Tana River Basin, Kenya: Geodatabase and Mapping Tool



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User Guide

Asghar Hussain and Tracy Baker







RESEARCH PROGRAM ON Water, Land and Ecosystems

Tana River Basin, Kenya: Geodatabase and Mapping Tool

User Guide

Asghar Hussain and Tracy Baker

International Water Management Institute

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Front cover photograph shows rice fields and forest near Vang Vieng, Lao PDR (photo: Matthew McCartney, IWMI).

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This user guide is intended to provide instructions and background information on the use of the Tana River Basin geodatabase and mapping tool. It is based on data and information obtained from published and grey literature as well as spatial analyses carried out using publicly available sources.

Project



This work was undertaken as part of the Water Infrastructure Solutions from Ecosystem Services Underpinning Climate Resilient Policies and Programmes (WISE-UP to Climate) project. The project is generating knowledge on how to implement mixed portfolios of built water infrastructure (e.g., dams, levees, irrigation channels) and 'natural infrastructure' (e.g., wetlands, floodplains, forests) that contribute to poverty reduction; water, energy and food security; biodiversity conservation; and climate resilience at a landscape scale. 'WISE-UP to Climate' aims to demonstrate the application of optimal portfolios of built and natural infrastructure developed through dialogue with stakeholders and decision-makers at multiple levels (local to national) to identify and find consensus on trade-offs. The project also seeks to link ecosystem services to water infrastructural development in the Volta River Basin (Ghana principally, and also Burkina Faso) as well as the Tana River Basin in Kenya.

The project is led by the International Union for Conservation of Nature (IUCN) and involves the Council for Scientific and Industrial Research - Water Research Institute (CSIR-WRI); African Collaborative Centre for Earth System Science (ACCESS), University of Nairobi; International Water Management Institute (IWMI); Overseas Development Institute (ODI); University of Manchester; and the Basque Centre for Climate Change (BC3). This project is part of the International Climate Initiative. Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit (BMUB) (Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety), Germany, support this initiative on the basis of a decision adopted by the German Bundestag.

For further details about the project, visit: www.waterandnature.org or www.iucn.org/ water_wiseup

Donors

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Acronyms

Almanac Characterization Tool
Centro Internacional de Agricultura Tropical (International Center for Tropical Agriculture)
Center for International Earth Science Information Network
Development Strategies for Fragile Lands project
Digital Elevation Model
Environmental Systems Research Institute
Food and Agriculture Organization of the United Nations
Famine Early Warning Systems Network
Geographic Information System
Global Positioning System
Independent Electoral and Boundaries Commission, Kenya
International Livestock Research Institute
Japan International Cooperation Agency
Kenya Agricultural Research Institute
Kenya Trypanosomiasis Research Institute
Kenya Meteorological Department
Kenya National Bureau of Statistics
Kenya Soil Survey
Land Cover Classification System
Socioeconomic Data and Applications Center
Tropical Soil and Biological Fertility Institute
United Nations Environment Programme
United States Agency for International Development
World Food Programme
World Resources Institute
Water Resources Management Authority

Introduction

This user guide contains information about using the Tana River Basin file geodatabase and associated mapping tool. The tool contains a set of spatial data layers that describe several biophysical, environmental and social aspects of Kenya's Tana River Basin. Many of the layers are derived from national-level datasets and subsets to the Tana for ease of use. Most data layers were derived from secondary sources as outlined below. The layers selected for inclusion in this geodatabase and mapping tool are intended to cover a range of information, which is as current as possible, to support the increased understanding of ecosystem services within the Tana River Basin.

This geodatabase is intended to work as a companion to the report titled *Baseline review and ecosystem* services assessment of the Tana River Basin, Kenya (Baker et al. 2015). All the maps found in this report, as well as additional maps suited to the user, can be reproduced using this geodatabase and mapping tool. This geodatabase and associated map were originally created to allow team members from the WISE-UP to Climate project to explore and query data in an interactive way, as well as to offer them the opportunity to create their own cartographic products. The map package consists of an ArcReader published map file (.pmf) and associated data files. Alternatively, the Tana River Geodatabase can be downloaded along with a basemap .mxd file.

This user guide is divided into the following sections:

Part I: Geodatabase Overview Part II: ArcReader Users Part III: ArcMap Users Appendix I: Data Layers Appendix II: Metadata and Layer Descriptions

Part I: Geodatabase Overview

The Tana River Basin geodatabase has been designed based on a thematic structure that integrates geographic information from different sources. This thematic structure helps us to understand the roles of different organizations working within the basin and the key objective of producing their spatial data. The credibility of information and their contribution towards research and development are also recorded in metadata. Thus, the geodatabase comprises a complete package that specifies the content, and representation of each thematic layer, including its source of information, originator, scale and credibility.

The geodatabase data structure consists of different types of geographic information system (GIS) data, including attribute data, geographic features, Raster Images, surface modeling three-dimensional (3D) data, utility and transportation network systems, Global Positioning System (GPS) coordinates and survey measurements.

Geodatabase Mind Map

The mind map (Figure 1) provides an overview of the GIS data collected from different organizations. The key objective of this map is to assist users in spatial analysis and modelling, while also providing them with a sufficient understanding and vision of the information available.

Figure 1. Mind map - Thematic and collaborative structure of the Tana River Basin geodatabase.



To achieve the objective of identifying optimal configurations of natural and built infrastructure on landscapes in the Tana River Basin, a comprehensive coverage of themes, along with a wide range of GIS layers, have been collected from different organizations within the basin. A geodatabase thematic layer index and description are provided in **Appendixes 1 and 2**.

Administrative and Civic Information

Administrative units play a key role in policy implementation within the basin. GIS information on the administrative units crossing the Tana River Basin was obtained from the Kenya National Bureau of Statistics (KNBS) and the Independent Electoral and Boundaries Commission (IEBC). Geospatial data from urban centers and built-up areas, such as major towns, towns and villages, were collected from the GIS Unit at the International Livestock Research Institute (ILRI). Spatial layers of vertical and horizontal population expansion were extracted from the global datasets archive produced by the Center for International Earth Science Information Network (CIESIN) and the Socioeconomic Data and Applications Center (SEDAC).

Natural and Built Infrastructure

Overall, the concept of differentiating among types of infrastructure is rooted in the idea that, while humankind may alter natural ecosystems to support their needs and livelihoods, the condition of ecosystems must be maintained to sustainably produce the basic services humanity requires for survival. GIS information of natural infrastructure, such as rivers, streams, floodplains, forests and wetlands, was obtained from the World Resources Institute (WRI). GIS information of built infrastructure, such as hydraulic and hydrographic structures (e.g., irrigation schemes, dams, monitoring instruments), and transport infrastructure (major roads, high roads and small roads), was obtained from the organizations listed below:

- World Resources Institute (WRI)
- Japan International Cooperation Agency (JICA)
- GIS Unit, International Livestock Research Institute (ILRI)

- Water Resources Management Authority (WRMA)
- Food and Agriculture Organization of the United Nations (FAO)
- Kenya Meteorological Department (KMD)
- International Water Management Institute (IWMI)

Physical Geography

The Tana River Basin has a diverse physical geography, spanning upland forests and agricultural lands through the vast Tana Plains. The geodatabase of the basin has a wide range of physical parameters - geology, topography, soils and climatic conditions. Based on the physiography and climatic conditions, the basin is divided into different climatic and ecological zones. GIS information on these aspects was collected from different organizations such as Kenya Soil Survey (KSS), the GIS Unit at ILRI and WRI.

Land Use and Livelihoods

Within the Tana River Basin, livelihoods are clearly and inextricably linked to the natural environment in a coevolving way whereby people influence and are influenced by land cover. The geodatabase of the basin has livelihood zones, including land use and land cover classification. GIS information on human activities, such as agricultural land-use practices, and horizontal and vertical growth and productivity of livestock and cropping systems was collected from the organizations list below:

- World Resources Institute (WRI)
- Famine Early Warning Systems Network (FEWS NET)
- GIS Unit, ILRI

Data Accuracy and Reliability

The Tana River Basin geodatabase was created using GIS information which had already been published by worldrenowned organizations, and used in public projects and scientific research certified by international agencies. Standard metadata information is provided with the geospatial data.

Software Employed

This geodatabase and the associated maps were created on a machine running Windows 7 Professional and using ArcMap 10.3. End users should download the files that are most appropriate for the version of ArcGIS software that they are using. Further details on this are provided in the sections below. It is important to note that ArcMap is not required to make use of the map package and the associated geodatabase.

Data Sources



Food and Agriculture Organization of the United Nations (FAO)



Independent Electoral and Boundaries Commission (IEBC)



Centro Internacional de Agricultura Tropical (International Center for Tropical Agriculture) (CIAT)









UNEP



World Food Programme



International Livestock Research Institute (ILRI)

Kenya Agricultural Research Institute (KARI)

Kenya National Bureau of Statistics (KNBS)

Tropical Soil and Biological Fertility (TSBF) Institute, CIAT

United Nations Environment Programme (UNEP)

United States Agency for International Development (USAID)

World Food Programme (WFP)

World Resources Institute (WRI)

Map Projection and Coordinate System

Map projections describe the technique that represent the Earth's curved surface on a flat map. Coordinate systems describe the grid referenced and measurement units, effectively translating the map projection. In order to overlay the GIS layers on each other, a single data frame is required. In the geodatabase, the layers are projected into a common projection system Arc1960 Universal Transverse Mercator (UTM) Zone 37 South.

Accessing the Tana River Basin Geodatabase and Mapping Tool

The geodatabase can be downloaded and used in two ways. First, any user may download the ArcReader project to their local machine for generating basic cartographic representations and for exploring the geodatabase. More advanced users with access to ArcMap and its associated extensions may prefer to download the file geodatabase and carry out a variety of spatial analyses with or without the associated .mxd file.

Version 1 of the Tana River Basin geodatabase was used when conducting the baseline review and assessment of ecosystem services of the basin (Baker et al. 2015). A copy of this geodatabase, the maps and associated documentation can be downloaded from the IWMI Water Data Portal (http://waterdata.iwmi.org/).

The Tana River Basin geodatabase package is also available on a Universal Serial Bus (USB) device for distribution.

Which files should I download?

We provide two sets of files for the commonly used ArcGIS version 10.2 and the recently updated version 10.3. It is important that the user selects the relevant folder according to the software that is installed on their machine.



Part II: ArcReader Users

For non-GIS users, the Environmental Systems Research Institute (ESRI) provides free software known as ArcReader which allows the user to explore prepackaged spatial datasets and generate maps for general use. This software provides the simplest access to the WISE-UP to Climate project Tana River Basin geodatabase and mapping tool.

Installing ArcReader

If you do not have ArcReader already installed on your computer then first go to the ESRI website and download version 10.3 (http://www.esri.com/software/arcgis/arcreader/download). You will have to register with ESRI to download the software. Please note that the installation file is more than 400 MB in size and may take over one hour to download for those with low bandwidth internet packages.

To install and use ArcReader, you will need to have the correct version of the Microsoft .NET Framework Service Pack 1. For complete details on the system requirements, please visit the ESRI ArcReader web page (http://desktop.arcgis.com/en/desktop/latest/get-started/system-requirements/arcreader-system-requirements.htm).

Once the installation file has been downloaded, unzip the file (if necessary) and then double-click the Setup (.exe) application file to begin the installation process using the default installation settings provided. If you have questions regarding installation then please visit the ESRI ArcReader web page (http://www.esri.com/software/arcgis/arcreader).

Using ArcReader

To open ArcReader on your computer, go to your Windows start menu and navigate to **All Programs > ArcGIS > ArcReader 10.x** and click on the program. **Note:** The version of ArcReader installed on your machine will appear here.



When ArcReader opens, the following screen will be displayed:



To open the Tana River Basin geodatabase and mapping tool, click **File > Open** and navigate to the folder where you saved the WISEUP_TanaBasin_10.2.pmf file. Select the file and click **Open**.

Exploring the Tana River Basin Data

Creating Maps

Data View

Exploring data Maps are not static displays; they're interactive. You can browse a map—taking a closer look at a particular area—and point at features to find out more about them.





Data exploration, map navigation and utilities:



Part III: ArcMap Users

ArcMap users may download and use the full Tana River Basin geodatabase (.gdb) file and associated .mxd file. This option provides the highest functionality for users interested in carrying out spatial analyses processes. The .mxd document is available for ArcMap 10.2, which may also be used with ArcMap 10.2.2, and ArcMap 10.3. To ensure you download the correct .mxd file, first verify your ArcMap version. To do this, go to **Help > About ArcMap**:



Instructions for opening the ArcMap project file:







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Appendix 1. Data Layers

The WISE-UP to Climate TanaBasin.pmf file and ArcMap project were created to serve as an interface for the Tana River Basin geodatabase. Users of this geodatabase are assumed to have only basic GIS skills and will, in many cases, be new to GIS. The thematic structure of the geodatabase is replicated throughout this project to manage the structure of the spatial layers and includes the layers listed below. More detailed metadata for each layer are included in Appendix 2.

Administration

- CountryBND: Administration Level 0 Kenya Country International Boundary
- Provinces: Administration Level 1 Provinces within the Tana River Basin
- Counties: Administration Level 2 Counties within the Tana River Basin
- Divisions: Administration Level 3 Divisions within the Tana River Basin
- Locations: Administration Level 4 Locations within the Tana River Basin
- Sublocations: Administration Level 5 Sub-locations within the Tana River Basin
- Districts: Administration Level 2 (Districts replaced with Counties in 2010) within the Tana River Basin
- Districts98: Administration Level 2 District in 1998 within the Tana River Basin
- Divisions2000: Administration Level 3 Division state in 2000 within the Tana River Basin

Built Infrastructure

- proposed_irrigation: Proposed irrigation schemes
- small_scale_irrigation: Small irrigation schemes
- Large_hydropower_dams: Large hydropower dams
- SevenForksDams: Seven Forks Dams (large hydropower dams) reservoirs
- micro_hydropower_dams: Micro-hydropower dams
- micro_hydropower_dams_proposed: Proposed micro-hydropower dams

<u>Civic</u>

- Majortowns: Major towns
- Towns: Small towns
- Villages: Villages
- Urbansettlement: Urban regions

<u>Climate</u>

- Climate_stations: Climate station location
- Climate_surface: Digital climate surface grid
- Rainfall_distribution: Annual rainfall distribution
- Rainstations18901985: Rainfall station data 1890-1985
- Rainstations19911996: Rainfall station data 1991-1996
- TanaRB_soter: Soil and Terrain Database (SOTER), Kenya

Conservation

- ImportantBirdAreas: Important bird areas
- ProtectedAreas: Protected areas
- eba: Endemic bird areas
- Mammals_Diversity: Mammal diversity
- Turtle_Breeding_Site: Turtle nesting and breeding sites

Demography

- pop_census1979: Population census 1979
- pop_census1989: Population census 1989
- pop1990_dens: Population density 1990
- pop1990_tot: Population total 1990
- pop1995_dens: Population density 1995
- pop1995_tot: Population total 1995
- pop2000_dens: Population density 2000
- pop2000_tot: Population total 2000
- pop2005_dens: Population density 2005
- pop2005_tot: Population total 2005
- pop2010_dens: Population density 2010
- pop2010_tot: Population total 2010
- pop2015_dens: Population density 2015
- pop2015_tot: Population total 2015

Elevation

- contours: Elevation contours 1,000-meter interval
- dem90m: Digital Elevation Model (DEM) 90-meter resolution
- hillshade: Hill Shade Effect derived from DEM 90-meter resolution

Epidemiology

- ecf_distribution: East coast fever distribution
- malaria_zones: Malaria zones
- r_appendiculatus: Brown ear tick (R. appendiculatus)
- tsetse_distribution: Tsetse distribution

<u>Geology</u>

• lithology: Lithology

Hydrography

- TanaRiverBasin: Tana River Basin boundary
- Streams: Streams
- StreamGauges: River gauges (monitoring by WRMA and KMD)
- Water_Bodies: Waterbodies (FAO, Africover)
- WaterPoints: Water points (Almanac Characterization Tool [ACT])

Land Use

- AgroEcologicalZones: Agro-ecological zones
- Aczones: Agro-climatic zones
- bare_areas: Bare areas
- charcoal_sources: Charcoal sources
- CentralHighlandsZone_LU: Central Highlands zone
- CoastalMarginalAgMixedZone_LU: Coastal marginal agricultural mixed farming zone
- CoastalZone_LU: Coastal zone
- crops_diversity: Crop diversity
- crops_intensity: Crop intensity
- crops_irrig: Crop irrigation

- crops_livestock: Crop livestock
- CropSize: Plot size
- EasternPastoralZone_LU: Eastern pastoral zone
- forest_ranges: Forest ranges
- landcover_ge: Land cover
- landuse: Land use Tana River Basin
- maize_prod_86_90: Maize production 1986-1990
- mangroves: Mangroves location
- millet_prod_86_90: Millet production 1986-1990
- Pineapple_plantations: Pineapple plantations
- rangeland: Rangeland
- rice_prod_86_90: Rice production 1986-1990
- sorghum_prod_86_90: Sorghum production 1986-1990
- SoutheasternMarginalMixedZone_LU: Southeastern marginal mixed farming zone
- SoutheasternPastoralZone_LU: Southeastern pastoral zone
- TanaAgriculture: Agriculture
- TanaRiverineZone_LU: Riverine zone
- Tree_plantations: Tree plantation
- wheat_prod_86_90: Wheat production 1986-1990
- woodlots_in_cropland: Woodlots in cropland

Livelihood

- CentralHighlandsZone: Central highlands zone
- CoastalMarginalMixedZone: Coastal marginal agricultural mixed farming zone
- CoastalZone: Coastal zone
- EasternPastoralZone: Eastern pastoral zone
- LivelihoodZones: Livelihood zones

Livestock

- Cattle_density: Cattle density (ZEBU Density, DAIRY Density)
- camel_distribution: Camel distribution

MyComposition

- line_3D: Line 3D
- Sea: Sea mask for Tana River Basin map composition
- White_wash: Mask outside the Tana River Basin area for map composition

Natural Infrastructure

- Forests: Forests
- FloodPlains: Floodplains
- Wetlands: Wetlands

Socioeconomics

• centralprov_servicepoints: Central Province service points

<u>Soil</u>

• soil_ph: Soil ph

Transportation

- highland_roads: Highland roads
- major_roads: Major roads
- Roads: Other roads
- roads_wfp: World Food Programme (WFP) roads

Appendix 2. Metadata and Layer Descriptions

Theme: Administration

CountryBND

File Geodatabase Feature Class



Tags

Kenya, country, international boundary

Summary

This layer shows the Kenya international border and coastal line

Description

Kenya country in East Africa

Credits

KNBS, IEBC

Provinces

File Geodatabase Feature Class



Tags

Province, administrative unit, first level

Summary

Province (first level of political administration) boundaries extracted for the Tana River Basin area

Description

This coverage shows the first level administrative boundaries (provinces) of Kenya and their respective names

Credits

UNEP (originally called Kenprov.shp), ILRI

Counties

File Geodatabase Feature Class



Tags

County, second level

Summary

County (second level of political administration) boundaries extracted for the Tana River Basin area

Description

This coverage shows the second level administrative boundaries (counties) of Kenya and their respective names

Credits

KNBS, IEBC, ILRI

Divisions

File Geodatabase Feature Class



Tags

Third level, districts, administrative boundary, Tana River Basin

Summary

Division (third level of political administration) boundaries extracted for the Tana River Basin area

Description

This coverage shows the third level administrative boundaries (divisions) of Kenya and their respective names

Credits

ILRI

Locations

File Geodatabase Feature Class



Tags

Location, administrative unit level 4

Summary

Division (fourth level of political administration) boundaries extracted for the Tana River Basin area

Description

This coverage shows the fourth level administrative boundaries (locations) of Kenya and their respective names

Credits

ILRI

Sublocations

File Geodatabase Feature Class



Tags

Administrative, fifth level, sublocation

Summary

Sublocation (fifth level of political administration) boundaries extracted for the Tana River basin area

Description

This coverage shows the fifth level administrative boundaries (sub-locations) of Kenya and their respective names

Credits

KNBS, IEBC, ILRI

Districts

File Geodatabase Feature Class



Tags

Administrative boundaries, boundaries

Summary

These data were used in maps throughout the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset outlines Kenya's District administrative boundaries

Credits

ILRI

Districts98

File Geodatabase Feature Class



Tags

District, political change, boundary, Tana River Basin

Summary

District (second level of political administration) boundaries extracted for the Tana River Basin area

Description

Coverage represents second level administrative boundaries (districts) in Kenya as in 1998 and their respective names. It does not contain the districts created after 1998

Credits

Originally called district98.shp and created in 1998 by the GIS Unit at ILRI. Digitized by ILRI

Divisions2000

File Geodatabase Feature Class



Tags

Third level, districts, administrative boundary, Tana River Basin

Summary

Division (third level of political administration) boundaries extracted for the Tana River Basin area

Description

The coverage shows the Kenya divisional boundaries as in the year 2000 created by the Wellcome Trust, Nairobi, Kenya. The new districts were carved out using the District Development Plan reports and the 1999 Central Bureau of Statistics (CBS) maps

Credits

Created in 2000 by Wellcome Trust and previously called kendivisions.shp, ILRI

Theme: Built Infrastructure

proposed_irrigation

File Geodatabase Feature Class



Tags

Irrigation, proposed, farming, infrastructure

Summary

This dataset was extracted for the Tana River Basin area. These data were used in Map 3.12 in the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset portrays the proposed large-scale irrigation schemes in Kenya.

Credits

File Geodatabase Feature Class



Tags

Irrigation, small-scale, farming, utilitiesCommunication, infrastructure

Summary

This dataset was extracted for Tana River Basin area. These data were used in Map 3.12 in the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset portrays the locations of existing small-scale irrigation and drainage points in Kenya.

Credits

Large_hydropower_dams

File Geodatabase Feature Class



Tags

hydropower, dams, infrastructure, economy, inlandWaters, utilitiesCommunication

Summary

These data were used in Map 3.11 in the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset portrays locations of large hydropower dams in Kenya.

Credits

SevenForksDams

File Geodatabase Feature Class



Tags

Reservoirs, waterbodies, imageryBaseMapsEarthCover, inlandWaters

Summary

These data were used in maps throughout the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset portrays water bodies in Kenya from FAO's Africover dataset. The location and shape of existing large hydropower reservoirs in the Tana River Basin were extracted from the waterbodies layer.

Credits

FAO's Africover

micro_hydropower_dams

File Geodatabase Feature Class



Tags

micro-hydropower, dams, infrastructure, utilities, Communication

Summary

These data were used in Map 3.11 in the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset portrays locations of micro-hydropower sites in Kenya. The definition of micro-hydropower is not given in the source data but it is usually categorized as 5 kW to 100 kW.

Credits
micro_hydropower_dams_proposed

File Geodatabase Feature Class



Tags

micro-hydropower, dams, infrastructure, utilitiesCommunication

Summary

These data were used in Map 3.11 in the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset portrays locations of proposed micro-hydropower sites in Kenya. The definition of micro-hydropower is not given in the source data, but it is usually categorized as 5 kW to 100 kW.

Credits

Theme: Civic

Majortowns

File Geodatabase Feature Class



Tags

Towns, cities, structure, Tana River Basin

Summary

Major towns extracted for the Tana River Basin area. These data were used in maps throughout the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset shows major towns in Kenya

Credits

ILRI

Towns

File Geodatabase Feature Class



Tags

Town, urban settlement, urban center, Tana River Basin

Summary

Towns extracted for the Tana River Basin area

Description

The coverage shows the towns and urban centers in Kenya derived from the Kenya topographic sheets of scale, 1:250,000 for Northern Kenya and 1:50,000 for the rest of Kenya. There are approximately 1,620 towns and urban centers captured in this layer

Credits

Digitized by the GIS Unit at ILRI from Kenya topographic sheets of scale - 1:250,000 for Northern Kenya and 1:50,000 for rest of Kenya from Survey of Kenya. Created in August 2000 from the Kenya topographic sheets by GIS Unit at ILRI. Originally known as Kentowns.shp

Villages

File Geodatabase Feature Class



Tags

Village, rural settlement, Tana River Basin

Summary

Villages extracted for the Tana River Basin area

Description

This is a point coverage showing the villages in Kenya according to ACT database

Credits

Russell Kruska (r.kruska@cgiar.org), ILRI

Urbansettlement

File Geodatabase Feature Class



Tags

Urban areas, imageryBaseMapsEarthCover, structure

Summary

This dataset was extracted for the Tana River Basin area. These data were used in Map 1.3 and in other maps throughout the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset portrays urban areas in Kenya, from FAO's Africover dataset

Credits

Theme: Climate

Climate_stations

File Geodatabase Feature Class



Tags

Climate station, weather station, Tana, Kenya

Summary

Climate station location and temporal coverage history for the Tana River Basin area

Description

Location of climate station covering the Tana River basin area

Credits

Not available

File Geodatabase Feature Class



Tags

Climate, temperature, minimum, mean, maximum, ET, PET, Tana River Basin

Summary

This dataset was extracted for the Tana River Basin area

Description

This is a digital climate surface that combines a series of digital climate databases. It is a subset of a report produced by USAID's Development Strategies for Fragile Lands (DESFIL) project for USAID's Office of U. S. Foreign Disaster Assistance (OFDA) on the use of crop seed in disaster mitigation. It was intended for use by nongovernmental organizations (NGOs) that distribute seed, and donor agencies that support development and disaster assistance in the region, for accurate targeting of germplasm to appropriate areas

It lays a foundation for a decision support system for agriculture and natural resource management priority setting.

Software

Annpre: Annual precipitation

Annpet: Annual evapotranspiration

Annppe: Annual P/PE

Annxt: Annual mean maximum temperature

Annit: Annual mean minimum temperature

Annmaxxt: Annual absolute maximum temperature

Annminit: Annual absolute minimum temperature

T05s1pre: First trigger season precipitation

T05s1pet: First trigger season evapotranspiration T05s1ppe: First trigger season P/PE T05s1xt: First trigger season mean maximum temperature T05s1it: First trigger season mean minimum temperature T05s1run: Number of months in the first trigger season T05m1s1: First month of best trigger season T05s2pre: second trigger season precipitation T05s2pet: second trigger season evapotranspiration T05s2ppe: second trigger season P/PE T05s2xt: second trigger season mean maximum temperature T05s2it: second trigger season mean minimum temperature T05s2run: Number of months in the second trigger season T05m1s2: First month of second best trigger season Opt5mpre: Five-month optimum precipitation Opt5mpet: Five-month optimum evapotranspiration Opt5mppe: Five-month optimum P/PE Opt5mxt: Five-month optimum mean maximum temperature Opt5mit: Five-month optimum mean minimum temperature Opt5mm1: First month of highest P/PE season D05s1pre: Dry season precipitation D05s1pet: Dry season evapotranspiration D05s1ppe: Dry season P/PE D05s1xt: Dry season mean maximum temperature D05s1it: Dry season mean minimum temperature D05s1run: Number of months in the first dry season D05m1s1: 1st month of the first dry season D05s2pre: Dry season precipitation D05s2pet: Dry season evapotranspiration D05s2ppe: Dry season P/PE D05s2xt: Dry season mean maximum temperature D05s2it: Dry season mean minimum temperature D05s2run: Number of months in second dry season D05m1s2: First month of the second dry season **Qdrypre:** Driest guarter precipitation **Qdrypet:** Driest guarter evapotranspiration

Qdryppe: Driest quarter P/PE

Qdryxt: Driest quarter mean maximum temperature Qdryit: Driest quarter mean minimum temperature Qdrym1: First month of driest quarter **Qcoolpre: Coolest quarter precipitation** Qcoolpet: Coolest quarter evapotranspiration Qcoolppe: Coolest quarter P/PE Qcoolxt: Coolest quarter mean maximum temperature Qcoolit: Coolest quarter mean minimum temperature Qcoolm1: First month of coolest quarter Qwetpre: Wettest quarter precipitation Qwetpet: Wettest quarter evapotranspiration Qwetppe: Wettest quarter P/PE Qwetxt: Wettest quarter mean maximum temperature Qwetit: Wettest quarter mean minimum temperature Qwetm1: First month of wettest quarter Qwarmpre: Warmest quarter precipitation Qwarmpet: Warmest quarter evapotranspiration Qwarmppe: Warmest quarter P/PE Qwarmxt: Warmest quarter mean maximum temperature Qwarmit: Warmest quarter mean minimum temperature Qwarmm1: First month of warmest quarter Credits

ACT database, originally called climod.shp. It is based on a report produced by USAID's DESFIL project

Rainfall_distribution

File Geodatabase Feature Class



Tags

Rainfall

Summary

This dataset was extracted for the Tana River Basin area

Description

This coverage shows the annual rainfall distribution (in millimeters) for Kenya.

It was produced by JICA, National Water Master Plan, Kenya

Credits

Digitized by JICA, National Water Master Plan, originally called rainfall

Rainstations18901985

File Geodatabase Feature Class



Tags

Rainfall station

Summary

This dataset was extracted for the Tana River Basin

Description

The coverage shows 110 rainfall stations with data recorded between 1890 and 1985. There are continuous data between 1890 and 1991 for one station and good data for 23 stations between 1961 and 1985

Credits

Unknown, Originally called kermdata-99.exe

Rainstations19911996

File Geodatabase Feature Class



Tags

Rainfall station, temporal, precipitation

Summary

This dataset was extracted for the Tana River Basin area

Description

Coverage showing six rainfall stations in Kenya with rainfall data recorded between 1991 and 1996. Each of the stations has been uniquely identified with a code that is standard through the years

There are also datasets available separately in text format for the different stations as shown below

Contact: Philip Thornton (p.thornton@cgiar.org)

Twenty-one stations with data in calendar format from 1977 to 1997. The filenames are WMO<name>.RNF

The rainfall is specified in tenths of millimeters and there is a lot of data missing

Forty-three stations <name>.MET with daily data, solar radiation (in Langley's), maximum and minimum temperatures (in degrees centigrade) and rainfall (in millimeters) up to 1985

Note: Some of these data are 10 daily (taken at 10-day intervals) and their sources have been lost with time. Therefore, care has to be taken when working with these data

Credits

Unknown, originally known as y1991.utm

File Geodatabase Feature Class



Tags SOTER

Summary Point data SOTER

Description

The Soil and Terrain database for the Upper Tana River Catchment (version 1.1) (SOTER_UT_v1.1) at scale 1:250,000 was compiled to support the Green Water Credits (GWC) program by creating a primary SOTER dataset for hydrological assessment of the basin. Kenya Soil Survey (KSS) of the Kenya Agricultural Research Institute (KARI-KSS) and ISRIC-World Soil Information compiled the SOTER_UT dataset according to the standard SOTER methodology. The dataset includes both data of the original KENSOTER database (1:1M) for the Upper Tana Catchment and new SOTER units and soil profile data taken from other, existing soil surveys mainly at scale 100,000, and from more detailed studies.

Credits

ISRIC - World Soil Information

Theme: Conservation

ImportantBirdAreas

File Geodatabase Feature Class



Tags

Birds, IBA, biota, environment, Tana River Basin

Summary

This dataset was extracted for the Tana River Basin. These data were used in Map 5.3 in the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset portrays Important Bird Areas (IBAs) and their status in Kenya for the period 2003-2004. The data depicts each IBA by a point in the center of its associated area. IBAs range from 1 hectare to more than 1 million hectares in size.

Credits

ProtectedAreas

File Geodatabase Feature Class



Tags

Parks, protected areas, environment, boundaries, Tana River Basin

Summary

This dataset was extracted for the Tana River Basin. These data were used in maps throughout the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset shows protected areas in Kenya.

Credits

eba

File Geodatabase Feature Class



Tags

Endemic bird areas, EBA, birds, biodiversity, environment, Tana River Basin

Summary

This dataset was extracted for the Tana River Basin area. These data were used in Map 5.3 in the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset outlines Endemic Bird Areas (EBAs) in Kenya. EBAs are sites where two or more bird species of 'restricted range' (less than 50,000 km²) gather together in the same area

Credits

Mammals_Diversity

File Geodatabase Feature Class



Tags

Mammals, biodiversity, biota, environment, Tana River Basin

Summary

This dataset was extracted for the Tana River Basin area. These data were used in Map 5.2 in the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset portrays the predicted mammal diversity (or the total number of mammal species) in Kenya

Credits

Turtle_Breeding_Site

File Geodatabase Feature Class



Tags

Turtles, coastal, biodiversity, biota, environment, Tana River Basin

Summary

This dataset was extracted for the Tana River Basin area. These data were used in Maps 6.4 and 6.5 in the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset portrays locations of turtle nesting and breeding sites on the eastern coast of Kenya

Credits

Theme: Demography

pop_census1979

File Geodatabase Feature Class



Tags

Population, density, demography, male, female, Tana River Basin

Summary

This dataset was extracted for the Tana River Basin area

Description

Coverage showing the 1979 population census carried out at the fourth administrative (location) level

Credits

CBS, and Tropical Soil and Biological Fertility (TSBF) Institute, Nairobi, Kenya. Originally called kenloc79. ILRI

File Geodatabase Feature Class



Tags

Population, density, demography, male, female, Tana River Basin

Summary

This dataset was extracted for the Tana River Basin

Description

The coverage showing total population numbers and population density, as well as households and household densities carried out up to the fifth administrative level (sub-location) in 1989 for Kenya

Credits

Kenya Population Census of 1989 from CBS. This coverage was created at the GIS Unit at ILRI, Famine Early Warning Systems Network (FEWS NET) and TSBF, Nairobi, Kenya

Originally known as Knsl89g.shp. ILRI



Tags

Population, density, demography

Summary

This dataset was extracted for the Tana River Basin area

Description

Gridded Population of the World, Version 3 (GPWv3), Future Estimates consists of estimates of human population for the years 2005, 2010 and 2015 by 2.5 arc-minute grid cells. A proportional allocation gridding algorithm, utilizing more than 300,000 national and sub-national administrative units, is used to assign population values to grid cells. The future estimate population values are extrapolated based on a combination of sub-national growth rates from census dates and national growth rates from United Nations statistics. All of the grids have been adjusted to match United Nations national-level population estimates. The population density grids are derived by dividing the population count grids by the land area grid and represent persons per square kilometer. The grids are available in various GIS-compatible data formats and geographic extents (global, continent [Antarctica not included] and country levels).

Credits

GPWv3 is produced by the Center for International Earth Science Information Network (CIESIN), Columbia University, in collaboration with CIAT.



Tags

Population, density, demography

Summary

This dataset was extracted for the Tana River Basin area

Description

Gridded Population of the World, Version 3 (GPWv3) consists of estimates of human population for the years 1990, 1995 and 2000 by 2.5 arc-minute grid cells and associated datasets dated circa 2000. A proportional allocation gridding algorithm, utilizing more than 300,000 national and sub-national administrative units, is used to assign population values to grid cells. The population count grids contain estimates of the number of persons per grid cell. The grids are available in various GIS-compatible data formats and geographic extents (global, continent [Antarctica not included], and country levels). GPWv3 is produced by CIESIN, Columbia University, in collaboration with CIAT.

Credits

CIESIN, Columbia University; FAO and CIAT



Tags

Population, density, demography

Summary

This dataset was extracted for the Tana River Basin area

Description

Gridded Population of the World, Version 3 (GPWv3), Future Estimates consists of estimates of human population for the years 2005, 2010 and 2015 by 2.5 arc-minute grid cells. A proportional allocation gridding algorithm, utilizing more than 300,000 national and sub-national administrative units, is used to assign population values to grid cells. The future estimate population values are extrapolated based on a combination of sub-national growth rates from census dates and national growth rates from United Nations statistics. All of the grids have been adjusted to match United Nations national-level population estimates. The population density grids are derived by dividing the population count grids by the land area grid and represent persons per square kilometer. The grids are available in various GIS-compatible data formats and geographic extents (global, continent [Antarctica not included], and country levels). GPWv3 is produced by CIESIN, Columbia University, in collaboration with CIAT.

Credits

GPWv3 is produced by the CIESIN, Columbia University, in collaboration with CIAT



Tags

Population, density, demography

Summary

This dataset was extracted for the Tana River Basin area

Description

Gridded Population of the World, Version 3 (GPWv3) consists of estimates of human population for the years 1990, 1995 and 2000 by 2.5 arc-minute grid cells and associated datasets dated circa 2000. A proportional allocation gridding algorithm, utilizing more than 300,000 national and sub-national administrative units, is used to assign population values to grid cells. The population count grids contain estimates of the number of persons per grid cell. The grids are available in various GIS-compatible data formats and geographic extents (global, continent [Antarctica not included], and country levels). GPWv3 is produced by CIESIN, Columbia University, in collaboration with CIAT.

Credits

CIESIN, Columbia University; FAO; and CIAT



Tags

Population, density, demography

Summary

This dataset was extracted for the Tana River Basin area

Description

Gridded Population of the World, Version 3 (GPWv3), Future Estimates consists of estimates of human population for the years 2005, 2010 and 2015 by 2.5 arc-minute grid cells. A proportional allocation gridding algorithm, utilizing more than 300,000 national and sub-national administrative units, is used to assign population values to grid cells. The future estimate population values are extrapolated based on a combination of sub-national growth rates from census dates and national growth rates from United Nations statistics. All of the grids have been adjusted to match United Nations national-level population estimates. The population density grids are derived by dividing the population count grids by the land area grid and represent persons per square kilometer. The grids are available in various GIS-compatible data formats and geographic extents (global, continent [Antarctica not included], and country levels). GPWv3 is produced by CIESIN, Columbia University, in collaboration with CIAT.

Credits

GPWv3 is produced by CIESIN, Columbia University, in collaboration with CIAT



Tags

Population, density, demography

Summary

This dataset was extracted for the Tana River Basin area

Description

Gridded Population of the World, Version 3 (GPWv3) consists of estimates of human population for the years 1990, 1995 and 2000 by 2.5 arc-minute grid cells and associated datasets dated circa 2000. A proportional allocation gridding algorithm, utilizing more than 300,000 national and sub-national administrative units, is used to assign population values to grid cells. The population count grids contain estimates of the number of persons per grid cell. The grids are available in various GIS-compatible data formats and geographic extents (global, continent [Antarctica not included], and country levels). GPWv3 is produced by CIESIN, Columbia University, in collaboration with CIAT.

Credits

CIESIN, Columbia University; FAO; and CIAT



Tags

Population, density, demography

Summary

This dataset was extracted for the Tana River Basin area

Description

Gridded Population of the World, Version 3 (GPWv3), Future Estimates consists of estimates of human population for the years 2005, 2010 and 2015 by 2.5 arc-minute grid cells. A proportional allocation gridding algorithm, utilizing more than 300,000 national and sub-national administrative units, is used to assign population values to grid cells. The future estimate population values are extrapolated based on a combination of sub-national growth rates from census dates and national growth rates from United Nations statistics. All of the grids have been adjusted to match United Nations national-level population estimates. The population density grids are derived by dividing the population count grids by the land area grid and represent persons per square kilometer. The grids are available in various GIS-compatible data formats and geographic extents (global, continent [Antarctica not included], and country levels). GPWv3 is produced by CIESIN, Columbia University, in collaboration with CIAT.

Credits

GPWv3 is produced by CIESIN, Columbia University, in collaboration with CIAT



Tags

Population, density, demography

Summary

This dataset was extracted for the Tana River Basin area

Description

Gridded Population of the World, Version 3 (GPWv3) consists of estimates of human population for the years 1990, 1995 and 2000 by 2.5 arc-minute grid cells and associated datasets dated circa 2000. A proportional allocation gridding algorithm, utilizing more than 300,000 national and sub-national administrative units, is used to assign population values to grid cells. The population count grids contain estimates of the number of persons per grid cell. The grids are available in various GIS-compatible data formats and geographic extents (global, continent [Antarctica not included], and country levels). GPWv3 is produced CIESIN, Columbia University, in collaboration with CIAT.

Credits

CIESIN, Columbia University; FAO; and CIAT



Tags

Population, density, demography

Summary

This dataset was extracted for the Tana River Basin area

Description

Gridded Population of the World, Version 3 (GPWv3), Future Estimates consists of estimates of human population for the years 2005, 2010 and 2015 by 2.5 arc-minute grid cells. A proportional allocation gridding algorithm, utilizing more than 300,000 national and sub-national administrative units, is used to assign population values to grid cells. The future estimate population values are extrapolated based on a combination of sub-national growth rates from census dates and national growth rates from United Nations statistics. All of the grids have been adjusted to match United Nations national-level population estimates. The population density grids are derived by dividing the population count grids by the land area grid and represent persons per square kilometer. The grids are available in various GIS-compatible data formats and geographic extents (global, continent [Antarctica not included], and country levels). GPWv3 is produced by CIESIN, Columbia University, in collaboration with CIAT.

Credits

CIESIN, Columbia University, in collaboration with CIAT



Tags

Population, density, demography

Summary

This dataset was extracted for the Tana River Basin area

Description

Gridded Population of the World, Version 3 (GPWv3) consists of estimates of human population for the years 1990, 1995 and 2000 by 2.5 arc-minute grid cells and associated datasets dated circa 2000. A proportional allocation gridding algorithm, utilizing more than 300,000 national and sub-national administrative units, is used to assign population values to grid cells. The population count grids contain estimates of the number of persons per grid cell. The grids are available in various GIS-compatible data formats and geographic extents (global, continent [Antarctica not included], and country levels). GPWv3 is produced by CIESIN, Columbia University, in collaboration with CIAT.

Credits

CIESIN, Columbia University; FAO; and CIAT



Tags

Population, density, demography

Summary

This dataset was extracted for the Tana River Basin area

Description

Gridded Population of the World, Version 3 (GPWv3), Future Estimates consists of estimates of human population for the years 2005, 2010 and 2015 by 2.5 arc-minute grid cells. A proportional allocation gridding algorithm, utilizing more than 300,000 national and sub-national administrative units, is used to assign population values to grid cells. The future estimate population values are extrapolated based on a combination of sub-national growth rates from census dates and national growth rates from United Nations statistics. All of the grids have been adjusted to match United Nations national-level population estimates. The population density grids are derived by dividing the population count grids by the land area grid and represent persons per square kilometer. The grids are available in various GIS-compatible data formats and geographic extents (global, continent [Antarctica not included], and country levels). GPWv3 is produced by CIESIN, Columbia University, in collaboration with CIAT.

Credits

GPWv3 is produced by CIESIN, Columbia University, in collaboration with CIAT



Tags

Population, density, demography

Summary

This dataset was extracted for the Tana River Basin area

Description

Gridded Population of the World, Version 3 (GPWv3) consists of estimates of human population for the years 1990, 1995 and 2000 by 2.5 arc-minute grid cells and associated datasets dated circa 2000. A proportional allocation gridding algorithm, utilizing more than 300,000 national and sub-national administrative units, is used to assign population values to grid cells. The population count grids contain estimates of the number of persons per grid cell. The grids are available in various GIS-compatible data formats and geographic extents (global, continent [Antarctica not included], and country levels). GPWv3 is produced by CIESIN, Columbia University, in collaboration with CIAT.

Credits

CIESIN, Columbia University; FAO; and CIAT

Theme: Elevation

contours

File Geodatabase Feature Class



Tags

contour, elevation, topography, Tana River Basin

Summary

This dataset was extracted for the Tana River Basin

Description

The coverage shows the elevation of Kenya according to the ACT database. It is at an interval of 1,000 meters.

Credits

ACT database, originally called contours.shp, GIS Unit at ILRI

dem90m

File Geodatabase Raster Dataset



Tags

Digital elevation model, topography

Summary

This dataset was extracted for the Tana River Basin area

Description

PROCESSED SHUTTLE RADAR TOPOGRAPHY MISSION (SRTM) DATA VERSION 4.1

The data distributed here are in ARC GRID, ARC ASCII and GeoTIFF formats, in decimal degrees and datum World Geodetic System (WGS) 84. They are derived from the United States Geological Survey (USGS)/National Aeronautics and Space Administration (NASA) SRTM data.

CIAT has processed these data to provide seamless, continuous topography surfaces. Areas of regions with no data in the original SRTM data have been filled using interpolation methods described by Jarvis et al. (2008).

Version 4.1 has the following enhancements over V4.0:

- Improved ocean mask used, which includes some small islands previously lost in the cut data.
- Single no-data line of pixels along meridians fixed.
- All GeoTIFFs with 6,000 x 6,000 pixels.
- For ASCII format files, the projection definition is included in .prj files.

- For GeoTIFF format files, the projection definition is in the .tfw (ESRI TIFF World) and a .hdr file that reports PROJ.4 equivalent projection definitions.

Credits

Jarvis A.; Reuter, H.I.; Nelson, A.; Guevara, E. 2008. Hole-filled seamless SRTM data V4. International Center for Tropical Agriculture (CIAT). Available at http://srtm.csi.cgiar.org (accessed on May 11, 2016).

hillshade

File Geodatabase Raster Dataset



Tags

Hillshade

Summary

This dataset was extracted into a subset for the Tana River Basin area.

Hillshade layer derived from SRTM DEM 90 meter by using the ArcGIS spatial analyst surface hillshade tool.

Credits

International Water Management Institute (IWMI)

Theme: Epidemiology

ecf_distribution

File Geodatabase Feature Class



Tags

East Coast Fever, Tana River Basin

Summary

This dataset was extracted for the Tana River Basin area

Description

Coverage showing the distribution of East Coast Fever (ECF) in Kenya. The distribution of *Theileria parva* based on epidemiological surveys (FAO 1975) have been compiled and mapped by Lessard et al. (1990). The map also includes 'expert opinion' based on an extensive survey of local experts.

Credits

FAO (Food and Agriculture Organization of the United Nations). 1975. *Kenya: Epizooitological survey of tickborne cattle diseases*. AG: RWA/77/006. Rome: Food and Agriculture Organization of the United Nations (FAO).

Lessard, P.; L'Eplattenier, R.; Norval, R.A.; Kundert, K.; Dolan, T.T.; Croze, H.; Walker, J.B.; Irvin, A.D.; Perry, B.D. 1990. Geographical information systems for studying the epidemiology of cattle diseases caused by Theileria parva. *The Veterinary Record* 126(11): 255-262.

Digitized by the GIS Unit at ILRI


Tags

Malaria, health, disease, Tana River Basin

Summary

This dataset was extracted for the Tana River Basin

Description

This coverage shows the classification of malarial endemicity in Kenya carried out at district level by Wellcome Trust.

Some of the districts represented in this shape file, which are not in the Kenya_district98, were carved out using the District Development Plan reports and the 1999 CBS maps.

Credits

A Noor at Wellcome Trust

r_appendiculatus

File Geodatabase Feature Class



Tags

Brown ear tick, R. appendiculatus

Summary

This dataset was extracted for the Tana River Basin area

Description

Recorded occurrence of the Brown Ear Tick (R. appendiculatus) in Kenya (and 14 other African countries) has been compiled by Lessard et al. 1990. For Kenya, these data are based primarily on collections by Walker 1974. Lessard's dataset comprises 894 records of *R. appendiculatus* and reference to the source of data is available with Brian Perry.

Credits

Lessard, P.; L'Eplattenier, R.; Norval, R.A.; Kundert, K.; Dolan, T.T.; Croze, H.; Walker, J.B.; Irvin, A.D.; Perry, B.D. 1990. Geographical information systems for studying the epidemiology of cattle diseases caused by Theileria parva. *The Veterinary Record* 126(11): 255-262.

Walker, J.B. 1974. *The ixodid ticks of Kenya: A review of present knowledge of their hosts and distribution.* London: Commonwealth Institute of Entomology.

Digitized by the GIS Unit at ILRI. Originally called krapnts.

tsetse_distribution

File Geodatabase Feature Class



Tags

Tsetse distribution

Summary

This dataset was extracted for the Tana River Basin

Description

This coverage shows tsetse distribution in Kenya. The original map is based on Ford and Katondo's (1977) distribution maps – modified with data generated by Kenya Trypanosomiasis Research Institute (KETRI).

Credits

Ford, J.; Katondo, K.M. 1977. Maps of tsetse fly (*Glossina*) distribution in Africa, 1973, according to sub-generic groups on a scale of 1:5,000,000. *Bulletin of Animal Health and Production in Africa* 15: 188-193. Nairobi: Organization of African Unity/Scientific and Technical Research Commission (OAU/STRC). (Map). Originally called ken_tst, GIS Unit at ILRI.

Theme: Geology

lithology

File Geodatabase Feature Class



Tags

Kenya lithology, Tana River Basin

Summary

This dataset was extracted for the Tana River Basin area. Used for the soil study.

Description

Coverage showing the lithology of Kenya, based on Kenya_SOTER. For each SOTER unit, a generalized description of the consolidated or unconsolidated surface material, underlying the larger part of the terrain, is given. Major differentiating criteria are petrology and mineralogical composition.

Credits

GIS Unit, ILRI

Theme: Hydrography

TanaRiverBasin

File Geodatabase Feature Class



Tags

River basin, watershed, catchment, Tana

Summary

Tana River Basin hydrological boundary

Description

Tana River Basin boundary delineated based on SRTM DEM 90-meter resolution by using the Soil and Water Assessment Tool (SWAT) model. Dr. Tracy Baker, formerly Researcher – Hydrology/Hydrological Modeling, International Water Management Institute (IWMI)

Credits

International Water Management Institute (IWMI)

Streams

File Geodatabase Feature Class



Tags

stream network, natural drainage

Summary

Tana River Basin streams

Description

Streams in the Tana River Basin are generated from SRTM DEM 90 meter resolution by using the SWAT model. Dr. Tracy Baker, Researcher – Hydrology/Hydrological Modeling, International Water Management Institute (IWMI)

Credits

International Water Management Institute (IWMI)

StreamGauges

File Geodatabase Feature Class



Tags

Gauging station, monitoring flow, measuring discharge

Summary

Tana River gauging stations, where total accumulated flow is measured for a catchment.

Description

There are 159 river gauging stations (RGS) run by WRMA and KMD stations are currently working

Credits

International Water Management Institute (IWMI)

Water_Bodies

File Geodatabase Feature Class



Tags

waterbodies, lakes, imageryBaseMapsEarthCover, inlandWaters

Summary

These data were used in maps throughout the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset portrays waterbodies in Kenya, from FAO's Africover dataset.

Credits

WaterPoints

File Geodatabase Feature Class



Tags

Dams, falls, rapids, springs, wells and water holes

Summary

This dataset was extracted for the Tana River Basin area

Description

The coverage shows the distribution of water points and related features in Kenya as described in the ACT database. The water points in this coverage include dams, falls, rapids, springs, wells and water holes.

Credits

ACT database map history: Originally called hyddnpoint, ILRI

Theme: Land Use

AgroEcologicalZones

File Geodatabase Feature Class



Tags

Agro-ecological zone, per humid, humid, sub-humid, semi-humid, transitional, semi-arid, arid, per arid

Summary

Agro-ecological zones, Tana River Basin

Description

Coverage showing the agro-ecological zones of Kenya based on temperature belts (maximum temperature limits within which the main crops of Kenya can flourish) and the main zones (probability of meeting the temperature and water requirements of the leading crops, i.e., the climatic yield potential). Its aim is to provide the framework for ecological land-use potential.

This coverage does not include information on the non-cultivated (pastoralist) areas. There is, however, a grid layer - Kenya_LGP_Aez - based on the length of the growing period prepared by FAO, which has information on the whole country and is available in the database.

Aezone: The agro-ecological zone

Main zones

(0) per humid, (1) humid, (2) sub-humid, (3) semi-humid, (4) transitional, (5) semi-arid, (6) arid, and (7) per arid

Temperature belts

(TA) Tropical alpine (annual mean temperature, 2-10 degrees)

- (UH) Upper highland (annual mean temperature, 10-15 degrees, occasional night frost)
- (LH) Lower highland (annual mean temperature, 15-18 degrees, M.min 8-11, normal, no frost)
- (UM) Upper midland (annual mean temperature, 18-21 degrees, M.min 11-14)
- (LM) Lower midland (annual mean temperature, 21-24 degrees, M.mean > 14 degrees)
- (IL) Inner lowland (annual mean temperature > 24 degrees, M.maximum > 31 degrees)

(CL) Coastal lowland (annual mean temperature > 24, M.maximum < 31 degrees)

Credits

Agro-ecological zones are based on the *Farm management handbook of Kenya*, Digitized by Kenya Soil Survey (KSS) and Kenya Agricultural Research Institute (KARI)

Ralph Jaetzold and Helmut Schmidt, volumes 1-3, Ministry of Agriculture, Nairobi, Kenya, and the German Agricultural Team of Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH, 1983, ILRI

Aczones

File Geodatabase Feature Class



Tags

Agro-climatic zones

Summary

Agro-climatic zone, Tana River Basin

Description

This coverage is derived from the Exploratory Soil Survey Report number E1, Kenya Soil survey, Nairobi, 1982, and shows the principle agro-climatic zones of Kenya based on a combination of both moisture availability zones (I-IV) and temperature zones (1-9).

Additional attribute information

Shape: Internally generated by Arc/info

Area: Internally generated by Arc/info

Perimeter: Internally generated by Arc/info

Kacz_: Internally generated by Arc/info

Kacz_ld: Internally generated by Arc/info

Zone: Agro-climatic zone based on temperature zones (1-9) and moisture availability zone (I-VII) as shown below

The first digit (translated from the roman numbers) represents the moisture availability zones, e.g., VII becomes 7

The second digit represents the temperature zones. Therefore, 71 in the coverage represents Zone VII-1.

The moisture availability and temperature zones are outlined below:

Moisture availability zones

(I) > 80-humid, (II) 65-80-sub-humid, (III) 50-65-semi-humid, (IV) 40-50-semi-humid to semi-arid, (V) 25-40-semi-arid, (VI) 15-25-arid, and (VII) < 15-very arid

Temperature zones (degrees centigrade)

```
(1) 24-30, (2) 22-24, (3) 20-22, (4) 18-20, (5) 16-18, (6) 14-16, (7) 12-14, (8) 10-12, and (9) less than 10
```

Credits

UNEP/GRID database derived from the Exploratory Soil Survey Report number E1, Kenya Soil Survey, Nairobi, 1982, ILRI



Tags

bare areas, imageryBaseMapsEarthCover

Summary

This dataset was extracted for the Tana River Basin area. These data were used in Map 1.3 in the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset portrays bare areas (areas naturally devoid of vegetation) in Kenya, from FAO's Africover dataset.

Credits

charcoal_sources

File Geodatabase Feature Class



Tags

charcoal, energy, environment, economy

Summary

These data were used in Map 7.5 in the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset portrays sources of wood for charcoal in selected administrative districts of Kenya, 2004

Credits

CentralHighlandsZone_LU

File Geodatabase Feature Class



Tags

landcover, environment, natural resources, agriculture, forest, rangeland, management, AFRICOVER, land cover

Summary

The purpose of the Africover land cover database is to provide the information required for natural resource assessment and management, environmental modelling and decision making.

Description

This dataset is a spatially re-aggregated version of the original national Africover multipurpose database. The original full resolution land cover has been produced from visual interpretation of digitally enhanced LANDSAT TM images (Bands 4, 3, 2) acquired mainly in the year 1999. The data was aggregated by eliminating polygons below a certain area threshold to give priority to the classes belonging to agriculture. This threshold corresponds to approximately a 30% reduction in the polygon count. The dataset was then re-aggregated based on area threshold values. For more information on the area thresholds used to spatially aggregate the land cover data, please see the 'spatial-agg-procedure' document included in the zip file available here for download.

The land cover classes have been developed using the FAO/UNEP international standard Land Cover Classification System (LCCS).

The dataset is intended for free public access.

The shape main attributes correspond to the following fields:

-ID -HECTARES -USERLABEL -LCCCODE (unique LCCS code) -CODE1 -CODE2

-CODE3

-LC

You can download a zip archive containing:

-the dataset ke-spatial-agg (.shp)

-the Kenya Classifiers Used (.pdf)

-the Kenya legend (.pdf and .xls)

-the Kenya Legend - LCCS Import file (.xls)

-the spatial-agg-procedure (.pdf)

-the Userlabel Definitions (.pdf)

Note: the document Kenya Classifiers Used.pdf is a list of all the LCCS classifiers used in the study area. They are grouped under the eight major land cover types. In addition to the standard classifiers contained in LCCS, the user may find 'user defined' classifiers used by the map producer to add additional information to a specific class, which is not available in LCCS. The user-defined attributes are always coded with the letter 'Z'.

Credits

FAO, ILRI

CoastalMarginalAgMixedZone_LU

File Geodatabase Feature Class



Tags

landcover, environment, natural resources, agriculture, forest, rangeland, management, AFRICOVER, land cover

Summary

The purpose of the Africover land cover database is to provide the information required for natural resource assessment and management, environmental modelling and decision making.

Description

This dataset is a spatially re-aggregated version of the original national Africover multipurpose database. The original full resolution land cover has been produced from visual interpretation of digitally enhanced LANDSAT TM images (bands 4, 3, 2) acquired mainly in the year 1999. The data was aggregated by eliminating polygons below a certain area threshold to give priority to the classes belonging to agriculture. This threshold corresponds to approximately a 30% reduction in the polygon count. The dataset was then re-aggregated based on area threshold values. For more information on the area thresholds used to spatially aggregate the land cover data, please see the 'spatial-agg-procedure' document included in the zip file available here for download.

The land cover classes have been developed using the FAO/UNEP international standard LCCS.

The dataset is intended for free public access.

The shape main attributes correspond to the following fields:

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-CODE3

-LC

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Credits

FAO, ILRI



Tags

landcover, environment, natural resources, agriculture, forest, rangeland, management, AFRICOVER, land cover

Summary

The purpose of the Africover land cover database is to provide the information required for natural resource assessment and management, environmental modelling and decision-making.

Description

This dataset is a spatially re-aggregated version of the original national Africover multipurpose database. The original full resolution land cover has been produced from visual interpretation of digitally enhanced LANDSAT TM images (bands 4, 3, 2) acquired mainly in the year 1999. The data was aggregated by eliminating polygons below a certain area threshold to give priority to the classes belonging to agriculture. This threshold corresponds to approximately a 30% reduction in the polygon count. The dataset was then re-aggregated based on area threshold values. For more information on the area thresholds used to spatially aggregate the land cover data, please see the 'spatial-agg-procedure' document included in the zip file available here for download.

The land cover classes have been developed using the FAO/UNEP international standard LCCS.

The dataset is intended for free public access.

The shape main attributes correspond to the following fields:

-ID -HECTARES -USERLABEL -LCCCODE (unique LCCS code) -CODE1 -CODE2

-CODE3

-LC

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Note: the document Kenya Classifiers Used.pdf is a list of all the LCCS classifiers used in the study area. They are grouped under the eight major land cover types. In addition to the standard classifiers contained in LCCS, the user may find 'user defined' classifiers used by the map producer to add additional information to a specific class, which is not available in LCCS. The user-defined attributes are always coded with the letter 'Z'.

Credits

FAO, ILRI



Tags

croplands, farming

Summary

Crop diversity details were extracted for the Tana River Basin area. These data were used in Map 5.5 in the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset portrays the average number of crops grown in croplands of central and western Kenya, 1997

Credits



Tags

Agriculture, farming

Summary

These data were used in Map 5.4 in the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset portrays the percentage of land under cultivation in Kenya, taken from FAO's Africover dataset.

Credits



Tags

Agriculture, irrigation, farming, Tana River Basin

Summary

These data were extracted for the Tana River Basin area. These data were used in Map 3.12 in the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset shows large-scale irrigation in Kenya, taken from FAO's Africover dataset.

Credits



Tags

Millet, sorghum, beans, area, production, livestock, population

Summary

This dataset was extracted for the Tana River Basin area

Description

This coverage shows data on crop yield and area planted for major crops, as well as livestock populations in Kenya between 1993 and 1999 prepared up to the third administrative level (divisions). All target crops are covered and livestock data is reported as exotic and local cattle.

Class3: Third level administrative boundary (division) identification

Unicode: Unique identification for the division as shown below

- The 1st 4 digits represent the country code
- The 4^{th} and 5^{th} digits represent the province code
- The 6^{th} and 7^{th} digits represent the district code
- The $8^{\mbox{\tiny th}}$ and $9^{\mbox{\tiny th}}$ digits represent the division code

Province: Name of province

District: Name of district

Division: Name of division

Mz_pro98: Total maize production per division in tonnes for the year 1998

Mz_ha98: Total number of hectares per constituency under maize for the year 1998

Mz_pro97: Total maize production per division in tonnes for the year 1997

Mz ha97: Total number of hectares per division under maize for the year 1997 Mz_pro96: Total maize production per division in tonnes for the year 1996 Mz_ha96: Total number of hectares per division under maize for the year 1996 Mz pro95: Total maize production per division in tonnes for the year 1995 Mz ha95: Total number of hectares per division under maize for the year 1995 Mz_pro94: Total maize production per division in tonnes for the year 1994 Mz ha94: Total number of hectares per division under maize for the year 1994 Mi_pro98: Total millet production per division in tonnes for the year 1998 Mi_ha98: Total number of hectares per division under millet for the year 1998 Mi pro97: Total millet production per division in tonnes for the year 1997 Mi ha97: Total number of hectares per division under millet for the year 1997 Mi_pro96: Total millet production per division in tonnes for the year 1996 Mi_ha96: Total number of hectares per division under millet for the year 1996 Mi_pro95: Total millet production per division in tonnes for the year 1995 Mi ha95: Total number of hectares per division under millet for the year 1995 Mi pro94: Total millet production per division in tonnes for the year 1994 Mi_ha94: Total number of hectares per division under millet for the year 1994 So pro98: Total sorghum production per division in tonnes for the year 1998 So_ha98: Total number of hectares per division under sorghum for the year 1998 So_pro97: Total sorghum production per division in tonnes for the year 1997 So ha97: Total number of hectares per division under sorghum for the year 1997 So pro96: Total sorghum production per division in tonnes for the year 1996 So_ha96: Total number of hectares per division under sorghum for the year 1996 So pro95: Total sorghum production per division in tonnes for the year 1995 So ha95: Total number of hectares per division under sorghum for the year 1995 So_pro94: Total sorghum production per division in tonnes for the year 1994 So ha94: Total number of hectares per division under sorghum for the year 1994 Bn pro98: Total bean production per division in tonnes for the year 1998 Bn ha98: Total number of hectares per division under beans for the year 1998 Bn pro97: Total bean production per division in tonnes for the year 1997 Bn ha97: Total number of hectares per division under beans for the year 1997 Bn pro96: Total bean production per division in tonnes for the year 1996 Bn ha96: Total number of hectares per division under beans for the year 1996 Bn pro95: Total bean production per division in tonnes for the year 1995 Bn ha95: Total number of hectares per division under beans for the year 1995

90

Bn pro94: Total bean production per division in tonnes for the year 1994 Bn_ha94: Total number of hectares per division under beans for the year 1994 Ca_pro98: Total number of cattle per division in 1998 Ca ha98: Total number of hectares under cattle production in 1998 Ca_pro97: Total number of cattle per division in 1997 Ca_ha97: Total number of hectares under cattle production in 1997 Ca_pro96: Total number of cattle per division in 1996 Ca_ha96: Total number of hectares under cattle production in 1996 Ca_pro95: Total number of cattle per division in 1995 Ca ha95: Total number of hectares under cattle production in 1995 Ca_pro94: Total number of cattle per division in 1994 Ca_ha94: Total number of hectares under cattle production in 1994 Excatt98: Total number of exotic cattle per division in 1998 Excatt97: Total number of exotic cattle per division in 1997 Excatt96: Total number of exotic cattle per division in 1996 Excatt95: Total number of exotic cattle per division in 1995 Excatt94: Total number of exotic cattle per division in 1994 Locatt98: Total number of local cattle per division in 1998 Locatt97: Total number of local cattle per division in 1997 Locatt96: Total number of local cattle per division in 1996 Locatt95: Total number of local cattle per division in 1995 Locatt94: Total number of local cattle per division in 1994 Tocatt98: Total number of both local and exotic cattle per division in 1998 Tocatt97: Total number of both local and exotic cattle per division in 1997 Tocatt96: Total number of both local and exotic cattle per division in 1996 Tocatt95: Total number of both local and exotic cattle per division in 1995 Tocatt94: Total number of both local and exotic cattle per division in 1994

Credits

ILRI, originally called Kenprod.shp. Since Kenya's administrative boundaries have undergone major changes in the last five years with the number of districts rising from 54 to 71, the available coverage which showed boundaries as they were in 1989 was overlaid with the new district coverage (which is available) at the sub-location level (sixth level) to help identify which administrative units belong to new districts.

CropSize

File Geodatabase Feature Class



Tags

Agriculture, farming

Summary

These data were used in Map 5.7 in the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset portrays the size of agricultural fields in Kenya, taken from FAO's Africover dataset.

Credits

EasternPastoralZone_LU

File Geodatabase Feature Class



Tags

landcover, environment, natural resources, agriculture, forest, rangeland, management, AFRICOVER, land cover

Summary

The purpose of the Africover land cover database is to provide the information required for natural resource assessment and management, environmental modelling and decision making.

Description

-CODE2

This dataset is a spatially re-aggregated version of the original national Africover multipurpose database. The original full resolution land cover has been produced from visual interpretation of digitally enhanced LANDSAT TM images (bands 4, 3, 2) acquired mainly in the year 1999. The data was aggregated by eliminating polygons below a certain area threshold to give priority to the classes belonging to agriculture. This threshold corresponds to approximately a 30% reduction in the polygon count. The dataset was then re-aggregated based on area threshold values. For more information on the area thresholds used to spatially aggregate the land cover data, please see the 'spatial-agg-procedure' document included in the zip file available here for download.

The land cover classes have been developed using the FAO/UNEP international standard LCCS.

The dataset is intended for free public access.

The shape main attributes correspond to the following fields:

-ID -HECTARES -USERLABEL -LCCCODE (unique LCCS code) -CODE1

-CODE3

-LC

You can download a zip archive containing:

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-the Userlabel Definitions (.pdf)

Note: the document Kenya Classifiers Used.pdf is a list of all the LCCS classifiers used in the study area. They are grouped under the eight major land cover types. In addition to the standard classifiers contained in LCCS, the user may find 'user defined' classifiers used by the map producer to add additional information to a specific class, which is not available in LCCS. The user-defined attributes are always coded with the letter 'Z'.

Credits

FAO, ILRI

forest_ranges

File Geodatabase Feature Class



Tags forest, ranges

Summary

Forest ranges, Tana River Basin

Description

This coverage shows the major forest ranges in Kenya according to International Union for Conservation of Nature (IUCN). There is also a supplemental coverage called Kenya_forests.shp prepared by FAO, which only shows the actual forests within Kenya as opposed to the forest ranges shown in this coverage.

This coverage shows the forest ranges that, in many cases, cover more than one forest.

Credits

International Union for the Conservation of Nature (IUCN), ILRI

landcover_ge

File Geodatabase Feature Class



Tags

landcover, environment, natural resources, agriculture, forest, rangeland, management, AFRICOVER, land cover

Summary

The purpose of the Africover land cover database is to provide the information required for natural resource assessment and management, environmental modelling and decision making.

Description

This dataset is a spatially re-aggregated version of the original national Africover multipurpose database. The original full resolution land cover has been produced from visual interpretation of digitally enhanced LANDSAT TM images (bands 4, 3, 2) acquired mainly in the year 1999. The data was aggregated by eliminating polygons below a certain area threshold to give priority to the classes belonging to agriculture. This threshold corresponds to approximately a 30% reduction in the polygon count. The dataset was then re-aggregated based on area threshold values. For more information on the area thresholds used to spatially aggregate the land cover data, please see the 'spatial-agg-procedure' document included in the zip file available here for download.

The land cover classes have been developed using the FAO/UNEP international standard LCCS.

The dataset is intended for free public access.

The shape main attributes correspond to the following fields:

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-CODE3

-LC

You can download a zip archive containing:

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Note: the document Kenya Classifiers Used.pdf is a list of all the LCCS classifiers used in the study area. They are grouped under the eight major land cover types. In addition to the standard classifiers contained in LCCS, the user may find 'user defined' classifiers used by the map producer to add additional information to a specific class, which is not available in LCCS. The user-defined attributes are always coded with the letter 'Z'.

Credits

FAO, ILRI

landuse

File Geodatabase Feature Class



Tags

landuse, forest, woodland, bushland (dense), bushland (sparse), grassland, barren land, swamp, water body, water (artificial), agriculture (dense), agriculture (sparse), plantation, town

Summary

This dataset was extracted for the Tana River Basin area

Description

Coverage showing general land-use classes derived from 1980 landsat data by JICA, National Water Master Plan, Kenya

Credits

JICA, National Water Master Plan, Kenya

Map history: prepared in 1987 from Landsat data by JICA, ILRI

maize_prod_86_90

File Geodatabase Feature Class



Tags

Maize, area, production, Tana River Basin

Summary

This dataset was extracted for the Tana River Basin area

Description

This coverage shows the total maize production in tonnes for Kenya between 1986 and 1990, according to a study conducted by FAO and published in 1998 at a scale of 1:1,000,000.

Credits

FAO, originally called AGRmaize.shp and created by FAO. Published in 1998 under the title 'FAOSTAT agriculture data'.

mangroves

File Geodatabase Feature Class



Tags

mangroves, coastal, imageryBaseMapsEarthCover, environment

Summary

These data were used in Maps 6.4 and 6.5 in the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset portrays locations of mangroves on the eastern coast of Kenya.

Credits
millet_prod_86_90

File Geodatabase Feature Class



Tags

Millet, area, production, Tana River Basin

Summary

This dataset was extracted for the Tana River Basin

Description

This coverage shows the total millet production in tonnes for Kenya between 1986 and 1990, according to a study conducted by FAO and published in 1998 at a scale of 1:1,000,000.

Credits

FAO, originally called AGRmillet.shp and created by FAO. Published in 1998 under the title 'FAOSTAT agriculture data'; ILRI

Pineapple_plantations

File Geodatabase Feature Class



Tags

agriculture, pineapple, imageryBaseMapsEarthCover

Summary

This dataset was extracted for the Tana River Basin area. These data were used in Map 3.9 in the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset portrays locations of pineapple plantations in Kenya, from FAO's Africover dataset.

Credits

rangeland

File Geodatabase Feature Class



Tags

savanna, grassland, imageryBaseMapsEarthCover

Summary

These data were used in Map 1.3 in the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset portrays areas of savanna and grassland in Kenya, from FAO's Africover dataset.

Credits

File Geodatabase Feature Class



Tags

Rice, area, yield, production, Tana River Basin

Summary

This dataset was extracted for the Tana River Basin area.

Description

This coverage shows the total rice production statistics for each province in Kenya between 1986 and 1990, and published in 1998 by FAO at a scale of 1:1,000,000.

Credits

FAO, originally called AGRrice.shp and created by FAO. Published in 1998 under the title 'FAOSTAT agriculture data', ILRI

sorghum_prod_86_90

File Geodatabase Feature Class



Tags

Sorghum, production, yield, area, Tana River Basin

Summary

This dataset was extracted for the Tana River Basin area

Description

This coverage shows the total sorghum production statistics for each province in Kenya between 1986 and 1990, and published in 1998 by the Food and Agriculture Organization of the United Nations (FAO) at a scale of 1:1,000,000.

Credits

FAO, originally called AGRsorghum.shp and created by FAO. Published in 1998 under the title 'FAOSTAT agriculture data', ILRI

SoutheasternMarginalMixedZone_LU

File Geodatabase Feature Class



Tags

landcover, environment, natural resources, agriculture, forest, rangeland, management, AFRICOVER, land cover

Summary

The purpose of the Africover land cover database is to provide the information required for natural resource assessment and management, environmental modelling and decision making.

Description

This dataset is a spatially re-aggregated version of the original national Africover multipurpose database. The original full resolution land cover has been produced from visual interpretation of digitally enhanced LANDSAT TM images (bands 4, 3, 2) acquired mainly in the year 1999. The data was aggregated by eliminating polygons below a certain area threshold to give priority to the classes belonging to agriculture. This threshold corresponds to approximately a 30% reduction in the polygon count. The dataset was then re-aggregated based on area threshold values. For more information on the area thresholds used to spatially aggregate the land cover data, please see the 'spatial-agg-procedure' document included in the zip file available here for download.

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-the spatial-agg-procedure (.pdf)

-the Userlabel Definitions (.pdf)

Note: the document Kenya Classifiers Used.pdf is a list of all the LCCS classifiers used in the study area. They are grouped under the eight major land cover types. In addition to the standard classifiers contained in LCCS, the user may find 'user defined' classifiers used by the map producer to add additional information to a specific class, which is not available in LCCS. The user-defined attributes are always coded with the letter 'Z'.

Credits

FAO, ILRI

SoutheasternPastoralZone_LU

File Geodatabase Feature Class



Tags

landcover, environment, natural resources, agriculture, forest, rangeland, management, AFRICOVER, land cover

Summary

The purpose of the Africover land cover database is to provide the information required for natural resource assessment and management, environmental modelling and decision making.

Description

This dataset is a spatially re-aggregated version of the original national Africover multipurpose database. The original full resolution land cover has been produced from visual interpretation of digitally enhanced LANDSAT TM images (bands 4, 3, 2) acquired mainly in the year 1999. The data was aggregated by eliminating polygons below a certain area threshold to give priority to the classes belonging to agriculture. This threshold corresponds to approximately a 30 % reduction in the polygon count. The dataset was then re-aggregated based on area threshold values. For more information on the area thresholds used to spatially aggregate the land cover data, please see the 'spatial-agg-procedure' document included in the zip file available here for download.

The land cover classes have been developed using the FAO/UNEP international standard LCCS.

The dataset is intended for free public access.

The shape main attributes correspond to the following fields:

-ID -HECTARES -USERLABEL -LCCCODE (unique LCCS code) -CODE1 -CODE2

-CODE3

-LC

You can download a zip archive containing:

-the dataset ke-spatial-agg (.shp)

-the Kenya Classifiers Used (.pdf)

-the Kenya legend (.pdf and .xls)

-the Kenya Legend - LCCS Import file (.xls)

-the spatial-agg-procedure (.pdf)

-the Userlabel Definitions (.pdf)

Note: the document Kenya Classifiers Used.pdf is a list of all the LCCS classifiers used in the study area. They are grouped under the eight major land cover types. In addition to the standard classifiers contained in LCCS, the user may find 'user defined' classifiers used by the map producer to add additional information to a specific class, which is not available in LCCS. The user-defined attributes are always coded with the letter 'Z'.

Credits

FAO, ILRI

TanaAgriculture

File Geodatabase Feature Class



Tags

agriculture, farming

Summary

These data were extracted for the Tana River Basin area. These data were used in Map 1.3 in the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset portrays areas of agriculture in Kenya, from FAO's Africover dataset.

Credits

File Geodatabase Feature Class



Tags

landcover, environment, natural resources, agriculture, forest, rangeland, management, AFRICOVER, land cover

Summary

The purpose of the Africover land cover database is to provide the information required for natural resource assessment and management, environmental modelling and decision making.

Description

-CODE2

This dataset is a spatially re-aggregated version of the original national Africover multipurpose database. The original full resolution land cover has been produced from visual interpretation of digitally enhanced LANDSAT TM images (bands 4, 3, 2) acquired mainly in the year 1999. The data was aggregated by eliminating polygons below a certain area threshold to give priority to the classes belonging to agriculture. This threshold corresponds to approximately a 30% reduction in the polygon count. The dataset was then re-aggregated based on area threshold values. For more information on the area thresholds used to spatially aggregate the land cover data, please see the 'spatial-agg-procedure' document included in the zip file available here for download.

The land cover classes have been developed using the FAO/UNEP international standard LCCS.

The data set is intended for free public access.

The shape main attributes correspond to the following fields:

-ID -HECTARES -USERLABEL -LCCCODE (unique LCCS code) -CODE1

-CODE3

-LC

You can download a zip archive containing:

-the dataset ke-spatial-agg (.shp)

-the Kenya Classifiers Used (.pdf)

-the Kenya legend (.pdf and .xls)

-the Kenya Legend - LCCS Import file (.xls)

-the spatial-agg-procedure (.pdf)

-the Userlabel Definitions (.pdf)

Note: the document Kenya Classifiers Used.pdf is a list of all the LCCS classifiers used in the study area. They are grouped under the eight major land cover types. In addition to the standard classifiers contained in LCCS, the user may find 'user defined' classifiers used by the map producer to add additional information to a specific class, which is not available in LCCS. The user-defined attributes are always coded with the letter 'Z'.

Credits

FAO, ILRI

Tree_plantations

File Geodatabase Feature Class



Tags

tree plantations, imageryBaseMapsEarthCover, farming, Tana River Basin

Summary

These data were extracted for the Tana River Basin area. These data were used in Map 7.3 in the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset portrays locations of tree plantations in Kenya, from FAO's Africover dataset.

Credits

wheat_prod_86_90

File Geodatabase Feature Class



Tags

Wheat, area, production, yield, Tana River Basin

Summary

This dataset was extracted for the Tana River Basin

Description

This coverage shows the total wheat production statistics for each province in Kenya between 1986 and 1990, and published in 1998 by FAO at a scale of 1:1,000,000.

Credits

FAO, originally called AGRwheat.shp and created by FAO. Published in 1998 under the title 'FAOSTAT agriculture data', ILRI

File Geodatabase Feature Class



Tags

woodlots, agriculture, farming, Tana River Basin

Summary

This dataset was extracted for the Tana River Basin area. These data were used in Map 7.3 in the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset portrays percentage of woodlots in sampled cropland in central and western Kenya, 1997

Credits

There are no credits for this item.

Theme: Livelihood

CentralHighlandsZone

File Geodatabase Feature Class



Tags

Pastoral zone, riverine zone, agropastoral zone, fishing zone, farming zone

Summary

This dataset was extracted for the Tana River Basin area. The dataset provides geographic orientation of livelihood systems to inform food security analysis and assistance targeting.

It provides the basis for identifying geographically relevant food security monitoring indicators.

It provides a sampling frame for future on-the-ground assessments.

Livelihood patterns clearly vary from one geographic area to another, which is why the preparation of a Livelihood Zone Map is a logical first step for livelihood-based analysis.

Description

A livelihood zone is an area within which people share broadly the same pattern of livelihood, including options for obtaining food and income, and market opportunities. Livelihood zoning is essential for the following reasons: KE_livelihood_profiles.pdf

Credits

CoastalMarginalMixedZone

File Geodatabase Feature Class



Tags

Pastoral zone, riverine zone, agropastoral zone, fishing zone, farming zone

Summary

This dataset was extracted for the Tana River Basin area. The dataset provides geographic orientation of livelihood systems to inform food security analysis and assistance targeting.

It provides the basis for identifying geographically relevant food security monitoring indicators.

It provides a sampling frame for future on-the-ground assessments.

Livelihood patterns clearly vary from one geographic area to another, which is why the preparation of a Livelihood Zone Map is a logical first step for livelihood-based analysis.

Description

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Credits

CoastalZone

File Geodatabase Feature Class



Tags

Pastoral zone, riverine zone, agropastoral zone, fishing zone, farming zone

Summary

This dataset was extracted for the Tana River Basin area. The dataset provides geographic orientation of livelihood systems to inform food security analysis and assistance targeting.

It provides the basis for identifying geographically relevant food security monitoring indicators.

It provides a sampling frame for future on-the-ground assessments.

Livelihood patterns clearly vary from one geographic area to another, which is why the preparation of a Livelihood Zone Map is a logical first step for livelihood-based analysis.

Description

A livelihood zone is an area within which people share broadly the same pattern of livelihood, including options for obtaining food and income, and market opportunities. Livelihood zoning is essential for the following reasons: KE_livelihood_profiles.pdf

Credits

EasternPastoralZone

File Geodatabase Feature Class



Tags

Pastoral zone, riverine zone, agropastoral zone, fishing zone, farming zone

Summary

This dataset was extracted for the Tana River Basin area. The dataset provides geographic orientation of livelihood systems to inform food security analysis and assistance targeting.

It provides the basis for identifying geographically relevant food security monitoring indicators.

It provides a sampling frame for future on-the-ground assessments.

Livelihood patterns clearly vary from one geographic area to another, which is why the preparation of a Livelihood Zone Map is a logical first step for livelihood-based analysis.

Description

A livelihood zone is an area within which people share broadly the same pattern of livelihood, including options for obtaining food and income, and market opportunities. Livelihood zoning is essential for the following reasons: KE_livelihood_profiles.pdf

Credits

LivelihoodZones

File Geodatabase Feature Class



Tags

Pastoral zone, riverine zone, agropastoral zone, fishing zone, farming zone

Summary

This dataset was extracted for the Tana River Basin area. The dataset provides geographic orientation of livelihood systems to inform food security analysis and assistance targeting.

It provides the basis for identifying geographically relevant food security monitoring indicators.

It provides a sampling frame for future on-the-ground assessments.

Livelihood patterns clearly vary from one geographic area to another, which is why the preparation of a Livelihood Zone Map is a logical first step for livelihood-based analysis.

Description

A livelihood zone is an area within which people share broadly the same pattern of livelihood, including options for obtaining food and income, and market opportunities. A livelihood zoning is essential for the following reasons: KE_livelihood_profiles.pdf

Credits

Theme: Livestock

Cattle_density

File Geodatabase Feature Class



Tags

cattle, density, ZEBU, dairy

Summary

Cattle density, Tana River Basin

Description

Dairy and zebu cattle density data prepared at the third administrative level, and derived from the 1995-1997 divisional-level dairy and zebu cattle density reports from the Ministry of Agriculture, Livestock Development and Marketing (MALDM).

Credits

The 1995-1997 divisional-level dairy and zebu animal density reports from the MALDM. The reports are based on data collected by District Livestock Officers and prepared in 2000, but reflect cattle numbers from 1995. Previously called 'dairy-no-negs', ILRI

camel_distribution

File Geodatabase Feature Class



Tags

Camel, distribution

Summary

Camel distribution between 1989 and 1994

Description

The coverage shows the camel distribution in Kenya according to Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

It is based on an aerial sample census between 1989 and 1994. The figures indicated do not reflect actual numbers of animals per district per year, but the numbers within the sampled area.

Credits

GTZ, Map history: Originally called Camels ILRI

Theme: MyComposition

line_3D

File Geodatabase Raster Dataset



Tags

Special effect, Tana River Basin boundary

Summary

This raster was created to show the special effects of the Tana River boundary within a 5-km buffer. This creates a three-dimensional (3d) effect of the boundary with 40% transparency.

Description

This raster was created to show the special effects of the Tana River boundary within a 5-km buffer. This creates a 3d effect of the boundary with 40% transparency.

Credits

Jarvis A.; Reuter, H.I.; Nelson, A.; Guevara, E. 2008. Hole-filled seamless SRTM data V4. International Center for Tropical Agriculture (CIAT). Available at http://srtm.csi.cgiar.org (accessed on May 11, 2016).

Sea

File Geodatabase Feature Class



Tags

Sea

Summary

This layer has the mask of the sea for map composition

Description

This layer is for the Tana River Basin map composition

Credits

IWMI

White_wash

File Geodatabase Feature Class



Tags

Mask, whitewash

Summary

The purpose of this layer is to mask the outside area of Tana River Basin for special effects.

Description

The purpose of this layer is to mask the outside area of the Tana River Basin.

Credits

IWMI

Theme: Natural Infrastructure

Forests

File Geodatabase Feature Class



Tags

forests, trees, imageryBaseMapsEarthCover

Summary

These data were used in Maps 1.3 and 7.1 in the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset portrays forest types in Kenya, from FAO's Africover dataset.

Credits

FloodPlains

File Geodatabase Feature Class



Tags

landform, floodplains, valley bottoms, geoscientific Information

Summary

These data were used in Maps 3.14 and 3.15 in the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset portrays floodplains and valley bottoms in Kenya, extracted from FAO's Africover landform dataset.

Credits

Wetlands

File Geodatabase Feature Class



Tags

wetlands, biodiversity, imageryBaseMapsEarthCover, environment, inlandWaters

Summary

These data were used in selected maps in the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset portrays wetlands areas in Kenya, from FAO's Africover dataset.

Credits

Theme: Socioeconomics

centralprov_servicepoints

File Geodatabase Feature Class



Tags

Service point

Summary

Central Province service points, Tana River Basin

Description

This is a point coverage showing the service providers in three districts - Kiambu, Nakuru and Nyandarua. The locations selected were based on the characterization of livestock farmers analyzed by the Smallholder Dairy Project (SDP), in which particular farmers were identified based on this characterization and their service providers were then mapped out.

Credits

GIS Unit, ILRI

The map was originally called servicep37.utm and was created at ILRI by georeferencing GPS points collected from the field.

Theme: Soil

soil_ph

File Geodatabase Feature Class



Tags

There are no tags for this item.

Summary

There is no summary for this item.

Description

This coverage shows the pH (the negative logarithm of the hydrogen ion concentration) of soils in Kenya according to Kenya Soil Survey (KSS).

Soil pH is determined by measuring the activity of H+ in a soil-water suspension.

The pH-water (Phaq) is used as an index of soil suitability for crops or plants in general. Low pH-water (acidic condition) from 4.5 to 5.5 normally decreases crop yields or even prevents it. The same with alkaline soils (pH-water over 8.0) optimal pH (neutral) for the majority of crops ranges between 6.5 and 7.5 in pH-water.

The difference between pH-water and pH-KCI (potassium chloride solution) gives information on the TOTAL ACIDITY in the soil.

Credits

KSS, this coverage was originally called Ken2

Theme: Transportation

highland_roads

File Geodatabase Feature Class



Tags

There are no tags for this item.

Summary

There is no summary for this item.

Description

The coverage shows road networks in the Kenya highlands digitized from topographic map sheets of scale 1:50,000. The road classes here are based on surface types.

Credits

ILRI

File Geodatabase Feature Class



Tags

transportation, roads, infrastructure

Summary

These data were used in maps throughout the following publication:

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; International Livestock Research Institute. 2007. *Nature's benefits in Kenya: An atlas of ecosystems and human well-being*. Washington, DC, and Nairobi: World Resources Institute.

Description

This dataset shows major roads in Kenya.

Credits

Roads

File Geodatabase Feature Class



Tags

transportation, road, infrastructure

Summary

Road network, Tana River Basin

Description

This coverage shows the road networks of Kenya derived from topographic map sheets (1978-1997) of scale 1:50,000

Credits

Survey of Kenya (SoK)

Map history: Originally called Kenroads, ILRI

File Geodatabase Feature Class



Tags

There are no tags for this item.

Summary

There is no summary for this item.

Description

This coverage shows the road network of Kenya, excluding western Kenya. It was created by the World Food Programme (WFP).

Credits

WFP, ILRI

International Water Management Institute

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