



CLIMATE CHANGE MAINSTREAMING GUIDELINES

FOREST, ENERGY AND WILDLIFE SECTOR



Contents

| | |
|--|-----|
| FOREWORD | ii |
| ACKNOWLEDGMENT | iii |
| | |
| 1.0 GARISSA COUNTY BACKGROUND INFORMATION | 5 |
| 1.1 Location and Administrative Units | 5 |
| 1.2 Climate and Topography | 6 |
| 1.3 Population | 6 |
| 1.4 Economic Activities | 6 |
| 1.5 Forest Cover and wildlife | 6 |
| 1.6 Water and Sanitation situation | 6 |
| 1.7 Waste Management | 7 |
| 1.8 Energy situation | 7 |
| | |
| 2.0 MAINTREAMING CLIMATE CHANGE IN THE FOREST, ENERGY AND WILDLIFE SECTOR IN GARISSA COUNTY | 7 |
| 2.1 Introduction | 7 |
| 2.2 Rationale for Climate Change Mainstreaming in the Forest, Energy and Wildlife Sector | 8 |
| | |
| 3.0 RISKS AND IMPACTS OF CLIMATE CHANGE IN THE FOREST, ENERGY AND WILDLIFE SECTOR | 9 |
| 3.1 Land Degradation and Desertification | 9 |
| 3.2 Human Wildlife conflict | 9 |
| 3.3 Invasive and alien species | 9 |
| | |
| 4.0 STRATEGIES AND GUIDELINES FOR MAINSTREAMING CLIMATE CHANGE IN THE FORESTS, ENERGY AND WILDLIFE SECTOR IN GARISSA COUNTY | 10 |

FOREWORD



Green Africa Foundation was founded in Kenya in the year 2000 with a focus of implementing practical community driven projects towards greening Africa. The organization has actively been implementing a number of projects covering; Climate Change, Policy Advocacy, Environmental Conservation, Agriculture, Water and Energy. The organization has been very instrumental in policy advocacy that has seen through a number of policies coming to fruition both at the county and the national level and with agenda of mainstreaming climate change at the county level taking precedence.

The project that enabled the formulation of these guidelines was a DFID StARCK+ Extension Programme, funded through the Act Change Transform (Act! - NRM component) and implemented by Green Africa Foundation. The project's overall goal was to consolidate prior efforts towards completion of climate change legislation and cross sectoral coordination for enhanced climate change mainstreaming. The objective was to support selected counties, namely Garissa, Marsabit and Wajir to move forward with completion of their climate change legislations and also develop the sectoral climate change mainstreaming guidelines for priority sectors with a view to help give input to the review process of counties CIDPs 2018-2022. This objective was achieved through a programmatic approach and in partnership between Green Africa Foundation and the county governments of Garissa, Marsabit and Wajir, as well as other stakeholders including national government agencies, the private sector and Civil Society Organizations.

These guidelines are intended to assist the County Government of Garissa to attain climate change mainstreaming in the water and sanitation sector by providing a framework for integrating climate change responses for the sector into county planning processes, especially the 2018- 2022 CIDP, as well as other processes such as performance contracting and budget making.

**ISAAC P. KALUA PhD, CBS | CHAIRPERSON
GREEN AFRICA FOUNDATION**

ACKNOWLEDGMENT

Hon. CEC Environment and Natural Resources Garissa County Government

Garissa County Government wishes to thank the UK Department for International Development (DFID) for the financial support towards implementing this project together with the Act Change Transform (ACT!) through the ENRM component who closely supervised and guided the implementation process.

Further gratitude to the County Government of Garissa where this project was implemented through the County departments of: Environment & Natural Resources, Agriculture & Livestock, Water, Energy, Disaster Response Unit, Health, Office of the County Secretary, County Assembly relevant committees and all other departments involved.

To the Kenya Forest Service, Kenya Wildlife Service, Kenya Forest Research Institute, WARMA, local Community Based Organizations, Non-governmental Organizations and Private Sectors who sent representatives who contributed immensely to this process, we highly and sincerely appreciate your valuable contribution. Mr. Abdirahman Kusow of Women Kind, Garissa, may God bless you and reward your effort and commitment towards ensuring this process was a success.

We thank the following Green Africa Foundation Team for their continuous support and input to the process; Mr. Milton Ogada, Mr. John Kioli, Ms. Gladys Njeri, Ms. Monika Masinzi and Mr. Alexander Matuku. Their dedication and positive spirit made this work possible.

Finally, we are very grateful to Mr. Gerphas Opondo who was the lead consultant in this project and was instrumental in drafting the document. Mr. Fredrick Onyango who provided research support services cannot be left unappreciated.

Copyright © 2018 Garissa County Government

This project was supported by department for international development DFID / UKAID through Act Change Transform (ACT!) and implemented by Green Africa Foundation in partnership with the local stake holder and the Garissa County Government.



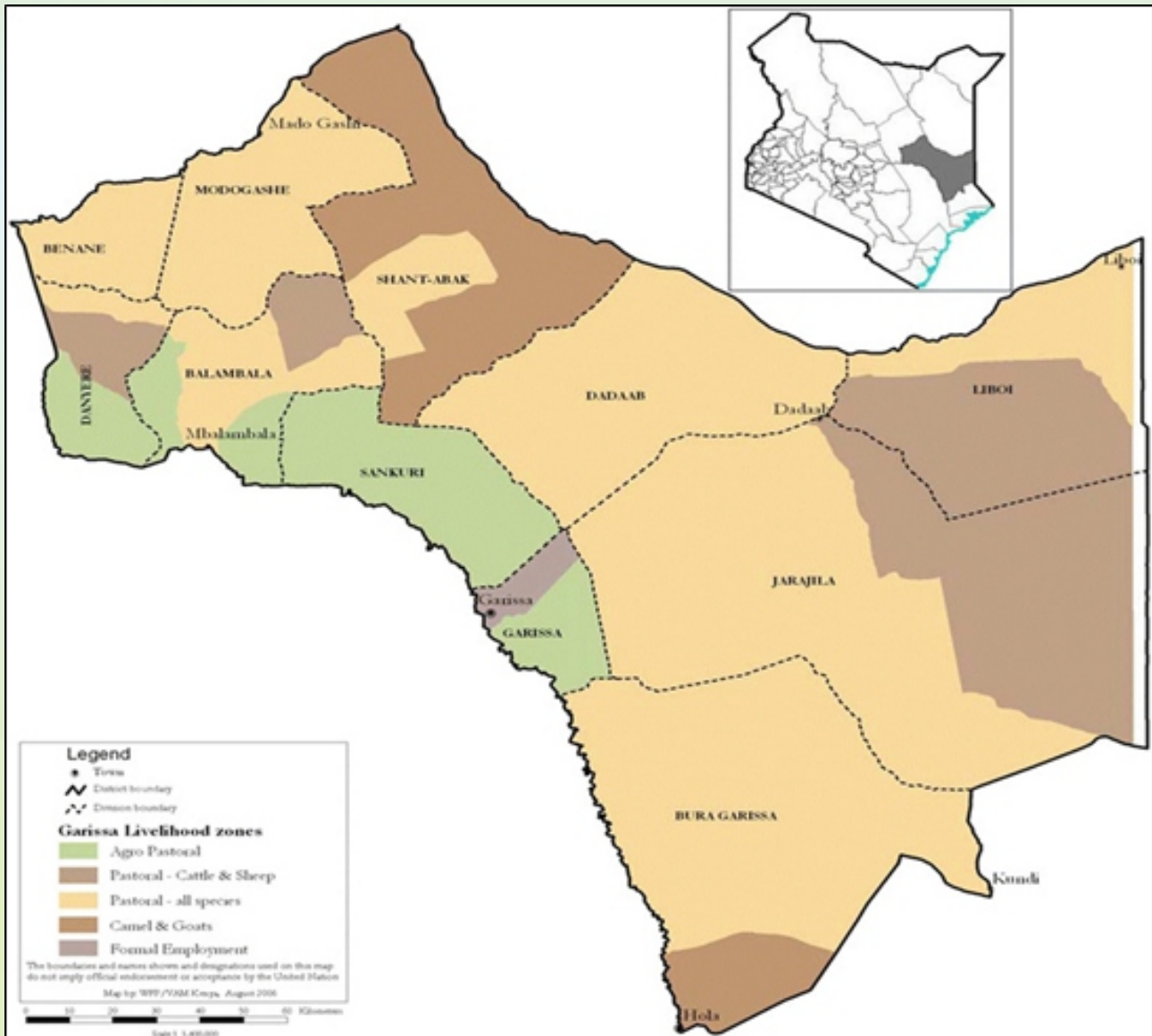
DISCLAIMER

Much attention has been taken in the production of this Forest, Energy and Wildlife Sector Climate Change Mainstreaming Guidelines Document, however it is provided as general information only and specific advice should be sought on any particular situation. Green Africa Foundation, DFID, ACT! And all other institutions mentioned here disclaims all liability, whether for negligence or otherwise, for any loss, expense, damage or injury caused by any or reliance on this information.

1.0 GARISSA COUNTY BACKGROUND INFORMATION

1.1 Location and Administrative Units

Garissa County is one of the three counties in the North Eastern region of Kenya. It covers an area of 44,174.1 Km² and lies between latitude 1° 58'N and 2° 1' S and longitude 38° 34'E and 41° 32'E. The county borders the Republic of Somalia to the east, Lamu County to the south, Tana River County to the west, Isiolo County to the North West and Wajir County to the north. Garissa County has six sub-counties namely: Fafi, Garissa Township, Ijara, Lagdera, Balambala and Dadaab



Map of Garissa County

1.2 Climate and Topography

Garissa County is generally characterized by high temperatures throughout the year and range from 20°C to 38°C with the average temperature being 36°C. The hottest months are September, January, February and March, while the months of April to August are relatively cooler. The humidity averages 60g/m³ in the morning and 55 g/m³ in the afternoon. Garissa County is principally a semi-arid area and receives an average rainfall of 275 mm per year. There are two rainy seasons, the long rains from October to December and the short rains from March to May. The dry season is usually marked with a general migration of livestock from the hinterland to areas near River Tana where water is readily available. However, some pastoralists move with their livestock to adjacent counties of Tana River and Lamu in search of pasture. The County is basically flat and low lying with few hills and rocks, valleys and mountains and rises from a low altitude of 20m to 400m above sea level. The major physical features are the seasonal laghas water ways and the Tana River Basin on the western side.

1.3 Population

According to the Kenya 2009 Population and Housing Census, Garissa County was projected to have a total population of 849,457 in 2017. The average population density is 16 persons per km² in the county with Garissa Township Constituency having the highest population density of 194 persons per square kilometer. The county is sparsely populated with majority of the population being concentrated in areas with infrastructural facilities such as Garissa Township.

1.4 Economic Activities

The main income generating activities practiced in the county includes small scale irrigation crop farming, livestock keeping, fish farming, mining, tourism, and trading. Livestock rearing is the backbone of the county's economy. The main livestock bred are cattle (Boran), goats (Galla), sheep (black headed Persian) and camel (dromedary one humped). The main livestock products are meat, milk, hides and skins. The main crops grown are: watermelons, mangoes, vegetables, tomatoes, paw paws, bananas, cow peas, simsim, maize, beans and green grams.

1.5 Forest Cover and wildlife

Garissa County has two non-gazetted indigenous forests, namely Boni and Woodlands, most of which are woody trees and shrubs which are mainly browsed by camels and goats and to some extent by grazers like cattle and sheep. The county has 40 Community Forest Associations (CFAs) which are currently inactive. The main wild animal types found in the county are: Elephants, Lions, Cheetahs, Leopards, Hippopotamus, Crocodiles, Grants Gazelles, Thompson Gazelle, Gerenuk, servo cat Jackals, Spotted Hyena, Buffalos, Grey Zebras, Topi, Reticulated Giraffes, white Giraffes, Dik-dik, Hirolas, Wild dogs, Warthogs, Monkeys, birds, butterflies and Baboons which move freely since they are not confined to parks.

1.6 Water and Sanitation situation

The main sources of water in Garissa County are River Tana, shallow wells, boreholes, water pans and one dam with the main supplier of treated water being Garissa Water and Sewerage Company (GAWASCO). The other water supply schemes are managed by Water Resources Users Associations (WRUAs) along River Tana. The

county is generally water scarce with acute water shortages experienced during the dry season.

Garissa County is water scarce with only 23.8 per cent of the population having access to safe water. Access to piped water is limited to the sub-county headquarters where approximately 27,725 households have connection. The main sources of water in the county is River Tana, springs and boreholes, seasonal laghas and the average distance to the nearest water point is 25Km.

In Garissa County only 49.37 per cent of the population use pit latrines while 50.63 per cent of the population uses other means of sanitation such as open defecation in bushes. This has often led to spread of diseases such as cholera. A smaller percentage of the population is connected to sewer and septic tanks.

1.7 Waste Management

The most prevalent method of waste disposal among the residents is through open surface dumping at 59.9% followed by open burning at 25.1% and burying at 15%. This implies that there is no proper management and available legislation/laws in place in the county.

1.8 Energy situation

About 78.8 per cent of the county's population use firewood as a source of energy for cooking purposes while 18.2 per cent of the population uses charcoal. Electricity is only available in Garissa, Ijara, Dadaab, Bura East and Modogashe, and their environs with only 0.7 per cent of the population having access to electricity. In Hulugho, plans are under way to install two generators to supply power. The Ministry of Energy and department of environment and natural resource, Garissa County has also installed solar power systems in institutions such as health facilities, schools and watering points. The use of renewable sources of energy such as biogas, wind and solar remain low in the county and the potential is extremely high.

2.0 MAINTREAMING CLIMATE CHANGE IN THE FOREST, ENERGY AND WILDLIFE SECTOR IN GARISSA COUNTY

2.1 Introduction

Like other counties in Kenya, Garissa County's economy is highly dependent on the natural resource base, and thus is highly vulnerable to climate variability and change. Rising temperatures and changing rainfall patterns, resulting in increased frequency and intensity of extreme weather events such as droughts and flooding, threaten the sustainability of the county's development.

Key economic sectors in Garissa County are particularly susceptible to climate change impacts and this threatens to undermine the county's recent and impressive development gains. It is therefore important that the county builds and enhances its climate resilience and adaptive capacity. Building climate resilience requires that Garissa County's systems of governance, ecosystems and society have capability to maintain competent function in the face of climate change. This would aid a return to some normal range of function even when faced with adverse impacts of climate change. Adaptive capacity is key to improving socio-economic characteristics of communities and households as it includes adjustments in behaviour, resources and technologies, and is a necessary condition for design and implementation of effective adaptation strategies. The sustainable development of Garissa County

therefore significantly depends on the design and implementation of mechanisms that trigger and enhance climate change resilience and adaptive capacity. Climate change mainstreaming in the various sectors is necessary to equip various coordinating departments in the county government with the tools to effectively respond to the complex challenges of climate change. In this context, mainstreaming implies the integration of climate change policy responses and actions into county sectoral planning and management processes. This requires explicitly linking climate change actions to core planning processes through cross-sectoral policy integration. This integration operates by providing an overarching guidance system that requires all sectors of the government to implement climate change responses in their core functions. Mainstreaming is a process that encourages cooperation across government departments in planning for a longer-term period; rather than fragmented, short-term and reactive budgeting. County governments are required by law to prepare and implement County Integrated Development Plans (CIDPs), through which climate change actions can be mainstreamed. These guidelines are intended to assist the County Government of Garissa to attain this climate change mainstreaming in the forest, energy and wildlife sector by providing a framework for integrating climate change responses for the forest, energy and wildlife sector into county planning processes, especially the CIDP, as well as other processes such as performance contracting and the budget making process.

2.2 Rationale for Climate Change Mainstreaming in the Forest, Energy and Wildlife Sector

The distribution of most of Kenya's forests is determined by rainfall. With rainfall as one of the most affected climatic elements, the survival of Kenya's forest resources is likely to be severely affected. For example, the ASALs such as Garissa County are subject to recurring droughts, which when coupled with overexploitation of resources, result in high vulnerability to land degradation and desertification. The vulnerability of Kenya's forest resource especially in ASALs such as Garissa is further exacerbated by the depletion of forest and other land cover through rapid increase in population and demand for human settlements; both agricultural and grazing land; construction materials; food; fuel wood and charcoal; and herbal medicines.

Climate change adds to the stresses on Kenya's forest cover and wildlife by altering the growth of trees, causing dieback in forests and animal species to migrate, which will in turn impact on forest products supply and wildlife habitat. The reduction in forest cover will have disastrous effects on downstream agriculture and hydropower generation, with big rivers such as River Tana being reduced to small streams and hundreds of other small rivers completely drying up especially during serious drought periods. This has serious implications for the livelihoods of those living downstream and the rest of the country, which depend on products from these ecosystems.

Climate change, especially increasing climatic variability continues to exacerbate the already serious environmental and forest degradation and deforestation problems many ASAL areas including Garissa County. Deforestation, degradation, desertification, natural disasters, spread of invasive species and loss of bio-diversity are among the major concerns created by warming climate in Kenya.

Rangelands form some of the largest habitats for wildlife in Kenya and about 75% of the country's wildlife is found in these areas. This makes the country a key tourist attractions destination. Through tourism, wildlife is one of the country's major foreign exchange earners. However, the capacity for these lands to sustain human and wildlife habitation is gradually declining. This is due to extreme weather events such as intense and prolonged droughts and severe flooding, all associated with climate change. The majority of pastoralists are poor and their practice is weather dependent, therefore their adaptive capacity is low making them highly vulnerable to climate change. This is evident in many counties including Garissa, Marsabit, Kajiado, Tana River, Garissa, among others.

3.0 RISKS AND IMPACTS OF CLIMATE CHANGE IN THE FOREST, ENERGY AND WILDLIFE SECTOR

3.1 Land Degradation and Desertification

Natural ecosystems have been adversely affected by climate change, including through variations of temperature and precipitation. The ASALs such as Garissa County are particularly vulnerable to climate change impacts. They are currently under threat from land degradation and desertification caused by climatic variations, and human impacts such as overgrazing of livestock and the creation of settlements. Impacts include loss of biodiversity including threatening of species, change in vegetation composition and structure, decrease in forest coverage, rapid deterioration in land cover, and depletion of water quality and quantity through the destruction of catchments and underground aquifers. Increased scarcity of water resources is a core concern, making resource management more difficult and increasing the likelihood of conflict. Water scarcity will affect forests, energy production, and agricultural systems.

3.2 Human Wildlife conflict

Long-term changes in climate exacerbate environmental degradation leading to loss of wildlife habitat in many vulnerable places. Furthermore, climate change will alter the location and nature of the geographical environment, and wildlife will be forced to migrate to new areas as a way of adapting or face extinction. As there are limited natural places left for wildlife to move to, this will likely bring wildlife into more densely populated human areas, and create situations of human wildlife conflict.

3.3 Invasive and alien species

Invasive species, especially *Prosopis Juliflora*, have disrupted vast tracts of Kenya's rangelands as well as farms and critical natural habitats. Because invasive plant species are well suited to thriving in novel environments because of their ability to beat out competitors for resources, it follows that the more we disrupt the climate, the more these plants might be able to expand their reach. Already there is evidence in ASALs such as Garissa County that the *Prosopis Juliflora* menace is getting out of hand, and that if the same is not tackled as a matter of urgency, it will impact negatively on the environment and livelihood systems by taking over livestock and wildlife grazing fields, as well as prime crop production areas.

4.0 STRATEGIES AND GUIDELINES FOR MAINSTREAMING CLIMATE CHANGE IN THE FORESTS, ENERGY AND WILDLIFE SECTOR IN GARISSA COUNTY

| STRATEGIC ISSUE 1: VULNERABILITIES DUE TO CHANGES IN TEMPERATURE REGIMES AND PRECIPITATION PATTERNS | | | |
|--|--|-----------------|--|
| Strategic Goal: Enhanced adaptive capacity and resilience of communities to impacts of climate change | | | |
| Strategic Objective: Institute measures to reduce the vulnerabilities of communities to changing temperature regimes and precipitation patterns | | | |
| Mainstreaming Strategies and Guidelines | | Timeline | Responsible |
| I | The County Government will invest in systems for provision of accurate, timely and reliable climate/weather information to inform decisions of actors in the forestry and agro-forestry, wildlife and energy value chains. This will involve collaboration with national government agencies such as the Kenya Meteorological Department and Kenya Forest Service Kenya forest research institute, Kenya Wildlife Service, National Drought Management Authority for the establishment, improvement, modernization and maintenance of weather infrastructure; integration of scientific and indigenous knowledge and technical skills enhancement in weather data analysis, packaging, dissemination through local radio stations and public forums, and use of early warning weather information. | By 2020 | Departments of Environment, Energy, Agriculture, Livestock |
| II | The County Government will promote tree and vegetation species that are adapted to varied weather conditions. This will involve breeding and promoting the use of tree and forage vegetation varieties that are adapted to flooding, drought, strong winds, hailstorms, heat waves and frost as well as tolerant to emerging pests and diseases. | Continuous | Departments of Environment, Energy, Agriculture, Livestock |
| III | The County Government will invest in technology development, dissemination and adoption along forestry, energy and wildlife value chains. This will entail research that includes trees and forage varieties that are able to withstand weather variations, providing efficient extension and advisory services, research and development of modern technologies for green energy such as biogas, briquettes, solar and wind in order to move the community away from wood | Continuous | Departments of Environment, Energy, Agriculture, Livestock |

| | | | |
|----|--|------------|--|
| | based cooking fuel, and improving the capacity of actors to use new or existing technologies. | | |
| IV | The County Government will promote diversification of enterprises and alternative livelihoods e.g. gum & resin, aloe, bee keeping and honey production, aquaculture, eco-tourism and community conservancies. This will include incorporation climate smart agro-forestry and pastoral production systems based on agro-ecological zones and priorities, promotion of sustainable alternative livelihoods away from forest resource exploitation, putting support to the alternative enterprises in form of grants, credit facilities and formation of producers associations and cooperative societies to enhance production and marketing. | Continuous | Departments of Environment, Energy, Agriculture, Livestock |
| V | The County Government will support on-farm, urban and peri-urban forestry for resilient communities. This will entail preparation and dissemination of guidelines for advancement of on-farm, urban and peri-urban forestry, promotion of forestry enterprises such as tree nurseries, demonstration or resource centres and education and awareness on the importance of tree planting. | Continuous | Departments of Environment, Energy, Agriculture, Livestock |

STRATEGIC ISSUE 2: VULNERABILITIES DUE TO EXTREME WEATHER EVENTS

Strategic Goal: Reduced vulnerabilities of communities to extreme weather events

Strategic Objective: Institute measures to reduce the vulnerabilities of communities to extreme weather events

| | Mainstreaming Strategies and Guidelines | Timeline | Responsible |
|---|--|------------|---|
| I | The County Government will develop and implement systems for early warning and response, and ensure preparedness for extreme weather events. This will involve collaboration with national government agencies such as the Kenya Meteorology Department and the National Drought Management Authority in developing effective early warning systems, producing and disseminating of downscaled weather information on extreme weather events, and the preparation of contingency plans to end drought emergencies. | Continuous | Departments of Environment, Energy, Agriculture, Livestock, Disaster Risk Reduction |

| | | | |
|----|--|------------|---|
| II | The County Government will invest in capacity development initiatives to reduce risks such as droughts, soil and wind erosion, floods and by encouraging hill-top tree planting and forest conservation, and strengthening the capacity of institutions in charge of environmental conservation, forest production, renewable energy and Disaster Risk Reduction (DRR) to cope with climate disasters. | Continuous | Departments of Environment, Energy, Agriculture, Livestock, Disaster Risk Reduction |
|----|--|------------|---|

STRATEGIC ISSUE 3: VULNERABILITIES DUE TO UNSUSTAINABLE NATURAL RESOURCE MANAGEMENT

Strategic Goal: Enhanced resilience of forest, energy and wildlife systems to climate change impacts through sustainable natural resource management

Strategic Objective: Mainstream sustainable natural resource management into production systems to enhance resilience of the farmers, pastoralists

| | Mainstreaming Strategies and Guidelines | Timeline | Responsible |
|----|--|-----------------|---|
| I | The County Government will establish baselines and undertake inventory of the existing forest and woodland and wildlife resources. This will entail reviewing and collating information on existing forest and woodlands and wildlife resources and their distribution; undertaking inventory and mapping of forest and woodland and wildlife resources; and developing and maintenance of database for forest, woodlands and wildlife resources; preparation of woodland management plan for the county; and establishment of legal mechanisms for gazetement of hills in the county for conservation purposes. | By 2019 | Departments of Environment, Energy, Agriculture, Livestock, Disaster Risk Reduction |
| II | The County Government will promote sustainable management and utilization of forest and wildlife resources. This will involve the development of policy/legal frameworks for sustainable forest and wildlife resources management; the development and implementation of programmes and projects on sustainable management and utilization of forest and wildlife resources, implementation of programs for protection of forests, wildlife corridors and stock routes, and promotion of eco-tourism | Continuous | Departments of Environment, Energy, Agriculture, Livestock, Disaster Risk Reduction |

| | | | |
|-----|--|------------|---|
| III | The County Government will put in place mechanisms for dealing with challenges of alien and invasive species in forest and rangeland systems, especially <i>Prosopis juliflora</i> . Such mechanism will include the management of the <i>prosopis</i> for positive use to increase the forest cover. Such positive uses include fodder for livestock, use of the powder from the pods as nutritive additives to human food, wood for furniture making and joinery, windbreakers for homes and institutions. | Continuous | Departments of Environment, Energy, Agriculture, Livestock, Disaster Risk Reduction |
| IV | The County Government will prioritize investment in the energy sub-sector to promote energy efficient innovations and technologies, and the development of eco-friendly energy resources such as wind, solar, biogas, briquette etc. in order to address the challenge of over-reliance on wood fuel and charcoal. | Continuous | Departments of Environment, Energy, Agriculture, Livestock, Disaster Risk Reduction |
| V | The County Government will promote and support conservation and propagation of climate adaptive forest species. This will involve the establishment of in-situ and ex-situ genetic resources conservation areas/centres, the identification of species of trees and vegetation that are adaptive and tolerant to adverse weather conditions, breeding, multiplication and field trials and demonstrations. | Continuous | Departments of Environment, Energy, Agriculture, Livestock, Disaster Risk Reduction |
| VI | The County Government will invest in research, technology development and dissemination for sustainable forest and wildlife resource management. This will entail participatory and collaborative research towards development of suitable sustainable forest and wildlife resource management technologies and innovations as well as technology packaging and transfer to end users. | Continuous | Departments of Environment, Energy, Agriculture, Livestock, Disaster Risk Reduction |
| VII | The County Government will establish and implement mechanisms for resolving natural resource use conflicts. This will entail the development of mechanisms for identification of potential natural resource conflict hotspots; the profiling of the natural | Continuous | Departments of Environment, Energy, Agriculture, Livestock, Disaster Risk Reduction |

| | | | |
|--|---|--|--|
| | <p>resource conflict hotspots; and the development of mechanisms for conflict resolution, taking into account traditional conflict resolution mechanisms. This will also include mechanisms for resolving human-wildlife conflicts. Formation of community forest association, establishment of community conservancies and community based natural resource management committees will be prioritized as this will enhance community resource stewardship and ownership.</p> | | |
|--|---|--|--|

