count Volumes from Entebbe Area (MTBS 2018)*

Figure 40: *Passenger Demand Routes from MTBS (2018 Survey)-Base Year Model*

- Gauff (2017) analysis show that Uganda cargo routing mostly takes place via or from and to Greater Kampala area, even if direct transport to Kenya or Tanzania and beyond by respective seaports would evolve less costly or time-wise shorter. The reasons for this are;
  - > Physical trade flows in Uganda follow the monetary or decision making pattern. Sales and commissions or distribution of international trade is managerial, administratively and material-logistically concentrating on Greater Kampala area first and, from this area onwards, on cross border transport.
  - > Greater Kampala area is at present the future intermodal focal point for road/rail and – by Bukasa Port – multimodal operations road-rail-ship and vice versa.
  - > Greater Kampala Area is the production and consumption center in Uganda
- As the table below shows (Gauff GmbH 2017), Uganda's trade balance is negative, with a deficit of below 3 billion USD in 2015.
  - > More than two thirds of Ugandan imports are originated from 6 countries; India, China, Kenya, UAE, South Africa, and Japan. Maritime traffic (i.e. imports via Indian Ocean Seaports) counts for the majority of Ugandan imports (Gauff GmbH 2017)
  - > Counted in USD, the eight most important commodities in 2015 (with a share of 55% of all imports) are: Petroleum and Petroleum products (18.2%); road vehicles (9.4%); medical and pharmaceutical products (6.8%); iron and steel (5%); machinery specialized for particular industries (4.7%); telecommunications and sound recording/reproducing apparatus etc. (3.7%); cereals and cereal preparations (3.6%); fixed vegetable fats and oils, crude (3.6%) (Gauff GmbH 2017)
  - > The six largest recipients of Ugandan exports in monetary terms are Kenya (19.6%), South Sudan (12.9%), DRC (12.5%), Rwanda (9.7%), Sudan (3.3%) and Tanzania (3%) (Gauff GmbH 2017).
  - > The main export commodities in 2015 with a share of 52.5% of total export values were; coffee (17.8%); Petroleum products (5.5%); fish and fish products (5.2%); maize (4%); iron and steel (3.8%); cement (3.5%); animal/veg fats & oils (3.5%); tobacco (3.2%); tea (3.1%); and sugar and confectionary (2.9%) (Gauff GmbH 2017).
- Uganda's foreign trade overseas is carried in transit through Kenya or Tanzania via the nearest seaports – Dar es Salaam and Mombasa (Gauff GmbH 2017).

Item	2011	2012	2013	2014	2015
Informal Exports	355.8	453.7	421.3	414.6	399.1
Formal/Official Exports	2,159.1	2,357.5	2,407.7	2,262.0	2,267.0
Total Exports	**2,514.9**	**2,811.2**	**2,829.0**	**2,676.6**	**2,666.1**
Informal Imports	53.9	53.0	53.7	65.8	64.3
Formal/Official Imports	5,630.9	6,042.8	5,817.5	6,073.5	5,528.1
Total Imports	**5,684.8**	**6,095.8**	**5,871.2**	**6,139.3**	**5,592.4**
Trade Balance	(3,169.9)	(3,284.6)	(3,042.1)	(3,462.8)	(2,926.3)
% change (Exports)	17.1	11.8	0.6	(5.4)	(0.4)
% change (Imports)	20.2	7.2	(3.7)	4.6	(8.9)

Notes: 2015 figures are provisional

Source: UBOS; Statistical Abstract 2016, referring to URA, UCDA, UETCL, TOTAL (U) LTD and SHELL (U) LTD

Figure 41: *External Trade 2011-15 in Million USD (Gauff GmbH 2017)*

- In 2014, the ports of Mombasa and Dar es Salaam handled roughly 20.8 million tons each, of which 11.7 million tons were imports (Gauff GmbH 2017).
- Mombasa is the main transit port for Uganda. Out of the 26.7 million tons handled in 2015, 5.98 million tons (22.8%) of total port throughput were import or export cargoes to or from Uganda. Uganda importers and exporters are combined the second largest client group for Mombasa port and count for a market share of 78% in total transit through the port (Gauff GmbH 2017).
- The share of Uganda in transit traffic through the port of Dar es Salaam of 5.2 million tons in 2014 comes to less than 2% of throughput, or some 88,000 tons of cargoes only. While Uganda's trade flows via Mombasa are stable, transit

throughput in Dar es Salaam fluctuates significantly. Uganda transit through Dar es Salaam was nearly three times higher in 2013 than it was for 2014 (Gauff GmbH 2017).

- Port hinterland transportation between Uganda and Mombasa is by road, but also by Metre Gauge Railway (MGR) for containers, iron, steel, minerals and agriculture products. Transit cargos from or to Uganda via Tanzania are carried mainly by road or by Lake Victoria (Gauff GmbH 2017).

Labels	2011	2012	2013	2014	2015
	Total t	Total t	Total t	Total t	Total t
Imports	5.252.843	5.764.084	5.603.371	6.439.611	6.621.044
Exports	1.946.653	2.203.909	1.944.220	1.810.947	1.634.200
Transit	2.792.735	3.479.618	4.352.980	3.493.523	3.329.113
Total	**9.992.230**	**11.447.611**	**11.900.571**	**11.744.081**	**11.584.356**

Figure 42: *Total Tonnage of Commodities in Uganda 2011-15 (Gauff GmbH 2017)*

- Gauff GmbH measured the total volumes of the imports, exports and transit traffic by adding the cargo quantities being transported in each border crossing stations including airfreight and other cargoes. The analysis results of import, export and transit commodity flows 2011-2015 are summarized in the tables below.

Cluster	2011	2012	2013	2014	2015
	t	t	t	t	t
Southern	71.632	144.160	146.866	121.101	122.914
Rwanda	32.310	23.989	23.855	30.504	23.019
South Lake Albert	7.319	7.212	7.492	7.746	5.732
North Lake Albert	4.267	5.495	3.987	3.948	5.638
Northern	5.840	96.775	3.572	3.339	2.921
Kenya	5.052.076	5.310.844	5.256.376	3.875.372	2.552.042
Total cluster	**5.173.445**	**5.588.475**	**5.442.147**	**4.042.010**	**2.712.266**

Figure 43: *Development of Imports in tons per Border Section 2011-15 (Gauff GmbH 2017)*

Cluster	2011	2012	2013	2014	2015
	t	t	t	t	t
Southern	9.029	18.008	12.676	18.179	12.098
Rwanda	487.366	614.163	575.072	283.789	184.256
South Lake Albert	202.810	166.057	113.320	182.100	158.315
North Lake Albert	43.628	70.754	100.825	70.801	133.280
Northern	404.443	539.310	430.018	495.690	455.480
Kenya	739.819	678.010	646.289	694.312	615.064
Total cluster	**1.887.094**	**2.086.301**	**1.878.201**	**1.744.870**	**1.558.494**

Figure 44: *Development of Exports in tons per Border Section 2011-15 (Gauff GmbH 2017)*

Cluster	2011	2012	2013	2014	2015
	t	t	t	t	t
Southern	1.457	377	22.406	545.108	5.450
Rwanda	66.047	4.046	334.879	101.146	13.858
South Lake Albert	16.709	55.376	81.943	3.328	477.933
North Lake Albert	107	425.191	2.460	89.840	2.031
Northern	1.889.612	72.398	72.645	4.392	45.648
Kenya	818.803	2.922.230	3.838.649	2.749.984	1.086.319
Total cluster	**2.792.735**	**3.479.618**	**4.352.980**	**3.493.798**	**1.631.239**

Figure 45: *Development of Transit in tons per Border Section 2011-15 (Gauff GmbH 2017)*

Border Sections / Clusters			2011	2012	2013	2014	2015
No.	Description		t	t	t	t	t
1	**Southern / Tanzania**		**33.700**	**104.871**	**61.254**	**53.265**	**57.690**
	Mode of transport:	Lake Transport	24.672	86.863	48.578	35.086	45.587
		Road Transport	9.029	18.008	12.676	18.179	12.103
2	**Rwanda**		**487.366**	**614.163**	**575.271**	**283.789**	**184.256**
	Mode of transport:	Road Transport	487.366	614.163	575.271	283.789	184.256
3	**DRC south of Lake Albert**		**202.810**	**166.057**	**113.320**	**182.100**	**158.315**
	Mode of transport:	Road Transport	202.810	166.057	113.320	182.100	158.315
4	**DRC North and Lake Albert**		**43.628**	**70.754**	**100.825**	**70.801**	**133.280**
	Mode of transport:	Road Transport	43.628	70.754	100.825	70.801	133.280
5	**Northern Uganda S.Sudan**		**404.443**	**539.310**	**430.018**	**495.690**	**455.480**
	Mode of transport:	Road Transport	404.443	539.310	430.018	495.690	455.480
6	**Kenya**		**739.819**	**678.010**	**646.289**	**695.782**	**615.721**
	Mode of transport:	Rail Transport (assessed)	6.375	6.625	8.375	5.000	5.225
		Road Transport	733.444	671.385	637.914	690.782	610.496
7	**Air cargo or others n.e.s.**		**32.634**	**28.655**	**15.656**	**29.063**	**29.457**
	Mode of transport:	Air Freight	32.634	28.655	15.620	27.105	21.083
		Road Transport assumed	0	0	36	1.958	8.375

All Border Traffic Clusters		**1.944.400**	**2.201.819**	**1.942.633**	**1.810.489**	**1.634.200**
Mode of transport:	Lake Transport	24.672	86.863	48.578	35.086	45.587
	Rail Transport (assessed)	6.375	6.625	8.375	5.000	5.225
	Air Freight	32.634	28.655	15.620	27.105	21.083
	Road Transport	1.880.719	2.079.676	1.870.060	1.743.298	1.562.305
Modal Split Uganda Export Traffic in %	Lake Transport	1,3%	3,9%	2,5%	1,9%	2,8%
	Rail Transport (assessed)	0,3%	0,3%	0,4%	0,3%	0,3%
	Air Freight	1,7%	1,3%	0,8%	1,5%	1,3%
	Road Transport	96,7%	94,5%	96,3%	96,3%	95,6%
	All Modes of Transport	100,0%	100,0%	100,0%	100,0%	100,0%
Note: Statistical Deviations/Null or corrected entries		*2.253*	*2.090*	*1.586*	*458*	*0*

Figure 46: *Development of Transit in tons per Border Section 2011-15 (Gauff GmbH 2017)*

Border Sections / Clusters			2011	2012	2013	2014	2015
No.	Description		t	t	t	t	t
1	Southern / Tanzania		132.386	299.280	281.373	190.152	231.628
	Mode of transport:	Lake Transport	60.753	155.120	134.508	46.495	5.892
		Road Transport	71.632	144.160	146.866	143.656	225.735
2	Rwanda		32.310	23.989	23.855	30.804	23.942
	Mode of transport:	Road Transport	32.310	23.989	23.855	30.804	23.942
3	DRC south of Lake Albert		7.319	7.212	7.492	7.746	5.732
	Mode of transport:	Road Transport	7.319	7.212	7.492	7.746	5.732
4	DRC North and Lake Albert		4.267	5.495	3.987	3.948	5.638
	Mode of transport:	Road Transport	4.267	5.495	3.987	3.948	5.638
5	Northern Uganda S.Sudan		5.840	5.146	3.572	3.339	2.921
	Mode of transport:	Road Transport	5.840	5.146	3.572	3.339	2.921
6	Kenya		5.052.076	5.310.844	5.264.497	6.180.289	6.322.197
	Mode of transport:	Rail Transport (assessed)	579.177	606.130	744.338	677.800	813.295
		Road Transport	4.472.899	4.704.714	4.520.159	5.502.489	5.508.902
7	Air cargo or others n.e.s.		18.644	20.489	18.596	23.334	28.985
	Mode of transport:	Air Freight	18.589	20.472	18.595	23.268	27.883
		Road Transport assumed	55	17	2	66	1.102
All Border Traffic Clusters			5.252.843	5.672.455	5.603.371	6.439.611	6.621.044
Mode of transport:		Lake Transport	60.753	155.120	134.508	46.495	5.892
		Rail Transport (assessed)	579.177	606.130	744.338	677.800	813.295
		Air Freight	18.589	20.472	18.595	23.268	27.883
		Road Transport	4.594.323	4.890.733	4.705.931	5.692.047	5.773.973
Modal Split Uganda Import Traffic in %		Lake Transport	1,2%	2,7%	2,4%	0,7%	0,1%
		Rail Transport (assessed)	11,0%	10,7%	13,3%	10,5%	12,3%
		Air Freight	0,4%	0,4%	0,3%	0,4%	0,4%
		Road Transport	87,5%	86,2%	84,0%	88,4%	87,2%
		All Modes of Transport	100,0%	100,0%	100,0%	100,0%	100,0%
Note: Statistical Deviations/Null or corrected entries			0	0	0	0	0

Figure 47: *Import Traffic of Uganda 2011-15 by Border Sections/Traffic Clusters in tons(Gauff GmbH 2017)*

3.8. Urban Commuter Services

There is currently a lack of regulated organized urban inland water services and therefore there is no observed demand data to report or to use to estimate future demand levels. However, even though such demand can be considered as latent and stakeholders have informed the consultants that the following four services could be viable from a demand perspective:

- Entebbe – Port Bell
- Entebbe- Jinja
- Port bell – Jinja
- Gbaba – Katosi

The Kampala Urban Model, which has been used to estimate the bus demand in the city, will be used by CIG consultants to forecast the demand for the above services. The new services will be coded as new public transport services in the model and the table below presents the generalised cost and time characteristics of a fast and slow service which will be used to estimate future demand levels.

Route / Service	Entebbe-Port Bell		Entebbe-Jinja		Port Bell-Jinja		Ggaba - Katosi	
	Fast	Slow	Fast	Slow	Fast	Slow	Fast	Slow
Distance (km)	44	44	121	121	125	125	1.8	1.8
Speed (km / hr)	60	25	60	25	60	25	60	25
Fare (UGX / km)	780	330	780	330	780	330	780	330
Fare UGX)	34,300	14,500	94,400	39,900	97,500	41,300	1,400	600
Interchange Penalty (UGX)	1375							
Waiting Penalty	1,250							
Time (hrs)	0.73	1.76	2.02	4.84	2.08	5.00	0.03	0.07
Total Cost (UGX)	36,925	17,125	97,025	42,525	100,125	43,925	4,025	3,225

Table 9: *Generalised Journey Time and Cost Characteristics for Urban Passenger Services in Greater Kampala*

4.0 EMERGING INVESTMENT OPPORTUNITIES

4.1. Infrastructure

The key areas of opportunity in IWT are the following: -

- Development of intra-regional traffic
- Development of container traffic between EAC countries in a growing market.
- Private sector interested in using IWT for bulk cargo in large quantities.
- Private sector interested in piloting mechanized cargo handling and longer-term lease or contractual agreements for port management and cargo handling.
- Potential for new financing sources for the sector such as tourism levies, fishing levies, etc.
- Positive environmental impact of IWT compared to other transport modes.
- Development of synergies between water management and IWT.

The emerging areas of investment in respect to IWT by theme include: -

- **Waterway Design Actions**
  - > Condition survey of the dangerous areas for navigation;
  - > Standardize waterway classification;
  - > Design of shoreline protection works;
  - > Experimental test dredging;
  - > Morphology study in the navigation path areas.
- **Navigation Safety Actions**
  - > Introduce a vessel inspection system;
  - > Establish a framework for reporting marine accidents;
  - > Development of a contingency plan;
  - > Implement search and rescue units on the Lake;
  - > Introduce safety books on safety issues and safe working practices;
  - > Introduce the obligation of Automatic Identification System (AIS) and Very High Frequency (VHF) on the whole Lake Operations;
  - > Development of Electronic Navigation Charts (ENCs) for the whole lake.
- **Aids to Navigation Actions**
  - > Construction of clearly visible low water alert gauges;
  - > Install a compulsory Global Positioning System (GPS) System;
  - > Install lights and marks at port approaches;
  - > Install buoys and beacons;
  - > Maintain the Aids to Navigation (AtN).
- Port Development and Management Actions
  - > Development of a port maintenance system;
  - > Development of a port Health, Safety and Environmental Management (HSEM) system;
  - > Rehabilitation and/or reconfiguring of existing passenger ports;
  - > Construction of new passenger ports and landing facilities;
  - > Construction of new port infrastructures for varying Deadweight Ton (DWT) cargo capacities;
  - > Update “Master Plan for ‘Inland Waterway Sector’”;
  - > Construction of a new passenger and cargo terminal;
  - > Development of a long-term port strategy and policy;

- Study ports to handle containers from oil graben for export.

4.2. Vessel Rolling Stock

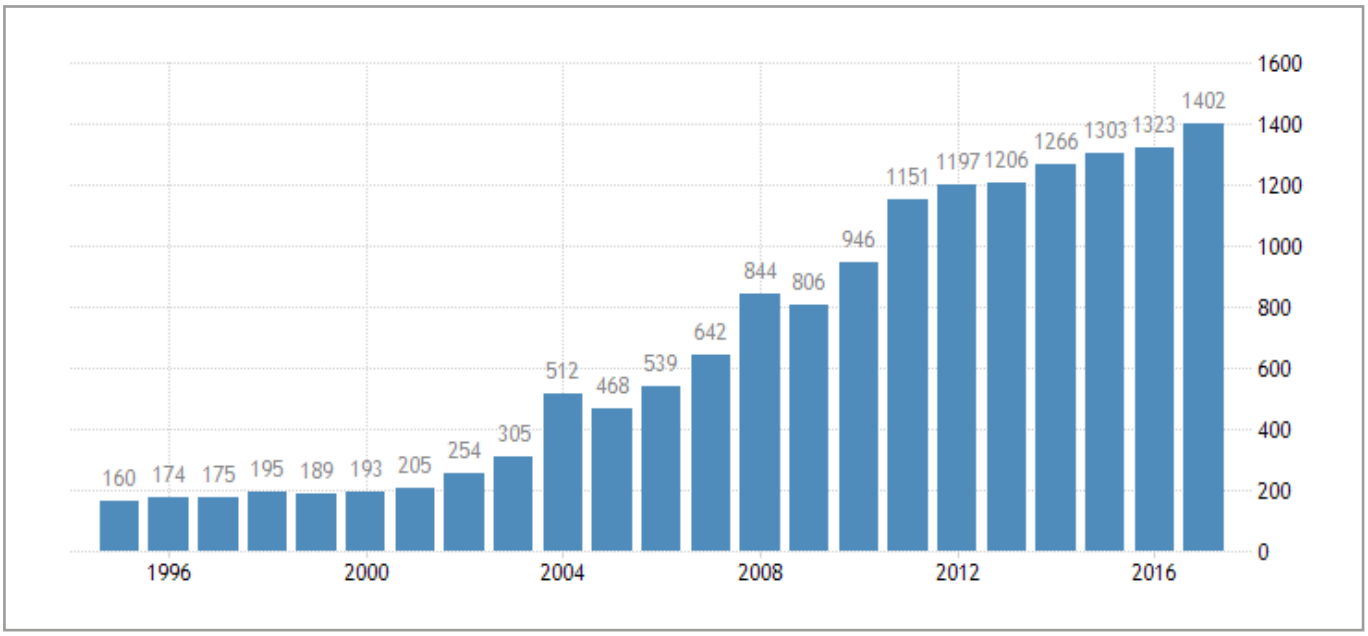
In respect of vessel rolling stock, the key areas of investment include: -

- Standardize vessel classification;
- Conduct feasibility study on the use of reinforced lake barges;
- Development of short and long-term fleet policy;
- Development of ship construction and shipyard policy;
- Implementation of standards for construction of new vessels.

4.3. Leisure and Tourism Facilities

At the national level, the Uganda Investment Authority (UIA) notes that tourism is becoming instrumental in the socio-economic development of Uganda, adding that it has a potential to greatly contribute to the strengthening of the fundamentals of the economy. UIA further notes that the tourism sector is the country's single largest export earner and generator of foreign exchange (UIA, 2016).[84]

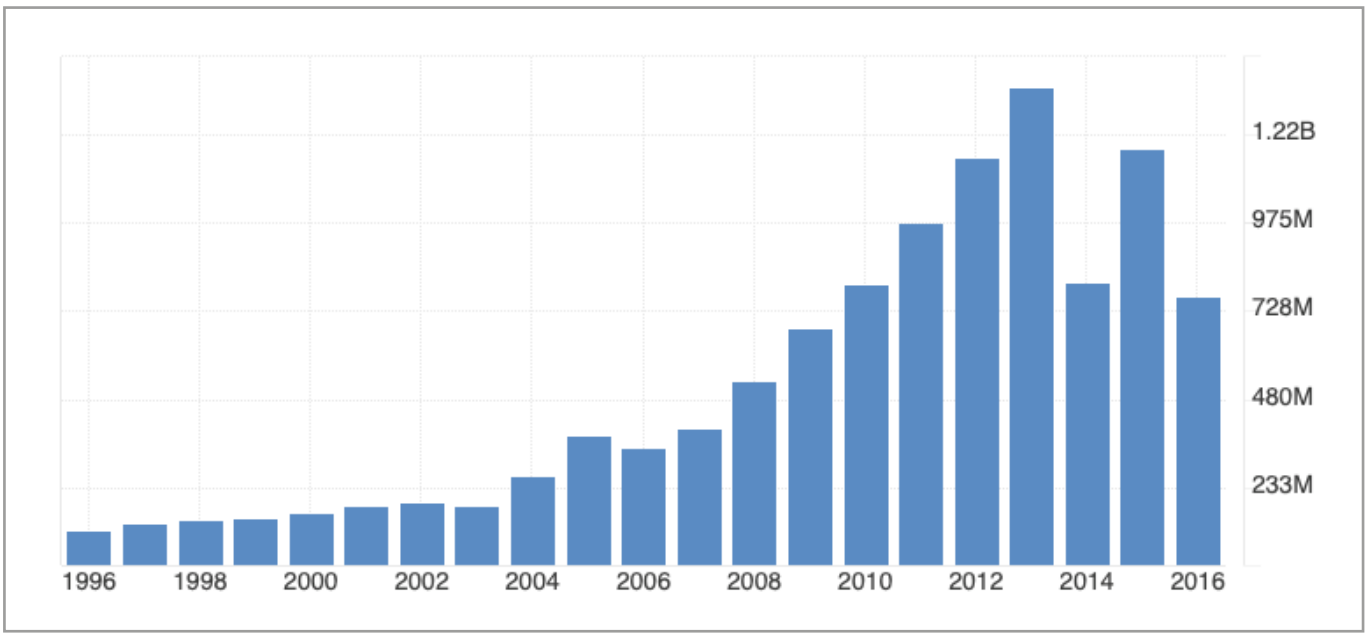
The number of international tourists has been steadily increasing in the last 25 years (Figure .... According to UBOS, the country received 1.8 million tourists in 2018, more than eleven times the number of visitors received in 1995. According to Godfrey Kiwanda, the State Minister of Tourism, 2018 was not a great year for the sector, mentioning the boat tragedy on Lake Victoria in November both as a tragedy and a threat. Kiwanda noted, however, that growing confidence of water transport is evidenced by travelers who visited Kalangala islands over Christmas," (Lyatuu, 2019).[85]



Source: Trading Economics [86]

Figure 48: *Tourists arrivals in Uganda ('000).*

84 Uganda Investment Authority (2016) Tourism Sector Profile. In: https://www.ugandainvest.go.ug/tourism-sector-profile/
85 Lyatuu, J. (2019) Uganda targets 1m more tourists in 2019. The Observer, January 16. In: https://observer.ug/news/headlines/59660-uganda-targets-1m-more-tourists-in-2019
86 Trading Economics (no date) Uganda Tourist Arrivals. In: https://tradingeconomics.com/uganda/tourist-arrivals



Source: Trading Economics [87]

Figure 49: *International tourism receipts (in USD).*

According to a Government budget report, the direct contribution of the tourism sector to the national economy was almost USD750m, representing 2.9% of GDP) while the total (overall) contribution amounted to USD1,914m (7.3% of GDP in 2017). In terms of employment contribution, tourism directly supported 229,000 jobs (2.4% of total employment) while the overall contribution of the sector to employment was more than 600,000.

The report cites the World Bank survey for Uganda in 2013 which notes that attracting 100,000 additional tourists would add 1.6% to national GDP and 11% to exports. If every tourist spent one additional night in the country, it would add 7% to exports and 1% to GDP. Taking into account that the tourism contribution to GDP and to employment in neighboring Kenya and Tanzania is about twice that of Uganda (WTTC, 2018),[89] the sector has considerable potential for expansion if fully supported.

Tourism potential in Kalangala District, Ssese Archipelago

According to the Minister for Water and Environment, Professor Ephraim Kamuntu, 'Kalangala was sitting on gold yet people remain wallowing in poverty.' (UWA, no date[90]). He urged tourism promoters to harness the potential of the industry in the island. The archipelago was categorised as Grade B in the Integrated Tourism Master Plan, described as an area of exceptional scenic attraction (MTWA[91], 1993; cited in Ssemmanda and Opige, 2018).

As evidenced by the team visit, tourism facilities on Bugala Island are limited and variable in quality. Although Kalangala Infrastructure Services (KIS) has greatly improved basic infrastructure on selected parts of the island in recent years such as piped water and electricity, most of the main road network is in poor condition despite efforts at rehabilitation. ICT is also in need of improvement, and the infrastructure and passenger facilities at the landing sites (both on the island and at the Entebbe terminal) are very basic with multiple opportunities for improvements. The team agreed on the great potential of the island to become a tourism spot for both Ugandans and international visitors, however the above-mentioned need to be improved as well as the transportation system between the island and mainland and also between islands in the archipelago.

The MTII and UTB[92] report on tourism in Lake Victoria (no date) highlights the importance of accessibility for tourism development, noting the importance on 'the provision of reliable and affordable water transport to facilitate the movement of people and goods & services.' The report states that 'government needs to develop the necessary tourist infrastructure connecting the various islands to each other as well as to adjacent landing sites on the mainland.'

87 Trading Economics (no date) Uganda: International tourism, receipts. In: https://tradingeconomics.com/uganda/international-tourism-receipts-us-dollar-wb-data.html
88 Budget Framework Paper FY 2019/20. In: https://budget.go.ug/sites/default/files/Sector%20Budget%20Docs/2019-2020_SectorBFP_19_Tourism_12_5_20184_45_18PM.pdf
89 WTTC (2018) Travel & Tourism. Economic Impact 2018 Uganda. In: https://eagle.co.ug/wp-content/uploads/2018/03/Full-report-attached-1.pdf
90 Uganda Wildlife Authority (no date) In: https://www.ugandawildlife.org/47-newsletters-articles/july-2013/296-exploit-kalngala-tourism-potential
91 MTWA, 1993. Integrated Tourism Master Plan: Final Report. UNDP and the Ministry of Tourism, Wildlife and Antiquities.
92 Ministry of Tourism, Trade and Industry and Uganda Tourism Board (no date) Report for the Development of Marine Tourism in Uganda (Lake Victoria Cruise Transportation System). In: https://www.ugandanetworks.org/Publisher/File.aspx?ID=161242

The Uganda Tourism Development Master Plan 2014-2024 describes the current context of water transport facilities for tourism:

> 'In overall there are very few tourism-orientated water transport services or water-borne linkages to provide strategic connection between different tourism areas. This has mainly been as a result of lack of hydrographic surveys to map all the lakes and navigable water ways; limited infrastructure of docking and landing piers in key tourist areas; inadequate public ferry transportation on most of the major water ways; and high cost of water transportation. Therefore, water travel should be given priority to provide facilities and identify potential new tourist circuits and water-based activities.'

Tourism potential in other coastal locations

The team had limited opportunity to visit coastal tourist sites other than those on Bugala Island and the high-end facilities at Muyonyo, a high income suburb in the south eastern part of Kampala, the site of the Speke Resort, the luxury Muyonyo Commonwealth Resort and associated marina. Both resorts offer conference facilities and suggest there are opportunities to create a more general tourism strategy building on business tourism. This is a strategy being successfully implemented in neighboring Rwanda but Uganda has the added advantage of the attractive wooded littoral landscape of Lake Victoria

4.4. Spatial Regeneration

Port Bell

The strategy elaborated for Ugandan ports on Lake Victoria developed by the Ministry of Works and Transport in their Final Draft Master Plan Report for the Development of Bukasa Port foresees Port Bell in the future as 'a port focusing on passenger traffic and for small scale, local cargo transport.' In this scenario, it will 'encompass pedestrians as well as motorised traffic in the form of passenger cars and, to a limited extent, trucks, using vessels with limited draft.'

The same report identifies the port location as one of its main strengths being close both to Kampala City Centre and to the islands with 'interconnectivity options by railway for passenger traffic by making use of existing facilities at limited extra effort for investment compared to completely new established systems.'

The construction of Bukasa Port may prove to be a prolonged process as noted. Given uncertainties around this, a question arises about the use of Port Bell in the meantime. The movement of freight to and from Port Bell is likely to remain important in the short term, or even medium and long term and contingencies should be allowed for to retain Kampala's place in the wider freight transit mix.

Given the uncertainties, a net present value costs and benefits approach could be used using whole life costs assuming different lifetime options involving optimistic, realistic and pessimistic scenarios for the construction of the new Bukasa port facility and any new rail connections linking it to the planned Northern Corridor development. Port Bell, itself, is currently working at only 10% of its capacity and efforts to improve its current capacity should involve a strong focus on the accessibility to the port to both people and goods.

A potential solution to the current access constraints for loading and offloading goods at the port itself is to transship between truck and the existing metre gauge railway away from the port in the existing Inland Container Depot at Mukono. This was constructed by a Chinese contractor under a World Bank-funded international trade infrastructure development programme in 2015. It appears to be relatively unused possible because of poor railway links but could potentially serve rail ferry based container transportation via the ferry service to Mwanza from Port Bell some 30-35 km distant. Some consideration might be given in the longer term to building a railway spur linked to the ICD facility, whether from the existing MRG, or new SRG line. This funding should become available, and maritime transshipment facilities at Bukasa. This would serve both ports and keep some of the heavy good vehicular traffic away from the city centres, though possibly too far away from both ports). The ICD facility can accommodate loading and unloading of containers onto flat-bed railway wagons that could use the existing ferries, demand permitting.

In the view of the Managing Director of the Uganda Railway Company (URC), there is medium term potential in extending Port Bell as a passenger/marina/leisure/residential venue with speedboat services between Entebbe, Port Bell and Jinja. Intermediate size launch or hovercraft services could be investigated. Port Bell railway could bring passengers into the centre of Kampala very quickly compared with 45 mins it takes by expressway from Entebbe. With regards a passenger service between Port Bell and Kampala City Centre, there is a preliminary design to turn the Railway Station into a multi-modal hub accommodating a rail-bus interchange. URC currently run a small local rail service between Kampala and Namanve with plans to extend this service, including to Port Bell. Freight movements are more profitable, including movement between Kampala and Mombasa.

As noted, within the immediate area of the port itself, there are sizeable vacant sites that could be developed depending on site conditions and ownership to accommodate a marina and residential/leisure facility in the longer term. Access to land in the vicinity of the port for this type of development would need to be investigated as part of any feasibility study.

Jinja Port:

Jinja Port is severely underused with one cargo vessel mooring in a week during busy periods. The expected development of the port in Bukasa may restrict the future growth of Jinja Port although opportunities for increasing freight movements along the coastal corridor to Kampala and Entebbe and possibly beyond should be further investigated. However, the growing importance of Jinja as a major tourist destination as the headwaters of the Nile and an attraction for white water rafting presents other opportunities for the city's development. For example, although the port is envisaged in some proposals as a potential shipbuilding centre it could equally be transformed into a marina with associated lakeside walk with residential, resort and service development. This could enhance its position as a tourist destination for international tourism as well as a weekend getaway for Kampala residents looking for a peaceful retreat. The port sits next to the town centre and has stunning views of the lake.

Improvements to main ferry landing sites: Nakiwogo, Entebbe; Lutoboka and Luku; Kalangala, Bukakata, Masaka

Although there are variations in the quality and upkeep of the different ferry landing sites there are opportunities to invest in general infrastructure improvements and passenger facilities in all of them. Even in Luku, the best landing site visited during the field trip, the existing facilities were just basic, there is no toilet for passengers and the covered area provided is basically a shed built with tin roof and walls. There is also a potential to improve the market area close to the landing sites both for tourist and for islanders that move around to buy a wide range of products. This will enhance both their attractiveness, for example for tourists, as well as habitual users, as well as their efficiency. Measures could include:

- Improvements to general facilities of the landing site, including in some cases paving of earth piers, provision of toilets, and enclosed comfortable passenger waiting areas and offices/ticket purchasing facilities.
- Improvements to nearby market infrastructure, commercial facilities, catering, lodging and leisure services.
- Improved access roads, parking and turning areas'
- Associated provision for small safe private boat hire.

These types of improvement and upgrading will be necessary to accommodate the evident demand for increased frequency of ferry services. According to the local authorities and tourism stakeholders, MV Kalangala, for example, carries up to four times in capacity during festive seasons, raising concerns over safety of the passengers (The Independent, 2018).[93] This implies that the demand is not currently met and adding more services between Kalangala and Entebbe would to further develop the growing tourism sector in the islands. Even a small change such as swapping the current timetable so the ferry could arrive at Bugala Island at 11:30 and depart at 2pm would allow visitors to spend more time in the island. For instance, a weekend visitor currently arrives on Friday at 5:30 pm and has to return Sunday early morning, effectively spending only one full day in the island.

Improvements to fishing landing sites and associated markets

Similarly, there are multiple opportunities for investing in fishing landing sites and associated market and processing facilities and give a strong boost to what is already a thriving and important local industry.

4.5. Fishing Industry

Even though Uganda is a landlocked country, almost one fifth of its total surface area is covered by water, with many inland fishery resources. The fisheries sub-sector is regulated by the Ministry of Agriculture Animal Resources and Fisheries, which identified fish as one of the priority commodities. Although the industry is mostly artisanal, the sector is the second largest foreign exchange earner in the country (UNCTAD 2017). The value of fish and fishery products exported in 2015 was USD118.3 million (FAO 2017). In 2006, the industry involved about 1.5 million people, 300,000 directly employed and 1.2 million involved in fishing related activities (Keizire, 2006). The fishing industry contributes 3% of total GDP and 12% of the agriculture sector GDP (Fortune of Africa, no date).

Most of the fish come from its five major lakes. Lake Victoria is the largest, covering an area of 68,000 sq. km, of which 43% is in Uganda, 51% Tanzania and the remaining 6% in Kenya (Warui, 2007, cited in Kjaer et al, 2012).

According to Kjaer et al (2012), the majority of the processed and exported fish come from Uganda's largest lake.

93 The Independent (2018) Leaders, hoteliers raise concern over safety of MV Kalangala, The Independent, December 14th. In: https://www.independent.co.ug/leaders-hoteliers-raise-concern-over-safety-of-mv-kalangala/

Figure 50: *Woman drying fish at Kiyindi Landing site*

Around Lake Victoria were over 1,500 landing sites with 600,000 people involved in fisheries and beach-related activities (FAO, 2007) . About 200,000 of these are men who do the fishing, while other people involved are the 'small-scale fish processors (usually women), agents who buy fish for fish processing factories and local traders who buy for local and further markets' (Nunan, 2017). In 2014, about 38% of the people involved in the fishing industry on the lake were from Uganda.

Although the team were only able to inspect a few of the fishing sites this included the major landing site and fish market hub at Kiyindi, south of Jinja, and it was evident that there are multiple opportunities for small scale and relatively low cost interventions improving the existing infrastructure and facilities and the overall efficiency of this important industry. Similarly, although already well developed, further investment in the Ggaba landing site in Kampala City could help to promote it as a model for other fishing port on the Uganda Lake Victoria coast to emulate.

4.6. Urban Travel

Government of Uganda's intention is for the future Bukasa Port to be used for international cargo Government transport, Jinja to be used as a ship building and training facility, and for Port Bell to be used for passenger services.

Therefore, potential for new passenger ferries to be provided for services from Port Bell, including routes to Pearl Marina (28km), Entebbe, the Ssese Islands, or even international services to Kenya and Tanzania.

Based on passenger and O-D surveys, MTBS (2018) identified the following ferry routes that could be developed on Lake Victoria

- Kyanvubu to Nakiwogo
- Nakiwogo to Zingoola
- Damba island to Port Bell and Katosi
- Port Bell to Namisoke

94 FAO (2007) Uganda fishermen fear water more than HIV. In: http://www.fao.org/fishery/nems/37841/zh
95 Nunan, F. (2017) A close up look at the social networks of Lake Victoria's fisherfolk. The Conversation, November 27th. In: https://theconversation.com/a-close-up-look-at-the-social-networks-of-lake-victorias-fisherfolk-88043

- Buvuma to Kiyindi
- Buwanzi to Masese and Namoni
- Bugaia to Lyabana
- Ssenyi to Buziri
- Ssenyi to Lwaji Island
- Bwondha to Golofa and Matolo
- Port Bell to Kigungu and Ggaba

Each of the landing sites require certain developments, such as paved waiting area, development or rehabilitation of a roll-on, roll-off (RoRo) pier, development of ticket office and toilets, awning for waiting passengers, introduction of safety measures etc. The total cost of this would be approximately 21,000,000 USD (MTBS 2018). The cost of each ferry vehicle would range between 6,300,000 and 9,400,000 USD.

The IWT Technical Team held a meeting with the Ferry Services Department at UNRA on 29th October 2019 where the following projects/routes were also suggested;

- New Ferry for River crossing Nakiwogo Rd (Lulongo - Banga Beach), 1.4 km. Estimated cost of new ferry 20 billion UGX plus rehabilitation of 2 landing sites at 5 billion UGX (total 30 billion UGX)
- New ferry route of Ggaba - Katosi as a new link (0.78 km).
- Pearl Marina - Port Bell (28 km) - for fast commuter ferry service.
- Buikje - Buvuma (7.57 km). Palm trade for purpose of palm oil.

4.7. Institutional Strengthening

In respect of institutional strengthening, the key areas of investment by theme include: -

- **Regulatory Actions**
  - > Enforce harmonized rules EAC;
  - > Enforce harmonized safety rules;
  - > Adopt plans/procedures for port safety and emergency response;
  - > Policy/recommendations to enhance legal protection of passengers;
  - > Ensure effective law enforcement;
  - > Develop a regulatory framework for ports;
  - > Ensure effective enforcement of rules and regulations.
- **Environmental Actions**
  - > Develop environmental assessment guidelines for IWT;
  - > Optimization study of dredging sand from the Lake;
  - > Determine oil spill pollution from ports, terminals and vessels;
  - > Start awareness campaigns on IWT pollution by vessels and ports;
  - > Inventory air emissions cargo ports and energy efficiency of vessels;
  - > Trans-boundary environmental management and monitoring systems;
  - > Further Strategic Environmental Assessment (SEA) to determine zones for IWT or port restrictions;
  - > Climate change adaptation integrated in reg. and nat. strategies.
- **Social Actions**
  - > Analysis of Social Impact Monitoring Vulnerability Assessment;
  - > Further surveys of passengers, boat owners and rural communities;
  - > Identify and promote eco-tourism and river-related tourism;
  - > Develop landing facilities for local passenger transport.
- **Capacity Building Actions**
  - > Plan and implement IWT education and training actions

- Institutional Actions
  - > National projects will require national implementation (N);
  - > National projects with cross-border impact will require national implementation but also regional coordination (NRC); and
  - > Cross-border projects require regional implementation and coordination (RC) (such projects can involve all countries or be bilateral only).

5.0 FINANCIAL STRUCTURING AND MOBILIZATION

5.1. Project Prioritization Overview

From the review of information and visits to the various IWT facilities, it is clear that there is need for investment across various areas, i.e. landing sites, vessels rolling stock, leisure facilities, fishing industries. The requirements will be articulated and prioritized to assess the most deserving needs to be taken forward. Analytical tools to support the project prioritization have been developed in-house and will be used for initial screening and downstream project planning.

5.2. Pathways to Mobilizing Financing

Financing for projects requires detailed study and development of project proposals to a point where by potential financiers can have confidence in the ability of the project to sustainably generate sufficient cash flows to meet the cost of borrowing. A number of pathways to financing will be studied in detail and followed up and may include public and private sector sources. The Draft Masterplan will provide detailed elaboration of the potential projects to be considered for implementation.

6.0 IDENTIFICATION OF INITIAL PROJECT PACKAGES

6.1. Identified Objectives

The aims of the IWT intervention is stated in the concept note as "coming up with a strategy for attracting additional private sector investment in water transport, to boost tourism, reduce travel inefficiency and lead to multiplier effects in business and commerce". Other implied imperatives include (a) introduction of safe, efficient and reliable passenger services, (b) identifying cost effective interventions, (c) gender and social inclusion, (d) environment and climate resilient options.

In view of the major objective above the initial suggested weightings are articulated below. However, it is important to note that the weighting is subject to re-configuration by the project team.

Tier 1		Tier 2	
Attribute	**Weighting**	**Attribute**	**Weighting**
Economic Efficiency	35%	Cost Effective	50%
		Job Creation	35%
		GDP	15%
Economic Restructuring and Diversification	15%	Transition to Industrial and Services Sector	10%
		Promotion and Support of Private Sector	60%
		Institutional Restructuring and Capacity Building	30%
Environment and Safety	25%	Greenhouse Gases	20%
		Local Air Quality	10%
		Noise	5%
		Landscape / Townscape	5%
		Biodiversity	10%
		Water Environment	10%
		Safety	40%
Accessibility	10%	Affordable and reliable access to transport	100%
Infrastructure Integration	15%	Intermodal Integration	50%
		National and regional infrastructure integration	50%

Table 10: *IWT Strategy Suggested Objectives and Weightings*

The initial weightings shown above will be further refined during the detailed engagements with the various stakeholders. Additional qualitative considerations may include political economy perspectives, assessment of degree to which sectors exist along/in the proximity of the proposed projects to support economies of scale., import/export opportunities etc.

6.2. Multi-criteria Analysis

Multi-Criteria Analysis will cover economic, social, political and strategic considerations and will consider all the long list against stated objectives of national (Government of Uganda), regional (East African Region) and CIG (DFID) objectives.

The key context within which MCA will be undertaken shall be as follows:

i. Analysis will be anchored with the framework of the IWT stated objectives;

ii. Identify options of technical solutions even at a global level;

iii. Identify criteria to be used to compare the options;

iv. Assign weightings to each criterion;

v. Describe the process of how the composite weightings will be computed to rank both mutually exclusive and competing alternatives interventions / solutions.

To date the following reports have been assessed in order to obtain a full list of objectives for the country and the sector:

- CIG Documents (Inception Report, CIG Log Frame, Infrastructure Sector Analysis)
- Vision 2040
- East Africa Vision 2020 (2015)
- National Transport Policy and Strategy (2014)
- Transport Annual Sector Performance (FY206/17)
- National Transport Master Plan for Greater Kampala Metropolitan Area (2008 – 23)
- Greater Kampala Economic Development Strategy (2017 – 2025)
- Second National Development Plan (NDPII) 2015 / 16 – 209 /20
- Public Private Partnership Act (2015)

6.3. Initial Prioritization of Investment Options

The different thematic areas of interventions to be considered for example are; policy actions, regulatory actions, standardization actions, institutional actions, environmental actions, social actions, capacity building actions, vessel development, and port physical development actions.

Initial identification of investment options is anticipated to span both the ''hard '', i.e. physical investments and the ''soft'', i.e. institutional and regulatory type interventions.

It is expected that the CIG project will undertake a first Multi-Criteria analysis of long listed projects. In the second stage a more detailed cost benefit analysis can be conducted of the short listed projects whereby costs and benefits are monetized. Analytical tools[96] to support the project prioritization have been developed in-house and will be used for initial screening and downstream project planning.

96 Financial Screening Tools deploying excel analytical options

6.4. Long List of Projects

A long list of projects was obtained from review of existing documents and interactions with various stakeholders, UNRA, MOWT etc. The following are initial considerations for hard (infrastructure projects). These will be refined further using the analytical tools that were developed in-house by CIG team.

Ref	Project	Options	Scope of Intervention
1	Port Bell	Do – Nothing	Remains in the current state
		Rehabilitate Existing Port	Works to cover essential operational and safety improvements
		Rehabilitate and Increase Port Capacity	Significant works to capacity and operational aspects
2	Jinja Port	Do – Nothing	Remains in the current state
		Rehabilitate Existing Port	Works to cover essential operational and safety improvements
		Rehabilitate and Increase Port Capacity	Significant works to capacity and operational aspects
3	Bukasa Port	Phase 1	Ongoing financed by GOU
		Phase 2	Works preparation in pipeline
		Phase 3	
4	Kawuku Port / Oil Terminal	Do - Nothing	Remains in the current state
		New Port	Significant works to build modern port to cater for capacity and operational aspects
5	Landing sites and Infrastructure at \Nakiwogo, Kiyindi, Buvuma, Kyanvubu, Zingoola, Masese, Buwanzi, Ggaba, Lutembe, Butebo, Namoni, and Kigungu	Do – Nothing	Remains in the current state
		New Ferry Landing Site	Significant works to build modern port to cater for capacity and operational aspects
		New Port	Remains in the current state
		New Crossing	
6	Rolling Stock/ Vessels	Do – Nothing	Retain the current stock of vessels
		New Modern Vessels	Acquire modern, efficient and safe vessels
7	Technical, Institutional and Regulatory Studies	Studies for new services, demand options etc	

Table 11: *Long List of Projects*

6.5. Ranking of Long List of Projects

The development of criteria for ranking the long list of interventions will take into account the stakeholders involved in IWT. According to the stakeholder matrix below, the stakeholders can be classified as Government Agencies, Social Groupings / Associations, Traders and Transporters / Truckers.

Figure 51: *Stakeholder mapping*

Each private and public actor can be classified under the attributes or multi-criteria: political (P), economic (E), social (S), technological (T), environmental (A), risk (R), and learning (L). In addition to already stated objectives, some sub objectives that may be used to support the ranking process may include:

- Safe water transport;
- Ensure fair competition and efficiency;
- Reduction of transport costs and travel time;
- Minimize involuntary resettlement;
- Minimize environmental damage; etc.,

7.0 STRATEGIC OUTLOOK

7.1. How to turn concepts to reality and investments?

From the review of information and visits to the various IWT facilities, it is clear that there is need for investment across various areas, i.e. landing sites, vessels rolling stock, leisure facilities, fishing industries. The requirements will be articulated and prioritized to assess the most deserving needs to be taken forward. Analytical tools to support the project prioritization have been developed in-house and will be used for initial screening and downstream project planning.

Financing for projects requires detailed study and development of project proposals to a point where potential financiers can have confidence in the ability of the project to generate sufficient cash flows to meet the cost of borrowing. A number of pathways to financing will be studied in detail and followed up and may include public and private sector sources.

Development of pipeline projects will require continual cooperation with the MOWT and need for robust analysis to ensure that all factors critical to successful project development have been taken into account.

7.2. Stakeholder linkage and interest

The IWT subsector has the potential to turn around productivity in JKE through reductions in transport costs and offering alternative modal shifts that will support business movement and scale up tourism potential. The needs of the stakeholders and interest groups vary depending on the economic and social context of each stakeholder grouping. It is expected that all stakeholders will be integrated in the IWT planning through the following action points:

- Develop a stakeholder engagement matrix to identify players and influencers, to ensure buy in and possible partnership to deliver the component.
- Follow up on engagement to keep tabs of development in the sector.
- Hold a stakeholder engagement targeted at key sector players to inform the master plan and consolidate already existing plans.

7.3. Private Sector Demand

Focused identification and engagement with the private sector will facilitate understanding of the issues of why private sector should invest and what the potential incentives are, given the other competing factors.

Assessment of demand and opportunities for use of IWT suggests that with reliable and improved services, demand will grow. It was established at a meeting with Roofings Group that they previously used IWT for imports of raw materials and export of finished goods to the region. However, challenges faced were as follows:

- Tonnage requirements overwhelmed the capacity of the currently operational vessels (7,000mt vs 800mt).
- Linkages between the boats and railway proofed inefficient/URC was on and off and goods were stuck at warehouses in several occasions
- Requirements for payments to multiple bodies managing the lake proofed to be bureaucratic, slow and arbitrary
- Decisions and interactions with GOT/Tanzania/central corridor were slow and unhelpful for efficient trade
- Although IWT is currently not being used for the logistical operations, improvements in services and infrastructure will lead to renewed interest in IWT services.

7.4. Evolving Communications and Engagement

A situation analysis is a very technical piece of work whose results and conclusions are relevant to key policy makers/ sector plays. Effective communication and translation of the analysis for lay persons who have a stake in the sector will be key in ensuring buy-in and fostering outreach, integration and dissemination of the IWT intervention.

The full situation analysis report is a wealth of information which should be published, promoted and distributed widely to guide contributions and engagement of all stakeholders during the strategic planning and development process of the IWT master plan.

The findings of the Situational analysis will be developed into a concise summary clearly highlighting the challenges, trends, major issues and possible solutions, that can be used to engage with the partners and potential investors.

Communication opportunities that can be leveraged includes the following:

- Stakeholder engagement including during the consultation process leading towards the development of the IWT masterplan. This will present opportunity to scale up visibility, buy- in and attention from relevant stakeholders especially at the back of the current state of the sector.

- Communication opportunities arising out of partnerships developed during the master plan development plan. E.g. upcoming World Bank Support to tourism on product development may present an opportunity to work and raise the component profile.
- Once the concept report and situational analysis are approved, a brief intervention brief will be prepared to support stakeholder engagements.
- Launch of final master plan will be a key deliverable, that will need to factored in the work plan.
- Long term, identification of bankable projects and investment opportunities will form key result areas that will result in case studies and an impact story to feed into the results framework as well as opportunity to share widely to demonstrate impact of project.
- Will explore the development of a short video form key experts on the benefit of IWT to Uganda.

A communication plan to guide the communication process throughout the development of the IWT master plan will be key for dissemination, buy-in and documentation.

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