COUNTY GOVERNMENT OF WAJIR

CLIMATE CHANGE MAINSTREAMING GUIDELINES

AGRICULTURE, LIVESTOCK AND FISHERIES SECTOR

Contents

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 County Integrated Development Plans (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 Marsabit 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.

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Hon. CEC Agriculture, Livestock and Fisheries Wajir County Government

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Further gratitude to the County Government of Wajir 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. Jimale Mohamed & Adan Mohamed of ALDEF Wajir branch, may God bless you and reward your efforts and commitments towards ensuring this process was a success.

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DISCLAIMER

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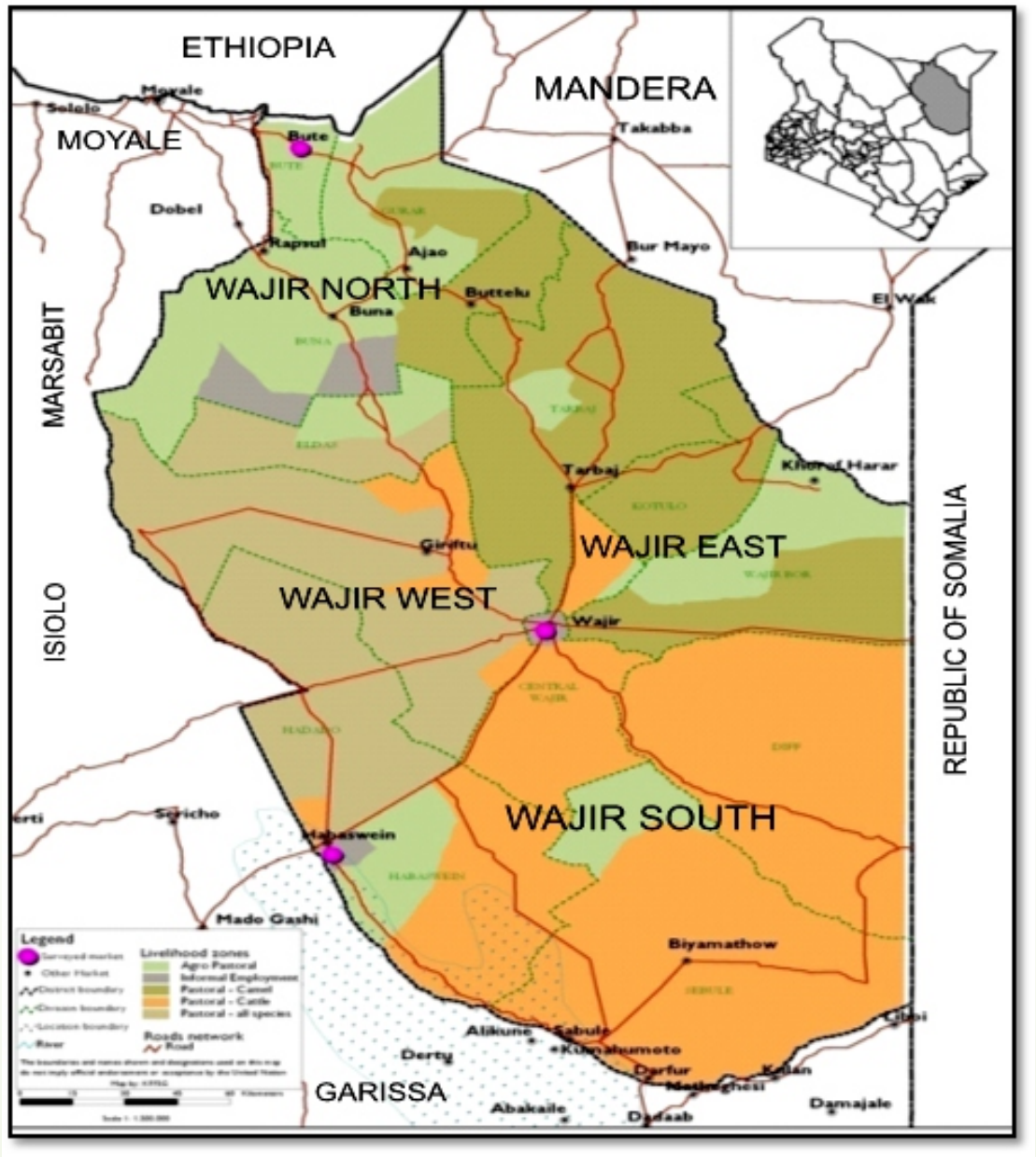
1.0 WAJIR COUNTY BACKGROUND INFORMATION

1.1 Location and Administrative Units

Wajir County is located in the North Eastern region of the Republic of Kenya between latitudes 1° N 60'N and 0° 20'N and longitudes 39° E and 41° E and covers an area of 56,685.9 Km^2. It borders Somalia to the East, Ethiopia to the North, Mandera County to the North East, Isiolo County to the South West, Marsabit County to the West and Garissa County to the South. The county comprises of six sub-counties namely: Wajir East, Wajir West, Wajir North, Wajir South, Eldas and Tarbaj. It is further sub-divided divided into 8 districts, 29 divisions, 30 wards, 142 locations and 172 sub-locations.



Map of Wajir County

1.2 Climate and Topography

Wajir County has an annual average relative humidity of 61.8 % ranging from 56 % in February to 68 % in June. The average annual precipitation received in the county is 240 mm. The annual average temperature is 27.9 °C with maximum temperatures ranging between 31°C in July and 36°C in March while minimum temperatures range between 21 °C in July and 24°C in April.

Wajir County is predominantly plain and lies between 150 metres and 460 metres above sea level and rises gently from the south and east towards the north rising to 200 metres at Buna and 460 metres at Bute and Gurar at the foothills of the Ethiopian highlands.

1.3 Hydrology and Drainage

Wajir County has one seasonal river and lake namely Ewaso Nyiro River and Lake Yahud respectively. The county is prone to seasonal flooding during the rainy season. The county's seasonal swamps and drainage lines serve as grazing zones during the dry season as well as for cultivation during the rainy seasons. The swamps are in Lagboghol area and in the western and southern part of Habaswein area. The county is generally covered with young sedimentary rocks with loamy soils in the north bordering the Ethiopian highlands.

1.4 Population

According to the Kenya 2009 Population and Housing Census, Wajir County was projected to have a total population of 852,963 in 2017. The males comprise 55 per cent of the population whereas female population account for 45 per cent. 84.2 per cent of the population is below 29 years. The county has an inter-censual growth rate of 3.22 per cent with an average population density of 13 persons per square kilometre. The county's population is mainly rural with only 13.8 per cent of the total population living in urban areas.

The Wajir County population is dominantly comprised of the Somali people who identify themselves through the clans. The main clans include: Degodia, Ajuran, and Ogaden. Most of the urban settlements are found in the county, sub-county and ward headquarters which also serve as market centers. On the other hand, the rural population of whom majority are pastoralists are found in the grazing reserves and watering points which may sometimes double as administrative locations and sub-locations. The settlements are modeled around clans, water and pastoral resources.

1.5 Economic Activities/Livelihood

Majority of the population in Wajir County depend on livestock for their livelihood. The main form of land use is nomadic pastoralism which is seen as the most efficient method of exploiting the range lands. Other economic activities practiced

in the county include small scale crop farming, mining and trading. Farming is practiced in depressions and along drainage lines where there is more moisture due to seasonal flooding, as well as around shallow wells, water pans and boreholes. Due to the aridity of the county, crop production is limited and contributes little to food security. Most inhabitants of the county rely on livestock products like milk and meat as their staple food. The main crops produced include sorghum, drought resistant maize, beans, melons, cowpeas, green grams and horticultural crops like kales, spinach, tomatoes, sweet and hot peppers. These activities are mostly undertaken in small scale for subsistence but commercial farming is beginning to take root in the county.

1.6 Forest Cover and Wildlife

Wajir County has no gazetted forest but has 1.99 per cent woodland cover of Kenya's 6.99 forest cover. However, most of the forest cover is comprised of woody trees and shrubs used for grazing by domestic animals and wildlife. The dominant species is acacia commiphora woodlands/trees which produces gums and resins that are only second to livestock in terms of supporting economic livelihoods in the county. The main forest products include gum and resin, charcoal, firewood, posts, barks, honey, wood carvings and wild fruits. Gums and resins are products that have high value in the international markets. It is used in many applications including cosmetics and pharmaceuticals, paints, confectionaries and soft drink industries, manufacture of acaricides and pesticides, among others.

In terms of wildlife, Wajir County is endowed with various game species like ostrich, hyenas, gazelles, lions, zebras, giraffes, warthogs, snakes and birds.

1.7 Water and Sanitation situation

The main sources of water in the county include underground water from boreholes and shallow wells, pans and dams as well as the seasonal Ewaso Nyiro River. Lake Yahud, which is an underground and permanent lake, situated on the periphery of Wajir town provides water for wildlife and quarry activities although the water is saline and not safe for human consumption. Only about 2 per cent of the county's households have access to piped water with many residents depending on water from water kiosks.

With regards to sanitation, more than 60 per cent of the population in Wajir County relieve themselves in the bush or open field. In the urban centres such as Wajir Town, only a few homesteads and institutions in the county are connected to septic tanks for sewer disposal. the bucket system is used for collection of human waste that is then collected by 'night soil men' for disposal by way of underground burying. This predisposes the population to disease outbreaks and the contamination of water sources with faecal coliforms. According to the Kenya Ministry of Health, Wajir County loses KES. 854 million each year due to poor

sanitation. This includes losses due to medical access time, premature death, health care costs and productivity.

1.8 Waste Management

Only 1.2 per cent of garbage generated is collected by the local authority while 0.6 per cent is disposed in a garbage pit, 8.3 per cent in public garbage heap and 89.9 per cent is burned. At least 13.6 per cent of the households have no place for human waste disposal with latrine accounting for 46 per cent.

1.9 Energy situation

Trees provide the major fuel for households, in terms of firewood and charcoal, which accounts for 96.5 per cent for domestic use as well as for use in institutions and hotels. For lighting, majority of the households depend on solar lanterns and solar torches.

2.0 MAINTREAMING CLIMATE CHANGE IN THE AGRICULTURE SECTOR IN WAJIR COUNTY

2.1 Introduction

Like other counties in Kenya, Wajir 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 Wajir 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 Wajir County's systems of governance, ecosystems and society have capability to maintain competent function in the face 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.

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 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 planning. County governments are required by the County Governments Act, 2012 to prepare and implement County Integrated Development Plans (CIDPs). The CIDP provides an appropriate channel through which climate change actions can be mainstreamed into county sectoral development plans.
These guidelines are intended to assist the County Government of Wajir to attain climate change mainstreaming in the agriculture sector by providing a framework for integrating climate change responses for the agriculture 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 Agriculture Sector

The agriculture sector, including crops, livestock and fisheries, is a priority in Kenya's Vision 2030 because it plays a critical role in improving livelihoods, enhancing food security and increasing GDP and employment. Vision 2030 aims to achieve an innovative, commercially oriented, modern agricultural sector through institutional reforms, increased productivity, land-use transformation, increased access to markets and development of arid and semi-arid lands (ASALs).

Kenya's Agricultural Sector Development Strategy 2010-2020 sets out a detailed plan to position the agricultural sector as a key driver for delivering the 10 % annual economic growth rate envisaged under the economic pillar of Vision 2030. The vision of the document is “a food secure and prosperous nation” and the strategy aims to increase productivity, commercialization and competitiveness of agricultural commodities and enterprises; and develop and manage key factors of production. Also important is the government's goal of 10 % farm forest cover on all agricultural land holding.

The agriculture sector, including crop production and livestock keeping is one of the economic sectors in Wajir County that is most vulnerable to climate change. Over 80 per cent of the population are dependent on rain-fed subsistence crop production and pastoralism, and are therefore significantly impacted by declining production due to unpredictable rainfall, reduced soil productivity through erosion and increased evapotranspiration. Enhance resilience and adaptive capacity of farmers, pastoralists and agro-pastoralists to the impacts of climate change is therefore a necessary priority for the county.

3.0 RISKS AND IMPACTS OF CLIMATE CHANGE IN THE AGRICULTURE SECTOR

3.1 Crop Production Sub-Sector

The major climate change-related challenges in the crops sub-sector include changes in enterprise suitability for specific areas, leading to decrease in profitability; unpredictable timing of farming operations due to seasonal weather variability and reliability, leading to lower production efficiency; losses due to yield reductions, total crop failures, enhanced postharvest losses and increased production costs arising from extreme weather events or reduced land productivity.

Climate change has led to more frequent and intense extreme weather events such as drought, floods, strong winds, hailstorms, and frosts. Droughts lead to loss of investments in crop production due to reduced yields or total crop failure as a result of water stress, pests and diseases affecting irrigated crops as they are the only green plants during drought. Floods lead to anaerobic soil conditions, hindering the ability of the roots to aerobically respire and abstract nutrients from the soil. This results in plant stresses that reduces yields or causes total crop failure. High temperatures cause withering of the crops reducing/ no yields, Strong winds lead to breakage, logging or physical injury of the crop, they erode top soil reducing soil fertility, accelerated evapotranspiration that lead to crop stress and yield reduction. Hailstorms cause physical crop damage, reducing the photosynthetic leaf area and predisposing the plant to disease infections. Drought, floods and strong winds also lead to the destruction of infrastructure such as the silting of dams, clogging and breaking of irrigation and drainage infrastructure; destruction of farm buildings and roads; drying, storage and marketing facilities, as well as agro-based industries. Wet conditions during harvest of cereals lead to enhanced postharvest losses due to rotting and aflatoxin contamination. Strong winds, landslides and dust storms also contribute to the reduction of soil fertility through erosion and translocation of the fertile top soils.

3.2 Livestock Sub-Sector

Livestock keeping is the main economic activity in Wajir County. Climate change is having substantial effects on ecosystems and the natural resources upon which the livestock sub-sector depends. Climate change has led to declining livestock production due to direct and indirect impacts to both livestock and their production systems. In grazing systems, the direct impacts include increased frequency of extreme weather events; increased frequency and magnitude of droughts and floods; productivity losses due to physiological stress occasioned by temperature increase; and change in water availability. The indirect impacts stem from agro-ecological changes and ecosystem shifts that lead to alteration in fodder

quality and quantity; change in host-pathogen interaction resulting in increased incidences of emerging diseases; and disease epidemics. In non-grazing systems, the direct impacts include change in water availability and increased frequency of extreme weather events while the indirect impacts include increased resource prices (e.g. feed, water and energy), disease epidemics and increased cost of animal housing (e.g. cooling systems).

Extreme weather events, especially droughts and floods lead to reduced pasture and forage availability, degradation of the environment and an increase in destitution. Strong winds and dust storms also contribute to the reduction of forage availability as they erode top soil, thus making grass regeneration difficult even when it rains. Recurring droughts have caused heavy losses to livestock, forcing an estimated 30% of livestock owners out of pastoralism in the past 20 years. According to the World Bank, estimated livestock mortality as a result of drought is about 10–15% above normal in the affected areas, which is equivalent to 5% of Kenya's livestock population. Between 2008 and 2011, drought caused losses in livestock that amounted to about KSh. 700 billion. Extended periods of drought erode livelihood opportunities and community resilience and leads to undesirable coping strategies that damage the environment and impair household nutritional status, further undermining long-term food security.

4.0 STRATEGIES AND GUIDELINES FOR MAINSTREAMING CLIMATE CHANGE IN THE AGRICULTURE SECTOR IN WAJIR COUNTY

STRATEGIC ISSUE 1: VULNERABILITIES DUE TO CHANGES IN TEMPERATURE REGIMES AND PRECIPITATION PATTERNS			
Strategic Goal: Enhanced adaptive capacity and resilience of farmers and pastoralists to the adverse impacts of climate change			
Strategic Objective: Institute measures to reduce the vulnerabilities of farmers and pastoralists 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 crops and livestock value chains. This will involve collaboration with national government agencies such as the Kenya Meteorological Department and National Drought management Authority for the establishment, improvement,	By 2020	Departments of Environment, Agriculture, Livestock

	modernization and maintenance of weather infrastructure; integration of scientific and indigenous knowledge and technical skills and capacity building on weather data analysis, packaging, dissemination through local radio stations, public forums, mosques and other channels, and use of early warning weather information.		
II	The County Government will promote and facilitate the adoption of crop varieties, livestock breeds and agro-forestry tree species that are adapted to varied weather conditions and tolerant to associated emerging pests and diseases. This will involve breeding and promoting the use of crop and forage varieties, livestock breeds and agro-forestry tree species that are tolerant to flooding, drought, strong winds, hailstorms, heat waves, frost and emerging pests and diseases.	Continuous	Departments of Environment, Agriculture, Livestock
III	The County Government will invest in the development of appropriate low-cost technology, taking into account indigenous knowledge along crops, livestock and agro-forestry value chains. This will entail participatory research that includes crops and forage varieties, livestock breeds and agro-forestry tree species that are able to withstand weather variations; facilitating the adoption of crop varieties, livestock breeds and agro-forestry tree species; providing efficient extension and advisory services, and improving the capacity of communities to use new or existing technologies.	Continuous	Departments of Environment, Agriculture, Livestock
IV	The County Government will promote diversification of enterprises and alternative livelihoods. This will include incorporation of integrated farming, pastoral and agro-pastoral production systems based on agro-ecological zones and priorities, agro-forestry and non-agricultural enterprises such as bee keeping, aquaculture, cottage industries for gum and resin, tree nurseries and demonstration centres.	Continuous	Departments of Environment, Agriculture, Livestock, Trade, Industry

V	The County Government will invest in enhancement of productivity and profitability of agricultural enterprises. This will entail promotion of use of improved technologies such as water harvesting/conservation structures, use of manure, conservation agriculture, integrated pest management and post-harvest approaches such as improved storage and investments in distribution networks for agricultural and livestock products, value addition and market access.	Continuous	Departments of Environment, Agriculture, Livestock, Trade, Industry

STRATEGIC ISSUE 2: VULNERABILITIES DUE TO EXTREME WEATHER EVENTS			
Strategic Goal: Reduced vulnerabilities of farmers and pastoralists to extreme weather events.			
Strategic Objective: Institute measures to reduce the vulnerabilities of farmers and pastoralists 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 the relevant National Government agencies in developing effective early warning systems, producing and disseminating of downscaled weather information on extreme weather events through local radio stations, public forums, mosques and other channels, and the preparation of contingency plans to end drought and flood emergencies.	Continuous	Departments of Environment, Agriculture, Livestock, Disaster Risk Reduction
II	The County Government will invest in the development and use index-based multi-peril agricultural insurance. This will involve collaboration with private insurance companies in the identification and development of diverse agricultural insurance products, capacity enhancement among actors to support insurance product availability, and the sensitization of product users along the value chains to take up agricultural insurance as a means of risk transfer.	By 2020	Departments of Environment, Agriculture, Livestock, Trade

STRATEGIC ISSUE 3: VULNERABILITIES DUE TO UNSUSTAINABLE NATURAL RESOURCE MANAGEMENT			
Strategic Goal: Enhanced resilience of agriculture 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 and fisher-folk			
Mainstreaming Strategies and Guidelines		**Timeline**	**Responsible**
I	The County Government will establish baselines and undertake inventory of the existing natural resources. This will entail reviewing and collating information on existing natural resources and their distribution; undertaking inventory and mapping of natural resources; and developing and maintenance of database for natural resources at County and Sub-County levels.	By 2019	Departments of Environment, Agriculture, Livestock, Forest, Wildlife, Water
II	The County Government will promote sustainable management and utilization of natural resources. This will involve the development of a framework for sustainable natural resource management. This includes integrated soil health management to include soil testing and nutrient management, soil and water conservation, conservation agriculture; restoration of degraded soils and conservation of soil biodiversity; protection of riparian reserves, wildlife corridors and stock routes; and management of invasive species in cropping and grazing systems (e.g. Prosopis Juliflora).	Continuous	Departments of Environment, Agriculture, Livestock, Forest, Wildlife, Water
III	The County Government will invest in climate smart water harvesting and storage, irrigation infrastructure development and efficient water use. This will entail incorporation of components that enhance resilience such as drip irrigation of crops, non-water intensive aquaculture, non-wasteful livestock watering, agroforestry for soil water conservation, development of water harvesting and storage structures, development of appropriate irrigation infrastructure and technologies including use of clean energy such as wind and		Departments of Environment, Agriculture, Livestock, Forest, Wildlife, Water

	solar for pumping irrigation water; and promotion of effective and efficient agricultural water use, including waste water management.		
IV	The County Government will promote and support conservation and propagation of germplasm of species with adaptive capacity. This will involve the establishment of in-situ and ex-situ genetic resources conservation areas/centres, the identification of species of livestock, crop and agro-forestry tree species that are adaptive and tolerant to adverse weather conditions, breeding, multiplication and field trials and demonstrations.		Departments of Environment, Agriculture, Livestock
V	The County Government will invest in the development of appropriate low-cost technology, taking into account indigenous knowledge along crops, livestock and agro-forestry value chains. This will entail participatory research that includes crops and forage varieties, livestock breeds and agro-forestry tree species that are able to withstand weather variations; facilitating the adoption of crop varieties, livestock breeds and agro-forestry tree species; providing efficient extension and advisory services, and improving the capacity of communities to use new or existing technologies.		Departments of Environment, Agriculture
VI	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 resource conflict hotspots; and the development of mechanisms for conflict resolution, taking into account traditional conflict resolution mechanisms.		Departments of Environment, Agriculture, Livestock, Forest, Wildlife, Water

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