



CLIMATE CHANGE MAINSTREAMING GUIDELINES

DISASTER RISK REDUCTION SECTOR





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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 Environment and Natural Resource Marsabit County Government

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To the Water Resources Management Authority, Kenya Forest Service, Kenya Wildlife Service, local Community Based Organizations, Non-governmental Organizations and Private Sector who sent representatives who contributed immensely to this process, we highly and sincerely appreciate your valuable contribution. To Mr. Mamo Abudo (MIO-NET, Marsabit), Ms. Janet Ahatho (Deputy Director, Department of Environment, Marsabit County) and Mr. Isaako Mulo (Caritas, Marsabit), may God bless you and reward your effort and commitment towards ensuring this process was a success.

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Finally, we are very grateful to Mr. Gerphas Opondo who was the lead consultant in this project and was instrumental in drafting the document, and Mr. Fredrick Onyango who provided research support services.

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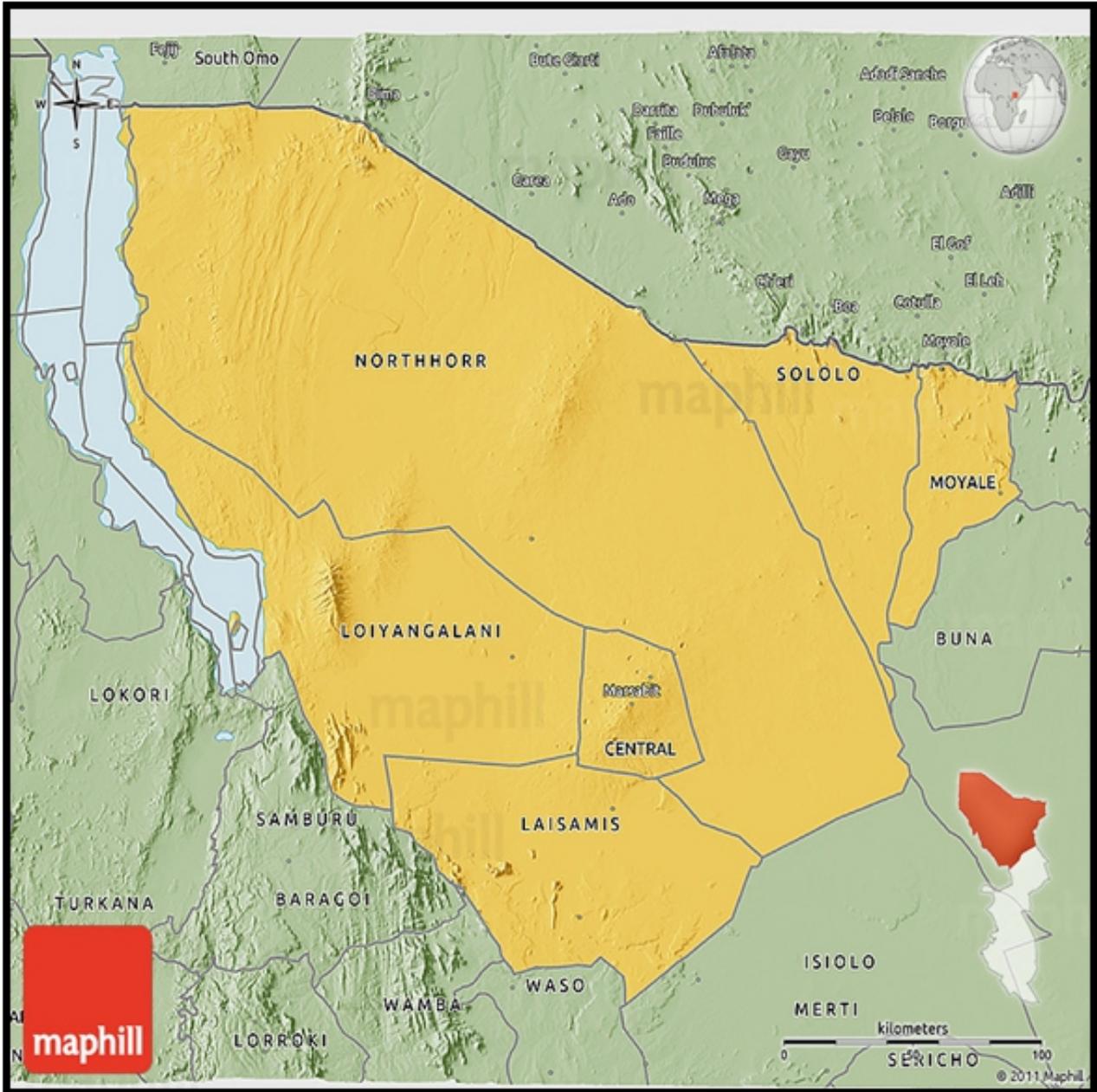
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1.0 MARSABIT COUNTY BACKGROUND INFORMATION

1.1 Location and Administrative Units

The County of Marsabit is located in northern part of Kenya and has a total area of 70,961.2Km² and. It is bordered by Ethiopia to the North, Samburu County to the South, Wajir and Isiolo Counties to the East and covers a section of Lake Turkana to the West. It lies between latitude 02° 45' North and 04° 27' North and longitude 37° 57' East and 39° 21' East.



Map of Marsabit County

The county is divided into four administrative sub-counties namely: Saku, Laisamis, North Horr, and Moyale which also form the electoral constituencies. The sub-counties are further divided into 20 wards and further into administrative locations, sub-locations and villages.

1.2 Climate and Topography

Most parts of the County are arid with the exception of high potential areas around Mt. Marsabit, Mt. Kulal, Hurri Hills and the Moyale-Sololo escarpment. Rainfall is erratic and highly variable with high evaporation rates that exceed rainfall more than 10 times. The county experiences tropical climatic conditions with extreme temperatures ranging from a minimum of 15 degrees celcius to a maximum of 26 degrees celcius, with an annual average of 2050 degrees celcius. Rainfall ranges between 200mm and 1,000mm per annum and its duration, amount and reliability increases as altitude rises. North Horr (550m) has a mean annual rainfall of 150mm; Mt. Marsabit and Mt. Kulal 800mm while Moyale receives a mean annual rainfall of 700mm.

Most of the county constitutes an extensive plain lying between 300m and 900m above the sea level, sloping gently towards the south east. The plain is bordered to the west and north by hills and mountain ranges and is broken by volcanic cones and calderas. The most notable topographical features of the county are: Ol Donyo Ranges (2066m above sea level) in the south west, Mt. Marsabit (1,865 m above sea level) in the central part of the county, Hurri Hills (1685m above sea level) in the north eastern part of the county, Mt. Kulal (2,235 m above sea level) in north west and the mountains around Sololo-Moyale escarpment (up to 1,400 m above sea level) in the north east. The main physical feature is the Chalbi Desert which forms a large depression covering an area of 948 km² lying between 435m and 500m elevation. The depression is within the Great Rift Valley and is separated from Lake Turkana, which is 65-100m lower in elevation, by a ridge that rises to 700m.

1.3 Population

According to the Kenya 2009 Population and Housing census, the county was projected to have a total population of 372,931 in 2017 with 193,544 males and 179,387 females. The projection is based on an annual growth rate of 2.74 per cent. The majority of the population in the county is confined between 0-24 years, translating to 67.8 per cent of the total population. It has an average population density of 5 persons per km² in the county with Saku Constituency has the highest population density at 25 people per Km². The county is cosmopolitan and dominantly home to the Borana, Gabra, Rendille, Samburu, Burji, Somali, Turkana and Dasanach peoples.

1.4 Education & Literacy situation

The county has 315 Early Childhood Development (ECD) centres, 179 primary schools, 35 secondary schools, 6 vocational centres and 4 youth polytechnics. There are however no commercial or public colleges and universities in the county. The proportion of primary schools that are situated within a radius of less than one

kilometre from the community is 79 per cent, less than five kilometres is 7.7 per cent while more than five kilometres is 84.4 per cent. This implies that majority of schools are located at distances that are more than five kilometres posing a challenge of accessibility to educational facilities.

1.5 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 keeping is the main economic activity in the county with the main livestock bred includes being Cattle approximated at 218,755, goats at 1,186,482, sheep at 2,029,490, camels at 217,368, donkeys at 63,861, poultry at 45,857 and rabbits at 68. There are 5,887 beehives/apiaries in the entire county. The main livestock products are: milk, beef, mutton and camel meat. The population practicing agriculture is estimated to be about 2 per cent. Main crops grown in the county include vegetables, fruits, khat (miraa), maize, teff, beans, green grams, cow peas and millet.

1.6 Forest Cover and wildlife

Only about 15% of the land in Marsabit County is under vegetation cover. The County has one indigenous forest known as Mt. Marsabit forest which covers an area of 152.8 km² which is the only gazetted forest in the county. There are two non-gazetted forests namely Mt. Kulal and Hurri hills, with a total area of 750km². Reports also indicate that rural indigenous forests and woodlands have been destroyed at a rate of 5% annually posing a threat to catchment areas and land resources. The main wildlife types found in the county are rare species of black rhino and great kudu. Other main animals found in the county include: Elephants, buffalos, lions, bush bulks, baboons, leopards, zebras, gazelles, giraffes and different species of birds such as ostriches.

1.7 Water and Sanitation situation

There are no permanent rivers in the county, but four drainage systems exist. Chalbi Desert is the largest of these drainage systems. The depression receives run-off from the surrounding lava and basement surfaces of Mt. Marsabit, Hurri Hills, Mt. Kulal and the Ethiopian plateau. The seasonal rivers of Milgis and Merille to the extreme south flow eastward and drain into the Sori Adio Swamp. Other drainage systems include the Dida Galgallu plains which receive run-off from the eastern slopes of Hurri hills, and Lake Turkana into which drain seasonal rivers from Kulal and Nyiro Mountains.

Most parts of county experience acute shortage of water and only 4 per cent of the households use piped water. 60 per cent of the households rely on boreholes, springs and wells. There are nine dams, 853 shallow wells, 18 protected springs, 17 unprotected springs, 53 water pans and 60 boreholes which serve as the main sources of water in the county. The piped water is treated at the water supply plant but the others are not treated and are saline. Households with latrines account for 34.3 per cent of the population. Among the toilets used include: pit latrine which account for 25.8 per cent, uncovered pit latrines (13.5 per cent), covered pit latrine (12.3 per cent), and flush toilets (0.2 per cent), while the remaining majority use open defecation in bushes and fields.

1.8 Waste Management

Waste/garbage disposal by county authorities is only at sub-county headquarters by way of heap burning which accounts for about 20 per cent of the waste generated in these urban centres, with majority of households resorting to backyard waste burning. In the rural areas most garbage is mostly un-attended while a few households practice disposal by way of garbage pits, farm garden disposal and open burning.

1.9 Energy situation

Currently, Marsabit County depends largely on biomass, hydrocarbons, grid and isolated grid electricity, solar, wind and biogas for its energy needs with petroleum and electricity dominating the commercial energy. The supply of adequate energy for household, institutional and SME needs remains a major challenge which must be addressed through a comprehensive medium to long term plan for the sector. Key challenges include: high power infrastructure development costs, long lead time required to implement energy projects, unforgiving climate and terrain, high cost of energy, inability to deliver adequate energy to meet county needs, and low investments in the sector, among others. Marsabit county has abundant renewable energy resources in the form of wind and solar. Biomass though widely used is increasingly under pressure and extensive use has resulted in environmental and land degradation. The main source of energy is wood fuel which is used both for cooking and lighting, while kerosene is used for lighting. The proportion of households using fire wood as main source of cooking fuel is 92.6 %, charcoal is 5.6 %, and paraffin is 1.4 %, while biomass residue is 0.2 %. For lighting 57.2 % of the households in the county use firewood while 27.5% use paraffin. Marsabit County is endowed with a huge potential of renewable energy, especially wind and solar which remain largely untapped. Despite these resources the county is still by and large powered by diesel. Many upcoming urban centres lack access to electricity thus inhibiting socio-economic growth.

2.0 MAINTREAMEING CLIMATE CHANGE IN THE DISASTER RISK REDUCTION SECTOR IN MARSABIT COUNTY

2.1 Introduction

Like other counties in Kenya, Marsabit 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 Marsabit 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 Marsabit 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 Marsabit 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 Marsabit to attain this climate change mainstreaming in the disaster risk reduction sector by providing a framework for integrating climate change responses for the 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 Mainstreaming Climate Change Disaster Risk Reduction

In recent years the Kenya Meteorological Department has attributed the phenomena of floods, increased frequency and severity of droughts, and increased food and water insecurity to climatic changes already being experienced in many parts of the country, especially in the arid and semi-arid lands (ASALs). The meteorology department has noted that the current climate is characterized by large variability in rainfall with occurrence of extreme events in terms of droughts and floods.

Climate change adaptation requires that development, social and economic practices be redesigned to respond effectively to new or anticipated environmental changes. Likewise, DRR seeks to influence development decision making and protect development aspirations from environment-related risks. The effectiveness of both adaptation and DRR are limited if they are not viewed within the broader context of sustainable development. Disaster risk reduction has been conceptualized as the first line of defence against climate change. Its relationship with adaptation, however, is very dynamic. Adaptation policies can benefit from proven DRR frameworks and methodologies. Simultaneously, adaptation can support DRR by reducing long-term vulnerability and influencing development potential. In the face of climate change and variability, disaster risk reduction programmes need to take a long-term perspective to prepare communities for not

only current, but also projected climate-related risks. Marsabit County has in recent years experienced climate change related disasters in the form of floods, drought and natural resource conflicts. These impacts will continue to be experienced, in some instances with greater severity and intensity, hence the need to mainstream climate change considerations into the county's disaster risk sector.

3.0 DISASTER RISKS ASSOCIATED WITH CLIMATE CHANGE

3.1 Flooding

For millennia, humans have settled in floodplains in order to till fertile soils, use the flat terrain for settlements, gain easy and safe access to water and use rivers for transport. Whereas riverine floods are natural phenomena that have always occurred, in recent times, humans have become more exposed to flood risk as encroachment into flood plains and lack of flood response plans increase the damage potential. Increased incidences of flooding will continue to displace communities, livestock and wildlife, will adversely affect food and potable water sources and may also compromise sanitation situation and built infrastructure such as roads in the county.

3.2 Drought

The term drought may refer to a meteorological drought (precipitation well below average), hydrological drought (low river flows and low water levels in rivers, lakes and groundwater), agricultural drought (low soil moisture), and environmental drought (a combination of the above). The socioeconomic impacts of droughts arise from the interaction between natural conditions and human-induced climate change factors such as changes in land use, land cover, and the demand for and use of water. In some cases the frequency of occurrence of droughts is exacerbated by human induced changes in land cover. Excessive water withdrawals can increase the likelihood and impact of drought. Droughts have both direct and indirect consequences for human livelihoods. A direct consequence is crop and pasture loss, livestock deaths, and in extreme instances can cause starvation if alternative food sources are not available. Indirectly, water shortages contribute to the spread of diseases, because people lack water for basic use and hygiene.

3.3 Natural resources conflicts

A water crisis as a result of climate change will increase the probability of competition between water use sectors and, in the absence of systems regulating such competition, the likelihood of water conflict. Climate change is anticipated to increase conflicts as a result of struggles for water use if increasing supply to meet growing demand for water resources cannot be assured, in addition to other pressures on natural and human systems, e.g. from population growth. In Kenya's ASAL areas such as Marsabit County where pastoralism and agro-pastoralism are major economic activities, with pastoral communities migrating in search of water and new seasonal grazing, conflicts over water and grazing fields, and between pastoralists and crop based farmer is likely to rise.

4.0 STRATEGIES AND GUIDELINES FOR MAINSTREAMING CLIMATE CHANGE IN THE DISASTER RISK REDUCTION SECTOR IN MARSABIT COUNTY

STRATEGIC ISSUE 1: VULNERABILITIES DUE TO CHANGES IN TEMPERATURE AND PRECIPITATION PATTERNS			
Strategic Goal: Enhanced adaptive capacity and resilience of communities to the adverse impacts of climate change			
Strategic Objective: Institute measures to reduce the vulnerabilities of communities to changing temperature 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 communities and other stakeholders on disaster prevention in situations of possible floods or droughts. This will involve collaboration with national government agencies such as the Kenya Meteorological Department, Water Resources Management Authority and National Drought Management Authority to establish, improve, modernize and maintain climate/weather assessment infrastructure; integration of scientific and indigenous knowledge and skills in weather data analysis, packaging and dissemination of downscaled weather information to communities and other stakeholders through various channels including local radio stations, community barazas, etc., for early decision making on possible flooding or drought disasters as a result of changes in temperatures and precipitation.	By 2020	Departments of Environment, Water, Sanitation
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 setting up a well-resourced and technically	Continuous	Departments of Environment, Water, Sanitation, Agriculture, Livestock , DRR

	equipped disaster response department, developing effective early warning systems, producing and disseminating of downscaled weather information on extreme weather events through local FM radio stations, public forums and other media, and the preparation of contingency plans to end flooding and drought emergencies, and use of early warning weather information for decision making on relocation or evacuation of vulnerable communities and distribution of emergency supplies including tents, clothing, food items, water and sanitation facilities, public health services, etc.		
II	The County Government will invest in climate-proofed infrastructure for all construction works including dams, roads, buildings and housing, public institutions such as schools and hospitals, water harvesting, storage and supply lines, storm water drains, waste water and sanitation facilities. This will involve developing infrastructure designs and implementing building technologies that can withstand weather extremes such as excessive precipitation and floods.	Continuous	Departments of Environment, Water, Sanitation, Public Works, Agriculture, Livestock

STRATEGIC ISSUE 3: VULNERABILITIES DUE TO UNSUSTAINABLE NATURAL RESOURCE MANAGEMENT

Strategic Goal: Enhanced resilience of communities to climate change impacts through sustainable natural resource management

Strategic Objective: Mainstream sustainable natural resource management into production systems to enhance resilience of communities to vulnerabilities due to unsustainable natural resource use

Mainstreaming Strategies and Guidelines		Timeline	Responsible
I	The County Government will promote sustainable management and utilization of natural resources such as forests, water, etc. This will involve the development of policy/legal frameworks for responsible natural resources use. This includes integrated natural resources management for various natural resources to ensure equitable access to all in order to reduce or eliminate possible resource conflicts.	By 2019	Departments of Environment, Water, Sanitation

II	The County Government will invest in research, technology development and dissemination for sustainable water resource management. This will entail participatory and collaborative research towards development of suitable sustainable water resource management technologies and innovations as well as technology packaging and transfer to end users, as well as for climate resilient sanitation.	Continuous	Departments of Environment, Water, Sanitation
III	The County Government will establish and implement mechanisms for resolving natural resource use conflicts including human wildlife conflict. This will entail the development of mechanisms for identification and profiling of potential natural resource conflict hotspots, and the development of mechanisms for conflict resolution including policy and legal frameworks, and use of community peace and reconciliation structures.	Continuous	Departments of Environment, Water, Sanitation, Agriculture, Livestock, DRR

