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Supply Chains and Transport Corridors in East Africa

Anna Bulzomi, Peter Danssaert, Sergio Finardi, Ken Matthysen

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Authors: Anna Bulzomi, Peter Danssaert , Sergio Finardi, Ken Matthysen
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For further information please contact:
Peter Danssaert - IPIS (Antwerp, Belgium) +32 3 225 00 22
peter.danssaert@ipisresearch.be
Sergio Finardi – TransArms Research (Chicago, USA) +1-773-327-1431
transarms@logitai.com

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Chapter 1 - Introduction

Transport infrastructure is a vital element of enhancing a country or region's economic development. The International Peace Information Service (IPIS) has a long tradition of studying peace, security, and development in Sub-Saharan Africa and TransArms has extensively researched the logistics chains of conventional arms and natural resources. They have ascertained on several occasions that the underdevelopment or degeneration of transport infrastructure is indeed a problematic issue across a number of African countries and regions.

The above-mentioned observation is well recognized. It has, for example, been raised by the International Conference on the Great Lakes Region (ICGLR) – an inter-governmental organization composed of eleven countries of the African Great Lakes Region[1] that aims to promote peace, stability and sustainable development within the region.

Amongst other measures, in 2006, ICGLR member States signed a comprehensive regional programme of action to enhance economic development and regional integration. The programme of action included among its sub-programmes "Infrastructure Development". The sub-programme included, among other aims, (a) improving the infrastructure of the Northern Corridor, (e) extension of the Northern Corridor railway into the Democratic Republic of Congo (DRC), and (h) extension of the Mombasa Oil Pipeline.[2]

This brief paper aims to give an idea of the actual logistics situation in Eastern Africa, and the logistic challenges faced by various actors in that region. It is based on desktop research and data and interviews collected during several field missions to East and Central Africa:

- Between August and November 2008 field missions were conducted in Kenya (Mombasa), Uganda (Entebbe, Kisoro, Cyanika, Mpondwe), DRC (Goma, Bunagana, Kalemie) and Tanzania (Dar es Salaam , Kigoma);
- Between July and August 2010 field missions were conducted in Kenya (Nairobi and Mombasa), and DRC (Goma);
- Between January 2012 and August 2012 field missions were conducted in DRC (Lumumbashi, Goma).

Chapter Two of this paper will give a general description of two important transport axes in East Africa: the Northern Corridor and the Central Corridor.

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[1] Angola, Burundi, Central African Republic, Kenya, Republic of Congo, the Democratic Republic of Congo (DRC), Rwanda, Sudan, Uganda, the United Republic of Tanzania and Zambia.

[2] NC-TTCA, Oil Pipeline, www.ttcanc.org/page.php?id=33; ICGLR, *Regional Programme of Action: Economic Development and Regional Integration*, February 2006.

Chapter Three will home in on the Northern Corridor, and analyze in further detail the effects of infrastructural flaws on logistic costs.

Chapter Four will examine eastern Congo, both as a case study that could help to illustrate the logistic issues raised in chapter Three, and also as a demonstration of the importance of the Northern Corridor for the country's access to world markets.

Chapter Five will focus on the transport networks of the world's youngest State: South Sudan and its quest for transport corridors that could decrease its dependency on (North) Sudan's infrastructure, such as the Lamu Port-Southern Sudan-Ethiopia Transport Corridor.

Finally, Chapter Six provides some examples of the use of Mombasa and Dar es Salaam ports as transloading points for arms shipments destined to various countries in the Great Lakes Region.

After the Conclusions, an annex provides statistics related to Chapter Two and Three.

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Chapter 2 - East African Transport Corridors

2.1 Northern and Central Corridors

East Africa has two major multi-modal[3] transport corridors - the Northern Corridor and the Central Corridor – respectively connecting the ports of Mombasa and Dar es Salaam to various landlocked countries.

The Northern Corridor is the main trading corridor in the region. It connects Mombasa (Kenya) to Uganda, Rwanda, Burundi, and several roads leading into eastern DRC (Goma, Bukavu, Beni, Bunia and Kisangani). Furthermore, two main routes[4] link the Northern Corridor with South Sudan's border and Juba. In view of the importance to the economy of the region of efficient transport links between DRC, Uganda, Rwanda, Burundi and the port of Mombasa in Kenya, these countries signed *The Northern Corridor Transit Agreement* in 1985. Furthermore, they instituted the *Northern Corridor Transit Transport Coordination Authority* (NCTTCA) to manage the implementation of the agreement and help to overcome transport constraints on the corridor.[5]

The Central Corridor connects Dar es Salaam and its port on the East African coast with a number of countries, including Rwanda, Burundi, eastern DRC, northern Zambia and Uganda.[6] The Corridor consists of a network of road, rail (operated by the Tanzania Railways Corporation), and lake transport systems, connecting Dar es Salaam with: Burundi (via Kigoma or Isaka Dry Port to Bujumbura); DRC (via Kigoma/Kalemie on Lake Tanganyika); Rwanda (via Isaka to Kigali); and Uganda (via Mwanza to Port Bell/Kampala on Lake Victoria with services provided by Uganda Railways and other companies).

However, in each of the above countries, Dar es Salaam does not presently constitute their most important gateway to the world markets; it is surpassed by the ports of Kenya, Mozambique and South Africa.[7] In 2006, however, Burundi, DRC, Rwanda, Tanzania, and Uganda signed an agreement to establish the *Central Corridor Transit Transport Facilitation Agency* (CCTTFA). As with the NCTTCA, the CCTTFA is tasked with promoting and facilitating reliable, secure and cost-effective trade along the corridor.[8]

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[3] Multi-modality refers to systems that connect two or more transport modalities (road, sea, inland navigation, air, and rail).

[4] Via Eldoret-Lodwar-Lokichogio and via Kampala-Gulu-Nimule by road.

[5] Northern Corridor Transit Transport Co-ordination Authority (NCTTCA) (http://www.ttcanc.org/).

[6] 71.9% (or 302,840 tons) of Dar es Salaam's imports are for the domestic market, 11.9% for the DRC, 6.6% for Zambia, 5.0% for Rwanda, 3.5% for Burundi and 0.7% for Uganda. (Source: Raballand G., Refas S., Beuran M. and Isik G., *Why Does Cargo Spend Weeks in Sub-Saharan African Ports? Lessons from Six Countries*, World Bank, 2012).

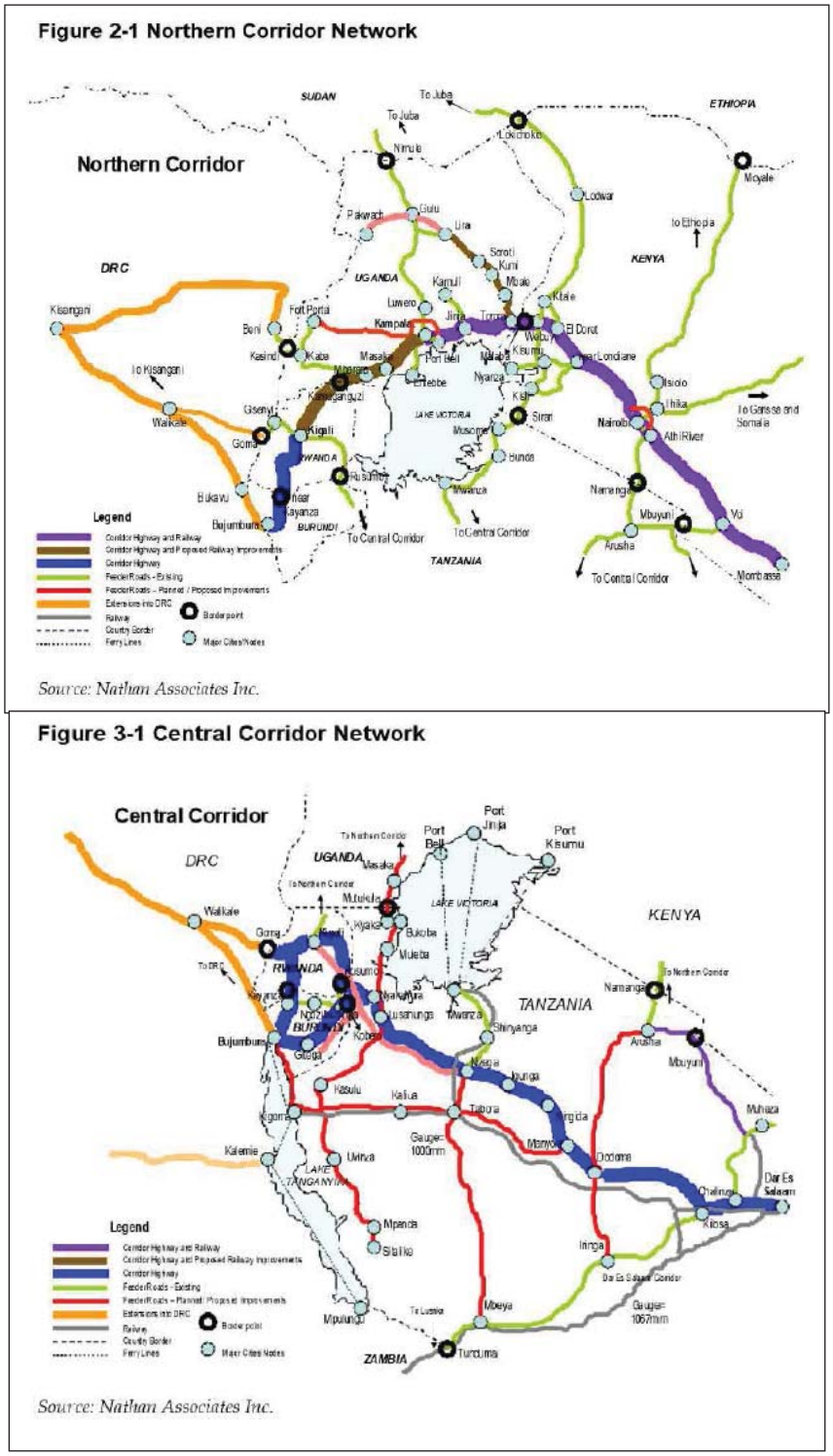
[7] Raballand G., Refas S., Beuran M. and Isik G., *Why Does Cargo Spend Weeks in Sub-Saharan African Ports? Lessons from Six Countries*, World Bank, 2012.

[8] Central Corridor Transit Transport Facilitation Agency (CCTTFA) (http://centralcorridor-ttfa.org/).

Map 1 - Main Connections of the Northern and Central Corridors

Source: Elaboration on *Study for the Harmonization of Vehicle Overload Control in the East African Community: Final Report - The East African Trade and Transport Facilitation Project*, Padeco Co. Ltd., September 2011 (http://www.eac.int), map prepared by JICA Study Team.

Map 2 - Main Routes of the Northern and Central Corridors



Source: Elaboration on *Corridor diagnostic study of the Northern and Central corridors of East Africa. Draft action plan, Volume 1: Main Report,* Nathan Associates Inc., Arlington, Virginia, USA, January 2011.

Fierce competition[9] exists between the various East African seaports to service the East and Central African landlocked countries but Mombasa (Kenya) currently remains the main transport gateway, and the Northern Corridor the main trade route for those countries. However, since 2011, an increasing volume of the cargo destined for the region's landlocked countries has been handled by Dar es Salaam.[10] The trend has been attributed[11] to a combination of two factors: reforms implemented at Dar es Salaam port and along the Central Corridor; and persistent congestion at Mombasa port, as well as along the Northern Corridor, despite recent improvements.[12]

The level of efficiency of port operations and the volume of traffic Mombasa and Dar es Salam are able to handle directly affect the performances of road, rail, and inland navigation systems along the Northern and Central corridors. For example, increases in the volume of containers handled by the two ports also increase the number of trucks and railcars that operate along the corridors. In absence of adequate measures that increase the capacity of roads, railways, warehouses, dry ports, and Customs to handle the new traffic volumes, congestion and inefficiency follow as unintended effects of business success of the two ports. Likewise, every improvement of regulatory systems and transport networks outside the two ports has a direct positive impact on the ability of the two ports to efficiently manage the increasing traffic.

The performances of Mombasa and Dar es Salaam port operations still remain behind international standards, but in the last years both ports have undergone various regulatory changes, as well as structural and infrastructural works that have improved their performances.[13] In fact, a 2012 logistics survey by the Shippers Council of East Africa recognized "*significant improvement in port and corridor efficiency*", but also found that severe problems are still affecting both Corridors.[14] In particular, the survey has found that "*high regulatory burden of the road transport sector, with numerous checkpoints (weighbridges, customs and police checks) along the transport corridor*" still hamper the efficiency of both Corridors. In addition "[the] *situation is compounded by congestion in urban areas along the transport corridor and less than adequate investment in the rail network to effectively complement the road transport system*." Potential benefits, the authors

[9] Ngahemera S., "East Africa set for port wars", *The African*, 2 September 2013.

[10] Ligami, C., "Tanzania scoops top position as best route for transit goods", *The East African*, 27 October 2012.

[11] Mwanga, L., "East Africa: Dar es Salaam Edges Mombasa in Cargo Handling", *East African Business Week*, 30 January 2012.

[12] Kihara G., "Mombasa, Dar ports speed up cargo clearance", *The East African*, 13 July 2013.

[13] "Mombasa port improves performance", *The Transporter*, July-September 2013; Mwasenga H., *Port Performance Indicators, A Case of Dar es Salaam Port*, UNCTAD Ad Hoc Expert Meeting on Assessing Port Performance, UNCTAD, 12 December 2012; Lyimo H., "Modernisation of Dar port services underway", *Daily News*, 26 November 2013 (http://www.dailynews.co.tz); NCTTACA, E-Transit Monitor, n. 1, January 2014.

[14] *East Africa Logistics Performance Survey 2012 - Cost, Time and Complexity of the East African Logistics Chain*, Shippers Council of Eastern Africa, July 2013 (http://www.shipperscouncilea.org/).

of the survey alert, "*will not be fully reaped unless there are concerted efforts to harmonize laws and regulations governing cross border trade.*"[15]

In the last years, some of the land-locked countries served by Dar es Salaam and Mombasa, and international finance organizations, have contributed projects and resources to improve relevant regulatory systems, the road and rail networks, and the port facilities, in particular for transit cargo.[16] One of the most important steps in that direction was taken at a summit held in Kigali in October 2013, when the Heads of State[17] of Kenya, Uganda, South Sudan, and Rwanda agreed on the establishment of the Single Custom Territory. This would form the basis of the elimination of some of the most significant barriers to the circulation of goods in parts of the Corridors.

2.2 Mombasa and Dar es Salaam throughput[18]

Mombasa and Dar es Salaam established a commercial port in 1895 and 1907, respectively. These ports have been the key gateways for the international connections of the Great Lakes Region and are presently at the core of the Northern and Central corridor logistic systems.

In the first six months of 2013, Mombasa port throughput (imports and exports) totaled 9.2 million tons of cargo, and Dar es Salaam, six million tons. Both ports see a large disparity between imports and exports. During the first half of 2013 imports totaled 88.2% at Mombasa and 86% at Dar es Salaam of the total cargo handled. Annual data for previous years reveal comparable ratios: import volumes were 86% of total cargo handled in 2012 at Mombasa and 83% at Dar es Salaam in 2011.

Cargo volumes are steadily growing at both ports; however there is still a significant difference between Mombasa and Dar es Salaam. In 2012, Mombasa handled a total of 22.6 million tons (20.5 million tons in 2011), with 6.6 million tons of cargo in transit to other

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[15] *East Africa Logistics Performance Survey 2012*, op. cit., p. ii.

[16] "New Berth Transforms Mombasa Port", *The Transporter*, July-September 2013.

[17] "East African region Heads of State launch Single Custom Territory", 29 October 2013, http://warsheekh.com/articles/21166/East-African-region-Heads-of-State-launch-Single-Custom-Territory

[18] All data from the following sources, if not otherwise noted: *Innovative Corridor Performance Monitoring*, Transport Observatory Project, Transit Transport Coordination Authority of The Northern Corridor (TTCA-NC), September 2013; *Scaling up Corridor Monitoring for Informed Decisions,* Transport Observatory Project, Transit Transport Coordination Authority of The Northern Corridor (TTCA-NC), April 2013; *Performance Indicators: Volume First Half 2013*, Central Corridor TTFA, www.centralcorridor-ttfa.org/, *Opening the Gates*, World Bank, May 2013 (www.worldbank.org/tanzania/economicupdate); "East Africa economy: East Africa's next gateway", *Economist Intelligence Unit*, 23 August 2013; *The Transporter*, Kenya Transporters Association Ltd, January-March 2013 and July-September 2013; Kenya Ports Authority, Corporate Affairs Department, 29 April 2013; Kennedy N., "Tanzania: Ports Authority Spells Targets for Future Strategies", *Tanzania Daily News,* 4 October 2013.

countries (5.6 million tons in 2011), compared to 12.1 million tons (10.3 million in 2011), of which 3.6 million tons in transit, handled at Dar es Salaam. However, the traffic gap between the two ports is narrowing, as the data for the first half of 2013 show.

2.2.1 Trade ventilation

For both ports, the share of cargo destined to or originated from their respective national territory is striking: 70% of imports and 63.9% of exports handled at Mombasa were destined to, or originated from, Kenya (data from the first seven months of 2013); 64% of imports and 44% of exports handled at Dar es Salaam were destined to, or originated from, Tanzania (data from first six months of 2013).[19]

In addition to their respective countries, Mombasa and Dar es Salaam ports serve seaborne trade to and from Burundi, DRC, Malawi, Rwanda, Somalia, South Sudan, Uganda, and Zambia. The two ports compete, in particular, on shipments to and from Burundi, DRC, Rwanda and Uganda, whereas South Sudan's seaborne trade is increasingly served by Mombasa (in competition with Port Sudan) and Malawi's and Zambia's by Dar es Salaam.

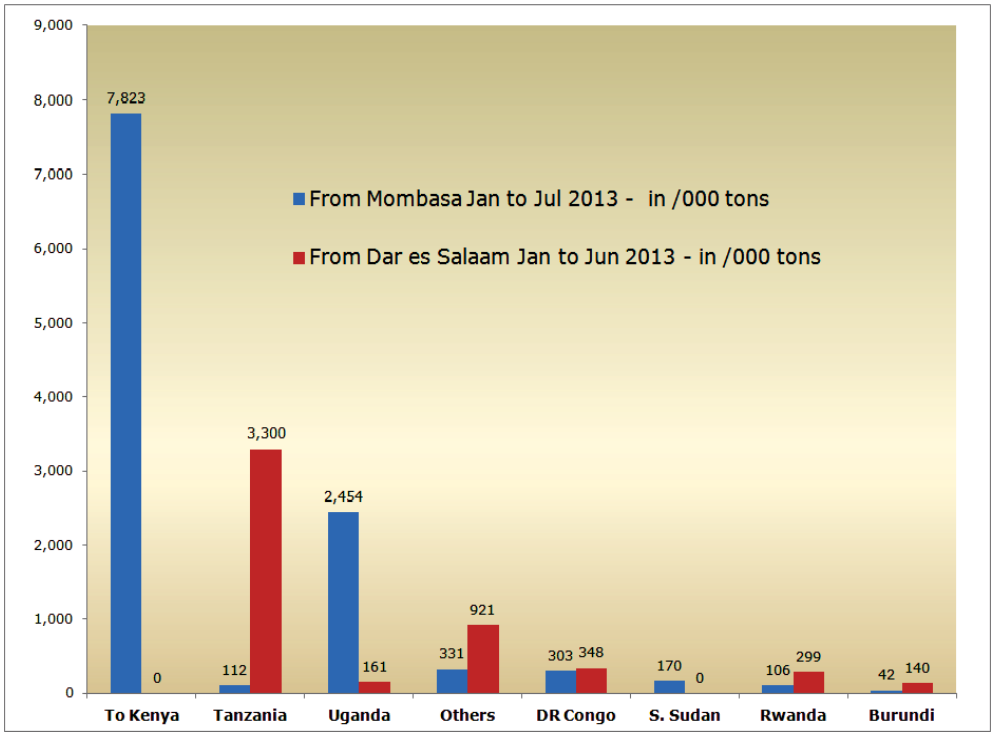
In the January to July 2013 time-period, import cargo in transit through Mombasa to countries other than Kenya totaled 3.5 million tons, and import cargo in transit through Dar es Salaam to countries other than Tanzania totaled 1.9 million tons. While Mombasa dominated transit traffic to Uganda, Dar es Salaam led on imports destined to Burundi, DRC and Rwanda (see Graph 1).

Cargo originating from countries other than Kenya and shipped abroad from Mombasa totaled 489,000 tons (36.1% on the total exports) from January to July 2013. Cargo originating from countries other than Tanzania and shipped abroad from Dar es Salaam totaled 487,000 tons (56% on the total exports) from January to June 2013.

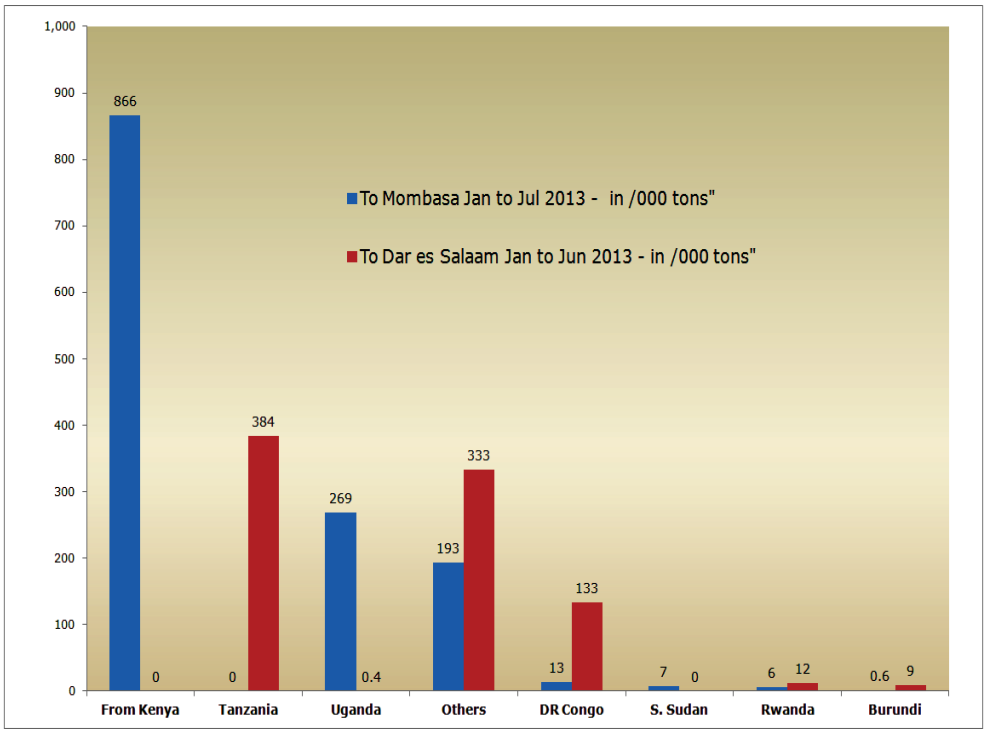
Mombasa handled most of the cargo from Uganda and South Sudan, whereas Dar es Salaam overcame Mombasa on shipments from DRC, Rwanda, and Burundi. "Other" origins (Malawi, Somalia, Sudan and Zambia) counted for a sizeable amount of the total transit cargos: 39% for Mombasa and 68% for Dar es Salaam, highlighting the economic importance of the links that connect the Northern Corridor with its "north" and the Central Corridor with its "south" and the *TAZARA* rail corridor (the "Great Uhruru Railway") to Zambia's copperbelt.

[19] http://www.centralcorridor-ttfa.org/site-page/volume-first-half-2013; *Innovative Corridor Performance Monitoring*, Transport Observatory Project, Transit Transport Coordination Authority of The Northern Corridor (TTCA-NC), September 2013.

Graph 1 - Trade ventilation of Imports - January to June and July 2013



Graph 2 - Trade ventilation of Exports - January to June and July2013

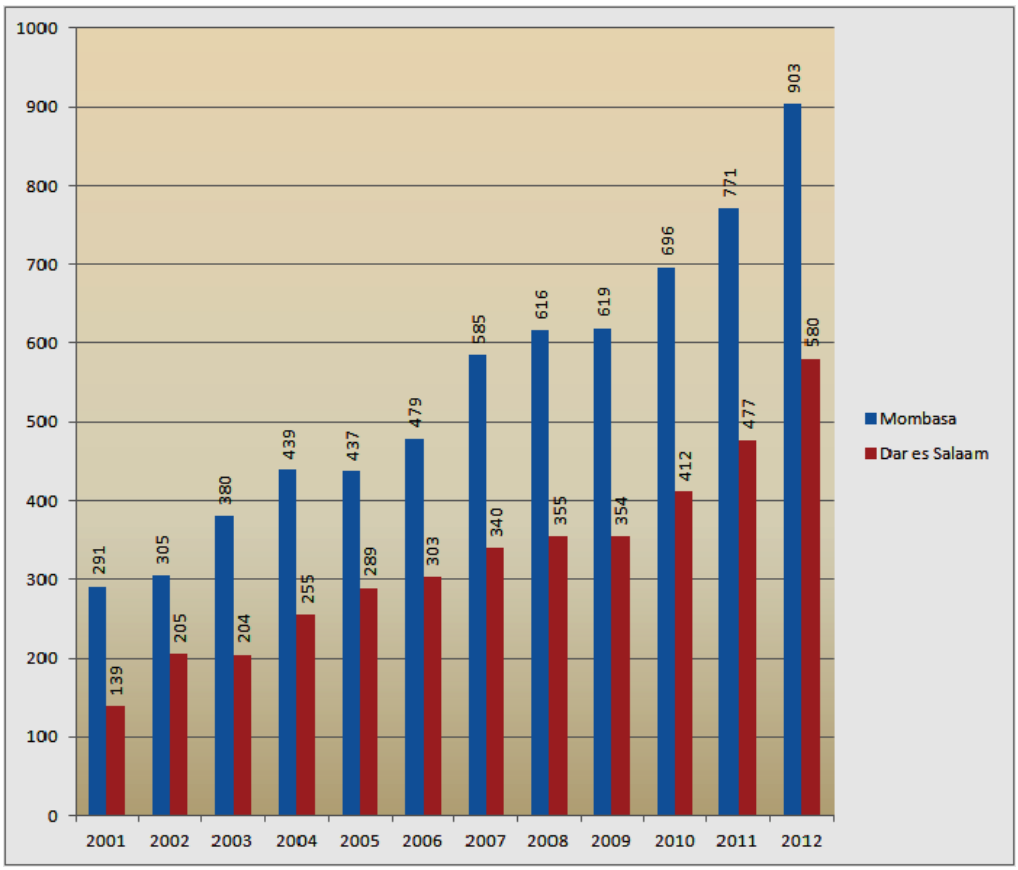


Sources: see footnote 18

2.2.2 Containerized traffic[20]

According to the Shippers Council of East Africa,[21] "*over the past decade, the East African ports of Mombasa and Dar es Salaam have witnessed substantial increase in container traffic. […]. The annual average growth rate of container traffic through these ports was 12.9% for Dar es Salaam and 11.1% for Mombasa per year.*" In 2012, both ports experienced improvements in the capacity and efficiency of their container terminals. However their facilities are currently still stretched beyond the limits of their designed capacity.

Graph 3 - Total TEUs handled at Mombasa and Dar-es-Salaam 2001-2012



Sources: see footnote 18

Mombasa's container terminal was originally designed (1980) to handle 250,000 TEUs and later on expanded to handle nearly 800,000 TEUs.[22] However, it handled more than 903,000

[20] Most of the international trade in manufactured goods is moved in containers. The main types of containers are the Twenty-foot Equivalent Unit or TEU and Forty-foot Equivalent Unit or FEU, the latter mostly used in maritime transport.

[21] *East Africa Logistics Performance Survey 2012*, op. cit., p. 13.

[22] "East Africa port competition needed", *Insight*, Drewry Maritime Research. 3 March 2013.

TEUs in 2012 (up from 770,804 in 2011), as a result of various improvements.[23] Mombasa's container terminal spans across four berths – 16 to 19 (the latter inaugurated in March 2013)[24] – for a total of 760m, a length that allows for working simultaneously on three vessels 230m long.[25]

An additional new container terminal[26] - at berths 21, 22, and 23, with a total length of 900m - is presently being constructed[27] south of the oil terminal. It will become operational in 2016, with an initial annual capacity of 450,000 TEUs. Once completed, the terminal will reach a capacity of 1.2 million TEUs.[28] The creation of several off-port container freight stations (for domestic traffic) has also helped to improve the port's performance.[29]

Dar es Salaam's first container terminal was created in 1988 with the conversion of berths 9, 10, and 11. In 2000 - when the container terminal was leased to Hutchison Port Holdings - the terminal had a yearly capacity of 250,000 TEUs.[30] Since then, the terminal's capacity has risen to 500,000 TEUs, which has proven to be already insufficient to handle the port's container traffic, which reached 580,000 TEUs in 2012 (477,000 in 2011).[31]

Whilst the Tanzania Ports Authority (created in 2005)[32] runs the general cargo terminal (berth 1-7), the container terminal (Tanzania International Container Terminal, TICTS) is run by Hutchison Port Holdings. The TICTS has four berths (8[33], 9, 10, and 11) with a total length

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[23] "Port of Mombasa joins top world ranked ports", Corporate Affairs Department, Kenya Ports Authority, 16th September 2013; "Joint efforts reduce Mombasa congestion", *Container Management*, 28 August 2013, http://container-mag.com/joint-efforts-reduce-mombasa-congestion/

[24] The new terminal at berth 19 has increased the port's capacity by 250,000 TEU annually. See *Kenya Ports Authority Handbook 2012-2013*, Kenya Ports Authority, Land & Marine Publications Ltd, Mombasa, 2013; "Port of Mombasa joins top world ranked ports", Corporate Affairs Department, Kenya Ports Authority, 16th September 2013; "Joint efforts reduce Mombasa congestion", *Container Management*, 28 August 2013, http://container-mag.com/joint-efforts-reduce-mombasa-congestion/

[25] *Kenya Ports Authority Handbook 2012-2013*, Kenya Ports Authority, Land & Marine Publications Ltd, Mombasa, 2013.

[26] Owned by the Bolloré Group.

[27] "Mombasa's second container terminal is 34% complete", *Container Management*, 20 May 2013; Mwita M., "Kenya: Second Container Terminal to Be Completed By 2016", *The Star,* 28 November 2013.

[28] *Kenya Ports Authority,* Corporate Affairs Department, 16 September 2013.

[29] "New Dry Port opened at Mombasa by APM Terminals", *Container Management*, 6 February 2013.

[30] Raballand G., Refas S., Beuran M. and Isik G., *Why Does Cargo Spend Weeks in Sub-Saharan African Ports? Lessons from Six Countries*, World Bank, 2012.

[31] Thiong'o T., Kamau S., Asiimwe D., Esiara K., "With USD11bn Bagamoyo port, Tanzania prepares to take on EA hub Mombasa", *The East African,* 11 May 2013.

[32] Its immediate predecessor was the Tanzania Harbours Authority (1977). See Port Management Association of Eastern and Southern Africa (PMAESA), at http://www.pmaesa.org/members/tpa.htm

[33] Berth 8 was assigned to TICTS in 2009. "East Africa port competition needed", *Insight*, Drewry Maritime Research. 3 March 2013.

of 725m and the ability to work simultaneously on three vessels.[34] TPA has planned two new container berths (13 and 14), to be completed in 2016, adding more than a further 500,000 TEUs in annual terms to the port capacity.[35]

A drawback of both Dar es Salaam and Mombasa is that neither are deep-sea ports. This means that they are not able to accommodate containerships larger than 6,000 TEUs or bulk carriers of 150,000 DWT[36] or more.

2.3 Dwell time at Mombasa and Dar es Salaam ports

"*The dwell time can be defined as the measure of the time elapsed from the time the importer's or exporter's cargo arrives within the port area to the time the goods leave the port area*."[37] According to a survey by the Shippers Council of Eastern Africa, in 2012 "*Dar–es–Salaam reported an average port dwell time of 10 days while Mombasa recorded a dwell time of 4 days* [...].

"*The major factors affecting port dwell time as revealed by the survey include the following: a) system reliability for ports and customs authorities which is affecting the passing of customs entries and issuance of release orders; b) rigidity of the clearance process means that any errors in declarations and manifests are heavily punished as shippers who complete a form C11 for rectifying such errors have to content with an average 7 days to have their entries passed, at which point their cargo has already started to incur storage and demurrage charges; c) complexity in fulfilling documentation for transit related cargo; d) too many government agencies involved in the goods clearance process*."[38]

Interestingly, the above-mentioned survey reveals that a relevant portion of the dwell time is caused by the shippers themselves: an importer or exporter "*also plays a major role in port dwell time.*" The shippers "*are often indifferent to long dwell times and* [...] *the dwell times recorded in are mostly related to factors that are dependent on shippers. The demand by importers for longer dwell time seems to be related to the private sector's inventory management and business model – including informal practices, where depending on the*

[34] http://www.nrlmry.navy.mil/port_studies/africaports/Tanzania/DarEsSalaam/text/port_information.htm

[35] Mwanga L., "East Africa: Dar es Salaam Edges Mombasa in Cargo Handling", *East African Business Week*, 30 January 2012; Nachilongo H., "Chinese to build additional berths at Dar port", *The East African*, 3 August 2013; "As it projects growth, Tanzania Port Authority embarks on massive expansion drive", *TR Tanzania Reports*, undated (http://tanzaniareports.com/?p=2325).

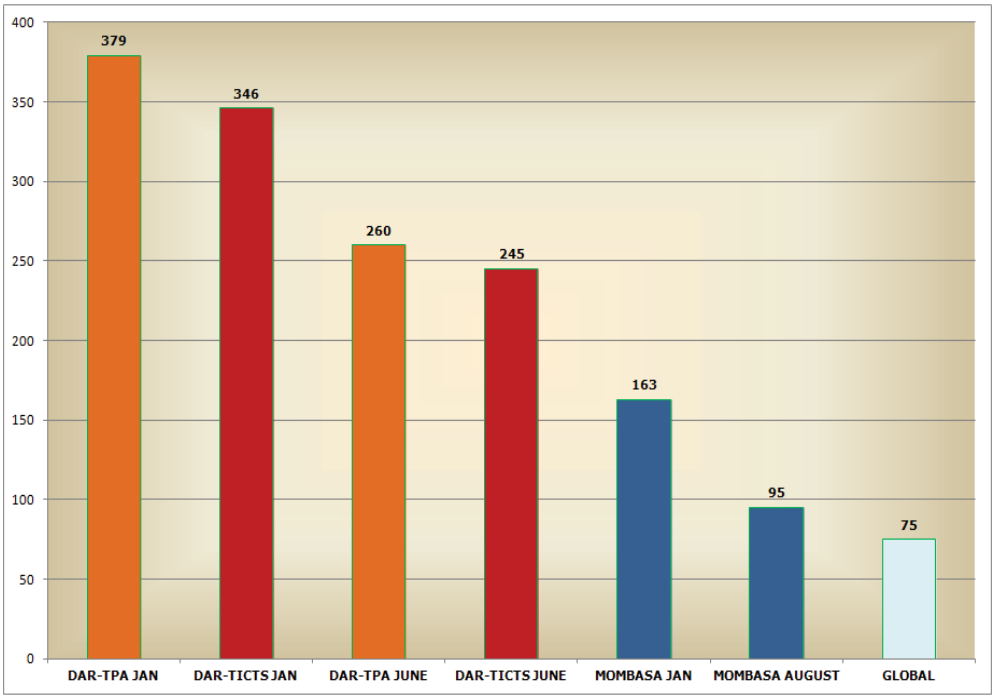
[36] Deadweight Tonnage ('DWT' or 'dwt') is a measure of a ship's carrying capacity, including bunker oil, fresh water, ballast water, crew and provisions. It is expressed in metric tons (1,000 kg) or long tons (2,240 pounds, about 1,016 kg).

[37] *East Africa Logistics Performance Survey 2012*, op. cit.

[38] *East Africa Logistics Performance Survey 2012*, op. cit., p. 15.

product and market conditions, importers have a strong incentive to use ports as storage farcicalities in order to support predatory pricing mechanisms." [39]

Graph 4 - Dwell Time in Hours - From January to August 2013 - Comparison between two Dar es Salaam Terminals (January and June), Mombasa (January and August), and Global Standard



Sources: see footnote 18.

In 2012, however, average dwell time significantly dropped at both ports: Mombasa port recorded an average of *"6.5 days in 2011 [and] 5 days in 2012 and Dar es Salaam* [an average of] *10 days in 2012*"[40], from 12 days in 2011.[41] Average dwell time for containers

[39] *East Africa Logistics Performance Survey 2012*, op. cit., p.16. The survey targets the following factors: a) "low logistics expertise and cash constrains also explain why some importers have no reason to reduce their cargo dwell times"; b) "some port operators earn large revenues from storage and have no willingness to fight for reduced dwell time"; c) "cost minimization and profit maximization may explain such irrational behaviors as deliberately delaying pick–up of cargo from the port"; d) "monopolist firms are not affected by high logistic costs especially in cases where demand is inelastic to price and will therefore make no effort to reduce dwell time"; e) "opportunistic pricing where adverse logistics conditions allows a company to justify higher markups or hold inventories to speculate on higher sale prices".

[40] *East Africa Logistics Performance Survey 2012*, op. cit., Executive Summary; *Report on the Performance of the Northern Corridor*, 14th November 2013.

[41] *Develop a Logistics Performance Survey Index (LPI) for the Kenya Shippers Council - Final Draft Report*, Institute of Trade Development, Nairobi, January 2012; Mwachang'a D., "Poor coordination prolongs cargo stay at Dar port - experts", *The Guardian* (Dar es Salaam), 12 November 2013. The average dwell time decreased to 9 days in November 2013.

also dropped: in the first half of 2013, Mombasa registered a dwell time of 5.8 days compared with 8.8 days in the same period of 2012,[42] and Dar-es-Salaam, 10 days (11.5 days in 2011).[43]

Average dwell times, however, may be misleading, hiding a more complex reality. The average dwell times for Transit cargo[44] are much higher than dwell times for cargo destined in-country. As we have seen, the volumes of in-country cargo are far higher than in-transit cargo and the former dwell times have an obvious influence on the "average". Shippers of in-transit cargo could not expect anything close to the "average" dwell times for their cargo.

For example, at the Dar es Salaam container terminal,[45] dwell times for cargo directed to DRC averaged: 15.8 days for the first six months of 2013 (falling to 12 days in June); 20 days in January 2013; and 12 days in June 2013. Average dwell time for the first six months of 2013 was, for Burundi, 13.7 days (12 days in June); 12.5 days for Uganda (10 days in June); and 12.3 days for Rwanda (9 in June). Dwell times for cargo directed to Tanzania were significantly lower in the same period: 8.8 days. Similar patterns were registered at the TPA general cargo terminal.

In the relatively poor logistic performances[46] of Mombasa and Dar es Salaam ports factors such as corruption and incompetence in certain areas may play a relevant role. For example, an article by Tanzania Daily News described the results of actions taken between 2012 and 2013 by Tanzania's Transport minister:

> *"Soon after taking over [May 2012, NdA], Dr Mwakyembe made headlines by suspending the top management at TPA and Dar es Salaam port before extending a similar cleanup operation to the board of directors. The result of these changes are impressive; theft of containers and other goods have been reduced or completely stopped, monthly revenue collected by TPA at the country's prime port has more than doubled and efficiency has also improved in terms of ships dwell time although complete cargo clearance remains problematic."* [47]

The negative factors affecting the logistics performance of Mombasa and Dar es Salaam ports interact with negative factors affecting various other components of the Northern and Southern Corridors, from the poor status of certain portions of road and railways networks to excessive bureaucratic obstacles and unfair competition amongst shippers and transporters.

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[42] "Mombasa port improves performance", *The Transporter*, Kenya Transporters Association Ltd, July-September 2013.

[43] Mwasenga H., *Port Performance Indicators, A Case of Dar es Salaam Port*, op. cit.

[44] Cargo in transit to and from countries other than Kenya or Tanzania.

[45] *Performance Indicators, Dwell Time,* Central Corridor TTFA, http://www.centralcorridor-ttfa.org/site-page/dwell-time-first-half-2013\

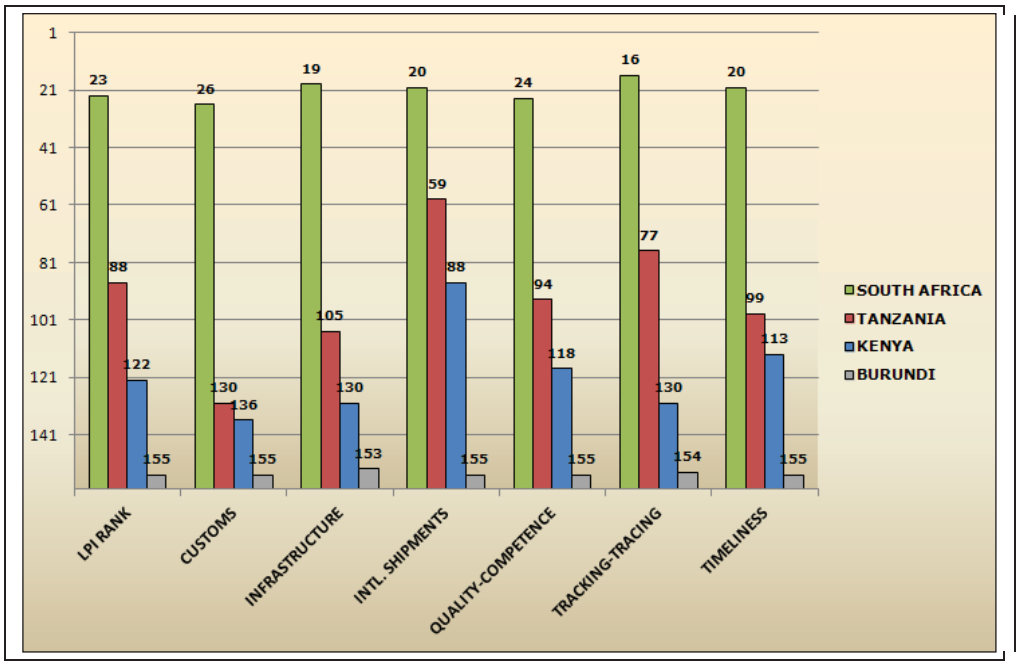
[46] **"**Port berth opening heralds new era in regional co-operation", *Standard*, 28 August 2013.

[47] "Tanzania: TPA's New Board Should Restore Sanity At Dar es Salaam Port", *Tanzania Daily News* (Dar es Salaam), 22 September 2013.

Combined, these factors provoke low performance in key elements of the logistics chain, as shown in a 2012 survey by the World Bank, whose results are summarized in Graph 5.

Graph 5 shows the position of Kenya and Tanzania in the Logistics Performance Index (LPI - a ranking that lists 155 countries), compared with Burundi's and South Africa's. Burundi scored lowest globally in most of the six indicators (customs practices; status of infrastructure; performance in international shipping; logistics quality and competence; ability to track and trace cargo, timeliness). Kenya scored at the 122nd position in the general LPI and 88th in international shipments. Tanzania scored 88th in the general PLI, and 59th in international shipments. To offer the context: Singapore scored 1st in the LPI and between the first and sixth positions in all indicators, while South Africa scored 23rd in the general LPI, with even higher results in tracking-tracing and infrastructure.

Graph 5 - Logistics Performance Index 2012



Source: International LPI results, in Arvis J.F., Mustra M.A., Ojala L., Shepherd B., *Connecting to Compete 2012. Trade Logistics in the Global Economy. The Logistics Performance Index and Its Indicators*, The World Bank, 2012.

2.4 New port projects for Tanzania's and Kenya's international trade

In addition to Mombasa and Dar es Salaam, Kenya's and Tanzania's coastlines (536 km and 1,424 km, respectively) host other ports with the potential to become major hubs of international trade: Tanga and Mtwara in Tanzania and Lamu in Kenya.

Tanga and Mtwara ports are presently the target of government projects aimed at rehabilitating and upgrading their infrastructures and rail/road networks connecting to the

main commercial routes of the Central Corridor and TAZARA. A project to build a new megaport at Lamu Island is underway. The port of Tanga[48] (the oldest in East Africa, founded in 1893) lies near Tanzania's border with Kenya, 179 nautical miles north of Dar es Salaam [49] and 69 nautical miles south of Mombasa. The port has recently seen a substantial surge in cargo movements[50] despite its shallow water berths.[51] The East African Community recently decided to support a project for the Mwambani Port and Railway Corridor[52] that includes the construction of a deep-sea port at Mwambani Bay near Tanga.[53] The deep-sea port of Mtwara[54] lies near the border with Mozambique, 230 nautical miles south of Dar es Salaam.[55] Neglected for decades, its operations have recently been boosted by offshore oil and gas operations and a rail connection project.[56]

The port of Lamu, "*a flagship infrastructure project under Vision 2030*" according to Kenya Ports Authority,[57] will mainly serve trade to and from South Sudan and Ethiopia and it will be complemented by a standard gauge railway, a new airport, highways, an oil refinery and pipeline, as well as a free trade zones (see Chapter Five for an analysis of these projects).

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[48] The port is connected by road (A14) with the Arusha-Dar es Salaam highway (B1, 354 km to Dar es Salaam and 438 km to Arusha). The rail connection ("Tanga Line") with Arusha has been out of use for many years and projects to build new railways are still at bay. The line would need a new 650 km leg to connect with Musoma on Lake Victoria and Uganda. See: Ngwega N., "Tanzania: Tanga - Musoma Railway Project Still Viable, Says Ministry", *Tanzania Daily News*, 14 September 2013

[49] About 12 hours of navigation from Dar es Salaam by an average containership.

[50] Mohamed P., "Tanga port realizes impressive growth", *The Guardian* (Dar es Salaam), 21 November 2013. http://www.ippmedia.com/frontend/index.php?l=61803. However, the port lacks dredging and a sufficient number of barges to handle a growing traffic.

[51] Cargo loading and unloading is served by barges and pontoons.

[52] See: Kapama F., "Tanzania: Mwambani Corridor Attracts International Prospects", *Tanzania Daily News*, 2 April 2013; "New Mwambani Port to ease Strain on Major Docks", *The Transporter*, Kenya Transporters Association Ltd, July-September 2013. The "MWAPORC" is an ambitious project aimed at establishing a high-volume rail and road connection between the DRC port of Banana on the Atlantic and a new port at the Mwambani Bay. See: http://www.mwaporc.com/.

[53] The necessity and feasibility of a new port at Mwambani Bay have been contested by the supporters of a far more modest investment that could transform and upgrade Tanga port. See: *Does Tanga need a new harbour at Mwambani Bay? A Brief Technical Assessment of Tanga Port operations*, Tanzania Natural Resource Forum, Arusha, 5 March 2008, http://tnrf.org/en/node/7066.

[54] The port is connected by road to Dar es Salam (562 km) and, on the West, with Mbamba Bay on Lake Malawi (818). From Mbamba Bay, a small ferry, MV Songea, connects Mbamba Bay with Nkhata Bay and Malawi's and Northern Zambia's road networks.

[55] About 15 hours of navigation from Dar by an average containership.

[56] "The Mtwara Rockefellers. A gas bonanza brings hope of wealth", *The Economist*, 20 April 2013.

[57] *Kenya Ports Authority Handbook 2012-2013*, op. cit.

Another project[58] - part of Sino-Tanzanian cooperation agreements signed in 2013 - aims to build a deep-sea port at the historic Bagamoyo port and bay - 60 km north of Dar es Salaam on the coast facing Zanzibar - with a capacity of 20 million TEUs and a scheduled completion in 2017. The project includes the construction of an airport, as well as land connections to Mlandizi (a 34-kilometre road) and the Tazara line (a 65-kolometre railroad). According to the Tanzanian authorities,[59] in addition to relieve the congestion of Dar es Salaam, the port is aimed to handle the export of natural resources from the region's landlocked countries and, in particular, Burundi's nickel exports.

Map 3 - Port-to-Port Distances in Nautical Miles from Mombasa/Dar es Salaam

Mogadishu	502	Cape Town	2,509
Aden	1,619	Port Said	3,006
Durban	1,718	Singapore	3,987
Diego Garcia	1,969	Genoa	4,408
Karachi	2,361	Hong Kong	5,445
Dubai	2,413	Antwerp	6,268
Kandla	2,427	New York	8,108

Source: "Distances Between Ports" Pub. 151, Lighthouse Press, 2003

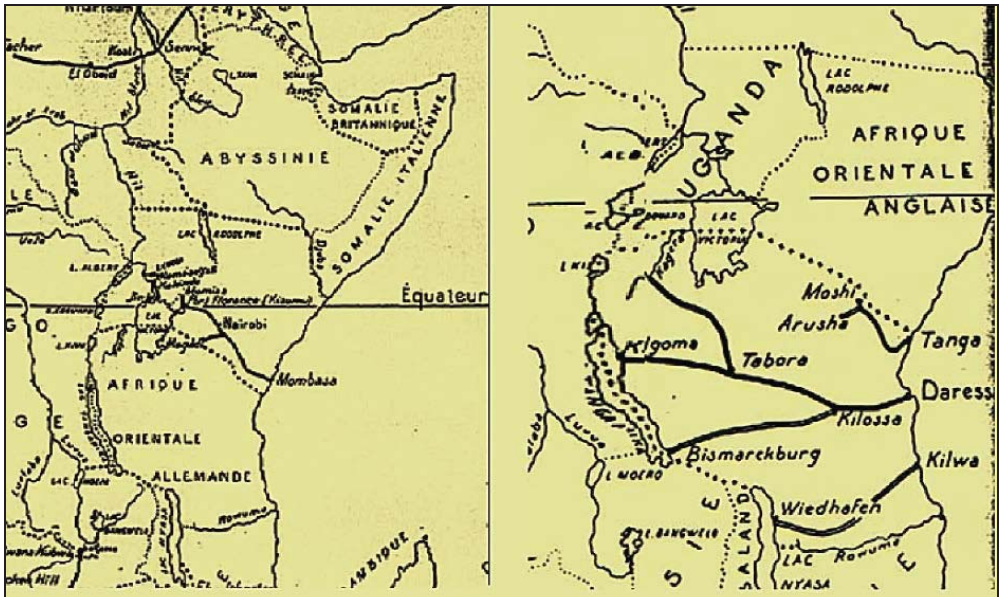
[58] "With $11bn Bagamoyo port, Tanzania prepares to take on EA hub Mombasa", *The East African*, May 11, 2013; Kassim, M., "New Bagamoyo port to restore town's lost glory", *The Guardian* (Dar es Salaam). 3 January, 2014.

[59] "New Bagamoyo port to restore town's lost glory", quoted.

2.5. Outlook on Rail systems of the Northern and Central Corridors

According to the Shippers Council of Eastern Africa's estimates, "*railway accounts for less than 4% of cargo evacuated from the port of Mombasa and 5% from the Dar–es–Salaam port. These low evacuation rates are attributed to lack of adequate wagons and a depleted rail infrastructure that has been largely neglected with minimal investment since the 1900s. Even with the existing capacity, there exist frequent delays, breakdowns, and service disruptions that make rail transport more unpredictable than road transport.*"[60]

Map 4 - Maps of African Railways (1914) and km of tracks in operation[61]



COUNTRY	OPENING	1899	1919
KENYA	163 (1898)	365	1,032
TANZANIA	14 (1895)	40	1,596
UGANDA	89 (1912)	-	108
DRC	40 (1893)	402	2,064
ZIMBABWE-ZAMBIA	154 (1894)	943	3,978

East Africa's main railway lines were initially built by competing colonial powers: the United Kingdom (Mombasa – Kisumu, 1894-1901) and Germany (Dar es Salaam – Kigoma, 1904-1914) under the East Africa Protectorate (1894) and Imperial Germany Protectorate (1891) respectively. Their purpose was to serve and protect military and economic penetration of the

[60] *East Africa Logistics Performance Survey 2012*, op. cit. See also: Briceno-Garmendia C.M., Shkaratan M., *Kenya's Infrastructure: A Continental Perspective*, The World Bank, Policy Research Working Paper, March 2011, p. 8

[61] Maps from *Politiques des Chemins de Fer en Afrique Tropical*, Royaume de Belgique, Ministére des Colonies, Bruxelles, 1914; excerpts from Finardi S., Tombola C., *The World Transport System*, Il Mulino, Bologna, 1995, p. 343.

region and the exploitation of its natural resources, after the United Kingdom and Germany agreed (in London, October 1886) to divide the region in two "spheres of influence". The attempts to subjugate the natives in the hinterland and the construction of the railways by the two colonial powers were met with fierce resistance by local population, but uprisings and rebellions were bloodily suppressed by military forces.[62] The territories were initially ruled by the British East Africa Company and the Deutsch-Ostafrikanische Gesellschaft (German East African Company), north and south, respectively, of the present Kenya/Tanzania border.[63] The Mombasa–Kisumu and the Dar es Salaam–Kigoma used the narrow gauge (1,000mm) of the India's railways model, whereas the TAZARA (1970-1975) railways from Dar es Salaam to Zambia used the 1,067mm gauge.

One of the main issues presently complicating the development of a regional railway network is this usage of different rail gauges.[64] The existing railway links do not truly constitute a regional network. In the last three years, however, several rehabilitation projects and plans for the construction of modern standard gauge railways have been approved and financed.

The Northern Corridor's rail network, operated by RIFT Valley Railways (RVR), extends along 2,352 km. Its main single line is the Mombasa-Nairobi-Nakuru-Kisumu/Eldoret-Tororo-Jinja-Kampala (1,330 km) that continues to Kasese (333 km) and has also branches from Tororo/ Soroti-Gulu to Packwach (341 km).

The Central Corridor's rail network, operated by the Tanzanian Railways Corp., includes the main line from Dar es Salaam to Kigoma (1,254 km), with various branches (Tanga-Moshi-Arusha; Kilosa-Kidatu; Manyoni-Singida; Tabora-Isaka-Mwanza; Kaliua-Mpanda) for a total of 2,707 km. The Tanzanian-Zambian Railways, operated by the Tanzania-Zambia Railway Authority (TAZARA), connect Dar es Salaam with New Kapiri Mposhi in Zambia, for a total distance of 1,860 km.

To date, Eastern DRC has no railway connection with the Northern and Central Corridors. The *Société Nationale des Chemins de Fer du Congo* (SNCC) does operate a rail system in the southeast of the country. This network, however, is only connected with Southern Africa's extensive railway system through Zambia. The railways are used to export copper from Katanga province to the port of Durban in South Africa. However most copper exports are still carried out through road freight.[65]

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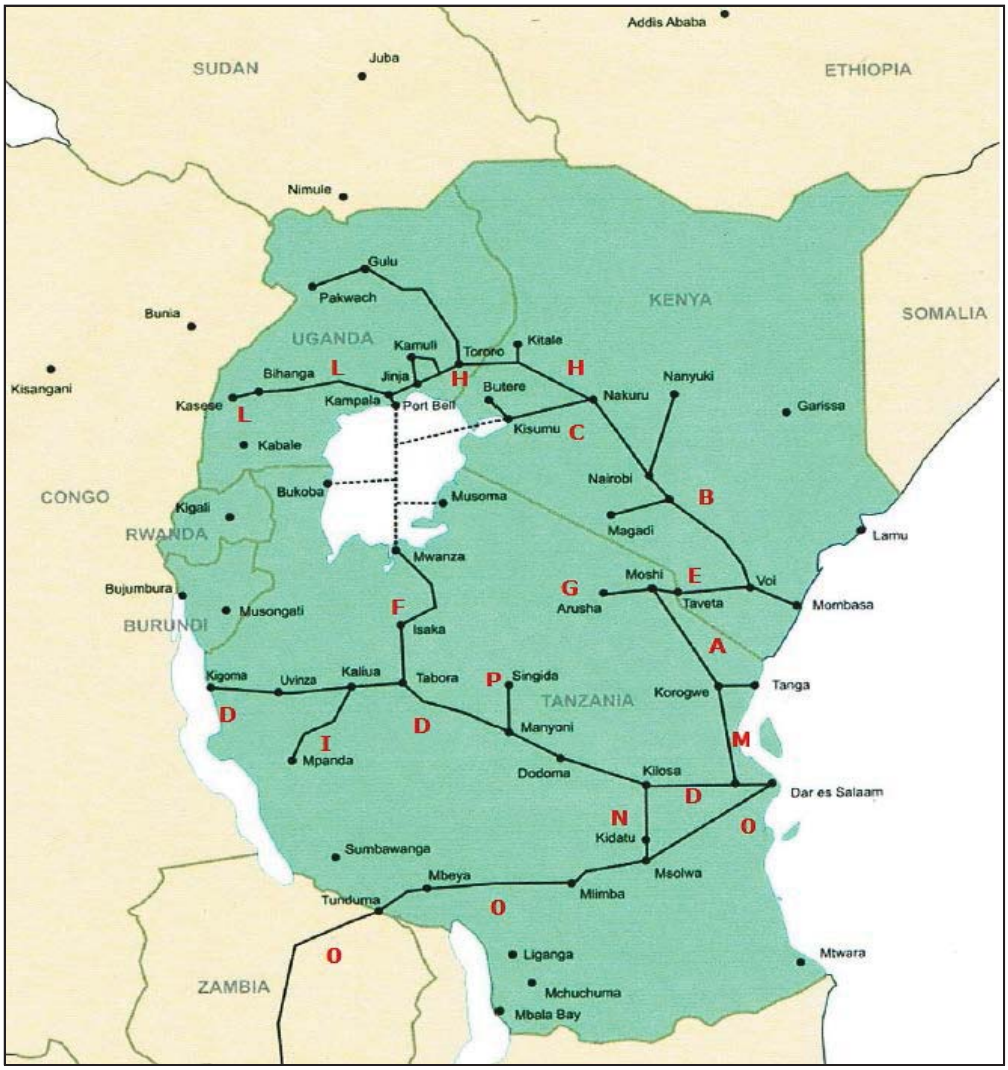
[62] Okoth A., *A History of Africa. African Societies and the Establishment of Colonial Rule 1800-195, Vol. I*, East Africa Educational Pubs., Nairobi, 2006, p.128; www.greywall.demon.co.uk/rail/Kenya/nrm.html, Nairobi Railway Museum.

[63] Okoth. A., op. cit.

[64] Ranganathan R., Foster V., *East Africa's Infrastructure: A Continental Perspective*, The World Bank, Policy Research Working Paper, September 2011, pp. 18-19.

[65] Foster V., Benitez D. A., *The Democratic Republic of Congo's Infrastructure: A Continental Perspective*, The World Bank, Policy Research Working Paper, March 2011, p. 12.

Map 5 - East African Existing Rail Lines



A = Tanga-Moshi Mainline (1893-1911)	H = Kampala Mainline (1931)
B = Mombasa-Nairobi Mainline (1896-1899)	I = Mpanda Line (1949)
C = Kisumu Line (1901)	L = Kasese Line (1956)
D = Dar es Salaam -Kigoma Mainline (1904-1914)	M = Tanga Link Line (1963)
E = Moshi -Voi Link-line (1924)	N = Kidatu Line (1965)
F = Mwanza Line (1928)	O = TAZARA Dar-Kapiri Mposhi (1975)
G = Arusha line (1929)	P = Singida Line (1985)

Source: Authors' elab. on data and map *Port Efficiency and Hinterland Infrastructure, A Symbiotic Relationship*, Kenya Ports Authority Media Workshop, 22 November, 2012, www.trademarkea.com and http://www.kpa.co.ke/; EAC Current Rail Network with Proposed New Lines, Map "EAC Current Rail Network with Proposed New Lines", http://www.infrastructure.eac.int/

2.5.1 Railways rehabilitation and projects

In July 2013, the repair of 73 km of the Northern Corridor Mombasa-Nairobi line was completed[66] and Rift Valley Railways installed a new GPS-based system for tracking and management of cargo.[67] In September, the governments of Kenya and China reached an agreement for the construction of a new standard gauge line between Mombasa and Nairobi to be completed in five years.[68] In November, the line between Tororo (Kenyan border) and Gulu (Northern Uganda) was "*re-opened 18 years after service ceased,*"[69] and rehabilitation works started on the link between Gulu and Pakwach (Lake Albert).[70] Plans have been developed to extend the network to Eastern DRC, South Sudan, and Ethiopia.[71]

Along the Central Corridor, projects relate to the upgrading of the Dar es Salaam–Isaka line (970 km); the extension of the same line to Kigali (494 km, of which 139 km in Rwanda); a line from Keza, Tanzania, to Musongati, Burundi (197 km, of which 139 km in Burundi);[72] and the rehabilitation of the TAZARA line.[73] In 2011, the governments of Tanzania and Uganda co-developed a project for the construction of a new railway line (800 km) between Musoma port (Lake Victoria) and the planned port of Mwambani Bay, near the existing port of Tanga.[74] Presently, a line connects Tanga with Arusha, 400 km from Lake Victoria. The project included the construction of the Mwambani port, the railway, a new dock at Musoma, rehabilitation of Port Bell, and a new inland port at Kampala. In 2013 the Tanzanian government reaffirmed its commitment to the project.[75]

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[66] Oirere S., "RVR upgrades track but Kenyan government threatens review", *International Railway Journal,* 5 July 2013.

[67] "RVR installs GPS technology to improve tracking and speed of cargo movement by rail", 27 June 2013, http://www.riftvalleyrail.com

[68] Kisero J., "Kenya, China quietly strike deal on modern railway line", *The East African*, 22 September 2012.

[69] Barrow K., "Presidential reopening for Northern Uganda Railway, *International Railway Journal*, 1 November 2013.

[70] See also: Ranganathan R., Foster V., *East Africa's Infrastructure: A Continental Perspective*, The World Bank, Policy Research Working Paper, September 2011, p. 19.

[71] Ford N., "Tenders invited for Mombasa-Kampala railway". *African Business,* 307 (Mar 2005): p. 26-27; Mesnick D.B., *Revitalizing the Railways for Enhanced Regional Integration and Economic Growth: The Northern Corridor a Pivotal Time for East African Railways,* MCP, The Louis Berger Group, Inc., The East African Community Railways Conference, Dar es Salaam, 11 March 2010.

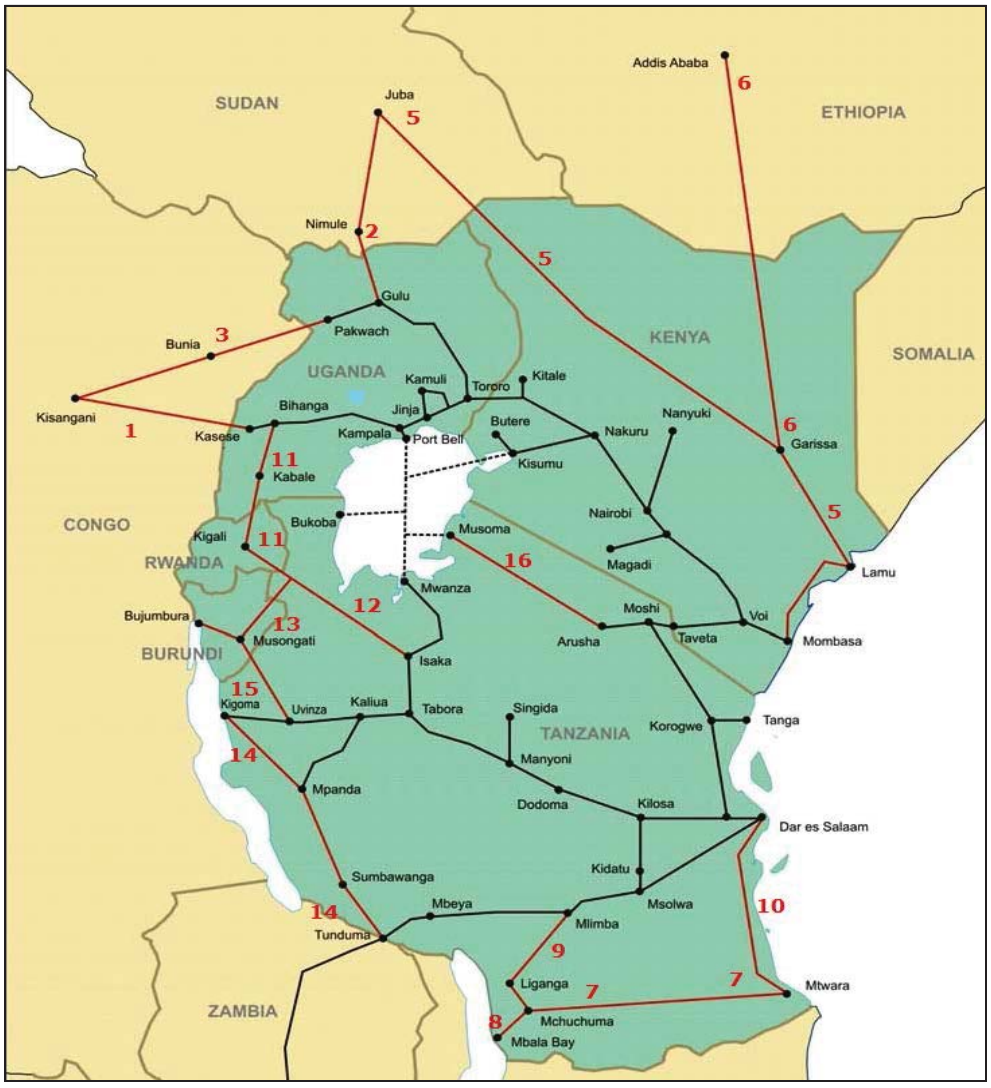
[72] *The Role of the Railways in Reducing the Cost of Doing Business*, NTTC Conference, WhiteSands Mombasa 30 Sept - 1 Oct. 2009, Joint Presentation by KRC/URC/RVR; Briginshaw D., "East African railway master plan gets funding", *International Railway Journal*, 24 August 2012.

[73] Mwansa A., "China signs Tazara rehabilitation deal", *International Railway Journal*, 7 November 2012.

[74] Ihucha, A., "Dar, Uganda plan USD2.7b new port-lake railway", *The East African*, 4 April 2011

[75] Ngwega N., "Tanzania: Tanga - Musoma Railway Project Still Viable, Says Ministry", *Tanzania Daily News*, 14 September 2013.

Map 6 - East African Proposed Standard Gauge Rail Lines



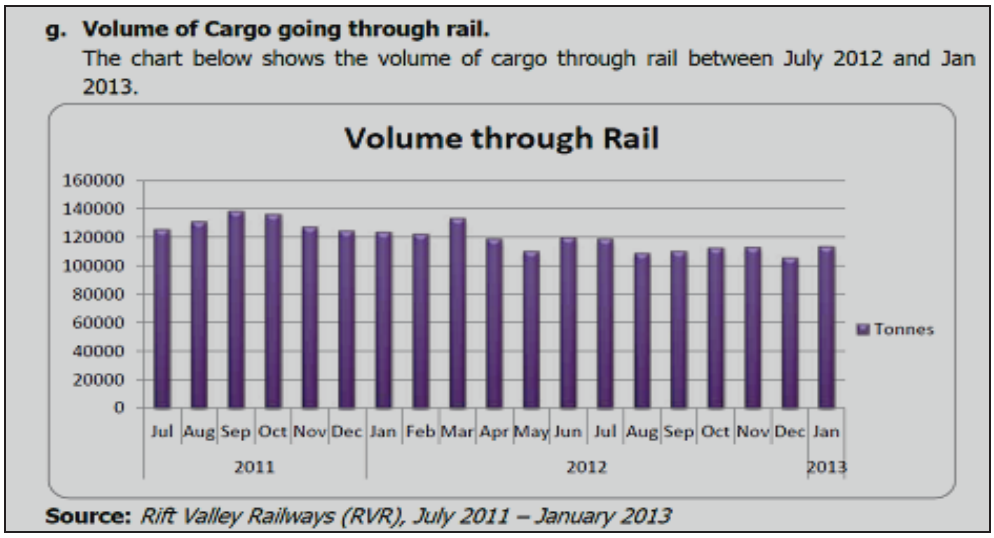
1	KASESE-KISANGANI	9	LIGANGA-MLIMBA
2	GULU-NIMULE-JUBA	10	DAR-MTWARA
3	PAKWACH-BUNIA-KISANGANI	11	KIGALI-BIHANGA
4	TORORO-KAMPALA-KASESE	12	ISAKA-KIGALI
5	MOMBASA-LAMU-GARISSA-JUBA	13	KEZA-MUSONGATI
6	GARISSA-ADDIS ABABA	14	KIGOMA-TUNDUMA
7	LIGANGA-MTWARA	15	UVINZA-BUJUMBURA
8	MCHUCHUMA-MBAMBA BAY	16	ARUSHA-MUSOMA

Source: Authors' elab. from EAC, *Corridor Diagnostic Study of the Northern and Central Corridors of East Africa*, 2011.

The railways of both Corridors hardly constitute a viable and attractive alternative to the road transport. For example, the Shippers Council of East Africa recently stated that "*rail transport costs along the Northern Corridor route are estimated at USD0.06 per ton-km, compared with USD0.07-0.09 per ton-km for road transport. This reflects a very minimal cost differential between road and rail leaving shippers with no incentive to choose one mode over*

the other." [76] The volume of cargo transported by the Northern Corridor's railways is declining and, on the Rift Valley Railway (RVR, part of the Northern Corridor), cargo volume (as a portion of all cargo transported along the Corridor) further declined to 3% in 2013 from 15% in 2007.[77] According to an estimate by TradeMark experts in Dar-es-Salaam, "*the cargo volume hauled through the central railway line has also rapidly declined due to aged infrastructure combined with lack of investment in the sector. [...] This has resulted in continuous deterioration of the rolling stock*."[78]

Unfortunately, it is impossible to evaluate the performances of East African railways independently. Neither Rift Valley Railways and its partners (Kenya Railways Corp. and Uganda Railways Corp.), the Tanzanian Railways Corp., the ministries of Transport of Kenya and Tanzania, the Northern Corridor Transit and Transport Coordination Authority (NCTTCA) nor the Central Corridor Transit Transport Facilitation Agency (CCTTFA)[79] make publicly available statistics on the volume of freight transported by rail. The only relatively recent data on freight volumes transported by rail are included in a chart published by the Transport Observatory Project of the NCTTCA in April 2013. It seems from the chart that in 2012 the RVR transported about 1,400,000 tons of cargo, roughly corresponding to 6% of all cargo handled at Mombasa port in the same year.



Source: *Scaling up Corridor Monitoring for Informed Decisions,* Transit Transport Coordination Authority of The Northern Corridor (TTCA-NC), April 2013

[76] Shippers Council of Eastern Africa, quoted 2013.

[77] Oirre S., "RVR upgrades track but Kenyan government threatens review", *International Railway Journal,* 5 July 2013.

[78] Mwachang'a D., "Poor coordination prolongs cargo stay at Dar port - experts", *The Guardian* (Dar es Salaam), 12 November 2013.

[79] http://krc.co.ke/newsite/;http://www.trctz.com/;http://www.transport.go.ke/;http://www.mot.go.tz/; http://www.ttcanc.org/;http://centralcorridor-ttfa.org/

Chapter 3 - Focus on the Northern corridor road and logistics network

3.1 Roads

The Northern Corridor's road network covers approximately 8,800 km across Kenya, Uganda, Rwanda, Burundi, and the Democratic Republic of Congo. 60% of roads are paved, although poor maintenance has led international donors (namely the European Union and the World Bank) and local stakeholders to invest a considerable amount of resources in rehabilitation and upgrading works. Plans to improve the quality of roads are currently on-going in Kenya[80], Uganda[81], and DR Congo, with the aim of increasing intra-regional trade while reducing transport costs and transit time.

This is an overview of the stretches of road that are currently undergoing (or are due to undergo) major improvements:

- Timboroa–Eldoret (73 km, Kenya);
- Kabale–Kisoro (100 km, Uganda) – specifically, the gravel road to Bunagana (DR Congo) and Cyanika (Rwanda) is currently being upgraded to tarmac;
- Jinja–Bugiri Road (72 km, Uganda);
- Masaka–Mbarara Road (154 km, Uganda);
- Kisangani – Lubutu – Walikale (425 km, DR Congo).

The Northern Corridor's starting point is Mombasa, on the coast of Kenya. Broadly speaking, Kenya has mostly paved, well-kept roads. When crossing the border into Uganda, roughly three quarters of roads are paved, and overall quality is very low. However, over the last years Uganda has been able to put rehabilitation of the Northern Corridor's network back on its agenda, thanks to a large grant from the European Commission.[82] The rationale for this vast rehabilitation programme lies in Uganda's interest in gaining quick access to Mombasa, Kenya's main port and East Africa's door to the world market. From Uganda onwards the corridor breaks up into one branch leading to Juba (South Sudan) and one to Kigali (Rwanda) and Bujumbura (Burundi). While the Rwandan portion of the Northern Corridor's road infrastructure is paved and in fairly good conditions, the South Sudanese section is still unpaved.[83]

As a result, moving freight from Kampala towards South Sudan is double as expensive as taking the route between Kampala and Mombasa. Along with road quality issues, another key

[80] www.afdb.org

[81] http://www.unra.go.ug/; www.afdb.org

[82] Ranganathan R., Foster V., *Uganda's Infrastructure: A Continental Perspective*, The World Bank, Policy Research Working Paper, February 2012, pp. 13-14.

[83] Ranganathan R., Foster V., *East Africa's Infrastructure: A Continental Perspective*, The World Bank, Policy Research Working Paper, September 2011, pp. 13, 18.

factor that explains this difference in costs is the fact that trucks traveling back from South Sudan are often empty.[84]

Feeder roads from the DR Congo connect with the Northern Corridor through Burundi and Rwanda, although extensions of the corridor itself into DR Congo have recently been planned.

A 1,003 km long Mombasa-Nairobi-Addis Ababa Highway to link Ethiopia with the port of Mombasa is also under construction, and is seen as a key link in the Trans-Africa Highway network project, linking West and East Africa.[85]

Finally, current plans include a major deep-sea port (to be situated in Lamu, Kenya), which will be discussed in further detail in Chapter 5.

Photo 1 -Kabale-Kisoro road (Uganda)

Source: Peter Danssaert (IPIS vzw), 2008.

3.2 Transit times along the Northern corridor and their influence on logistics costs

Transit times are a decisive element in the determination of transport costs of raw materials and supplies. In 2012 and 2013, East African government agencies have started to

[84] Ranganathan R., Foster V., *Uganda's Infrastructure: A Continental Perspective*, The World Bank, Policy Research Working Paper, February 2012, pp. 14, 16.

[85] *Mombasa-Nairobi Addis Ababa Road Corridor Project - Phase II: Project Appraisal Report*, African Development Fund, June 2009; *Mombasa-Nairobi Addis Ababa Road Corridor Project - Phase III: Project Appraisal Report*, African Development Fund, October 2011.

implement reforms that could lead to the creation of a fast track and cut down on costs in a relatively short period. However, various factors still impact upon transit times in a negative way: a) the poor status of the road network; b) the frequent roadblocks by various law enforcement authorities; c) an exaggerated number of weighbridges stops along the routes; d) lengthy inspections by Customs at international borders; e) lack of harmonised rules for transport and Customs documents; f) Mombasa's port congestion; and g) the cargo handling practices at Mombasa port, where shipping lines have set up a *de facto* monopoly.[86]

Photo 2 - "Route nationale 3" Kisangani–Bukavu (DRC): rehabilitation works

Source: Peter Danssaert (IPIS vzw), 2008.

The above-mentioned factors implied severe transit delays that made transport and other logistics costs of the Northern Corridor nearly the highest in the world.[87] Logistics costs had reached levels as high as 48% of the total price of exports from Rwanda[88] (compared to 9%

[86] See for example: Kihara G., Marete G., "New law will scuttle cartels at Mombasa port", *The East African*, 8 June 2009. See also *The Merchant Shipping Act 2009*. After one year from approval, the enforcement of the law remains elusive. See text at: www.kenyalaw.org/Downloads/Acts/The_Merchant_Shipping_Act_2009.pdf

[87] Mbogori C., *Impact of Poor Transport and Trade Facilitation on Overall Competitiveness and Doing Business in East Africa: What can be done differently*, NTTC Conference, WhiteSands Mombasa 30 Sept - 1 Oct. 2009, EABC presentation.

[88] Mbogori C., op. cit.

in developed countries)[89] and - for the Northern Corridor in general - 30 to 45% on the total cost of imports in c.i.f. terms (cost, insurance and freight included). While the cost to move freight in the developing world generally fluctuates between USD0.01 and USD0.04 per tonne-kilometre, this mounted up to USD0.07 and USD0.13 in East and Central Africa respectively.[90]

Long waiting time at ports, cross borders and weighbridges means more workdays to be paid to the truckers, more fuel consumption, more trucks needed, and lost opportunities to arrive on time to load cargo for the return leg. (See *infra*.)

Despite recent improvements (see Chapter Two), cargo dwell times at seaports are still a major issue in Africa. Reportedly, more than 50% of the time allocated for it to reach its final destinations (often main cities in Sub-Saharan Africa) appears to be spent in the port itself. While cargo spends on average more than two weeks in Sub-Saharan ports, dwell times in Asian, European and Latin American large ports is less than a week. Next to the usual scapegoats like Customs and terminal operators, Raballand *et al* argue that there are several private sector stakeholders that also have an interest in slowing down the loading/ unloading process. Long dwell times, for example, deter competitors to enter the same market. Furthermore, ports terminals are often the cheapest option to store cargo for short periods.[91]

Box 1 - Major problems affecting Northern Corridor road transport

In 2009, the Commissioner General of Kenya Revenue Authority, Mr. M.G Waweru outlined the most significant problems affecting road transport along the Northern Corridor.[92] While certain elements of his analysis may have changed in the last three years, most of the shortcomings he listed are yet to be addressed. These outstanding issues are summarised below.

" *1) Importers failing to reveal their* ***true identity****. Several importers allegedly use paper companies and other nominees to mask their identity, often in order to conceal actual trade volumes and undertake illicit trading activities, including diversion and smuggling.*
2) Delays in ***cargo clearance****. Failure by importers to facilitate clearance of their goods on time leads to a backlog of clearance procedures and overall port congestion.*
3) ***Theft****. It is not uncommon that cargo gets stolen at the port of entry or while in transit. Such thefts often involve both port operators and importers.*

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[89] Conference Recommendations, NTTC Conference, WhiteSands Mombasa 30 Sept - 1 Oct. 2009.

[90] Ranganathan R., Foster V., *East Africa's Infrastructure: A Continental Perspective*, The World Bank, Policy Research Working Paper, September 2011, pp. 9-10.

[91] Raballand G., Refas S., Beuran M., Isik G., *Why Does Cargo Spend Weeks in Sub-Saharan African Ports? Lessons from Six Countries*, World Bank, 2012.

[92] Waweru M. G. (Commissioner General, Kenya Revenue Authority), *Challenging the Challenger, What are the problems attributable to the private sector players themselves?*, Presentation at the NTTC Conference, White Sands Mombasa 30 Sept - 1 Oct. 2009.

*4) Lack of integration of **different port control systems**. The failure to achieve full integration between the various port procedures and the operations carried out by various groups of port personnel often results in costly delays.*

*5) **Manifest fraud.** Manifest fraud involves illegal amendment of ship's manifest by shipping agents and the filing of supplementary manifests to facilitate fraud. This happens mainly through amendments of the "Destination of Goods" label, to ensure that goods that have been cleared for foreign destinations find their way into the domestic market while in transit. Another frequent example is fraud through "Change of Consignee" from a person subject to taxation to an entity that enjoys a tax-free status, for example when commercial goods are imported under the false label of "Military Supplies".*

*6) **Insufficient bond security**. This constitutes a major challenge in determining the correct value, quantity and other relevant information pertaining to the goods in transit.*

*7) Insufficient capacity to physically **escort high-risk goods**. An alarmingly high number of trucks carrying goods in transit have reportedly "disappeared from the convoys" while driving along the Northern Corridor.*

*8) **Corruption**. Escort officers are often under pressure by importers to fraudulently certify exports of diverted goods. It is not uncommon for pressure to turn into corruption and the promise of easy "extra cash".*

*9) National Revenue Acts boast several **tax incentive schemes** but states often lack the capacity to follow through these ambitious commitments. An example of this is provided by the Tax Remission and Export Promotion schemes.*

*10) Long **stretches of porous and unsecured** land and sea/lake **borders** are continually exploited to smuggle goods. Some of the regions/territories crossed by or connected to the Northern Corridor are plagued by political instability, overall lack of security and are even, in some cases, prone to conflict. This situation exacerbates the problem of smuggling [despite] efforts to invest in opening up new border stations and surveillance equipment to control the illegal movement of goods.*

*11) Failure by the Revenue Authorities to **exchange crucial information** about movement of goods across the region.*

*12) **Underground Economy** and Money Laundering*

*13) **Under-invoicing** (or even the use of fake invoices) of goods is often used by exporters as a way to reduce import duties and taxes in destination countries.*

*14) **Creation of Cartels** in the Import/Export supply chain: there are major risks arising where only a handful of companies are involved through the supply chain operating as shipping agents, operators of container freight stations or bonded warehouses, clearing and forwarding agents and transporters at the same time."*

Chapter 4 - Transport of natural resources on the Northern Corridor

4.1 Case study 1: The supply chain for the eastern Democratic Republic of Congo

Eastern DRC is an interesting example of a landlocked area that depends on the Northern Corridor to access the world market[93]. The Democratic Republic of the Congo boasts some of the richest mineral deposits in the world. Cassiterite, coltan, copper, cobalt, diamonds, gold and wolframite are some of the resources that can be found in the country.[94] The mining sector holds an important role in the country's formal economy, with minerals accounting for the large majority of the DRC's exports.[95] Besides its mineral wealth, the country is also home to a vast array of natural resources as diverse as oil, timber and hydropower.

The weakness of state institutions, poor governance standards and a culture of corruption and impunity have however resulted in decades of neglect and have fuelled violent conflict. Over the past decades, the Congo has been plagued by war and a relentless scramble for resources. In the eastern part of the country, the conflict still lingers on. The DRC is currently relying on humanitarian and development aid to fulfil the basic needs of the communities affected by long-simmering tensions – often escalated to abrupt conflict - between the State/army (Forces Armées de la RDC, or FARDC) and a myriad of rebel groups.

4.1.1 The mining sector in Eastern DRC: artisanal mining and conflict minerals

Industrial mining is present in the DRC's southern province of Katanga, as illustrated by recent export figures, where Katanga's copper and cobalt accounted for 73.3% of the total export value. The eastern part of the country, on the other hand, hardly sees any industrial exploitation of its mineral resources, with artisanal and small-scale mining (ASM) being the standard practice to extract minerals.

ASM is one of the main sources of income for hundreds of thousands of Congolese diggers. In 2008 the World Bank even estimated that approximately two million people worked as artisanal miners (*creuseurs*) across the country.[96] Taking into account those dependent (directly or indirectly) on the artisanal mining sector, it can be estimated that ASM contributes to the livelihoods of 18% of the national population.[97]

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[93] 'Eastern DRC' refers to Ituri district in Orientale province, North Kivu, South Kivu, Maniema and the northern part of Katanga.

[94] https://www.cia.gov/library/publications/the-world-factbook/fields/2111.html as of 26 July 2012

[95] Country report: Democratic Republic of Congo, *Economist Intelligence Unit*, March 2011, p. 6.

[96] *Democratic Republic of Congo Growth with Governance in the Mining Sector*, Report No.43402-ZR, Oil/Gas, Mining and Chemicals Department, AFCC2, Africa Region, World Bank, 2008

[97] Matthysen K., Zaragoza A., *Conflict Minerals initiatives in DR Congo: perceptions of local mining communities*, November 2013 (http://ipisresearch.be/publications_detail.php?id=426)

Another distinguishing feature of the DRC's mining sector is its regional nature. For the purpose of this paper, an analysis of this aspect is crucial, since most minerals extracted in Eastern DRC, and currently on the international community's agenda as 'conflict minerals' (cassiterite, wolframite, coltan and gold), have to pass through the DRC's eastern neighbouring countries (Burundi, Rwanda and Uganda) before being shipped towards their final destination from the ports of Dar es Salaam (Tanzania) and Mombasa (Kenya).

The logistics of the eastern DRC's mineral trade from mining site to the port of Mombasa will be discussed in more detail in the following sections. First, it is crucial to understand the trading patterns within DR Congo, i.e. from mining site to point of export, in order to have an overview of the most upstream portion of the supply chain and be able to detect the challenges that may arise at this stage. Traditionally, the supply chain of minerals in Eastern DRC encompasses the following actors: artisanal miners (*creuseurs)*, local mineral traders or middlemen (*négociants)* and trading houses located in major export hubs (*comptoirs* or *entités de traitement)*.

Creuseurs are the most upstream actors of Eastern Congo's mineral supply chain, digging up the ores with rudimentary tools. Further along the mineral chain, *négociants* buy minerals at or in the vicinity of mines. These mineral traders then sell them at a profit to other traders further down the chain, or to *comptoirs* in major trading centres near the border, such as Butembo, Goma and Bukavu. According to the Mining Code, traders are obliged to sell purely to official trading houses, registered with the Ministry of Mines. Only official trading houses are allowed to export artisanally mined ores from the country.

Box 2 - Changes along the supply chain: the role of ASM cooperatives in Northern Katanga

In the past three years, slight changes in the traditional supply chain have been observed in Northern Katanga.[98] More precisely, the *négociants* have largely disappeared from the Katangese 3T[99] sector, and they have been replaced by ASM cooperatives.

These cooperatives have strong ties with the industry, namely with the exporter/*comptoir*, with whom prices and quantities are discussed and arranged beforehand. This pattern has been observed with the ASM cooperatives CDMC, COMIDEK and COMPIPRUK, all active at major mining sites and partnering up with large exporters such as Mining Minerals Resources (MMR) and Chemaf.

The inherent complexity of the supply chain, coupled with poor infrastructure, increases the chances of trading networks merging with criminal networks and using the country's mineral wealth to enrich themselves to the detriment of a broader resources-for-development

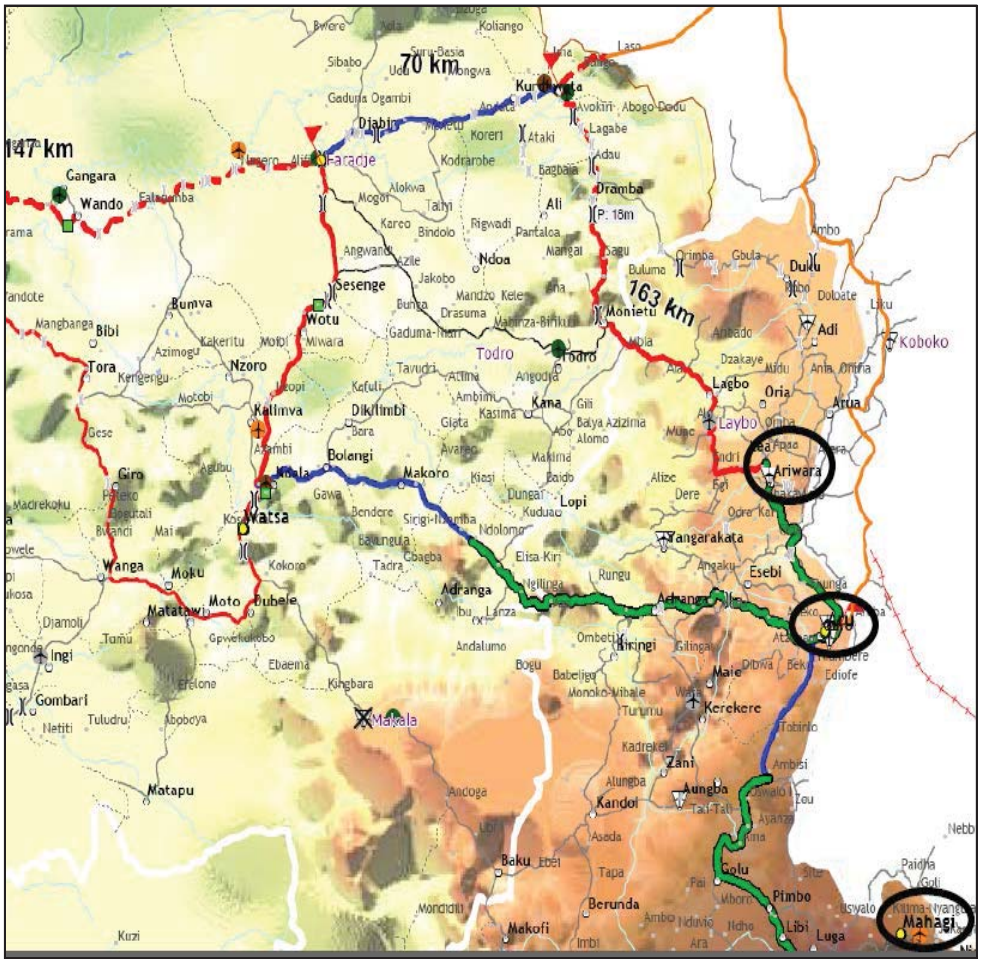
[98] IPIS interview with upstream industry stakeholders in Lubumbashi, January 2012 and August 2012.

[99] The '3Ts' refers to tin, tantalum and tungsten, which are mined in the form of cassiterite, coltan and wolframite ores.

strategy. Furthermore, the Congolese state lacks factual control over many parts of the country, most notably over its eastern provinces. As a result, smuggling of valuable minerals across porous borders is commonplace; smuggling networks and routes have been identified by the UN Group of Experts in their reports, including in their latest one.[100]

There are many reasons that determine illicit cross-border trade, as for example the fact that official prices might be too low in one country and considerably higher in a neighbouring one. Harmonisation of taxes, a measure directly tackling this issue, could be one way of cracking down on smuggling.

Map 7 - DRC, minerals collecting / crossing points to Uganda: Ariwara , Aru, Mahagi



Source: Elaboration from LogisticsCluster, *Accessibilité Haute Uele, Situation au 27 Octobre 2009, Province Orientale*. Road status: a) for light trucks : Solid Red = Bad conditions ; Hatched Red = Very bad conditions; Orange = Medium conditions; b) for heavy trucks: Green = Good conditions; Blue = In rehabilitation

[100] UNGOE Report.

Photo 3 - "Route nationale 3" Kisangani–Bukavu (DRC)

Source: Peter Danssaert (IPIS vzw), 2008

4.1.2 Transport and the supply-chain of the Eastern DRC mining

This section will analyse the logistics from the DRC's eastern mining sites to international gateways reached through the Northern Corridor, such as the port of Mombasa. The analysis is mostly based on Customs and transport documents, as well as interviews with logistic companies executives, carried out in Goma, Nairobi, and Mombasa between July and August 2010. The companies that were involved in the transport of minerals from the eastern DRC to Mombasa will be discussed, as well as the logistic costs that traders were subjected to when forwarding the minerals. [101] In order to assess the volume of logistics business generated by minerals exports in the Great Lakes region, this section also takes into consideration the

[101] Logistics is a sector that includes different types of companies, from carriers (transport companies in the air, road, rail, and maritime modalities) to cargo handling companies and freight forwarders (from individual agents to logistics groups that organizes all the chain of documents and permits needed by an international shipments and link together the various actors of a supply chain, such as shippers, carriers, banks, Customs and port/airports authorities. Logistics costs includes the lease of aircraft, ships, and trucks; payments for goods insurance, export and import documentation; transit permits; Customs duties; fees at crossing points and Customs bonded warehouses or logistics parks; entrance/exit fees at port and airports; payments for goods handling at ports, airports and whenever a change in transport modality is necessary; possible fuel surcharge for delays caused by congestion at Customs points and port/airports.

volumes of minerals - in particular cassiterite, coltan, and wolframite - that were transported from DRC to Mombasa between 2007 to June 2010.

The open and hidden[102] costs of logistics services in Africa's Great Lakes region are much higher than in other parts of the world. Consequently, export and import costs could amount to 30 to 40% of the total price of the commodities, while this was no more than 7 to 10% in other world regions. The distance from the DRC mining sites to the end of the Northern Corridor in Mombasa varies between 1,500 and 2,500 km, depending on the available routes. The logistics costs are relatively irresponsive to the fluctuations of costs in the mining sector and to the trends in international market prices of minerals. In difficult times, the relative inelasticity of logistics costs creates the environment for higher levels of smuggling, aiming to reduce overall expenses by lowering or avoiding "institutional" costs.[103]

In few other world regions carriers, freight forwarders and shipping companies play such an important role in determining the export and import prices of commodities. Yet the structure of the logistics sector in the Great Lakes region remains unfitted to provide shippers and traders a trouble-free and therefore fast and cheap supply-chain. The documented structure of the logistics sector[104] that supports the mining exports from and the imports into the eastern DR Congo causes bottlenecks and uncertainty in the supply-chain, for the following reasons:

- Mining sites are mostly served by a handful of small aviation companies whose business fragility frequently leads to service disruptions;
- International road transport is served by an array of small truck companies that cannot count on economies of scale and consequently have high fixed costs that make the prices of their services relatively inelastic;
- Despite the abundance of freight forwarders and Customs clearing companies in the East African region, only few of them are routinely employed for Congolese exports and imports in Mombasa, signalling the existence of preferential treatment of some companies with "fast track" access to ports/airports and Customs points;
- No more than 5 to 6 shipping lines/agents monopolise the transport of DRC's minerals from Mombasa to their final destinations in Europe, North America, and South and Southeast Asia. It leaves shippers with few or no alternatives to the prices these agents impose. (Additionally, the same companies have formed a *de facto* cartel in the cargo handling business at Mombasa port).

[102] For example bribes paid to Customs, port, and other law enforcement officials to "facilitate" the transit of goods.

[103] "Institutional" costs include all duties and fees paid to authorities for transporting and exporting goods. From North/South Kivu and Ituri to the end of the Northern Corridor in Mombasa shipments pass through three (DRC, Uganda, Kenya) to five (DRC, Burundi, Rwanda, Uganda, Kenya) countries.

[104] The overall structure of the transport and logistics sector that support Eastern DRC's mineral sector may of course be larger and more complex than the one that emerges from Customs and transport documents, due to the exclusion in this research of Burundi-, Rwanda-, and Uganda-based operators that may play an intermediary role in shipments of minerals to, and transport of supplies and equipment from, Mombasa.

4.1.2.1 Transport of 3T minerals from mining sites to Goma: aviation companies and airport networks

The first leg of the Kivus' minerals supply chain obviously starts at the mining sites. Most of these sites are located in areas where land transport on long itineraries is practically impossible or very expensive. One of the elements contributing to the high costs is the "transit fees" imposed by armed groups, including rebels as well as state security services.

Air transport is often the best way to carry minerals from distant mining sites to DRC's border towns. The aviation modality is however complemented with road transport to reach the airstrip that is closest to the mining site. Bisie in North Kivu, the DRC's principal cassiterite mine, offers a perfect illustration. Before the mine's cassiterite production reaches Ndjingala, on the main road between Kisangani, Walikale and Goma, it has to be carried on small paths through dense forests, over more than 30 km. Normally, a porter carrying a 50 kg-sack on his back would cover the distance in one day and a half, and receive USD 20 for his labour.[105] From Ndjingala, the cassiterite is transported by road to Kilambo, where small planes land on a stretch of asphalt road to deliver food and other necessities, and fly back with the mineral ores to Goma.[106] Road conditions as well as the precarious security situation, impede traders to continue all the way to Goma by road.

The aviation companies based in the Kivu region, and in particular the ones that operate at Goma airport, have historically played an important role in the supply-chain that supports the mining sites of the Eastern Congo.[107] Their fleets are composed of small planes, mostly LET-410s[108], but also Antonov 26, 28, 32, Nord 262,[109] and Short Skyvan,[110], that are all capable of '*short take-off and landing*' (STOL) operations. On their way to mining sites the aircrafts transport food, beverages and equipment.

The planes can make two to three shifts daily, depending on the distance separating the mining sites (or mineral collecting points, such as Walikale town) from Goma. Two or three shifts a day means that the aircraft can have a daily payload of 4 or 6 tons of cargo, which

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[105] Murairi J., Kubuya S., *Etat des lieux du développement socio-économique dans les zones minières au Nord-Kivu (territoires de Walikale et Masisi)*, IPIS/ASSODIP, March 2012, pp. 10, 14.

[106] Zing Wimmer S., Hilgert F., *Bisie. A one-year snapshot of the DRC's principal cassiterite mine*, IPIS, November 2011, p. 2.

[107] See for example UNSC, GoE report S/2007/423, 18 July 2007; *DRC: Arming the East*, Amnesty International, July 2005.

[108] The LET-410 UVP, is a utility aircraft manufactured in the Czech Republic by Let Kunovice. L-410 operates at extreme conditions (-50oC to +42oC / -58F to +108F). There are basically three main versions: commuter, cargo or paratrooper and a dozen variants, including the UVP. In the version UVP-E Cargo it payload is 1,710 kg (3,770 lb). Cruise speed is 197 knots (nautical miles per hour). At sea level, take-off requires a runway 970 m long; landing requires 540 m.

[109] Cruise speed is 194 knots. Can transport 3 ton of cargo.

[110] Cruise speed is 170 knots. Can transport 2 tons of cargo.

maximises their annual turnover. It also increases the risk of accidents, however, as these aircrafts are sometimes 30 years old and have endured many years of landings and take-offs on unpaved or makeshift runways.[111] Tables 1 and 2 offer data, gathered from North Kivu Customs and aviation companies during an August 2010 mission to Goma, that illustrate the above paragraphs. Table 1 shows the types of airplanes that Goma-based airline companies have been using between 2008 and 2010, including additional information such as the registration and manufacturing numbers. Table 2 gives an overview of recorded cassiterite transports from 15 locations to Goma, per airlines.

Table 1 - Airlines and aircraft serving the routes from minerals sites to Goma 2008-2010

Airlines	Type	Registration	Serial number
AFRICAN AIR	LET-410	9Q-CIF	?
AFRICAN AIR	AN-28	TN-AHF	1AJ008-05
AFRICAN AIR	AN-28	9Q-CFQ	1AJ008-05
AIR KASAI	LET-410 UVP	9Q-CFG	NA
BUSYBEE	LET 410 A	9Q-CSW	730209
CHC - STELLAVIA	LET-410 UVP	9Q-CUA	...0101 ?
CHC - STELLAVIA	LET-410	9Q-CIY	831020
DOREN AIR CONGO	LET-410 UPV	9Q-CZA	851524
GLBC	AN-32	9Q-CMG	3201
GOMA EXPRESS	LET-410 UPV	9Q-CQZ	851339
MALU AVIATION	NORD 262A	9Q-CPM	38
MALU AVIATION	SHORT SKYVAN 7	9Q-CLD	SH 1831
MANGO AIR	AN-26	9Q-CGM	6401
MPC	Mi8-MTV1	UR-HLC	94914
SAFE AIR	LET-410 MU	9Q-COA	781116
SAFE AIR	LET-410 UVP	9Q-CUB	790325
TRACEP	AN-28	9Q-CUN	1AI006011
TRACEP	LET-410	9Q-CLX	?
TRACEP	AN-28	9Q-CAX	1A100208

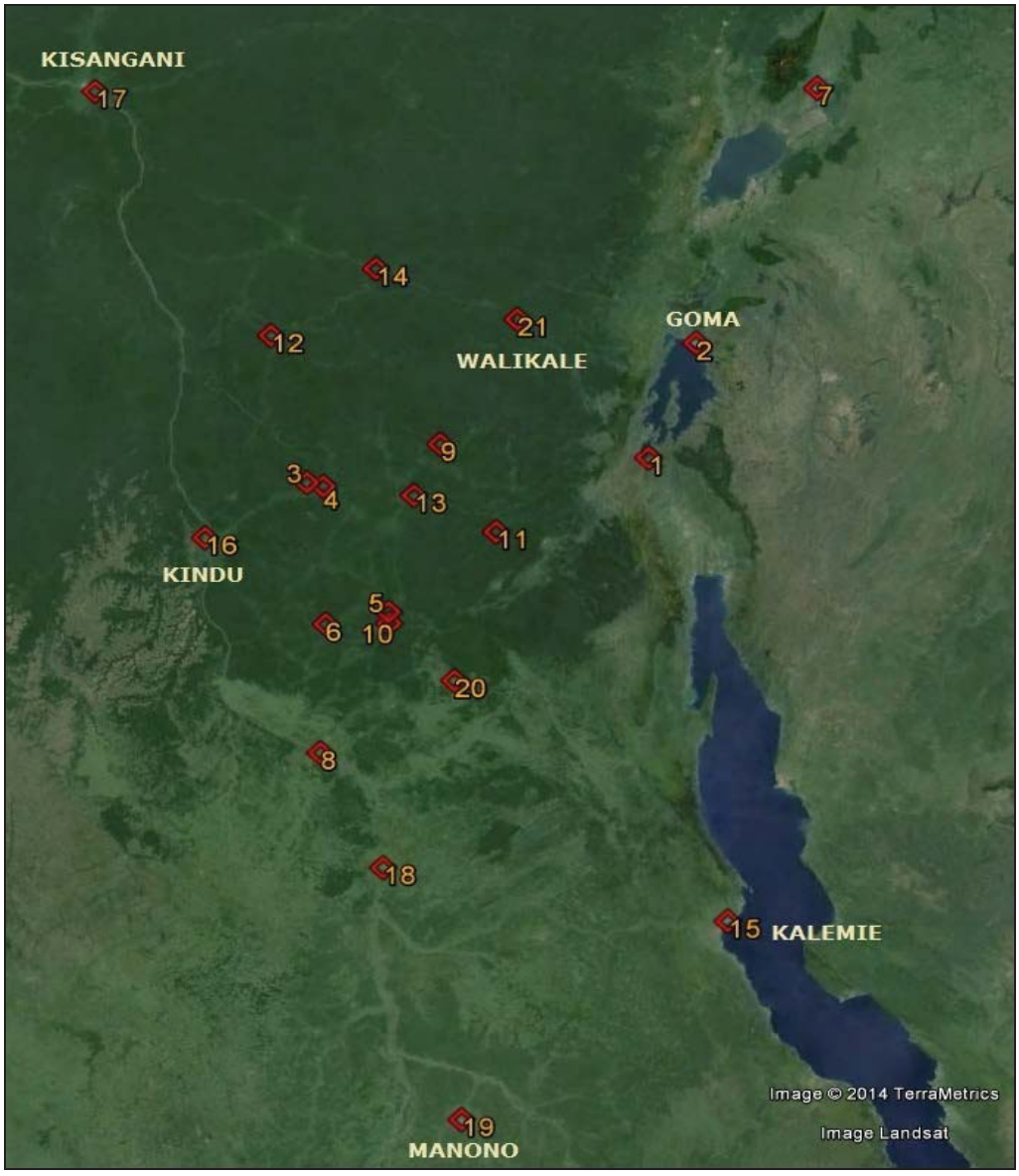
Source: Authors' on-field inquiry and TransArms DRC Aviation database

Answers given by airlines to a questionnaire the researchers distributed during a field mission in 2010,[112] demonstrate that airlines transporting minerals from North Kivu, South Kivu, Ituri and Maniema's mining sites to Goma use a substantial network of airfields and airports (see Appendix D).

[111] Landing and taking off is one of the main stresses that affect an aircraft.

[112] See: Questionnaire distributed by the researcher in July and August 2010 to a sample of 24 transport, freight forwarding, and shipping companies located in Goma, Nairobi, and Mombasa.

Map 8 - Eastern DR Congo - Airfields used for transporting minerals to Goma



Map N.	Airport	Map N.	Airport	Map N.	Airport
1	Bukavu Kavumu	8	Kipaka/Kasongo	15	Kalemie
2	Goma	9	Lulinga-Tshionka	16	Kindu
3	Kalima Kamisuku	10	Lusenge	17	Kisangani
4	Kalima-Kikungwa	11	Mulungu	18	Kongolo
5	Kama	12	Punia Basenge	19	Manono/Kitotolo
6	Kampene	13	Shabunda	20	Namoya
7	Kasese	14	Amisi	21	Walikale

Source: TransArms DRC Aviation database

Photo 4 - Aviation "resources" at Goma airport

Credit: Guido Potters, Goma airport, April 17-29, 2010.

In fact, 21 airports and airfields were routinely used for the transport of minerals in the abovementioned provinces plus Katanga: Kalemie, Kongolo, and Manono - Kitotolo in Katanga; Kalim, Kampene, Kasese, Kindu, Kipaka - Kasongo, Namoya, and Punia in Maniema; Amisi, Goma, and Walikale in North Kivu; Kisangani in Oriental; Bukavu, Kama, Lulinga-Tshionka, Lusenge, Mulungu, and Shabunda in South Kivu.

Table 2 - Cassiterite (in /000 kg) transported to Goma (2008) - Airlines rankings on total

Airlines/From	Walikale	Amisi	Punia	Kalima	Bukavu	Kongolo	Kisangani	Kindu
Safe Air	1,850	30	88	8	72	56	16	153
Doren	1,652	72	75	55	0	0	0	0
Goma Express	1,078	93	7	20	4	0	0	0
Malu Aviation	6	67	269	367	23	3	7	10
GLBC	0	0	168	82	4	0	104	301
Services Air	0	0		0	15	0	499	153
African Air	560	0	12	4	4	0	0	0
Mango	0	0	3	33	5	13	206	85
Galaxy	0	0		0	2	93	173	33
Stellavia	268	0	5	0	3	0	0	0
Tracep	0	0	44	7	0	0	0	0
Busy Bee	44	46	13	25	5	4	0	3
MPC	36	1	4	2	0	0	0	0
Safe Air	3	7		0	0	0	0	2,283
Doren	0	0		0	0	0	0	1,854
Goma Express	0	0		0	0	0	0	1,202
Malu Aviation	26	13	285	8	52	2	5	1,143
GLBC	0	88		0	0	0	0	747
Services Air	0	0		0	0	0	0	667
African Air	0	0	18	0	0	0	0	597
Mango	0	0		0	0	0	0	344
Galaxy	0	2		0	0	0	0	303
Stellavia	0	0		0	0	0	0	277
Tracep	0	0	112	2	7	0	0	172
Busy Bee	0	0	6	0	1	0	0	147
MPC	0	0	78	0	0	0	0	121
Overall Total								9,857

Source: DRC Customs/airport data - TransArms database on DRC Aviation

4.1.2.2 Roads from Eastern DR Congo to Mombasa

The Northern Corridor connects various Kivu and Ituri border towns (such as Aru, Ariwara, Mahagi, Butembo/Beni-Kasindi, Rutshuru, Bunagana, Goma, Bukavu, amongst others) with

Mombasa, through Uganda, Rwanda, and Burundi (see Map 2).[113] From the Congolese border the main Northern Corridor routes cross the following towns:

In **Burundi**, from: the South Kivu town Uvira to the Burundian capital Bujumbura. From the port of Kalemie (DRC) it is also possible to cross Lake Tanganyika to Kigoma in Tanzania and connect with the Central Corridor to Dar es Salaam . Also from Burundi the shortest distance to the world markets is through the Central Corridor. As stated above, however, the road to Mombasa is still the fastest and the cheapest option, despite the fact that it is 600 kilometres longer.[114]

In **Rwanda,** from: the Goma/Gisenyi border through Ruhengeri to the Cyanika borderpost between Rwanda and Uganda, from where the Kisoro-Kampala road can be reached; and the Bukavu/Cyangugu border to Kigali via Butare, and linking up with the Northern Corridor to Kampala.

In **Uganda,** along the highways from: the Kasindi/Bwera border to Kasese[115]; the Rutshuru/Ishasa border to Kasese; and the Bunagana/Kisoro border to Mbarara and Masaka.

All these networks lead to Kampala and continue to either Malaba or Busia, Uganda's border points with Kenya. According to the TTCA the Malaba border crossing is generally preferred above Busia because of the quality of the road and the availability of social amenities along the road.[116] In the northern part of Uganda, another network of roads (see Map 2) connects up with the Northern Corridor, from:

- the Ariwara/Arua to Eruba and Gulu;
- the Aru/Vura border to Eruba and Gulu;
- the Mahagi/Goli border to Nebbi and Gulu.
- from Gulu the road heads southwards to Kampala.

From the Malaba and Busia border towns in **Kenya**, traffic goes to Nakuru through either Eldoret or Kisumu, and then to Nairobi, to finally arrive at the Mombasa port. In recent years, transit traffic (to and from other countries) was on average 26 to 27% of the total yearly traffic.[117]

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[113] See Northern Corridor Transit Transport Coordination Authority (NC-TTCA), www.ttcanc.org. See "Northern Corridor Transit Agreement (Bujumbura, February 1985; Nairobi, November 1985; Kigali, May 1987)".

[114] Ranganathan R., Foster V., *East Africa's Infrastructure: A Continental Perspective*, The World Bank, Policy Research Working Paper, September 2011, pp. 11-12,15-16.

[115] From Kasese onwards it is also possible to opt for a rail connection with Kampala.

[116] TTCANC website, "Road Transport", op. cit.

[117] Mombasa Port Authority, Throughput 2005-2009.

Photo 5 - Cyanika border crossing: trucks transporting cassiterite from Goma to Mombasa.

Source: Peter Danssaert (IPIS vzw), Rwandan-Ugandan border, 2008.

4.1.2.3 Transit times between Goma and Mombasa

According to the Northern Corridor's Transit Transport Coordination Authority (NCTTCA), an average voyage Kampala-Malaba-Mombasa (1,170 km) takes about ten days.[118] An additional leg to Goma will add another two days. Industry sources, however, dispute this assessment, claiming that the transit times for a Kampala-Mombasa voyage mount up to almost twice the NCTTCA estimate.[119]

An in-depth inquiry on transit times carried out in 2005[120] detailed the delays caused by non-physical barriers along the Northern Corridor. The inquiry concluded: "*The average transit time within the port of Mombasa is 64 hours and 49 minutes, of which 55 hours and 15 minutes is between loading and departure. Transit time in Kenya, excluding the port of Mombasa is approximately 7 days, while it is 3-4 days in Uganda. In Rwanda the transit time is approximately 5 days for Bukavu-bound traffic, but only two days for Goma-bound traffic*.

[118] TTCANC website, "Road Transport", op. cit.

[119] Statement by Kassim Omar, chairman of the Uganda Clearing and Forwarding Agents. See: Kagenda P., "Uganda rail at crossroads as attention shifts to Dar", *The Independent*, 11 February 2009.

[120] *Prome Consultants Ltd, Final Report.* Transit Transport Coordination Authority of Northern Corridor, October 2005.

[…] *Journey times on average range from 129 hours for Nairobi to Kampala (5.3 days), to 337 hours for Nairobi to Bujumbura (14 days). Perhaps more indicative is the 255 hours for Mombasa to Kigali (10.6 days).”*

The delays described by the above-mentioned inquiry for 2005 have worsened in the last years, because of soaring traffic at Mombasa port. The cargo handled at the port in the year 2005 was equal to 13 million tons, which increased to 15.9 million tons for the year 2007, 16.4 million tons in 2008, and 19 million in 2009. Container traffic handled at the port passed from 616,000 TEU (Twenty-foot Equivalent Unit) in 2008 to 619,000 in 2009,[121] and currently even more than 700,000 TEU per year.[122] Consequently, some sources claim that nowadays it even takes 44 days before cargo arrives in Kampala after a ship entered the port of Mombasa. These 44 days include the time to allocate a berth to the ship, to discharge the containers, to bring the cargo to the Container Freight Services (CFS) depot, and to transport it to Nairobi or Kampala.[123]

In addition, for security reasons trucks often travel in convoy, accompanied by a police escort. At the point of departure - particularly Mombasa - truckers have to wait for the formation of the convoy and the police escort. Furthermore, an accident occurring to one of the trucks in the convoy can substantially delay the transit times of all the other trucks, or require additional escort cars. Security is often a necessity. In 2010, for example, armed robbers hijacked an ammunition transport that was destined for the United Nations Mission in Congo. Kenyan law enforcement officials were displeased with the lack of security that the UN had provided.[124] Based on the above-mentioned calculations a shipment of minerals from North/South Kivu’s border towns to Mombasa by road may take between 15 to 20 days. The rain season may add other days along poorly maintained highways.

4.1.2.4 How many trucks and trips are necessary to transporting the Kivus’ minerals from its border towns to Mombasa?

Based on the information and assessments provided in the paragraphs above, it could be assumed that a truck departing from the Eastern Congolese border towns with, for example, a cargo of minerals can generally not return with a cargo of supplies and equipment for the mining sites within 30 or 40 days after departure. On average, the trucks can perform 7 to 8 round-trip voyages per year. Assuming a conventional payload of 20 to 25 tonnes per truck in each leg of the round-trip voyage, and supposing a truck makes 7 to 8 round-trips per year, the total cargo that a truck could be able to transport on the Northern Corridor varies between 280 and 400 tonnes. Due to the characteristics of the trucks, as shown by

[121] Mombasa Port Authority, Throughput 2005-2009.

[122] Kabukuru W., “Mombasa log jam causes regional anger”, *African Business*, 384 (Mar 2012): p. 50-51.

[123] Kabukuru W., “Mombasa log jam causes regional anger”, *New African*, 20 March 2012.

[124] Confidential interviews with Kenyan officials.

Congolese Customs documents, an average 340 tonnes per truck per year seems to approximate to reality.

According to KRA statistics for the year 2009, 11,965 tons of cassiterite, coltan, and wolframite in transit from DRC left Mombasa to overseas locations (see below for further details). There are no statistics on the volumes of minerals that Ugandan and Kenyan railways have been transporting to Mombasa. However, as mentioned above, rail traffic volumes are relatively low in Uganda. Uganda's trucking industry greatly ousts the use of the country's railroads.[125] The same is true for Kenya. Ever since railway lines were damaged during the 2007-2008 crisis, there has been no competition between rail and road transport. It is therefore justified to assume that transport by road has been the main modality for the traffic generated by the Kivus' minerals industry (imports and exports).

KRA statistics show that the above-mentioned 11,965 tonnes of minerals have been shipped in 503 single operations, which comes down to an average 23.8 tonne per shipment (Table 3).

Considering the above-mentioned average of seven trips per truck per year, about 70 trucks would in theory be needed to transport the 11,965 tonnes of minerals. In practice however, considering the difficulties that the truckers meet along the Northern Corridor and all the other frictions that a complex transport system causes to the schedules of the operators, the total number could have been far higher and might approximate 100 to 120 trucks (and possibly more during the rainy season).

It is worth noting that - according to Congolese Customs documents - 159 trucks (tractors/towing engine) and 147 trailers and semi-trailers, based in eastern Congo, obtained a Kenyan "Transit Goods License" in 2009 through OFIDA's[126] Mombasa office. The numbers are consistent with a fleet able to manage sizeable volumes of cargo in direct transport to and from Mombasa, including all the 2009 exported minerals.

Kenya Revenue Authority granted 95 annual transit licenses to Customs Clearing Agents acting on behalf of East Congolese truck and container owners between January 2009 and the end of March 2010 (76 in 2009 and 19 in 2010)[127] (See also Appendix 5). The licenses allow the trucks to cross Kenya's fiscal territory from or to Mombasa under a particular status that only allow them to transport cargo with origin/destination in the fiscal territory of DRC, without any involvement in domestic freight transport and without been subjected to

[125] Ranganathan R., Foster V., *Uganda's Infrastructure: A Continental Perspective*, The World Bank, Policy Research Working Paper, February 2012, pp. 20-21.

[126] OFIDA, or Office des Douanes et Accises, is the former Congolese Customs agency, but is nowadays called the Direction Générale des Douanes et Accises, or DGDA.

[127] The documents do not show any trucks or trailer owned by the Goma-based TMK. In the past years, TMK had a fleet of about 50 trucks, with a sizeable activity back and forth from Mombasa. According to sources in Goma, TMK has withdrawn from the international road transport in 2009. However, this information could not be independently verified.

Customs duties.[128] Therefore the volumes of cargo transported by the trucks were - at least officially - those loaded at the origin point in East Congo or Mombasa.

The 76 licenses granted in 2009 included permits for a total of 159 trucks (tractors/towing engine) and 147 trailers and semi-trailers. The 19 licenses granted in 2010 included permits for 43 trucks and 43 trailer and semi-trailers. Out of the total of 306 trucks and trailers for 2009, the Customs documents show 235 trucks/trailers for which ownership (owner's name and address) and type/model was clearly indicated. Butembo-based truck companies/owners led the rankings with 96 trucks/trailers, followed by Bunia-based owners with 75 trucks/trailers (with one company owning 55 trucks/trailers). In the third position were Beni-based companies with 18 trucks/trailers, followed by Ariwara-based companies with 14, Goma-based with 11, Bukavu-based with 9, Aru-based with 5, Uvira-based with 4.

The freight transport between East Congo and Mombasa is of course not a monopoly of truck companies based in the Kivus. Additionally, there could be Kivu-based truck companies that only serve a portion of the Northern Corridor, transhipping their cargo to partner truck companies in Burundi, Rwanda, Uganda and Kenya. Avoiding the payment of multiple Transit Goods Licenses (TGL) may be a substantial gain. A Kenyan TGL, for example, costs about 300,000 Kenyan shillings per year (USD 3,708)[129] for each truck. Furthermore, there is the advantage of using local "expertise" for documentation and smooth passage through roadblocks, weigh-bridges, and Customs crossing points.

4.1.3 Mombasa shipping agents for DRC cassiterite, coltan, and wolframite exports

According to the Kenyan Revenue Authority (KRA) data, there are only a handful of shipping agents/shipping lines that expedite DRC's 3T exports to overseas locations from Mombasa. SDV Transami Kenya (Bollorè Group) and Interfreight East Africa lead the rankings with a total of 23,568 and 20,087 tons respectively between 2007 and July 2010. In terms of value, on the other hand, the leading mineral exporter is Interfreight with 7.4 billion Kenyan shillings in comparison to SDV's 6.9 billion. These two companies accounted for 96% of all mineral shipments from Mombasa for the 2007-July 2010 period.

Whereas KRA statistics do not specify from which DRC province the shipments of minerals originate, it could be assumed that the Kivu region has played a major role in exports of

[128] See Northern Corridor Transit Transport Coordination Authority (NC-TTCA), www.ttcanc.org. See "Northern Corridor Transit Agreement (Bujumbura, February 1985; Nairobi, November 1985; Kigali, May 1987)". Protocol n. 6 details the provisions for "Transport by Road of Goods in Transit". The Customs treatment of the goods is defined as Customs Transit Operation. Protocol n. 3, "Customs Control", Art. 5 reads: "The Contracting Parties agree not to subject goods which are destined to or consigned from the territory of other Contracting Parties and which are carried through their territories under Customs transit, to the payment or deposit of import or export duties and taxes, provided that the conditions laid down in this Protocol are complied with."

[129] Kagenda P., "Uganda rail at crossroads as attention shifts to Dar", The Independent, 11 February 2009.

cassiterite, coltan, and wolframite, either as producer and exporter or as point of departure for the exports originating in Northern Katanga or Maniema. Table 3 provides a summary of the yearly weight and value of the Congolese mineral exports from Mombasa from 2007 until July 2010. The total value of minerals shipments from Mombasa in the 2007-July 2010 period is equal to about USD 203 million.

Table 3 - DRC Exports of cassiterite, coltan, and wolframite in transit through Kenya

Year	Tons	C.I.F. in Ksh	C.I.F. in USUSD	# Of Shipments	Average Weight
2007	11,967	2,631,017,883	39,438,958	472	25.3
2008	17,624	3,962,914,324	59,681,490	686	25.7
2009	11,965	5,020,119,828	67,219,404	503	23.8
2010 July	4,058	2,792,138,938	36,967,920	177	22.9
Total	45,614	14,406,190,973	203,307,772	1,838	24.4

Source: Elaboration on KRA statistics for the listed years. (*) At current exchange rates of the year, USUSD for 1 Ksh: 2007 0.01499; 2008 0.01506; 2009 0.01339; 2010 0.01324

Tables 4 A to J provide a summary of the yearly weight and value (in c.i.f. terms) of the above-mentioned minerals shipped from Mombasa by each company.

Table 4A - SDV Transami Kenya

Year	Shipments	Tons	Value (KSh)
2007	194	5,326	1,334,980,628
2008	323	9,582	2,349,878,992
2009	259	6,475	2,008,722,616
2010	92	2,185	1,217,307,348
Total	868	23,568	6,910,889,584
Year	Destinations and numbers of shipments		
2007	Belgium 139; Thailand 26; Malaysia 12; Hong Kong 5; the Netherlands 3; Germany, UAE 2; India, Russia, Switzerland, Vietnam, Not specified 1		
2008	Belgium 263; Thailand 40; India 13; Hong Kong 2; Germany, Malaysia, Somalia, Switzerland, Not specified 1		
2009	Belgium 125; Thailand 72; Malaysia 38; H. Kong 15; UK 5; Mali 2; China, Switzerland 1		
2010	Malaysia 84; Belgium 8		

Table 4B - Interfreight

Year	Shipments	Tons)	Value (KSh)
2007	267	6,394	1,283,994,464
2008	300	6,642	1,601,329,072
2009	233	5,217	2,966,001,714
2010	83	1,834	1,554,981,380
Total	883	20,087	7,406,306,630
Year	Destinations and numbers of shipments		
2007	Belgium 256; China 3; Malaysia, Netherland 2; Greece, India, Thailand, UK 1		
2008	Belgium 243; Russia 34; India 9; Bolivia 6; UK 3; China 1;Slovenia 1; (DRC 3)		
2009	Belgium 185; Russia 34; Malaysia 9; Switzerland 2; Germany, Japan, Not specified 1		
2010	Belgium 68; Malaysia 13; Russia 2		

Source: Elaboration on KRA statistics for the listed years and companies

Table 4C - Transfreight Logistics

Year	Shipments	Tons)	Value (KSh)
2007	6	115	1,376,906
2008	61	1,390	7,862,408
2009	9	213	32,014,423
Total	76	1,718	41,253,737
Year	Destinations and numbers of shipments		
2007	Hong Kong 6		
2008	Hong Kong 48; Canada 8; Malaysia 4; UK 1		
2009	Hong Kong 8; Malaysia 1		

Table 4D - Maersk Kenya

	Shipments	Tons	Value (KSh)
2007	4	82	11,334,131
Year	Destinations and numbers of shipments		
2007	UK, Germany 2		

Table 4E - Intrasped

Year	Shipments	Tons	Value (KSh)
2007	2	50	436,498
Year	Destinations and numbers of shipments		
2007	UK 2		

Table 4F - Seagate Freighters

Year	Shipments	Tons	Value (KSh)
2009	1	43	12,301,200
Year	Destinations and numbers of shipments		
2009	Hong Kong 1		

Table 4G - APM Global Logistics Kenya

Year	Shipments	Tons	Value (KSh)
2008	1	8.3	3,063,212
2010	1	24	18,476,578
Total	2	32.3	21,539,790
Year	Destinations and numbers of shipments		
2008	Germany 1		
2010	China 1		

Table 4H - Kenfreight (EA)

Year	Shipments	Tons	Value (KSh)
2009	1	18	1,079,875
Year	Destinations and numbers of shipments		
2009	China 1		

Source: Elaboration on KRA statistics for the listed years

Table 4I – Dodwell & Co. Ltd

Year	Shipments	Tons	Value (KSh)
2010	1	15	1,373,632
Year	Destinations and numbers of shipments		
2010	China 1		

Table 4J -Benpa Freight Agencies

Year	Shipments	Tons	Value (KSh)
2008	1	1.3	780,640
Year	Destinations and numbers of shipments		
2008	Not specified 1 (for tantalum)		

Source: Elaboration on KRA statistics for the listed years

In conclusion, it is worth noting that only a handful of countries hold a key position for DRC exports of cassiterite, coltan, and wolframite, or at least they are the main points of first destinations from Mombasa.

On the 1,828 shipments for which a first destination country was specified (out of total of 1,838), Belgium ranked first with 1,287 shipments, followed by Malaysia with 164 shipments, Thailand with 139, Hong Kong with 85 (5%), and Russia with 71 shipments. These trends are largely confirmed by 3T export figures of North Kivu's provincial mining division for 2009 and the first 7 months of 2010.

These data are then summarised in tables 5A/ B. Table 6 shows the rankings of all country named as destination in the KRA statistics.

Table 5A: Destinations of cassiterite, coltan and wolframite exports from Goma, 2009

Destination	Cassiterite	Cassiterite	Coltan	Coltan	Wolframite	Wolframite
	Weight (ton)	% of total	Weight (ton)	% of total	Weight (ton)	% of total
Belgium	5,033.20	47.7	5.5	1.9	126.9	41.7
Hong Kong	969.4	9.2	157.57	56.1		
Rwanda	903	8.6	-	-	-	-
Malaysia	897.8	8.5	-	-	-	-
India	778.7	7.4	-	-	-	-
Russia	674	6.4	-	-	-	-
Thailand	600.1	5.7	-	-	-	-
Canada	550.2	5.2	-	-	-	-
Austria	114	1.1	-	-	159	52.3
Switzerland	23	0.2	-	-	-	-
Vietnam	-	-	-	-	17.9	5.9
China	-	-	117.7	42	-	-

Source: Division Provinciale des Mines du Nord Kivu, August 2010.

Table 5B: Destinations of cassiterite, coltan and wolframite exports from Goma, Jan-July 2010

Destination	Cassiterite	Cassiterite	Coltan	Coltan	Wolframite	Wolframite
	Weight (ton)	% of total	Weight (ton)	% of total	Weight (ton)	% of total
Belgium	1,575.03	29			21.32	55.5
Rwanda	1,534.82	28.3			17.1	44.5
Malaysia	1,402.51	25.9				
Canada	461.94	8.5				
India	202.09	3.7				
England	210.3	3.9				
Hong Kong	38.5	0.7	62.48	42.16		
China			85.72	57.84		

Source: Division Provinciale des Mines du Nord Kivu, August 2010.

Table 6 – Destinations: country rankings

Country	N. of Shipments	Country	N. Shipments	Country	N. of Shipments
Belgium	1,287	Canada	8	UAE	2
Malaysia	164	China	8	Greece	1
Thailand	139	Germany	7	Japan	1
Hong Kong	85	Bolivia	6	Slovenia	1
Russia	71	Netherland	5	Somalia	1
India	24	Switzerland	5	Vietnam	1
UK	14	Mali	2	Total	1,832

Source: elaboration on KRA statistics 2007-2010

Chapter 5 - Lamu Port-Southern Sudan-Ethiopia Transport Corridor (LAPSSET Corridor)

5.1 Case Study 2: South Sudan supply-chain

In 2009 the Kenyan government unveiled plans to construct a new port at Lamu. New roads and rail would link the port to Ethiopia and South Sudan. More importantly an oil pipeline would be constructed to Lamu at the detriment of Port Sudan. Initially Qatar had agreed to help construct the port in exchange for arable land. The Chinese government also expressed its interest in the Lamu project to give the Chinese oil companies present in South Sudan easy access to the Indian Ocean.

As the previous paragraph suggests, plans of constructing the port of Lamu and a connecting transport network do not only concern Kenya, but also have a major impact on South Sudan and access to its natural resources. Before discussing the Lamu project and the potential role that it can play for the new-born country South Sudan, we will first have a look at the commodities the country could offer to the world market and current logistics challenges.

5.1.1 Oil production as a driver of economic growth

South Sudan became an independent country on 9th July 2011, after a referendum put an end to decades-long conflict with a death toll of allegedly 2 million people[130]. The country's economy is driven by the export of its natural resources. Most of South Sudan's income comes from oil production. However, oil abundance has been one of the triggers of many years of violent confrontation with the Republic of Sudan, since a considerable portion of the oil deposits are located along the disputed North/South border. South Sudan also possesses some other natural resources such as timber (e.g. teak) and a vast array of mineral resources including iron ore, copper, chromium ore, zinc, tungsten and silver. Substantial gold reserves can be found in the southern state of Eastern Equatoria, and Chinese officials and private sector actors are currently exploring possibilities of investing in mining projects.[131] It should however be emphasized that value of oil production dwarfs all other natural resources in the country.[132]

A the time of writing, the main policy initiatives in the natural resources agenda of the Government of South Sudan (GoSS) are focused on oil extraction, water and land. Oil still garners most of the attention, since it represents a major contributor to the country's gross domestic product and at the same time it is the main political and diplomatic challenge in the

[130] "South Sudan: in numbers", *The Guardian*, 9 July 2012

[131] "China/Sudan: Beijing's balancing act", *Africa-Asia Confidential*, Vol. 4, Number 2, December 2010, p.1

[132] "South Sudan in numbers", The Guardian, 9 July 2012.

fragile North/South relations. Yet, the GoSS is starting to recognize the importance of elaborating a detailed plan concerning effective water resource management.[133] In that perspective, hydropower is also acquiring relevance, specifically because the Nile River traverses the country's open plains and has many tributaries in South Sudan. However, budget difficulties coupled with a very unreliable legal framework with regards to regulating sources of energy (and especially hydropower) have delayed the GoSS' plans to dam the river and build hydroelectric facilities in Wau, a town located in the state of Western Bahr el Ghazal.

Before the South gained independence, oil accounted for 90% of Sudan's exports and the country was producing up to 500,000 barrels per day.[134] Most of this oil was pumped from the South, though the only pipeline runs through the North. South Sudan currently produces nearly three-fourths of the former Sudan's total oil output, and before the oil production shutdown in January 2012, after failure to agree on the use of the North's pipelines and facilities,[135] oil accounted for 98.1% of government revenues.[136]

In order to ensure that oil exploitation does not continue to foster clashes between the two states, three key issues need to be addressed and clarified, namely: ownership of the deposits; border demarcation; and contracts regulating the transfer of southern oil through northern infrastructure. At the same time, like many oil-rich countries, South Sudan is faced with the challenge of ensuring that oil becomes a leverage to chart long-term economic growth, rather than a path towards higher poverty rates, weaker institutions and rampant corruption.

5.1.2 Infrastructure

Landlocked South Sudan suffers from severe underdevelopment of its infrastructure networks, i.e. it only has 60 km of paved roads. The country's highways are almost entirely unpaved, and Juba lacks paved road connections with any adjacent country. Overall, there are roughly 5,470 km of road, of which the majority is only passable during the dry season.

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[133] In 2007, the then federate Government of South Sudan produced its Water Policy Framework, and in September 2011, only two months after independence, South Sudan announced its intention to join the Nile Basin Initiative (NBI). Fort further detail, please see Mukum-Mbaku J., Smith J.E., *Efficient and equitable resource management: using transparency to avoid the resource curse*, June 2012.

[134] "Sudan: secession referendum", *Africa Research Bulletin – Political, Social and Cultural Series*, 16 December 2010- 15 January 2011.

[135] Failure to reach an agreement led to border clashes between North and South Sudan in 2012, with the South briefly seizing a disputed oilfield and raising fears of a new war between the two nations. For further details, see "North and South Sudan: the biggest game of poker in the world", Open Oil, 6 July 2012; See also "South Sudan outlines budget for uncertain times", *Reuters*, 20 June 2012

[136] Data and statistics from the CIA World Factbook, last accessed on 4 December 2012 (https://www.cia.gov/library/publications/the-world-factbook/geos/od.html)

The Nile River plays a major role in facilitating trade and administration, as it flows in the country's thick equatorial vegetation and links up major trading hubs (such as the capital Juba) with remote rural areas. Furthermore, South Sudan has 248 km of single-track narrow gauge railway line, which was built between 1959 and 1962 and links the Sudanese border to the Wau terminus. Plans for extending the railroad network from Wau to Juba are currently being reviewed, together with more ambitious plans of connecting the capital with the Kenyan and Ugandan railway networks.

South Sudan's poor transport infrastructure is a major impediment on the landlocked country's economic development and its regional integration. The absence of a network of practicable roads within the country is an important obstacle for trade and economic development, but is not within the scope of this report. This study will particularly discuss South Sudan's difficulty to connect with the world market. For the moment, there are two main ports that have connections with South Sudan, being Port Sudan (Republic of Sudan) and Mombasa (Kenya).

Connectivity with Sudan is definitely underdeveloped. The road connection between Juba and Port Sudan is only practicable for six months a year, during the dry season - between October/November and April/May. The other half of the year, reaching Port Sudan requires multi-modal transport, by road and river. The second option, however, takes six days longer; 13.5 days compared to 7.5 days. Furthermore, container dwell times in Port Sudan also appear to be quite prolonged.[137]

From an economic perspective, South Sudan's second option to reach a coastal gateway, the port of Mombasa, is currently the most interesting one. The southward road network, linking Juba to East Africa, is South Sudan's best and most-travelled transport infrastructure. Still, the quality of South Sudan's roads is below that of its south-eastern neighbours. Consequently, the World Bank reported in 2011 that the average transport cost per tonne-km mounted up to USD0.18 between Juba and Kampala, or three times the cost per kilometre of transport between Kampala and Mombasa.[138] The World Bank allegedly considers funding a project to build a highway between South Sudan and Mombasa. This could help to reduce transport costs of import and export, as most goods that are currently imported are supplied by trucks through Uganda.[139]

Next to its road network, South Sudan's oil pipeline infrastructure is of vital importance to the country's economy, keeping in mind the importance of oil production to GoSS revenues. Currently, the country's oil pipeline infrastructure is still tailored to the pre-independence era. There is only one option to export the country's oil production, which is through Port Sudan and the Red Sea.

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[137] Ranganathan R., Briceño-Garmendia C. M., *South Sudan's infrastructure: A continental perspective*, The World Bank, Policy Research Working Paper, September 2011, pp. 10-12.

[138] Ranganathan R., Briceño-Garmendia, quoted, pp. 10-11.

[139] "South Sudan plans to build highway to Kenya's Mombasa", *Bloomberg*, 26 October 2010.

Post-independence tensions between Sudan and South-Sudan have led Khartoum to charge Juba heavily for the use of its infrastructure to bring South Sudan's oil on the world market through its pipelines and Port Sudan.[140] In January 2012, Juba decided to suspend its oil production as it only wanted to pay USD 0.5 per barrel, while Khartoum charged over USD 30.[141] The two parties, however, reached an agreement in September, setting the price that Juba has to pay between USD 9.10 and USD 11 a barrel.[142] Despite the provision that Juba should have restarted oil production on 15 November, a dispute over the disarmament of rebel groups has so far blocked the passage of South Sudanese oil through Sudan.[143]

In order to decrease its dependency on Khartoum, the GoSS has been exploring for alternative options to export its oil. Several suggestions have been tabled for discussion, such as a pipeline from Melut (in South Sudan's Upper Nile state), through Ethiopia to Djibouti.[144] Juba has already signed a Memorandum of Understanding with each these countries for the construction of this pipeline.[145] Other alternatives would involve the transport of Juba's oil to the Atlantic coast through the DRC,[146] or through the connection between Melut and the Cahd-Cameroon pipeline, passing through Doba (Chad) and Kribi (Cameroon).[147] The most often-heard alternative, however, is the option to export South Sudan's oil through the Kenyan coast, which involves the port of Mombasa or the future port of Lamu.

In January 2012, South Sudan's Minister of Energy signed a Memorandum of Understanding with Kenya over the construction of the pipeline to the future port of Lamu.[148] Under the terms of the agreement, South Sudan will build the 2,240-kilometre pipeline and will in return have full ownership over the entire pipeline. Juba will only have to pay transit fees to Kenya for the 350,00 barrels that pass through the pipeline per day.[149]

Several companies have already shown interest to help South Sudan construct such a pipeline. Already in 2010, Tullow Oil, with Total's support, raised the option to link South Sudan's oil fields with its infrastructure in Uganda, so South Sudan's oil production could flow to Mombasa or Lamu.[150] Also in 2010 Toyota Tsusho Corporation proposed to Juba to

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[140] "Djouba coupe les vannes", *Africa Energy Intelligence*, 1 February 2012.

[141] "South Sudan's oil pipeline construction will commence soon", *Sudan Tribune*, 14 June 2012

[142] "South Sudan's Kiir says oil production to resume next week as Khartoum asserts security prerequisite", *Sudan Tribune*, 14 November 2012.

[143] "Sudan blocks South Sudan oil over rebel disarmament, Kiir says", *Bloomberg*, 26 November 2011.

[144] "Comment évacuer le brut?", *Africa Energy Intelligence*, 26 January 2011.

[145] "South Sudan's oil pipeline construction will commence soon", *Sudan Tribune*, 14 June 2012.

[146] *Seminar Report: Sudan and South Sudan at War - Explaining the Border Issues in Legal and Political Terms*, Institute for Security Studies, 23 April 2012

[147] "Comment évacuer le brut?", *Africa Energy Intelligence*, 26 January 2011.

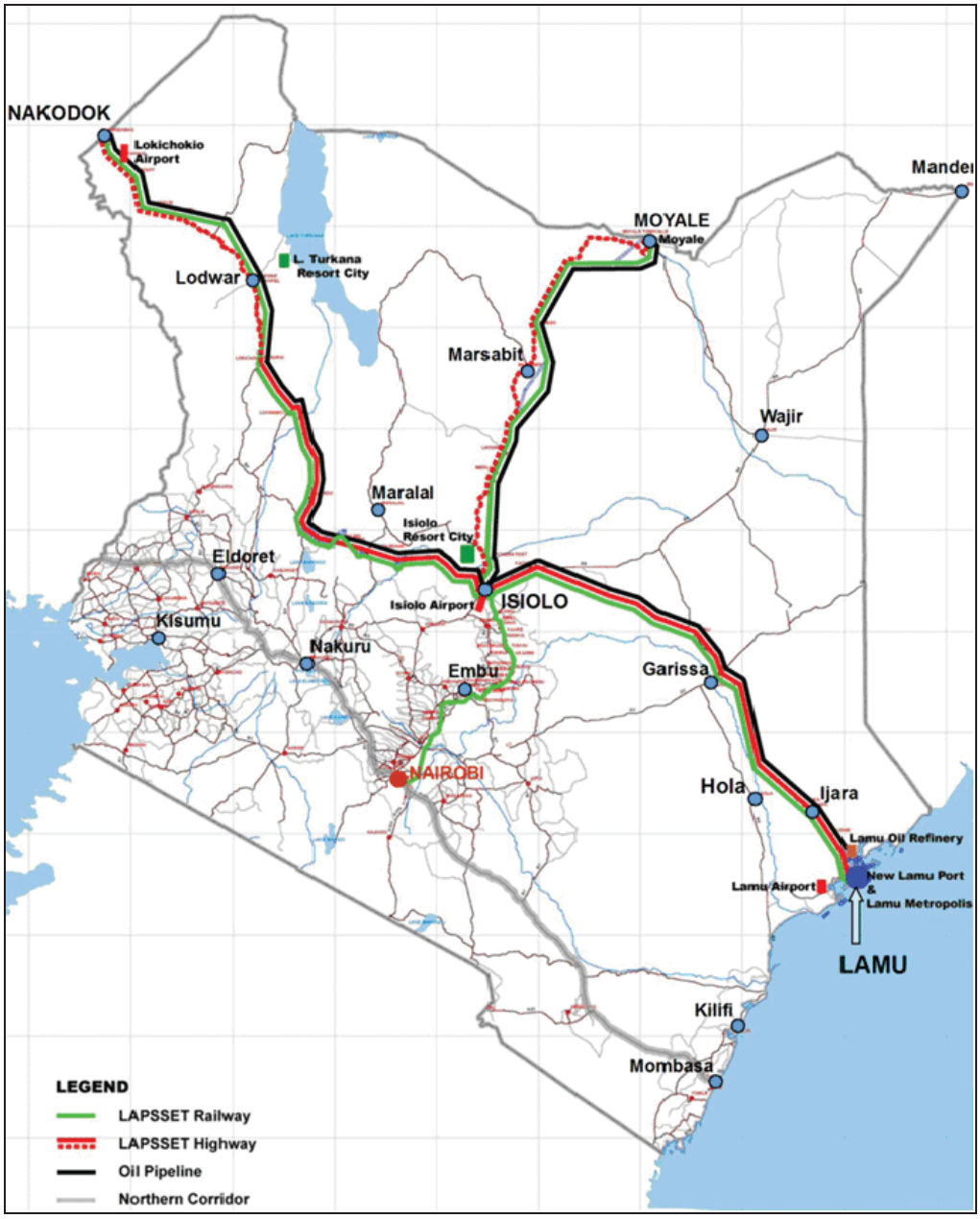
[148] "Djouba coupe les vannes", *Africa Energy Intelligence*, 1 February 2012.; "East Africa: Juba Fuels Sudan Oil Row With Kenya Pipeline Deal", *Business Daily*, 25 January 2012.

[149] Kabukuru W., "Pipeline deal rescues Lapsset", *African Business*, 384, March 2012, pp. 56-57.

[150] "Khartoum sans le pétrole du Sud en 2011?", *Africa Energy Intelligence*, 16 June 2010.

construct such a pipeline.[151] In mid-2012 it finalised a feasibility study, assessing the costs of the pipeline as part of the multi-billion dollar Lamu Port Southern Sudan and Ethiopia Transport Corridor (LAPSSET).

Map 9 - Lamu-South Sudan Transport Corridors



Source: http://commons.wikimedia.org/wiki/File:LAPSSET.gif

[151] "Oléoduc est-africain en pôle", *Africa Energy Intelligence*, 16 February 2011.

In July 2012 the Kenyan government put forward a tender for the design and construction of the first three berths at Lamu. [152] Longer-term plans include a 32-berth deep-sea port, an oil refinery, an oil pipeline, a standard gauge railway line linking Juba with a branch line to Ethiopia, a highway connecting Ethiopia and South Sudan and the construction of three international airports in Lamu, Isiolo and Lokichogio.[153]

5.1.3 Regional security

If Kenya and the neighbouring countries want to reap the benfits of the LAPSSET project, the Kenyans need to secure their land and maritime borders with Somalia against terrorism and piracy. This was expressed by President Mwai Kibaki in his opening speech for the ceremony of the construction of the LAPSSET Corridor project on 2nd March 2012 when he said: "We will therefore continue to work with our neighbours, to ensure that we neutralize any security challenges to our development endeavours. I am therefore happy to note the progress we are making in stabilizing Somalia".[154]

Kenya is receiving aid in this regard from the European Union and the United States.[155] The Kenyan navy is operating from Manda Bay Naval Base, which includes a US contingent operating under the Combined Joint Task Force-Horn of Africa (CJTF-HoA). The base is used as staging area for US Navy SEALs and commandos against pirates and al-Shabaab.[156] In addition the United States government is funding various military aid projects – including the Office of Anti-terrorism Assistance training facility at Manda Bay[157]. The military operation, Linda Nchi, begun in October 2011, by the Kenyan army against al-Shabaab must most likely also be seen from this perspective.

[152] www.ecosonline.org/news/2012/20120906_Kenya_Funds_O_and_G_infrastructure_with_bond_sale/

[153] Kabukuru W., "Pipeline deal rescues Lapsset", *African Business* (Mar 2012), Number 384, p. 56-57.

[154] Speech by his Excellency Hon. Mwai Kibaki, during the ceremony for the construction of the Lamu Port-Southern Sudan-Ethiopia Transport (LAPSSET) Corridor project, 2nd March 2012.

[155] Kabukuru W., 'Lamu - back to the future", *African Business* (Feb 2012), Number 383, p. 72-73.

[156] "U.S. expands secret intelligence operations in Africa", *Washington Post*, 14 June 2012.

[157] U.S. Foreign Assistance Program Overview (pdf.usaid.gov/pdf_docs/PCAAB894.pdf).

Chapter 6 - Mombasa, Dar es Salaam and arms shipments

The ports of Mombasa and Dar es Salaam have been the destination of significant shipments of military equipment, mainly bound to Kenya and Tanzania, but also to Uganda, Rwanda, Burundi, DRC, Southern Sudan, Ethiopia, Somalia, and Zambia. Over the last years, arms shipments passing through Mombasa and Dar es Salaam have been the object of intense scrutiny by media and international organizations, with the aim to ascertain their real destination beyond contradictory statements by relevant authorities.

6.1 MVs Radomyshl, Beluga Endurance, and Faina

Between September 14 2007 and September 1 2008, three ships – the Ukraine-flagged Radomyshl, the Antigua & Barbuda-flagged Beluga Endurance, and the Belize-flagged Faina - loaded hundreds of tonnes of military equipment at the Ukrainian port of Oktyabrsk/Nikolayev.[158] According to documents provided by Mike Lewis and Oliver Sprague, who first researched these cases,[159] the shipments were destined for (and delivered to) the Government of South Sudan.

On September 14 2007, the Ukraine-flagged general cargo ship MV Radomyshl[160] departed the Ukrainian port of Nikolayev (72 miles east of Odessa) after loading military cargo at the nearby port of Oktyabrsk. The cargo was the first in a row of three arms shipments[161] destined for South Sudan via Mombasa port (Kenya).

MV Radomyshl movements - September 2007-February 2008

Place	Country	Area	Arrival	Sailed	Details
Mumbai	India	Indian Sub (	1-Feb-08		Detention
Djibouti	Djibouti	S & E Africa	13-Dec-07	27-Dec-07	
Aden	Yemen	Red Sea	12-Dec-07	12-Dec-07	
Maputo	Mozambique	S & E Africa	11-Nov-07	14-Nov-07	
Mombasa	Kenya	S & E Africa	29-Oct-07 17:55	1-Nov-07 19:25	
Suez	Egypt	N Africa	2-Oct-07	2-Oct-07	Passed South
Port Said	Egypt	N Africa	30-Sep-07	2-Oct-07	
Dardanelles	Turkey	Black Sea	21-Sep-07 19:50	21-Sep-07 19:50	Passed West
Istanbul	Turkey	Black Sea	18-Sep-07 18:10	18-Sep-07 18:10	Passed West
Nikolayev	Ukraine	Black Sea	8-Sep-07	14-Sep-07	

Source: TransArms/IPIS databank, October 2008.

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[158] Finardi S., Danssaert P., *Rough Seas, Maritime Transport and Arms Shipments,* TransArms-R and IPIS vzw, Chicago. July 2012 (http://www.ipisresearch.be/search_publications.php).

[159] TransArms/IPIS contributed to their research. See Lewis M., *Skirting the Law: Sudan's Post-CPA Arms Flows*, Small Arms Survey, Graduate Institute of International and Development Studies, Geneva, September 2009.

[160] The ship (IMO 7415527) has a cargo capacity of 5,657 DWT.

[161] The shipments stemmed from three contracts signed on 29 December 2006, 15 February 2007, and 5 May 2008. See Lewis, M., op. cit.

The ship sailed to Port Said and arrived at Suez (Red Sea) on October 2, 2007, docking at the port of Mombasa in the late afternoon of October 29th. Three days later the ship continued south to reach Maputo and later cross the Indian Ocean to Aden and Mumbai. At the time of the shipment to Mombasa, the MV Radomyshl was owned and managed by a Ukrainian-registered and Izmail-based company, Ukrainian Danube Shipping. The ship was broken up at Mumbai (India) on September 2009.

After docking at the port of Nikolayev December 15, the Antigua & Barbuda-flagged MV Beluga Endurance ("Martin" since March 2011) sailed North to the Oktyabrsk port, where it loaded 1,771 tons of heavy military equipment, including 42 battle tanks and AKM assault rifles[162], officially destined for the Government of Kenya but actually delivered to South Sudan.

MV Beluga Endurance movements – December 2007/April 2008

Place	Country	Area	Arrival		Sailed		
Panama Canal	Panama	Central America	4/6/08	4:57	04/06/08	4:57	Passed East
Singapore	Singapore	Far East - Asean	2/23/08	5:30	02/23/08	18:10	
Mumbai	India	Indian Sub Continent	2/1/08		02/05/08		
Mombasa	Kenya	S & E Africa	1/20/08	10:55	01/20/08	17:40	
					Before		
Mombasa	Kenya	S & E Africa	1/8/08	10:20	01/20/08		
Suez	Egypt	N Africa	12/28/07		12/28/07		Passed South
			After		Before		
Ashdod	Israel	E Mediterranean	12/20/07		12/28/07		
Istanbul	Turkey	Black Sea	12/20/07	17:00	12/20/07	17:00	Passed West
					Before		
Nikolayev	Ukraine	Black Sea	12/15/07		12/20/07		

Source: TransArms/IPIS databank, October 2008.

On August 20, 2008, the Belize-flagged ro/ro cargo ship MV Faina[163] departed the Ukrainian port of Illicivsk (Ilyichevsk, south of Odessa), sailing North-East to the ports of Nikolayev (72 miles east of Odessa) and Oktyabrsk. In Oktyabrsk the ship loaded the last cargo destined for Southern Sudanese rebels, via Mombasa port (Kenya). On September 1, 2008 the ship sailed to Suez, where it arrived on September 15. Ten days later the ship was attacked by Somali pirates and seized. [164] The content of its heavy military cargo was widely exposed.[165] The crew that survived (the captain, Vladimir Kolobkov, died soon after the attack) were set free

[162] Lewis, M., op. cit.

[163] The ship (IMO 7419377), with a cargo capacity of 9,019 DWT, was previously named Vallmo (1978), Matina (1983), Loverval (1989), and Marabou (2003).

[164] "Worldwide threat to shipping – Mariner warning information, 27 September 2008", *Office of Naval Intelligence* (www.nga.mil)

[165] Lewis, M., op. cit. reports the description of the cargo manifest: "33 T-72M1 and T-72M1K tanks with Kontakt-1 explosive reactive armor; 8,926 rounds of VOF-36 high explosive fragmentation (HE-FRAG) 125 mm tank ammunition; 5,000 rounds of VDK-10 high explosive anti-tank (HEAT); 125 mm tank ammunition; 73 packages of spare parts for T-72M1 and T-72M1K tanks; 6 ZPU-4 anti-aircraft guns; 36 packages of spare parts for ZPU-4 anti-aircraft guns; 36 packages (2,818 kg) of RPG-7V launchers and spare parts; 6 BM-21 122 mm multiple launch rocket launchers on Ural wheelbase".

after four months, on February 5, 2009, allegedly after a USUSD3.2 million ransom was paid.[166] Once the cargo was unloaded from the ship in Mombasa, the Kenya government ordered that the tanks be temporarily stored at the Kahawa Barracks (Nairobi). The cargo eventually reached Juba (South Sudan)[167] by rail.[168] At the time of the shipment to Mombasa, the MV Faina was controlled by a Ukraine-registered and Odessa-based company, Tomex Team Inc., an operator of ro/ro and car carrier vessels[169] owned by Vadim Alperin, an Israeli citizen based in Ukraine and a former deputy of the Odessa City Council.[170] The ship registered owner was a company based in Panama City (Panama), called Waterlux AG and the ship manager was another company based in Odessa, called the Almar.[171] However, it is likely that the ship's previous owner, the Odessa-based Phoenix Logistics Ltd (until March 16, 2008),[172] had played a role in securing the contract.

MV Faina movements - April/September 2008

Place	Country	Area	Arrival	Time	Sailed	Time	Details
Suez	Egypt	N Africa	15-Sep-08		15-Sep-08		Casualty
Istanbul	Turkey	Black Sea	3-Sep-08	21:55	3-Sep-08	21:55	Passed West
Nikolayev	Ukraine	Black Sea	29-Aug-08		1-Sep-08		
Illichivsk	Ukraine	Black Sea	19-Aug-08		20-Aug-08		
Istanbul	Turkey	Black Sea	17-Aug-08	13:45	17-Aug-08	13:45	Passed East
Dardanelles	Turkey	Black Sea	15-Aug-08	1:05	15-Aug-08	1:05	Passed East
Tartous	Syria	E Mediterranean	10-Aug-08		12-Aug-08		
Dardanelles	Turkey	Black Sea	5-Aug-08	20:15	5-Aug-08	20:15	Passed West
Istanbul	Turkey	Black Sea	4-Aug-08	17:00	4-Aug-08	17:00	Passed West
Sevastopol	Ukraine	Black Sea	1-Aug-08		4-Aug-08		
Illichivsk	Ukraine	Black Sea	27-Jun-08		28-Jun-08		

Source: TransArms/IPIS databank, October 2008.

6.2 MV Maersk Constellation

On January 20, 2011, the United States-flagged, multipurpose m/v *Maersk Constellation*[173] departed Lake Charles (Louisiana, US) with cargoes destined to various African ports. The

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[166] After paying the ransom, the owner of the ship deducted the cost of the crew telephone calls to families from their salaries! See: "Faina owner deducts telephone charges from crew salaries", *Itar-Tass*, February 8, 2009.

[167] US Embassy Kyiv, 09KYIV1942 dated November 9, 2009, Secret; Gelfand L., Puccioni A., "IMINT Tracks T-72 Tanks towards South Sudan" *Jane's Defence Weekly,* London, 3 July 2009.

[168] Matthysen K., Finardi S., Johnson-Thomas B., Danssaert P., *The Karamoja Cluster of eastern Africa: Arms transfers and their repercussions on communal security perceptions*, International Peace Information Service vzw, Antwerp and Transarms-Research, Chicago - December 2010.

[169] Lloyd's Seasearcher, Beneficial Owner, MV Faina.

[170] Bugayova N., "Pirates' Prison", *Kyiv Post*, 28 January 2009.

[171] Equasis database, MV Faina, Management Detail.

[172] Lloyd's Seasearcher, Previous Owner, MV Faina. Under Phoenix, the ship registered owner was a company registered in Monrovia, Liberia, the Redrick Co.

[173] IMO number 7717171, built in 1980, with a cargo capacity of 21,213 DWT

ship arrived in Lobito (Angola). On February 28, 2011 the ship was detained by the Angolan authorities in Lobito.[174] The vessel, owned by Maersk Line Ltd, based in Norfolk (VA, USA), was carrying U.S. food aid for the World Food Programme and various American NGOs to several African nations: Guinea-Bissau, Angola, Mozambique, Tanzania.[175] Included in the cargo were four ammunition containers with destination Mombasa. The circumstances surrounding the detention of the vessel were not very clear. The Angolan authorities claimed "that the soy in four of the containers was covering a cache of guns, ammunition and rockets", while the "local police said the captain had known of the munitions, but failed to declare them".[176] According to Maersk Line the entire incident was a misunderstanding: "As the vessel arrived in Lobito to unload some of the food aid, all the ship's cargo was declared," the shipping line said. "Twelve days later, Angolan authorities raised questions about the four containers on board and elected to detain the vessel until the documentation was verified."[177]

Photo 6 - Unloading of an ammunition container from Maersk Constellation

Credit: "Pwani Images-Kenya", Mombasa April 4, 2011

The availability of transport records and transport documentation - presently at disposition of a very limited transport business community – reveals essential and problematic details about the nature and destination of that shipment. The shipper for the ammunition was a U.K.-based company, British International Industries.[178]

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[174] "U.S. Ship Held in Angola for Cargo Dispute Is Released", *Wall Street Journal*, 18 March 2011

[175] Bills of Lading for Jam, International Partnership for Human Development, and World Food Programme.

[176] "Angolan authorities clear U.S.-flagged ship to proceed," *CNN*, 3 March 2011.

[177] "Another ship ferrying Kenya arms held in Angola seaport," *The Standard*, 6 March 2011.

[178] Bill of Lading No. DYNLKCMOM1.

Photo 7 - The ammunition containers, loaded on trucks, leave the port

Credit: "Pwani Images-Kenya", Mombasa April 4, 2011

According to a ship's crew member and to the shipper,[179] the four containers were loaded with a hazardous material cargo, 25mm ammunition, for a total weight of 65,361 kg[180] and a value of USUSD1.6 million.[181] However, according to its website, British International Industries is a global provider of aircraft parts, components, and other related equipment and services and does not manufacture or trade weapons. The spokesperson for Maersk Line Ltd, Kevin Speers said that the ammunition was "*destined for a U.S.-allied country under a U.S. Department of State export license arranged by the shipper, a U.S. company that is not affiliated with Maersk*"[182].

The US company was, according to the State Department, General Dynamics Corporation, while the U.S.-allied country was identified to be Kenya.[183] The vessel was released on 17

[179] Communication with the authors, dated January 21, 2013.

[180] "Bakersfield man among 20 American crewmembers forcibly detained by Angolan military", *bakersfield.com*, 10 March 2011.

[181] Bill of Lading DYNLKCMOM1.

[182] "Angolan authorities clear U.S.-flagged ship to proceed", *CNN,* 3 March 2011; Ship with Bakersfield man aboard released by Angolan authorities, *Bakersfield.com*, 18 March 2011; 'Maersk Constellation' underway after extended delay in Angola, *gcaptain.com*, 22 March 2011.

[183] "U.S. Ship Held in Angola for Cargo Dispute Is Released", *Wall Street Journal*, 18 March 2011; "Kenya: Ammunition Belongs to Nation, Says Mutua", *Daily Nation*, 7 March 2011.

March and unloaded its cargo in Mombasa April 4, 2011.[184] Meanwhile the spokesperson for the Kenyan Ministry of Defence had said "*he could not confirm or deny whether the arms belonged to the Kenyan military*." Adding: "*That is information that can be given by the shipping agent, and I cannot comment unless it [the shipment] reaches Mombasa for us to clear. For now I am unable to confirm or deny since all is with the shipping agent*".[185] This reply by the Kenyan authorities raised suspicions that the end-user might not have been the Kenyan MoD. In previous similar incidents, military cargo onboard several vessels bound for Mombasa, e.g. m/v Faina and m/v Beluga Endurance, and allegedly destined for the Kenyan Ministry of Defence, has had as final destination South Sudan. The Maersk Constellation was demolished in China May 23, 2011.

6.3 MVs Crystal Ray and Topaz Ace

According to the Kenyan newspaper "The Star"[186] several military trucks, wagons, and trailers were unloaded at the Mombasa port from two vehicles carriers (Crystal Ray[187] and Topaz Ace[188]) between the end of March and the beginning of April 2012. The cargo - according to the newspaper – was destined to South Sudan and was in part owned by the United Nations. A source for the article stated that "[the] *South Sudan government has continued to import its military equipment and other hardware through the port of Mombasa. There has been a long-term agreement which was signed a long time ago. It is now that it is being implemented in phases*". The article did not specify which equipment was destined to the UN Mission in South Sudan and which to the government, despite the availability of "cargo manifest[s]" and the indication of the consignee that this report identifies as a Kenyan company[189]. The article also stated that "*the KPA head of corporate affairs, Bernard Osero, gave a breakdown of all the vehicles which have been imported through the port in the last month but did not include the military ones headed for South Sudan*."

The origin of the trucks, wagons and trailers was not clear. The article said the origin was China and the trucks were "Chinese". However, while Crystal Ray actually docked in Xingang (Tianjin) March 2 before arriving in Mombasa on April 2,[190] the ship Topaz Ace did not dock in

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[184] "Controversial arms ship docks in Kenya", *The East African*, 4 April 2011; Kenya Port Authority, Shipping Movements, http://www.kpa.co.ke.

[185] "Another ship ferrying Kenya arms held in Angola seaport", *The Standard*, 6 March 2011.

[186] Mudi M., "South Sudan Imports Chinese Military Trucks", *The Star*, 10 April 2012.

[187] The Bahamas-flagged Crystal Ray (IMO 9210440), built in 2000, has a capacity of 57,772 DWT. It is managed by Ray Car Carriers, based in the Isle of Man at Circular Road, Douglas,. Its registered owner is Crystal Ray Shipping Ltd, based at the same address of Ray Car Carriers.

[188] The Panama flagged Topaz Ace (9077836), built in 1995, has a capacity of 14,696 DWT. It is managed by CIDO Shipping HK CO, domiciled in Hong Kong, World Wide House, 19, Des Voeux Road Central. Its registered owner is Back-Boned Maritime, based at the same address of CIDO.

[189] "Freight Forwarders Kenya Ltd", based in Mombasa and domiciled at Leslander House, Dar es Salaam Road, P.O. Box 90682. http://www.freightforwarders.co.ke/logistics.html

[190] Kenya Port Authority, Shipping Movements, http://www.kpa.co.ke.

any Chinese port before arriving to Mombasa on March 27, 2012.[191] In its last voyages from December 2011 and before Mombasa, the ship docked in various ports in Russia, South Korea, the United States, Canada, and Japan, but not China and therefore it is not clear where the ship could have loaded "Chinese" trucks. Topaz Ace left Mombasa March 28, bound to Dar es Salaam. The cargo from Crystal Ray was unloaded April 4 and the vehicles departed Mombasa April 9 to South Sudan.

6.4 MV Asian Beauty

In October 2012, the Kenyan newspaper "The Star" reported[192] that a car carrier - the MV Asian Beauty[193] - had docked in Mombasa in August and had unloaded "*more than 30 modern military lorries, water boozers, tankers and breakdowns from China*", likely destined to improve the logistic support of Kenya Defense Forces in Somalia, despite the refusal of the ministry of Defense "*to confirm that the hardware belonged to the Kenya military",* quoting concerns about divulging "*any security issues that may jeopardise operations*" and stating that "*whatever military hardware that passes through the port could be ours or for any other country*". [194] According to a source for the above-mentioned article, the "*formidably lethal all-weather, day-night vehicles, will fuel KDF military trucks and aircraft and involved* [sic] *in breakdown operations*" and were manufactured by Sinotruk.[195]

The MV Asian Beauty did not reach Mombasa in August, as reported, but actually on 19 September 2012[196] and its voyages since August 2012 included various stopovers, from the Chinese port of Xingang (Tianjin) on 6 August, 2012 and Shanghai (14 August) to Singapore (22 August) and from Durban (South Africa, 7 September), Maputo (Mozambique, 11 September), and Dar es Salaam (Tanzania, 17 September).

6.5 MV Neptune Ace

In September 2013, not less than 120 heavy military trucks, 36 battle tanks and armoured vehicles were unloaded in Mombasa from India, bound to Juba and Bor[197] and destined to the

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[191] Kenya Port Authority, Shipping Movements, http://www.kpa.co.ke.

[192] Mudi M., Onsarigo C., "New Military Cargo from China Awaits Clearance At Kenya Port", *The Star,* 5 October 2012.

[193] The then UK-flagged (since June 2013 under Liberia flag) Asian Beauty (IMO 9210440), built in 1994, has a capacity of 13,308 DWT. It is managed by Eastern Pacific Pte, based in Singapore at Millenia Tower, 1, Temasek Avenue. Its registered owner is Kenzalo Shipping, based at the same address of Eastern Pacific.

[194] Statement by Defense spokesperson Bogita Ongeri quoted in the article, *The Star,* 5 October 2012.

[195] China National Heavy Truck Group Co. Ltd, based in Jinan, Shandong, one of the Chinese main manufacturers of heavy trucks for military use.

[196] Kenya Port Authority, Shipping Movements, http://www.kpa.co.ke.

[197] Nyassy D., "Military gear abandoned in pay demand", *Daily Nation* (Kenya), 1 October 2013.

UN Mission in South Sudan that was facing a dramatic situation.[198] The sensitive cargo soon became the object of a dispute between the clearing agents who acted on behalf of the U.N., the trucking companies hired to transport the vehicles, and Kenyan, Ugandan and South Sudanese authorities.[199] As a result, the military vehicles were not able to reach their destination for several weeks. The Uganda-based Jetspeed Air Freighters Ltd.[200] was in charge of clearing the cargo at Mombasa on behalf of the U.N. and to pay the more than 120 truckers, as well as to coordinate the documentation for the transit to Uganda and South Sudan.[201] The cargo was cleared at Mombasa September 9, but Jetspeed agents failed to pay the truckers and to provide the proper transit documentation on time. As a consequence, most of the truckers refused to move the vehicles and others got stuck at the Malabo border crossing between Kenya and Uganda.[202]

Part of the military vehicles were stored in various Customs warehouses in the Mombasa region, including the port; part along the road Mombasa-Malabo; part (18 vehicles) reached Malabo but were stopped by Uganda's Customs agents - lamenting lack of documentation - stuck in the Customs yard for nearly three weeks. According to the Kenyan newspaper "Daily Nation", the truckers - confronted with huge losses and demurrage costs - decided to mount a boycott and abandoned the vehicles.

Addressing the authorities and the media, they claimed losses for the equivalent of about 800,000 US dollars[203]: "*We decided to abandon the cargo after conflicting information from UN and its Kenyan and South Sudan agents. When we go to one office, we are referred to the other in Mombasa, Nairobi, Entebbe, Uganda, or Juba, South Sudan. We are confused and don't know what the truth is*," [...] "*since that time* [September 9] *nearly a month now, we have not been paid a single cent. We have therefore downed our tools until UN or its agents pay us in full*."[204] After other delays, Jetspeed agents eventually declared that the impasse - "*a result of misinformation from both the governments of Kenya and Southern Sudan*", according to Jetspeed - was solved.[205] The truckers stuck at Malabo were eventually cleared and continued their journey, but it is not clear at the time of writing whether all vehicles

[198] On the situation in South Sudan in the first half of 2013 see: "South Sudan: Jonglei Clashes", *Africa Research Bulletin – Political, Social and Cultural Series*, 1-31 May 2013; "South Sudan: Resurgence of Heavy Fighting", *Africa Research Bulletin – Political, Social and Cultural Series*, 1-31 July 2013; "Sudan: Tactics but no strategy", Africa Confidential, 26 April 2013; "Sudan/South Sudan: Mission impossible", Africa Confidential, 2 August 2013. See also: Doki C., George N., "5 UN troops, 7 others killed in South Sudan", *Associated Press*, 9 April 2013.

[199] Onsarigo C., "Boycott hits Sudan-bound UN cargo", *The Star*, 3 October 2013.

[200] The company is domiciled in Kampala, PO Box 171, 41 Entebbe Kanjokya Road.

[201] Onsarigo, C., op. cit.

[202] Jakaa S., "Truck drivers released after 21-days at border", *Standard Digital* (Kenya), 9 October 2013.

[203] "UN military vehicles for S. Sudan abandoned at Kenyan port", *Xinhua Agencies*, 3 October 2013. Representatives of the trucking companies stated that the voyage to Juba costs about 5,600 US dollars and the voyage to Bor about 6,500 US dollars.

[204] Nyassy D., op. cit.

[205] Onsarigo C., op cit.

reached Judah and Bor. The outburst of heavy fighting between South Sudan's government forces and the rebels of vice-president Riek Machar have created enormous difficulties for shipments from Mombasa to South Sudan, with truckers stuck for weeks at the Uganda/South Sudan border.[206]

The media have not reported on the name of the ship that carried the vehicles from India. However, research carried out for this report has shown that among the 34 general cargo ships that docked at Mombasa[207] between 23 August and 9 September 2013 (the day the cargo was cleared at the port), only one ship, the car carrier Neptune Ace,[208] had previously docked in an Indian port, and precisely at the car terminal of the port of Ennore (Tamil Nadu State, north of Chennai). The ship departed from Inchon (South Korea) the 27th of July and arrived in Singapore the 3rd of August. It reached Ennore the 9th of August, Durban and Porth Elizabeth (South Africa) the 21st and 23rd, respectively, Maputo (Mozambique) the 26th, and then Dar es Salaam (4th of September) and eventually Mombasa on the 5th of September, departing on the 6th of September.

6.6. MV Anne Scan

On the 22nd of July 2008, the Antigua & Barbuda flagged general cargo ship Anne Scan (IMO 9145126)[209] - managed by the German company Held Bereederungs GmbH[210] - docked in Dar es Salaam. The copy of the cargo manifest - collected in Dar es Salaam by one of the authors of this report while investigating arms shipments to the DRC rebels in 2008[211] - reported the details[212] of the cargo of each of the 62 containers unloaded, for a total of 822

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[206] "Kenya truck drivers in South Sudan ask state to evacuate them", *The Star*, 3 January 2014.

[207] Kenya Port Authority, Shipping Movements, 28 August - 9 September 2013, http://www.kpa.co.ke.

[208] The Bahamas-flagged Neptune Ace (IMO 9584059), built in 2010, has a capacity of 18,436 DWT. The ship is managed by Mitsui Osk Line, domiciled in 1-1, Toranomon 2-chome, Minato-ku, Tokyo-to. Its registered owner is Glorious Marine Shipping SA, domiciled at the same address of Mitsui.

[209] MV Anne Scan has a cargo capacity of 3,526 DWT and 167 TEUs.

[210] Located at Boschstr. 21, 49733 Haren (Ems), Germany.

[211] Sergio Finardi, Group of Experts, UN SC Resolution 1807 (2008).

[212] The copy of the cargo manifest was consigned to the UN Sanctions Committees Secretariat, according to the rules governing materials collected by the experts during UN service. The first page of that manifest was shown by TransArms in a closed door meeting in New York in February 2011 and a summary of the case and cargo was reported in *Rough Seas. Maritime Transport and Arms Shipments,* by Finardi and Danssaert (IPIS/TransArms, July 2012). The slide of the first page of the cargo manifest used for the non-public TA presentation and a summary of the case and cargo "surfaced" in the report "*The Odessa Network*" by Tom Wallace and Farley Mesko (Center for Advanced Defense Studies, September 2013), without a source. Asked by TransArms and IPIS about the source of the document and information, the authors of the report were unable to provide a source. See also Washington Post's "correction" to its article on the "Odessa Network" report (September 8, 2013): http://www.washingtonpost.com/world/national-security/ukrainian-port-eyed-as-analysts-seek-syrias-arms-source/2013/09/07/f61b0082-1710-11e3-a2ec-b47e45e6f8ef_stroy.html

tons of ammunition, including 7.62mm, 12.7mm, 40mm, 100mm, and 122mm calibre, for a total cargo of 960 tons.

MV Anne Scan movements - June-August 2008

Flag	Place	Country	Arrived	Time	Sailed	Time
	Singapore	Singapore	9-Aug-08	7:35 AM	9-Aug-08	2:10 PM
	Galle	Sri Lanka	3-Aug-08		3-Aug-08	
	Dar es Salaam	Tanzania	22-Jul-08		24-Jul-08	
	Suez	Egypt	2-Jul-08		2-Jul-08	
	Dardanelles	Turkey	29-Jun-08	3:20 AM	29-Jun-08	3:20 AM
	Istanbul	Turkey	27-Jun-08	2:45 PM	27-Jun-08	2:45 PM
	Nikolayev	Ukraine	24-Jun-08		25-Jun-08	
	Kerchenskiy	Ukraine	22-Jun-08	10:12 PM	22-Jun-08	10:12 PM
	Mariupol	Ukraine	21-Jun-08		22-Jun-08	
	Kerchenskiyit	Ukraine	20-Jun-08	11:32 PM	20-Jun-08	11:32 PM
	Istanbul	Turkey	19-Jun-08	8:56 AM	19-Jun-08	8:56 AM
	Dardanelles	Turkey	18-Jun-08	6:05 PM	18-Jun-08	6:05 PM

Source: TransArms/IPIS databank, October 2008.

Photo 8 - MV Anne, Santa Anna Bay, Netherlands Antilles

Credit: Cees Bustraan, Shipspotting.com, February 3, 2011

The cargo was shipped by Barwil Ukraine Ltd, based in Ilyichevsk (Odessa region, Ukraine), on behalf of Ukrinmash (Kyiv, Ukraine) from the port of Oktyabrsk and was destined to the Uganda ministry of Defence. The containers were shipped to Uganda by rail. At the time of

delivery, Uganda was suspected to support the CNDP insurgency in Eastern Congo[213] and there were reasons to believe that the cargo of ammunition could have been intended, at least partially, for the use of CNDP. On November 23, 2008, EUPOL officials discovered and photographed 100mm artillery shells corresponding to the Anne Scan cargo type. According to a MONUC official's communication,[214] CNDP rebels did not have heavy artillery shells until September 2008.

In an unrelated incident, the Anne Scan later incurred in a major case of contraband. On October 27, 2009, the ship docked at Greenore, Ireland. On board the ship the Irish authorities seized a cargo of 120 million cigarettes.[215] In November 2006 the ship changed name in "Anne".[216]

[213] See: UNSC Report of the Group of Experts, S/2008/773, December 12, 2008

[214] Confidential e-mail dated September 18, 2008.

[215] See Scan-Trans: http://archive.today/mVhwm; http://www.rte.ie/news/2009/1028/123474-cigarettes/ 28 October 2009.

[216] The MV Anne Scan (built in 1997) has a long history of name change, from Lebasee (1997) to Sao Vicente (1997), again Lebasee (1998-2006), Moldavia (2006-2007), Herford (2007), Anne Scan (2007-2009), Anne (November 2009 to date).

Conclusions

Dilapidated or underdeveloped transport infrastructure is a substantial barrier to socio-economic development and sustainable growth of many regions and sub-regions of Africa. The Northern and Central Corridor represent two examples of transport networks in Central and East Africa that are essential to connect landlocked African countries with the world market. These corridors play a vital role in transferring the countries' export commodities and in supplying local populations with consumer goods. However, both the Northern and Central Corridor are currently facing a number of challenges.

The role of the Northern Corridor has been studied in more detail through the analysis of two case studies, East Congo and South Sudan. The report clearly describes the importance of this transport axis to both countries, and pinpoints how high logistic costs hamper trade development. Other issues that add up costs (besides logistics) include the currently critical condition of most roads and railways across the corridors; cross-border corruption; lack of security along certain (long) stretches of the road; slow implementation of harmonised rules for transport and Customs documents; and port congestion once goods reach Mombasa.

Consequently, donors should be encouraged to financially support the rehabilitation of transport infrastructure, alongside the creation of feeding roads and ancillary infrastructure to truly enable the economic integration of landlocked and isolated areas. In addition to this, there is a dire need for accelerating the implementation of cross-border and regional cooperation, as well as harmonisation of legislation, to facilitate transit, import and export of commodities in Central and East Africa. In order to address these issues, the region's governments have already created relevant agencies: the Northern Corridor Transit Transport Coordination Authority and the Central Corridor Transit Transport Facilitation Agency.

At the time of writing, however, logistic and other challenges to cost-efficient trade and overall economic development are yet to be addressed. Further research and policy actions to effectively tackle current shortcomings are much needed, and relying only on a piecemeal approach (e.g. on ad hoc investments in infrastructure) is likely to result in a 'quick fix' to ship raw materials out of the African continent rather than in an effort to boost sustainable economic development.

Statistical Appendix

A - Northern Corridor - main road network (km)[217]

Country	Paved	Unpaved	Total
Burundi	320 km	36 km	356 km
Congo, DR	721 km	1920 km	2641 km
Kenya	1196 km	-	1196 km
Rwanda	814 km	-	814 km
Uganda	1042 km	657 km	1669 km+
Total	4093 km	2613 km	6706 km
%	61%	39%	100%

+: Does not include Kampala-Karuma-Pakwach-Nebbi-Goli-Arua

B - Northern Corridor - Transit routes for road traffic[218]

Democratic Republic of Congo

From	By way of	To
Aru	Bunia	Kisangani or Isiro
Mahagi	Bunia	Kisangani or Isiro
Kasindi	Beni	Kisangani or Bunia
Ishasha		Goma Ville
Goma Ville		Goma
Bukavu	Kindu	Kisangani
Kiliba	Uvira	Kalundu
Kavimvira	Uvira	Kalundu
Kamanyora	Bukavu	Kalundu

Burundi

From	By way of	To
Upper Akanyaru	Kanyaza - Bujumbura	Gatumba
Gisenyi	Kirundo - Ngozi	Bujumbura
Luhwa	Rugomba - Bujumbura	Upper Akanyaru

[217] http://www.ttcanc.org/mnrdnetwork.html

[218] Northern Corridor Transit Agreement, Protocol No 2, TRANSIT ROUTES AND FACILITIES (1985): art. 3.

Rwanda

From	By way of	To
Kagitumba	Kigali - Butare	Upper Akanyaru
Kagitumba	Kigali - Butare	Cyangugu
Kagitumba	Kigali - Ruhengeri	Gisenyi
Gatuna	Kigali - Butare	Upper Akanyaru
Gatuna	Kigali - Butare	Cyangugu
Gatuna	Kigali - Ruhengeri	Gisenyi
Cyangugu		Bugarama
Cyanika	Ruhengeri	Gisenyi

Uganda

From	By way of	To
Malaba	Jinja-Kampala-Masaka-Kabale	Katuna
Malaba	Jinja-Kampala	Ishasha River
Malaba	Jinja-Kampala	Mpondwe
Malaba	Tororo	Goli
Malaba	Tororo	Arua
Busia	Jinja-Kampala-Masaka-Kabale	Katuna
Busia	Jinja-Kampala	Ishasha River
Busia	Jinja-Kampala	Mpondwe
Busia	Tororo	Goli
Busia	Tororo	Arua
Kasese	Ishaka-Ntungamo	Kagitumba
Kasese		Mpondwe
Kasese		Ishasha River

Kenya

From	By way of	To
Mombasa	Nairobi-Kisumu	Busia
Mombasa	Nairobi-Eldoret	Malaba

C - Northern Corridor - NTCA designated transit routes for rail traffic

Kenya

From	By way of	To
Mombasa	Nairobi-Eldoret	Malaba
Mombasa	Nairobi-Kisumu	Busia

Uganda

From	By way of	To
Tororo	Jinja-Kampala	Kasese

D - Airport and airfield networks for transport of minerals to Goma

The following table summarizes the findings of our inquiry[219] and highlights the main characteristics of each airport and airfield.

Table D1 – Network of locations and Fairfield source of shipments of minerals - Questionnaire

Location	ICAO	Province	Latitude	Longitude	Surface	R/w m
Bukavu	FZMA	South Kivu	02 18 ' 32 " S	028 48 ' 32 " E	Paved	2000
Goma	FZNA	North Kivu	01 40 ' 15 " S	029 14 ' 18 " E	Paved	1995
Kalima	FZOC	Maniema	02 33 ' 43 " S	026 37 ' 51 " E	Unpaved	1250
Kalima-Kikungwa	FZOD	Maniema	02 34 ' 74 " S	026 43 ' 79 " E	Unpaved	1190
Kama		South Kivu	03 31 ' 34 " S	027 07 ' 41 " E	na	1140
Kampene	FZOE	Maniema	03 35 ' 47 " S	026 42 ' 07 " E	Unpaved	900
Kasese	FZOS	Maniema	01 38 ' 58 " S	027 04 ' 52 " E	Unpaved	800
Kipaka/Kasongo	FZOK	Maniema	04 32 ' 00 " S	026 37 ' 00 " E	Unpaved	970
Lulinga-Tshionka	FZOG	South Kivu	02 19 ' 00 " S	027 33 ' 00 " E	Unpaved	900
Lusenge	na	South Kivu	03 36 ' 26 " S	027 07 ' 47 " E	na	na
Mulungu	FZMC	South Kivu	02 58 ' 49 " S	027 51 ' 01 " E	Unpaved	800
Punia	FZOP	Maniema	01 27 ' 26 " S	026 25 ' 27 " E	Unpaved	1250
Shabunda	FZMW	South Kivu	02 41 ' 46 " S	027 20 ' 81 " E	Unpaved	1100

Source of data: TransArms DRC airports database

The following table reports additional Customs data-based information on airports used for the shipment of minerals and Goma's airport flight logs for 2008.

[219] The question companies were asked to answer was: "To and from which airports your company transport or receive shipment of minerals?"

Table D2 – Additional locations and airfield source of shipments of minerals - DRC Customs

Location	ICAO	Province	Latitude	Longitude	Surface	R/w m
Amisi	na	North Kivu	01 00 ' 44 " S	027 08 ' 36 " E	Paved	2000
Kalemie	FZRF	Katanga	05 52 ' 00 " S	029 15 ' 00 " E	Paved	1750
Kindu	FZOA	Maniema	02 54 ' 58 " S	025 54 ' 87 " E	Paved	2200
Kisangani	FZIC	Oriental	00 28 ' 54 " N	025 20 ' 17 " E	Paved	3500
Kongolo	FZRQ	Katanga	05 24 ' 00 " S	027 00 ' 00 " E	Unpaved	1900
Manono/Kitotolo	FZRA	Katanga	07 17 ' 00 " S	027 24 ' 00 " E	Unpaved	1400
Namoya	na	Maniema	04 01 ' 00 " S	027 34 ' 00 " E	na	na
Walikale	na	North Kivu	01 24 ' 56 " S	028 03 ' 26 " E	Paved	na

Source of data: TransArms DRC airports database

Table D3 shows airport locations and distances from Goma in nautical miles. Table 5 also shows average flight times from the listed airports to Goma with a Let-410 at a cruise speed of 197 knots.[220] Aviation companies use the flight times to calculate cargo transport prices per kg or ton.

Table D3 - Listed airports' distance from Goma in N/M and flight time (in hours) with a Let-410

Map N.	Airport	Nautical Miles From Goma	Flight time
2	Goma	0	0:0'
1	Bukavu Kavumu	46	0:14'
21	Walikale	71	0:22'
9	Lulinga-Tshionka	108	0:33'
11	Mulungu	114	0:35'
7	Kasese	129	0:39'
13	Shabunda	129	0:39'
14	Amisi	132	0:40'
4	Kalima-Kikungwa	160	0:49'
3	Kalima Kamisuku	165	0:50'
5	Kama	168	0:51'
12	Punia Basenge	168	0:51'
10	Lusenge	172	0:52'
20	Namoya	173	0:52"
6	Kampene	191	0:58'
16	Kindu	213	1:05'
8	Kipaka/Kasongo	232	1:11'
15	Kalemie	251	1:16'
18	Kongolo	260	1:19'
17	Kisangani	267	1:21'
19	Manono/Kitotolo	353	1:47'

Source of data: TransArms DRC airports database

[220] Knots are nautical miles per hour. Landing and take-off times are not considered.

E - Trucks/trailers owners

E1 - Based in Butembo (96)

Trucks/trailer owner	Given location	Number of assets
FISSAHAYE P. AMMAR	B.P. 350 BUTEMBO	12
KAKULE MULUMBI	B.P. 394 BUTEMBO	10
TSONGO KASEREKA	BUTEMBO	10
CETRACA SPRL	B.P. 223 BUTEMBO	8
KASEREKA-NZOLI	B.P.373 BUTEMBO	8
PALUKU LOLWAKO	B.P. 34 BUTEMBO	6
KIPOSO MASIVI	B.P.218 BUTEMBO	4
MUHINDO KASEVERE	BUTEMBO	4
MUHINDO TEGHERWAKO	B.P. 574 BUTEMBO	4
JEAN PAUL LUKANDO	BUTEMBO	2
KAMBALE MICHEL FILS	B.P. 253 BUTEMBO	2
KAMBALE NGANZA	BUTEMBO	2
KAMBALE-KOWA	B.P. 192 BUTEMBO	2
KASEREKA KISUNE	B.P.264 BUTEMBO	2
KIZITO MALONGA	B.P.49 BUTEMBO	2
MAHMUD ABDIRAHMAN	B.P. 15 BUTEMBO	2
MAPENZI DIEU EST BON K. KITAMULIKO	B.P.253 BUTEMBO	2
PLATAIMU	BUTEMBO	2
Y. D. NAZIR	B.P. 367 BUTEMBO	2
YOSUA K.	BUTEMBO	2
MAISON KAHEHERO SPRL	B.P. 172 BUTEMBO	2
KAKULE MUHAHIRW	BUTEMBO	1
KAMBALE MUHINDO	B.P. 253 BUTEMBO	1
KAMBALE TESAMA	B.P.253 BUTEMBO	1
KATSUVA KIRIVUTSI	BUTEMBO	1
MUHINDO KAVYAVU	B.P. 285 BUTEMBO	1
OSMAN BIRE MOHAMED	B.P. 257 BUTEMBO	1

E2 - Based in Bunia (75)

Trucks/trailer owner	Given location	Number of assets
HASSAN RAZA NAWAZ/ PIROMOHAMMED	B.P. 327 BUNIA	55
DAHAM ALI JUMA	B.P.16 BUNIA	9
DRAMMEH ET FRERES	B.P. 205 BUNIA	3
ABDUL LAZIZ J. SHORAB	B.P.585 BUNIA	2
AGUPIO LEMIRI	B.P.390 BUNIA	2
DHEGRO GOKPA	BUNIA	2
EGIREX SPRL	B.P. 372 BUNIA	1
MUHAMMED	B.P. 205 BUNIA	1

E3 - Based in Beni (18)

Trucks/trailer owner	Given location	Number of assets
KHALID H. AHMED	BENI	4
ABDI MOHAMED	BENI	2
FISSAHAYE P. AMMAR	B.P. 331 BENI	2
MOHAMED A. IDI	B.P. 1062 BENI	2
SALADO KEILE ALI	BENI	2
KHALID H. AHMED	BENI	2
EGIREX SPRL	BENI	1
HERUY ABREHA	B.P. 1103 BENI	1
MUHAMMED IBRAHIM MUHAMMED	B.P. 707 BENI	1
MUSAKY VOSOKE	BENI	1

E4 - Based in Ariwara (14)

Trucks/trailer owner	Given location	Number of assets
MAISON 425	ARIWARA	7
DRANI ANGUEZI	ARIWARA	4
ADJWA-ODRU	ARIWARA	2
OMBETIO-LEKU	ARIWARA ARU	1

E5 - Based in Goma (11)

Trucks/trailer owner	Given location	Number of assets
ABDALLAH YUSSUF RUGEMA	PO Box G59 GOMA	2
ABDI MOHAMMED KASSIN	B.P. 326 GOMA	2
ABDULL ATIF HIBRAHIM SAID	B.P.1428 GOMA	2
CHRIMWAMI RWAMO C/O MAISON MBIZA	GOMA	2
IGAL MOHAMED	B.P. 75 GOMA	2
JAFFER MOHAMED	B.P. 291 GOMA	1

E6 - Based in Bukavu (9)

Trucks/trailer owner	Given location	Number of assets
ABDI SALAM Y.	B.P. 2016 BUKAVU	1
MUKUBAGANYI MULUME	IBANDA BUKAVU	2
MUNGANGA CHIGOHO	B.P. 1934 BUKAVU	4
MUSIWA WAKENGE	IBANDA BUKAVU	2

E7 - Others (12)

Trucks/trailer owner	Given location	Number of assets
GARI OKUA	B.P. 7 ARU	2
IBRAHIM ABDULLATIF C/O GARI OKUA	B.P. 07 ARU	1
YUSUF AWES ABUKAR	B.P. 54 ARU	2
SAMIRA AMOURI	B.P. 70 UVIRA	2
TRANSCORP CO.	B.P. 145 UVIRA	2
MUHINDO NYENZE	BASWAGHA	2
NAMTEX CO. LTD	POB 21517 KAMPALA	1

Sources: see Chapter 4.