

Analytical Comparative Transport Cost Study Along the Northern Corridor Region



prepared for:

**Northern Corridor Transit Transport Coordination
Authority (NCTTCA)**

prepared by:

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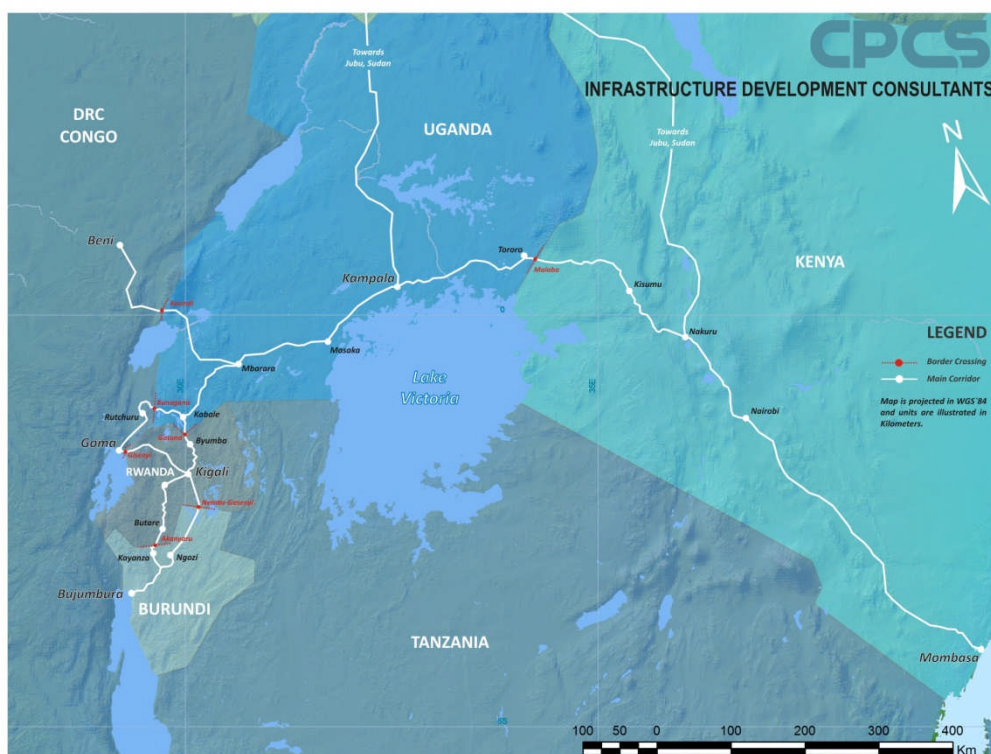
Executive Summary

Efficient and well-integrated transport infrastructure is critical for unlocking economies of scale and sharpening competitiveness, especially for the landlocked countries. Competitiveness is important for the survival of all business enterprises.

Transport corridors have over the past two decades gained particular attention with growing efforts for regional integration in Africa and elsewhere. African Union programs such as NEPAD and the programs of the Regional Economic Communities all place priority on enhancing interconnectivity and facilitating trade by focusing on transport corridors as microcosms of integration and spatial development on the continent.

In the East Africa region, transit traffic to and from landlocked countries entails passing through the Port of Mombasa in Kenya or the Port of Dar-es-Salaam in Tanzania. From these two ports has evolved what are known as the Northern and Central Corridors, respectively.

The Northern Corridor links the port of Mombasa in Kenya with the landlocked eastern and central African countries of Uganda, Rwanda, Burundi and the Democratic Republic of Congo (DRC). It also provides links to Southern Sudan, Ethiopia and Northern Tanzania. The Corridor consists of the road network from Mombasa through to Kampala, Kigali, Bujumbura and Goma and Beni in eastern DRC. It also includes the rail network from Mombasa to Kampala, the oil pipeline from Mombasa to Nairobi, Eldoret and Kisumu, and the inland waterway system on Lake Victoria. The Corridor carries significant quantities of inter regional and domestically traded commodities to the main urban centres in the region.



Average transport costs along the corridors in East Africa are considerably higher than those in West Africa and Southern Africa, and domestic transport costs are even higher. These high transport costs are brought about through a combination of poor infrastructure, high fuel costs, older, inefficient trucks and considerable delays at weighbridges, border points and various check points along the main routes.

The Northern Corridor Transit Agreement (NCTA) is a 1985 treaty between the Member States of the corridor countries (Kenya, Uganda, Rwanda, Burundi and DRC) which provides a framework for cooperation on issues related to trade and transit between the member states. The main objective of the NCTA is that the member states should guarantee each other free passage of transit traffic through their respective territories. The vision of the NCTA is to make the Northern Corridor the most cost-effective corridor in East and Central Africa to enhance the sub-region's competitiveness in the global market. The organs of the NCTA include a Council of Ministers responsible for transportation referred to as the Northern Corridor Transit Transport Coordination Authority (NCTTCA), assisted by an Executive Board of senior officials and the NCTTCA Secretariat headquartered in Mombasa, Kenya.

Analytical Comparative Transport Cost Study Along the Northern Corridor Region

CPCS was engaged by the NCTTCA to undertake this study whose overall objective is to assist the NCTTCA and Member States in fully understanding and quantifying the high logistics costs of the Northern Corridor countries, and to propose appropriate policy and other measures to reduce these costs in order to increase trade and the region's competitive position.

To achieve the objectives of the study, we developed a methodology to quantify total logistics costs with a special emphasis on quantifying the costs of delays and hidden costs. Building on analysis from existing studies, we conducted additional research and data gathering in the field, including extensive interviews with stakeholders in Kenya, Uganda, Rwanda, Burundi and eastern DRC. The interviews consisted of face-to-face meetings with public authorities (revenue authorities, customs, transport and infrastructure ministries, national railway companies, etc) as well as with private sector stakeholders (transporters, shippers, freight forwarders, clearing agents, shipping lines, stakeholder associations, etc).

Our resulting analysis considered logistics costs in six countries of the region which use the Northern Corridor as a key trade link: Kenya, Uganda, Rwanda, Burundi, eastern DRC and Southern Sudan. For each country we looked at the macroeconomic framework, the institutional organisation of the transport sector, traffic patterns for dominant commodities, transporter vehicles operating costs, transit delays and costs associated with transit procedures, and the total logistics costs structure. The operating costs and performance of the railways, pipeline and inland waterways were also analysed. We developed a set of prioritized policy measures and actions to improve the flow of goods across the region, with the ultimate objective of decreasing logistics costs and increasing competitiveness of the Northern Corridor.

Overview of the Port of Mombasa

The Port of Mombasa on the Kenyan coast plays a strategic role in the facilitation of trade both for Kenya and other hinterland countries along the Northern Corridor. A key premise of this report is therefore that Mombasa port performance, transit costs and procedures lie at the heart of the logistics supply chain.

The port has an annual throughput capacity of 22 million tonnes and registered total cargo throughput of 18.9 million tons in 2009, reaching 85.9% of its full capacity. This utilisation capacity ratio illustrates the congestion and delays observed at the port which are one of the key issues contributing to the relatively high logistics costs along the Northern Corridor.

Trade along the Northern Corridor is characterised by major disequilibrium, with imports through Mombasa accounting for 91% of total port traffic, and exports out of Mombasa accounting for only 9% of movements. This disequilibrium has a significant impact on transport costs as there is far more demand for transportation of goods in the Mombasa-inland direction, than in the return direction (regional countries out of Mombasa). A lack of backload traffic for transporters means that most of them need to charge higher tariffs for inward goods movements than would be the case if import and export trade was more balanced.

In 2009, approximately 74% (13.9 million tonnes) of traffic passing through the Port of Mombasa was domestic traffic destined for, or originated from, Kenya. The remaining 26% (4.9 million tonnes) was transit traffic going to, or coming from, landlocked and neighbouring countries. The trade imbalance for this transit traffic reflects the overall imbalance for the region; imports destined to inland countries made up almost 93% of transit goods traffic, while exports represented less than 8% of total transit traffic. In total, 80% of transit traffic passing through Mombasa Port is destined to or originated from Uganda, followed by Tanzania, DRC and Rwanda (about 5% each) and Sudan (3.4%).

Although there have been improvements in the past couple of years, the Port of Mombasa has been beleaguered by inefficient cargo clearance processes causing delays and rendering the port expensive and uncompetitive. This scenario which is caused by cumbersome documentation, cargo clearance and customs procedures has contributed to the high costs of maritime transport logistics along the Northern Corridor and increased the cost of doing business in Kenya and the region as a whole.

Although Kenya Revenue Authority (KRA) and Kenya Ports Authority (KPA) have introduced computerized systems in their operations, delays are still prevalent due to lack of complete integration between the two systems and frequent system failures. Port operations are also hampered by lengthy customs procedures which otherwise are not conducive for attracting business at the Port of Mombasa. The clearing processes at Mombasa Port, Container Freight Stations (CFS) and customs procedures remain the main sources of delay and high logistics costs for the Northern Corridor. As described in the report, there are more than twenty-nine (29) clearance steps to import containers through Mombasa Port which are destined for the Kenyan market, and twenty-seven (27) steps for clearance for transit containers. Overall, the multiple and duplicated steps which are required to clear both local

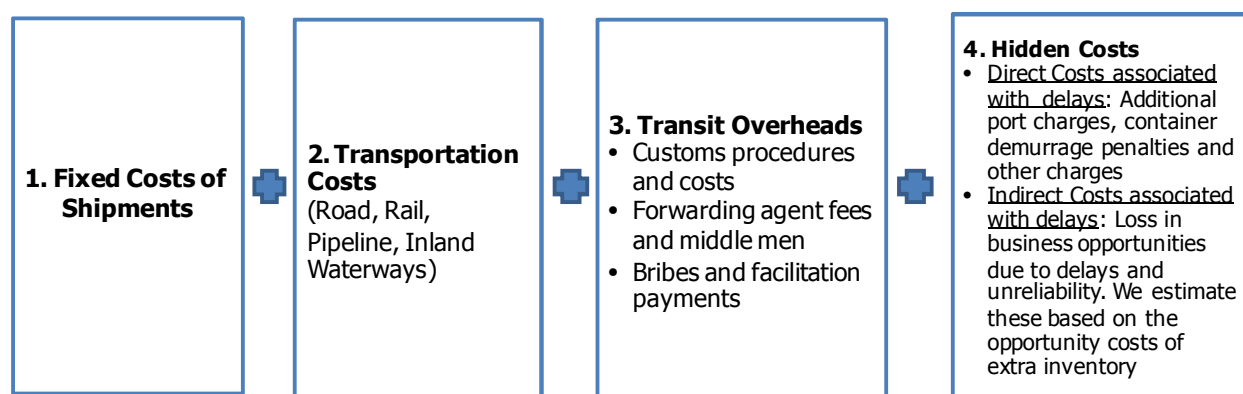
and transit containers illustrate the reasons for delays along the logistics chain, and the reason why port / customs clearance through Mombasa was cited by most stakeholders as the leading barrier to smoother transit flow in the region.

While KPA charges are not strongly contested by the shipping community and were recently established by KPA at competitive levels, there are a number of additional charges which customers are being subjected to by the shipping community and which are perceived as being harmful to the economies of Kenya and other EAC countries which are served by the Northern Corridor. A wide range of additional charges from shipping lines (on top of sea freight costs) are seen as exorbitant and unjustified. Furthermore, in spite of KPA setting the tariffs for use by the CFS operators to match those applied in the port, there is evidence to suggest these tariffs are not always being adhered to. In addition, CFS locations are increasingly congested, leading to greater delays in clearance, which in turn is causing importers to pay higher demurrage and storage charges. To address the perceived unfairness and duplication of functions in port processes, the new Kenya Maritime Authority (KMA) is currently developing regulations to introduce some oversight on commercial fairness in the industry.

Logistics Costs Analysis

Our methodology to estimate total logistics costs across the five Northern Corridor countries and Southern Sudan is based on a sum of components illustrated in the figure below.

Figure ES-1: Components of Logistics Costs



Using the formula above, we developed a full and comparative logistics costs analysis for import movements by road for a twenty foot (20') container along six of the main routes of the Northern Corridor:

- Mombasa – Nairobi
- Mombasa – Kampala
- Mombasa – Kigali
- Mombasa – Bujumbura
- Mombasa – Goma
- Mombasa – Juba

For each route we assumed a common sea freight shipping charge of US\$1,700 per 20' container, based on movement a container of consumer goods from Singapore to Mombasa. Although sea freight charges vary depending on the origin of goods (e.g. Singapore, Europe, Durban, etc) and other factors, this shipping charge was considered close to the average and representative of a movement of typical household goods.

For each route we also analysed the direct and indirect costs of moving goods through the Port of Mombasa, including the formal costs associated with shipping line charges, KPA, KRA, CFS, clearing agent charges, and other costs (such as transit bonds).

For the land transport component of each route, we reviewed in detail the vehicle operating costs (VOCs) faced by transporters, and the tariffs which they charge for movement of goods, for small/informal, medium and large sized companies. On average, fixed costs make up 36% of VOCs for regional operators and variable costs make up 64% of total VOCs. The fact that fixed costs are only one-third of VOCs supports conclusions from previous literature and is not surprising given the relatively low cost of salaries, overheads, and the advanced age of vehicles (and therefore depreciation) along much of the Northern Corridor. The VOCs ranged from US\$0.09 / Tkm to US\$0.149 / Tkm. There were of course differences in costs for different types of transport companies (small/informal, medium and large), and our analysis takes this into consideration.

The figure below summarises the average VOCs and transport tariffs for movement of a 20' container from Mombasa to the main destinations along the Northern Corridor. Overall, road transport costs accounted for between 14% and 37% of total logistics costs for importing goods.

Figure ES-2: Summary of Road Transport Indicators, 20' Container

Route	Distance (km)	Average VOC / Tonne-Km (US\$)	Average Transport Tariff (US\$)	Road Transport as % of Total Logistics Costs
Mombasa – Nairobi	430	0.129	\$1,300	14%
Mombasa – Kampala	1,170	0.145	\$3,400	23%
Mombasa – Kigali	1,700	0.094	\$6,500	34%
Mombasa - Bujumbura	2,000	0.090	\$8,000	37%
Mombasa – Goma	1,880	0.094	\$9,500	37%
Mombasa – Juba	1,750	0.149	\$9,800	35%

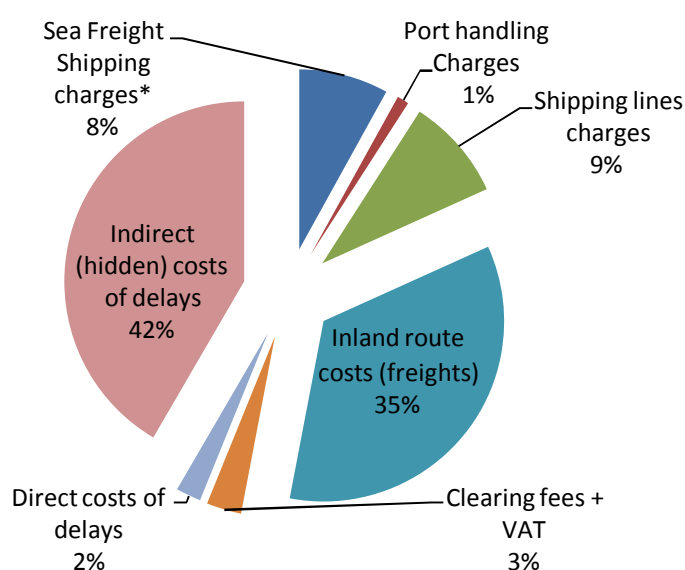
We also considered the costs of direct and indirect delays, which accounted for the largest component of the total logistic costs. Costs associated with direct and indirect delay costs accounted for an average of 44% of total logistics costs, of which hidden costs account for 42%. Hidden costs include the costs related to additional cargo dwell time and the opportunity costs of extra inventory held due to unreliability of the transport chain. Our

conclusions in this area are in line with recent literature and other studies in this area for the Northern Corridor and other corridors.

Globally, the total logistics costs for movement of a 20' container inland from Mombasa range from a minimum of US\$ 9,174 for a domestic transport from Mombasa to Nairobi to a maximum of US\$ 28,309 for movement from Mombasa to Juba. Those amounts are very high and represent 5 to 15 times the sea freight charges. As mentioned above, costs associated with direct and indirect delays (including hidden costs) account for 2% and 42% of the total logistics costs, respectively. The second highest component of total logistics costs is from road freight transport, averaging 35% of total logistics costs. This is due to the high vehicle operating costs and the high cost of fuel in particular. Shipping line charges at Mombasa Port account for 9% of total logistics costs, many of which are considered high and unjustified. The sea freight shipping charges represent only 8% of total logistics costs, reflecting the common idea that inland costs on the Northern Corridor are much higher than sea freight costs. Finally, port handling charges, clearing agent fees and VAT account for 4% in total.

The following graph illustrates the breakdown of the Northern Corridor logistics costs.

Figure ES-3: Northern Corridor Logistics Costs Structure



Railway Transport

Railway transport is the second most important mode of freight transport along the Northern Corridor, after road transport. Rail is particularly suitable for transporting bulky and heavy commodities over long distances. The metre-gauge railway extends from the Port of Mombasa in Kenya to Kampala, Uganda, with a series of shorter branch lines.

On November 1, 2006 the Kenyan Government /KRC and the Ugandan Government / URC signed two separate concession agreements for management and operations of the railway services with Rift Valley Railways (RVR). RVR manages the mainline freight and passenger services between Mombasa, Kampala and a selection of branch lines. They also have

responsibility under their concession agreement for operating rail ferries on Lake Victoria, none of which are currently active. RVR took over the operations of the network with various ailments ranging from missing or worn-out components and obsolete parts that to date have only been partially corrected. The performance of the railway since the concession agreement was awarded (and indeed prior to the signing of the concession agreement) has been declining steadily. Traffic levels which averaged 3.5 million tonnes per year in the early 1990s, declined to 2.3 million tonnes by the year 2000, and fell to 1.65 million tonnes in 2008.

The tariff for transporting goods by rail depends on the distant transported, type of product and on the size/weight of the container being transported¹. RVR has an internal costing program to estimate the cost of specific moves and determine its tariff rates, which they did not share with our consulting team. We therefore estimated their operating costs per Tkm on the basis of their financial ratios to be between US\$0.06 – US\$0.073 / Tkm (4.5 to 5.0 Kenya Shillings per TKm).

Transport of Petroleum Products

A major concern for the region and especially for landlocked countries has been security of supply of petroleum products, fuel prices and capacity of product transportation/distribution infrastructure. East and Central African countries are net importers of petroleum products, and especially the refined petroleum products and crude oil processed at the Kenya Petroleum Refinery Ltd in Mombasa. The transportation and distribution of petroleum products in the region is through a network of the oil pipeline managed by Kenya Pipeline Company (KPC), transport by railway, by roads and (previously) through lake transport systems.

The existing pipeline system transports over 90% of the products consumed in Kenya and about 80% of the petroleum products consumed by the neighbouring countries of Uganda, Rwanda, Burundi, Northern Tanzania, eastern DRC and Southern Sudan. The current pipeline system has experienced capacity constraints, which has led to oil marketers uplifting their products at Mombasa/Nairobi using the more costly road and rail options. Based on an all inclusive pipeline tariff of 4.5 KSh (US\$0.06) per cubic meter-kilometer, a maximum product loss ratio of 0.25% (as reported by KPC and confirmed by shippers), and a KPC operating profit margin averaging 45% in 2006 and 2007, our estimate of its operating cost is 3 KSh (US\$ 0.04) per tonne-Km.

Inland Waterways

Inland waterway transport is an important mode of intermodal transport which can provide a means of coping with congestion in road infrastructure, as well as addressing air pollution concerns. Although Lake Victoria is strategically located at the convergence of two major transport corridors in the East African region, namely, the Northern Corridor and the Central Corridor, the potential of its marine transport has not been fully exploited. The

¹ From Mombasa to Kampala the approximate tariff by rail is US\$ 1408 (20'') and US\$ 2552 (40')

competitiveness of inland waterway shipping, as one link in a transport chain, is dependent on the functioning of the entire corridor transport system, and especially rail transport.

Inland waterway transport operations are presently limited due to low investment in vessels. Most of the vessels which used to ply Lake Victoria have either broken down or been surveyed and disposed of and there is currently only one operational ferry service on Lake Victoria, offered by Tanzania and focused on Mwanza port and movements of goods in the Central Corridor. The Ugandan government owns three rail ferries which would operate from Port Bell outside Kampala. One of the ferries has been decommissioned and two are still waiting to be refurbished and are non-operational. The Kenyan government owns on ferry which is also currently non-operational, the MV Uhuru. It is expected to begin operations again in 2010.

Another constraint to inland water transport is the low capacity of the Nakuru-Kisumu railway track which makes the port of Kisumu route less attractive for transit to Uganda and other land-locked countries. The track branching from Nakuru to Kisumu, though an important route connecting Kenya to both Tanzania and Uganda via water transport on Lake Victoria, can only support low axle loads. Since there were no Kenyan or Ugandan rail ferries operating on Lake Victoria and the MV Uhuru managed by RVR is expected to start operating shortly, there are no recent operating costs available for this service and we based our estimation on the most recent costs study available².

Summary Comparison of Operating Costs by Mode

The following table synthesizes the operation costs per tonne-km for each major inland transport mode in US\$ and Kenya Shilling (KSh).

Figure ES-4: Operating Costs per Tonne-Km by Mode

	Road	Rail	Pipeline
Operating Cost per Tonne-km (US\$)	0.113	0.068	0.043
Operating Cost per Tonne-km (KSh)	7.91	4.75	3
Difference in % compared to pipeline	264%	158%	100%
Difference in % compared to rail	167%	100%	63%

The conclusions which can be drawn from our analysis are as follows:

- The pipeline mode is the cheapest mode of transport (US\$.043 per T-km), followed by the rail mode (US\$.068 per T-km) and then the road (US\$.113 per T-km);

² CENTRAL DEVELOPMENT CORRIDOR (CDC) REGIONAL SPATIAL DEVELOPMENT INITIATIVE PROGRAM (RSDIP) - INTEGRATED TRANSPORT STRATEGY – LAKES TANGANYIKA AND VICTORIA - Marine Logistics Limited - February 2009

- The operating costs of the road are 167% higher than the pipeline and 67% higher than the rail; and
- The rail operating costs are 58% higher than for pipeline.

These conclusions are in line with many other studies on the Northern Corridor, although not in the same proportions.

Comparison with Other Corridors

When evaluating and assessing the performance of any system, it is always useful to compare performance with other similar systems elsewhere in the world. A comparative analysis across transportation logistics systems can help identify performance differences and the underlying factors behind them, helping policy makers place their particular situation in context. As part of this study we undertook a review of the following five corridors, considering the infrastructure available, institutional framework and freight cost structures for each corridor:

- East Africa: Central Corridor (Dar es Salaam to Rwanda, Burundi, DRC)
- Southern Africa: Southern Corridor (Mozambique to South Africa)
- West Africa: Tema (Ghana) to Ouagadougou (Burkina Faso)
- Asia: East West Corridor (Vietnam, Laos, Thailand, Myanmar)
- Latin America: Bolivian Corridor

For each of these corridors, we undertook desk-based research on institutional and operational structures of the transport industry and transport and logistics costs. Where available we presented data on the time and cost of each stage of the logistics chain, from port entry to final destination. The benchmarking results according to several performance criteria are presented in a final table. The Northern corridor is performing less well than most of the other corridors on almost all the criteria.

Prioritized Policy Measures

We conclude the report by presenting a series of prioritised policy measures to enhance transit movement across the Northern Corridor, lower logistics costs, and enhance the competitiveness in the region. A set of policy measures is presented for each sector in matrix format, indicating whether the priorities are low, medium or high priority. The policy measures are based on our extensive consultations in the region as well as existing literature and research on the barriers to trade in the Northern Corridor. In the figure below, we present a summary of the priority actions we have recommended across each sector.

Figure ES-5: Matrix of Priority Actions

Issue	Action Required	Priority
Maritime / Port Clearance		
Enhance goods clearance and tracking system	<ul style="list-style-type: none"> Enhance SIMBA to reduce downtime and failures which lead to major delays Develop full a single window approach for Simba 2005/ KWATOS and other systems Enable electronic changes to ship manifest online to prepare customs clearing information well before ship arrives Ensure Port and CFS are genuinely open 24 / 7, and that banking facilities also available for clearance. 	High
Enhance CFS performance system	<ul style="list-style-type: none"> Monitor CFS charges to ensure they reflect KPA charges Monitor CFS performance to ensure delays are not created unduly to generate additional revenues from storage Develop container allocation / nomination system from Port to CFS which is transparent and based on supply and demand, not preferential treatment 	High
Reducing shipping lines and port charges	<ul style="list-style-type: none"> Eliminate or reduce the unjustifiable port and shipping lines charges, including any unjustified charges to use rail vs. road Adopt regulations to ensure that the shipping lines use exchange rates that are announced by the Central Bank of Kenya for each day Support Kenya Maritime Authority in development of regulations to enhance maritime environment and review charges 	High
Restructuring of port operation institutional framework	<ul style="list-style-type: none"> Transform the port into a landlord port status Promote private sector participation in stevedoring, storage and shore handling operations at the port Update maritime standards to meet the domestic and international standards. 	Medium
License Additional Grain Handling conveyors at Mombasa Port	<ul style="list-style-type: none"> Consider licensing additional private companies to provide grain handling through modern conveyor system Address any challenges around delays at GBHL and monopolistic pricing 	Medium
Automation of Cargo Releases	<ul style="list-style-type: none"> Allow automation of customs cargo releases at Port of Mombasa for transit goods Station Northern Corridor country revenue agency personnel in Mombasa to collect taxes Eliminate need for Transit Bonds 	Low

Issue	Action Required	Priority
Road Transport		
Axle-Load Regulations	<ul style="list-style-type: none"> • Harmonize Axle load regulations and policies across regional countries • Encourage financial institutions to offer favourable credit to businesses to invest in new vehicles compatible with Axle road regulations (when regulations change, as has been the case in Kenya in the past 3 years, transporters are forced to invest in new equipment) • Strictly enforce axle load regulations, fight extensive corruption at weighbridges • Penalise shippers, not just transporters, for overloading practices. 	High
Elimination of delays due to weighbridge processes, police checks	<ul style="list-style-type: none"> • Reduce number of weighbridges in Kenya • Computerize weighbridges with close monitoring by independent agency • Use weigh in motion scales and weigh group of axles (not single axle) • Introduce a ceiling system for transit vehicles already weighted at the first weighbridge in order to avoid multiple weighing (no need for sealed transit vehicle to be weighed 7 times in Kenya) • Invest in mobile weighbridges equipment for spot checks • Presidential directive to be immediately implemented and monitoring system established • Reduce frequency of police checks which cause delays (and therefore costs) 	High
Change “Transit Goods” licensing regulations	<ul style="list-style-type: none"> • Change EAC licensing regime which only allows “Transit Goods” vehicles to transport transit goods in order to enhance productivity, avoid waste and decrease costs. 	Medium
Reducing the Fuel Cost	<ul style="list-style-type: none"> • Reducing KPC fuel transport charges • Reducing fuel taxes (~33% of fuel cost is tax) • Harmonize fuel prices 	Medium
Safety and Security	<ul style="list-style-type: none"> • Increase parking stops off the road to prevent accidents at night from trucks parked on the road in the dark • Improve security conditions for drivers along Northern Corridor • Offer better / safer overnight services for truck drivers to keep them from unsafe practices (e.g. alcohol consumption, risks of AIDS, theft) • Put a limit on the maximum of age of vehicles/trucks permitted on Northern Corridor roads 	Medium
Rehabilitation of the road infrastructure	<ul style="list-style-type: none"> • Ensure Mombasa-Nairobi road is maintained to benefit from recent investments • Complete Nairobi by-pass • Improve road to South Sudan to enhance safety and lower logistics costs • Coordination of roads sub-sector development and maintenance • Ensure sustainable and adequate funds for road infrastructure construction, rehabilitation and maintenance 	Low

Issue	Action Required	Priority
Improving professionalism in the road transport industry	<ul style="list-style-type: none"> Regulating the transit transport and freight forwarding licensing system Increasing the role and activities of the Transport associations and Freight forwarding associations Increasing credit access to informal and small transporters Organizing training sessions for drivers and freight forwarders to improve professionalism (e.g. fuel siphoning; briefcase clearing agents) 	Low
Rail Sector		
Establishment of an appropriate regulation framework	<ul style="list-style-type: none"> Provide for a legal framework that encourages fair competition among the modes. Review KRC Act to allow for the establishment of an independent regulator to cover the entire railway industry Reduce the excessive control by the Acts and encourage a more facilitative legal framework. Monitor the railway concession to ensure the concessionaire meets the minimum investment set in the agreement 	High
Improving Rail-Road competition	<ul style="list-style-type: none"> Reduce/remove excess / unjustified shipping lines charges which are applied specifically to transport by rail (as opposed to road) 	Medium
Promoting multi modal transport through integration of railway systems with other transport modes	<ul style="list-style-type: none"> Initiate a long-term railway development programme that will provide efficient and reliable rail capacity 	Medium
Introducing intermodal full infrastructure pricing policy	<ul style="list-style-type: none"> Exonerate the railway users from paying the fuel tax which is used for highway maintenance Adopt a tariff policy based on the user's marginal social costs of each mode and including: Infrastructure marginal maintenance cost; Congestion cost; and external marginal costs (cost for accidents and pollution) 	Medium
Promotion of railway safety and security	<ul style="list-style-type: none"> Harmonize the safety and security standards with other railways in the region 	Low
Development of ICT use in railways operations	<ul style="list-style-type: none"> Expand the Rail tracker train operation information system Implement comprehensive integrated information and communication technology systems 	Low

Issue	Action Required	Priority
Inland Waterways		
Promotion and development of inland water transport on Lake Victoria in order to divert cargo from road to rail and marine transport.	<ul style="list-style-type: none"> Developing an integrated multi-modal transport system in the Northern Corridor to facilitate Kenya's trade with the EAC partner states and with the land-locked countries in the Great Lakes region Review the KRC Act in order to harmonize it with KMA Act regarding security and Regulation Promote private sector participation in the provision of inland water transport services 	High
Development of infrastructure and water transport services	<ul style="list-style-type: none"> Upgrade the Mau Summit-Kisumu rail section to enable high capacity locomotives to ply the Nakuru - Kisumu branch line Encourage investment in the provision of water transport services Encourage procurement of new ferries 	High
Safety and Security	<ul style="list-style-type: none"> Ensure safety of passengers and goods on Lake Victoria Harmonize safety and security regulations in the region Promote environmental safety in the management of inland water transport 	Medium
Pipeline	<ul style="list-style-type: none"> 	
Institutional and regulatory framework	<ul style="list-style-type: none"> Enact appropriate legislation that will govern the development and operation of the pipeline transport system. Ensure that the KPC tariffs are competitive. Ensure the integration of pipeline transport mode with other modes, particularly railway and road transport. Institute measures that will discourage fuel transportation by road in areas already served 	High
Maintenance infrastructure for an efficient pipeline transport network	<ul style="list-style-type: none"> Encourage private sector participation in the provision of pipeline infrastructure and in the operation of services Ensure development of common user facilities that are convenient and compatible to all modes of transport. 	Medium
Pipeline management	<ul style="list-style-type: none"> Encourage the utilization of ICTs in product monitoring and management Develop and enforce energy saving measures that will focus on energy conservation and efficiency Streamline the operations of KPC with a view to ensuring that it operates in the most efficient manner. Enhance capacity building within the pipeline industry. 	Medium
Safety and security	<ul style="list-style-type: none"> Ensure security for pipeline infrastructure to enhance reliability. Strict adherence to international standards on health, environment and safety 	Low

Implementation and Monitoring

In the final chapter of the report we address policy implementation and monitoring indicators, highlighting the required conditions for successful implementation of the policy recommendations and matrix of actions and for efficient management of the Northern Corridor. These include:

- Promoting peace and security;
- Increased investment to improve transport infrastructure and related facilities;
- Improved intermodal coordination;
- Establishment and improvement of information technologies;
- Effective implementation of regulatory frameworks; and
- Strengthening institutional support systems.

We also suggested fourteen corridor performance indicators to monitor the Northern Corridor performance on three levels:

- Quality and competitiveness of transport and logistics services;
- Capacity and condition of public infrastructure used by these services; and
- Domestic, bilateral, and sometimes, multilateral regulation of these services and the trades that they serve.