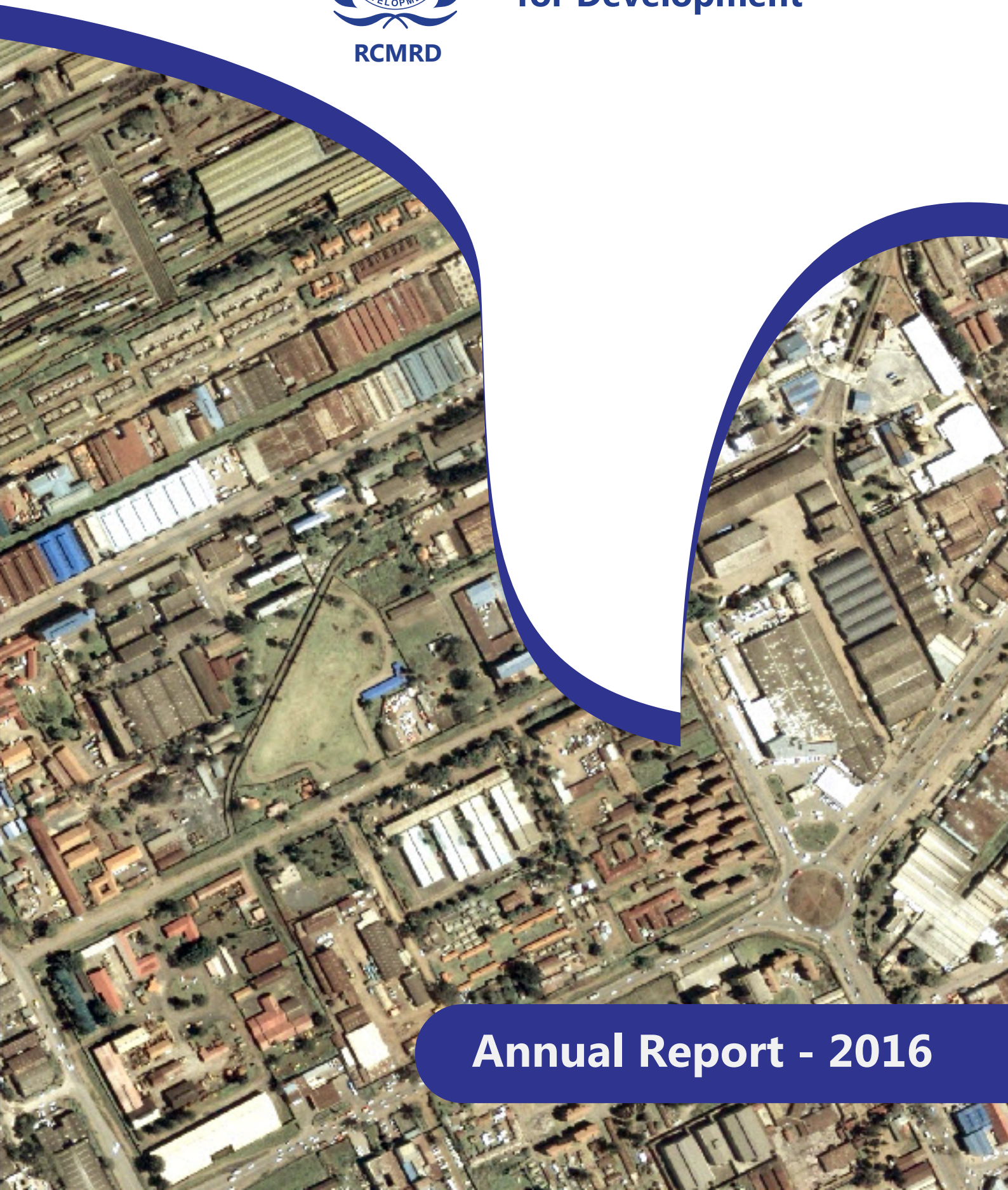




**RCMRD**

# **Regional Centre for Mapping of Resources for Development**



**Annual Report - 2016**

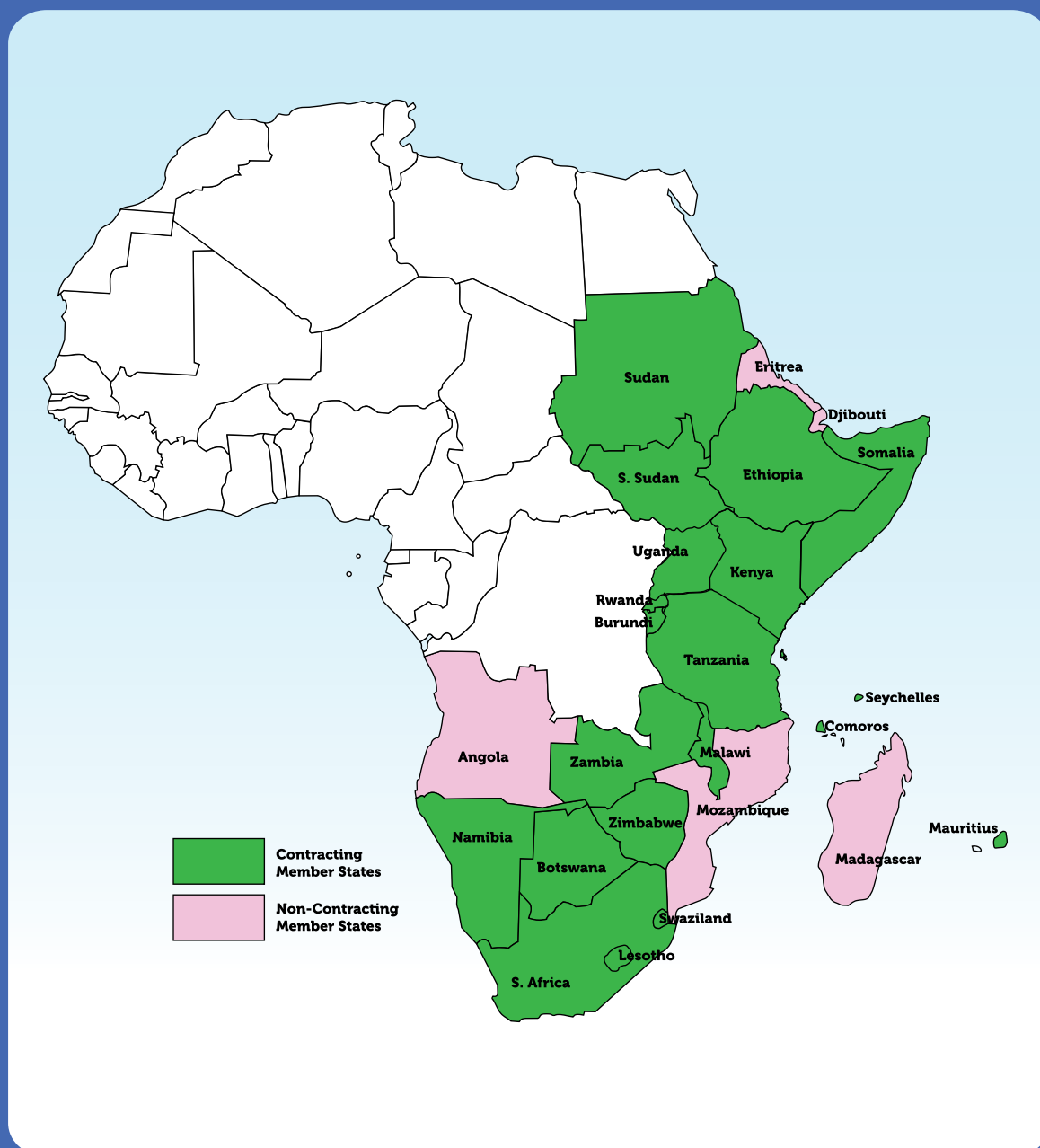


RCMRD

## Our Vision

To be a premier Centre of excellence in the provision of geo-information for sustainable development in the member States and beyond.

## Member States





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# Letter of Transmittal from the Director General

In accordance with the provisions of Article VI, Sub Article C of the Agreement establishing Regional Centre for Mapping of Resources for Development (RCMRD), on behalf of the management, I have the honour and privilege to submit to Members of the Governing Council and partners, the Annual Report of the Centre for the period from 1 January to 31 December, 2016.

This Report describes the activities of the Centre during the year. This report shares the progress made in the implementation of a range of programmes. It also presents a review of the performance of each of the Centre's Departments.

In addition, our management team continues to receive the support of the Member States and the cooperating partners. This not only underscores the unflagging commitment of the Member States to RCMRD's ideals, but also the confidence which our cooperating partners have in our institutions.

We are more than persuaded that this spirit of commitment, confidence and cooperation will prevail as we strengthen the Centre's agenda and build a stronger foundation for promoting sustainable development in the member States through generation, application and dissemination of geo-information and allied ICT technologies, products and services.

Honourable Members of the Governing Council, please accept the assurances of my highest consideration and esteem.



**Dr. Emmanuel Nkurunziza**  
Director General





# Introduction

It is with great pleasure that I present the RCMRD 2016 Annual Report. The year 2016 marked the second year of the implementation of 2015-2018 Strategic Plan that was approved by our Conference of Ministers in November 2014. The Strategic Plan outlined the Centre's Vision requiring the Centre and its stakeholders and partners to stretch their future expectations, aspirations and performance is "To be a premier Centre of excellence in the provision of geo-information services to member States and beyond." The RCMRD Mission statement expresses its fundamental purpose and business as "To promote sustainable development in the member States through generation, application and dissemination of geo-information and allied ICT technologies, products and services."

I am pleased to report that, working closely with member States and our partners we have made significant progress towards fulfilling our mission. The 2016 work plan focused on the building of capacity of member States institutions to generate information for planning and decision support to tackle environmental and resources issues in order to accelerate the social and economic development of our peoples. This annual report highlights the activities undertaken in 2016 in particular implementation of projects, customer tailored applications of geo-information training and IT courses, research and development, and infrastructure and staff development at RCMRD.

The Centre continued to engage member States and Partners by providing services and increasing its visibility and presence in the region. In this regard workshops, training programmes and visits were held in member States and five partnerships were made to help the Centre implement its Strategic Plan.

In 2016, more than 1,000 nationals from member States and other African countries were trained in different geo-information training programmes. In project implementation we carried out 29 projects. The projects demonstrate novel applications and the increasing role of geo-information in national development. Among the projects implemented included degradation and forest monitoring, production of Hazards maps for Turkana, Garissa and Tana River counties in Kenya, Malawi Population and Housing Census mapping and climate adaptations tools for East Africa region.

In the area of research four activities were undertaken; analysis of Soil Moisture using Sentinel Satellite Data in Africa, generation of population data using satellite imagery, integrating Geospatial and Statistical Data

to Support Transparent Land Valuation is on-going under the framework of UN-GGIM: Africa-WG5 and topographic map revision using Sentinel 2 data.

In 2016 we serviced over 400 pieces of survey and mapping instruments for five member States namely Ethiopia, Mauritius, Tanzania, Botswana and Kenya.

We have undertaken several initiatives to improve the quality of our services. In 2016, we completed the organization Structure and Human Resource Review. The organizational review ensures that our institutional structure is aligned to deliver the objectives of Strategic Plan and improve the efficiency, effectiveness and impact in contributing to sustainable development in the Member States. We continued with implementation of the ISO 9001: 2008 Quality Management System (QMS) certification. QMS will steer the RCMRD in achieving customer/member States satisfaction by continually improving its processes, products and services to ensure they meet customers' requirement. The mid-term review of the Strategic Plan provides direction to further improve the services provided by the Centre in the next two years 2017-2018.

RCMRD values partnerships and using existing synergies between institutions to achieve its mission. In this regard we signed MoU's with National Geomatics Centre of China (NGCC), MoU with Esri Eastern Africa Limited (ESRI EA), United Nations Institute for Training and Research (UNITAR) amongst others.

The 50th Governing Council and 10th Conference of ministers of RCMRD was held in November 2016 in Kigali, Rwanda. Seventeen Member States and the Economic Commission for Africa attended. The Governing Council reviewed and approved the Centre's 2017 Work Plan and Budget. It also reviewed and approved important policy documents that are expected to improve corporate governance and institutional development of the Centre. The Conference of Ministers also approved the Midterm review of our 2015-2018 Strategic Plan.

In conclusion, I wish to most sincerely thank RCMRD staff, our member States, development partners and clients for their support and cooperation that significantly contributed to our achievements in 2016. I also take this opportunity to appeal to them for their continued support as we tackle the challenges in the coming years and achieve our aspirations to be a premier Centre of excellence in the provision of geo-information services to Member states and beyond.



# TECHNICAL SERVICES DEPARTMENT

During the reporting year 2016, the Department successfully implemented various activities that were included and approved in the 2016 work plan. The Annual work Plan was itself derived from the 2015 – 2018 Strategic Plan. The Department provided services to Member States and other stakeholders during the reporting year. The services were grouped into the following categories Project Implementation, Capacity Development, Advisory, Research and Development (R&D) and Data Dissemination.

## Project Implementation Service

The Department successfully implemented a record of over 19 projects in 2016. Each project had its own unique nature and characteristics with regard to the data input, implementation methodology, and output/deliverable packaging. The major ones are the following:

### Malawi Population and Housing Census Mapping – Technical Support and Imagery Provision

This project was awarded to the Department during the reporting year and will take one year to implement (July 2016 – July 2017). The following are achievements on this project;

- Provision of high resolution satellite imagery for the entire country at 50cm resolution to aid in dwelling frame capture and Enumeration Area Demarcation,
- Comprehensive mapping exercise to create a geographic framework for Enumeration Areas,
- Dwelling frame capture and enumeration area demarcation for four districts was d and field verification for the same was completed,
- Nine districts were mapped.

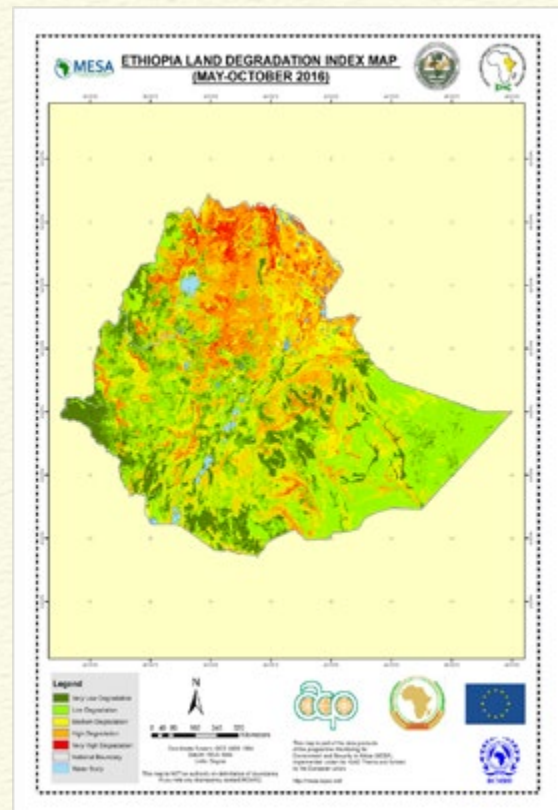


RCMRD Director General visit to the Project office in MALAWI

## Degradation and Forest Monitoring Services Project

The Department continued with implementation of the Monitoring of Environment and Security for Africa (MESA). Land Degradation and Forest monitoring Services were provided to nine countries. The project is funded by the European Commission in collaboration with the African Union.

During the reporting year the following milestones were achieved: production of Regional and National biannual Land Degradation (LD) Maps and Bulletins for the period 2014-2015; products generated and disseminated in the MESA Portal; QGIS Open source tool for Land degradation Assessment: LDIM Model tested on QGIS and Manual produced on use of QGIS for LD assessment; MESA E-Station Ground Antennae; installation of satellite receiving Station took place in May 2016; Staff training conducted on Systems Administration and Application (March and July 2016); MESA Policy Workshop was held in Addis Ababa in June 2016 where progress of MESA IGAD and policy intervention strategies discussed were discussed; MESA Regional and National level training: Land degradation training conducted for Regional and National thematic experts to further capacitate them on operational services. (Feb-March 2016)





## Hazard Atlas Maps

The project was implemented for the National Drought Management Authority (NDMA) and funded by UNDP. During phase one of this project hazard atlas maps were prepared and printed for the Counties of Turkana, Garissa and Tana River in Kenya while Baringo, Kilifi and Kwale Counties were included in the second phase of the project. These were developed using a participatory mapping approach. The Atlases shows the occurrence and frequency of: draught, human diseases, animal diseases, floods conflict and seismic activities. Work on Baringo County has been completed while the work for the Kilifi and Kwale counties is on-going. Training on the application of Atlases using geo-information techniques and Web mapping was done.

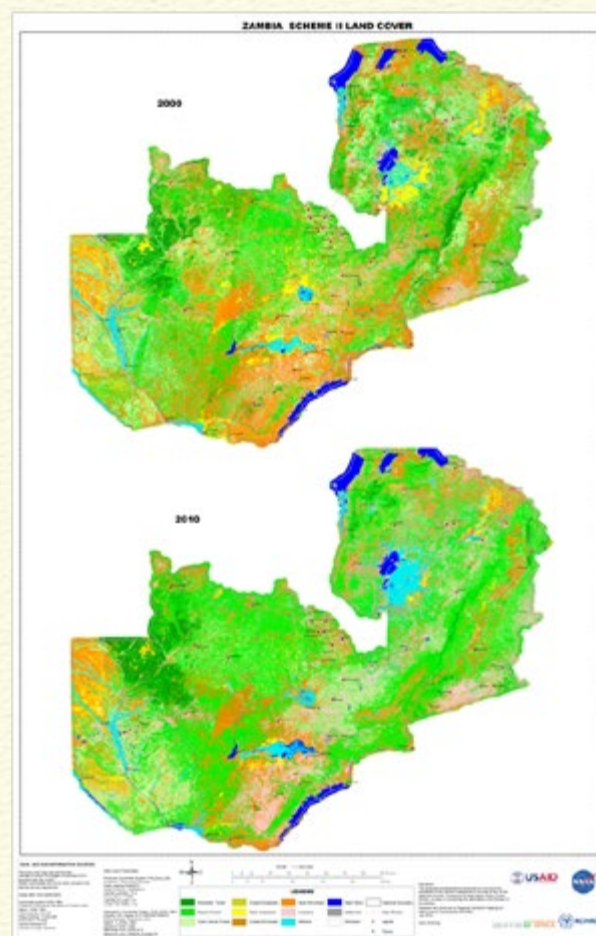


*Baringo and Turkana counties, Kenya, Hazard Maps*

## System for Land Based Emission Estimation Project

The System for Land based Emission Estimation (SLEEK) is a system that draws data from Forest Cover and change rates, Land Use/Cover changes, climate data and soil data for Green House Gas (GHG) estimation in Kenya. The Department implemented the Land cover change mapping component in partnership with the Department of Resource Surveying and Remote Sensing

(DRSRS), Survey of Kenya (SOK) and Kenya Forest Service (KFS). Sixteen (16) Land Cover change maps were developed for between 1990 to 2014. The project was successfully completed in October 2016.



*Land Cover map for Zambia*

## SIGMA Project

The objective of the project is to enhance remote sensing based agriculture monitoring technique and develop innovative methods to assess progress towards sustainable agriculture in Africa. The project is being implemented by 22 partners worldwide. The role of RCMRD in the project is capacity development and knowledge dissemination. This year one training workshop and ground truthing of maps was undertaken. Sixteen (16) countries participated.



*Participants of the SIGMA training workshop*



## Continuously Operating Reference Station (CORS)

RCMRD continued to support the AFREF initiative through publication of two AFREF Newsletters, advisory services to Mauritius and Zambia and maintenance of the Continuously Operating Reference Station (CORS) located at the Centre and two other sites. One (1) training for member States was also provided. The training was on establishment of CORS and GNSS data processing.



*Participants of the training course on establishment of CORS and GNSS data processing.*



## Continuously Operating Reference Station (CORS) Project in Botswana

The Centre continued to support the implementation of Real Time Geodetic Network in Botswana by advising on the procurement of the necessary hardware and software and training on the use of the system. This year five CORS were installed. The system is currently active and working.

## GNSS Control Surveys

GNSS control survey service was provided to the department of Resource Survey and Remote Sensing Kenya, the Kenya Airports Authority and Water Resource development Project.

## Land Policy Initiative (LPI) project

In the reporting year, the Land Policy Initiative (LPI) project focused on; developing the capacity of RCMRD in collaboration with Land Development and Governance Institute (LDGI) to implement AU Agenda on Land Policy; support Capacity Development Initiatives in collaboration with UNHABITAT Global Land Tool Network (GLTN) and development of a Prototype Land Information Management System is on-going. Three regional training programmes were implemented; fifteen member States participated in the training programmes.



*Workshop of using the International Guidelines on Urban and Territorial planning to Support Land Policy Processes in Eastern and Southern Africa region*

## SERVIR-Eastern and Southern Africa (SERVIR-ESA)

SERVIR Project is a partnership between RCMRD, NASA and USAID whose objectives is to improve, environmental management and resilience to climate change by building capacity of institutions in the member States to integrate earth observation and geospatial technology in environment decision making

The projects that were successfully implemented under the SERVIR-ESA Project were continuation of the long term engagements stipulated under the SERVIR-ESA work pan. The Project were on the following thematic areas:

### User Needs Assessment

Under the User Needs Assessment SERVIR-ESA the Department carried out a comprehensive user needs assessment in Uganda, Rwanda, Tanzania and Kenya between May and August 2016. The objective was to identify and understand existing and emerging needs in the use of Earth Observation and geospatial technologies in informing decision making in the four key service priority areas including; Land Cover Land use and Ecosystems, Agriculture and Food Security, Weather and Climate, and Water and Hydro-climatic Disasters.



The assessments further sought to understand decision making contexts in different jurisdictions in addressing environmental management issues and how geo-information is used to inform decision making processes. Key governmental, non-governmental agencies, private agencies and research institutions were involved in these assessments. The user needs assessment is to be used to plan the activities of SERVIR-ESA for the year 2017.

## Food Security and Agriculture

Under this thematic area three (3) major activities were carried out:

- Rangelands assessment
- Agricultural mask development
- Land Potential Knowledge Systems (LandPKS)

On Rangelands assessment an assessment of existing datasets and their quality was carried out to identify the most suitable datasets for land degradation assessment. These were then downloaded for further processing. A field scoping exercise was subsequently done through which an initial rangelands assessment and data collection of sample GPS points were taken to inform methodology development. Existing land degradation methodologies were reviewed and currently a methodology for the development of the land degradation maps is being refined.

On Agricultural mask development two sets of Landsat satellite imagery, 2000 and 2015, have been identified and downloaded. A third set of the images have been processed in readiness for interpretation and analysis with high resolution satellite images for selected sites also procured.

On Land Potential Knowledge Systems (LandPKS) a field data collection exercise was conducted to collect soil samples that will be used in future trainings at RCMRD. This also served as a pre-assessment of how LandPKS outputs can be used in validating land degradation outputs. To promote use of LandPKS mobile technologies several institutions were visited and sensitized on these technologies.



*Field work on Land Potential Knowledge Systems (LandPKS)*

## Water Resources and Hydro-Climatic Disasters

Under this thematic area six major activities were carried out:

- Surface water mapping
- Water quality monitoring
- Weather and Climate
- Developing Climate Vulnerability tools for Conservation
- Lake Victoria Basin Climate Vulnerability Mapping and Assessments
- Weather Research and Forecasting (WRF) model

The Surface water mapping was part of a project titled "Development and Implementation of Flood Risk Mapping, Water Bodies Monitoring and Climate Information for Disaster Management and Human Health". In one segment of the project, the water bodies monitoring was implemented and training provided to 15 participants at RCMRD on running the algorithm. RCMRD team is currently exploring to use this methodology to address a request from RCMRD's stakeholders of having an up to date surface water maps for African Countries. The methodology uses freely available Landsat data and SRTM DEM 30 meter to come up with the surface maps.

On Water quality monitoring NASA in collaboration with RCMRD/SERVIR ESA, developed a more accurate floating macrophyte such as water hyacinth detection algorithm which is currently being developed for use with Landsat and Sentinel data. These programmes will be made available to RCMRD for operational use and for possible replication and extension to detect floating macrophytes in Lakes in Africa.

On Weather and Climate we continued to engage regional and national stakeholders to address their information needs to support climate change adaptation. Further, the team continued the improvement of weather forecasting tools. Several meetings with stakeholders were held in line with services that were identified during the first work planning and stakeholders' workshop.

On Developing Climate Vulnerability tools for Conservation the department developed climate vulnerability maps and generated data to support conservation planning initiatives in the Northern Rangelands of Kenya. A draft report was shared with partners and further work to improve the maps developed is on-going.

On Lake Victoria Basin Climate Vulnerability Mapping and



Assessments, RCMRD through SERVIR-ESA continued to support a project on development of climate adaptation tools for the East African Community (EAC) region. The team worked with implementing partners (CAMCO, FEWSNET and ICPAC) to develop vulnerability hotspots maps for the EAC and the Lake Victoria Basin (LVB). Four baseline climate vulnerability maps for four sectors were completed and used to complete a baseline assessment for LVB. Baseline and future climate vulnerability maps were used to develop 23 adaptation measures for the LVB. A Standard climate vulnerability mapping training manual was also prepared.

The NASA Science Coordination Office assisted in building the capacity of ICPAC and RCMRD technical experts on numerical weather forecasting using Weather Research and Forecasting (WRF) model. As a result, the WRF model was set up at RCMRD and this is currently being implemented to support frost forecasting system.



*Frost Mapper Application*

## Forest Assessment for Eastern and Southern Africa

FAO and RCMRD collaborated in Forest Assessment Training and Validation Workshop held on September 2016 at RCMRD premises. FAO provided the training while RCMRD provided guidance, supervision and facilities to enable a selected group of participants to attend this short course on Collect Earth tool and to collect and analyze data with Saiku (a statistical analysis tool) for about 14200 sample plots in the Eastern and Southern Africa region. The purpose of this approach was to ensure that the interpretation was done consistently in all regions leveraging the regional and local knowledge of the participants.

## Hazard Risk Assessment Project

This assignment from Humanitarian Leadership Academy seeks to assess hazards occurring in Kakamega County in Kenya and analyze the capacity of the community to manage and built resilience against these hazards. Preliminary studies are underway with spatial and non-spatial data being collected and analyzed. Participatory mapping approach will be employed followed by ground truthing with the project completed by December 2016.

## Training and Capacity Building

The Department implemented various training and capacity building activities in 2016. Most of the trainings implemented by the Department were part of project activities. Other trainings were implemented based on user demand from member States and different stakeholders who needed tailor made packages



*NASA science coordination office & RCMRD staff participate in the Regional numerical weather prediction modeling and verification workshop at ICPAC*

## Land Cover, Land Use Change and Ecosystems

Under this service area the activities included design, development and testing of invasive Species Data Collection Toolkit. The Department supported the development of a tool to automate data collection on invasive plant species process. An invasive plant species App was designed and developed for tracking locations and sightings of invasive species of trees or plants and the extensiveness of their effects. The App would be customized to include any list of local invasive plants present in an area, take photos of the invasive species and will also be able to work offline in case of no internet connection in the field.



to enhance their specific requirements. A total of 876 participants were trained in the reporting year. The main trainings events that were conducted during the reporting year are listed below:

- Training on spatial analysis, landslides and land degradation mapping using Earth Observation data
- Training in Satellite imagery interpretation, GIS Data capture (Dwelling frame) plus Enumeration Area mapping (segmentation) from high resolution imagery and GIS database development for National Statistical Office (NSO), Malawi
- QGIS, Remote Sensing and GPS under Regional Pastoral Livelihoods Resilience Project (RPLRP), Ministry of Agriculture, Livestock and Fisheries in Machakos, Kenya, two weeks
- Digital Image Processing and digital Photogrammetry training in Cadastral data base development for the Ministry of Agriculture in Federal Republic of Ethiopia, 4 weeks
- GIS, RS and GPS Training, 2 weeks
- Mobile mapping GPS with ArcPad , 1 week
- Global Navigation Satellite System (GNSS) Kigali, Rwanda , 2 weeks
- Integration of Land Tenure Monitoring in Development Projects using Geospatial Technologies, 2 weeks
- Cadastral Database Development and Management for use in Planning Process. 2 weeks
- GIS, Remote Sensing and GPS – Central Statistical Agency of Ethiopia, 2 weeks
- Regional Training of Trainers on the Integration of Land Tenure Monitoring in Development Projects using Geospatial technologies, 2 weeks
- Tools for Carbon Emission Estimation in East Africa, 3 days
- GIS, RS/GPS in LIMS for Ministry of Agriculture, Ethiopia, 2 weeks
- Effective Land Administration Systems in Africa, 5 days
- Innovative Concepts, Tools and Practices in Land Administration, 2 weeks
- Land Information Management System, 1 week
- Disaster Risk Reduction by IGAD, UNITAR and UNOSAT, 2 weeks
- Total Station for Care Somalia International, 5 days
- QGIS and GPS for Boundaries and Federation Commission, Somalia, 10 days
- Aerodrome Mapping Certification – Nigerian Civil

Aviation Authority (NCAA), 1 week

- Climate Vulnerability Assessment training, 1 week
- Calibration, servicing and repair of mapping instruments, 2 weeks
- Introduction to Remote Sensing and Image Processing, 2 weeks
- Modelling of Landslide mapping, 2 weeks
- Processing of Sentinel 2 image data, 1 weeks

## Advisory Services

The Department provided advisory services to our member States as follows:

- Production of two (2) AFREF newsletters
- Feasibility study for Geodetic modernization using CORS for Zambia
- Feasibility study for Geodetic modernization using CORS for Mauritius
- Pro-Poor Land Tools use
- World Bank-Kenya GIS Working Group on Conflict and Violence
- USAID-Kenya Water Towers Climate Change Resilience project Advisory Group
- Advisory services to NSDI development in Tanzania
- Photogrammetry needs assessment for member States

## Research and Development

During the reporting year there were several research activities undertaken in the framework of the projects being implemented. The main research areas were as follows:

i) Project on analysis of Soil Moisture using Sentinel Satellite Data in Africa was done in partnership with EURAC of Italy. The objective is to develop soil moisture map from satellite images. several milestones have been accomplished including:

- Workshop attended by about 20 participants was conducted at RCMRD to identify data to be collected and evaluate interest areas in the application of Sentinel image data
- Ground truthing using TDR instrument for soil moisture content measurement was done in the field.

ii) Research project on Generation of population data using satellite imagery was completed.

iii) Integrating Geospatial and Statistical Data to



Support Transparent Land Valuation is on-going under the framework of UN-GGIM: Africa-WG5

iv) Topographic map revision using SENTINEL 2 data

v) Technical Advisory Group (TAG) of SERVIR ESA in collaboration with the NASA Science Coordination Office engaged some distinguished US scientists in reviewing the products, data and tools generated in SERVIR Phase I, with a view to providing guidelines that could improve the research and outputs in future.

## Data archiving, Retrieval and dissemination

The Department undertook satellite data archiving, data retrieval and dissemination through sales and free data supply. The Department provided commercial image supply and data sale to various clients. Another service was provision of free data to institutions towards supporting their research programmes, the data was from Landsat, MODIS and MSG. Some of the data

dissemination and supply services undertaken during the reporting year are summarized as follow:

- Disseminated over 5000 satellite images to research institutions, clients and students
- Disseminated approximately 300 satellite imageries to RCMRD internal clients
- Supplied Sentinel 2 data to stakeholders in Rwanda, Ethiopia, Uganda, Malawi, Tanzania and Kenya. We hope to cover the pending member states in due time as we receive the data.
- Received the MESA eStation for various earth observation data products and training was done on its management.
- Through the section RCMRD successfully procured and delivered satellite data for 2018 Malawi Population and Housing Census Mapping project.



*Satellite Image for Malawi population and housing census mapping*



## Product Development

The MODIS automatic flood monitoring system is about 60% complete. A pilot project entailing the development of photogrammetric data products using satellite imagery undertaken jointly with the photogrammetric unit is nearing completion.

The Data Section continued to support and maintains existing RCMRD data dissemination platforms. RCMRD Geoportal is now finally linked to the GEO/GEOSS portal. This ensures that our data is at present searchable and discoverable through the GEO/GEOSS Portal. Certainly, this provides scope for more partnership/ interoperability linkages with GEO/GEOSS Common Infrastructure. Pursuant to this, RCMRD has recently been nominated to serve as a member to the AfriGEOSS Working Group on Data & Infrastructure Coordination Team. Additionally, tagging of project based content is capability that has also been recently built into our Geoportal, besides inclusion of a new segment on Story Maps.

## Engineering Section

The section continued to render services in repair, servicing and calibration of surveying instruments to

government and private practitioners in the member States. During the reporting period the section rendered services to six member States with details described in the Table below:

Country	Number of Instruments repaired
Ethiopia	28
Mauritius	11
Tanzania	33
Zambia	24
Botswana	60
Kenya Government	29
Kenya-Private	220

The Engineering section also established a 200m calibration baseline at the Centre and undertook training on calibration, servicing and repair of mapping instruments for participants from Ethiopia, Botswana, Tanzania and Swaziland was conducted.



*RCMRD staff repairing and servicing survey instruments at RCMRD workshop*



# COMMON SERVICES DEPARTMENT

During the year under review, the Department undertook the following activities:

## Business Development and marketing unit and information services

For the reporting year 2016, the unit addressed implementation of Result Area 3 and 4 of the Centre Level Strategic Result Areas in Strategic Plan for 2015-2018. The unit also sought opportunities on initiatives within Member States and associated clientele through intervention strategies and activities focusing on chief audiences; Member States/ Government Bodies and Sectoral Ministries/Agencies; Development Partners and Governments; United Nations Organizations/Agencies; Inter-Governmental Organizations and Non-Governmental Organizations; Professional Bodies; Tertiary Learning Institutions; and Media. While secondary audiences were addressed as Research and Development Organizations; Non-mapping related stakeholders who would benefit from RCMRD products; Private Sector; and General Public. Implementation Strategy and Stakeholder Engagement The strategy that was adopted for the year was based on key messages towards Raising Awareness on RCMRD's regional activities and communicate these amongst relevant audiences; To Impart knowledge on areas of possible collaboration; and Build Business Synergy and capacities internal and external to RCMRD as well as enhancing Resource Mobilization role. For 2016 the section focused on:

- Sustaining, building and strengthening relationships with bilateral and multi-lateral stakeholders as well as Member States by entering 4 partnership agreements and MoU's and re-establishing contacts with partners
- Facilitated more than 25 outreach activities and developed materials/media that communicated RCMRD's role in National Development of Member States and Africa.
- The Resource Mobilization capacities were enhanced to enable improved engagement of new users of RCMRD products and services was improved through training programmes.
- Capacities of internal staff on communication internally to improve business development and marketing activities of the Centre products and services
- Interventions towards Networking, Collaboration, Partnerships & Consultancies – To promote

RCMRD were continuously carried out

- Visits to 5 Member States was carried out by the unit for the reporting year
- Development of case materials for exhibition at events where RCMRD member States were present
- Participation at more than 5 non geo-information related events.
- About 2500 information materials were acquired including books, journals/ magazines, newspapers etc.
- The library processed more than 3000 information materials into the Library database
- Dissemination of information – more than 6000 information materials were disseminated to library users in the year 2016 in both print and non-print media.

## Marketing, Outreach and Promotion

The unit was instrumental in developing marketing, promotion and communication systems addressing e-marketing and direct communication focusing on societal benefit areas in reporting year 2016. Key messages we focused on were raising awareness; to impart knowledge; enable internal and external advocacy and build synergy internal and external to RCMRD addressed by the mitigating strategies below:

- RCMRD Branding – Impacting on RCMRD as a brand and standardizing branding on all media
- Advocacy – to build on staff resources and abilities to respond to Member State needs
- RCMRD website was improved
- Social media platform was enhanced
- A minimum of two potential clientele visits were made in every month for the reporting year
- Engagements with universities in member states were improved
- Customer assessments were carried out for visitors to RCMRD

## Information Technology Support Services

This year IT Support Services has made tremendous improvement of the ICT infrastructure. The Section is mandated to provide support services in the management of the Centre's ICT infrastructure, hence enabling the other departments and sections carry out their work effectively. The main services are: network administration, Data and information security, maintenance and servicing of computers, printers and



other peripherals as well as website management and updating. The section also proposes and provides avenues for new and upcoming trends in ICT for adoption to enable the Centre deliver geo-information products and services. During the reporting year the section implemented the following activities

- To ensure that preventive maintenance contracts are obtained for the equipment needing external preventive maintenance the section signed preventive / Maintenance contracts for the following set of equipment ;two Plotters in the Data Office ,the Alcatel PABX system and the telephone extensions and the Air Conditional (ACs)
- 30 computers were procured and setup in the RS and GIS training labs and one Computer for the Library are operational.
- Preparation of RS and GIS training labs for the trainings as well.
- Acquired new Internet Service Provision at thirty (30) MBPs.
- Set up campus wide Unified Ubiquity Wireless Network. We have also reconfigured the Watchguard Firebox policies to provide better performance for Internet Access. Network segments have also been setup.
- Set up Print Grouping of Staff Users based on the block/building they are stationed at RCMRD through reduction of printers stationed in offices in order to reduce on printing cost. To further monitor and control usage, the section is still working on the print management software.
- Set up the power regulator / stabilizer in the Server Room to regulate and stabilize power supply for the Server Equipment.
- Procured 24TB sinology storage as well as 40 TB Storage upgrade for our Servers

## Monitoring and Evaluation (M & E)

During the year under review the M & E committee was reconstituted to provide broad expertise from all sections in order to establish M & E system in all sections. The overall goal of the committee is to provide leadership in implementation of M & E framework.

The Committee supported development of RCMRD M&E Framework in order to establish a well-coordinated, harmonized monitoring and evaluation system that provide timely and accurate strategic information to

guide the implementation of our strategic plans and ensure RCMRD delivers its core mandate.

The Committee also conducted evaluation of the current work plan for the period between January to June 2016 to establish achievement of key performance indicators against annual targets. A detailed report with key findings and recommendations was presented to the management. Data Quality Assessment (DQA) was conducted by staff from USAID that focused on SERVIR-E&SA project. A list of indicators in the M & E plan and the progress made in the project were presented. There was detailed discussion on definition for each indicator and data quality procedures for collecting data.

To strengthen M & E system in project management, M & E Specialist provided technical assistance on development of the proposals that were submitted to various clients.

To build the capacity of staff in the implementation of effective M & E system, a three day training where 27 members of staff who included management was conducted. The training focused on developing staff skills on M & E key concepts, performance indicators, M & E Plans and tools for data collection. In addition, M & E Committee held one day training for two groups of 37 members of staff who did not attend the main training with an overall goal of raising awareness on the critical role of M & E during implementation of Centre projects. The key highlights of the training were introduction to M & E basic concepts, Project Logic Model, Evaluation of training and use of M&E tools that include half-year evaluation.

## Information Technology Training Centre (ITTC)

During the reporting year, ITTC implemented the corporate training programmes and the Diploma programmes as follows:

- International Computer Driving License (ICDL), an International Certification course that provides basic skills in ICT and more of an introductory course to all professionals to equip with basic ICT skill.
- IT Security and Cyber Security Course
- Corporate courses in area of Data Analysis, Web design, Digital Skills for Managers, IT Security and



Cyber Crime, Graphic Design and Programming. A total of 22 participants have been trained in this category

The Centre was registered by the Technical and Vocational Education Training Authority (TVETA) and Kenya National Examination Council to offer two (2) years diploma courses in Land Survey, GIS and Cartography, Remote Sensing and Photogrammetry and Information Technology. The section managed to launch one diploma course; Diploma in Land Survey and 36 students registered for the course.



*ITC students during a practical session*

## MANAGEMENT, ADMINISTRATION AND HUMAN RESOURCE

The 2016 Work Plan rolled out measures to position the Centre strategically to play a central role in the promotion of sustainable development in member States through the use of geo-information. The Work Plan dealt with the provision of capacity building and project services required by member States and clients as well as provision of advisory services and forming networks of partners dealing with geo-information research for sustainable development. RCMRD management facilitated all the departments to perform their activities.

### Strategic Partnerships

Over the years, the Centre has continued to establish beneficial partnerships and collaboration with relevant institutions within and outside the region in research, development and application of geo-information for sustainable development. In this regard the Management engaged with Member States institutions and development partners in pursuit of areas of collaboration. In 2016 the Centre entered into partnerships with several organizations to undertake various activities. Some of these were:

- MoU with National Geomatics Centre of China (NGCC).
- MoU with Esri Eastern Africa Limited (ESRI EA)
- MoU with Esri Rwanda Limited
- MoU with Central Statistical Agency of Ethiopia
- MoU with Chinese Academy of Surveying and Mapping

- MoU with United Nations Institute for Training and Research (UNITAR)
- MoU with Jaramogi Oginga Odinga University of Technology (JOOUST), Kenya
- MoU with County Government of Murang'a, Kenya
- MoU with University of Nairobi, Kenya



*MoU signing between RCMRD and ESRI-EA*

### Visits to member States by the RCMRD Management

The RCMRD Director General led senior staff to visit several member States. The purpose of the visits was to familiarize management with the activities of government institutions and expose the institutions to RCMRD services as well as identifying areas of mutual benefit to the member States and RCMRD.



## Tanzania

The Director General met with the Permanent Secretary, Ministry of Lands, Housing and Human Settlement, the United Republic of Tanzania, Mr. Yamungu Kanyadabila in Dar es Salaam, Tanzania in May 2016. During the meeting they discussed possible areas of cooperation and provision of service to the Ministry of Lands and Housing and other Government Ministries by RCMRD. The visit brought closer working relations and cooperation between Tanzania and RCMRD.



*Mr. Yamungu Kanyadabila Permanent Secretary, Ministry of Lands, Housing and Human Settlement, the United Republic of Tanzania and RCMRD Director General*

## Rwanda

The Director General met the Rwanda Minister for Natural Resources, Hon. Vincent Biruta in Kigali, Rwanda in August, 2016. During the meeting they discussed areas of cooperation between Rwanda and RCMRD, particularly in, land cover mapping, forest monitoring, GPS reference stations and spatial data infrastructure. The two also discussed the preparations for the RCMRD Council of Ministers Meeting to be held in November, 2016 in Kigali. Also present was Dr. Emmanuel Nkurunziza, the Director General of Rwanda Natural Resources Authority.



*Hon. Vincent Biruta, Rwanda Minister for Natural Resources and RCMRD Director General*

## Botswana

The Director General met officials from the Ministry of Lands and Housing in September 2016 in Gaborone, Republic of Botswana. The purpose of the visit was to familiarize RCMRD management with the activities of the Ministry of Lands and Housing, expose Ministry of Lands and Housing to RCMRD services, discuss possible areas of cooperation and provision of service to the Ministry of Lands and Housing by RCMRD and RCMRD support in the establishment of the National Spatial Data Infrastructure (NSDI) and Modern Geodetic Network.



*Mr. Thato Raphaka, Permanent Secretary, Ministry of Lands and Housing and RCMRD Director General*

## Kenya

The Director General made a courtesy call on the Kenya Minister for Lands and Urban Development, Hon. Prof. Jacob Kaimenyi in Nairobi in August, 2016. The two discussed cooperation between Kenya and RCMRD, in particular, accelerating land registration, provision of satellite imagery for mapping, and establishment of GPS reference stations and spatial data infrastructure. The two also discussed the preparations for the RCMRD Council of Ministers Meeting to be held in November in Kigali. The Minister thanked RCMRD for the services it provides to member countries and pledged support of the Government of Kenya to RCMRD as its host. Present during the meeting were the Principal Secretary Ms. Mariamu Elmaawy and the Director of Surveys, Mr. Caesare Mbaria.





*Hon. Prof. Jacob Kaimenyi, Minister for Lands and Urban Development, Republic of Kenya during his tour of RCMRD*

The Director General also met the Minister of Mining, Republic of Kenya Hon. Dan Kazungu in Nairobi Kenya in September 2016. The meeting discussed areas of cooperation with the RCMRD on mapping of natural resources in Kenya. The Minister said that Kenya was currently undertaking an ambitious programme of mapping the natural resources of the entire country.

To achieve this ambitious programme the Minister requested RCMRD to work with the departments in his Ministry to come up with tailor made training programme. He further requested RCMRD to provide technical advice on the standards and specifications and best practice in the mapping programme. The Minister subsequently visited the Centre in October 2016.



*Hon. Dan Kazungu Minister of Mining, Republic of Kenya during his tour of RCMRD*

## Distinguished visitors to RCMRD

### Visit by Chairperson Council of Ministers

Hon. Dr. Yinager Dessie Belay, Chairman, Council of Ministers and National Planning Minister, Federal Republic of Ethiopia made a familiarization visit to RCMRD in March, 2016. During his visit the Minister was accompanied by the Ethiopian ambassador to Kenya and Eng. Sultan Mohamed Alya, the Chairman of RCMRD Governing Council and Director General of Ethiopian Mapping Agency. The Minister discussed with RCMRD Management on the progress of the implementation of the 2015-2018 Strategic Plan, and in particular, resource mobilization for infrastructural development at RCMRD.

### Mr. Thato. Y. Raphaka, Permanent Secretary in the Ministry of Lands and Housing Republic of Botswana

Mr. Thato. Y. Raphaka, Permanent Secretary in the Ministry of Lands and Housing, led a delegation from the Republic of Botswana on a familiarization visit to RCMRD in May 2016.

### Hon. Amongi Betty Ongom, the Minister ministry of Lands Housing and Urban Development, Republic of Uganda

Hon. Amongi Betty Ongom, Minister of Lands Housing and Urban Development Republic of Uganda led a delegation from the Republic of Uganda on a familiarization visit to RCMRD in August, 2016. The delegation composed of Mr. Oput John Richard, Mr. Gilbert Kermundu, and Mrs. Annet Kiraza. The Director General of RCMRD briefed her of RCMRD activities in support of national institutions in member States in relation to Geo-information and different services being provided to member States. The Minister also toured different units of the Centre, met staff and witnessed the activities in person. Hon. Ongom requested support for surveys and mapping department of Uganda as the country had started modernizing surveys and mapping activities.

## ISO Quality Management System Certification

The Centre was awarded the ISO 9001: 2008 Quality Management System (QMS) certification in July 2014. RCMRD has continued to maintain the Quality Management System ISO 9001:2008 certification by undertaking the following activities: two internal



and one external audit and one management review meeting. As the Quality Management System ISO 9001:2008 is expiring in April 2017, RCMRD is in the process of acquiring certification to the new version ISO 9001:2015 by reviewing the process owners' documentation and training of the staff. Internal Audits were done in January and October 2016. The External audit was carried out in February 2016. The importance of these Audits is to take corrective actions necessary to ensure continual improvement of QMS at RCMRD. Staff training on the new version ISO 9001:2015 was done this year. QMS will steer the RCMRD in achieving member States and customer satisfaction by continually improving its processes, products and services to ensure they meet customers' requirement.

## Implementation of the Communication and Resource Mobilization Strategies

The Management continued implementing the Centre's communication strategy for effective out-reach to its stakeholders in order to enhance its corporate visibility and image. This has strengthened its relations with member States, existing clients and partners, as well as new ones. We have published 3 e-Newsletters and distributed them widely.

In order to better implement the resource mobilization strategy, we improved the strategy and supportive mechanisms were put in place.

## Strengthening of institutional internal audit, planning, monitoring and evaluation and quality assurance systems

Management also embarked on establishment and operationalization of effective and efficient institutional internal audit, planning, monitoring and evaluation and quality assurance systems through strengthening of the internal financial and assets audit processes and procedures. In this regard a Monitoring and Evaluation Committee is functional. An M & E tool was developed and is being used. Internal Audits were carried out in four sections at the Centre.

## 50th Governing council and 10th Conference of Ministers Meetings

The 50th RCMRD Governing Council and 10th Conference of Ministers meetings were held in Kigali, Rwanda from 14th to 22nd November 2016. The Governing Council is an organ that meets annually to review and approve RCMRD's Annual Work Plan and budget and is composed of Permanent/Principal secretaries from member States responsible for the activities of RCMRD. The 50th Governing council discussed and the 2017 Annual Work Plan and Budget and approved the same for implementation.

The Conference of Ministers meets every two years and is composed of Ministers from our member States. They meet to evaluate the implementation of the RCMRD Strategic Plan as well as approve a new one. The 10th Conference of Ministers reviewed the implementation of RCMRD 2015-2018 Strategic Plan.

17 member States and UNECA attended the meeting. The member States were: Botswana, Burundi, Comoros, Ethiopia, Kenya, Lesotho, Malawi, Mauritius, Namibia, Rwanda, South Sudan, South Africa, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe. The meetings were chaired by Republic of Rwanda; Rwanda took over from the Government of the Federal Democratic Republic of Ethiopia as the chair of both the Governing Council and Conference of Ministers.



*Delegates of the 10th Conference of Ministers held in Kigali, Rwanda*



## Administration

The Administration and Human Resource Section continued facilitating implementation of planned activities by providing the following support services:

### Physical Infrastructure

The following activities were undertaken in order to improve the facilities and infrastructure of the Centre:

- General maintenance of buildings and grounds
- Replacement of furniture in various offices
- Renovation of classrooms and increasing office space in Block E
- Repair of walkways to various blocks
- Upgrade of electric and internet cabling in Block E

### Transport and Protocol Services

The main transport services that were provided were as follows:

- Provision of transport to staff, guests, course, workshop participants and dignitaries.
- Maintenance and servicing of vehicles.
- Valuation of vehicles for insurance purposes.
- Procurement of one vehicle
- Supporting field trips.

### Protocol Services

The following activities were undertaken with regard to Protocol services:

- Processing of import duty exemptions
- Processing diplomatic documents
- Clearing of Centre's imported equipment
- Processing of Visas for staff and course participants

### Security Services

During the reporting period under Security services, the following activities were undertaken:

- Servicing of fire-fighting equipment twice during the year
- Issuing security advisories.
- Conducting Firefighting training
- Providing security to staff and Centre's premises
- Servicing of Electric Fence
- Implementing security training

## Human Resource Management

The following activities were undertaken in Human Resource:

### Organization Review

Following the Governing Council approval for the Organization Review of RCMRD to be conducted, the exercise, which was a comprehensive one, took place from September, 2015 to March, 2016. The overarching objective was to align the organization structure to the RCMRD 2015-2018 Strategic Plan. In addition it addressed the critical HR issues the Centre faces. It involved reviewing the Organization structure; Departments; expanding grades for career progression; conducting job analysis and job evaluation; developing job descriptions; carrying out work load analysis and developing a scheme of service, amongst the key issues that were to be tackled. It was approved for implementation by the APRC of the Governing Council and implemented in June 2016. Members of Staff were oriented on the scheme of service and were placed in the appropriate positions according to the scheme of service.

### Recruitment

The Director Technical Services, who was recruited in November, 2015 took up the position in January, 2016. Under the SERVIR East & Southern Africa Project, a Capacity Development Lead and User Engagement Lead were recruited in March and April, 2016 respectively and both took up their positions in May, 2016. Monitoring & Evaluation Specialist recruited in December, 2016, took up the position in January, 2016.

The recruitment process for the position of Director General commenced earlier in the year and the Interviews were held during the Governing Council meeting in November 2016. The positions of Principal Assistant Internal Auditor, Principal IT Technician and Principal Geo-information Trainer were advertised in August, 2016. The interviews for these positions were undertaken before the close of the year. Interviews for the position of Communications and Outreach Expert under SERVIR Project were conducted in December, 2016. There was recruitment of 24 short term staff to undertake three weeks FAO funded project on Global Forest Assessment. These individuals detached once the project was completed. Various other short term project personnel were engaged in the year for other projects.



## Resignations

Two staff members departed from the Centre to pursue other interests. An Internal Auditor and a Senior Remote Sensing Technician, left after serving for three years.

## Performance Management

The Centre continued implementing the Performance Management System for staff. 91 work plans were completed and submitted. This high number was mainly due to short term staff who joined during the year. All the 91 staff of the Centre completed their Mid-Year Performance evaluation which was undertaken at the end of June, 2016. End of the year performance appraisals were carried out between November and December, 2016.

## Staff Training

There was a Monitoring and Evaluation Committee Training in April, 2016 for twenty three staff members. Thereafter, this Committee trained 42 internal staff on the basics of M&E. Due to the introduction of an updated ISO 9001:2015 (Quality Management System), 22 members of staff were trained in July 2016 on the changes. A staff welfare retreat took place in September, 2016 as a way for the staff to bond and build team work.

Several Technical staff attended various training sessions. Four staff members attended Water Information System training, five staff members attended Landslides training and two more attended training in Italy, two staff attended MESA Receiver training, one staff attended ITTC Geo-information training, two staff attended Climate Change training, and one staff member attended MESA training in Italy. Two Remote Sensing staff participated in Collect Earth tool training for the FAO Global Forest Assessment project. One member of staff from Finance Division attended Finance Management training. The security section undertook basic security training and firefighting training. The firefighting training was also attended by 10 staff members from different sections. Five Remote Sensing staff were undertaking MSc in GIS sponsored by the SERVIR project.

A number of staff continued to pursue self-sponsored training in local colleges and universities on part time basis to acquire more knowledge and improve their professional skills. The Librarian was undergoing training

for an MSc in Information Science. An IT Lecturer's MSc in IT training was also ongoing. A Procurement Assistant was pursuing a Bachelor of Business Administration; an Assistant Accountant was undertaking a Bachelor of Commerce degree programme; a Receptionist was on a Bachelor of Business Leadership course; a Survey Assistant was taking a BSc in Geomatic Engineering. An Administrative Assistant for IT Training Centre was undertaking a Bachelor of Procurement degree course



*Monitoring and evaluation committee training at RCMRD*

## Finance section

### Overhead (Indirect Costs) charge out rate

The Finance Division engaged a consultant to help in the computation of an indirect cost rate in order to improve projects budgeting. The final indirect cost rate was computed based on year 2014 Financial Statements. This is the rate that will be used by the departments while preparing projects budgets.

### Procedures and Documentation

In a bid to improve the procurement process, the Finance Section continued partnering with the suppliers who were prequalified in the year 2015. An evaluation of the suppliers was done at the beginning of the year in order to establish which suppliers were efficient for consideration in continued partnership.



# DISTINGUISHED VISITORS TO RCMRD

During the year under review, the Centre received over 30 distinguished visitors. These included:

- Hon. Kurexi Maihesuti Vice Minister, Ministry of Land and Resources and National Administration of Surveying, Mapping and Geo-information (NASG), China, January 2016
- Prof. Joel Kibiiy Moi University, Kenya, January 2016
- Elijah Makhala, WMO Sub- regional/ Office for Eastern & Southern Africa, February 2016
- Makoto Ashino, Kokusai Kogyo Company Limited, Japan, Feb. 2016
- Stephen Mogaka World Bank, Kenya, February 2016
- Bledi Ceiku World Bank, DC, February 2016
- Bernard Mertz World Bank, DC, February 2016
- Ouma Sylla Chief of GLTN / UNHabitat, Kenya, February 2016
- Dr. Yinager Dessie Minister, National Planning Commission, Ethiopia, March 2016
- Eng. Sultan Mohamed Director General, Ethiopian Mapping Agency, Ethiopia March 2016
- Raphaka T. Y PS Ministry of Lands & Housing, Botswana, May 2016
- Seeletso, T.G.G.G Independent Electro Commission, Botswana, May 2016
- Beaulah Mguni Ministry of Lands and Housing, Botswana, May 2016
- Mmamaruti Manewe Ministry of Lands and Housing, Botswana, May 2016
- Molebodi Khaduego Ministry of Lands and Housing, Botswana, May 2016
- Kgakgamatso Letsholo MKII, Botswana, May 2016
- Kaone Soloun Attorney General, Botswana, May 2016
- Gotseone Lesiela Ministry of Lands and Housing, Botswana, May 2016
- Prof. Fulher Namwamba Salisbury University, USA, July 2016
- Musa Apundo University of Kabianga, July 2016
- Sheila Wachiye University of Kabianga, July 2016
- Hon. A. Betty Ongom Minister of Lands Housing and Urban Development Uganda, August, 2016
- Prof. Zhao Jicheng Vice President, Chinese Academy of Surveying and Mapping, (CASM), August 2016
- Cesare Mbaria Director of Surveys, Kenya, September 2016
- Neal Archer Defence Geographic Centre, UK, September 2016
- Hon. Dan Kazungu Cabinet Secretary for Mining, Kenya, October 2016
- Dr. Ibrahim Mohamed PS, Ministry of Mining, Kenya, October 2016
- Bwango Apuuli ICPAC, Kenya, October 2016
- Jameson Ndawala NSO, Malawi, October 2016
- Kingsley Manda NSO, Malawi, October 2016
- Grace Jesemani NSO, Malawi, October 2016



# PICTORIAL



*50th Governing Council session in Kigali, Rwanda*

*NSDI workshop for Tanzania*



*ITC Diploma courses training*





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