



REPUBLIC OF KENYA

KENYA COUNTRY REPORT TO THE 26TH INTERNATIONAL CARTOGRAPHIC
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BY

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1. GENERAL OVERVIEW

a. Introduction

The Republic of Kenya lies across the Equator on the Eastern seabed of Africa. She covers an area of approximately 610,000 square kilometers and shares boundary with Tanzania to the South, Uganda to the West, South Sudan to the North-West, Ethiopia to the North and Somalia to the East.

The country has about 600 kilometers of coastline and over 143,000 square kilometers of Exclusive Economic Zone. She has a total of approximately 11,230 square kilometers of inland waters which include lakes mainly located within the Great Rift Valley and 6% of Lake Victoria which she shares with Uganda and Tanzania. There are two main perennial rivers in Kenya the Tana and the Athi which both drain into the Indian Ocean.

The population of Kenya is projected to be approximately (National Census) people as per 2009 population census. She has a total fertility rate of 4.6 children per woman and annual population growth rate of 2.75%. Kenya is a religious country whose population predominantly Christian at 85% and 15% Muslim.

b. Ministry of Lands, Housing and Urban development

The Ministry of Lands, Housing and Urban Development was established through the presidential circular No. 1 of 2013 to provide Land, Housing and Urban Development Services.

ROLE, MANDATE AND FUNCTIONS THE MINISTRY

- The Ministry derives its mandate from the executive order No. 2 of 2013. However the portfolio responsibilities have outlined include:
- Lands Policy Management
- Physical Planning
- Land Transactions
- Survey and Mapping
- Land Adjudication
- Settlement Matters

- Rural Settlement Planning I.e. Eco-Village
- Land Reclamation
- National Spatial Data Infrastructure
- Land Registration
- Land and Property Valuation Services
- Administration of Public Land as Designated By The Constitution
- Land Information System
- Housing Policy Management
- Public Works Policy and Planning
- Development and Promotion of Affordable Housing Policy
- Management of Building and Construction Standards And Codes
- National Secretariat for Human Settlement
- Management of Housing for Civil Servants and Disciplined Forces
- Development and Management of Government Housing
- Development and management of public buildings
- Public office Accommodation lease Management
- Public works planning
- Maintenance of inventory of government property
- Overseeing Provision of Mechanical and Electrical (Building)Services to Public Building
- Supplies Branches and Coordination Of Procurement Of Common-User Items By Government Ministries
- Registration of Contractors and Materials Suppliers
- Registration of Civil, Building and Electro-Mechanic Contractors
- Registration Of Architects and Quantity Surveyors

The Lands Directorate in Ministry is structured into five Departments through which it executes its functions viz:

- i. Department of Administration;
 - o Land reform transformation
 - o Administration and Planning (*Management and Support Services*)
 - o National Land Information Management System (NLIMS)
- ii. Department of Surveys;
 - o Standardisation of Geospatial Names
 - o International boundary surveys and maintenance
 - o Geodetic Controls
 - o Mapping

- Subdivision of Geospatial names
 - Cadastral Surveys
 - Adjudication Surveys
 - Hydrographic Surveys
 - Geospatial Information Services
 - Kenya National Spatial Data Infrastructure
 - Kenya Institute of Surveying and Mapping
- iii. Department of Lands;
- Land Transactions
 - Land Registration
 - Valuation
 - Administration of State and Trust Land
- iv. Department of Physical Planning
- National and Regional physical planning
- v. Land Adjudication & Settlement
- Settlement matters
 - Land Adjudication matters

c. Department of Surveys

The Department of Surveys is the sole Government Agency for Surveying & Mapping and its activities are defined in the Survey Act, Cap 299 of the Laws of Kenya.

The Headquarters of the Department is in Nairobi, with representation in all the counties 80 of the administrative Districts for effective service delivery.

Mission

The mission of the Department is: "To produce, maintain and distribute accurate geographical data to ensure security of land tenure and territorial integrity of the Nation".

Vision

To produce, maintain and disseminate current and accurate geospatial information to ensure security of land tenure, social economic development and territorial integrity of the Republic of Kenya.

For efficiency and effectiveness of service delivery, a six (6) Scheme of Services were approved by the Ministry of State for Public Service, Office of the Prime Minister, and as a result the Department has been restructured to be in compliance the schemes in order to meets its mandates through the following divisions;

- 1. Cartography Division;** function involves:-planning, designing, compiling, drawing, customizing, producing, publishing and revising maps, plans and charts; geospatial data collection, modeling and verification; control of map dissemination; acquisition, compilation and publication of National Gazetteer on Geographical Names; planning, designing, compilation, drawing, production and publication of the National Atlas; maintaining and updating land survey and mapping records; costing of Cartographic projects; and development of human capacity in Cartography.
- 2. Geospatial Data Management Division;** function involves:- processing, preserving, maintaining, cataloguing, storing, archiving and retrieving geospatial data; creating and updating geospatial files, cards and registers; developing geospatial information policies, standards, procedures and user needs assessment; converting, analysing and modeling geospatial data; creating, maintaining and updating geospatial database; creating and publishing metadata; updating and maintaining geospatial data clearinghouse; internet mapping, design and management of geospatial information access; securing, standardizing, sharing, disseminating, estimating and costing of geospatial information;. Planning, costing and implementing geospatial data management projects.
- 3. Land Surveying Division;** function involves:- astronomical observations, gravity and magnetic measurements; processing, analysis and dissemination of geospatial data; establishment of Very Long Baseline Interferometry (VLBI); computation and analysis of crustal movements; angular and linear measurements; trigonometrical heightings; triangulation; computations of twin-station problems; establishment and

re-establishment of trigonometrical points; photo identification; pre-flight-marking of photo controls; establishment and re-establishment of control points; observation of level lines; traversing and tacheometry; engineering, cadastral, adjudication, geodetic and topographical surveys; interpretation and identification of photo control points; geodetic leveling; national and international boundaries surveys; estimation and costing of survey projects; and maintenance of survey instruments; and human capacity development in land surveying.

4. Photolithographic Division; function involves:- enlargement and reduction of imageries, maps, plans and charts; preparation of processing solution; image capture; processing of films; print origination, planning and designing manuscript; text generation; colour separation and proofing; preparing reversals and plate-making; printing of imageries, maps, plans charts and other materials; research and development on emerging printing, survey and mapping techniques; setting standards for printing, survey and mapping equipments and materials; testing, calibrating, servicing, upgrading and maintaining printing, survey and mapping equipments; and estimation and costing of printing projects; and photolithographic mapping human capacity development.

5. Photogrammetric Division; function involves:- carrying out flight planning, aerial photography and satellite imagery acquisition; checking of imagery in conformity with specifications; compilation of flight index and imagery overlap diagrams; ortho-photo and photo-mosaics processing and imagery rectification; photo control preparation; aerial triangulation and adjustment; topographical, engineering and cadastral stereo feature extraction; generation of thematic data outputs; map revision; acquisition, processing, digitization and maintenance of adjudication boundary records; maintenance and upgrades of photogrammetric instruments; estimating and costing of photogrammetric projects; establishment and revision of photogrammetric production standards in

line with other existing geographic information standards; and human capacity development in photogrammetry.

During the financial year 2012/2013 Aerial and LIDAR photography was carried out for nineteen (19) Urban Areas

6. Hydrographic Division; Function involves collecting maritime data which includes the following:- conducting hydrographic survey, planning and pre-cruise logistics; carrying out echo sounding for water bodies; measuring tides, water temperature, pressure, tidal currents and salinity; marine crustal and deformation monitoring surveys; sub-bottom profiling, undertaking coast line surveys and mapping of aids for water navigation; modeling, verifying and controlling Hydrographic data; producing and publishing updated international hydrographic charts and notices; maintaining hydrographic equipment; estimating and costing of hydrographic mapping projects and human capacity development in hydrography.

Further, two units have been established as follows;

7. Geodesy and Astronomy Unit; with the development of space technologies, a need arose to the establishment of this unit which is expected to develop to a fully fledged Division. The unit functions as a research, data collection, processing and dissemination of Geodesy, Remote Sensing, Astronomical and other space related data. The Kenya National Space Agency (KENSA) is in its formative stage with a policy having reached the final stages. The Geodesy and Astronomy Division will form a strong linkage between Survey of Kenya and the Agency.

8. Geodetic, Technical, National and International Boundaries Unit; that deals with establishment, maintenance of the national geodetic frame, publication of survey related journals, inspection, surveying and maintenance of national and international boundaries.

The Department has a modern training Institute;

9. Kenya Institute of Surveying and Mapping (KISM); that provide trained manpower in the fields of Surveying and Mapping. The institute offer training in Land Surveying, Cartography, Photogrammetry and Remote Sensing and Map Reproduction (Printing) at diploma and higher diploma levels.

Workforce

The department has a work force of 973 technical officers and 473 which include skilled survey support staff (previously known as “staff men”) as follows;

i. Land Surveyors	620
ii. Cartographers.....	222
iii. Photolithographers.....	51
iv. Photogrammetrists.....	52
v. Geospatial Management officers.....	10
vi. Hydrographers.....	12
vii. Engineers.....	3
viii. Librarians	3
ix. Support Staff.....	473

2. MAJOR POLICY AND LEGISLATIVE ISSUES IN THE LAND AND MAPPING SECTOR

Over the years, policy matters within the land sectors have been guided by various legislations. In the year 2004 the formulation of a comprehensive National Land Policy commenced. The draft National Land Policy was approved by Cabinet in 2009 and gazette as Sessional paper no. 3 of 2009.

The National Land Policy is now a key tool in guiding land reforms in the country. It also informed the preparation of the Constitution of Kenya, 2010 on Land issues.

The National land Commission has been established to administer all public lands in the country. The New Land Act, 2012 and Land Registration Act, 2012 have been enacted to provide legal framework for management and registration of land in Kenya.

3. MAJOR TECHNICAL ISSUES IN THE LAND AND MAPPING SECTOR

a) Geodetic Services

Geodetic controls

Geodetic control surveys involve accurate determination of ground positions and heights above mean sea level for points suitably distributed throughout the country.

Currently the Department is engaged in the process of Modernization of the National Geodetic Reference Frame. The process involves establishment of a Zero Order Geodetic Network consisting of twenty five (25) reference stations approximately 200 km apart and a First Order Geodetic Network consisting of seventy five (75) reference stations approximately 70 km apart. Based on the two networks, a Continuous Operating Reference Stations' (CORS) Real Time Kinematic (RTK) Network will progressively be set up with its control centre based in Nairobi.

To date twenty (18) Zero Order reference stations have been constructed. By end of the year 2012 Zero Order observations campaign was undertaken including some International Geodetic Service (IGS) stations in Africa and two African Geodetic Reference (AFREF) stations in Kenya and Ethiopia. The exercise resulted in the establishment of a new **National Geodetic Datum KENREF – 2012 constrained to ITRF2008/IGb08 epoch 2012-11-13.**

The project is being undertaken in collaboration with *Lantmäteriet* (the Swedish mapping, cadastral and land registration authority) and will go a long way in supporting geo-referencing all parcels of land in the country as per the requirements of the new Kenya Land Registration Act, 2012.

International Boundaries

The Department is responsible for inspection and maintenance of national and international boundaries in liaison with the neighbouring States.

During the year, Kenya-Ethiopia Joint Technical Boundary Committee of Experts undertook the inspection and maintenance of Sector 1 of the common International boundary at Lake Turkana.

Further, the Directors of Surveys from Kenya and Tanzania held a Joint boundary meeting and agreed that the inspection and maintenance of the common boundary west of Lake Victoria should commence as soon as possible.

b) Remote Sensing

This involves planning, acquisition and provision of aerial photographs for;

- Preparation of large scale base maps.
- Preparation of large scale photo enlargements for adjudication production of maps for registration of law.
- Various specialized expert uses such as forest, land use, soil conservation and human settlement.
- Quality control of all photography from all public organizations.

Capacity has been enhanced for use of remotely sensed data through acquisition of five photogrammetric work stations.

c) Mapping

The Department is responsible for the production and revision of the following;

A. Basic Topographical maps at scale of 1:50,000

- B. Derived Topographical maps at the scale of 1:250,000.
- C. Thematic and special purpose maps depicting particular themes e.g. tourist facilities, medical facilities, physical features, rainfall, administrative boundaries; aeronautical charts, national parks etc. to satisfy diverse requirements of the users.
- D. The National Atlas of Kenya.
- E. Large scale Mapping of Urban areas, mainly for the City of Nairobi, all Municipalities and other major towns for infrastructure and utilities development.
- F. Compilation of the national Gazetteer of Geographical Names.
- G. Sale of Maps

With the advent of new and emerging technology, the Department has embarked on production of basic topographical maps at scale of 1:10,000.

d) Cadastral Services (Fixed and General Boundaries)

The Department is responsible for the execution, examination, approval and authentication of all cadastral surveys in order to provide Registry Index Maps (R.I.M's), Preliminary Index Maps (PIDs) and Deed Plans required to support land registration and issuance of land titles under the Government Lands Act, (Cap. 280), the Land Titles Act (Cap. 282), the Registration of Titles Act (Cap. 281), the Registered Land Act (Cap. 300) and other land related Acts.

i. Cadastral Surveys

This year, the department approved and authenticated 1,900 survey plans and 14,135 deed plans. 23,223 parcels amended on Registry Index Maps (R.I.Ms) were amended and 6,108 parcels processed under settlement schemes.

ii. Adjudication Surveys

During the year, the Department prepared Preliminary Index Diagrams (PIDs) containing 26,838 parcels, Registry Index Maps (RIMs) containing

17,069 parcels and processed 3,212 mutation surveys containing 16,784 new parcels which were reflected on existing RIMs after amendments. 52 old and mutilated RIMs and PIDs were also retraced onto new drafting films. The department published 17 adjudication sections.

The department performed digital cataloging of 281 film rolls, vectorised 11 sheets of Malindi town, rasterised 149 existing large scale base maps, established 20 photogrammetric ground control points for Isiolo and prepared 45 analogue base maps.

e) Hydrographic Services

Survey department is committed towards achievement of the goal of providing up to date, complete and reliable bathymetric data in the coastal zone of Kenya. The Department has made great strides towards its capacity building. In terms of technical capacity, the Hydrography Division of the Department currently has 19 members of staff, comprising an Ag. Senior Assistant Director, 10 Category "B" trained Hydrographers, seven surveyors and four Cartographers.

In terms of equipment, the Division has acquired one single beam echo sounder, four tide gauges, GPSs, a survey boat and a number of workstations. It is in the process of procuring more equipment including boat accessories, a multibeam echo sounder and hydrographic software.

The department collaborates with many organizations both nationally and internationally. At the national level, the Department provides Chair and Secretariat to the Kenya national Hydrographic and oceanographic Committee (KNHOC). It is also the central coordinator of activities of other agencies involved with hydrographic activities. The Department carries the onus of ensuring that the country's navigation charts are kept up to date and that the country adheres to the Safety of Life At Sea (SOLAS) regulation, to which the country is a signatory.

The Department also cooperates with organizations such as Kenya Maritime Authority, Kenya Ports Authority, Kenya Navy, Kenya Marine Fisheries and

Research Institute, Ministry of Energy, Kenya meteorological Department and the Regional Centre for Mapping of Resources for Development, among others; in order to ensure that relevant data is collected and used in updating the country's navigation charts. It has two Hydrographers seconded to the Taskforce on delineation of Kenya's Continental shelf.

Internationally, the Department has through a memorandum of understanding between the Ministry of Lands and the United Kingdom Hydrographic office, worked together since 2009 to ensure that safety of navigation in the country is maintained through production of Charts and other Nautical Publications. Other international organizations with which the department cooperates include:

1. Intergovernmental Oceanographic Commission (IOC) through the Coast Map IO project, geared towards development of mitigation capacity to ocean-based extreme events such as tsunamis.
2. Western Indian Ocean Marine Electronic Highway (WIOMEH) for acquisition of hydrographic data and Electronic Navigation Charts (ENCs) for selected Ports and training of more staff as a way of capacity building.
3. International hydrographic Organization (IHO) through the Southern Africa and Islands Hydrographic Commission (SAIHC) to which Kenya is an observer member. Through concerted efforts of the Department, the Government has now recognized the importance of full membership to IHO and made firm commitment to attain full membership.
4. International Maritime Organization (IMO) to meet the country's SOLAS legal obligations.

Japan Hydrographic and Oceanographic Department (JHOD), United Kingdom Hydrographic Office (UKHO), Nippon Foundation, JICA, IHO and IMO have continued to provide capacity building, for Hydrographic Surveyors.

The Kenya Government in collaboration with the International Maritime Organization has established a regional Maritime Rescue and Coordination Center at the port of Mombasa. It is operated by the

Kenya Maritime Authority, and covers the territorial waters of Kenya, Tanzania, Seychelles and Somalia.

f) Geospatial Information Systems

The advancement of information and communication technology has caused a rise in the demand for digital geo-information and solutions. The department meets this demand by use of the vast developing GIS Technology to transform spatially referenced data into actionable intelligence through;

- Geo-spatial data collection in respect to pre-defined objectives
- GIS data development and management in accordance to the Kenya National Spatial Data Infrastructure(KNSDI) Standards
- GIS data visualization, presentation and dissemination
- Provision of technological solutions to various business, economical, social and political problems by undertaking simple to complex GIS data modeling, analysis and presentation

The Department is undertaking conversion and cataloguing of existing Cadastral and topographical maps into digital format to create a National Digital Cadastral and Topographical Data Base (NCDB &NTDB) to ease the issues of access, sharing and search (dissemination).

Over the year the department;

- Prepared Digital Elevation Models (DEMs)and Digital Terrain Model (DTMs) for topographical maps at scale 1:250000 for Ldwar, Didinga, Maralal, Rumuruti, Kapenguria, Moroto, Garba Tula, Narok, Hola and Voi.
- Prepared Topo-cadastral maps for various development projects mainly in Nairobi including road construction, water supply and residential plans for high income areas and informal settlements.
- Initiated the creation of a National Topographical Data Framework (NTDF) for urban areas. Mombasa, Malindi and Lamu have a seamless database in the final stages.

- Developed the National Address System GIS in compliance to the city of Nairobi for Nairobi Airport Service (NAS) project.
- The department in collaboration with *Lantmäteriet*(the Swedish mapping, cadastral and land registration authority)is running a pilot project for the establishment of Parcel Identification in Kenya

g) Photolithography

During the year the department printed 10,876 copies of maps, 23,500 copies of dyeline prints, 711 photographic prints, 133,000 sets of mutation forms, 191 Cash Register books, and 43,000 copies of stationeries.

In the same year the Division has also procured 10 Plan Printers, 31 Map filing cabinets one (1) two-colour offset printing machine and two(2) servers

4. INFRASTRUCTURE DEVELOPMENT

a) KNSDI

The KNSDI Unit is the Secretariat of the National Initiative on implementation of Spatial Data Infrastructure with the objective to support spatial data standardization, discovery, sharing and dissemination.

The NSDI initiative was started in the year 2001. Since then various stakeholder workshops have been held and a draft Kenya National Spatial Data Infrastructure Policy prepared.

The KNSDI Unit is continuing to undertake;

- Metadata preparation
- Maintenance of the clearing house
- Revision of KNSDI manuals
- Data quality control, with emphasis on application of KNSDI standards and technology transfer to GI producers
- Preparation of specification as a tool for Quality Assurance and control for Geographical Information producers nationally.
- Preparation of the cadastral and topographical databases.

b) KNSDI COMPLEX

The construction of Kenya National Spatial Data Infrastructure (KNSDI) complex building is 90% to its completion which will be housing among others, the KNSDI Activities.

c) IT INFRASTRUCTURE

The Department has put in place a Local Area Network with Internet connectivity to serve all users. Means of connecting the Ministry Headquarters and the Survey Field Headquarters (approx. 10 Kilometers apart) via a Wide Area Network is ongoing.

5. HUMAN RESOURCE, EDUCATION AND TRAINING

a) Departmental Training Unit

During the year, the department trained fifty five (55) senior officers on management skills, twelve (12) Higher Diplomas, nine (9) on ISO quality management and four (4) are pursuing Masters Degrees in our local Universities. Fifteen (15) officers underwent for a two weeks training on topographical mapping and LIDAR photographic imaging technics in Korea

b) The Kenya Institute of Surveying and Mapping

The Kenya Institute of Surveying and Mapping was started in 1996 to provide trained manpower in the fields of Surveying and Mapping. The institute offer training in Land Surveying, Cartography, Photogrametry and Remote Sensing and Map Reproduction (Printing) at diploma and higher diploma levels.

This year, there are 300 and 18 students pursuing diploma and higher diploma in the above areas.

Kenya Institute of Surveying and Mapping collaborates with Japan International Cooperation Agency (JICA) to run the Third Country Group Training Courses, which provides training to Officers in the Eastern and Southern Africa countries. Currently, Kenya Institute of Surveying and Mapping is conducting the Geographical Information Science (GISc) course, where 15 participants were trained in August, and, the Application of the Land Observing Satellite (ALOS) in Mapping course, where 32 participants were trained in February and August this year.

The institution also holds short-term courses, mainly in Information Technology (IT), Geo-Information Systems (GIS) and Remote Sensing Technology to meet the required needs of the users in the country.

6. COOPERATION WITH RCMRD

a) Map Revision

The division has been working closely with the RCMRD in areas of topographic map revision using remote sensing data.

b) KENREF

The RCMRD has been a very active participant in this process and is expected to provide for the harmonization of the Kenya Geodetic Reference Frame (KENREF) and the African Geodetic Reference Frame (AFREF).

7. PARTNERSHIPS, BILATERAL, REGIONAL AND INTERNATIONAL COOPERATION AND AFFILIATIONS

a) **JICA**

JICA is a key development partner and over the year continued its support in areas of Human resource development training and mapping.

b) **SIDA**

SIDA, through *Lantmäteriet* (the Swedish mapping, cadastral and land registration authority), has continued to give her support on land reforms. To be noted are the following ongoing activities which are key in setting up a National Land Information Management System;

- Modernization of Kenya Geodetic Reference Frame
- Development of business architecture
- Capture of safeguarded paper records into a Document Management system
- Establishment of Parcel Identification System
- Development of Cadastral Information System.

c) **KOICA**

Through international cooperation agreement between the Government of Kenya and Korea International Cooperation agency (KOICA), the creation of Large Scale Data Infrastructure for an area of 600sq. km. in Lamu Island and environs. The area includes the proposed sites of the second sea port and new airport of Lamu. Data and 150 maps at the scale of 1:5,000 of the area will be published and printed.

d) **ESRI-EA**

The department is collaborating with a software developer; Esri-EA has provided technical support in customizing the symbology, template and map specifications for the national digital basic topographical map production as per the Kenya National Spatial Data Infrastructure (KNSDI) standards. Training staff to enhance skills for the production has been ongoing.

The department received a Special Achievement Award in GIS as one of the 140 recipients from among 170,000 participants worldwide.

8. CHALLENGES IN THE MAPPING SECTOR

a) **Data Acquisition**

Geospatial data is important for any country that is aspiring to achieve desirable social economic development; however. The Department has the challenge of keeping up with the demand for this data which must be up to date and accurate and is considering ways of improving tools and methods of data acquisition.

b) **Data Processing**

Adequate skills and equipment are required to convert the acquired data to actionable intelligence. The department has continued to train its workforce as well as procurement of modern equipment to deal with the challenge.

c) **Data Dissemination**

The products of the department are of no use unless they reach the intended audience. Over the years the manner of disseminating these products has been changing with the change in technology. The department is addressing this challenge by investing in the National Spatial Data infrastructure and modern printing press.

9. FUTURE ACTIVITIES.

- **Administration**

The Department has plans to train heads of district survey offices on managerial and supervisory skills and team building. Plans are ongoing for change of management to be in line with the new County Governance structure after next year's General election.

- **Geodetic**

The modernization of Kenya Geodetic Reference Frame is on-going and is expected to be completed in the near future.

- **Remote Sensing**

The department is in the process of modernizing its remote sensing laboratories.

- **Cadastral**

The Ministry is undertaking a programme on computerization of its paper records in the process of developing a GIS-based National Land Information System. Computerization activities in the Cadastral services in the department will be crucial in the success of this programme.

- **Mapping**

The department is undertaking to prepare large scale data framework for for all urban areas in the country. Data has been produced for Nairobi, Mombasa, Malindi, Lamu and Thika.

The Editorial and Technical Committees for production of the sixth edition of the Kenya National Atlas have initiated for collection of data from authors. The National Standard Names Gazetteer will list all place names with the geographical coordinates and forward to the Standing Committee on Geographical Names for approval.

- **Hydrography**

The department will continue training of personnel in hydrographic surveys and acquiring equipment, pursuing International Hydrographic Organization (IHO) membership, customizing the acquired survey boat to carry out hydrographic surveys. There plans to carry out feasibility studies to assess the tide gauges installed along the coast to establish the

possibility and site for new installation sites and data accessibility and availability. In addition, the department is also planning to carry out the delimitation of the Contiguous Zones of Kenya in the Indian Ocean and intends to hold Kenya National Hydrographic and Oceanographic Committee (KNHOC) and Southern Africa and Island Hydrographic Commission (SAIHC) for the purpose of development of capacity in the Hydrographic Service in Kenya. There are also plans to create data bases for existing Nautical Charts in Kenya.

- **GIS**

For the compliance of digital data in a GIS environment, the department will continue with the development of a National Topographical Database and related GIS analysis products.

- **Photolithography**

The department plans to modernize its printing press in order to cope with the changes in technology and become more competitive.

