COUNTY GOVERNMENT OF MERU

MERU COUNTY CLIMATE CHANGE MITIGATION AND ADAPTATION PLAN

A United, Prosperous, Green and Happy County

FOREWORD

This Climate Change Mitigation Action Plan (CCMAP) integrates environmental concerns into the County's policies, plans, programs, and projects in line with the provisions of the Environmental Management and Coordination Act (EMCA, 1999) and other environmental frameworks. The CCMAP report addresses environmental issues from various sectors in an integrated manner at the county level and their significance in developing planning. It proposes strategies for achieving sustainable development in line with the County's quest to meet the Sustainable Development Goals (SDGs), Vision 2030, Meru County Vision 2040 and the County integrated Development Plan (CIDP). The report has identified actions to be taken by government agencies, civil society and individuals and more for incorporation into sectoral development plans and programs. Its implementation will be monitored through the Annual State of the Environment (SoE) reporting. Meru County faces a numerous of environmental issues, including deforestation, soil erosion, desertification, water catchment destruction, poaching, domestic and industrial pollution, land degradation, loss of biodiversity, degradation of aquatic ecosystems and resources, droughts, floods and landslides and invasive and alien species. Moreover, climate change issues have been, underscored in the global agenda as it affects all spheres of human activity. Our commitment to ensure environmental management is critical, hence the need for the CIDP and sectoral policies to mirror the recommendations of the CCMAP framework.

The process for the production of this CCMAP was participatory, involving various stakeholders from institutions and sectors, including the public, private, and local communities at the county level. These consultative meetings provided the basis for the formulation of the Meru CCMAP.

This CCMAP report will provide harmony in the prioritization and implementation of environmental interventions at the County level for sustainable development as envisaged in Vision 2030, Meru County Vision 2040 and the Constitution of Kenya 2010. The participatory approach adopted in the CCMAP process enhanced environmental awareness among various stakeholders including the legal fraternity, Ministry of Interior and Coordination of National Government, institutions of learning and community based organisations (CBOs), therefore underpinning their relevance in sustainable development.

I look forward to all institutions (public and private), civil society and the public to be engaged in the implementation of this plan in order to achieve sustainable development in the country.

Economic growth and environment are closely intertwined, in Kenya and in Meru County. CCMAP is a tool that aims to enhancing the integration of environment into development planning. In this regard, the Environmental Management and Coordination Act No.8 of 1999 provides for the formulation of Environmental Action Plans every five years.

H.E. KIRAITU MURUNGI
GOVERNOR - MERU COUNTY

PREFACE

Climate Change Mitigation Action Plan (CCMAP) is a tool that aims at integrating environmental concerns into development planning. The CCMAP report addresses environmental issues on climate change from various sectors in an integrated manner at the county level and their significance in developing planning. It proposes strategies for achieving sustainable development in line with Kenya's quest to meet the Sustainable Development Goals (SDGs), Vision 2030, Meru county visio 2040 and the Medium Term Plan (MTP). The report has identified actions to be taken by government agencies, civil society and individuals and more for incorporation into sectoral development plans and programs. Its implementation will be monitored through the Annual State of the Environment (SoE) Reporting.

This report will provide harmony in the prioritization and implementation of environmental interventions at the County level for sustainable development as envisaged in Vision 2030, Vison 2040 and the Constitution of Kenya, 2010.

Climate change mitigation action Planning is a multi-sectoral process that calls for a participatory approach in its preparation and implementation. Many institutions and individuals have contributed to the completion of this CCMAP.

The State of the Environment (SoE) report is a tool for annual monitoring of the implementation of the EAP framework and provides an update on the state of the environment for all sectors. The SoE reports have focused on key environmental concerns such as Land Use and Environment (2004), Pollution and Waste Management (2005) and Climate Change (2006) and now focus is on environmental indicators.

The participatory approach adopted in the CCMAP process enhanced environmental awareness among various stakeholders including the legal fraternity, Ministry of Interior and Co-ordination of Nation Government, institutions of learning and community based organizations (CBOs), therefore underpinning their relevance in sustainable development.

I look forward to all institutions (public and private), civil society and the general public to be engaged in the implementation of this plan in order to achieve sustainable development in the country.

PROF. KARWITHA KIUGU.

CECM –DEPARTMENT OF ENVIRONMENT, CLIMATE CHANGE AND NATURAL RESOURCES

ACKNOWLEDGEMENT

The process of preparing this, Meru County Climate Change Mitigation Action Plan (CCMAP) benefited from the support and guidance of Pan Africa Climate Justice Alliance (PACJA), National Environmental Management Authority (NEMA) and the Meru County Government (MCG) predominantly Department of Environment, Natural Resources and Climate change that steered the development of the CCMAP. In particular, the process gained from their experience in preparations and data gathering for the National and County Development Plans. The County Development Planning Officer gathered data on practical experience in the County development planning and programme / project formulation. The officer also gave both technical and hand-on support throughout the preparation process. The National Environment Management Authority through Meru County office provided both advisory and policy direction. Their technical support in the formation of this is highly CCMAP appreciated. The County Climate Change Unit Secretariat has ensured that this CCMAP is produced in the most cost-effective manner. They worked diligently to ensure that the CCMAP underscores all pertinent environmental matters within the County comprehensively. The information and data provided by the department of Agriculture, Livestock and Fisheries, Department of Water and irrigation, Department of Physical Planning, Department of Public Health, Kenya Wildlife Service, Kenya Forest Service, Water Resources Authority, civil societies among other stakeholders and lead agencies formed the basis of this plan and the participation of the various representatives is highly appreciated. I acknowledge the efforts made by all persons who contributed directly or indirectly to the preparation of this CCMAP. In particular, I pay special tribute to the Meru County Department of Environment, Natural Resources and climate change for ensuring policy direction throughout the process, hence enriching the report and making quite relevant to the county's development agenda. We look forward for the CCMAP report to contribute in integrating environmental issues in the county's sustainable development and guide appropriately the process of development planning. I urge the policy makers, all institutions, experts and individuals from various sectors to make good use of this very fundamental document.

KINOTI MWEBIA

CHIEF OFFICER E, NR & CC

CHAPTER ONE
INTRODUCTION AND BACKGROUND

1.0 Administration and Geography

Administratively, the County is divided into eight (8) sub-counties namely Buuri, Igembe North, Igembe South, Imenti North, Imenti South, Meru Central, Tigania East and Tigania West Sub Counties. Politically, the county is divided into nine (9) Constituencies of Buuri, Igembe North, Igembe Central, Igembe South, North Imenti, South Imenti, Central Imenti, Tigania East and Tigania West. The county has 45 assembly wards with the highest number (6) within South Imenti and the least (4) in Central Imenti. The rest of constituencies share a common number of wards (5). The county also has 392 villages.

Contextually, Meru County is located in the Eastern part of Kenya (formerly Eastern province of Kenya) and has a total area of approximately 70, 006km^2, making it amongst the largest counties in Kenya. The county lies between 0^{o}6' North and 0^{o}1' South and between latitudes 37^o West and 38^o East. It borders Isiolo County to the North, Tharaka/Nithi County to the East, Nyeri County to the South West and Laikipia County to the West making it very prone to immigrants as opposed to emigrants given its high agricultural potential and natural resource base.

Largely, the county's located on the eastern slopes of Mt Kenya and the equator thereby influencing its natural conditions. The county's altitude ranges from 300m to 5,199m above sea level. This has influenced the atmospheric conditions leading to a wide variety of microclimates and agro-ecological zones. The drainage pattern in the county is characterized by rivers and streams originating from catchment areas such as Mt. Kenya and Nyambene ranges in the North of the county. The rivers cut through the hilly terrain on the upper zones to the lower zones and drain into the Tana and Ewaso Nyiro Rivers. The rivers form the main source of water for both domestic and agricultural use.

The distinct physical features for which the county is famous are Meru National Park, Njuri Ncheke shrine, Mt. Kenya, Meru Museum, Nyambene Complex among others. The County has eleven permanent rivers with the major one being the Kathita River, a tributary of River Tana. The County also has 12 shallow wells, 30 protected springs, two water pans, 16 dams and 105 boreholes. These form the major sources of water for domestic use and irrigation.

The County is classified as a Semi-Arid zone, except high potential areas around Meru central and Meru North to lowland semi-arid areas (Meru South and Tharaka). The distribution of rainfall ranges from 300mm per annum in the lower midlands in the North to 2500mm per annum in the South East. Other areas receive on average 1250mm of rainfall annually. There are two seasons with the long rains occurring from mid-March to May and short rains from October to December. Temperatures range from a low of 8^{o}C to a high of 32^{o}C during the cold and hot seasons respectively.

The county has varied ecological zones ranging from upper highlands, lower highlands, upper midlands and lower midlands. This has greatly influenced the major economic activities. The upper highlands zones covers majority of the county's area ranging from Imenti South, Imenti Central, Imenti North, Part of Tigania East, part of Tigania West, Igembe Central and Igembe South constituencies. The lower midland zones are only found in lower parts of Buuri, Igembe North and Tigania East and West which borders Laikipia and Isiolo Counties.

1.1 Population, Gender Dynamics and Urbanization

According to the 2019 National Population and Housing Census by the Kenya National Bureau of Statistics (KNBS), Meru County has a progressive population of 1,545,714 hosted in about 426,360 households and approximate household size of 3.6. Considering this against the total land mass of the county of 70,006km^2, the county has about 221 km^2 population density. This, looking at the growth rate projected for the county, is a huge impending challenge to the natural resources given the continuous demand and continuously growing urban areas.

Conferring to the national census of 2019, the majority of the population in the county is between 0-24 years. This is an indicator of a young and growing population, which will potentially exert pressure on the county's resources and urban areas in the future if the trend continues. Major towns in the county include Meru Town, Nkubu, Laare, Timau and Maua. The social landscape of the county is characterized by chronic food droughts, insecurity (mostly climate induced), high levels of food aid (especially in low potential areas) and rapidly changing livelihoods. Household dynamics are also changing rapidly. Although about 80% of the population is still depending on classical agriculture income, more and more young and well-educated people are moving to urban areas looking for other sources of income corresponding to a more modern lifestyle and aspirations. Still another significant number of households become pastoral drop-outs following each major natural disaster like droughts.

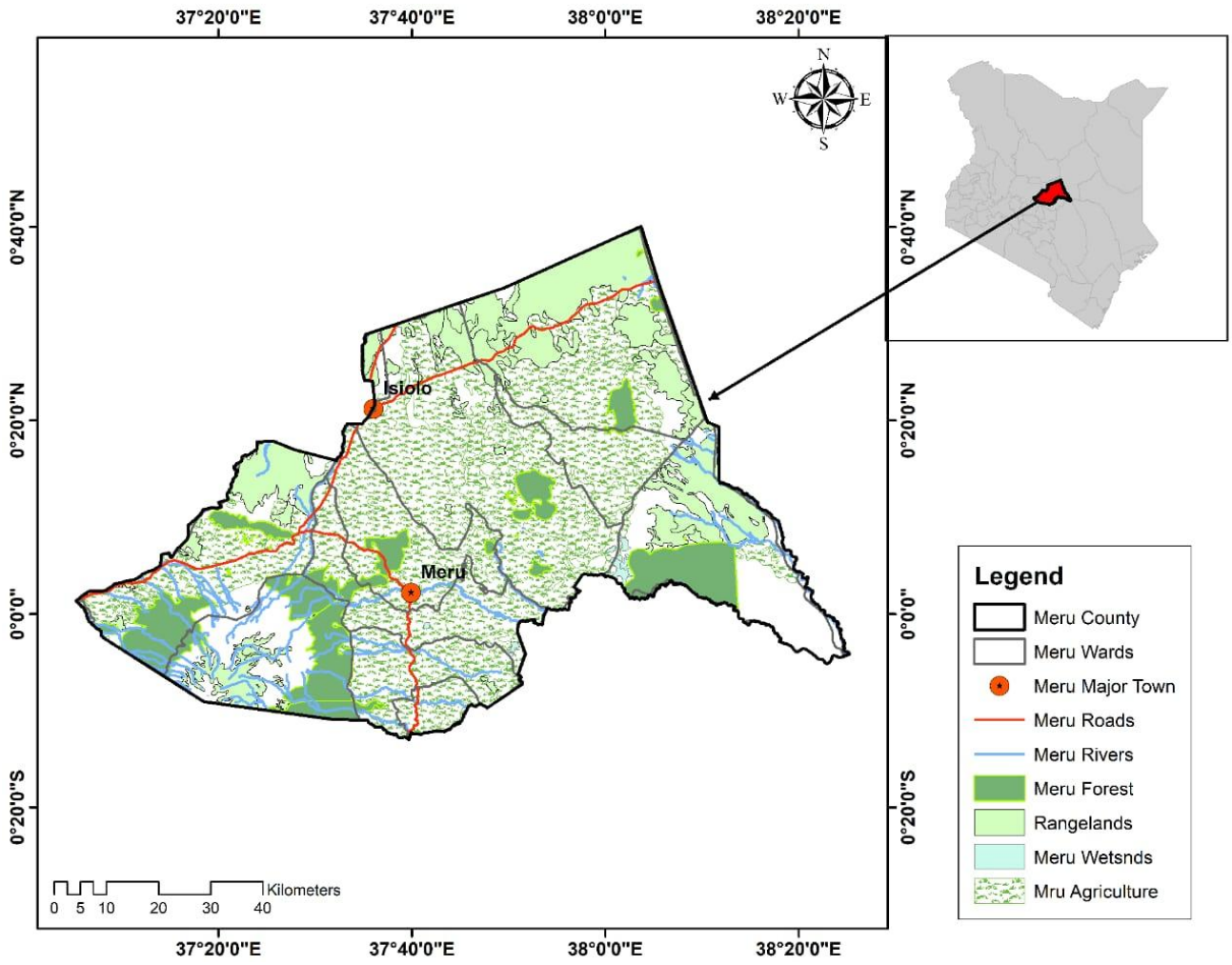

Figure 1: Meru County Geography and Administration Geographic Information System (GIS) generated Map. Source: Robert Muthami (2020).

CHAPTER TWO
SITUATIONAL ANALYSIS

2.1 Evidence of Climate Change in Meru County

Kenya is increasingly becoming Arid and Semi-Arid Land (ASAL). Even as it does, the population of the country is increasingly growing and high dependence to feed the country is left on the "hands" of the country's food basket; the central Kenya; where Meru is located. According the country's climate smart agriculture strategy, green economic strategy and implementation plan alongside other sector specific plans, the Kenyan bread basket; the central Kenya; is largely endowed with vast amounts of natural resources, host roughly 30.4 percent of Kenya's population, produces almost 70 percent of the national food and 90 percent of the wild game that Kenya's tourism sector is renowned for. Yet, the ASALs continue to record the lowest development indicators

Meru County economy just like the rest of the country is highly dependent on the natural resource base, and thus is highly vulnerable to climate variability and change. Rising temperatures and erratic rainfall patterns, resulting in increased frequency and intensity droughts and flooding, threaten the sustainability of the County's development and livelihoods. In response to this realization, this Meru Climate Change Policy has been developed to guide the overall response priorities to climate variability and change.

The County is bound by the Constitution of Kenya, 2010 which has set out a legal commitment to attain ecologically sustainable development and all the international and regional protocols on climate change. This policy provides a firm basis to address the challenge of climate change while striving to attain the development goals set out in Kenya Vision 2030 and Meru Vision 2040. The County has further established a Directorate of Environment and Climate Change in accordance with the National Climate Change Act, 2016 to provide overall guidance to climate change responsive development in the County.

The primary focus of this plan is on the nexus between sustainable County development and climate change. Climate change adversely impacts key sectors that are important to the economy and society: Environment, Water and Forestry; Agriculture, Livestock and Fisheries; Trade; Extractive industries; Energy; Physical Infrastructure; Tourism; and Health. This Policy therefore elaborates options that can help to achieve the goal of low carbon climate resilient development in the County as a contribution to the Nationally Determined Contribution (NDC).

Meru County climate just like the general climate of Kenya, has over time been experiencing changes in frequency, intensity, spatial extent, duration and timing of extreme weather and climate events. In recent past, evidence of higher frequency and intensity of droughts and floods has been noted in Meru causing immense suffering for some of the county residents.

The country's drought cycles have been reduced from 20 years (1964-1984), to 12 years (1984-1996), to two years (2004-2006), to a yearly occurrence of drought recorded in the period between 2007 and 2012 (Republic of Kenya, 2016). In Meru, all the wards in and bordering the Northern grazing zone (Buuri, Tigania East and West, Igembe North and Central) and the Eastern side of Imenti South and Central (Kiagu, Mitunguu, Abogeta East and Igoji East) have frequently been hit by extreme droughts.

In 2019, almost all permanent rivers in Meru County experienced extremely reduced water levels and/or dried up. This caused insurmountable loses to the county residents and resulted to intra and inter-county conflicts over the needed resource. In a response to the County Government of Meru held a Water Dialogue forum themed "towards practical solutions to environmental and water crises" in October 2019. Some strategies proposed from the forum shall be used in crafting policy options in this policy.

2.2 Impact of Climate Change in Meru County

Crop farming and value chains: The economy of Meru is primarily agrarian. The growing of a variety of crops and keeping livestock in some parts of the county form a critical chunk of the economic activities of the people of Meru. The Greater Meru is endowed with soils and climatic conditions that allow for the production of a variety of commodities including wheat, barley, potatoes, millet, Sorghum and maize. High grade tea, coffee, bananas and Miraa (Khat) are the key cash crops.

According to Meru County Integrated Development Plan (CIDP) and the county climate risk profile done by Consultative Group on International Agricultural Research (CGIAR), Meru County is characterized by high agricultural productivity attributed to favorable climatic conditions and fertile lands. High-input, rain-fed agriculture complemented by irrigation is the main source of livelihood in the County, contributing about 80% to the average household income. Maize, bananas, potatoes and dairy cattle are the key value chain commodities that contribute to both household food security and livelihoods. However, floods and heat stress compromise productivity and food security in Meru County and are expected to pose even greater challenges in coming years. Reduction of agricultural land, declining soil fertility, high input costs, lack of protection of catchment areas, environmental degradation, cross-border conflicts between pastoralists and crop farmers, and poor marketing systems are some of the key factors that exacerbate the impacts of climate change and variability and at the same time limit the ability of farmers and livestock keepers to cope with these impacts.

To adjust to the occurrences, farmers employ a number of on-farm strategies to cope with climate risks and shocks including: conservation agriculture, tree planting, growing of drought-tolerant crop varieties, value addition, improving livestock breeds, animal feed conservation, water harvesting, farm inputs such as seeds and fertilizers, irrigation and water harvesting equipment, and forming of cooperatives for easier access to credit, markets and information. The main constraints to adoption of these strategies include; high costs of inputs, distance to input markets, counterfeit inputs (products) and technologies, and limited knowledge of new technologies. It is projected that declining crop production will further impact negatively on the already food insecure communities in the county. Off-farm services to increase the adaptive capacity

of farmers include: agricultural extension and training, youth friendly technologies/engagement, credit and insurance schemes, early warning information and food security assessments. These services are provided by governmental, non-governmental, faith-based and private organizations. Engagement between actors is facilitated through a stakeholders' forum, however, there is a need to strengthen the framework for collaboration to maximize the use of resources and minimize duplication of effort. The absence of County-specific legislations on enforcing national climate change policies, lack of political goodwill, and a lack of mechanisms to coordinate, implement and monitor interventions are the most common institutional hindrances to disaster risk management and climate change adaptation.

Livestock and Dairy farming: Meru County is one of the leading milk producing areas in Kenya. Dairy farming is practiced in all AEZs of the County. In 2015, an estimated 120,000,000 liters of milk was produced earning the farmers about KES 4.56 billion. More than half the population (40% - 60%) of the County is involved in dairy farming with the majority of households keeping an average of two animals. Milk is consumed on a daily basis, hence the importance of dairy farming for food security. Although dairy farming is widespread, productivity is considered to be medium. For the exotic cattle, the productivity per animal is about 6.7 liters/cow/day during the dry season and 8.6 liters/cow/day during the wet season (GoK, 2014). Dairy is an income earner for many households with farmers being paid an average of KES 38 per liter by the Meru Dairy Union, a large-scale processor in the County.

In 2015, the processor was handling an average of 110,000 liters per day. Even though most of the milk is taken to the Meru Dairy Union, raw milk is still sold in local shops, local markets and pasteurized milk in the supermarkets. The actors in this value chain include the farmers (or milk producers), the inputs providers (who distribute the various inputs used in dairy production), and the processors (such as the Meru Dairy Union, who buy the milk from the farmers, add value and sell to consumers). On the other hand, the Meru County farmers keep livestock both for subsistence and commercial purposes. These include dairy and beef cattle, goats, sheep, poultry and honey bees. The main livestock facility in the county is the Kinoru livestock resource centre (KLRC) which is a diagnostic facility as well as the county's artificial insemination programme centre

While the sector appears to have some growth and prosperity, there are also indications that climate change has affected its existence largely. According to the annual development plans and CIDP for the county, breeding in dairy cows, sheep and goats has halved to just once in a year instead of the previous two times. The cumulative impact of climate change on these sector include; diminished water and pasture, increased resource conflicts, increased pests and diseases, reduced productivity and production with associated socioeconomic impacts (loss of livelihoods and income and further deprivation). Some households, for instance, lose up to 50 percent of their herds during a drought.

Land Use and Land Use Changes: Land in Meru County is utilized in diverse ways including: agricultural, residential, educational, public purpose, public utilities, transportation, industrial, recreation and conservation and commercial. However the major land use in the county is mainly for agricultural activities for both crop farming and livestock-keeping. Agricultural land use is common in all the sub Counties and is

particularly intense in the Imenti sub counties and Buuri while livestock is common in the Tigania and North Igembe sub counties. Other uses include cultural and forestry conservation. There are large scale farming carried out by private companies in Timau, Buuri constituency. Livestock and Miraa farming is also practiced in Tigania and Igembe areas. Coffee, Tea and Macadamia are also major crops produced in Imenti Central and Imenti South sub counties respectively. Other crops grown in the county include Bananas, maize, beans, sorghum, millet, green grams, potatoes, cabbages, carrots and kales among others. Urban uses are also rapidly emerging in the County with Meru, Maua, Nkubu, and Timau developing as urban nodes. The urban areas are also being complemented by other centers in the Sub Counties and ward level. Transportation and forestry use constitute other main users in the county.

The increasing dependence on land coupled with the two tier demand for food and other natural resources have seen the county land degraded, food reduced, malnutrition increased, livelihoods altered, weather unpredictable and drought prolonged. Statistically, according to the county climate change risk profile as undertaken by the CGIAR; a global partnership that unites international organizations engaged in research about food security, The average land holding size per household is 1.8 ha for the small scale and 18.25 ha for the large scale land owners. The area which is potential for irrigation is 81.262 ha with only 2,131ha under irrigation. The major land use in the county is farming for both subsistence and commercial purposes. Approximately 65 per cent of the farmers in the county have title deeds. However, Meru North region which includes the Igembe South, Central and North and Tigania East and West leads with the highest number of farmers without title deeds. This is mainly as a result of slow process of land registration and numerous land cases in courts occasioned by the use of CAP 284. However the prospect of accelerated land registration are high since the same CAP 284 has since been suspended

Range management: The rangelands of Meru County contribute significantly to national and local economies by supporting livestock production, wildlife conservation, and tourism. Even so, climate change impacts negatively on water availability, pasture productivity, massive livestock and wildlife losses owing to frequent drought episodes, increased human-wildlife conflicts, escalation in resource conflicts between various pastoralist groups especially from Isiolo competing over meager rangeland resources, loss of biological diversity, reduced aesthetics of landscape as a result of degradation and encroachment of invasive species. Observable changes in vegetation patterns across the county are equally forcing specific wildlife species to migrate to newer sites, neighboring counties and/or even across international borders leading to reduced visitation by tourists and therefore loss of revenue.

2.3 Policy and Legal Frameworks Governing Climate Change

Since 2003 the Government of Kenya has demonstrated a renewed commitment to the agricultural and production regions, for example, through the Economic Recovery Strategy launched in 2003, which, for the first time, recognized 'the important contribution the arid and semi-arid areas like Meru to national development. Similarly, the Government of Kenya is committed to putting in place a holistic policy framework that facilitates and fast-tracks sustainable development of such regions, reducing levels of

inequality concerning the rest of Kenya and realizing its potential for the benefit of affected counties and the country as a whole.

The 2010-2011 drought was one of the most severe humanitarian disasters of recent years and had a significant negative impact on the region's livelihoods and its people. In what amounted to a political sea change, the Heads of State and Government of Intergovernmental Authority on Development (IGAD) and East African Community (EAC) member states and international development partners convened a Summit in Nairobi on September 2011 to discuss the drought crisis. Following the Nairobi Summit Decision to embark on the initiative to end drought emergencies in the Horn of Africa, IGAD member states and their development partners were urged to put in place coordinated long-term policies, programs, and interventions aimed at addressing food security and building drought resilience on a sustainable basis. As a result, the IGAD Secretariat led a consultative, participatory process involving member states, development partners and non-state actors to prepare the IGAD Drought Disaster Resilience and Sustainability (IDDRSI) Strategy. IGAD Member States, Kenya included, developed Country Programming Papers (CPPs) for the Ending Drought Emergencies (EDE) interventions to be undertaken at the national level, from which the County Governments can now draw on for their drought resilience initiatives.

On top of the ending drought emergencies, Kenya has assented to several international and regional instruments governing diverse aspects of climate change, currently implemented with varying degrees of success. The United Nations Convention to Combat Desertification (UNCCD) promotes sustainable management and utilization of dry-lands while the United Nations Framework Convention on Climate Change (UNFCCC) seeks to address climate change through periodic and successive binding global agreements (presently the Paris Agreement) that detail, among others, adaption measures to respond to both current and future impacts of climate change. Further, the Sustainable Development Goals (SDGs) are a set of development goals that aim at fostering sustainable development across diverse sectors. Of particular interest to Meru County are SDGs 2 (zero hunger) 15 (Life on Land) and 13 (Climate Action).

With Meru County sharing its border with Isiolo County, the Sendai Framework for Disaster Risk Reduction (2015-2030) seeks a reduction in disaster risk and losses in lives and livelihoods while the African Union (AU) Policy Framework for Pastoralism in Africa aims to secure, protect and improve the lives, livelihoods, and rights of African pastoralists. Closer home, the EAC Climate Change Policy guides Partner States on the preparation and implementation of collective measures to address climate change in the region.

The Constitution of Kenya (2010) asserts the aspiration of all Kenyans for a governance based on the essential values of, among others, human rights, equality, and social justice. These aspirations particularly resonate with residents of Meru and other ASAL border counties who have endured socio-economic marginalization. It creates an Equalization Fund to right the wrongs of such marginalization. Most importantly, the Constitution creates a two-tier system of governance where, among others, counties are tasked with the implementation of crop and livestock production, water and sanitation services, disaster management (concurrent function) as well as soil and water conservation; all of which contribute to climate change adaptation.

The National Land Policy (2009) provides for guiding principles that resonate with sustainable land management including, among others, equitable access to land; conservation of ecologically sensitive areas, elimination of gender discrimination in land relations; and encouragement of traditional dispute resolution mechanisms. To secure community rights to land, the Policy mandates the Government to enact legislation which shall inter alia, provide a framework for the recognition and registration of community rights to land and resources found thereon. Pending which, any unregistered community land shall be held in trust by the County governments in trust for the community in question.

The Kenya Vision 2030 recognizes the semi-arid lands as an integral part of the national economy that have specific disadvantages borne out of historical marginalization and which therefore require special attention. It roots for inclusive development and recognizes the contribution of farmers to the national economy. Vision 2030's Second medium-term plan (MTP II) 2013-2017 recognizes that Kenya is susceptible to natural disasters such as drought and flooding which are likely to increase because of climate change. It thus prioritized the management of climate-induced disasters by strengthening people's resilience to drought and improving the monitoring of, and response to emerging drought conditions through the Ending Drought Emergencies (EDE) program.

The National Policy for the Sustainable Development of Northern Kenya and Other Arid Lands (2012) seeks to strengthen climate resilience of communities in the ASALs and ensure sustainable livelihoods, recognizes the importance and need to strengthen customary natural resource management, recommends appropriate mechanisms to support mixed farming as a viable livelihood system and eradicate invasive species such as Prosopis juliflora (*mathenge*) that are increasingly posing a threat to rangelands which are no stranger to the rangelands of Meru County.

The National Climate Change Response Strategy (NCCRS, 2010) laid the foundation for strengthening nationwide actions towards climate change adaptation and mitigation of greenhouse gas (GHG) emissions. The National Climate Change Action Plan (2018-2022) sets plans for the implementation of the NCCRS, including prioritized actions needed to achieve a low carbon and climate-resilient development. The 2016 Climate Change Act provides the regulatory mechanisms to implement climate change resilience and low-carbon actions in both public and private sector development activities and has enshrined the National Climate Change Action Plan (NCCAP) – to be developed in 5-year cycles and aligned with the MTPs – as its principal implementation instrument. It requires County governments to integrate the provisions of the Act. The National Adaptation Plan (2015-2030) aims to integrate climate change into national and county level development planning and budgeting, as well as enhance the resilience of vulnerable populations to climate shocks through adaptation and DRR.

The County Government Act (2012) mandates counties to develop a County Integrated Development Plan (CIDP), County Spatial Plan (CSP) as well as Cities and Urban Areas Plan which shall be the basis for county budgeting and expenditures. The 2016 Community Land Act sets a framework for ownership, protection, management, utilization, rights, benefits sharing, disputes resolutions, and penalties regarding

community land. Furthermore, communities have powers to set rules for administration and management of communal land, establish measures to protect critical ecosystems and habitats, and facilitate access, public participation and co-management of resources by communities. The 2011 Environment and Land Court Act 2011 mandates the court to mainstream Alternative Dispute Resolution (ADR) in its proceedings.

The Environmental Coordination and Management (EMCA Amendment) Act of 1999 (amended in 2015 to incorporate devolution) creates the County Environment Committee comprising, inter alia, representatives of pastoralists within the county in question. The Water Act, 2016 provides for, inter alia, the regulation, management, and development of water resources and services throughout the country. The Water Services Trust Fund shall provide grants to counties (in addition to the Equalization Fund) to extend water services in marginalized areas or those considered to be underserved or not to be commercially viable. The Wildlife Conservation and Management Act, 2013 calls for devolution of wildlife conservation and management, wherever possible, to landowners where wildlife occurs while recognizing the rights of communities living adjacent to protected areas.

The National Environment Policy (2013) aims to a better quality of life for present and future generations (of all Kenyans) through sustainable management and use of the country's environment and natural resources. Its provisions most relevant to ASALs and rangelands are to be found in several sections such as forest ecosystems (develop and implement a national strategy for rehabilitation and restoration of degraded forest ecosystems and water catchment areas with active community involvement/participation), ASALs (promote integrated natural resource management in ASALs, implement the National Action Plan to combat desertification and revitalize the Desertification Trust Fund and mainstream dryland issues into all national development plans and policies) and land (ensure implementation of the Constitutional and the National Land Policy provisions on land, promote land restoration). Others are biodiversity and wildlife resources (involve community participation in conservation activities) and livestock (develop and implement an environment-friendly livestock production policy that takes cognizance of livestock mobility and communal management of natural resources

CHAPTER THREE

GOALS, OBJECTIVES AND GUIDING PRINCIPLES

3.1 Goals and Objectives

Goal: The goal of this Plan is to enhance mitigation and adaptive capacity and resilience to climate change, and promote low carbon development for the sustainable development of Meru County.

Objective: To reduce vulnerability to the impacts of climate change by building mitigation and adaptive capacity, enhancing climate change resilience and strengthening capacities for disaster risk reduction.

Specific Objectives

a) Establish and maintain an effective and efficient institutional framework to mainstream climate change responses across relevant sectors and into integrated planning, budgeting, decision-making and implementation in the county.
b) Reduce vulnerability to the impacts of climate change by building adaptive capacity, enhancing climate change resilience and strengthening capacities for disaster risk reduction.
c) Spur Meru County transition to cleaner, lower emission and less carbon intensive development in accordance with Meru Vision 2040.
d) Encourage private sector involvement and investment in building climate change resilience and engaging in low carbon development opportunities in the county.
e) Promote countywide public awareness, participation, ownership and oversight of Meru County's climate change response efforts and action plans.
f) Provide a mechanism to mobilize resources for Meru County's climate change response and ensure effective and transparent utilization of the resources.
g) Adopt intergenerational, special needs and gender mainstreaming approaches across all aspects of County's climate change response.
h) Provide the policy framework to facilitate effective implementation of regularly updated and scientifically informed Climate Change Action Plans.
i) Enhance research and use of science and technology in policy decisions and sustainable management of resources.

3.2 Guiding principles

This implementation plan will be guided by the following principles:

a) **Common but differentiated responsibilities and respective capabilities**: under the UNFCCC (UNFCC, 1994) Kenya has a common but differentiated obligation in the global effort to address climate change because of its negligible historical responsibility for causing global climate change, and its limited capability to mitigate climate change and adapt to its impacts in light of its stage of development. On the same breadth, Meru County is an integral component of Kenya its development shall have an implication on the overall country emission. Against this backdrop, Meru County shall cause low carbon resilient development.
b) **Right to a clean and healthy environment**: under the Constitution of Kenya, 2010 every person has a right to a clean and healthy environment and a duty to safeguard and enhance the environment.
c) **Right to sustainable development**: the right to development will be respected taking into account economic, social and environmental needs. Meru County under Vision 2040 seeks to achieve people-centered development that builds human capabilities, improves people's wellbeing and enhances quality of life.
d) **Partnership**: building partnerships, collaboration and synergies among various stakeholders from the public, government, non-governmental organizations, civil society and private sector, as well as vulnerable communities and populations including women and youth, will be prioritized to achieve effective implementation of this Policy.
e) **Cooperative government**: embracing a system of consultation, negotiation and consensus building in government administration between and within the County and National governments as encapsulated in the Constitution.
f) **Equity and social inclusion**: ensuring a fair and equitable allocation of effort and cost, as well as ploughing back of benefits in the context of the need to address disproportionate vulnerabilities, responsibilities, capabilities, disparities, and inter– and intra-generational equity.
g) **Special needs and circumstances**: the special needs and circumstances of people and geographic areas that are particularly vulnerable to the adverse effects of climate change will be prioritized. This includes, but is not limited to, vulnerable groups such as women, children, the elderly and persons with disability.
h) **Avoiding maladaptation**: the climate change response will be conducted in such a way so as to avoid maladaptation, defined by the UNFCCC as any changes in natural or human systems that inadvertently increase vulnerability to climatic stimuli.
i) **Integrity and transparency**: the mobilization and utilization of financial resources shall be undertaken with integrity and transparency in order to eliminate corruption and achieve optimal results in climate change responses.
j) **Cost effectiveness**: the selection of climate change interventions will take into account available alternatives in order to identify appropriate choices that provide most benefit to society at least cost.

3.3 Implementation Plan Priority Areas

i. Just transition and low carbon resilient development
ii. Mainstreaming Climate Change

iii. Climate Change Governance
iv. Climate finance
v. Implementation Framework
vi. Public Awareness and Civic Education
vii. Research and Technology
viii. Knowledge Management and Access to Information

CHAPTER FOUR

IMPLEMENTATION PLAN/MATRIX FOR THE MERU COUNTY CLIMATE CHANGE MITIGATION AND ADAPTATION

Strategy	Activity	Output	Key Indicator	Reporting Schedule	5 Year Target	Year					Budget (Kshs.)	Focal Person
						Y 1	Y 2	Y 3	Y 4	Y 5		
Strategic Objective 1: Mainstreaming of Climate Change												
Strengthening inter-sectoral coordination for enhanced CC mainstreaming	Establish a Thematic Working Group on CC – headed by the environment department	Functional secretariat	1 Secretariat formed	Quarterly for the first year	1	1	-	-	-	-	2M	Director, Environment
	Establish a CC Coordination mechanism for the county	Functional TWG	1 TWG formed	Bi-annual	1	1	-	-	-	-	2 M	Director, Environment
	Establish Joint reporting team on CC	Joint reports	No of meetings held	Bi-annual	10	2	2	2	2	2	2 M	Director, Environment
	Establish a tripartite CC Stakeholder Forum (consisting of NGOs, CSOs, Private sector and academia)	Functional tripartite stakeholders forum	Minutes and action plans of the forum meetings and proceedings	Bi-annual	10	2	2	2	2	2	5M	Director, Environment
Strategic objective 2: Reducing vulnerability to the impacts of climate change												
Enhancing adaptive capacity of Meru county residents to climate emergencies	Conservation of vegetation cover in Meru county in line with the 10% forest cover national policy	Functional plan for the conservation of vegetation cover in Meru county	Size (in ha) of the vegetation conserved	Bi-annually	5	1	1	1	1	1	5M	Director Environment
	Introduction of active sustainable forest management and	Functional technologies for sustainable	Number of natural and man-made forests	Bi-annually	10	2	2	2	2	2	10M	Director Environment

Strategy	Activity	Output	Key Indicator	Reporting Schedule	5 Year Target	Year					Budget (Kshs.)	Focal Person
						Y 1	Y 2	Y 3	Y 4	Y 5		
	conservation technologies in Meru County	forest management and conservation	conserved									
	Adaptation of farming practices to new climate change conditions and enabling their climate smart financing	Increased agricultural produce and CSA financing	Positive change in number of harvested produce	Bi-annually	10	2	2	2	2	2	5M	Director Environment
	Strengthening of local capacities and lessons sharing and cross learning	Strengthened local capacities for climate resilience	Number of lesion sharing and cross learning encounters by farmers	Bi-annually	10	1	2	2	2	2	15M	Director Environment
	Establish a disaster management and coordination committee	Functional committee	Minutes and implementation plans of the coordination committee	Annually	10	1	2	2	2	2	20M	Director Environment
	Develop early warning systems, Surveillance, monitoring, evaluation and research	Operational research systems for EWS Surveillance, monitoring and evaluation	No of disaster mapping and database developed.	Annually	10	1	2	2	2	2	20M	Director Environment
Strategic objective 3: Justly transitioning to cleaner, lower emission and less carbon intensive development in accordance with Meru Vision 2040												
Promoting county level climate action for the realization of the NDCs an INDCs based on the Paris Agreement	Reviewing and adjusting county sector policies and plans in line with the principles of just transition and low carbon principles and	Policies with clear just transition and zero carbon development	Number of policies reviewed in line with the principles of just transition and low carbon principles	Annually	10	2	2	2	2	2	5M	Chief Officer Environment and Natural Resources

Strategy	Activity	Output	Key Indicator	Reporting Schedule	5 Year Target	Year					Budget (Kshs.)	Focal Person
						Y 1	Y 2	Y 3	Y 4	Y 5		
	trajectories		and trajectories									
	Promoting conservation agriculture given the economy of the County is largely agrarian	Increased agricultural produce	Wide spread adoption of CSA in Meru county	Annuall y	10	2	2	2	2	2	20M	Chief Officer Environme nt and Natural Resources
	Stimulating the economy of Meru County to produce green jobs through policy interventions	Green Jobs created by the county to create employment for the residents of Meru County	Number of green jobs created by the county	Annuall y	10	2	2	2	2	2	10M	Chief Officer Environme nt and Natural Resources
	Building partnerships to enhance realization of circular economy, industrial ecology and cleaner production as are concepts of just transition and zero carbon development	Partnerships to enhance realization of circular economy, industrial ecology and cleaner production as are concepts of just transition and zero carbon development	Number of partnerships built	Annuall y	10	2	2	2	2	2	20M	Chief Officer Environme nt and Natural Resources
Strategic objective 4: Establishing public private sector partnership for building climate change resilience and engaging in just transition and low carbon development opportunities in the county												
Strengthening tripartite partnerships for climate change resilience in Meru County	Mapping out all the strategic private sector, Academia and CSOs in Meru – including doing a due diligence on them – for partnership	Potential partners for resilience in Meru	Report and list of all the private sector actors on climate change resilience in Meru County and Kenya for potential		1	1	-	-	-	-	0.5M	Director Environme nt

Strategy	Activity	Output	Key Indicator	Reporting Schedule	5 Year Target	Year					Budget (Kshs.)	Focal Person
						Y 1	Y 2	Y 3	Y 4	Y 5		
	purposes		partnership									
	With the needs, objectives and goals of the established Meru County Climate Change directorate, reviewing the partners Institutions and organizations goal and objectives for striking common grounds for partnership	Donor and Private sector pipelines	Number of identified partners	Bi-Annually	1	1	-	-	-	-	0.2M	Director Environment
	Establishing an MSP - pool of private sector actors – to partner with the county in driving the resilience agenda	Established MSPs	Number of MoUs signed – at least 2 per quarter	Bi-Annually	5	1	1	1	1	1	2M	Chief officer Environment
	Holding periodic meetings to review progress against the implementation plans/MoU areas developed	Improved coordination for climate resilience initiatives	Minutes and action plans for the MSP	Bi-Annually	5	1	1	1	1	1	2M	Chief officer Environment
Strategic Objective 5: Enhance Public Awareness on Climate Change Mitigation and Adaptation												
Training implementers and policy makers	Educate and train environmental officers and key policy makers on climate change related issues	Informed staff	No. of personnel trained No of trainings held	Annually	1,500	300	300	300	300	300	10M	Director Environment
Community sensitization	Inform and sensitize the community on climate change related issues	Sensitized and informed community champions	No of groups sensitized and increased awareness of	Quarterly	1,800	360	360	360	360	360	10M	Director Environment

Strategy	Activity	Output	Key Indicator	Reporting Schedule	5 Year Target	Year					Budget (Kshs.)	Focal Person
						Y 1	Y 2	Y 3	Y 4	Y 5		
			CC issues									
	Annual Stakeholder Forum on CC	Forums	No of forums held	Annually	5	1	1	1	1	1	10M	Director Environment
			No of delegates	Annually	1,000	200	200	200	200	200	10M	Director Environment
Community outreach	Conduct community outreaches on CC adaptation	Informed community members Community resilience established	No. of people informed Mortality rate due to CC impacts reduced	Quarterly	2,800	560	560	560	560	560	10M	Chief Officer Environment Chief Officer Environment
Strategic Objective 6: Mechanizing ways to mobilize resources for Meru County's climate change response												
Adequately finance the climate change department and other line departments for accelerated realization of the goals and objectives of the policy	Develop an inventory of the requisites for the climate change directorate operation	An updated inventory	No. of updated inventory	Annually	1	1	-	-	-	-	0.5M	Chief Officer Environment
	Through the county climate change fund law, establish a fund mechanism of not more than 2% of the county development budget to kick start the operations of climate change resilience initiatives	Available funding for climate change resilience initiatives – 2%	2% county development budget allocated for climate resilience initiatives	Annually	1	1	-	-	-	-	15M	Chief Officer Environment
	Establish a resource mobilization team for the directorate of climate change comprising of various Multi-	A multi-stakeholder resource mobilization team for Meru County Climate	Established 10 member resource mobilization team for the county climate	Annually	5	1	1	1	1	1	5M	Director Environment

Strategy	Activity	Output	Key Indicator	Reporting Schedule	5 Year Target	Year					Budget (Kshs.)	Focal Person
						Y 1	Y 2	Y 3	Y 4	Y 5		
	Stakeholder Platforms but chaired by the director environment and economic planning	Resilience Initiatives	resilience initiatives									
	Develop a RM plan for the set team to actively engage in resource mobilization	Clear guideline for resource mobilization for climate resilience	Implementable RM Plan for the county directorate of Environment	Annually	2	1	1	-	-	-	1M	Director Environment
	Resource Mobilization	Resources for the department	Increased funding for climate resilience in Meru County	Annually	5	1	1	1	1	1	2M	Chief Officer Environment
Strategic Objective 7: Promoting gender and social inclusion in the response to climate emergencies												
Enhanced inclusion and participation in climate change resilience by Meru County residents	Develop a gender mainstreaming and social inclusion tool kit for climate resilience	Clear guideline on gender mainstreaming and social inclusion	Gender mainstreaming and social inclusion tool kit	Annually	1	1	-	-	-	-	2M	Director Environment and Gender
	Establish a county gender and social inclusion reference group to be the forbearers of gender and social inclusion in climate resilience	County Gender Mainstreaming and Social Inclusion reference group	Minutes and action plans for the gender and social inclusion reference group	Annually	5	1	1	1	1	1	8M	Director Environment and Gender
	Partner with the department of gender and other partners in creating awareness on gender mainstreaming and climate change	Increased awareness/informed county on matters gender and climate change	Number of awareness sessions conducted by the county	Annually	5	1	1	1	1	1	10M	Director Environment and Gender

Strategy	Activity	Output	Key Indicator	Reporting Schedule	5 Year Target	Year					Budget (Kshs.)	Focal Person
						Y 1	Y 2	Y 3	Y 4	Y 5		
Strategic Objective 8: Operational research activities on climate change resilience												
Forge strategic partnerships for research on climate change resilience	Collaboration with institutions of higher learning and research e. g. UoN, KU, and other Universities, KEMRI, KEPHIS, KEFRI, ILRI, IFPRI etc. in promoting research for climate change resilience in Meru County	No. of partnership developed (at least 4 partnerships annually)	MOUs signed	Annuall y	5	1	1	1	1	1	5M	CECM Water and Environme nt
Strengthen research and training activities	Conduct research, surveys and surveillance programs on emerging and re-emerging climate induced occurrences like drought, livestock diseases, clouding amongst other sector specific items	Research results – at least 2 annually	No of research results	Annuall y	5	1	1	1	1	1	10M	CECM Water and Environme nt

Annex II

Terminology in Climate Change discourse (Adapted from the Sessional Paper No. 5 of 2016 on National Climate Change Framework Policy)

Adaptation - Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.

Adaptive Capacity - The ability or potential of a system to respond successfully to climate variability and change, and includes adjustments in both behavior and in resources and technologies.

Capacity building - In the context of climate change, the process of developing the technical skills and institutional capability in developing countries to enable them to address effectively the causes and results of climate change.

Carbon market - A trading system through which countries or other entities may buy or sell units of greenhouse gas emissions in an effort to meet their national limits on emissions, either under the Kyoto Protocol or under other agreements, such as that among member states of the European Union. The term comes from the fact that carbon dioxide is the predominant greenhouse gas, and other gases are measured in units called "carbon dioxide equivalents."

Carbon sequestration - The process of removing carbon from the atmosphere and depositing it in a reservoir or “sink”, such as soil or trees

Climate - The average pattern for weather conditions occurs over a long time period. Weather refers to the atmospheric conditions at a specific place at a specific point in time. Climate has always varied because of natural causes. Increasingly, however, human increases in GHG emissions causing changes in climate as well.

Climate Change - Changes in global or regional climate patterns, including changes in temperature, wind patterns and rainfall. In particular, climate change refers to a change apparent from the mid to late 20th century onwards and attributed largely to human activities that increase levels of GHG emissions, especially atmospheric carbon dioxide produced by the use of fossil fuels. Climate change is sometimes referred to as global warming, which specifically refers to the long-term trend of a rising average global temperature.

Climate Finance - Local, national or international financing that may be drawn from public, private and alternative sources of financing, and is critical to addressing climate change because large-scale investments are required for adaptation and mitigation.

Climate Resilience - Closely linked to adaptation, building climate resilience includes reducing vulnerability to climate change, making sure that the impacts of climate change are avoided or cushioned, and enabling people to respond to climate risks.

Conference of the Parties - The supreme governing body of the UNFCCC, which meets once a year to review the Convention's progress. The word "conference" is not used here in the sense of "meeting", but rather of "association”.

Deforestation - The long-term or permanent loss of forest cover. The term implies transformation of forest into another land use, which is caused and maintained by a continued human-induced or natural perturbation.

Greenhouse gases - The atmospheric gases responsible for causing global warming and climate change. The major GHGs are carbon dioxide (CO2), methane (CH4) and nitrous oxide (N20). Less prevalent -- but very powerful -- greenhouse gases are hydro fluorocarbons (HFCs), per fluorocarbons (PFCs) and sulphur hexafluoride (SF6).

Intergovernmental Panel on Climate Change (IPCC) - Established in 1988 by the World Meteorological Organization and the UN Environment Programme, the IPCC surveys worldwide scientific and technical literature and publishes assessment reports that are widely recognized as the most credible existing sources of information on climate change. The IPCC also works on methodologies and responds to specific requests from the UNFCCC's subsidiary bodies. The IPCC is independent of the UNFCCC.

Kyoto Protocol - An international agreement standing on its own, and requiring separate ratification by governments, but linked to the UNFCCC. The Kyoto Protocol, among other things, sets binding targets for the reduction of GHG emissions by industrialized countries.

Low Carbon Development Pathway - A national development plan or strategy that encompasses low-emission economic growth. Transitioning to this pathway means taking actions, where possible, to encourage GHG emissions that are lower than business-as-usual practice; and reducing the human causes of emissions by moving toward a resource efficient economy that is as low-carbon as possible and enhancing carbon sinks.

Mitigation - In the context of climate change, a human intervention to reduce the sources or enhance the sinks of greenhouse gases. Examples include using fossil fuels more efficiently for industrial processes or electricity generation, switching to solar energy or wind power, improving the insulation of buildings, and expanding forests and other "sinks" to remove greater amounts of carbon dioxide from the atmosphere.

Measurement, Reporting and Verification Plus (MRV+) - An integrated framework proposed for Kenya to measure, monitor, verify and report results and impacts of mitigation, adaptation and climate finance actions, and the synergies between them.

National Adaptation Plan - A document prepared by developing countries that identifies urgent and immediate needs for adapting to climate change.

National Climate Change Action Plans - National plans of action, prepared at five-year intervals, that set out in detail the requirements and costs for the design and implementation of the various climate change interventions required for Kenya to attain low carbon climate resilient development.

Public Private Partnerships (PPPs) - Public-Private Partnerships are an association between government and private sector through which private financing is utilized to perform a public function, at a profit to the private sector.

REDD+ - Reducing Emissions from Deforestation and Forest Degradation plus the role of conservation, sustainable management of forests and enhancement of forest carbon stocks. REDD+ is a mechanism

under the UNFCCC designed to create a financial value for the carbon stored in forests, offering incentives for developing countries to reduce emissions from forested lands.

Sustainable development - Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Technology Transfer - A broad set of processes covering the flows of know-how, experience and equipment for mitigating and adapting to climate change among different stakeholders.

United Framework Convention on Climate Change (UNFCCC) - An international treaty signed by 195 countries that entered into force in 1994. The objective of the Convention is "…stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate systems…"

Vulnerability - The degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude and rate of climate variation to which a system is exposed, its sensitivity and its adaptive capacity.

Critical Reference Materials

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