

COUNTY GOVERNMENT OF NYAMIRA



NYAMIRA COUNTY CLIMATE CHANGE ACTION PLAN 2023-2028

MAY 2023

CITATION

Nyamira County (2023). County Climate Change Action Plan: 2023-2028.

Nyamira: Department of Environment.

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PREAMBLE



Climate change is a crucial subject that cannot be ignored; therefore, it has to be treated as an immediate threat to mankind. This far, I'm delighted to declare that Nyamira County has joined the global nations in the fight against the adverse effects of Climate change that have posed great risks to the realization of the ideals of Sustainable Development Goals (SDGs), Kenya vision 2030, the Big Four Agenda, the County Integrated Development Plans and other blueprints that push agendas for poverty reduction and food security.

The first ever edition of the County Climate Change Action Plan (2023-2028) has been developed through a consultative process. The plan aims at providing the framework for enhanced response to climate change impacts through proposing low carbon climate smart actions. For a stable climate system, there is need for the County to conserve and increase its carbon sink as well as adopting clean production technologies.

It is noteworthy that the County has experienced extreme weather conditions which heighten threat to food security, contribute to deteriorating water resources, diminished biodiversity and increased land degradation.

There is need to mainstream climate considerations into our flagship projects for resilience to achieve the Sustainable Development Goals (SDGs). It is our mandate to direct efforts towards ensuring that our economy is recalibrated to support climate-smart and carbon-efficient pathways investment in "Bankable Projects" such as renewable energy and water harnessing.

The actions proposed in this Plan are geared towards ensuring that our development remains sustainable in the event of any adverse climate change impacts, including droughts, floods, and other extreme climate events that have in the recent past occasioned negative implications on our economy. It will also contribute to the achievement of our Nationally Determined Contribution under the Paris Agreement.

This was a participatory process that included all stakeholders ranging from the County Government, civil society, research and academia, private sector and the local community to ensure its effective implementation for the benefit of the present and future generations.

H.E. Amos Kimwomi Nyaribo
Governor - Nyamira County

FOREWORD



As the chairman of the steering County committee of climate change, I'm honoured to be part of this serious global conversation on climate change and its attendant effects as we seek for sustainable interventions of mitigation and adaptation to build responsive and robust resilience.

The steering committee has worked around the clock to ensure timely realization of the PCRA and CCCAP .the committee worked along with other crucial entities and stakeholders whose contribution largely informed the content of this Plan.

I'm glad Nyamira County has joined the global movement of Climate Change mitigation, adaption and resilience. As such, the County has developed the legal framework to implement Climate Change mitigation, adaptation and resilience. This far, the County has developed and adopted three crucial instruments namely; The Nyamira County Climate Change Policy (2021), The Nyamira County Climate Change Act (2021) and The Nyamira County Climate Change Finance Regulations (2021) To further guide the implementation for the next five (5) year, the County has developed The Nyamira County Climate Change Action Plan (2023-2028).

I look forward for collective support particularly from the county assembly for approval so that we can move forward expeditiously within the set timeliness.

DR JAMES ONDICHO GESAMI

DEPUTY GOVERNOR – NYAMIRA COUNTY.

CHAIRMAN OF THE COUNTY CLIMATE CHANGE STEERING COMMITTEE.

ACKNOWLEDGEMENT



Tackling climate change is the greatest environmental challenge we face today. If more ambitious policies are not introduced we pose a serious challenge to social and economic development in our County hence, it's imperative that we adapt to the already changing climate. This document assesses the current situation of the County with regard to climate change risk and outlines strategies that will guide in mitigation, adaptation and resilience in the core sectors Agriculture, Water, Environment, Energy and Rural infrastructure. I therefore, with much gratitude, take this opportunity to appreciate and acknowledge various entities that participated in the entire process that culminated in the production of this Plan.

Firstly, I'm greatly indebted to the stewardship role played by H.E, Amos Kimwomi Nyaribo and his Deputy, James Ondicho Gesami for their leadership in spearheading and supporting the Climate Action Planning Process.

Secondly, the Technical Working Group led by Ombogo Marwanga (Chief Officer – EWEMCCNR) and Daniel Omwansa (Director Climate Change) who provided the substantive inputs and contributed to the finalization of the document. Thirdly, those who provided invaluable secretarial assistance to the work of the task team and the publication process. Fourthly, those who provided the editorial support and graphics. May God bless you.

Thirdly, I acknowledge with gratitude, the support of the following funding partners in this whole process; World Bank, KFW, Government of Germany, DANIDA, Sweden-Sverige, National government and County Government of Nyamira

Lastly, I acknowledge the citizens (on whose needs and feedback the plan is hinged), the Private Sector, Academia and Civil society Organizations.

John Omambia Matiang'i

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EXECUTIVE SUMMARY

Climate change in Kenya has caused devastating effects resulting to loss of properties and lives, damaged infrastructure, floods, hunger, drying of rivers, among other adverse consequences. For instance, flooding has affected wide area of the country since March this year (2023). Kenya Red Cross reported that the data collected on 27th March showed that over 36000 people were affected across the Country. Kenya is committed to protecting the climate system for the benefit of the present and future generations by supporting the United Nations Framework Convention on Climate Change (UNFCCC) process, ratifying the Kyoto Protocol in 2005, and contributing to continental and regional climate change initiatives.

The legal framework in developing this plan and the content borrows largely from the National Climate change Action Plan (NCCAP) (2013/2027, 2018/2022) which provides an implementation framework for the National Climate Change Response Strategy (NCCRS). In this regard, the County has prioritized the issue of climate change and focused on developing relevant plans and strategies that aim towards promoting resilience to the effects of climate change. Given that Nyamira County's economy is highly dependent on the agriculture, it is given the citizens become highly vulnerable to climate variability and change. Climate change adversely impacts key sectors that are important to the economy and society, which include; water resources management, agriculture, fisheries and livestock; land use management; energy; public works; environment, disaster risk reduction; tourism wildlife and culture; trade and extractive industry and public health. This Action Plan therefore, provides a clear and concise articulation of priority actions to climate variability and change as well as addressing implementation gaps in these areas.

The Nyamira County Climate Change Action Plan 2023-2028 is informed and guided by key global, regional, national and county climate change adaptation frameworks, policies, legislations, and aspirations. It provides mechanisms and measures to achieve low carbon climate resilient development, in a manner that prioritizes adaptation, and recognizes the essence of enhancing the climate resilience. NCCAP identifies four strategic sectors that are core in climate change mitigation, adaptation and resilience; Environment; Water; Agriculture; and Rural Infrastructure, Disaster Management and Energy. The Implementation Matrix breaks down the sectors into programs that address the climate change mitigation, adaptation and resilience, in these sectors, with the attendant budget spread over the five (5) years. It further provides a framework for priority enabling actions to be addressed which include; enabling policy and regulatory framework, technology and innovation, capacity development and knowledge management, climate finance and resources mobilization, transparency, measurement, reporting and verification. Lastly. The Action Plan identifies the relevant institutions and sectors that will be essential for the actions to realize the strategic objectives and the problem to be solved. Hence, outlining the implementation roles of the relevant County agencies and expected results in the delivery and coordination mechanisms.

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LIST OF ACRONYMS AND ABBREVIATIONS

CA	Conservation Agriculture
CCCAP	County Climate Change Action Plan
CH₄	Methane
CIDP	County Integrated Development Plan
CIS	Climate Information Services
CO₂	Carbon Dioxide
COP	Conference of Parties
CSA	Climate Smart Agriculture
DRR	Disaster Risk Reduction
ERC	Energy Regulatory Commission
GWASCO	Gusii Water and Sanitation Company
GCMs	Global Climate Models
GDP	Gross Domestic Product
GESIP	Green Economy Strategy and Implementation Plan
GHGs	Green House Gases
HFCs	Hydro fluorocarbons
ICRAF	International Council for Research in
ILRI	International Livestock Research Institution
KALRO	Kenya Agriculture and Livestock Research Organization
NCCAP	Nyamira Climate Change Action Plan
KCIC	Kenya Climate Innovation Centre
KCSAIF	Kenya Climate Smart Agriculture Implementation Framework
KCSAS	Kenya Climate Smart Agriculture Strategy
KEBS	Kenya Bureau of Standards
KETRACO	Kenya Electricity Transmission Company
KFS	Kenya Forest Service
KMD	Kenya Meteorological Department
LPG	Liquefied Petroleum Gas
MRV+	Monitoring, Reporting and Verification plus
N₂O	Nitrous Oxide
NAP	National Adaptation Plan
NCCAP	National Climate Change Action Plan
NCCRS	the National Climate Change Response Strategy
NDC	Nationally Determined Contributions
NF3	Nitrogen Tri-fluoride

NRW	Non-Revenue Water Management
PFCs	Per fluorocarbons
REA	Rural Electrification Authority
SDGs	Sustainable Development Goals
SF6	Sculpture Hexafluoride
SGR	Standard Gauge Railway
UNFCCC	United Nations Framework Convention on Climate Change
WRA	Water Resources Authority

DEFINITION OF KEY TERMS

Climate change refers to a change in the climate system that is caused by significant changes in the concentration of greenhouse gases due to human activities, and which is in addition to the natural climate change that has been observed during a considerable period.

Adaptation means 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 refers to the ability of systems, institutions, humans, and other organisms to adjust to potential damage, take advantage of opportunities, or respond to consequences.

Global warming refers to the observed or projected gradual increase in global surface temperature. It is one of the consequences of climate change.

Greenhouse gases (GHGs) are gases that absorb and emit radiant energy within the thermal infrared range. The main GHGs measured in a GHG inventory are, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), per-fluorocarbons (PFCs), hydro-fluorocarbons (HFCs), sulphur hexafluoride (SF₆) and nitrogen tri-fluoride (NF₃).

Mitigation refers to human interventions to prevent or slow down atmospheric GHG concentrations by limiting current or future emissions, and/or enhancing potential sinks for greenhouse gases.

Resilience refers to the capacity of social, economic and environmental systems to cope with a hazardous event, trend, or disturbance. It is manifested through responding or reorganizing in ways that assert the essential function, identity, and structure of the system, while also maintaining the capacity for adaptation, learning and transformation. Carbon credit or offset is a financial unit of measurement that represents the removal of one tone of carbon dioxide equivalent from the atmosphere. Carbon credits are generated by projects that deliver measurable reductions in greenhouse gas emissions.

Vulnerability refers to the propensity or predisposition to be adversely affected. It encompasses a variety of concepts and elements, including sensitivity or susceptibility to harm, and lack of capacity to cope and adapt.

CHAPTER 1.

INTRODUCTION

1.1 Background

Climate change refers to long-term shifts in temperatures and weather patterns. These shifts may be natural, but since the 1800s, human activities have been the main driver of climate change, primarily due to the burning of fossil fuels (like coal, oil and gas), which produces heat-trapping gases. As greenhouse gas emissions blanket the Earth, they trap the sun's heat. This leads to global warming and climate change. The world is now warming faster than at any point in recorded history. Warmer temperatures over time are changing weather patterns and disrupting the usual balance of nature. This poses many risks to human beings and all other forms of life on Earth.

In the Kenyan context, there is notable evidence of climate change including: a shift in agricultural seasons due to erratic rainfall; low agricultural production due to erratic weather patterns, prolonged drought that has led to death of animals, crops and people; increased spread of vector-borne diseases and pests such as malaria and armyworms respectively; increased acidity of agricultural soils and loss of biodiversity; and emergence of floods that come after the prolonged drought. These effects have resulted in famine, increased cases of malaria and waterborne diseases, food insecurity, increasing damage to infrastructure causing subsequent deaths all forms of live on earth.

Climate change is a global problem which demands global responses that seek to establish permanent solutions. The international response to climate change is founded upon the United Nations Framework Convention on Climate Change (UNFCCC) that entered into force in 1994. The objective of the UNFCCC as spelt in Article 2, is to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate systems. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.

The Kyoto Protocol, a greenhouse gas emissions reduction treaty linked to the UNFCCC, was adopted by the Conference of the Parties (COP) in 1997 and entered into force in 2005. The Kyoto Protocol is an international agreement that commits developed countries and countries in transition to market economics to reduce their overall GHG emissions. The Kyoto Protocol

created the Clean Development Mechanism (CDM) under which developing country projects that reduced emissions and contributed to sustainable development earned credits that could be sold to countries or companies with a commitment to reduce emissions. More than 1.5 billion tonnes of carbon dioxide were avoided through the CDM, and US\$ 9.5-13.5 billion in direct benefits went to host countries from the sale of credits as of 2012.⁶³ The first commitment period started in 2008 and ended in 2012. Parties to the Kyoto Protocol adopted an amendment in 2012, which has yet to enter into force. The Paris Agreement entered into force internationally on 4th November 2016, thirty days after 5th October 2016, the date on which the threshold for entry into force was achieved. As of May 2018, 178 Parties had ratified the Convention, surpassing the threshold for entry of at least 55 Parties to the Convention accounting in total for at least an estimated 55% of the total global Green House Gas (GHG) emissions.

Kenya signed the UNFCCC on 12th June 1992 and ratified the Convention on 30th August 1994. Kenya ratified the Kyoto Protocol on 25th February 2005. The Paris Agreement was ratified by Kenya on 26th December 2016 under section 9(1) of the Treaty Making and Ratification Act, and entered into force for Kenya on 27th January 2017. Kenya's NDC sets out the country's actions to contribute to achieving the global goal set out in the Paris Agreement. Additionally, Kenya through the Ministry of Environment and Forestry, developed the Kenya Climate Change Action Plan 2021-2036, as a roadmap to climate changes responses implementation.

Nyamira County Government has joined the global movement of Climate Change mitigation, adaption and resilience. As such, the County Government has mainstreamed climate change responses in the County Integrated Development Plan (CIDP) 2022 -2027. Additionally, the county developed the legal framework to implement Climate Change mitigation, adaptation and resilience. This far, the county has developed and adopted The Nyamira County Climate Change Policy 2021, The Nyamira County Climate Change Act 2021 and The Nyamira County Climate Change Finance Regulations 2021. To further guide the implementation of climate change actions for the next five (5) years, the County has developed The Nyamira County Climate Change Action Plan 2023-2028. The County Climate Change Action Plan (CCCAP) 2023-2028 will provide an informed platform for building climate change mitigation, adaptation and resilience

1.1.1 Purpose of the CCCAP 2023-2028

The NCCAP (2023-2028), seeks to provide mechanisms and measures to achieve low carbon climate resilient development, in a manner that prioritizes adaptation, and recognizes the essence of enhancing the climate resilience. Specifically, it aims to: Align climate change actions in the County with the national development agenda, including the Kenya National Priority, Enhance the resilience of the grass root community through provision of opportunities for participation of the private sector, civil society, and vulnerable groups within society, including children, women, older members of society, persons with disabilities, youth, and members of minority or marginalized communities; vulnerable groups, including children, women, youth, persons with disabilities, the elderly, marginalized and minority communities.

1.1.1.1 Guiding Principles

Responsiveness; Responding to actual adaptation and mitigation needs in Kenya through taking of measures that reduce the adverse effects of climate change and preventing or minimizing the causes of climate change.

Equity and social inclusion; Addressing the needs of vulnerable groups within society including those of children, women older members of society, persons with disabilities, youth and members of minority or marginalized communities through an inclusive approach to climate change action.

Consultation and cooperation; Implementing actions through consultation and cooperation between national and county governments and in consultation and cooperation with civil society and private sector.

Fairness; Ensuring that climate actions do not create competitive disadvantage for the Kenyan private sector, relative to its trading partners.

1.1.2 Process used in developing NCCCCAP 2023-2028

The Department of Environment, Water, Energy, Mining and Natural resources coordinated the development of NCCCCAP 2023- 2028 through a multi sectoral working group drawn from sectors highly affected by climate change.

It also included various department within the County's departments responsible for Disaster Management; Agriculture; Economic Planning; Gender, Kenya Metrological Department, Public Health; Lands, Housing, Municipality and Urban development, Water services, NEMA, Forestry among others. The Process was guided by the Participatory Climate Risk Assessment Report.

Considering the cross-cutting nature of climate change sector, all players and actors who participated have been considered as key institutions that will realize achievement of strategic objectives within their jurisdiction.

1.2 Underlying Climate Resilience

Climate resilience is the ability to withstand and recover from the resulting impacts of Climate change. It is a complex concept that encompasses a wide range of factors, Including social, economic and environmental.

There are several f key factors contributing to climate change resilience. These include;

Adaptive capacity: The ability of a system to adapt to changing conditions. This can be achieved through a variety of means, such as developing new technologies, changing practices, or building infrastructure that is more resilient to climate change.

Social cohesion: Community cohesion is key during times of need. This is important as the community plans and experiences the shocks of climate change related disaster.

Economic diversification: Creating alternative income sources for communities can help to reduce the risk of economic collapse in sectors likely to be impacted by climate change.

Environmental health: The health of the environment is equally at stake with increasing impacts of climate change, hence protecting the environment from the impacts of climate change such as extreme weather events and air pollution resulting from human activities.

Mainstreaming Climate resilience into the County programs is important in reducing resulting negative impacts of climate change. Significant investment in climate resilience projects can help protect people, property and environment from the resulting effects of climate change

1.2.1 Impacts of Climate Hazards in the County

Nyamira County is projected to experience dry seasons in the future. This is from the projected climatic trends that indicate Nyamira shall receive a higher rainfall amount during rainy days and relatively higher number of dry days during the short rains season.

This is likely to increase the impacts of climate change felt by the community. The impacts of prolonged dry spells will contribute to low productivity and reduced water quantities from existing water sources. Increased cases of pests and diseases occurrence have also been noted in the recent years. The emergence of Invasive species have been noted across the county. Increased occurrence of malaria cases have been noted and are linked to the increase of disease vectors such as malaria which affect children, expectant mothers, the elderly and terminally ill.

Climate change hazards have also contributed to the reduced quality of water, contributing to increased cases of water-borne diseases. The elderly and persons with disabilities (PWDs) are populations that are mainly affected by the effects of climate change. They are found vulnerable to floods and reduced quality of water and reduced productivity from crops.

Women are mostly affected by reduced water quantities because culturally they are delegated to bear the responsibility of fetching water for domestic use. Declining water levels in springs and reduced water levels in wells and rivers have left women exposed as their main source of water remains affected by climate change because they take more time accessing water and do not have authority over resources within their households.

1.2.1.1. Spatial distribution of risks

Nyamira county has a total of five sub-counties namely Manga, Borabu, Nyamira south, Nyamira North, Masaba North having a total of 20 wards. The spatial distribution of climate hazards across the various wards within the county is mainly determined by existing human practices and the areas topographical features.

The county relatively small geographical size has made the area have minimal variation on the climate hazards within the various sub-counties.

1.2.2. Impacts of Climate Disasters on Kenyan Societies and the Economy

1.2.2.1. Climate Disasters

Climate disasters have the potential to affect people's health and sometimes claim lives. Prolonged dry spell causes a shift in the farming seasons thus crop failure, shrinking/loss of productive crop areas and biodiversity, and increased malnutrition, which impact heavily on vulnerable groups.

It also causes water scarcity, as a result of drying springs, wells and boreholes in turn affecting people, farming, manufacturing, livestock and wildlife.

Increased cases of floods have more immediate impacts because they lead to displacement and resettlement of people, destruction of infrastructure, loss of lives and properties and in some cases contribute to increased cases of poverty. An example is the flooding that happened along River Charachani in Nyamira South sub-county, where movement from Ogango to Miruka and Kisii County was also disrupted after water gushing out of River Charachani damaged parts of the road and a foot bridge.

Prolonged dry season

In recent times intense and prolonged dry spells have occurred. Each of these have caused severe crop, livestock losses, and food scarcity. Climate change introduces an additional uncertainty into existing vulnerabilities, particularly in the eastern region of the County.

Increased temperatures in the future are likely to exacerbate the dry conditions and may have a significant impact on water availability and general well-being also prolonged dry spells delays supply of farm produce and lowers farm yields.

Floods

Floods have caused disruptions to human lives. In the County, floods are common along Rivers Eaka, Gucha and Nyabomite.

The occurrence is mostly related to heavy rainfall seasons, that is, between March and May. These hazards have resulted into loss of lives and property, destruction of existing infrastructure, proliferation of water related diseases such as malaria, typhoid, cholera,

destruction of crops, scarcity of water, and destruction of other vegetation causing reduction in the quality of pastures and soil erosion resulting into gulley formation.

Landslides

Mostly occur on hill slopes and areas with poor control of storm water. Landslides are common in Nyamira South Sub County, especially along the Kenonka area. Highland areas are more susceptible to landslides during extreme rainfalls.

Lightning, hailstorms and strong winds

Most of the climate hazards occur during the long rain seasons (March, April and May). Storms are common in Gudi, Mwanda and Biego though the occurrence is unpredictable. Lightning strikes cause injuries and deaths. Hailstorms affect agricultural products, which are the main trading products and industrial raw materials.

Invasive Pest species

Invasion of pests such as fall army worms and parasitic plants interferes with the supply of raw materials. The economic consequences of invasive species include poor food quality, reduced farm yields and increased cost of farm crop management.

Table 1. 1: Summary of likely impacts of climate change by sector in the County

Sector	Likely impacts of climate change
Agriculture, Fisheries and Livestock	● Decline in overall crop yields in most areas due to erratic rainfall, excessive moisture conditions; and more pests, diseases, and weeds thus, greater risk to food insecurity. ● Uncertainty regarding the impact on the production of specific crops, but likely reduction in the yields of maize and beans, and potential reductions of export cash crops, such as tea, coffee and horticulture. ● Livestock deaths, caused by drought due to lack of pasture, reduced access to water and heat stress.

	● Changes in disease patterns, and potential for re-emergence of climate related diseases, pests and invasive species.
Disaster and Risk Reduction	● Increased frequency and intensity of flooding, which could decrease people's ability to cope. ● Increased number of food insecure and malnourished people. ● Increased number of people without access to clean water. ● Safety risks associated with existing buildings that do not meet standards and codes. ● Destruction of key infrastructure investments in the county such as roads and drainage systems
Energy	● Decline in forest productivity, which restricts availability of fuel wood. ● Damage to infrastructure particularly power lines, transformers and poles.
Environment	● Increased likelihood of contestation and conflict over diminishing natural resources. ● Increases invasive species, and new pests and diseases. ● Increase in stagnant air, which aggravates air pollution.
Forestry	● Increased exposure to fire, pathogens, and invasive species. ● Reduced provision of environmental resources and benefits, and forestry- associated economic activities. ● Survival rate of most tree species has reduced.
Health	● Shifts in the geographic range and incidences of malaria.

	● Increase in water-borne diseases, such as cholera, and typhoid.
Public Works	● Damage to infrastructure, including roads and bridges, during heavy rainfall ● Interruptions to road networks because of flooding, and heavy rainfall events. ● Disruption of access to work, markets, education, and healthcare facilities, due to damaged infrastructure. ● Increase in risks from collapse, declining health of buildings, and loss of value, due to more frequent and heavier rain events and water encroachment. ● Increased cost of maintenance of the physical infrastructure as a result of extreme weather effects.
Trade and industry	● Greater resource scarcity, such as water and raw materials that are inputs in manufacturing processes. ● Greater risk of plant, product and infrastructure damage, and supply chain disruptions from extreme climate events. ● Higher costs to companies, including for insurance.
Water	● Reduced availability of surface water for activities, such as irrigation, livestock production, household use and industry. ● Increased water loss from reservoirs, due to evaporation. ● Lower water levels in boreholes and springs, particularly during dry seasons.

1.2.3 County Climate Hazard Map

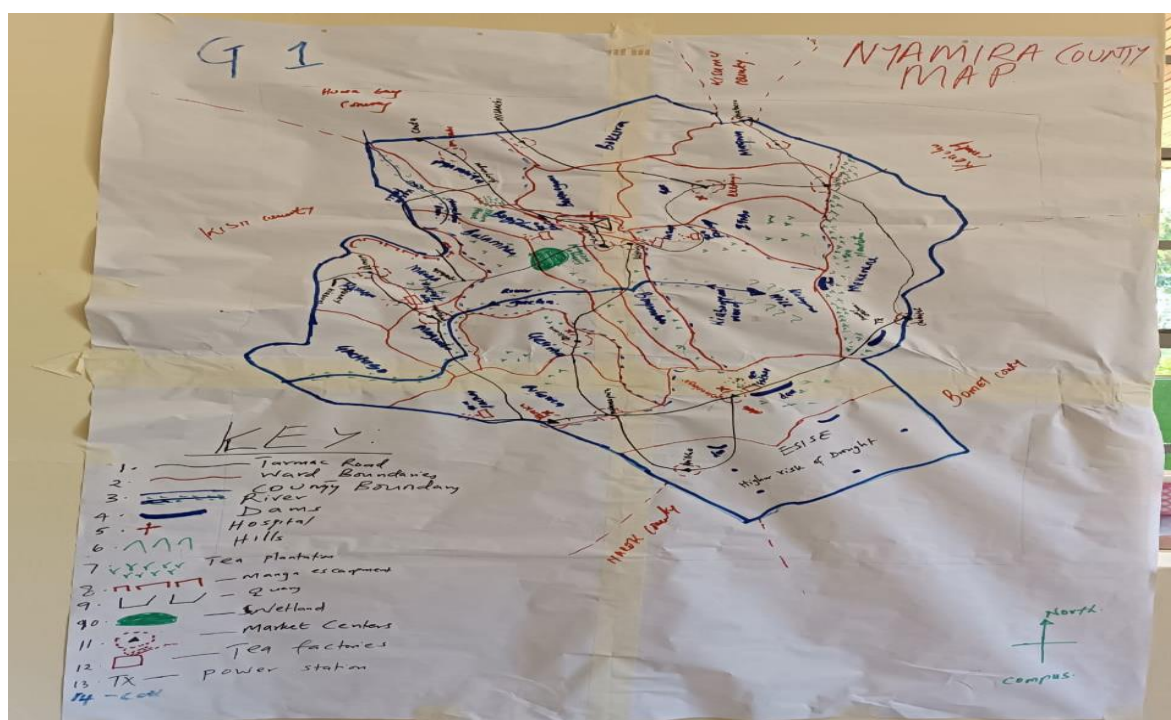


Figure 1: Sketch of Nyamira county Hazard Map

1.2.4 Summary of Differentiated Climate Exposure and Vulnerability of Key Groups and Livelihoods in the County.

The County is characterized by a rapid growing population, high population density, portable water scarcity, falling food production, and low resilience to climate change. The combined effects of climate change and rapid population growth are increasing food insecurity, environmental degradation, and poverty levels in the county. The Nyamira County Integrated Development Plan (CIDP), 2018-2022; identified environmental degradation and climate change as key development challenges.

The growing population in the region coupled with the changing climate has resulted in severe environmental concern in the County. These challenges include poor land use planning, improper waste management; source and non-source pollution; dropping water levels; increase in catchment degradation (land and forest ecosystems); wetland degradation; and loss of biodiversity as well as deteriorating ecosystem services.

Global Climate Models (GCMs) projects a change in the climate of the Lake Victoria basin associated with extreme weather events such as unreliable rainfall, frequent floods and extended droughts resulting in high crop losses and food insecurity in the region.

The most prevalent climate change threats to Nyamira county environment include; Susceptibility to negative effects of climate change, such as deteriorating water quality and quantity, loss of biodiversity, emergence of invasive pests and declining agricultural productivity; which in tandem are already causing misery to inhabitants; Extreme weather events such as the severe droughts, and heavy rainfall leading to floods and landslides; all of which are projected to be more intense, frequent and unpredictable; Increasing temperatures resulting in enhanced heat- and water-stressed conditions, particularly in rocky dominated landscapes, leading to reduced agricultural productivity as well as diminishing water yields from hitherto, highly productive springs; Decreasing forest cover due to anthropogenic activities and rapid change in climatic conditions whose immediate impact include extinction and migration of natural vegetation plant and animal species; Conflict between upstream and downstream communities on sharing of diminishing water resources; and Increasing public health risks.

1.3 Brief Overview of Climate Change Actions in the County

Contribution to climate change is mainly attributed to the amount of greenhouse gases (GHGs) that humans release into the atmosphere. As carbon dioxide and other GHGs build up in the atmosphere, they trap heat, which causes global warming.

Most residents in the county rely on wood fuel for cooking. The County also has a number of manufacturing industries majorly tea factories such as; Sang`anyi, Tombe, Gianchore, Nyansiongo, Kipkebe limited company, Kebirigo and Mogeni tea factories that are likely to emit GHGs.

Adaptation is the main priority to climate change; actions are needed to reduce these emissions that are projected to increase due to population, investments in processing factories and economic growth.

1.3.1 Mainstreaming of NCCAP in County Actions

Currently, the County has put in place strategies to eliminate the existing gaps in the quest to address climate change. These include the development of the Nyamira County Climate Change Policy, Nyamira County Climate Change Act, and Nyamira County Climate Finance Policy which are vital for creating an enabling environment to attract funding and investments (both locally, nationally and internationally) to mitigate and adapt to climate change.

1.3.2 Climate Change in CIDP

County has mainstreamed climate change into its CIDP and Departmental Plans since it is a cross-cutting issue. These sectors include; Water Resources Management; Agriculture, Fisheries and Livestock; Land Use Management; Disaster Risk Reduction; Public Health; Energy; Public Works; Environment; Tourism, Wildlife & Culture; and Trade and Industry.

1.3.3 Other key Climate Actions / Strategies in the County

(a) Political Environment; Successful delivery of Nyamira County Climate Change Action Plan (2023-2028) requires a supportive political and legal environment. The county's political environment is favourable, as the political leadership at the County level is supportive of climate change action.

(b) Economic Environment; A stable and supportive economic environment is vital to the effective delivery of CCCAP (2023-2028). The actions in this Plan require resources that depend on a stable and supportive economy.

A sufficient budgetary allocation is vital for the implementation of the actions in this CCCAP. However, this might not be achieved due to competing demands for the revenues collected. Therefore, the County will require implementing strategies to attract foreign climate financing to supplement the local allocation.

(c) Social Environment; The county's social situation is a key to the success of CCCAP. A significant number of Kenyans live below the poverty line which translates to the county context. Most households rely on wood-based fuels that emit substantial GHGs and particulate matter during cooking. There is need for community empowerment and ownership of the projects in this plan for it to succeed.

CHAPTER 2

POLICY ENVIRONMENT

The Nyamira County Climate Change Action Plan (2023-2028), is informed and guided by key global, regional, national, and county climate change adaptation and/or targets, frameworks, policies, legislations, and aspirations.

This section specifies some of the key governance instruments context informing this plan and its linkage to various development plans. These are captured at three levels including International, National and County.

2.1 Enabling Policy and Legal Framework at international level

There exist frameworks that provide the basis for concerted international action to mitigate climate change and to adapt to its impacts.

Its provisions are far-sighted, innovative and firmly embedded in the concept of sustainable development as described hereunder:

2.1.1 Kyoto Protocol

The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change, which commits member countries to reduce greenhouse gas (GHG) emissions by setting internationally binding emission reduction targets.

Kenya ratified it in 2005 and has committed to reduce its emissions by 20% by the year 2030. To contribute to the achievement of this, the County is adopting a green developmental trajectory, promoting forestation and uptake of alternative energy sources.

2.1.2 United Nation Framework on Climate Change

The 21st Conference of Parties to the United Nation Framework on Climate Change (UNFCCC-Cop 21) marked an important milestone in international climate governance system, shifting focus from “negotiations” to “implementation”.

The international response to climate change is founded upon this convention. The Paris Agreement under the UNFCCC aims to strengthen the global response to the threat of climate change by keeping global temperature rise this century well below 2°C above pre-industrial

levels. Under this convention, each country committed a set of actions known as the “Nationally Determined Contributions” aimed at combating climate change through establishment of policy and legal frameworks.

Kenya ratified the UNFCCC in 1994 and set out actions to contribute to achieving the global goal. The County has been actively participating in development of the second NDC that was submitted to UNFCCC.

2.1.3 Sustainable Development Goals

The Agenda 2030 on Sustainable Development Goals emphasizes the global commitment to address climate change with goal 13 addressing the need to take urgent action to combat climate change and its impact. The county is obligated to mainstream the SDG in CIDP and other Development blue print.

2.1.4 East African Community Regional Climate Change Master Plan 2011-2031

East African Community Regional Climate Change Master Plan 2011-2031 serves as a blueprint to guide regional climate change response measures in the long term. This will help deal with Trans-boundary climate change issues.

2.1.5 Enabling Policy and Legal Framework at National level

Kenya has shown commitment to protect the climate system for the benefit of the present and future generations by supporting the United Nations Framework on climate change. This has been exemplified in the constitution and other frameworks on climate change.

2.1.5.1 Constitution of Kenya 2010

The Constitution of Kenya 2010 established a devolved system of government and specifies the distribution of functions between the National and County Governments, as set out in the fourth schedule.

As set out in Article 2(6) of the Constitution of Kenya (2010), international convention such as the Paris Agreement form part of the laws of Kenya. The County Governments in accordance to Article 185 of the Constitution and County Government Act (2012) are empowered to develop county legislations hence, regulate devolved functions provided for in Article 186.

2.1.5.2 Climate Change Act 2016

This is the main legislation guiding Kenya's climate change response through mainstreaming climate change into sector functions, and it is the legal foundation of the NCCAP.

It recognizes the complementary role between the County Governments and National governments in the management of climate change matters. In addition, climate change impacts are localized placing County Governments in a vantage point to identify and address them.

A key objective of the Climate Change Act 2016, is to integrate climate change governance between the County and National Governments and also establish institutions mechanisms to mainstream climate change matters at both National and County levels.

The Act requires Counties to mainstream implementation of the National Climate Change Action Plan in the development of the County Integrated Development Plan and the County Sectoral Plans.

2.1.5.3 National Climate Change Policy (2018)

The Policy was developed to facilitate a coordinated, coherent, and effective response to the local, national and global challenges and opportunities that climate change presents.

This is achieved through the adoption of a mainstreaming approach that ensures integration of climate change considerations into the development planning process, budgeting, and implementation in all sectors and at all levels of government. In its entirety, the Policy aims to enhance adaptive capacity and build resilience to climate variability and change while promoting low carbon development pathways.

2.1.5.4 The National Climate Change Response Strategy 2010

This was formulated by the Country to respond to the challenges and opportunities posed by climate change by strengthening and directing actions towards climate change adaptation and GHG emission mitigation.

This was to be achieved by ensuring commitment and engagement of all stakeholders while taking into account the vulnerable nature of Kenya's natural resources and society.

2.1.5.5 Kenya Vision 2030

This is an economic blueprint that seeks to create “a globally competitive and prosperous nation with a high quality of life by 2030”. The Vision is anchored on three key pillars: economic; social; and political.

As a climate change adaptation measure, vision 2030 aspires to conserve water sources and initiate new ways of harvesting and using rainwater, underground water, and increasing acreage under irrigation.

The Plan envisages the rehabilitation of hydro- meteorological data gathering networks; construction of multipurpose dams and increasing tree cover by planting at least seven billion trees to address food, water, and energy security.

All efforts are incognizant of the fact that the Country is water-scarce amid the increasing water demand. The County Government of Nyamira has contextualized vision 2030 in Nyamira County Vision 2030 as a framework that will contribute to the realization of the strategic goals.

2.1.5.6 National Climate Change Action Plan (NCCAP) 2018-2022

This was a framework linked to the “Kenya National Priority” to enable Kenya to reduce vulnerability to climate change and to improve ability to take advantage of the opportunities that climate change offers.

NCCAP (2018-2022), sets out a vision for a low carbon climate-resilient development in a manner that prioritizes adaptation. This plan builds on the first Action Plan (2013-2017) and provides a framework for Kenya to deliver on its Nationally Determined Contribution (NDC) under the Paris Agreement of the United Nations Framework Convention on Climate Change (UNFCCC).

The Plan guides the climate actions of the National and County Governments, the private sector, civil society, and other actors as Kenya transitions to a low carbon climate-resilient development pathway.

2.1.5.7 Climate Change Plans

Kenya developed the first NCCAP (2013-2017), National Adaptation Plan (NAP 2015- 2030), Kenya Climate-Smart Agriculture Strategy (2017-2026), Climate Risk Management

Framework (2017), and National Climate Finance Policy (2018), among other sector plans and policies that address aspects of climate change.

CHAPTER 3

PRIORITY CLIMATE CHANGE ACTIONS

3.1 Identification of Strategic Climate Action Priorities in the PCRA

The CCCAP 2023-2028, takes into consideration the impacts of climate change on the county's socio-economic context. It integrates the proposed strategic actions and the County Departmental Annual Plans, CIDP, Kenya National Priority, Vision 2030 and the SDGs.

Adaptation actions prioritized in this CCAP are as a result of the devastating impacts of climate change experienced in the County in the recent past. These effects include; flooding along Rivers (Eaka, Gucha and Nyabomite), shifting of planting seasons, prolonged dry spells in the County, erratic rains and emergence of new pests and diseases.

Therefore, the actions in this NCCAP are geared towards contribution to achieving sustainable development as well as empowerment of vulnerable groups, including women, the youth, persons with disabilities, and members of marginalized and minority communities to the effects of climate change.

The outcomes of the implementation of these actions will include increased agricultural productivity, increased access to affordable and clean cooking energy and improved access to water

3.2 Priority County Climate Change Actions

This section outlines the priority climate change actions envisaged in CCAP 2023-2028 for implementation in the County from 1st July, 2023 to 30th June 2028. The actions will:

- Enable all county departments to concentrate efforts towards achieving climate change adaptation and mitigation objectives.
- Support achievement of the Kenya National Priority, Vision 2030 and Sustainable Development Goals.
- Enhance the adaptive capacity and resilience of communities, with emphasis on vulnerable groups in the society.

- Require to be undertaken in a way that limits GHGs emissions, to ensure a clean carbon pathway development.
- Require climate action to be undertaken in an integrated manner that includes all stakeholders ranging from the research institutions, academia, county departments, the civil society, the private sector and the community.
- Require that the proposed actions be locally driven to ensure community involvement and ownership of the projects.

3.3 Summary of Priority Climate Change Actions per Sector

The major climate risks and hazards identified by stakeholders across the five sub-counties in Nyamira county include; Prolonged dry seasons, Environment degradation, Increased occurrence of pests and diseases, Storms and Floods, Erratic rainfall patterns that is felt within the county.

During community consultation forums and the County Level Multi-stakeholder workshop, the climate hazards in the county prioritized at ward level were presented in the view of the current and projected climate outlook.

This was followed by sector-wise identification and prioritization of the response actions for the identified climate risks. This section presents the prioritized strategies for addressing climate risks and their impacts in four priority areas namely water, agriculture, environment and disaster management. The strategies are summarized in the table 8 below

Table 3. 1: Strategic Priority Areas Summary

Climate Change Priority 1: Water	
Strategic objective 1: To promote/Enhance sustainable utilization & access to adequate, safe water and sanitation services through mitigation of various climatic hazards in Nyamira county	
Hazard	Actions

Prolonged Dry Season	● Enhance Climate proof water harvesting and storage in public institutions, households and farms ● Rehabilitation, protection and conservation of water catchment areas and water sources ● Capacity development in water sector; application of solar energy in water supply and mobilizing resources ● Promote water efficiency (monitor, reduce, re-use, and recycle) ● Capacity development in water sector; application of solar energy in water supply and mobilizing resource
Emerging pests, diseases and Invasive weeds	● Nature based solutions in addressing pests to avoid chemical pollution of water sources ● Reduce the incidence of malaria and other vector-borne diseases that increase with changes in climate ● Promote recycling to divert collected waste away from disposal sites ● Climate proof landfill sites ● Control flooding in human settlements ● Promote green buildings
Environmental degradation such as; Destruction of water sources by human activities (planting of eucalyptus along the riparian land), Soil Erosion & Pollution.	● Promotion of water harvesting and storage ● Conservation and restoration of water catchment areas ● Climate proof water infrastructure and rehabilitation of existing infrastructure ● Including promotion of clean energy in water supply ● Removing of eucalyptus trees from the riparian zones ● Increase Stream protection projects across the county

	● Discourage ploughing on steep slopes to minimize soil erosion and landslides ● Encourage use environment friendly pesticides to avoid water pollution
Intense / erratic rainfall	● Rain water harvesting and expand storage ● promote on farm water storage and conservation ● Invest in early warning systems on weather and climate conditions
Flash Floods & Storms (Hailstorms & Thunderstorms)	● Storm and water harvesting and storage to be achieved through infrastructure development, capacity building on best water harvesting techniques and nature-based solutions ● Protection of riparian zones and river banks ● Afforestation and increase in vegetation cover
Climate Change Priority 2: Agriculture	
Strategic Objective 2: To Increase productivity in the agricultural sector, through mitigating for climate hazards in Nyamira county.	
Hazard	Actions
Prolonged Dry Season	Promotion of climate Smart Agriculture achieved through irrigation, modern technology and early maturing and drought tolerant varieties and breeds, and certified seeds. Livelihood diversification such as apiculture and aquaculture. Strengthen extension services.
Emerging pests, diseases and Invasive weeds	Strengthening crop pest and disease surveillance Promotion of pest resistant varieties and nature based solutions to pests

	Vaccination campaigns and extension service
Environmental degradation such as; Destruction of water sources by human activities (planting of eucalyptus along the riparian land), Soil Erosion & Pollution.	Afforestation, agroforestry and reforestation Soil erosion control through construction of gabions terracing in affected areas, grass striping and cover cropping with focus on ecosystem based solutions Awareness, sensitization and capacity building
Intense /erratic rainfall	Cover Cropping, Soil erosion control (Grass stripping, trenching, terracing, gabions among others)
Flash Floods & Storms (Hailstorms & Thunderstorms)	Planting of cover crops Terracing, Maintaining buffer zones between farms and water sources. Promotion of crop insurances Agricultural enterprise diversification Use of agricultural nets Green house use
Climate Change Priority 3: Environment & Energy	
Strategic objective 3: To enhance environmental conservation and management in order to increase the resilience of the environment sector through mitigating of various climate hazards in Nyamira county	
Hazard	Actions

Prolonged Dry Season	Conservation and protection of water catchment areas to be achieved through afforestation and reforestation. Establishment of fruit tree nurseries and agroforestry; Supporting private and community tree nurseries with fruit trees, bamboo and indigenous tree species. Capacity building and resource mobilization. Restore degraded landscapes. Increase renewable energy for electricity generation that is climate resilient and accounts for needs of rural areas. Transition to clean cooking through the uptake of liquefied petroleum gas (LPG) and other clean fuels in urban areas and efficient biogas cook stoves in rural areas.
Emerging pests, diseases and Invasive weeds	Promote environmentally friendly pesticides Strengthen capacity to monitor and control use of agrochemicals More extension officers in the county
Environmental degradation such as; Destruction of water sources by human activities (planting of eucalyptus along the riparian land), Soil Erosion & Pollution.	Conservation of water catchment areas to be achieved through afforestation and reforestation programs Promotion of green energy e.g. biogas and solar Capacity building and awareness creation on environmental conservation
Intense / erratic rainfall	Increased tree planting Establish soil and water conservation structures
Flash Floods & Storms (Hailstorms & Thunderstorms)	Improved drainage systems Physical planning requirements Conservation of riparian zones

	Capacity building of residents on livelihood diversification on livelihood resources such as Apiculture, fish farming, Installation of lightening arrestors in institutional buildings
Climate Change Priority 4: Disaster management	
Strategic Objective 4: Build capacity for mitigation climatic hazards and resilience against the impacts of climate related disasters.	
Prolonged Dry Season	Strengthening of Early Warning Systems to be achieved through Improving climate information systems. Scaling up and improving existing local weather stations.
Emerging pests, diseases and Invasive weeds	Setting up of an Agricultural Emergency kitty. Pest surveillance Strengthening extension services. Promote the transition to clean cooking with alternative clean fuels, such as: LPG, ethanol and other clean fuels in urban areas.
Environmental degradation such as; Destruction of water sources by human activities (planting of eucalyptus along the riparian land), Soil Erosion & Pollution.	Development and equipping of disaster response unit Promote research and strengthen early warning systems.
Intense / erratic rainfall	Improve climate information services
Flash Floods & Storms (Hailstorms & Thunderstorms)	Strengthen disaster response institutional capacity Community capacity building on Disaster Risk Reduction Strengthening Early Warning System Promote crop insurance schemes Map lightning prone areas, carry out sensitization and install lightning arrestors.

3.4 Alignment with Other Development Agenda

3.4.1 The Kenya National Priorities & Sustainable Development Goals (SDGs)

Relevant SDGs include; **Goal 1:** No Poverty; **Goal 2:** Zero Hunger; **Goal 3:** Good Health and Well-Being; **Goal 4:** Quality Education; **Goal 5:** Gender Equality; **Goal 6:** Clean Water and Sanitation; **Goal 7:** Affordable and Clean Energy; **Goal 8:**Decent Work and Economic Growth; **Goal 9:**Industry, Innovation and Infrastructure; **Goal 10:**Reduced Inequalities; **Goal 11:**Sustainable Cities and Communities; **Goal 12:** Responsible Consumption and Production; **Goal 13:**Climate Action; **Goal 14:** Life below Water; **Goal 15:** Life on Land; **Goal 16:** Peace, Justice and Strong Institutions and **Goal 17:** Partnership for the Goals.

The National Climate Change Action Plan 2021-2026, prescribes the priority sectors in which subsequent plans and other legislation must be aligned to. Priorities are listed as; priority 1: Water and the Blues Economy; Priority 2: Agriculture (Food and Nutrition); priority 3; Environment, Energy, Wildlife and Tourism; and priority 4; Disaster Management

3.2.1 Water and the Blue Economy

The core objective of priority 1 is to promote/Enhance sustainable utilization & access to adequate, safe water and sanitation services through mitigation of various climatic hazards in Nyamira County

The National priority is provision of clean and safe water; surveillance of water quality and treatment and safe disposal of waste water. Minimizing overreliance on rain-fed agriculture; promotion of drought resistant crops; dissemination of climate information to farmers and reduction of post-harvest losses.

To increase water sources the government is promoting recycling and reuse of water and adaption of green energy for pumping water for industrial use. This is in addition to building roof catchment infrastructure for rain water harvesting. Finally the government has put in measures to increase water connectivity and improved sanitation infrastructure. All these efforts are towards provision of clean and safe water; surveillance of water quality and treatment and safe disposal of waste water.

Relevant Sustainable Development Goals (SDGs) include **Goal 13:** Climate Action; **Goal 6:** Clean Water and Sanitation; **Goal 9:** Industry, Innovation and Infrastructure; **Goal 10:** Reduced Inequalities; **Goal 12:** Responsible Consumption and Production; **Goal 14:** Life below Water; **Goal 1:** No Poverty; **Goal 2:** Zero Hunger and **Goal 3:** Good Health and Well-Being.

Nyamira County is endowed with water resources both surface and ground. The main sources of water in the County are rivers, streams, dams, springs, boreholes and shallow wells.

This NCCAP addresses one of the largest challenges, which is dwindling water resources. The decline in access to quality water is exacerbated by climate change, and its associated prolonged drought, lack of climate resilient infrastructure; inadequate water harvesting systems to meet the demand/population; degradation of water catchment areas; pollution of existing sources; increased levels of siltation in our water reservoirs; flooding that led to destruction of water systems; and prohibitive costs of infrastructure development, repair and maintenance.

Lack of access to quality water has the potential to undermine achievement of the Kenya National Priority. Water is also linked to the Blue Economy, which refers to the “sustainable use and economic development of both aquatic and marine spaces, including lakes, rivers and underground water” to enhance livelihoods.

Dwindling water resources

Approximately 12% of the population in the county access piped water though the majority access water from improved sources (CIDP 2018). The County is endowed with water resources however climate change is a threat to future availability of this resource. Drought and anthropogenic activities such as deforestation, low storage capacity, growing demand for water and high pressure on our water resources including aquifers is threatening our water resources. As a result, rivers are reducing their flow, dams and water pans are silting, and water quality is deteriorating.

Erratic rains due to climate change have affected water supply, increased costs of acquiring water and lowered the hygiene standards with severe impacts on food production. In the year 2018, the county experienced prolonged dry spell resulting in drying of many rivers which

impacted the quality and quantity of water in both rural and urban areas. Most communities' dependent on agriculture were exposed to food insecurity due to reduced incomes from water reliance productive activities.

Climate change also impacts the Blue Economy. Climate change is driving changes in the composition of species assemblages, the abundance, biomass and distribution of species, fish yields and the efficiency of fishing methods and gears. Increase in water flows may result in siltation which may contribute to reduce Dissolved Oxygen that suffocates aquatic organisms including fish.

Climate change is not the only threat or stressor on a fisheries system but is an additional, possibly unidirectional one, adding to what is typically a range of other stressors and uncertainties from anthropogenic and natural causes including overfishing, pollution, habitat loss, competition for space and environmental variability.

Flooding leads to rise in water levels, submerges fish ponds, estuaries and swamps destroying aquatic breeding grounds. Increased water temperatures are not ideal for fish breeding. Changing rainfall patterns leads to water scarcity thus threat to diminish aquatic ecosystems.

Ensuring Access to Quality Water for All

The CCCAP 2023-2028 seeks to increase bulk water harvesting and storage strategies. This will be achieved through development of water infrastructure e.g. water harvesting infrastructure, gravity water schemes, and use of green energy technologies in water pumping.

The Plan proposes concrete actions to enhance the resilience of the water sector, by ensuring adequate access to, and efficient use of water for agriculture, manufacturing, domestic use and other uses. Conservation of water catchment areas ensures sustainability of water resources. Efficient use of water for example adoption of climate resilient methods of farming such as drip irrigation; climate proof water and sewerage treatment facilities and Public education on water conservation and management will be over emphasized.

Large volumes of treated water are lost at the household level where treated water ends up in gardens or septic tank. Efficient water management technologies such as Water catchment protection innovations, Non-Revenue Water Management (NRW), Commercial Financing,

smart meter reading, billing and complaints management, solar water pumping and online leakage detection.

The climate actions are expected to result in adaptation; increased water availability through water harvesting and storage infrastructure such as earth dams, bulk water storage tanks, roof catchment in institutions; improved water efficiency, and improved water availability through Climate proof water supply infrastructure and storm water infrastructure.

Table 3. 2: Actions to realize the strategic objective for Water provision

Strategic Objectives	Hazard	Actions	Relevant institutions
Strategic objective 1: To promote/Enhance sustainable utilization & access to adequate, safe water and sanitation services through mitigation of various climatic hazards in Nyamira county	Prolonged Dry Season	Enhance Climate proof water harvesting and storage in public institutions, households and farms	County Treasury, County Department of Environment, Water, Energy, Mining and Natural Resources, County Legal office, Lake Victoria South Water Works Development Authority, Gusii Water and Sanitation Company, Water Resources Authority, National Environment Management Authority, Water Sector Fund, Kenya Water Sector Network,
		Rehabilitation, protection and conservation of water catchment areas and water sources	
		Capacity development in water sector; application of solar energy in water supply and mobilizing resources	
		Promote water efficiency (monitor, reduce, re-use, and recycle)	

		Capacity development in water sector; application of solar energy in water supply and mobilizing resource	Water Resource Users Association, Kenya Water Towers Agency, Private Sector, Civil Society Organizations.
	Emerging pests, diseases and Invasive weeds	Nature based solutions in addressing pests to avoid chemical pollution of water sources Reduce the incidence of	
		malaria and other vector-borne diseases that increase with changes in climate Promote recycling to divert	
		collected waste away from disposal sites Climate proof landfill sites	
		Control flooding in human settlements Promote green buildings	
	Environmental degradation such as; Destruction of water	Promotion of water harvesting and storage Conservation and	
		restoration of water catchment areas	

	sources by human activities (planting of eucalyptus along the riparian land), Soil Erosion & Pollution.	Climate proof water infrastructure and rehabilitation of existing infrastructure Including promotion of clean energy in water supply	
	Intense / erratic rainfall	Rain water harvesting expand storage promote on farm water storage and conservation	

3.2.2 Agriculture (Food and Nutrition)

The strategic objective of priority 2, is to increase productivity in the Agricultural sector, through mitigating for climate hazards in Nyamira County.

The problem to be addressed is the climate change instances such as shifting farming seasons and erratic rains with prolonged dry periods are threats to food security as they negatively impact crop and animal production. A climate disaster such as drought and floods causes on-farm and post-harvest losses. The integration of national and international priorities enhances progress toward the achievement of food and nutrition security agenda.

Relevant Sustainable Development Goals (SDGs) include **Goal 1:** No Poverty; **Goal 2:** Zero Hunger; **Goal 3:** Good Health and Well-Being; **Goal 12:** Responsible Consumption and Production and **Goal 13:** Climate Action

Climate change has the potential to prevent achievement of the Kenya National Priority item of Food and Nutrition Security. This sub-section highlights how food insecurity is increased by climate change and, the win-win solutions for the climate, agriculture, and food security.

Increased Food Insecurity due to Climate Change

A bigger percentage of the County's population is dependent on rain fed agriculture. The sector is highly susceptible to climate variability, including temperature rise, changes in precipitations, and extreme climate events. Extreme variability causes poor plant growth, on farm losses and poor crop productivity. An incidence such as excessive rainfall and floods causes post-harvest losses.

The county's economy is dependent on agriculture. The manufacturing factories in the county for instance sugarcane processing, proposed dairy plant, maize meal and tea factory rely/or will rely on agricultural raw materials which are greatly affected by climate change. Dry spells cause shortage of pasture and water affecting production of livestock.

Agriculture is the county's backbone for food security, rural livelihoods, and poverty alleviation. Increasing food security requires climate change-response actions that revolve around the agriculture sector relating to crops, livestock and fisheries which should integrate climate. Our farming techniques, produce processing and storage should ensure low carbon emissions.

This CCAP provides actions to increase production in a varying climate for the achievement of the Kenya National Priority pillar of Food and Nutrition Security by increasing productivity and enhancing resilience of the agricultural systems.

This will be achieved by promoting large-scale production, investing in climate resilient crop species, crop diversification, sustainable land management, reduction in post-harvest losses and multiple use of water to include irrigation and storm water harvesting for irrigation.

These actions will have focused interventions to address gender because women account for the biggest percentage of labour in the agriculture sector.

Ongoing initiatives outlined in the Kenya Climate Smart Agriculture (CSA) Strategy, 2017-2026 are vital in addressing climate change impacts in this sector. The program seeks to enhance the adaptive capacity and resilience of farmers and minimize GHG emissions from agricultural production systems.

Table 3. 3: Actions to realize the strategic objective of improving Agriculture

Strategic Objectives	Hazard	Actions	Relevant Institutions
Strategic Objective 2: To Increase productivity in the agricultural sector, though mitigating for climate hazards in Nyamira county.	Prolonged Dry Season	Promotion of climate Smart Agriculture achieved through irrigation, modern technology	Department of Agriculture, Livestock and Fisheries, Department of Water, Environment and Natural Resources, WRA, KFS, KMD, KALRO, Private sector, ICRAF, ILRI, farmer groups.
		Early maturing and drought tolerant varieties and breeds and certified seeds.	
		Livelihood diversification such as apiculture and aquaculture	
		Strengthen extension services	
	Emerging pests, diseases and Invasive weeds	Strengthening crop pest and disease surveillance	
		Promotion of pest resistant varieties and nature based solutions to pests Vaccination campaigns and extension service	
	Environmental degradation such as; Destruction of water sources	Afforestation, agroforestry and reforestation	
		Soil erosion control through construction of gabions	

	by human activities (planting of eucalyptus along the riparian land), Soil Erosion & Pollution	terracing, grass striping and cover cropping with focus on ecosystem-based solutions	
		Awareness, sensitization and capacity building	
	Intense / erratic rainfall	Cover Cropping, Soil erosion control (Grass stripping, trenching, terracing, gabions among others) On farm water storage	
	Flash Floods & Storms (Hailstorms & Thunderstorms)	Planting of cover crops	
		Terracing	
		Maintaining buffer zones between farms and water sources	
		Promotion of crop insurances	
		Agricultural enterprise diversification	
		Green house use	
		Use of agricultural nets	

3.2.3 Environment, Energy, Wildlife and Tourism

The National Strategic Objective for priority 3, is to enhance environmental conservation and management in order increase the resilience of the environment sector through mitigating of various climate hazards in Nyamira County

The problem to be addressed is the encroachment into fragile ecosystems for settlement, agriculture, infrastructure development; deforestation and forest degradation which leads to ecosystem destruction and increased GHG emissions.

Fragile ecosystems are sources of food to the community, such as fishing in wetlands. These ecosystems are sources of raw material for industrial processes. Forests play a vital role in air purification by absorption of GHG, as such reducing respiratory health risks

The relevant Sustainable Development Goals (SDGs) include **Goal 3:** Good Health and Well-Being; **Goal 6:** Clean Water and Sanitation; **Goal 9:** Industry, Innovation and Infrastructure; **Goal 11:** Sustainable Cities and Communities; **Goal 13:** Climate Action; **Goal 14:** Life below Water and **Goal 15:** Life on Land.

Climate change has emerged as one of the greatest concerns towards forestry since climate determines the distribution of vegetation. Forests play a crucial role as habitats to varied biodiversity, carbon sinks that abate climate change as well as having socio-economic benefits to the human population among other ecological benefits. Therefore, efforts to ensure their protection and sustainable use are necessary.

Nyamira County is endowed with fragile ecosystems such as forests, wetlands, and hill ecosystems. These ecosystems are characterized with rich biodiversity, some of which are rare, endemic and threatened fauna and flora.

These ecosystems are of great hydrological importance by contributing to large volumes of water to rivers within the county and also influencing the rainfall pattern in the region. However, these ecosystems are being subjected to a lot of pressures such as increase in population size, urbanization, and industrial growth among other development activities, which are degrading the forests at an alarming rate.

Nyamira forest is the only remaining tropical rainforest in Kenya. The forest is the major carbon sink in the county. The current county forest cover is 3% which is below the national target.

The forest is the major habitat for wildlife and act as a tourism centre. Other tourist sites include Manga ridges, Keera waterfalls, Gachuba community forest and Kiabonyoru hills.

Climate change is likely to affect forests resulting in reduced biodiversity and capacity to deliver important ecosystem services. It also shifts the distribution of wildlife species, reduce the population sizes of species, and lead to extinction of some impacting tourism.

3.2.3.1. Benefits of Sustainable Management of Fragile Ecosystems

These ecosystems are characterized by vegetation which provide hydrological ecosystem services, such as regulation of storm waters. Vegetation improves infiltration of rainwater, reduce surface run-off, and control soil loss, storing run-off and recharging it to stream. Mitigation of the harmful effects of GHG emissions by acting as “sinks” through carbon sequestration.

These ecosystems are also sources of livelihood to many communities. For instance, wetlands are used as fishing grounds, source of water for domestic uses, vegetation such as reeds are used for art. Therefore, any actions to combat degradation of these ecosystems and speed up restoration of degraded lands will contribute to economic growth, poverty reduction, and greater food and nutrition security and, help communities to adapt to climate change.

3.2.3.2. The planned actions in this NCCCCAP

Adaptation- Sustainably managed forests, increased forest cover, improved management of landscapes, reduced riverbank erosion through riverine vegetation conservation and restoration, and maintenance of ecosystems for wildlife and linking of protected areas.

Mitigation - GHG emission reductions of through forest restoration, afforestation, reforestation, and reduction of deforestation.

Table 3. 4: Actions to realize the strategic objective in Environment

Strategic Objectives	Hazard	Actions	Relevant Institutions
Strategic objective 3: To enhance environmental conservation and management in order increase the resilience of the environment sector through mitigating of various climate hazards in Nyamira county	Prolonged Dry Season	Conservation and protection of water catchment areas to be achieved through	Kenya Forest Service, Kenya Wildlife Service, Water Resources Authority, National Environment Management Authority, County Departments of Environment, Water, Energy, Mining and Natural resources, Kenya Water Towers Agency, Kenya Forest Research Institute
		Afforestation and reforestation.	
		Establishment of fruit tree nurseries and agroforestry; Supporting private and community tree nurseries with fruit trees, bamboo and indigenous tree species.	
		Capacity building and resource mobilization.	
		Restore degraded landscapes.	
		Increase renewable energy for electricity generation that is climate resilient and accounts for needs of rural areas. Transition to clean cooking through the uptake of liquefied petroleum gas (LPG) and other clean fuels in urban areas and efficient biomass cook stoves in rural areas.	

	Emerging pests, diseases and Invasive weeds	Promote environmentally friendly pesticides	
		Strengthen capacity to monitor and control use of agrochemicals	
	Environmental degradation such as; Destruction of water sources by human activities (planting of eucalyptus along the riparian land), Soil Erosion & Pollution.	Conservation of water catchment areas to be achieved through afforestation and reforestation programs	
		Promotion of green energy e.g. biogas and solar Capacity building and awareness creation on environmental conservation	
	Intense / erratic rainfall	Increased tree planting	
		Establish soil and water conservation structures	
	Flash Floods & Storms (Hailstorms & Thunderstorms)	Improved drainage systems Physical planning requirements	
		Conservation of riparian zones	
		Capacity building of residents on livelihood diversification on livelihood resources such as	

		Apiculture, fish farming, Installation of lightening arrestors in institutional buildings	
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3.2.4 Disaster Management

The National Strategic Objective of Priority 4 is to build capacity for mitigation and resilience against the impacts of climate related hazards & disasters.

The problem to be addressed is the quantity and quality of water is projected to decline because of climate change. The major Climate change impacts particularly prolonged dry spell and flooding need to be addressed. With increased demand for scarce water resources for domestic and farming needs amid weak enforcement of regulatory frameworks, result in encroachment on fragile ecosystems including wetlands, hilltops and forests thus increase vulnerability to climate hazards.

The planned interventions will enhance progress towards the achievement of all the; Food and Nutrition Security, Universal Health Care, Affordable Housing and Manufacturing by ensuring that climate-related disasters do not destroy resources and expose people to disasters. This will ensure reduced exposure and vulnerability of the county, especially of the poor and vulnerable groups, to climate disasters and shocks.

The relevant Sustainable Development Goals (SDGs) include **Goal 1:** No Poverty; **Goal 2:** Zero Hunger; **Goal 6:** Clean Water and Sanitation; **Goal 11:** Sustainable Cities and Communities; and **Goal 13:** Climate Action

The prevalent challenges the country that need addressing are floods and droughts have national economic consequences, and extensive socio-economic effects at the household and community levels, especially for vulnerable groups, such as women, older members of society, persons with disabilities, children, youth, and members of marginalized and minority communities. Current responses are reactive rather than proactive, and impeded by inadequate

early warning systems, lack of disaster management coordination, and limited support to build disaster preparedness.

The county faces four related climate change hazards including; First, Prolonged Dry Season, second; Emerging pests, diseases and invasive weeds; third, environmental degradation such as, destruction of water sources by human activities, fourth, Intense / erratic rainfall, and lastly, flash floods & storms (hailstorms & thunderstorms) in the southern and eastern part of the County including Nyamira South and Borabu sub counties respectively. These can impede the realization of the CIDP and other climate change relevant plans.

The increasing population has resulted in encroachment into riparian land and fragile ecosystems such as Kiabonyoru, Nyairang'a, Nkora and Manga which is sloppy and rich in terms of water and forest resources.

The most affected populations are the rural poor, who tend to plant eucalyptus along river banks in places such as Eronge in Bomwagamo ward that is steep and prone to floods. The existing tree species are unable to allow other tree species thrive well especially the leguminous plants thus unable to hold surface water. The surface run off due to erratic rains also causes erosion of such areas resulting into siltation of river Eaka.

3.2.4.1. Impact of Climate Disasters on Kenyan Societies and the Economy

Climate disasters affect people's health and sometimes claim lives. Prolonged dry spell causes a shift in the farming seasons thus crop failure, shrinking/loss of productive crop areas and biodiversity, and increased malnutrition, which impact heavily on vulnerable groups. It also causes water scarcity, as a result of drying springs, wells and boreholes in turn affecting people, farming, manufacturing, livestock and wildlife.

Increased cases of floods have more immediate impacts because can lead to displacement and resettlement of people, destruction of infrastructure, loss of lives and properties and in some cases contribute to increased cases of poverty.

3.2.4.2. Interventions of NCCCCAP for Climate-Related Disasters

The NCCCCAP (2023-2028), gives priority approaches to climate-related hazards. The proposed measures are aimed at DRR to increase the resilience of the community through building of the capacity of people to cope with impacts of climate change.

The priority actions include flood and prolonged dry spell early warning systems, including at the community level; implementation of flood management plans particularly bulk water storage, installation of lightening arrestors in lightening prone areas, construction of drainage channels, creation of buffers zones to avoid settlement in fragile ecosystems, reforestation and rehabilitation of riparian areas, and construction of small dams; the community will be sensitized to raise awareness and educate people on need to protect ecosystems to ensure DRR.

The County Government of Nyamira has established Disaster unit that respond to emergencies through provision of disaster relief supplies and support in rehabilitation of destroyed infrastructure. There are also other systems and programmes that are in place to deliver climate change actions at the national level.

Table 3. 5: Actions to realize the strategic objective in Disaster Management

Strategic Objectives	Hazard	Actions	Relevant Institutions responsible
Strategic Objective 4: Build capacity for mitigation climatic hazards and resilience	Prolonged Dry Season	Strengthening of Early Warning Systems to be achieved through Improving climate information systems.	The sectors that will be essential to realize the strategic objective include: the County department of Finance and Planning, Kenya Metrological Department, County Department of Public Service Management,
		Scaling up and improving existing local weather stations.	

against the impacts of climate related disasters.	Emerging pests, diseases and Invasive weeds	Setting up of an Agricultural Emergency kitty	County Department of Environment, water, Energy, Mining and Natural Resources, Lake Victoria South Water Works Development Authority, Water Resources Authority (WRA), Water Resource Users Associations, community groups, Public Benefit Organizations, civil society and the private sector.
		Strengthening extension services	
		Promote the transition to clean cooking with alternative clean fuels, such as: LPG, ethanol and other clean fuels in urban areas	
		Pest surveillance	
	Environmental degradation such as; Destruction of water sources by human activities (planting of eucalyptus along the riparian land), Soil Erosion & Pollution.	Development and equipping of disaster response unit	
		Promote research and strengthen early warning systems	
	Intense / erratic rainfall	Improve climate information services	
	Flash Floods & Storms (Hailstorms & Thunderstorms)	Strengthen disaster response institutional capacity	
		Community capacity building on Disaster Risk Reduction	

		Strengthening Early Warning System Promote crop insurance schemes Map lightning prone areas,	
		carry out sensitization and install lightning arrestors.	

CHAPTER 4.

DELIVERY MECHANISMS FOR CCAP

4.1. Enabling Policy and Legal Framework at county level

The County of Nyamira identifies climate change as a threat to development milestone achieved since devolution. Various policy and legislative framework have been developed as illustrated below:

4.1.2 Nyamira County Integrated Development Plan (CIDP 2018-2022)

The CIDP 2018-2022 commits to integrate climate change risks and adopt clean energy pathway through investment in renewable energy technologies. The CIDP has been tailored to implement national policies on climate change to enhance community resilience to climate change impacts through promotion of climate change adaptation and mitigation programs.

The target is particularly in agriculture, transport, waste management, land use, water, energy, natural resource management and education sectors among others.

4.1.3 Departmental Strategic Plan (2018-2022)

The County Department of Water Environment and Natural Resources has developed a strategic plan with climate change mitigation and adaptation as a key thematic area with programs aimed at enhancing community-based resilient initiatives.

These include; strengthening locally led climate change projects, strengthening compliance and governance, the department targets to develop and institutionalize key County policies and legislative framework related to Climate change as illustrated in table 4.1 below.

Table 4. 1: Climate plans and regulations at county government level

County Framework	Description
County Integrated Development Plan 2018-2022.	This is the County's five-year plan to guide development. It is required that the plan mainstream climate change.
County Department of Environment, Water, Energy, Mining and Natural Resources Strategic Plan (2018-2022)	It presents fundamental thematic areas that were built on the Department and breadth of its programming to support it realize its mandate effectively and efficiently.
County Annual Development Plan 2021/2022	Provides for mainstreaming of Green economy considerations in all capital projects.
Nyamira County Climate Change Policy 2020	The Policy proposes a legislative framework to institutionalize climate change management as well as facilitate flow of climate finances from international and national sources to finance locally led projects.
Nyamira County Water Act 2021	Provides for rain water harvesting, bulk water harvesting and use of clean energy such as solar.
Nyamira County Climate Change Act 2021	The Act provisions for establishment of County Climate Change Fund; Climate change governance structures; climate change adaptation and mitigation plans; and up scaling of climate
Nyamira County Climate Finance Act 2022	The Act provides for climate finance mobilisation, management, reporting, monitoring and evaluation and climate change information services.

4.2.1 Mainstreaming Climate Change Actions in the CIDP

Mainstreaming the Nyamira County Climate Action Plan into the County Integrated Development Plan (CIDP) is a crucial step to ensure that climate change considerations are integrated into the broader development framework of the county. Here's a general approach to mainstreaming the climate action plan:

- **Review the Climate Action Plan:** Begin by reviewing the Nyamira County Climate Action Plan to understand its goals, objectives, strategies, and specific actions. Identify the key climate change priorities, targets, and interventions outlined in the plan.
- **Analyze the CIDP:** Analyze the existing County Integrated Development Plan to identify areas where climate change considerations can be integrated. This involves assessing the goals, objectives, sectoral plans, and projects within the CIDP to identify synergies and gaps with the climate action plan.
- **Identify Cross-Cutting Issues:** Determine the cross-cutting issues that link the climate action plan with the CIDP. Climate change considerations may intersect with various sectors such as agriculture, water resources, infrastructure, health, and disaster management. Identify the sectors and areas within the CIDP that are most relevant to climate change.
- **Align Goals and Objectives:** Align the goals and objectives of the climate action plan with the relevant goals and objectives of the CIDP. Ensure that the climate change priorities are integrated into the broader development goals of the county. This may involve revising or expanding the existing goals and objectives to incorporate climate change considerations.
- **Integrate Strategies and Actions:** Identify the strategies and actions from the climate action plan that can be integrated into the sectoral plans and projects within the CIDP. This could include incorporating climate-resilient practices, renewable energy targets, ecosystem-based approaches, and other climate change adaptation and mitigation measures into the relevant sectoral plans.
- **Coordinate with Sectoral Departments:** Collaborate with the various sectoral departments responsible for implementing the CIDP to ensure their active involvement and

understanding of climate change considerations. Provide technical guidance and support to the departments to help them incorporate climate change into their plans and projects.

- **Budget Integration:** Ensure that the budgetary allocations within the CIDP reflect the climate action priorities. Advocate for the allocation of financial resources to support the implementation of climate change interventions identified in the integrated plan. This may involve identifying potential funding sources, exploring climate finance mechanisms, and leveraging partnerships with external stakeholders.
- **Monitoring and Reporting:** Establish a monitoring and reporting mechanism to track the progress of climate change integration within the CIDP. Regularly assess and report on the implementation of climate change actions, indicators, and targets to ensure accountability and transparency.
- **Stakeholder Engagement:** Engage stakeholders throughout the mainstreaming process to ensure their input and participation. This includes involving government agencies, community organizations, civil society, private sector, and other relevant stakeholders. Seek their feedback and collaboration to enhance the effectiveness and ownership of the integrated plan.
- **Continuous Review and Improvement:** Monitor and evaluate the integration process to identify challenges, lessons learned, and areas for improvement. Regularly review and update the integrated plan to incorporate emerging climate change priorities and address evolving challenges.

4.2.2 Multi-Stakeholder Participation Processes

Multi-stakeholder participation processes play a crucial role in climate change action by ensuring that diverse perspectives, expertise, and interests are represented in decision-making processes. Such processes promote inclusivity, foster collaboration, and enhance the effectiveness and legitimacy of climate action initiatives. Here are some key aspects and examples of multi-stakeholder participation processes in climate change action:

- **Stakeholder Identification:** The first step is to identify and involve relevant stakeholders. This includes government agencies, local communities, indigenous groups, civil society organizations, businesses, academia, and other key actors involved in climate-related

issues. Stakeholder mapping exercises help identify the range of perspectives and interests that need to be represented.

- **Collaborative Decision-Making:** Multi-stakeholder participation processes emphasize collaborative decision-making. This involves creating platforms for dialogue, consultation, and negotiation where stakeholders can contribute their knowledge, expertise, and perspectives. Examples include public consultations, working groups, roundtable discussions, and joint planning and implementation processes.
- **Information Sharing and Awareness Building:** Effective participation requires that stakeholders have access to relevant information and resources. Providing accurate and timely information about climate change impacts, mitigation strategies, and adaptation measures helps stakeholders make informed decisions and contribute effectively. This can be done through workshops, public hearings, online platforms, and awareness campaigns.
- **Capacity Building:** Building the capacity of stakeholders is essential for meaningful participation. This includes providing training, workshops, and educational programs to enhance stakeholders' understanding of climate change, its impacts, and potential solutions. Capacity building initiatives can also focus on specific skills needed for participation, such as negotiation, communication, and project management.
- **Co-creation of Solutions:** Multi-stakeholder processes should aim to co-create climate solutions. This involves involving stakeholders in the formulation, implementation, and evaluation of climate action plans and projects. By actively involving stakeholders, solutions are more likely to be contextually appropriate, socially acceptable, and sustainable in the long term.
- **Monitoring and Evaluation:** Regular monitoring and evaluation of multi-stakeholder processes are important to assess their effectiveness and identify areas for improvement. This includes evaluating the inclusiveness of participation, measuring the impact of stakeholder input on decision-making, and reviewing the outcomes and progress of climate action initiatives.
- **Policy and Institutional Support:** Governments and institutions play a critical role in facilitating multi-stakeholder participation processes. They can establish policies, guidelines, and frameworks that support inclusive decision-making, provide resources and

technical support, and ensure that stakeholder inputs are integrated into climate policies and actions.

4.2.3 Financing Climate Change Programs (Climate Change Fund)

International institutions such as World Bank, Kreditanstalt für Wiederaufbau (KfW), DANIDA, Sweden-Sverige have committed to support programs that are focused on climate change mitigation, adaptation and resilience, for the next five years. Additionally the County Government of Nyamira has also committed 2.5% of its development budget to Climate Change response. This provides a sufficient resource pool for enhanced response to climate change impact through proposing low carbon emission actions in addition to increasing its carbon sink as well as adopting clean production technologies.

4.2.4 Governance; County Government Structures

The Nyamira County climate change Act 2021, has established a governance structure in the county under the following committees

4.2.4.1. County Climate Change Steering Committee

The Nyamira County Climate Change Act 2021, created the County Climate Change Steering Committee which is to be established under section 5. The act prescribes that the County Climate Change Steering Committee shall comprise the following members— (a) the Deputy Governor, who shall be the Chairperson and in his absence the County Executive Committee Member (CECM) shall be the chairperson; (b) the County Executive Committee Member (CECM) of the relevant department where Directorate of Climate Change is domiciled who shall be the secretary. The Nyamira County Climate Change Bill, 2021 9 (c) County Executive Committee Member (CECM) of the department responsible for Finance and economic planning; (d) County Executive Committee Member (CECM) of the department responsible for agriculture, livestock and fisheries; (e) chairperson of the relevant committee from the County Assembly; (f) County representative of the National Environment Management Authority; (g) County Director in charge of Meteorological services; (h) Fund Administrator, as an ex-officio member with no voting rights; (I) a representative of women; (j) a representative of youth; (k) a representative of persons with disability; (l) a representative of the civil society organization whose activities are related to climate change; and (m) a representative of the academic institutions (3) In making these appointments to the County Climate Change Steering

Committee, consideration has to be made to the two-thirds gender rule and the provisions of Article 27 of the Constitution shall apply. (4) A person shall qualify for appointment under 8 (2) (i), (j) (k). (l) and (m) respectively if the person— (a) is a resident of Nyamira County. (b) Has knowledge and experience in any of the following fields— (i) environmental studies; (ii) engineering; (iii) meteorology; (iv) climatology; (v) agriculture (vi) law (vii) Forestry (viii) economics; or (ix) such other relevant field as may be determined by the County Executive Committee Member responsible for climate change in consultation with the County Public Service Board.

4.2.4.2. Ward Climate Change Committee

The Nyamira County Climate Change Act 2021, created the Ward Climate Change Planning Committee. This is spelt out section 15 which states that; (1) There shall be established a Ward Climate Change Committee in each ward. (2) Composition of Ward Climate Change Committee shall be as follows: (a) Chairperson elected by members of the committee and ratified by the Planning Committee. (b) Ward administrator will be the secretary to the committee (c) Village County Climate Change Steering Committee Administrators will be Alternate Secretary (d) Sub-County Agriculture Officer (e) Sub-County Environment/ Water/ Climate Change Officer (f) Representative of Member of County Assembly (g) A Youth representative (h) Woman representative (i) A representative of the Community based Organizations actively operating in the ward on climate change actions (j) A representative of people living with disability (PWDs) (k) National Government representative (Chief or assistant Chiefs Ex-official) (3) For appointment to the Committee a member shall; (a) fulfil requirement of Chapter Six of the Kenya Constitution 2010. (b) Have basic knowledge on climate change. (c) Have a minimum basic education; preferably form four or its equivalent. (d) be committed persons willing to serve the community 14 The Nyamira County Climate Change Bill, 2021 (e) A resident of the given Ward Member nominated from the Community under this section 17(b) (vii – ix) shall be subjected to public vetting facilitated by the Sub-County Climate Change/Environment officer. (4) The Ward Climate Change Committee member will serve for a period of three years’ renewable once subject to performance. (5) The allocation of County Climate Change Fund to various projects in the Ward and County levels shall be done by the County Climate Change Steering Committee using agreed criteria.

4.2.5 Climate Information Services & Climate Data Access

The Nyamira County Government is committed to addressing the challenges posed by climate change and ensuring the resilience of its residents. To this end, there is a proposed establishment of the Nyamira Climate Hub, a comprehensive initiative that focuses on providing Climate Information Services (CIS) and facilitating Climate Data Access (CDA) for the county. The Nyamira Climate Hub will serve as a centralized platform to empower individuals, organizations, and decision-makers with the necessary tools and knowledge to mitigate and adapt to climate change effectively.

This will be achieved through the following actions:

Facilitate Climate Information Services (CIS): The Nyamira Climate Hub will provide accurate, up-to-date, and localized climate information to residents, businesses, and stakeholders in the county. This will include weather forecasts, climate projections, early warning systems, and other relevant data and tools.

Enhance Climate Data Access (CDA): The Nyamira Climate Hub will establish a comprehensive database of climate-related data, including historical records, satellite imagery, climate models, and other relevant datasets. This data will be made available to researchers, policymakers, and the general public, fostering a culture of data-driven decision-making and promoting innovation.

Raise Climate Awareness and Capacity Building: The Nyamira Climate Hub will conduct awareness campaigns, workshops, and training programs to enhance climate literacy and build the capacity of individuals, communities, and organizations to understand and respond effectively to climate change. This will include education on sustainable practices, climate adaptation strategies, and the use of climate data and information.

Foster Collaboration and Partnerships: The Nyamira Climate Hub will facilitate collaboration among local stakeholders, government agencies, research institutions, and non-profit organizations. By creating a network of climate-related expertise, the hub will encourage knowledge sharing, joint research projects, and the development of innovative solutions to address climate challenges.

Support Climate-Resilient Planning and Decision-Making: The Nyamira Climate Hub will work closely with government departments and agencies to integrate climate considerations into local planning and decision-making processes. This will ensure that climate change is systematically factored into infrastructure development, disaster preparedness, agriculture, water resource management, and other sectors.

4.2.6 Resilience Planning Tools

The following tools have been adapted and applied Nyamira County.

- **Vulnerability Assessments:** Conducting vulnerability assessments helps identify the areas and sectors most susceptible to climate change impacts in Nyamira County. This process involves evaluating the exposure, sensitivity, and adaptive capacity of various systems, such as agriculture, water resources, infrastructure, and communities. By understanding vulnerabilities, local authorities can prioritize resources and develop targeted strategies.
- **Climate Action Plans:** Developing comprehensive climate action plans is crucial for effective climate action. These plans outline specific goals, objectives, and strategies for reducing greenhouse gas emissions, adapting to climate change impacts, and building resilience. Climate action plans often involve collaboration between government agencies, community organizations, and other stakeholders to ensure a coordinated and integrated approach.
- **Risk Management and Early Warning Systems:** Establishing risk management frameworks and early warning systems can enhance the county's resilience to climate-related hazards. These tools help identify potential risks, such as floods, droughts, or extreme weather events, and provide timely alerts and response mechanisms to mitigate their impacts. Integration with local communities is vital to ensure effective communication and evacuation plans.
- **Green Infrastructure Planning:** Nyamira County can integrate green infrastructure planning into its development strategies. This approach involves using natural systems like forests, wetlands, and green spaces to enhance ecosystem services, such as flood regulation, water filtration, and temperature regulation. Green infrastructure can provide multiple benefits while also increasing climate resilience.
- **Stakeholder Engagement and Capacity Building:** Active involvement of stakeholders, including local communities, businesses, NGOs, and academia, is crucial for successful climate action. Engaging stakeholders helps build awareness, gather local knowledge, and foster collaboration.

Capacity building initiatives, such as training programs and workshops, can enhance the understanding of climate change impacts and empower individuals and organizations to take appropriate actions.

- **Monitoring and Evaluation:** Implementing robust monitoring and evaluation systems allows for the tracking of progress and the identification of gaps in climate action initiatives. This includes monitoring greenhouse gas emissions, tracking adaptation measures, and evaluating the effectiveness of resilience-building efforts. Regular assessment helps in refining strategies and making informed decisions.

4.2.7 Measurement, Reporting and Verification

The Monitoring and Evaluation of this CCAP 2023-2028 will be mandate of the Department of Climate change. The County Climate Change Act 2021 provisions the county climate change steering committee with the role of promoting monitoring, evaluation, reporting and verification of climate change mitigation and adaptation initiatives. Adaptation actions under CCAP will be tracked through a monitoring and evaluation (M&E) system based on indicators.

M&E provides a vital mechanism to assess and manage progress of implementation of the proposed climate actions.

Therefore, any M&E system needs to have a feedback mechanism which will ensure the continued assessment, collation and dissemination of information relating to climate change actions for ease of tracking progress, reporting and learning. This CCAP puts into consideration the Big Four Agenda“: Food security and nutrition; Affordable universal health care; Affordable housing; and Enhancing manufacturing, the Sustainable Development Goals and the Vision 2030.

Kenya is expected to provide information on GHGs emissions, mitigation, adaptation, and the support received as in the Paris Agreement under the UNFCCC to achieve the country’s NDC goals. As per the National Climate Change Act 2016, the National Climate Change Council has been mandated to set targets for the regulation of GHGs emissions. The County is expected to track and report its GHGs emissions, adaptation and mitigation actions deployed to the National Council for Kenya’s reporting to the UNFCCC.

Therefore, the following enabling actions must be in place for efficient Monitoring and Evaluation

Table 4.2. Actions for monitoring and evaluation

Institution	Responsibility
Department of Environment	● Develop and implement policies and strategies for climate change mitigation and adaptation. ● Coordinate and oversee environmental conservation initiatives. ● Conduct environmental impact assessments. ● Monitor and regulate environmental pollution and degradation. ● Promote sustainable development practices.
Kenya Meteorological Department	● Collect and analyze meteorological data. ● Forecast and monitor weather patterns and climate change trends. ● Provide early warning systems for extreme weather events. ● Disseminate weather information to the public, government agencies, and other stakeholders. ● Conduct research on climate change and its impacts.
Kenya Forest Service	● Manage and conserve forest resources. ● Develop and implement reforestation and afforestation programs. ● Protect forests from illegal logging and encroachment. ● Promote sustainable forest management practices. ● Conduct research on the role of forests in climate change mitigation.
Department of Agriculture	● Develop and implement climate-smart agricultural practices. ● Promote sustainable farming techniques. ● Provide farmers with information and training on climate change adaptation. ● Support the development of resilient crop varieties.

	● Monitor and address the impacts of climate change on agriculture.
Water and Sanitation Services	● Ensure access to clean and safe water supply. ● Develop and maintain water infrastructure. ● Promote water conservation and efficient water use. ● Assess and address the impacts of climate change on water resources.
Department of Health	● Assess and address the health impacts of climate change. ● Develop and implement strategies to mitigate climate-related health risks. ● Provide public health education and awareness on climate change. ● Coordinate emergency response during climate-related health emergencies. ● Collaborate with other agencies to promote climate-resilient healthcare systems.

4.3 Implementation and Coordination Mechanisms

The department of climate change has developed a set of mechanisms to aid in the implementation of climate change programs within the department. The following mechanisms have been put in place;

Climate Change Unit: Established a dedicated unit within the county government responsible for coordinating climate change initiatives. This unit has a clear mandate and authority to oversee and implement climate actions across various sectors.

Climate Action Plan: Develop a comprehensive climate action plan that outlines specific goals, targets, and strategies for addressing climate change in Nyamira County. The plan should be developed in consultation with relevant stakeholders and should cover sectors such as energy, agriculture, water, and disaster risk management.

Interagency Collaboration: Foster collaboration and coordination among different departments and institutions involved in climate change-related activities. Regular meetings, workshops, and joint initiatives should be encouraged to share knowledge, resources, and best practices.

Stakeholder Engagement: Engage and involve various stakeholders, including local communities, civil society organizations, private sector entities, and academic institutions, in the planning, implementation, and monitoring of climate actions. This can be done through public consultations, workshops, and partnerships.

Capacity Building: Provide training and capacity-building programs for government officials and relevant stakeholders to enhance their understanding of climate change issues, mitigation, and adaptation strategies. This will enable them to effectively implement climate actions and mainstream climate considerations into their work.

Data Collection and Monitoring: Establish a system for collecting and analyzing climate-related data to monitor progress and evaluate the effectiveness of climate actions. This can include weather monitoring systems, greenhouse gas inventories, and impact assessments.

Financing Mechanisms: Identify and leverage various sources of funding, including government budgets, grants, and international climate finance, to support the implementation of climate actions. Explore innovative financing mechanisms such as public-private partnerships and carbon financing to mobilize additional resources.

Public Awareness and Education: Conduct public awareness campaigns and educational programs to increase understanding and knowledge of climate change issues among the public. This can include workshops, seminars, media campaigns, and community outreach activities.

Integration into Development Plans: Integrate climate change considerations into the county's development plans, policies, and regulations. Ensure that climate change is mainstreamed across sectors to ensure coordinated action and sustainability.

Monitoring and Evaluation: Regularly monitor and evaluate the progress of climate actions, using indicators and targets set in the climate action plan. This will help identify gaps, challenges, and opportunities for improvement and ensure accountability.

For successful implementation of climate change related programs in the department and the county, there is a need to integrate these mechanisms into the proposed community led actions that lead to sustainable development and resilience to climate change.

4.3.1 Directorate of Climate Change

The Directorate of Climate Change in Nyamira County plays a crucial role in addressing climate change-related issues and implementing climate change strategies at the local level. Some of the common roles and responsibilities within the Directorate of Climate Change:

Policy Development: The Directorate is responsible for developing and implementing climate change policies and strategies specific to the county's context. This involves conducting research, analyzing climate data, and formulating policies that address climate change mitigation, adaptation, and resilience.

Planning and Implementation: The Directorate oversees the integration of climate change considerations into county development plans, programs, and projects. This includes identifying climate change risks, setting targets and priorities, and coordinating the implementation of climate change actions across various sectors.

Coordination and Collaboration: The Directorate serves as a focal point for coordinating climate change initiatives within the county government and with external stakeholders. This involves collaborating with relevant departments, agencies, community groups, and development partners to foster synergy, information sharing, and effective implementation of climate change activities.

Capacity Building and Awareness: The Directorate conducts capacity-building programs to enhance the knowledge and skills of county officials, stakeholders, and the public on climate change issues. This includes organizing training workshops, awareness campaigns, and educational activities to promote climate change literacy and mainstream climate change into decision-making processes.

Monitoring and Evaluation: The Directorate establishes mechanisms for monitoring and evaluating the progress and effectiveness of climate change interventions in the county. This includes collecting and analyzing data, assessing the impacts of climate change, and identifying opportunities for improvement and learning.

Resource Mobilization: The Directorate plays a crucial role in mobilizing financial resources, grants, and partnerships to support climate change initiatives within the county. This involves identifying funding opportunities, preparing project proposals, and engaging with national and international institutions for financial and technical support.

Stakeholder Engagement: The Directorate facilitates stakeholder engagement and participation in climate change planning and decision-making processes. This includes conducting consultations, establishing platforms for dialogue, and involving communities, civil society organizations, academia, and the private sector in climate change actions.

Research and Innovation: The Directorate promotes research and innovation in climate change adaptation and mitigation strategies specific to the county's context. This involves collaborating with research institutions, promoting knowledge exchange, and supporting pilot projects and initiatives that demonstrate innovative solutions to climate change challenges.

4.3.2 County Climate Change Planning Committee

Outlined roles for the climate change planning committee include;

- (a) Hold consultative meetings with communities together with relevant government sectors, planners, agencies and local organizations.
- (b) Participate in livelihood and resilience assessments to enable different community groups identify challenges arising from increasing climate variability.
- (c) Prioritize and design investments that will promote climate change resilience.
- (d) Prepare project proposals, aggregate and coordinate Ward resilience needs.
- (e) Prioritize proposals and submit them to the County Climate.

4.3.2 Implementation Matrix 2023-2028

The table below contains the proposed mitigation, adaptation and resilience measures for Nyamira county for a period of 5 years. The table also contains the proposed budget.

Table 4.1; Implementation of Climate Change Programs

Strategic Objectives	Priority Actions	Expected Outputs/Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Time frame	Source of Funds	Indicative Budget (KES million)					
								Total	23/24	24/25	25/26	26/27	27/28
RURAL INFRASTRUCTURE AND DISASTER MANAGEMENT													
Build capacity for mitigation climatic hazards and resilience against the impacts of climate related disasters. Hazards (Prolonged dry spells, Invasive species Emerging pests and diseases, Intense rainfall, Environmental degradation, Flashfloods, storms, Hailstorms and Thunderstorms)	Installation of Lightning Arrestors	Lightning Arrestors Installed in 1Institutions per ward (In 20Ward)	100 Institutions installed with lightning arrestors countywide	-Disaster Mgt unit, -County Department of Finance and Planning	Vulnerable populations.	2023-2028	National Government, County Government & Development partners	40	8	8	8	8	8
		Mapped Lightning Risk Areas	100 Institutions Mapped as Lightning Risk Areas	-Disaster Mgt unit, -County Department of Finance and Planning	Community	2023-2028		5	1	1	1	1	1
		Sensitized Community on Lightning risk	No. of Community members sensitized	Disaster Mgt unit, -County	Vulnerable populations.	2023-2028	National Government, County Government & Development partners	15	3	3	3	3	3

Strategic Objectives	Priority Actions	Expected Outputs/Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Time frame	Source of Funds	Indicative Budget (KES million)					
								Total	23/24	24/25	25/26	26/27	27/28
	Development and equipping of disaster response unit	Equipping the Disaster response Unit to be able to respond to emerging disasters	1 Number of response equipment purchased.	-Disaster Mgt unit, -County Department of Finance and Planning	Vulnerable populations.	2023-2028	National Government, County Government & Development partners	0	0	0	0	0	0
		Purchase of rescue Tools	Number of Rescue Tools Purchased	-Disaster Management unit, -County Department of Finance and Planning	Vulnerable populations.	2023-2028	National Government, County Government & Development partners	15	3	3	3	3	3
		Provision of PPEs	Number of PPEs Provided	Disaster Mgt Unit		2023-2028	National Government, County Government & Development partners	15	3	3	3	3	3
		Capacity building county of disaster Management team	Capacity building of 30Nos of disaster Management team members	Disaster Management unit, -County Department of Finance and Planning	Vulnerable populations.	2023-2028	National Government, County Government & Development partners	15	3	3	3	3	3

Strategic Objectives	Priority Actions	Expected Outputs/Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Time frame	Source of Funds	Indicative Budget (KES million)					
								Total	23/24	24/25	25/26	26/27	27/28
		Capacity building of community disaster Management team	Capacity building of 200 Members of community on disaster Management	Disaster Management unit, -County Department of Finance and Planning	Vulnerable populations.	2023-2028		10	2	2	2	2	2
	Restoration of Swept Foot Bridges	Swept Bridges restored	2 Footbridge Restored per year	Disaster Management unit, County department of Roads -County Department of Finance and Planning	Community	2023-2028		20	4	4	4	4	4
TOTAL								135	27	27	27	27	27
ENERGY													
	Lighting of Households	Increased renewable energy for lighting that is climate resilient and accounts for needs of rural areas across the county.	100 households with solar Lamps per ward per year	-Community groups. -Public Benefit Organizations. -Civil society and the private sector.	Vulnerable populations comprising the elderly, children and women.	2023-2028	National Government, County Government & Development partners	60	12	12	12	12	12

Strategic Objectives	Priority Actions	Expected Outputs/Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Time frame	Source of Funds	Indicative Budget (KES million)					
								Total	23/24	24/25	25/26	26/27	27/28
		Increased use of renewable energy for electricity generation that is climate resilient and accounts for needs of rural areas across the county.	5..NO of SMART VILLAGES per sub-county	-County Treasury and Planning, -Community groups. -Public Benefit Organizations.	Vulnerable populations comprising the elderly, children and women.	2023-2028	National Government, County Government & Development partners	25	5	5	5	5	5
	Electricity Generation	Reduction of methane emissions into the atmosphere Use of clean energy sources	2.NO. of PUBLIC INSTITUTIONS with Biogas per ward per year	Community groups. -Public Benefit Organizations. -Civil society and the private sector	Vulnerable populations comprising the elderly, children and women.	2023-2028	National Government, County Government & Development partners	60	12	12	12	12	12

Strategic Objectives	Priority Actions	Expected Outputs/Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Time frame	Source of Funds	Indicative Budget (KES million)					
								Total	23/24	24/25	25/26	26/27	27/28
	Transition to clean cooking.	Increased number of households transitioned to clean cooking through the use of Energy Saving Jikos in rural areas County wide.	250 of households adopting use of energy jikos saving per ward	-County Treasury and Planning, -Community groups. -Public Benefit Organizations. -Civil society and the private sector.	Vulnerable populations comprising the elderly, children and women.	2023-2028	National Government, County Government & Development partners	50	10	10	10	10	10
	Capacity building of the community on energy saving jikos	250 Community members capacity built per ward per year	5,000 Community members capacity built per ward	County Treasury and Planning, -Community groups. -Public Benefit Organizations. -Civil society and the private sector.	Vulnerable populations comprising the elderly, children and women	2023-2028		25	5	5	5	5	5

Strategic Objectives	Priority Actions	Expected Outputs/Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Time frame	Source of Funds	Indicative Budget (KES million)					
								Total	23/24	24/25	25/26	26/27	27/28
	Develop County policies and regulations on energy	2 No of policies, bills, acts and regulations		County Treasury and Planning. -Community groups. -Public Benefit Organizations. -Civil society and the private sector.	Vulnerable populations comprising the elderly, children and women	2023-2028		10	2	2	2	2	2
	TOTAL							230	46	46	46	46	46

AGRICULTURE

Strategic Objectives	Priority Actions	Expected Outputs/Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Time frame	Source of Funds	Indicative Budget (KES million)					
								Total	23/24	24/25	25/26	26/27	27/28
To increase productivity in agricultural sector, through mitigation of climatic hazards in ward. Hazards <i>(Prolonged dry spells, Invasive species Emerging pests and diseases, Intense rainfall,</i>	Sensitize farmers & officers on emerging pests, diseases & invasive weeds -Establish emerging pest, diseases & invasive weeds surveillance & response team Establish plant & animal mobile clinics	Farmers & officers sensitized on emerging pests & diseases Emerging pest, disease & invasive weeds surveillance team established & operationalized Plant & animal mobile clinics established & operationalized Reduced incidences of pests and diseases.	No. of farmers sensitized No. of officers trained No. of pest & disease surveillance team established No. of plant & animal clinics established & operationalized No. of pests and disease incidences reported.	-Department of Agriculture, Livestock and Fisheries -KMD -KALRO -Private sector -ICRAF -ILRI	Farmers and farmer groups.	2023-2028	National Government, County Government & Development partners	25	5	5	5	5	5

Environmental degradation, Flashfloods, storms, Hailstorms and Thunderstorms	Animal Disease & vector control through vaccination	Routine animal vaccination scaled up Improved surveillance & reporting of Notifiable livestock disease outbreaks	No of animals vaccinated No. of livestock farmers trained on emerging & notifiable diseases	Directorate of Veterinary, Livestock, Kenya Veterinary Board	Farmers and farmer groups	2023-2028		20	4	4	4	4	4
	Train farmers on pre- and post-harvest loss reduction & management initiatives	Reduced pre- and post- harvest loses.	No. of farmers trained on pre- and post-harvest management.	- Department of Agriculture, Livestock and Fisheries -ILRI -ICRAF -ILRI	Farmers and farmer groups.	2023-2028	National Government, County Government & Development partners	20	4	4	4	4	4
	Formation of support groups/cooperatives on value addition.	Increased agricultural produce processing and marketing.	No.of groups/cooperatives supported on value addition	-Department of Agriculture, Livestock and Fisheries -KALRO -Private sector -ICRAF -ILRI	Farmers and farmer groups	2023-2028	National Government, County Government & Development partners	10	2	2	2	2	2
	Promote soil and water conservation initiatives.	Reduced soil erosion and pollution.	No. HH trained & adopting soil conservation technologies	-Department of Agriculture, Livestock and Fisheries -KALRO -Private sector -ICRAF -ILRI	Farmers and farmer groups.	2023-2028	National Government, County Government & Development partners	25	5	5	5	5	5
	Participatory Scenario planning to Dissemination of weather and climate information to local communities	Improved usage of climate information. Improved access to weather information	No. of HH trained, accessing and using weather and climate information.	-Department of Agriculture, Livestock and Fisheries -KALRO	Farmers and farmer groups.	2023-2028	National Government, County Government & Development	10	2	2	2	2	2

Promotion of agroforestry/farm forestry	Increased farm forestry in the County	No. of farmers with 10% farm forest cover. No. of farmers trained on farm forestry & implementing No. of agroforestry tree seedlings procured & distributed No. of agroforestry tree seedlings nurseries established	-Department of Agriculture, Livestock and Fisheries -KALRO -Private sector -ICRAF -ILRI -KFS	Farmers and farmer groups.	2023-2028	National Government, County Government & Development partners	10	2	2	2	2	2
Promotion of traditional foods, Drought tolerant & early maturing crops	Improved traditional food production, preservation & utilization -Drought tolerant/early maturing crops promoted	-No. of HH producing traditional foods. - No. of farmers trained on traditional food crops production -Quantity of traditional food crops seed/planting material procured & distributed	-Department of Agriculture, Livestock and Fisheries -KALRO -Private sector -ICRAF -ILRI -KFS	Farmers and farmer groups.	2023-2028	National Government, County Government & Development partners	40	10	10	10	10	10
Construction of climate resilient irrigation and drainage infrastructure. (Set up Demos sites in public institutions eg TIVETs schools.)	Increased production under irrigation.	-Hectares of crop under irrigation, drainage and practicing smallholder irrigation.	-Department of Agriculture, Livestock and Fisheries -Private sector -ICRAF	Farmers and farmer groups.	2023-2028	National Government, County Government & Development partners	30	6	6	6	6	6
Improve availability of quality livestock feed during throughout the year through farmers trainings on production of climate resilient fodder, feed formulation & feed preservation	Increased livestock fodder/ feed / pasture production	Hectares under climate resilient fodder crop. No. of famers trained on feed formulation No. of feed formulation equipment procured, installed & operational Quantity of feed formulated & utilized	Department of Agriculture, Livestock and Fisheries -KALRO -Private sector -ICRAF	Farmers and farmer groups.	2023-2028	National Government, County Government & Development partners	20	4	4	4	4	4

		No. of farmers doing on-farm feed formulation	-ILRI -KFS									
		Quantity of fodder/pasture seed distributed										
Provision of farm input subsidies targeting the vulnerable & marginalized groups	Increased number of farmers accessing subsidies for improved household food & nutrition security	No. of vulnerable farming households accessing subsidized inputs Quantity of subsidized inputs procured & distributed	-Department of Agriculture, Livestock and Fisheries -KALRO -Private sector -ICRAF -ILRI	Farmers and farmer groups, VMGs	2023-2028	National Government, County Government & Development partners	35	7	7	7	7	7
Distribute and operationalize climate friendly milk coolers.	Reduced milk losses Improved milk marketing/better prices	No. of operational climate friendly milk coolers procured & distributed	-Department of Agriculture, Livestock and Fisheries -KALRO -Private sector -ICRAF -ILRI	Farmers and farmer groups.	2023-2028	National Government, County Government & Development partners	25	5	5	5	5	5
Support AI services for more adoptable animal breeds (Drought tolerant breeds/animals)	AI services scaled up across the County Stock genetic resources improved	Quantity of semen procured No. of animals served with adoptable genes (for genetic improvement) No. of breeding stock improved	Department of Agriculture, Livestock & fisheries, KAGRI	Livestock farmers/breeders	2023-2028	National Government, County Government & Development partners	20	4	4	4	4	4
Desilting, restocking & Caging of ponds and dams & stocking with fish	Increased fish production in cages Established dam management units	No. of dams stocked No. of cages for fish farming distributed No. of farmers trained on cage fish farming No. of de-silted dams stocked and cages for fish farming of No. dam management units established & operationalized	-Department of Agriculture, Livestock and Fisheries & blue economy -KALRO -Private sector -ICRAF -ILRI	Farmers and farmer groups.	2023-2028	National Government, County Government & Development partners	20	4	4	4	4	4

	Sensitize farmers on crop/livestock insurance.	Increased number of farmers adopting/sensitized on crop/livestock insurance.	Number of farmers with crop/livestock insurance	Department of Agriculture, Livestock and Fisheries.	Farmers	2023-2028	National Government, County Government & Development partners	5	1	1	1	1	1
	Farmers training on conservation agriculture (CA) technologies for improved productivity & environmental sustainability	Increased number of farmers practicing conservation agriculture (CA)	-No. of farmers & officers trained on CA & Climate Smart Agriculture technologies -No. of farmers practicing Conservation Agriculture -No. of farmers adopting CSA technologies	-Department of Agriculture, Livestock and Fisheries -KFS -KMD -KALRO -Private sector -ICRAF -ILRI	Farmers and farmer groups.	2023-2028	National Government, County Government & Development partners	20	4	4	4	4	4
	Training households on enterprises diversification for food security & improved incomes (Kitchen gardens, apiculture, multi storey gardens. Peri-urban agriculture)	Improved enterprises diversification	- No of enterprises introduced - No. of households trained & adopting various enterprises	-Department of Agriculture, Livestock and Fisheries -KALRO -Private sector -ICRAF -ILRI	Farmers and farmer groups, VMGs, urban & peri-urban households	2023-2028	National Government, County Government & Development partners	35	7	7	7	7	7
Sub- Total								380	76	76	76	76	76

ENVIRONMENT

Strategic Objectives	Priority Actions	Expected Outputs/Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Time frame	Source of Funds	Indicative Budget (KES million)					
								Total	23/24	24/25	25/26	26/27	27/28
To enhance environmental conservation and management in to order increase the resilience of the environment sector through	Afforestation and reforestation	Increased tree cover across all 20 wards	No. of 10 hectares of land afforested. -Percentage of land under forest/tree cover.	Department of Environmental and water, -LVSWSB -WRA -WRUA -NWHSA - NEMA	Women, youths, persons living with disability and elderly	2023-2028	National Government, County Government & Development partners	80	16	16	16	16	16
	Establishment of fruit tree nurseries and indigenous trees	Increased seedlings supply for increased forest cover.	20 indigenous tree nurseries established per Ward	Department of Environment -KFS -KWS - WRA -NEMA	Community, Community groups.	2023-2028	National Government, County Government & Development partners	60	12	12	12	12	12
Hazards <i>(Prolonged dry spells, Invasive species Intense rainfall, Environmental degradation, Flash floods, storms, Hailstorms and Thunderstorms)</i>													

	Capacity building of communities on conservation programmes / Waste Management	Sensitization on conservation programmes & Waste management	10 sensitization workshops conducted per 20 wards @ 50,000 each	Department of Environment -KFS -NEMA	Community, Community groups	2023-2028	National Government, County Government & Development partners	55	11	11	11	11	11
	Purchase of machineries for waste management	Purchase of 3 backhoes to assist in waste collection	Number of backhoe purchased	Department of Environment -KFS -NEMA	Community, Community groups	2023-2028	National Government, County Government & Development partners	40	8	8	8	8	8
	Promotion of Technologies and innovations uptake in solid waste management Incentivising waste management	Modern solid waste management technologies adopted -establish Of 5 Waste Management plant (garbage sorting & landfills) @20M	Number of modern solid waste management plants established	-Department of Environment -Public benefit organization, private sector, and civil society.	Community.	2023-2028	National Government, County Government & Development partners	100	20	20	20	20	20
	Rehabilitation of degraded landscapes	Increased number of rehabilitated quarries and brick making sites -restoration of 100 quarry sites	Number of awareness forums conducted - 100	Department of Environmental and water, -LVSWB -WRA -WRUA -NWHSA - NEMA	Community	2023-2028	National Government, County Government & Development partners	60	15	15	15	15	15

	Conservation and restoration of riparian zones.	Degraded riparian zones restored with indigenous tree species and increased tree cover -Removal of Eucalyptus -50 sites of 5km each	-Percentage of land under forest/tree cover.	Department of Environment KFS -KWS -WRA	Community	2023-2028	National Government, County Government & Development partners	50	10	10	10	10	10
	Construction of automatic weather stations for early warning system	Building of automatic weather stations in wards- 20 station	Number of automatic weather stations	-Department of Environment -Department of tourism -KFS -KWS - WRA - NEMA	CG, NG & other Stakeholders	2023-2028	National Government, County Government & Development partners	30	6	6	6	6	6
Total								470	98	98	98	98	98

WATER AND THE BLUE ECONOMY

Strategic Objectives	Priority Actions	Expected Outputs/Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Time frame	Source of Funds	Indicative Budget (KES million)					
								Total	23/24	24/25	25/26	26/27	27/28
To promote sustainable utilization and access to clean, safe, potable water and sanitation services through mitigation of various climatic hazards Hazards <i>(Prolonged dry spells, Invasive species Emerging pests and diseases, Intense rainfall, Environmental degradation, Flash floods, storms, Hailstorms and Thunderstorms)</i>	De-siltation and protection of dams	5 dams protected and desilted	-Volume of water in dams increased -No. dams de-silted and protected	Department of Environmental and water, -LVSWSB -WRA - WRUA -NWHSA - NEMA	-WRUAs	2023-2028	National Government, County Government & Development partners	55	11	11	11	11	11
	Drilling development, Equipping and distribution of solar powered water boreholes	2 boreholes to be drilled and equipped in 20 wards by end of 5 years	40 No. of boreholes drilled and equipped	Department of Environmental and water, -LVSWSB -WRA - WRUA -NWHSA - NEMA	Community	2023-2028	National Government, County Government & Development partners	245	49	49	49	49	49

Supply and installation of water tanks for water harvesting and storage in public institutions.	2 public institutions to be supplied and installed with water tanks together with gutters in 20 wards in a year..	200 water tanks supplied and installed.	- Department of Environmental and water, -LVSWSB -WRA -WRUA -NWHSA - NEMA	Public Institutions	2023-2028	National Government, County Government & Development partners	80	16	16	16	16	16
Excavation, construction and protection of water pans	5 water pans be constructed and protected	Increased water harvesting and storage	-Department of Environmental and water, -LVSWSB -WRA -WRUA -NWHSA	-WRUAs - Conservati on groups.	2023-2028	National Government, County Government & Development partners	20	4	4	4	4	4
Protection, development and rehabilitation of water springs	4 water springs protected and rehabilitated in 20 wards.	400 No. water springs protected, developed and rehabilitated in 5 years.	- Department of Environmental and water, -LVSWSB -WRA -WRUA -NWHSA - NEMA	Community	2023-2028	National Government, County Government & Development Partners	85	17	17	17	17	17

Strategic Objectives	Priority Actions	Expected Outputs/Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Time frame	Source of Funds	Indicative Budget (KES million)					
								Total	23/24	24/25	25/26	26/27	27/28
	Construction of Medium water supply scheme from spring.	Improved climate proof water infrastructure in 4 sub counties.	15 climate proof water infrastructure developed. -50 KM of distribution line.	- Department of Environmental and water, -LVSWSB -WRA - WRUA -NWHSA - NEMA.	Community	2023-2028	National Government, County Government & Development partners	120	24	24	24	24	24
	Developing of County water master plan	Water master plan developed.	1 Water master plan developed.	- Department of Environmental and water, -LVSWSB -WRA - WRUA -NWHSA - NEMA		2023-2028	National Government, County Government & Development partners	20	4	4	4	4	4

Strategic Objectives	Priority Act ions	Expected Outputs/Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Time frame	Source of Funds	Indicative Budget (KES million)					
								Total	23/24	24/25	25/26	26/27	27/28
	Capacity building of WASH actors and staff	WASH actors and staff sensitized on water resource climate adaptation, mitigation and resilience building.	No. of awareness forums conducted	Department of Environmental and water, -LVSWSB -WRA - WRUA -NWHSA - NEMA	WASH actors and staff	2023-2028	National Government, County Government & Development partners	40	8	8	8	8	8
Sub-Total								665	133	133	133	133	133

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