



**REPUBLIC OF KENYA**

**NATIONAL REPORT TO THE 7<sup>TH</sup> SOUTHERN AFRICAN  
AND ISLANDS HYDROGRAPHIC COMMISSION MEETING**

**TO BE HELD IN**

**ST. DENIS, REUNION, 14<sup>TH</sup> – 17<sup>TH</sup> SEPTEMBER 2009.**

**PREPARED BY**

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## **1. INTRODUCTION:**

The Republic of Kenya has about 143,000 Square Kilometers of EEZ and about 11,230 Square Kilometers of internal Lake Victoria waters, besides several other water bodies . There is a major port at Mombasa City which handles bulk trade for local market and cargo for neighboring countries like Uganda, Southern Sudan, Rwanda, and Burundi. Besides the port is on a linear route along the east coast of Africa thus serves as a through route facility. A fully operational Regional Maritime Rescue Coordination Center (RMRCC) exists in the Port. The Centre covers Seychelles, Tanzania, Somalia and Kenya.

The above therefore illustrates the need to have maritime, hydrographic, geological, geophysical , meteorological and oceanographic data in our waters efficiently and effectively collected, shared and promulgated for purposes of;

- Making our waters safe for navigation which is an international obligation,
- Map/Chart preparation,
- Exploration and exploitation of natural resources/Protection of environment and
- Maritime disaster early warning and climate change monitoring
- Informed decision making among others.

Kenya is not yet a member of IHO but is committed to becoming a full member.

## **2. NATIONAL HYDROGRAPHIC AND OCEANOGRAPHIC OFFICE:**

Although Kenya already has a basic structured organization responsible for oceanographic and hydrographic surveys; it is not under a single directorate hence there is no coordinated central data base for the information available. This is held separately by the various involved parties, who are also geographically well dispersed.

At the moment a Hydrographic Survey Division, headed by a Senior Assistant Director of Surveys exists within the Survey Department in the ministry of lands. It is this division that provides the secretariat to the Kenya National Hydrographic Committee. Besides the Senior Assistant Director the office is manned by six Category 'B' hydrographic surveyors.

The country has other organizations and authorities who have trained and qualified hydrographers and oceanographers, such as Kenya Navy (KN), Kenya Marine and Fisheries Research Institute (KMFRI), Kenya Meteorological Department (KMD), Kenya Ports Authority (KPA), National Oil Corporation of Kenya (NOCK) and many others. It is therefore recommended that a new directorate of national hydrographic and oceanographic services be created to harmonize the activities.

### **3. HYDROGRAPHIC AND OCEANOGRAPHIC SURVEYS:**

#### **a) Recent surveys.**

In November/December 2007 Kenya carried out a multi beam survey under the management of a Task Force on the Delineation of Kenya Outer Continental Boundaries with a view of determining if Kenya had a claim to extension of its continental shelf in accordance to Article 76 of the United Nation's Convention on the Law of the Sea (UNCLOS). Gardline Survey Company of the UK was engaged to carry out the survey. From the survey it was determined that indeed Kenya has a claim and on 6 May 2009, the Republic of Kenya submitted to the Commission on the Limits of the Continental Shelf, in accordance with Article 76, paragraph 8, of the United Nations Convention on the Law of the Sea, information on the limits of the continental shelf beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured.

Around September 2007, a survey of Lake Victoria commissioned by the East African Community was carried out by Marin Matteknik from Sweden to survey marine vessels' safe sailing routes to the respective ports of the three East African Countries sharing the water mass. The said ports are Mwanza in Tanzania, Belle in Uganda and Kisumu in Kenya. The project was funded by UK and French governments.

A survey was conducted in 2005 after the 2004 Tsunami which assessed the arrival time of the Tsunami and its impacts covering the whole Kenyan coast. Airborne hydrographic survey from Lamu Island to Somali border was conducted from January-April 2005 and a further survey conducted in the same year for dredging purposes at Manda channel. Two dimensional marine seismic surveys in blocks L5 and L7 in off-shore Lamu was carried out by Woodside Energy company from Australia from 2004 to 2005 and Gippsl carried out seismic surveys block L6 off Ngomeni in Unganwa bay

### **b) New technologies and /or equipment**

Due to lack of services and equipments in the country, most of these surveys were conducted using outsourced facilities. The products and data streams from these surveys include;

- 2-D seismic data
- Bathymetric data
- Ocean currents speed data
- Wind speed and direction
- Navigational charts
- Multi-beam data
- Inundation zones

### **c) New ships**

The organizations which deal with hydrographic and oceanographic surveys in the country have no survey vessels of their own and therefore depend on outsourcing and ships of opportunity.

#### **d) Problems encountered**

Although adequate Human resource is available, it is clear that the KNHC has challenges in carrying out its mandate as far as equipment( both hardware and software) is concerned. Data dissemination from the collector to the user is a problem due lack of coordination amongst relevant organizations.

#### **4. CHARTS AND PUBLICATIONS:**

All Charts for the Kenyan administered waters are foreign prepared, principally by the UKHO and occasionally by contracted entities like Marin MattekNIK and some visiting foreign vessels. As a result the currency (up-to date) of these charts is not good and therefore we need assistance in the purchase of equipment to facilitate local production of charts. Issues of capacity and equipment do contribute to the status quo.

We are however pleased to report that a Memorandum of Understanding has been signed between the United Kingdom Hydrographic Office and the Ministry of Lands, Government of the Republic of Kenya for the production of charts, sailing directions and other products. Previously concerned institutions have been making and publishing materials relevant to their needs.

#### **5. MSI**

##### **a) Existing infrastructure for transmission**

The first phase of hydrographic capability, namely the collection and promulgation of urgent navigational safety information has been accomplished. The Kenya Maritime Authority is charged with the responsibility for Maritime Safety Information under the following;

- Co-ordination and dissemination of all MSI data
- Liaison with NAVAREA VIII Co-ordinator
- Liaison with UKHO
- Liaison with maritime agencies

KPA promulgates local navigational warnings by port VHF, through the pilots, and by E-mail to shipping agents. The KPA tide Tables for Lamu and Mombasa are based on British Admiralty predictions.

#### b) New infrastructure in accordance with GMDSS Master Plan

GMDSS Status: The Regional Maritime Rescue Coordination Centre (RMRCC) was commissioned on 5th May 2006 and is fully operational. INMARSAT Fleet 77 equipment is fitted and operating. This also includes NAVTEX equipment. The personnel to man this equipment were recruited and some have undergone the necessary training overseas.

Under the IMO requirements on Safety of Life at Sea (SOLAS) the Kenya Meteorological Department (KMD) has the responsibility to issue Shipping Broadcasts and Weather forecast for METAREA VIII(S), the region over Western Indian Ocean bounded by East African coastline between Longitude 39° to 55° E and Latitude 0° to 11° S referred to as region 8/7 under the WMO procedures daily at 11.30hrs and 23.30hrs. This bulletin includes a detailed statement on Storm/Wave Warnings, Weather Forecast, Surface wind, Visibility and State of the sea. Under this broadcast the Indian Ocean is divided into two regions thus region 8/7 WEST OF 50°E and region 8/7 EAST OF 50°E.

#### c) Challenges

Data collection and promulgation amongst the major Government agencies is still a problem. For instance to relay Meteorological information to the ships, KMD needs to use the GMDSS communication system, for the ships in the high seas, or NAVTex for ships in coastal Indian Ocean and inland waters. There is therefore need for KMD to liaise with KMA and KPA to acquire and establish the appropriate communication links between KMD, KMA, and the Ships plying in the Indian Ocean. However, the modalities for this are being worked out.

## **6. OCEANOGRAPHIC ACTIVITIES & CAPACITY BUILDING**

Member institutions have been implementing their own individual capacity building programmes. A number of scientists at KMFRI and KMD have received post graduate training in physical oceanography. The training has covered areas like Hydrodynamic Modeling and Estuarine Water Circulation. Thus there is sufficient capacity in oceanography as regards human resource but with short comings with equipment specifi-

cally for deep sea research. However there is an on going capacity building initiative through the Agulhas and Somali Current Large Marine Ecosystem, a project funded by Global Environment Facility (GEF).

The Kenya Meteorological Department has installed four Tidal gauges at Kilifi, Lamu, Shimoni and Malindi which measure both oceanographic and meteorological parameters and relay the collected data in real-time to the KMD headquarters for processing and archival.

At the end of 2006, 35 drifting buoys had been deployed in the West Indian Ocean in partnership with NOAA. Out of these 15 drifters were deployed in May 2005, while 20 were deployed in September 2006 to study surface currents and sea surface temperatures. Due to the drifting nature of the buoys, from the initial 15 only 3 are operational while out of the later 20 ,14 were operating at the end of 2008 . Arrangements are at an advanced stage to acquire 20 more drifting buoys in the coming year.

To give early warning on Tsunami and other maritime hazards and to monitor climate change and the associated impacts like the warming of the Indian Ocean which will affect the intensity of the monsoon requires:

1. urgently acquiring a deep-ocean assessment and reporting of Tsunami (DART) buoy for the Indian Ocean..
2. On human capacity building the KMD requirements include
  - Wave Forecasting and Modeling (High priority)
  - Ship routing services techniques (High priority)
  - Ship and Ocean observations, data coding and decoding (High priority)
  - Maritime communication practices including the GMDSS and NAVTEX (High priority)
  - Data management courses (Medium priority)

A number of officers from Ministry of Lands, Department of Surveys have been trained in Hydrographic Surveys (Category 'B'), Maritime Safety Information (MSI), a training in the use of Multi-Beam Echo sounder and Marine Cartography. The Department has also acquired Caris LOTS 4.0 Software and four Desktop Computers.

The Department needs

- Post Graduate training in Hydrography (Cat. 'A')

- More Marine Cartographers
- Training in Basic Hydrography
- The equipment to carry out surveys

KMFRI is hosting the National Oceanographic Data Centre as well as the Secretariat of the South West Indian Ocean Fisheries Project (SWIOFP), a World Bank Funded Project for Fish Stock Assessment in the Western Indian Ocean Region.

Geoscientists in the Ministry of Energy are trained in Geophysical Data Acquisition and many have been attached to Seismic Data Acquisition Vessels both on-shore and off-shore .Three have been trained in basic off-shore safety training and there is need for a hydrographer in the (Ministry of Energy) National Oil Corporation of Kenya.

KMA is currently utilizing Nautical Surveyors who have undertaken Hydrographic Surveying and Marine Cartography as part of their Nautical Science Study Programme (Bsc Nautical Science).More trainee surveyors are to undergo the same course in the UK starting this fall. There is need for specialized hydrographers to assist in wreckage identification and mapping.

## **7. S-55**

### **1) HYDROGRAPHIC SURVEYING**

This entails survey of all navigable waters including internal waters, out to the limits of EEZ .

Survey coverage, where:

A = percentage which is adequately surveyed.

B = percentage which requires re-survey at larger scale or to modern standards.

C = percentage EEZ which has never been systematically surveyed

	<b>A</b>	<b>B</b>	<b>C</b>
<b>DEPTHS&lt;200M</b>	<b>50%</b>	<b>35%</b>	<b>15%</b>
<b>Depths&gt;200m</b>	<b>85%</b>	<b>10%</b>	<b>5%</b>

### **a) CONCLUSIONS**

KMD has installed four tide Gauges at Shimoni, Malindi, Kilifi and Lamu used for monitoring both Meteorological parameters and Tsunami early warning as well as preparing shipping broadcasts for the Indian Ocean. KMFRI has two tide gauges installed at the ports of Mombasa and Lamu for monitoring sea level changes and to produce tide tables.

### **b) RECOMMENDATIONS**

- There is a need to have a National Hydrographic Office to coordinate Hydrographic and Oceanographic activities of all the stakeholders and users.
- To monitor Tsunami and Marine Hazards, a Deep-Ocean Assessment and Reporting Tsunami Buoy (DART) is urgently needed.
- Establishment of a communications Link between KMD, KMA and Ships for the uploading of Meteorological Information through NAVTEX and GMDSS.
- That refresher courses for pertinent institutions be able to keep up with emerging technologies.
- That the name Kenya National Hydrographic Committee be changed to Kenya National Hydrographic and Oceanographic Committee to reflect the diversity of its membership.

**Ahsante**

**Thank you**

