

A Brief overview of Marine Traffic Status on port of Mombasa and Maritime Activities in Kenya

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Abstract: Kenya is a sovereign country with a vast potential in maritime industry. Though Kenya is known to have made it in IMO white list on 14TH May 2010, she is making huge investments in maritime industry in an effort to have a share of booming world maritime industry and sea trade. Statistics has it that 90% of trade volume is carried on the sea, which is strong indication that for any country aspiring to be an economic powerhouse it has to have a lion share of sea trade volume, and one of the proven ways in gaining economic success is by investing heavily in maritime infrastructure. The purpose of this paper is to give a brief description of marine traffic status in port of Mombasa which is the largest port in Kenya, highlight vital features of multi-billion Lamu port investment under taken by the Kenyan government and finally discuss the future of maritime industry and Kenyan seafarer.

Key words: Marine traffic, port index, Infrastructure, LAPSET, maritime industry.

1. Introduction

Kenya is a sovereign country located on Eastern African Coast between latitudes 5o 40'north and 4o 4'south and between longitudes 33o 50' and 41o 45' east. The country is bordered by Tanzania to the South; Uganda to the West; Sudan and Ethiopia to the North; Somalia and Indian Ocean to the East. It's the world's forty seventh largest country with an area cover of 580,367 square kilometers and a coastline 608 km long. The breadth of the territorial waters is 12 nautical miles as described in the Maritime Zones Act of 1991, Rev. 2012 with an Exclusive Economic Zone extending to 200 nautical miles into the Indian Ocean. Two languages unify the country; these are Kiswahili which is the national language and English, the official language. Kenya falls in the category of middle level economy with a GDP of US\$ 55.2 billion (World Bank, 2013) of which the maritime sector contributes to the GDP inform of tourism; that is marine national parks and reserve, historic sites in coastal areas; and international trade from its coastal ports. Kenya has a large potential of maritime resources which hasn't been exploited especially in the northern coast of Kenya in Lamu area, but with the recent push by the government to build a multibillion dollar Lamu port is a sure first step to realize its full potential. Moreover Kenya lacks specialized skilled personnel in maritime sector as

most education institutions offers diploma maritime course with an exception of one university which is offering degree course in marine engineering.

1.1 legal Administrations

There are three legal authorities which have been established by Kenyan law to oversee maritime activities in Kenya. These are; Kenya Ports Authority (KPA) which is mandated to maintain, operate, improve and regulate all scheduled sea ports situated along Kenya's coastline; Kenya Maritime Authority (KMA) is charged with regulatory oversight over the Kenyan maritime industry. KMA serves both as a port state authority under the Indian Ocean Memorandum of Understanding on Port state control and flag state authority; Kenya Marine and Fisheries Research Institute (KMFRI) is mandated to conduct aquatic research covering all the Kenyan waters and the corresponding riparian areas including the Kenyan's EEZ in the Indian Ocean waters.

2. Port of Mombasa

The port of Mombasa is the principal Kenyan seaport and the busiest port on East African coast with a port index of 73. Its ranked 5th in Africa and 120TH in the world having handled 1.01 million TEUs in 2014. The Port of Mombasa

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not only serves Kenya but is also the main gateway to the Eastern African hinterland countries of Uganda, Rwanda, Burundi, Democratic Republic of Congo and Southern Sudan and more over serves as a trans-shipment port to port of Dares salaam.

Mombasa port comprises of Kilindini Harbour and Port Reitz on the Eastern side of the Mombasa Island and the Old Port and Port Tudor north of the Mombasa Island. Currently it has 19 berths but expansions are still ongoing in the second container terminal to 23 berths by the year 2019 as shown in figure 1. The port has a length of 7 nautical miles, a width of 300 meters and maximum depth of 15 meters. The Port is a tidal port with a tidal range of 4.0 metres maximum at spring tide and 2.5 metres at neap tides. The port can accommodate vessels up to 13.71 metres draught and 300 metres LOA.

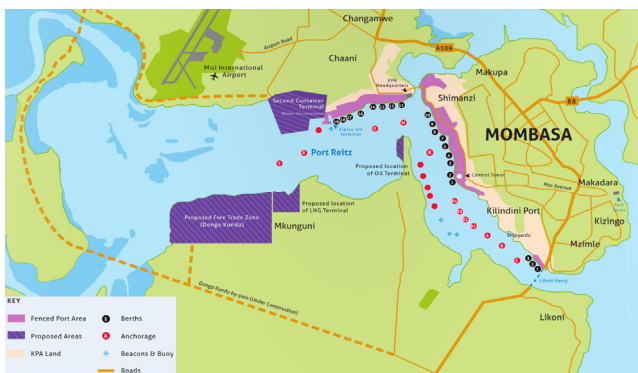


Fig. 2 Mombasa port plan and proposed new terminals.

2.1 Marine traffic status in Mombasa port

The Mombasa port is a multi-purpose port capable of handling all type of cargo including containers, general cargo, liquid and dry cargo and passengers. The sheltered waters of Mombasa port is characterized by three main type of traffic namely; in-bound traffic, out-bound traffic, local traffic and cross-traffic. The narrow channel especially at the entrance and kilindini harbour allows for one way traffic only at a time from entrance to berth or vice versa.

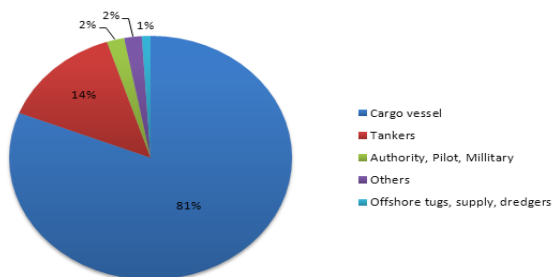


Fig. 3 Types of Vessels passing through port of Mombasa

2.1.1 In-bound Traffic

In-bound traffic consists of the vessels that are destined to stop at any of the facilities available within the Mombasa port waters. Close to 95% of in-bound traffic are cargo, container and tanker vessels flying foreign flag.

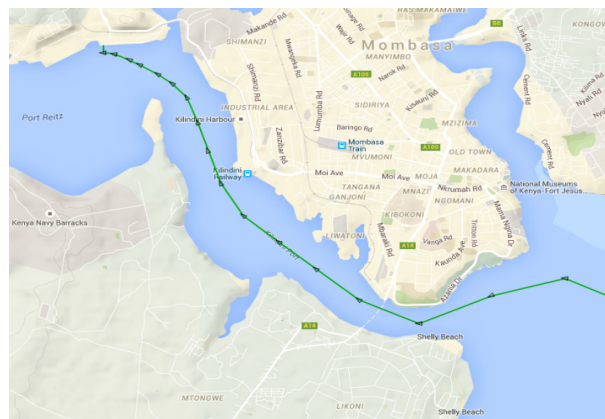


Fig. 4 Route of an in-bound vessel in Mombasa port

Vessel entering Mombasa port has to maneuver through two critical bends as shown in figure 3. That is through the bend at entrance of the Kilindini channel which has a narrow deep water channel and the bend caused by a headland when entering port reitz from Kilindini channel. The in-bound traffic consists of vessels originating from three major directions as shown in the density map; The west bound traffic comprises of vessels that originate from the mediterranean sea, the far east of asia, the middle east and from strait of Malaca; The north bound traffic that converge at the approach channel comprises of fleet that originate from South africa, Dares-salaam port of Tanzania and ports located in south-east coast of Africa.

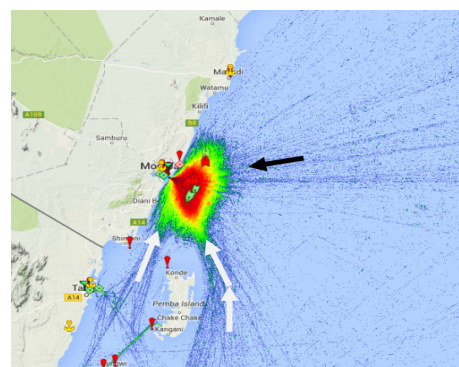


Fig. 5 Density map for In-bound traffic.

2.1.2 Out-bound Traffic

Out-bound traffic on the other hand consists of the vessels that are moving out of the port waters into the open Indian

Ocean. However, vessels moving out of the port still have to maneuver through two major bends at port reitz and at the exit of the channel. Out bound traffic diverges at open sea to the following directions; north bound traffic that comprises of Kenya Navy fleet that man the somali waters and vessels heading to port of Lamu and Mogadishu; East bound traffic that head to the far east, middle east and red sea; south bound traffic that heads to port of Dares salaam, South africa and ports located in south-east coast of Africa.

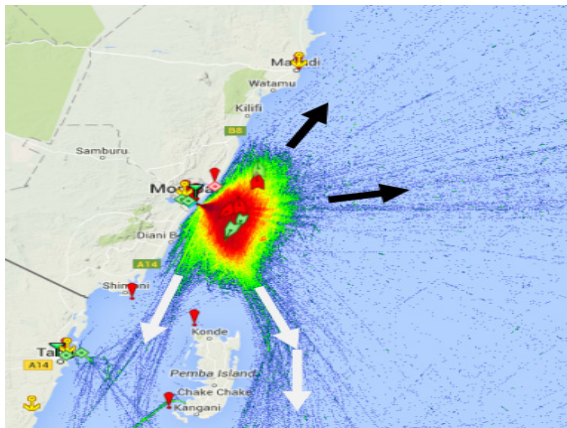


Fig. 6 Density map for out-bound traffic

2.1.3 Cross-traffic and Local Traffic

Port of Mombasa accommodates a number of authorities and industries that has stakes at maritime industry such as; The Kenya navy barracks at port reitz, Kenya Ports Authority, Marine engineering companies, Alpha Logistics fish company and Kenya Ferry Service. Therefore Local traffic in port of Mombasa is operated by these authorities and industries where in it consists of fishing vessels, tug boats, millitary vessels, pilot boats, dredgers and many more. Cross-traffic results from two ferry routes that operate in Kilindini channel namely Likoni ferry and Mtongwe ferry as shown in figure 6. The ferries transports vehicles and passengers between mainland and Mombasa island.



Fig. 7 Ferry routes in Kilindini harbour

Likoni ferry (black arrow) is the busiest and the most risky since its located near a bend at the port entrance and it operates the whole day, and moreover it's the main connection route between the mainland and Mombasa island. During peak hours two ferries operate in this route at an interval of every 10 minutes, but at off-peak hours only one ferry operate at an interval of every 15 minutes. Mtongwe ferry (red arrow) operate a peak hour's service for passengers only at Mtongwe channel linking Mombasa Island adjacent to Bandari College and Mtongwe South Mainland. The service runs between:- 05.30AM to 10.20 AM and 04.00 PM to 09.30 pm, at half hourly intervals.



Fig. 8 MV Kwale ferry crossing Likoni channel.

3. LAPSSSET Project

LAPSSSET (Lamu Port–Southern Sudan–Ethiopia Transport Corridor Project) is a multi-billion infrastructure investment project funded by three countries; Kenya, South Sudan and Ethiopia. LAPSSSET project was formed for two main purpose, to ease congestion at the port of Mombasa and to increase trade between Kenya and its neighbouring countries by providing healthy competition to its competitors especially the port of Djibouti and Dares salaam. The LAPSSSET project involves; Construction of a new mega-port in Manda bay, Lamu town; pipeline to deliver oil from South Sudan and nothern Kenya to a refinery near Lamu; A refinery and tanker terminal to handle the oil shipments; Over 1,700 kms of highways and railways linking Lamu with South Sudan and Ethiopia; Three airports; Tourist resorts in Lamu, Isiolo and Lake Turkana. The proposed New Lamu port site is located in Manda Bay to the North end of the Kenyan Coast, bordering Somalia. Proposed developing area falls within 40°52'00" to 41°00'00" in Easting and -2°13'00" to -2°16'00" in Southing.

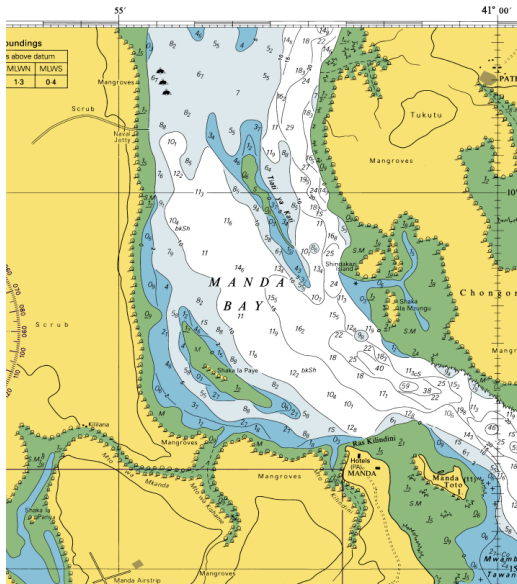


Fig. 9 Map showing location of proposed lamu port.

The proposed location is endowed with natural deep waters ranging from 10 meters to 60 meters deep, relatively flat land with heights ranging from 0 metres to 14 metres which is sparsely inhabited. Building of Lamu port commenced in may 2015, with the first three berths, which have a total length of 1,150 meters and 17.5 meters draught, expected to be finished by 2017-2018. The plan includes 32 berths with a total quay length of about 10 km with depths alongside of up to 18 meters; so the new port will be able to handle post-panama vessels. Upon completion, Lamu port will be the largest in Africa with a projected volume of 23.86 million teu by 2030.



Fig. 10 Architectural impression of the first three berths of Lamu port.

4. Conclusion

From the overview of the marine traffic status in port of Mombasa and the LAPSSET project we can deduce the following conclusions;

1. That cross traffic at Likoni ferry route poses the greatest risk of collision with traffic since it operates the whole day and more-so its located just next to the entrance bend into the channel.

2. Approach channel bends at the entrance and at the headland in port reitz pose a challenge in maneuvering of vessels.

3. Cross traffic at Mtongwe ferry route is not a great risk to traffic since it only operates during peak hours and more over its located at upper end of the channel therefore an oncoming vessel has full view of the ferry when approaching it and hence necessary pre-caution can be taken to avert any kind of incident.

4. We can also conclude that Kenyan seafarers and maritime professionals have a reason to smile as they will greatly benefit from the LAPSSET project through employment, related business opportunities and plenty of continuous research work opportunities.

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