



**Department Of Resource Surveys And Remote Sensing
MINISTRY OF ENVIRONMENT AND MINERAL RESOURCES**

P.O. Box 47146-00100, TEL. (020)-609013/27, Fax (020)-609705 Nairobi.
Website: www.drsrcs.go.ke

DRSRS PROFILE

The Department of Resource Surveys and Remote Sensing (DRSRS) formerly known as Kenya Rangeland Ecological Monitoring Unit (KREMU) was established in 1976 with funding from the Government of Kenya and Canadian International Development Agency (CIDA). The unit was then under the Ministry of Tourism and Wildlife with the main aim of monitoring the condition and trends of natural resources (mainly the vegetation cover, wildlife and livestock populations) in the Kenya rangelands using aerial ground sampling techniques, aerial survey and remote sensing application.

Over time, the scope of the UNIT was expanded. In 1982 the Government of Kenya and the World Bank funded the land use/cover mapping programme for the high potential areas and the French Government funded forest cover mapping using SPOT satellite. The World Bank continued supporting the Department through the Agricultural Sector Management Programme (ASMP) until 1998. All the departments' activities are today wholly funded by the Government of Kenya. Exceptions are a few projects co-sponsored by various local partners involved in environmental planning and management in the country.

- 1984 - KREMU began crop forecasting programme;
- 1987 - Installed Geographical Information System;
- 1988 - Became full-fledged department under the Ministry of Planning and National Development;
- 2002 - 2008: Moved to the Ministry of Environment and Natural Resources; and
- 2008 - Present: Moved to the Ministry of Environment & Mineral Resources

Today, the scope of the department's activities has increased tremendously with mandates to collect the geospatial data/information on most natural resources in Kenya with a view to monitoring changes over time and space. The data gathered is used in planning, Conservation and management of the said resources in various ministries and agencies of government and other users.

VISION

The Vision is to become a national focal centre of excellence in matters related to development of national Geo-spatial Databases on most renewable and non-renewable natural resources and environment for rapid decision-making and policy formulation.

MISSION

The Mission is to promote sustainable development of Geo-spatial Information Databases while up-holding efficiency in its dissemination for purpose of alleviating poverty and supporting sustainable development.

MANDATE

The Department of Resource Surveys and Remote Sensing (DRSRS) is mandated with the collection, storage, analysis, updating and dissemination of geo-spatial information

on natural resources to facilitate informed decision-making for sustainable management of these resources with the major aim of alleviating poverty and environmental management. Data collected forms the basis for formulation of policies and development plans and help decision-making in various government ministries, and resource planning and management agencies.

OBJECTIVES

The main objectives of the department are:

- To collect data on the numbers and distributions of livestock/wildlife and associated environment/ecological attributes in the Kenya Rangelands;
- To inventorize, map and monitor the vegetation and habitats of livestock/wildlife in Kenya;
- To undertake land cover/use assessment, mapping and monitoring (vegetation cover, forests, species composition, biofuel and land degradation);
- To develop early warning systems (EWS) for crop forecasting used in food security management and vegetation biomass productivity monitoring for range management
- To develop Land Information Management Systems (LIMS) from geospatial databases generated;
- Coordinate the application of remote sensing technology in Kenya

FACILITIES AND EQUIPMENT

The Department of Resource Surveys and Remote Sensing (DRSRS) has a variety of up-to-date equipment and professional staff for resource surveys and mapping:

- **Computers and software:** - Data entry and analysis, map production, GIS and remote sensing laboratory.
- **Air Service:-** 2 Partenavia 168 and Cessna 208 (Carravan) aircraft for wildlife/livestock aerial census, low level reconnaissance flights and high level aerial photography – forest cover mapping, infrastructures and crop forecasting
- **Cameras:** - High level aerial photography, 35mm vertical and oblique photo cameras
- **Tape recorders:** - Aerial surveys of wildlife and livestock populations
- **Global Position Systems (GPS):** - Location mapping and sampling
- **Fieldwork Vehicles:** - Field sampling and ground truthings
- **Herbarium:** - Depository and inventory of plant specimens
- **Library:** - Books, technical reports and articles relevant to the department's activities



**DEPARTMENT OF RESOURCE SURVEYS AND REMOTE SENSING
MINISTRY OF ENVIRONMENT AND MINERAL RESOURCES**

SERVICE CHARTER

A service charter is basically an instrument or contracts/obligations set to provide quality and efficient services between a client and a customer. The Department of Resource Surveys and Remote Sensing (DRSRS) charter contains our objectives and services we provide. This charter is prepared in an effort to improve service delivery in accordance with the civil service reform policies and results based management (RBM) initiative of the Kenya Government. The standards in this Charter are therefore consistent with the *Kenya's Public Service Values and Code of Conduct* and form the basis of evaluating and reporting on our services. DRSRS members of staff are bound by the Ethics and Code of Conduct stipulated in the *Public Officer Ethics Act 2003*, the Civil Service Code of Regulations (COR) and the departmental code of conduct (appended). Our performance against these standards and your feedback will be crucial. DRSRS aims to continually improve its customer services and the Service Charter will be reviewed regularly in consultation with the staff and feedback from the clients.

DRSRS SERVICES

The services provided by the Department revolve around our activities and include:

- Maps, datasets and reports
- Aerial surveys and mapping
- Aerial censuses
- Digital cartography and map compilation and printing
- GIS analysis
- Satellite scenes or sub-scenes
- Training in Remote sensing, GIS and GPS
- Image processing and printing
- Aerial photography
- Development of panchromatic photographic films
- Photo interpretation
- Reconnaissance flights

Some of the services outlined above and duration taken are depicted in the table below:

Service	Time frame
Aerial photography	30days (1week photography,3weeks production of prints)
Aerial survey of wildlife/livestock for clients	2 months (depend on the size of survey area - 1month survey, 1 month results)
Wildlife/livestock population statistic summaries	2 days
Satellite image provision	1 week
Training in Remote Sensing/GIS	3 weeks
Land cover/use maps (district, etc)	2 days
Reconnaissance surveys	1 day (depend on availability of aircraft)
Technical reports	1 day

DRSRS CLIENTS

The Department of Resource Surveys and Remote Sensing (DRSRS) customers and clients include:

- Government ministries, departments and agencies;
- Environmental protection agencies;
- Distributors of remotely sensed data, maps and mapping products;
- Civil and environmental planners and resource managers;
- Research and educational institutions; and
- Non-Governmental Organizations

COMPLAINTS AND CORRESPONDENCE

The Department of Resource Surveys and Remote Sensing (DRSRS) would like to know the complaints/feedback about its services or products offered to customers/clients with view to rectifying and continuously offering the services efficiently, effectively and professionally. The department views a speedy and effective resolution to complaints as an important part of commitment to customer satisfaction. Please, address your complaint first to the officer who served you and in case s/he does not respond adequately, contact the Director at the address below. You may also deposit the correspondence in the suggestion box provided at the department's reception hallway.

The Department of Resource Surveys and Remote Sensing is in business on all normal working days from 0800 to 1700 hours. The department is situated off Mombasa road, along Kapiti road in South C, about 5 km from Nairobi city centre.

Postal Address

P. O. Box 47146-00100,

Telephone: (020)-609013/27,

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YOUR RIGHTS AND RESPONSIBILITIES

Under this Charter, you have a right to:

- a) Access our services and information in a manner that meets your needs;
- b) Expect us to offer services effectively, efficiently and professionally;
- c) Lodge complaints;
- d) Seek redress and appeal

We expect you to

- i. Treat us with courtesy;
- ii. Be honest and ethical in dealings with us;
- iii. Provide clear feedback about our products and services within reasonable timeframes.

CORE FUNCTIONS

The activities of the Department of Resource Surveys and Remote Sensing (DRSRS) are undertaken in four sections namely;

1. Ground Survey Section: Land use and vegetation assessment;

2. Aerial Survey Section: Livestock/wildlife abundance, spatial distribution and trends monitoring
3. Remote Sensing Section: Land cover assessment;
4. Data Management Section: Geospatial data integration, analysis and databases development

These activities, their objectives, outputs and applications are provided and the users outlined for each section as below.

GROUND SURVEY SECTION: LAND USE AND VEGETATION ASSESSMENT

The Ground Survey Section conducts its activities on the ground as its name suggests and mainly on inventory, mapping and monitor of land use and vegetation cover using ground sampling techniques, remote sensing data and socio-economic surveys in the Kenya rangelands. The key role in the programme is to inventorize, map land degradation, and assess and monitor the vegetation cover over space and time in most parts of the country. The synthesized data and information is used for biodiversity conservation and management, land use planning, range management, and land degradation assessments



Objectives

- To inventory, map, assess and monitor the vegetation as habitats for livestock and wildlife in the rangelands;
- To undertake land cover/use mapping); and
- To assess and monitor seasonal vegetation biomass production

Activities/Programmes

Ground Surveys Section undertakes the following activities

- Land degradation assessment;
- Vegetation inventory, land cover mapping and monitoring;
- Land use/cover assessment with respect to plant biodiversity;
- Plant inventory and taxonomy (herbarium database); and
- Seasonal biomass monitoring for range management and early warning systems

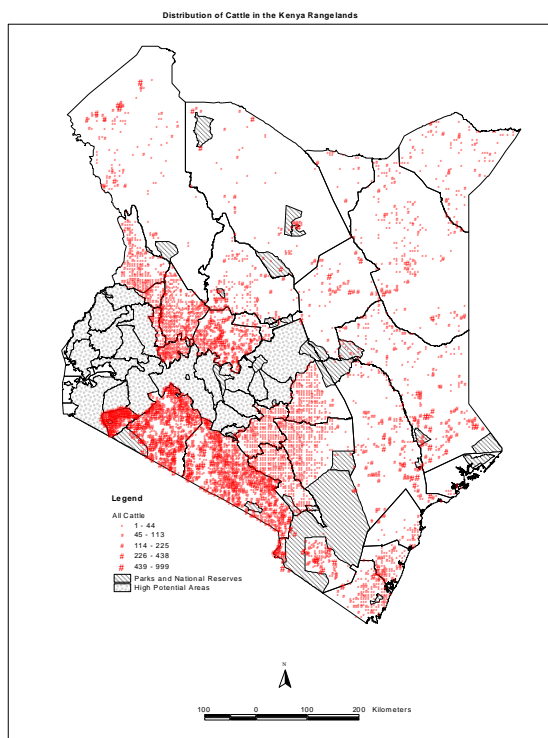
Application of GSS Data/Information

1. Vegetation and habitat maps produced serve as basic ecological information of an area used for planning and locating development projects, measurement of future trends (Forest Dept, MPND, NEMA);
2. Assessing range condition; livestock and wildlife grazing needs (MoA, MLFD, KWS);
3. Indicators of land degradation (desertification) (e.g soil erosion, deforestation, overgrazing, etc.) (KSS, NEMA, Forest Dept, MoA, MLFD, UNEP);
4. Estimation of wood fuel availability potential (MoE, MPND);
5. Inventory and taxonomy helps in conservation of plant species (used in determination of rare, threatened and endangered) (NMK, IUCN, NEMA);
6. Vegetation biomass monitoring in predicting forage availability and plan range utilization (range management) and in drought prediction/monitoring as an early warning mechanism (MoA , MLFD, OP);

7. Location of water Catchment areas (Forest Dept, MoW);
8. Assessment of genetic resources of an area with a view to guiding their utilization and conservation (Forest Department, NMK);
9. Human-wildlife conflict resolution (Ministry of Agriculture (MoA), Ministry of Livestock and Fisheries Development (MLFD), KWS);
10. Biodiversity conservation and management, e.g. creation of forest/wildlife reserves (Forest department, KWS); and
11. Land use planning and management (MLH, MPND).

AERIAL SURVEYS SECTION: /WILDLIFE/LIVESTOCK CENSUS, SPATIAL DISTRIBUTION & TRENDS

The Aerial Survey Section has been conducting the census of wildlife and livestock populations in the Kenya rangelands since 1977 to assess their abundance, spatial distribution and trends over time. The data is mainly collected on county boundary basis every 3-5 years in line with the national and county plans, and county focus strategy for rural development.



Livestock distribution in Kenya



Activities/Programmes

- Census of wildlife/livestock populations and spatial distributions in the rangelands;
- Species composition assessments (rare, threatened, endangered species; and
- Studies on habitat/environmental attributes (human settlement, vegetation structure, surface water, agricultural activities, etc) in wildlife areas.

Objectives

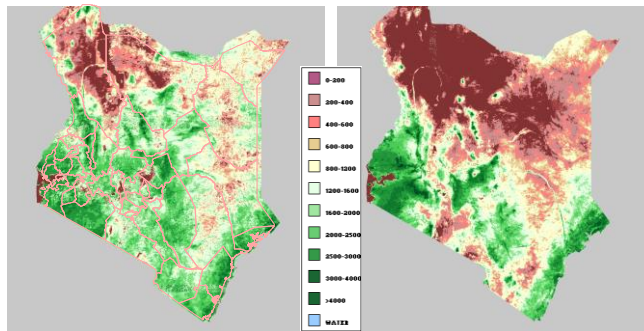
- To obtain data/information on wildlife and livestock numbers and spatial distribution;
- To obtain data on environmental attributes such as human settlement, vegetation structure, surface water, agricultural activities, surface water, etc that influence wildlife numbers and distribution; and

- To monitor the population trends and distribution over space and time.

REMOTE SENSING SECTION: APPLICATION OF RSD DATA/INFORMATION

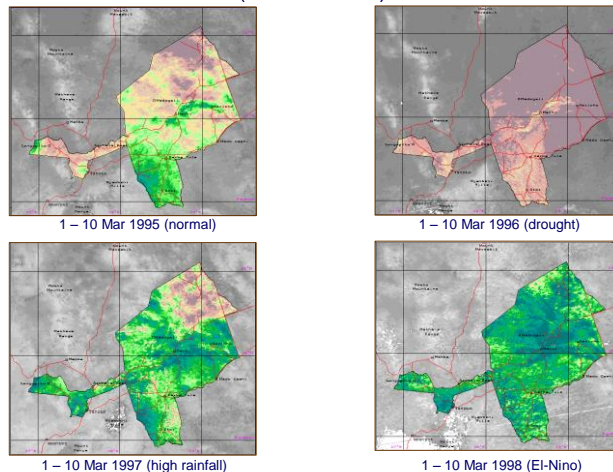
1. Forest cover mapping for forest conservation and management and general environmental planning and management (NEMA, Forest Dept, International Union of Conservation of Nature & Natural Resources (IUCN));
2. Crop forecast used for national food security planning and management (Office of the President (OP), Ministry of Agriculture (MoA), National Cereals and Produce Board (NCPB));
3. Land use and cover studies useful for land use planning and land policy development, land evaluations, land use plans, and for general environmental planning and management (Ministry of Land & Housing (MLH), NEMA);
4. Urban land use mapping useful for physical planning and urban environmental planning (City & Urban councils, MLH) and general environmental planning and management (NEMA); and
5. Early warning system data is useful predicting drought and range management (OP, Ministry of Agriculture (MoA))

Application of Remote Sensing Data: Mapping indicators of land degradation and food security

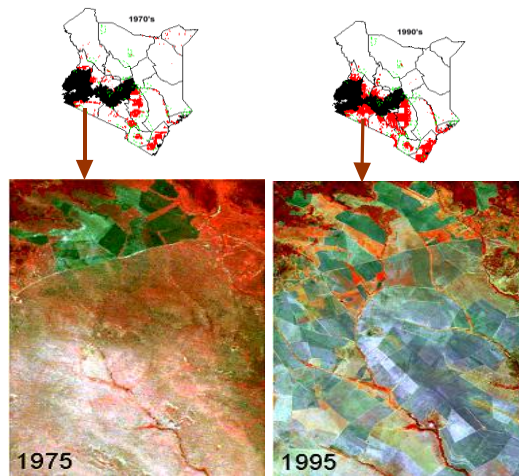


Estimating primary biomass production for assessment of carrying capacity (livestock) and grazing pressure. Good management tool for pastoralists’ livestock and wildlife management in drought mitigation.

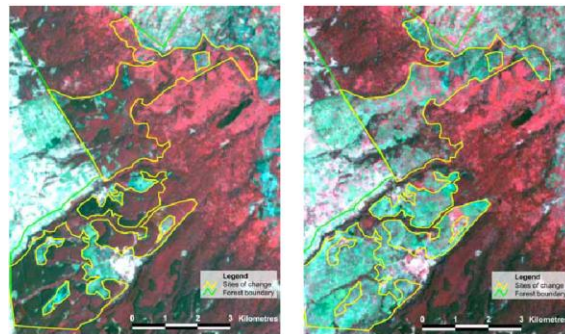
NDVI variation within same period in Isiolo District (1995 – 1998)



Early Warning Systems (AVHRR-NDVI) for Drought Monitoring: Impacts of environmental stress on natural resources



Land use change in Narok County



Forest cover change in Mau Forest

DATA MANAGEMENT SECTION: GEOINFORMATION, GEOSPATIAL DATA ANALYSIS, DATABASE DEVELOPMENT & CARTOGRAPHY

This division has been in existence since the inception of the institution. It is involved in geospatial data analysis, modeling, data integration and the custodian of all the datasets gathered by other sections above.

Activities/Programmes

- Systems Analysis, and Geospatial Data Management;
- Geographic Information System (GIS) Applications;
- Land Information Systems Development
- Cartography and map production
- GIS and Remote Sensing Training

Objectives

- a) To create an environmental management information system;
- b) To develop, maintain and manage environmental databases;
- c) Repository of geospatial databases and GIS/remote sensing software
- d) Training of staff and others professionals on GIS and Remote Sensing technology

Application of data/information by DMS

The datasets analyzed by DMS are those provided from all other sections above. The databases developed are useful for the development of Environmental Planning and Management Information Systems (EP&MIS) which are crucial for decision-making and sustainable resource development.

COLLABORATION AND USERS OF DRSRs DATA/INFORMATION

DRSRs has collaborated, collected and shared data on various natural resources that include livestock and wildlife, vegetation and other aspects of land use/cover. Memorandum of understanding (MOU) on information and data gathering, sharing and exchange have been drawn for mutual benefit of institutions (e.g Mpala research centre, KWS) involved. The users of DRSRs data/formation are numerous and may include:

- **Government Ministries/agencies:** MoA, MLFD, MPND, CBS, OP, MLH; MoE; MTW; KWS, NEMA, KMD, NMK, NCPB; KARI, KSS, KTB.
- **Other institutions:** International Livestock Research Institute (ILRI), FAO/Africover , Regional Centre for Mapping of Resources for Development (RCMRD), Kenya Forests Working Group, Local and foreign Universities, United Nations Environment Programme (UNEP), Laikipia Wildlife Forum (LWF), Mpala Research Centre, United Nations Environment Programme (UNEP), Germany Agency for Development (GTZ), African Conservation Centre (ACC), African Wildlife Foundation(AWF), World Wildlife Foundation (WWF), International Union of Conservation of Nature and Natural Resources(IUCN), East African Wildlife Society (EAWLS), among others NGOs, as well as individual researchers affiliated to local and foreign universities, etc.

PUBLICATION AND DISSEMINATION

The data/information generated is published in technical reports, maps, and statistical summaries. These may be disseminated to users in workshops and seminars, brochures, posters, local newspapers, scientific journals, shows, internet as well as institutional or individual requests.