Tana River County Climate Change Action Plan 2023-2027

REPUBLIC OF KENYA

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OCTOBER 2023

REPUBLIC OF KENYA

MESSAGE FROM HIS EXCELLENCY THE GOVERNOR, TANA RIVER COUNTY

Climate change has adverse impacts on our country's economic development and threatens the realization of our Vision 2030 goals of creating a competitive and prosperous nation with a high quality of life. Tana River County has not been spared as the County's economy is highly dependent on natural resources, meaning that recurring droughts, erratic rainfall patterns, invasive species, sea water intrusion and floods will continue to negatively impact livelihoods and community assets.

The County Government of Tana River recognizes the threats posed by climate change and has taken action to address them in line with the National aspirations. In this regard, the department of Environment and Climate Change coordinated the development of a five-year County Climate Change Action plan (CCCAP) covering the period 2023-2027. This action plan demonstrates a commitment on the part of the County government to implement the National Climate Change Action Plan (NCCAP) and contribute to the Nation's adaptation aspirations. It effectively provides the roadmap and commits resources to addressing the County's vulnerability to enhance local community's resilience to climate change.

The CCCAP focuses on 8 strategic objectives including Food and Nutrition Security; Water and Blue Economy; Ecosystem Conservation and Sustainable Land Management; Climate Proof Infrastructure; Green Energy Production and Use; Sanitation, Health and Human Settlement; Knowledge Management and Capacity Building; Sustainable Financing for Climate Action as well as Governance and Coordination of Climate Change Adaptation and Mitigation. These objectives are aligned to the Tana River County Integrated Development Plan 2023-2027.

The CCCAP was developed through a consultative process that included numerous community engagements at grassroots level, stakeholders from the National Government, the private sector, and the civil society; with the support of international development agencies. All of these partners have committed to continue to support the implementation of the CCCAP through the design, financing and implementation of priority actions. Effective implementation of the CCCAP will be supported through the establishment of enabling governance structures, including those set out in the Tana River County Climate Change Act 2021. Additional support and increased partnerships will be required for Tana to achieve its adaptation goals.

The County Government of Tana River is fully committed to addressing climate change locally, as well as demonstrating leadership in the National and Global fight against climate change. Tana River County is committed to positively contribute to Kenya's NDC in line with the Paris agreement. This CCCAP demonstrates the County's commitment to the National NDC, and will help bring to life our critical responses to the impacts of climate change. Building climate resilience in as low carbon manner as possible will ensure that the County contributes to the goals of the Paris Agreement and the Sustainable Development Goals.

H.E Major (Rtd) Dr. Dhadho Gaddae Godhana
Governor, Tana River County

PREFACE

Climate change is a global development challenge of our time and requires a global approach in dealing with its impacts. The severe and extreme impacts of these climate related hazards have accelerated droughts and floods, which pose a challenge to the attainment of Kenya's development aspirations. This has informed the need for collaborative approach of the county government, development partners and the residents to strategically address the impacts of climate change.

Tana River County is vulnerable to climate change hazards ranging from droughts, floods, sea water intrusion, pests and diseases (crop and livestock) as well as occasional human epidemics. The impacts of these climate hazards have had negative impacts on communities and resulted in human displacement, loss of life and disruption of livelihoods, damage to infrastructure and productive assets.

The county government recognizes the urgency and as such, the development of this action plan is part of the critical steps in addressing the identified impacts. The CCCAP outlines responses the county government will put in place in the next 5 years ensuring that the actions are mainstreamed in all sectors. Implementation of this CCCAP will guarantee a pathway towards more sustainable and resilient communities and reduced carbon emissions through adoption of appropriate technologies founded on sound research.

The implementation of this CCCAP will require substantial resources in form of finances, investment, technology and capacity building. To meet these huge resource requirements, the county will develop a robust and innovative resource mobilization strategy including exploring options for Public Private Partnerships (PPPs).

I want to sincerely thank our stakeholders and partners who have worked with us through this journey in preparation of this CCCAP. I look forward to their effective partnership in its implementation. It is therefore with great satisfaction that I introduce the Tana River Climate Change Action Plan that will guide our pursuit for a sustainable and resilient County even in face of climate change.

Hon. Mathew Babwoya Buya
County Executive Committee Member,
Department of Environment and Climate Change,
Tana River County

ACKNOWLEDGEMENT

Many thanks go to our partners World Food Programme (WFP), Nature Kenya, Wetland International and CISP for their financial support during the formulation of the Action Plan. We acknowledge the technical support and cooperation we received from Kenya Meteorological Department (KMD) and National Drought Management Authority (NDMA). We also appreciate the National Treasury through FLLoCA program for their guidance on the Action Plan formulation process.

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ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immunodeficiency Syndrome
AR6	Sixth Assessment Report
ASALs	Arid and Semiarid Lands
AU	African Union
BMU	Beach Management Unit
CBPP	Contagious Bovine Pleural Pneumonia
CCCAP	County Climate Change Action Plan
CCCF	County Climate Change Fund
CCD	County Climate Department
CCO	County Chief Officer
CCPP	Contagious Caprine Pleural Pneumonia
CBOs	Community Based Organizations
CDM	Clean Development Mechanism
CECM	County Executive Committee Member
CGTR	County Government of Tana River
CFA	Community Forest Association
CIDP	County Integrated Development Plan
CLTS	County-Led Total Sanitation
COP	Conference of Parties
COVID 19	Corona Virus
CSOs	Civil Society Organizations
CSR	Corporate Social Responsibilities
CWWDA	Coast Water Works Development Agency
^{0}C	Degree Celsius
DRM	Disaster Risk Management
DTF	Decentralized Treatment Facility
EA	Environmental Audit
EIA	Environmental Impact Assessment
EMCA	Environment Management and Coordination Act
FLLoCA	Financing Locally-Led Climate Action
FMD	Foot and Mouth Disease
FOLAREP	Forest and Landscape Restoration Action Plan
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas
GoK	Government of Kenya
HIV	Human Immunodeficiency Virus
IPCC	Intergovernmental Panel on Climate Change
ISWM	Integrated Solid Waste Management
KALRO	Kenya Agricultural and Livestock Research Organization
KCSA	Kenya Climate Smart Agriculture
KEFRI	Kenya Forestry Research Institute
KENGEN	Kenya Electricity Generating Company
KEPHIS	Kenya Plant Health Inspectorate Service
KFS	Kenya Forest Service
KMD	Kenya Metrological Department
KNBS	Kenya National Bureau of Statistics
KWS	Kenya Wildlife Service
M/E	Monitoring and Evaluation
MET	Metrological
MLND	Maize Lethal Necrosis Disease
MTP II	Second Medium Term Plan
NAP	National Adaptation Plan
NCCAP	National Climate Change Action Plan
NCCRS	National Climate Change Response Strategy
NDC	Nationally Determined Contribution
NDMA	National Drought Management Authority

NEMA	National Environment Management Authority
NGO	Non-Government Organization
NMK	National Museums of Kenya
ODF	Open Defecation Free
PCRA	Participatory Climate Risk Assessment
PES	Payment for Ecosystem Services
PPR	Peste des Petits Ruminants
PSM	Public Service Management
PSF	Public Sanitation Facility
REDD+	Reducing Emissions from Deforestation and Forest Degradation
RVF	Rift Valley Fever
SEA	Strategic Environmental Assessment
SDGs	Sustainable Development Goals
SMS	Short Message Service
TAWASCO	Tana Water and Sewerage Company
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
US	United States
USD	United States Dollar
VNRLUC	Village Natural Resource Land Use Committee
WRA	Water Resources Authority
WRUA	Water Resources Users Association

DEFINITION OF TERMS

Adaptation: adjustment in natural or human system in response to actual or expected climatic stimuli or their effects in order to moderate harm or exploit beneficial opportunities.

Adaptive Capacity: The ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences.

Afforestation: Planting of new forests on lands that historically have not contained forests.

Biodiversity: The variability among living organisms from terrestrial, marine and other ecosystems. Biodiversity includes variability at the genetic, species and ecosystem levels.

Carbon Sequestration: The uptake of carbon containing substances, in particular carbon dioxide (CO2), in terrestrial or marine reservoirs. Biological sequestration includes direct removal of CO2 from the atmosphere through land-use change (LUC), afforestation, reforestation, revegetation, carbon storage in landfills and practices that enhance soil carbon in agriculture (cropland management, grazing land management).

Climate Change: A change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically three decades or longer.

Climate Change Adaptation: The process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects.

Climate Change Mitigation: A human intervention to reduce the sources or enhance the sinks of greenhouse gasses (GHGs).

County: Tana River County

County Assembly: County Assembly of Tana River County

County Government: Tana River County Government

Constitution: Constitution of Kenya 2010

Deforestation: Conversion of forest to non-forest use.

Disaster: Severe alterations in the normal functioning of a community or a society due to hazardous physical events interacting with vulnerable social conditions, leading to widespread adverse human, material, economic or environmental effects that require immediate emergency response to satisfy critical human needs and that may require external support for recovery.

Drought: A period of abnormally dry weather long enough to cause a serious hydrological imbalance.

Ecosystem: An ecosystem is a functional unit consisting of living organisms, their non-living environment and the interactions within, between and among them.

Ecosystem Services: Ecological processes or functions having monetary or non-monetary value to individuals or society at large.

Environment: has the meaning assigned to it in section 2 of the Environment Management and Coordination Act

Forest and Landscape Restoration: An active long-term process to regain ecological integrity and enhance human wellbeing across deforested, degraded forests and landscapes

Forest: Land spanning more than 0.5 hectares with trees of at least 2 metres and a minimum canopy cover of 15%, and include natural and planted plantation forests on state, community and private land.

Forest Cover: Refers to a land area of more than 0.5ha with a canopy cover of at least 15%, a minimum tree height of 2 meters which is not primarily under agricultural or other specific non-forest land use

Land Use: The total of arrangements comprising human actions, activities and inputs undertaken in a certain land- cover type

Landscape: A social-ecological system that consists of a mosaic of natural and/or human-modified ecosystems, often with a characteristic configuration of topography, vegetation, land use, and settlements that is influenced by the ecological, historical, economic and cultural processes and activities of the area

Mitigation: preventing, reducing or slowing down the increase of atmospheric greenhouse gas concentrations by limiting current or future emissions and enhancing potential sinks for greenhouse gases.

Rangelands: Vast undisturbed natural resources and landscapes in the form of grasslands, bushland, woodlands, wetlands and deserts. They grow primarily indigenous vegetation, rather than plants established by humans.

Reforestation: Planting of forests on lands that have previously contained forests but that have been converted to some other use.

Rehabilitation: Restoration of the capacity of degraded landscape to deliver goods and services.

Resilience: the ability of a social, economic or ecological system to absorb disturbances while retaining the same basic structure and ways functioning, the capacity for self-organization and the capacity to adapt to stress and change.

Sustainability: A dynamic process that guarantees the persistence of natural and human systems in a trans-generational equitable manner.

Tree Cover: Area covered by tree patches of less than 0.5 hectares outside recorded forest areas.

Vulnerability: the condition determined by physical, social, economic and environmental factors or processes, which increase the susceptibility of a system to the impact of hazards.

EXECUTIVE SUMMARY

Climate change is a global concern. The adverse impact on populations and livelihoods is on an upward trend. This has been attributed to climate variability/change and low adaptation capacity & mechanisms. Nationally, the cost of dealing with the impacts of climate change has been estimated to be about 30% of the GDP. The emergency situations resulting from these impacts necessitates priority budgeting and response. As a result, development funds have been diverted in such circumstances to respond to drought and other climate change related hazards to save lives. This has continued to pose a threat to sustainable development as well as poverty reduction initiatives as vulnerability among population increase.

To prevent and mitigate the negative impacts of climatic hazards specifically drought and floods, concerted efforts among planners, development agencies, local institutions and the community at large is crucial. To ensure a coordinated and strategic investment of resources, the County Government of Tana River (CGTR), working with its partners has developed a County Climate Change Action Plan (CCCAP) 2023-2027.

The CCCAP outlines responses the County Government will put in place in the next 5 years ensuring that the actions are mainstreamed in all sectors. Implementation of this CCCAP will guarantee a pathway towards more sustainable and resilient communities and reduced carbon emissions through adoption of appropriate technologies founded on sound research.

The First Chapter of this document gives introductions and background information of the climate change at global, regional, national and county level and adaptation measures taken by the mentioned categories. It covers the methodology and process employed to come up with the County Climate Change Action Planning. It narrates the initial stages of planning, training/capacity building, data collection and documentation of findings. It also describes the climatic vulnerabilities that are brought about by diverse hazards in Tana River County. It explains how different elements at risk become vulnerable whenever a disaster strikes.

The Second Chapter gives an overview of the climate change laws, policies and regulations that have been put in place by authorities at global, national and county levels that enable them to mitigate or adapt to the impacts of climate related hazards.

The Third Chapter describes the climate change adaptation/mitigation plans to be executed as proposed by communities during the PCRA exercise conducted across all the wards. Under this specific interventions/activity are documented, the objectives mentioned, monitoring indicators captured, ward in which these interventions will be carried out, last but not the least the timeframe and budget captured. The Fourth Chapter outlines the delivery, implementation and coordination mechanism.

CHAPTER 1: BACKGROUND AND CONTEXT

1.1 Introduction and Background

Climate change is a global challenge of our time and it is important that countries do not only implement actions that enhance adaptation to the already changing climate but also act to mitigate further temperature rise (GoK, 2018). The Paris Agreement adopted at Conference of the Parties (COP) 21 charts a new course in the global climate effort by building upon the United Nations Framework Convention on Climate Change (UNFCCC). It brings nearly all nations into a common cause to undertake ambitious efforts to combat climate change and adapt to its effects, with enhanced support to assist developing countries.

Policies and laws addressing mitigation have consistently expanded globally. The greenhouse gas (GHG) emissions are projected to exceed 1.5ºC during the 21st Century which makes it harder to limit warming below 2°C (IPCC AR6, 2021). There are gaps between projected emissions (from implemented policies and those from NDCs) and finance flows. The short fall in finance flow make it difficult to attain the levels needed to meet climate goals across all sectors and regions.

Adaptation planning and implementation has progressed, with documented benefits and varying levels of effectiveness. Despite the progress, gaps exist, and will continue to grow at varying levels during implementation. Maladaptation is happening in some sectors and regions.

Africa is the most vulnerable continent to climate change impacts under all climate scenarios above 1.5ºC (Katy R. *et al.*, 2022). Despite having contributed the least to global warming and having the lowest emissions, Africa faces exponential collateral damage, posing systemic risks to its economies, infrastructural investments, water and food systems, public health, agriculture, and livelihoods, threatening to undo its modest development gains and slip into higher levels of extreme poverty. In East Africa for example, climate change has impacted communities heavily even as the region experiences rapid population growth, urbanization and economic transformation. These impacts limit the attainment of the full growth potential of the region.

Climate change action in Kenya is guided by the Climate Change Act, (Number 11 of 2016), which provides a framework for mainstreaming climate change across sectors (GoK 2018). Temperatures in Kenya have increased with increased frequency of extreme weather events mainly droughts and floods being experienced. Rainfall patterns have however become irregular, resulting in declining livelihoods (Maitima *et al.*, 2009). Droughts degrade the environment increasing resource conflicts and desertification. The increase in drought frequency and severity aggravates aridity of the drylands, making them drier which affects ecosystems balance and impacting on resultant livelihoods.

Tana River County has been experiencing climate change effects characterized by long-term shifts in temperatures and weather patterns. The main economic activities of Tana residents are crop farming, livestock keeping and fishing. The successes of these economic activities are heavily climate dependent with rainfall determining the success of both livestock and crop farming. The negative impacts of climate related hazards have pushed communities to activities such as charcoal burning, manual labor and small-scale trade, many of which are either insufficient to address their household needs or cause further degradation and worsen their adaptive capacities.

The County Participatory Climate Risk Assessment Report (March 2023) identifies flooding, drought, invasive species and pest and diseases as priority hazards with the greatest negative impacts to community lives and livelihoods. The impact of these hazards was reported in all the 15 wards of the county and have directly been linked to increase in poverty and hunger; limiting access to basic assets, resources and services; stifling economic growth and even causing conflict.

Over the years, the damage caused by flooding has reduced mainly due to reduction in rainfall and/or occasional total failure of the rains. The increase in temperature experienced during drought has resulted to increase in prevalence of pest and diseases effectively resulting in increased cases of hunger and malnutrition resulting from crop failures and livestock mortalities.

In response to the negative impacts of climate change, the County Government of Tana River (CGTR) has taken steps to formulate the County Climate Change Action Plan (CCCAP). The climate change action planning is anchored in section 32(1) of the Tana River County Climate Change Act 2021 and is in line with the National Climate Change Action Plan (NCCAP). The action plan is also aligned to the County Integrated Development Plan (CIDP) 2023-2027 and aims to accelerative efforts to increase adaptive capacities of the local communities. Additionally, the County government has taken active steps to;

- Establish a special programs department that carries out disaster response interventions and a county disaster fund under the Disaster Risk Management Act 2020.
- Initiate a resettlement program “Cluster Village Program” to prevent communities from effects of riverine floods.

- Formulate Climate Change Act and policies that ensure that the climate actions are mainstreamed in government plans and budgeting processes.
- Establish a County Climate Change Fund (CCCF) setting aside 2% of its development budget to this Fund.
- Comply with the Financing Locally-Led Climate Action (FLLoCA) program requirements to access resources for climate action in the county.

1.2 County Climate Change Action Plan Purpose and Formulation Process

1.2.1 Purpose of the CCCAP

Section 32 of the Tana River County Climate Change Act 2021 established the County Climate Change Action Plan (CCCAP) to run concurrently with the National Climate Change Action Plan and County Integrated Development Plan (CIDP). The CCCAP 2023-2027 articulate a climate change response implementation plan informed by the climate change needs and response assessment, and specifying measures and mechanism for the following;

i. Guiding the County towards the achievement of low carbon climate resilient sustainable development
ii. Mainstreaming climate change into county development plans, programs, projects and strategies.
iii. Adaptation to and mitigation of climate change
iv. Enhancing research, capacity building and knowledge management on climate change and climate change response
v. Enhancing public awareness for effective participation in climate change response
vi. Monitoring, evaluation and periodic review to integrate learning and best practise in the implementation of the County Climate Change Action Plan.

1.2.2 Process of the CCCAP

The process of formulating the County Climate Change Action Plan is guided by the Tana River County Climate Change Act 2021 under section 32(1) of the Act. As such, the County followed a series of steps, involving diverse institutions and stakeholders. The process began by a stakeholders meeting held on 12th January 2023 at the NDMA, Boardroom in Hola. This first meeting led to the formation of cross-sectoral technical working group which was tasked to deliver the Participatory Climate Risk Assessment (PCRA) report and develop the County Climate Change Action Plan. The technical working group was trained between 23rd and 27th January 2023 at Ocean Beach Resort and Spa, Malindi. The training was meant to equip the team with skills relevant for data collection and reporting for the PCRA and CCCAP.

Field data collection took place across all the 15 wards of the County from 30th January 2023 to 4th February 2023. Before embarking on ward level reports, the technical teams reviewed relevant documents and policies including National Climate Change Action Plan 2018-2022, County Integrated Development Plan (2023-2027), Kenya Vision 2030, Big Four Agenda, The Climate Change Act 2016, The Tana River County Climate Change Act 2021, The Tana River County Climate Change Finance Policy 2023, , The Constitution of Kenya 2010, The Africa Development Agenda 2063, The Sustainable Development Goals, The Energy Act 2019, The Water Act 2016, Tana River County Disaster Risk Management Act 2020 and Environment Management and Coordination Act 2015 among others.

The ward level PCRA reports were compiled by the technical team at Laza Leisure Hotel in Hola from 8th to 10th February 2023. These ward reports were later collapsed into a county PCRA report in a meeting held at Lantern Resort, Garissa between 16th and 17th March 2023. Consequently, the draft county PCRA report was subjected to a validation in a multi-stakeholder workshop held between 23rd and 24th March 2023 at Laza Leisure hotel in Hola. The list of the stakeholders during this workshop is attached as Annex 1. Following the multi-stakeholder consultative workshop, a small team of technical officers was formed to review the draft PCRA report, incorporate the views of the stakeholders and draft a final County PCRA report.

Following the completion of the PCRA report, the County Department of Environment and Climate Change embarked on the process of formulating the County Climate Change Action Plan. The department formed technical task team (see Annex 2) which developed the first draft at Ocean Beach Resort and SPA between 18th and 20th May 2023. This draft was subjected to community validation at all sub-counties including Tana North, Tana River and Tana Delta (Annex 3, 4 & 5 shows list of participants in the three sub-counties) concurrently on 23rd May 2023. After the validation process, the technical team retreated at Laza Leisure Hotel in Hola on 25th May 2023 (Annex 6) to incorporate the views and inputs from the community/stakeholders and drafted a final CCCAP. The final CCCAP draft was approved by the County Executive Committee on 26th May 2023. It was submitted to the County Assembly of Tana River on 29th May 2023 and adopted by the House on 9th August 2023 followed by official launch by H.E The Governor in a ceremony held at the County Headquarters on 12th August 2023.

1.3 Underlying Climate Resilience Context

1.3.1 Ecological Conditions

The county is divided into four agro-ecological zones namely: CL3 Coconut – Cassava zone (non ASAL) and CL4 Cashew nuts- Cassava zones where the main economic activity is peasantry mixed farming; CL5 Lowland Livestock zone and CL6 Lowland Ranching zones where the locals are involved in pastoral activities. The soils range from sandy, dark clay and sandy loam to alluvial deposits. The soils are deep around the riverine environments but highly susceptible to erosion by water and wind. Soils in the hinterlands are shallow and have undergone seasons of trampling by livestock, thus are easily eroded during rainy seasons.

The vegetation ranges from scrubland to thorny thickets within the riverine area. Shrubs and annual grasses dominate most parts of the region. However, there are enclaves of trees and perennial grasses dominating wetter parts. The invasive tree species called *Prosopis juliflora*, commonly known in the area as 'Mathenge' (named after the person who introduced it) has spread rapidly in the area to cover about 114,239 Ha in 2019. The tree is threatening to replace most of the indigenous vegetation. It was introduced for fuel-wood production in the Bura Irrigation Scheme. It grows fast and chokes other vegetation, watering points and the canals, and is colonizing most of the areas that are not cropped, including the riparian environments.

1.3.2 Climatic Conditions

The region has a hot and dry climate within ecological zones ranging from III (in the very high grounds) to VII (in the plains or lowlands). Average annual temperatures are about 30°C with the highest being 41ºC around January-March and the lowest being 20.6ºC around June-July. Rainfall is low, bimodal, erratic and conventional in nature. The total annual rainfall ranges between 280mm and 900mm with long rains occurring in April and May, short rains in October and November with November being the wettest month. The Inter-Tropical Convergence Zone (ITCZ), which influences the wind and non-seasonal air pattern for the river Tana, determines the amount of rainfall along the river line. The dry climate in the hinterland can only support nomadic pastoralism.

1.3.3. Climate Trends and Projections

Precipitation: The County precipitation is projected to decrease by 5% in the first wet season, and increase 14% in the second wet season of the years 2021-2065. Increased extreme precipitation is projected to occur during the second season, with the highest single day of precipitation increasing on the order of 25%. The first wet season is projected to experience no change or even a slight decrease in the single day greatest precipitation.

Temperature: Experts and farmers alike acknowledge that there have been significant changes and variations in climatic conditions over the past years, affecting agricultural production and livelihoods in the County. Extreme weather events are very common in the county. As such, heat stress, dry spells, and drought are hazards that strongly contribute to agricultural risks. Drought conditions have been experienced in 1975, 1976, 1980, 1981, 1983, 2001, 2004, and 2009 with the Central and Northern parts of the county being the most affected. Both extreme precipitation and prolonged moisture stress are projected to occur, but the changes are different during different seasons. Within 30 years (by the early 2040's) temperature is projected to increase by (~0.5ºC), with the first wet season projected to experience even greater changes.

1.3.4 Impacts of Climate Hazards in Tana River County

Climate vulnerability is the degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. Being an ASAL county, Tana River is highly vulnerable to the impacts of climate related hazards and consequently the livelihoods of communities are negatively affected, impacting on their adaptive capacities. In 2017, Tana River was one of the most drought affected counties when a national emergency was declared by the President of Kenya.

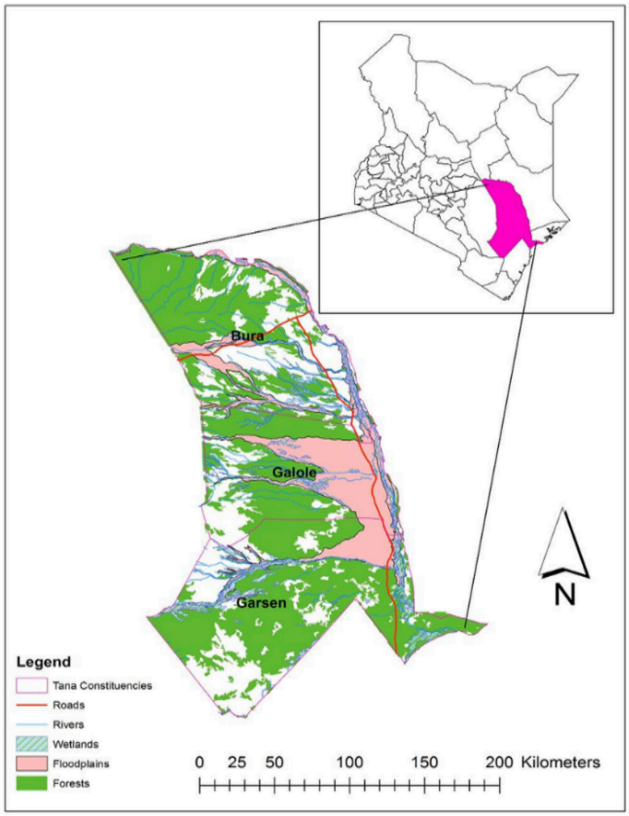

Fig. 1: Tana River County Flood risk map

This chapter explains the impacts of climate change hazards and associated risks in Tana River County as per the Participatory Climate Risk Assessment that was conducted in all of the 15 wards in February 2023.

Floods

Tana River County is prone to flooding, especially during the rainy season. The flooding is often caused by heavy rainfall, overflowing of rivers, and poor drainage systems. The floods have led to loss of lives, displacement of people, destruction of property, and disruption of economic activities. Wards that are mostly affected by floods are: Kipini East, Kipini West, Garsen North, Garsen South, Garsen West, Garsen Central, Hirimani, Madogo, Chewani, Chewele, Mikinduni, Kinakomba.

Drought

In recent years, Tana River County experienced prolonged drought has resulted to increase in prevalence of pest and diseases effectively resulting in increased cases of hunger and malnutrition resulting from crop failures and livestock mortalities leading to increase in poverty level, resource-based conflict and wide spread of *Prosopis juliflora* (Mathenge). The most recent drought was experienced in 2021. As a result, about 92,000 people faced severe food shortage, water and livestock death (NDMA, 2022).

Tana River County has three types of livelihood zones namely pastoral, marginal mixed and mixed farming zones. These three zones are affected by drought in diverse ways. The water shortages in the pastoral and marginal mixed farming zones for example leads to crop failure, increases food shortages and massive human and livestock migration into the Tana delta area. This migration in turn leads to conflicts between pastoralists and farmers over the available water resource. The migration also leads to the spread of human and livestock diseases. Further, livestock body condition deteriorates for all species and market prices for livestock fall below 50% of long-term average. Milk production at household level in pastoral livelihood zones is reduced, affecting nutritional status of children under the age of five

The areas that are mostly affected by drought are: Bangale, Hirmani, Kamagur, Boka, Konekaliti, Malka Mansa, Lebile and Habaqiq in Tana North Sub-County; Wayu, Chifiri, Titila, Daba, Waldena, Gururi, Koticha, Haroresa, Lakole, Kesi and Hakoka in Tana River Sub-County and Hurara, Assa, Kone, Iddi, Odoganda, Ngao, Tarasaa, Kibusu and Gerarsa in Tana Delta Sub-County.

Invasive Species (*Prosopis juliflora*)

Introduced as a means of greening the vast range lands of Tana River County, Mathenge (Prosopis juliflora) has been a source of building materials and fodder to livestock. Although, it provides some positive uses, Mathenge has more disadvantages than its rewards. These include drying up of water points, cause fatal injury or death to humans and livestock, reduce arable land and affect accessibility of roads.

Pest and Diseases

Climate change effects have increased the prevalence and occurrence of pest and diseases in humans, livestock and crops. During floods, waterborne disease outbreaks tend to increase in frequency. However, the recent climatic conditions have reduced the occurrence of floods and thus reduction in water borne disease outbreaks.

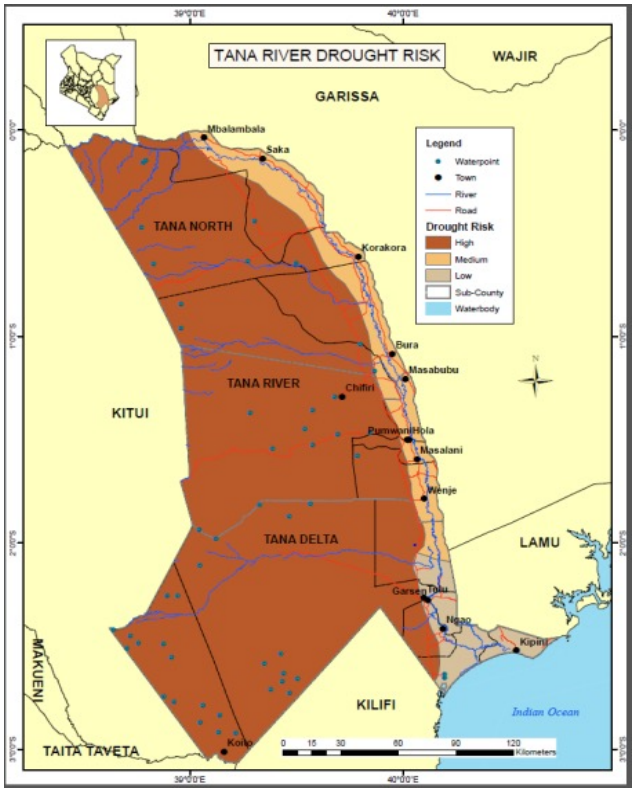

Fig. 2: Tana River County Arid and Semi-Arid classification Map

Fig. 3: Vaccination exercise against Q Fever in Tana River, ILRI

Table 1: Summary of Differentiated Climate Exposure and Vulnerability of Key Groups and Livelihoods in the County

No.	Hazard	Risk	Key resources affected	Wards	Vulnerable Groups
1	Drought	• Loss of biodiversity • Increased food shortages, • Migration in search of pasture and water • Increase cases of human wildlife conflicts • Resource-based conflicts • Increased incidence of crop Pest, human and livestock diseases • low productivity of crops and livestock • loss of lives among both humans and livestock • Increased scarcity of water and pasture • Reduced meat and milk production.	Arable land, Grazing land, Forests, Rivers, Livestock, Dams/ Wells	Garsen Central, Garsen West, Garsen South, Garsen North, Mikinduni, Chewani, Chewele, Madogo, Kipini West,Kipini East, Hirimani, Sala, Wayu, Bangali Kinakomba	Elderly people, Unskilled people, school children, women
2	Sea Water intrusion	• Loss of fresh water ecosystems • Loss of biodiversity (fresh/aquatic ecosystems • Displacements of indigenous tree species • The loss of pasture land • farm lands	Arable land, Grazing land, Forests, Rivers, Livestock, Dams/ Wells	Kipini East and Kipini West	Elderly people, Unskilled people, school children, women
3	Floods	• Loss of lives among both humans and livestock • Increased incidence of floods related human and livestock diseases • Increased food shortages • Destruction of properties (social amenities, critical infrastructure and houses) • Loss of livelihoods resources (farm lands and grazing lands) • Loss of biodiversity • Disruption of economic activities, and soil erosion.	Arable land, Grazing land, Forests, Rivers, Livestock, Dams/ Wells, Family, Roads, Houses, Schools/Hospitals	Garsen Central, Garsen West, Garsen South, Garsen North, Mikinduni, Chewani, Chewele, Madogo, Kipini West, Kipini East, Hirimani, Sala, Wayu, Bangali Kinakomba	Elderly people, Unskilled people, school children, women

High temperatures are reported to have brought about increased incidences of pests and diseases such as the Rift Valley Fever (RVF), ECF, and CCP in livestock, with areas such as Garsen, Assa, Nanighi and Kone being more affected. In February 2023, flash floods occasioned a cholera outbreak in Tana North Sub County, Bura and Madogo areas. According to the Department of Health, Tana River County, 708 cholera cases were reported; 645 in Madogo and 63 in Bura area. Fatalities amounted to 17, with the rest of the affected isolated for medical intervention.

Resource Based Conflicts

Conflict between the sedentary agrarian and the pastoral communities has sporadically occurred since the 17th century. However, increasing environmental hardship has exacerbated the situation. The agrarian's community use the swamp-like river banks to cultivate tropical cash-crops such as rice, maize, green grams and mangos, while the pastoral community traditionally inhabit the hinterlands and only migrate to the river Tana when lack of water and grazing grounds force them to do so. These migratory movements

have sometimes led to the destruction of crops by cattle and conflicts between the two communities have ensued. In recent years, such conflicts have become more frequent as erratic and unpredictable rains in the Tana River region combined with frequent droughts (at least one a year) to force pastoralists to travel to the river bank more often. The most recent resource-based conflict (human to human) happened in 2021 between the Orma and Munyoyaya communities which led to displacement, loss of lives and livelihoods.

Sea Water Intrusion

Tana River County has a 76-kilometer coastline located in Kipini East Ward, which has enabled nearby communities to engage in fishing. The delta is also situated in this coastal strip, but over the years, climate change has led to a reduction in the amount of water flowing into the Indian Ocean. The melting of icebergs from the North and South Arctic regions has contributed to an increase in sea levels. As a result, the reduction of water levels from River Tana flowing into the Indian Ocean and the rise in sea water levels have caused the intrusion of seawater into nearby fertile farms, resulting in the loss of diversity and indigenous species, pastureland, water scarcity, and a reduction in crop and fruit tree productivity.

1.4 Brief Overview of Climate Change Actions in the County

1.4.1 Mainstreaming of NCCAP in County Actions

The national Climate Change Act (2016) mandates counties to mainstream resilience and low-carbon actions in both public and private sector development activities. It established the National Climate Change Action Plan which will run for 5 years and is aligned with the Medium-Term Expenditure Plans (MTP IV). It requires County governments to domesticate the Act through plans, policies, and programs and finance such programs through the public expenditure management cycle.

This plan identified climatic hazards and the vulnerable sector affected negatively by climate change and it puts across mitigation and adaptation measures that will be undertake by different stakeholders in the County. These climate actions adopted by the plan are in eight thematic areas and are in line with the County CIDP 2023-2027. They are as follows; enhance food and nutrition security, enhance water security and blue economy, ecosystem conservation and sustainable land management, establishment of climate proof infrastructure, green energy production and use, promotion of health, sanitation and human settlement, capacity building, knowledge management and information sharing, sustainable financing for climate change action, and governance and coordination of climate change actions.

1.4.2 Climate Change in the CIDP 2023-2027

Tana River County Integrated Development Plan (CIDP) 2023-2027 is the county's 5-year master plan for socio-economic development. It provides a comprehensive and structured framework for economic, social and environmental (climate change) development. Climate change has been mainstreamed in the County CIDP in all sectors to contribute to the broader effort to combat climate change and ensure long-term wellbeing of the communities.

The County Integrated Development Plan serves as a foundational document for shaping the Annual Development Plan and the county's yearly budget. These documents align with the development priorities and performance objectives outlined in the County Integrated Development Plan. Consequently, the County Integrated Development Plan plays a pivotal role in facilitating public involvement in the county's planning and development process, integrating climate change considerations, monitoring the advancement of climate-related initiatives, and contributing to national climate objectives within the Medium-term Plan.

1.4.3 Other Key Climate Actions/Strategies in the County

The County in partnership with the National Government, Agencies, private partners and Civil Society Organizations have been implementing projects, programs that are climate actions. Among them are as follows;

Greening Tana Program – Tree planting along the major roads in major towns and Hola Municipality for beautification as well as reduce greenhouse gases to mitigate the impacts of climate change.

Non-Government Organizations – The Restoration Initiative Project that targeted the Tana Delta which is a Ramsar Site. It aimed at restoration of degraded forests and mangrove in the Delta while protecting biodiversity. REBUILD project that builds the resilience of communities to the impacts of Climate Change. International Climate Change Initiative and Eden Restoration that targeted restoration of mangroves along the coastline.

Private Companies/Investors – Kenya Commercial Bank tree planting program to mitigate the impacts of climate change and promote agroforestry in the County.

County Government of Tana River – SIVAP, KCSAP, KOSAP and projects – the projects enhanced the livelihoods of communities through building their resilience to the impacts of Climate Change.

National Development Management Authority – TWENDE Project which aims at ending Drought emergencies which is a Climate Change hazard.

CHAPTER 2: POLICY ENVIRONMENT

Kenya is a signatory to a number of multinational and regional conventions, which effectively form part of Kenya's constitution. The foundation of the institutional and legal framework for climate change actions is the Constitution of Kenya, 2010. Article 2(6) provides that treaties and conventions that have been ratified form part of Kenyan law even in absence of domestic legislation. This chapter reviews policies and legal frameworks governing climate change adaptation strategies.

2.1 International Policies on Climate Change

2.1.1 United Nations Framework Convention on Climate Change (UNFCCC)

Kenya became a member of the United Nations Framework Convention on Climate Change (UNFCCC), in 1994 and ratified it in 1997. The objective of UNFCCC is to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous human interference with the climate systems in a timeframe which allows ecosystems to adapt naturally and enable sustainable development.

2.1.2 Inter-Governmental Panel on Climate Change (IPCC)

The Intergovernmental Panel on Climate Change (IPCC) is a UN body for assessing the science related to climate change. The IPCC prepares comprehensive assessment reports about the state of scientific, technical and socio-economic knowledge on climate change, its impacts and future risks, and options for reducing the rate at which climate change is taking place. It also produces Special Reports on topics agreed to by its member states, as well as methodology reports that provide guidelines for the preparation of greenhouse gas inventories.

2.1.3 Kyoto Protocol

The Kyoto Protocol is a GHG emission reduction treaty of the UNFCCC that was adopted in 1997 and Kenya ratified it in 2005. The protocol commits developed countries, and countries in transition to market economies to reduce their overall GHG emissions. The protocol created the Clean Development Mechanism (CDM), under which projects of developing countries, which reduced GHG emissions and contributed to sustainable development, earns credits that could be sold to countries or companies with a commitment to reduce GHG emissions.

2.1.4 Paris Agreement

This is a legally binding international treaty on climate change adopted by 196 parties at the UN COP 21 in Paris, France on 12th December 2015. The Agreement came into force in November 2016 and Kenya ratified it in December 2016. Its overarching goal is to hold the increase in the global average temperature to below 2ºC above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5ºC above pre-industrial levels. Additionally, the Agreement aims at strengthening the ability of countries to deal with the impacts of climate change through the Nationally Determined Contributions (NDCs), which assigns responsibilities to all Countries regardless of their contributions to the overall emission levels. The Paris Agreements commits the developed countries to contribute a total of 100 billion US dollars annually for climate action in less developed countries. Kenya's NDC sets out the country's actions to contribute to achieving the global goal set out in the Paris Agreement.

2.1.5 Nationally Determined Contributions (NDCs)

Nationally Determined Contribution is a climate action plan to cut emissions and adapt to climate impacts. Each party to the Paris agreement is required to establish an NDC and update it after every 5 years. Kenya's NDC under the Paris Agreement of the UNFCCC includes mitigation and adaptation contributions. In regard to adaptation, the country ensures enhanced resilience to climate change towards the attainment of Vision 2030, by mainstreaming climate change into Medium Term Plans (MTPs), and implementing adaptation actions. Kenya submitted its first NDC in December 2016 which targeted to abate Kenya's GHG emissions by 30% by 2030. Kenya submitted an updated NDC in December 2020 which commits to abate GHG emissions by 32% by 2030 with milestone targets at 2025 in line with the sustainable development agenda. While the first NDC relied entirely on international support, the updated NDC commits to mobilize resources to meet 13% of the budget and will require international support to finance 87% of its budget.

2.1.6 Sendai Framework for Disaster Risk Reduction

This is a 15-year global agreement to reduce, prevent and respond to disaster risks across the globe. It aims to strengthen social and economic resilience to disasters caused by natural, biological and technological hazards by which are further exacerbated by climate extremes and slow onset events. It is a voluntary agreement that recognizes that the state has the primary role to reduce disaster risk, but that responsibility should be shared with other stakeholders, including local governments, the private sector, and other stakeholders. It aims at achieving substantial reduction of disaster risk and losses in lives, livelihoods and health in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries.

Kenya adopted the Sendai Framework in 2005.

2.1.7 Sustainable Development Goals (SDGs)

The Sustainable Development Goals were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet and ensure that by 2030, all people enjoy peace and prosperity. Kenya is committed to the 2030 Agenda for Sustainable Development that was adopted by world leaders in September 2015 at the United Nations (UN) Sustainable Development Summit. On 1st January, 2016 the 17 SDGs officially came into force. While the SDGs are not legally binding, governments are expected to take ownership, and establish national frameworks for their achievement. The 2030 Agenda includes dedicated goals for climate change (SDG 13), protecting, restoring and promoting sustainable use of terrestrial ecosystem (SDG 15) and mainstreaming climate change impacts and climate change actions across all the SDGs. The agenda introduces the overriding objectives of "leaving no one behind" that has strong implications for the definition, and selection of climate actions. This objective prioritizes the poorest and most marginalized people so that they progress at a higher rate than those that are better off to ensure that no one will be left behind, world leaders committed to end extreme poverty and curb inequalities by 2030 and underscored that no goal of the 2030 Agenda will be met until it is met for everyone.

2.1.8 AU Agenda 2063

The African Union's Agenda 2063 commits to climate change action that prioritizes adaptations and calls on member countries to implement the Programme on Climate Action in Africa, including a climate resilient agricultural development programme. Agenda 2063 commits to building climate resilient economies and communities and notes that participation in global efforts for climate change mitigation will support and broaden the policy for sustainable development.

2.2 National Policies on Climate Change

2.2.1 National Climate Change Response Strategy 2010

The National Climate Change Response Strategy (NCCRS) 2010 is the culmination of a year-long process to develop a comprehensive and concerted suite of strategies to respond to the challenges posed by climate change to Kenya's socioeconomic development. The objective of the strategy is to enhance understanding of the global climate change regime, negotiation process and develop priorities for Kenya.

The strategy highlights various measures for adaptation and mitigation to the impacts of climate change in all sectors of the economy. In the environment and water sector, the strategy gives priority to protection and rehabilitation of water towers and increased forest cover through farm forestry and afforestation.

The NCCRS includes indicative budgets and plans for line ministries. It is meant to guide the government in all activities and interventions aimed at addressing issues related to climate change; it consolidates all the national efforts and focus on climate change adaptation and mitigation.

2.2.2 National Climate Change Finance Policy 2016

The National Climate Finance Policy promotes the establishment of legal, institutional, and reporting frameworks for access to, and management of climate finance. The goal of the policy is to further Kenya's national development goals through enhanced mobilization of climate finance that contributes to low carbon climate resilient development goals. This Policy establishes the legal, institutional and reporting frameworks to access and manage climate finance, consistent with the institutional structures and framework set out in the Climate Change Act 2016. The goal of the Policy is to further Kenya's national development goals through enhanced mobilization of climate finance that contributes to low carbon climate resilient development goals.

2.2.3 National Climate Change Framework Policy 2018

The National Climate Change Framework Policy was developed to facilitate coordinated, coherent and effective response to the local, national and global challenges and opportunities presented by climate change. The policy adopts an overarching mainstreaming approach to ensure integration of climate change considerations into the development planning, budgeting and implementation in all sectors at all levels of government. The policy therefore aims to enhance the adaptive capacity and build resilience to climate variability and change, while promoting a low carbon development pathway.

2.2.4 National Adaptation Plan 2015-2030 (NAP)

The National Adaptation Plan (NAP) is Kenya's first plan on adaptation and demonstrates the Country's commitment to operationalize the National Climate Change Action Plan by mainstreaming adaptation across all sectors in the national planning, budgeting and implementation processes. Kenya's National Adaptation Plan 2015-2030 was submitted to the UNFCCC in 2017. The aim of NAP is to consolidate the country's vision on adaptation supported by macro-level adaptation actions that relate with the economic sectors and county level vulnerabilities to enhance long term resilience and adaptive capacity. This NAP presents adaptation actions that cover the timeframe 2015 - 2030. NAP is aligned to MTP II in which climate change adaptation is represented in the drought risk

management and ending drought emergencies, environment, water, energy, agriculture, livestock, and fisheries sectors. NAP proposes macro-level adaptation actions and sub-actions in 20 planning sectors, categorizing them into short-, medium- and long-term time frames.

2.2.5 The Climate Change Act 2016

The Climate Change Act (No. 11 of 2016) is the first comprehensive legal framework for climate change governance in Kenya. The objective of the Act is to "Enhance climate change resilience and low carbon development for sustainable development of Kenya." The Act establishes the National Climate Change Council (Section 5), Climate Change Directorate (Section 9), and Climate Change Fund (Section 25).

2.2.6 The Forest Conservation and Management Act 2016

The Act makes provision for the conservation and management of public, community and private forests and areas of forest land that require special protection, defines the rights in forests and prescribes rules for the use of forest land.

Section 6 (3) (a) (iii) highlights the need to develop "programmes for achievement and maintenance of tree cover of at least 10% of the land area of Kenya". Section 37 (1) requires every County Government to, establish and maintain arboreta, green zones or recreational parks for use by persons residing within its area of jurisdiction. The act is therefore relevant and supports climate change adaptation and mitigation commitments of the Country.

2.2.7 The Energy Act 2019

The Energy Act 2019 has a very broad scope, covering all forms of energy, from fossil fuels to renewables. The Energy Act mandates the government to promote the development and use of renewable energy, including biodiesel, bioethanol, biomass, solar, wind and hydropower. The Energy Act provides a useful supporting framework for the transition to a green economy with likely gains in environmental protection and climate change.

2.2.8 The Water Act (No 43 of 2016)

The water act provides for the regulation, management and development of water resources and water and sewerage services in line with the Constitution. The water Act states that every person has the right to access water resources. Access to water increases resilience to climate change.

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

NCCAP 2018-2022 furthers the achievement of Kenya's development goals by providing mechanisms to realize low carbon climate resilient development. It emphasizes sustainability, while prioritizing adaptation and enhanced climate resilience for vulnerable groups. NCCAP 2018-2022 has identified seven priority areas, including: Disaster Risk Management; Food and Nutrition Security; Water and the Blue Economy; Forestry; Wildlife, and Tourism; Health, Sanitation, and Human Settlements; Manufacturing; and Energy and Transport. NCAAP aligns with the Government's Big Four Agenda, and the Sustainable Development Goals (SDGs).

2.3 Tana River County Climate Change Legislations and Policies

2.3.1 The Tana River County Climate Change Act 2021

This Act was formulated with the objective of enhancing climate resilience through development, management, implementation, regulation and monitoring of adaptations and mitigation measures and actions. The Act in section 32(1) states that as one of the measures and actions for responding to climate change, the County Executive Committee Member through a participatory process involving relevant stakeholders, formulate a County Climate Change Action Plan. Additionally, the Act {Section 32(2)} specified that the County Climate Change Action Plan shall be for a period of five years and shall run concurrently with the National Climate Change Action Plan and County Integrated Development Plan.

2.3.2 The Tana River County Climate Change Finance Policy 2023

The Policy provide guiding principles and Framework to promote climate finance flows, tracking of climate finance, enhancing private sector participation, technology transfer and equitable benefit sharing from climate change interventions in the county.

The Policy objectives are to: - provide an overarching guidance framework for climate finance including putting in place coordination system for mobilizing and managing climate finance,; enhance and streamline the implementation of public finance management in relation to climate financing; establish a framework for tracking, monitoring, accounting for, evaluating and reporting on sources, applications and impacts of climate finance; enhance the capacity of the county to mobilise climate change finance to support local climate adaptation and mitigation actions; and encourage and facilitate private sector participation in climate relevant financing opportunities.

CHAPTER 3: PRIORITY CLIMATE CHANGE ACTIONS

3.1 Identification of Strategic Climate Action Priorities in PCRA

The CCCAP 2023-2027 takes cognizance of the climate hazards in the county and their impacts in all the livelihoods and socio-economic sectors and focus on the adaptation strategies. From the data findings in PCRA in all 15 wards, this chapter, takes a cross-sectoral perspective and focus on strategic investment priorities that strengthen the adaptive capacity and resilience of socio-economic systems that are in line with the Third CIDP. The strategic adaptation investments address the needs of all vulnerable wards/populations/ communities to enhance their resilience.

Hazard	Adaptation strategy	Livelihood/Economic System	Priority Actions	Actors	Timeline
Drought	Enhance community resilience	Crop Production	• Crops production through irrigation • Procurement of drought resistant seeds. • Having subsidized agricultural inputs to increase production. • Training and capacity building of farmers on climate Smart Agriculture • Establishment of new irrigation schemes • Enhance crop insurance initiatives • Establish food storage facilities • Promote use of simple improved storage technologies e.g., hermetic bags • Enhance aflatoxin control • Enhance value addition and processing of key crops • Cash transfer to the vulnerable groups and school feeding programs for schools • Adopt diversified adaptive enterprises/value chains for sustained livelihood and nutrition security.	CG, Nature Kenya, KFS, CISP, KEFRI, KALRO, Concern Worldwide, World Vision, WHH, ASDSP, MoA, NIA, KMD, GROOTS Kenya, Department. of Trade, KCSAP, ADS *Pwani*, IAS Kenya, Public Health	2023/2024, 2024/2025, 2025/2026 3FYs

			E.g mixed farming, bee keeping • Strengthening of market and financial linkages • Adopt alternative extension approaches e.g., lead farmers, FFS model etc. • Educate farmers on post-harvest handling and management.		
		Livestock production	• Rangeland reseeding • Supply of drought resistant pasture seeds to livestock keepers • Improving livestock breeds • Sustainable livestock insurance • Establish pasture storage facilities • Conservation of pastures for use in the drought season. • Training and capacity building of communities on fodder production and conservation to enhance feed lotting. • Formation and training of range management committees • Provision of livestock supplementary feeds • Capacity building on destocking of livestock • Adoption of the Grazing land Act	Department. of Livestock, KCSAP, CISP, NK, WHH, Concern Worldwide, World Vision, World Concern ADS Pwani, Groots Kenya, ADSP, National Government, Red Cross, NDMA,	2023-2026 3FYs

			• Diversification of livelihoods i.e., poultry farming, apiculture • Strengthening market linkages • Vaccination of livestock • Slaughter offtakes • Improve of watering points for livestock • The county government to give land to communities for pasture production		
		Fish farming	• Low-carbon aquaculture productions and promotion of fish farming. • Restocking of fish in fish farms and ponds. • Procurement and supply of fish farming equipment. • Capacity building on best aquaculture practices, hygienic fish handling, processing, storage and value addition. • Strengthen market linkages	KEMFRI, Department. of Fisheries and Environment, NEMA, ADS Pwani, KEMFSED, farm Africa, Nature Kenya, CISP, WHH	2023-2026 3 FYs
	Enhance continuous supply of safe and adequate water	Water Access	• Conducting hydrological surveys and mapping of all water sources • Desilting and construction of water pans, silted lakes, earth dams • Drilling and desalination of boreholes in drought prone areas • Upgrading and solarization of existing boreholes and wells	NEMA, CG, WRMA, Nature Kenya, NG, Department. of Water, CISP, Concern Worldwide, World Vision, WFP, WHH, GIS, CDA, CWWDA, ADS Pwani, Islamic Relief, Well-wisher, Team and Team, KWAHO, Red cross,	2023-2027

			• Supply and installation of rain water harvesting structures. • Water tracking • Strengthening of the urban water supply systems • Construction of water structures on *laggas* • Restoration of the Boka spring and its environments • Installation and extension of water pipelines from the river Tana to Bangale, Wayu, Garsen West Wards and other areas far from the river with water scarcity. • Provision of water storage tanks/ facilities to schools, homes and health facilities • Extension of water supply to all villages • Adoption and implementation of the Tana River water Act 2020 • Formation and capacity building of WRUAs on water catchments in the county.		
		Water Quality control	• Capacity building and sensitization of water treatment methods at household levels. • Distribution of water chemicals at household levels • Sensitization on water use efficiency	NEMA, CG, WRA, Nature Kenya, National Government, Department. of Water, CISP, Concern Worldwide, World Vision, WFP, WHH, public health CDA, NDMA, CWWDA,	

			• Regular water quality monitoring • Chemical analysis of water and sites • Distribution of NFIs • Promote sanitation and hygiene		
	Increase forest coverage	Forestry	• Reclamation of degraded areas through reseeding, tree planting, protection against encroachment etc. • Practicing on-farm agroforestry • Provision of tree seedlings and planting of trees in institutions • Support communities and conservation groups to establish tree nurseries • Formation and capacity building of CFAs, WRUAs and other CBOs on protection and management of forests and natural resources • Sporadic monitoring of forests • Gazettement of forests • Empowerment of community rangers to support forest management • Implementation of TIPS • Sensitization of communities to adopt renewable energy sources	CG, Nature Kenya, CISP, KEFRI, KALRO, KEMFRI, NEMA, ADS Pwani, World Vision, KCSA, WFP, communities, National government, KFS, Conservancies, Eden restoration, WHH	2023-2026

	Enhance harmony in the use of natural resources.	Resource based conflicts	• Mark and secure livestock/wildlife grazing areas, malkas, water points corridors and routes. • Establishment of electric fences for wildlife habitats. • Capacity building of community on natural resource management • Adopting the county grazing act. • Compensation for damages caused by wildlife i.e., crop, livestock, human life • Community barazas/ meeting for peacemaking/reconciliation • Security patrols to beef-up security in villages.	KECOSCE, KWS, Community, village elders/peace committees, KPLC, CG, Ministry of interior and Coordination, conservancies	
Floods	Resettlement program	Human settlements	• Implement the County cluster program on eco-villages to resettle communities from flood zones to higher grounds. • Support community with food, toiletries and temporary shelters. • Develop an evacuation plan • Sensitization on Water treatment methods, hygiene promotions and distribution of water chemicals to the affected populations	CG, NG, Red Cross, WFP, FAO, Concern Worldwide, World Vision, WFP, WHH, public Health, WHH	2023-2026

			• Security patrols to beef-up security in villages.		
Floods	Resettlement program	Human settlements	• Implement the County cluster program on eco-villages to resettle communities from flood zones to higher grounds. • Support community with food, toiletries and temporary shelters. • Develop an evacuation plan • Sensitization on Water treatment methods, hygiene promotions and distribution of water chemicals to the affected populations • Cash transfer to the affected population • Capacity development of WRUAs, CFAs and other CBOs • Community awareness and sensitization on issues related to floods with inclusive of vulnerable groups like children, women and PLWD	CG, NG, Red Cross, WFP, FAO, Concern Worldwide, World Vision, WFP, WHH, public Health, WHH	2023-2026
	Early warning information systems	Disaster response	• Continuous dissemination of early warning information using innovative technologies such as mobile phones	KMD, NDMA, CG, Red cross, community, concern worldwide,	2023-2026

			• Capacity building, enhanced resilience and sensitization of communities on impacts of floods and other related disasters		
	Invest in infrastructure	Infrastructure Development	• Construction of dams, dykes to harness excess waters, • Construction of storm water drainage systems in towns. • Construction of flood-proof bridges and roads in floods prone areas and *laggas*. • Protection and restoration of riparian land and other water catchment areas. • Tree planting along the shoreline, riparian and bare land • Building gabions • Construction of emergency response centers for emergencies	NEMA, KFS, Eden Restoration, NK, KeRRA, NCA, KenHA, municipality	2023-2027
			• Enhance utilization of mobile clinics for immediate response on diseases outbreak.	Department. of Health	
Pests and Diseases	Enhance pest and disease control	Crops and Livestock Production	• Training and capacity building of community groups on Integrated pests and crop management using farmer centered methodologies such as FFS and PFS.	Department. of Agriculture and Livestock, KCSAP, NK, CISP, NK, WHH, Concern Worldwide, World Vision, World Concern ADS Pwani, KMD, Local	2023-2027

			• Creation of awareness on pests and diseases through radio talk shows and barazas	Communities	
			• Adopt disease tolerate crops and improve livestock breeds • Conduct vaccination and immunization programs • Leverage on ITK (indigenous technical knowledge) on management of pests and diseases in crops and livestock • Livestock and crop disease surveillance and monitoring • Construction of cattle dips and cattle crush • Invest in livestock and crop insurance • Destocking of livestock • Procurement of improved livestock breeds and disease tolerant crops • Support extension services *mashinani* • Capacity-build local based research on pests and disease identification and control • Strengthen linkages with research institutions i.e., KALRO	Department. of Agriculture and Livestock, KCSAP, NK, CISP, NK, WHH, Concern Worldwide, World Vision, World Concern ADS Pwani, KMD, Local Communities	

Invasive species (P.juliflora)	Sustainable management of P. *juliflora*	Land use	• Mechanical uprooting of Mathenge and bush clearing for other productive land use. • Promote mathenge species as an alternative source of energy. • Conduct further research on management and control of the spread of Mathenge. • Training and capacity building of communities on management and control of Mathenge. • Reseeding of rangelands	NK, Eden Restoration, CG, Department. of Environment, NG, KEFRI, KMD, World Vision, Concern Worldwide, World Concern, NEMA, WHH NDMA, ADS Pwani, wood weed	2023-2027
Sea water intrusion	Improve shoreline eco system	Sustainable utilization of the shoreline ecosystem	• Construction of sea walls and gabions • Training, capacity building and sensitization on restoration initiatives along the coastline. • Construction of brooks in water channels leading to surface sea water intrusion. Among them is Kalota, Handaraku brook. • Tree Planting along the coast line. • Monitoring sea water intrusion	CG, NG, NK, WFP, ADS Pwani, KEMFRI, Department. of Fisheries and Environment	2023-2027
			• Promote crops tolerant in saline environment to maximize production	KALRO, MoA, Department. of Agriculture, ASDSP, KEPHIS, CISP, WHH, World Vision, Concern Worldwide, World Concern,	

3.2 Priority County Climate Change Actions

Introduction

Stakeholder consultations and extensive desktop studies show that most sectors of Tana River County economy are prone to impacts of climate change. If left unchecked, these impacts will derail the development agenda of the county, and the contribution of the county towards the attainment of Kenya's Vision 2030 development agenda. This chapter outlines the strategy that Tana River County will use to respond to the impacts of climate change in order to sustain the economic and social well-being of its citizens and their environment. This strategy is based on the amplification of appropriate on-going climate change adaptation and mitigation actions, and the adoption of other potential climate actions. It is aligned to the National Climate Change Action Plan, County Integrated Development Plan (CIDP) and Sustainable Development Goals (SDGs). It also clarifies the stakeholders who need to be engaged in these activities and the resources required and suggests the timelines that specific actions need to be carried out.

Vision

Tana River County has a low carbon, climate resilient economy that sustains the livelihoods of its citizens while contributing to national development.

Goal and Strategic Objectives

The goal of this action plan is to "mainstream climate change adaptation and mitigation strategies in the economic production and development activities to improve the living standards of Tana River County residents."

This goal will be achieved through eight strategic objectives namely:

1. Food and Nutrition Security
2. Water Security and the Blue Economy
3. Ecosystem Conservation and Sustainable Land Management
4. Climate Proof Infrastructure, Green energy production and use
5. Sanitation, Health and Human settlements
6. Knowledge management and capacity building of community, stakeholders and County officials
7. Sustainable financing for climate change action
8. Governance and coordination of climate change adaptation and mitigation.

Objective 1: Food and Nutrition Security

Food and nutrition security is a key component in resilience building. Food production sector, (crop farming, livestock, or fisheries) is highly vulnerable to the impacts of climate change. Inadequate food and nutrition have serious health consequences, and affects social and economic sectors. In Tana River, prolonged droughts, invasive species (Prosopis juliflora), floods and sea water intrusion are perhaps some of the most important factors that limit county food production and thus limiting the ability of the county to be food secure.

The low food production is worsened by the use of uncertified seeds that more often are not resistant to drought. Majority of the communities have shifted and no longer produce "traditional crops" that are known to be nutritive and resilient to drought and other climate hazards. To enhance crop production, the county will invest and partner with relevant research institutions to conduct research, and identify suitable crops that are adapted to the current climate hazards and promote their production. Being an agriculturally dependent county, most of the economic activities are based on agriculture implying that reduced agricultural production leads to a reduction in employment opportunities and depressed overall economic wellbeing. As such, the impacts of climate change on food and nutrition security needs urgent attention.

Interventions that need to be implemented to make the crop, livestock, and fisheries production sector robust, vibrant and resilient to climate change are listed in Table 1. Agriculture, livestock, fishery production and nutrition are devolved functions implying that the county government, and in particular the responsible department has the overall mandate in this area. However, the county government has to work closely with other stakeholders to realize the food and nutrition security for the county.

Table 3: Climate Change Action Plan for Food and Nutrition Security

	Objective 1: Enhanced Food and Nutrition Security
	Issue/Problem: Unpredictable weather patterns/extreme weather events/food scarcity/increased disease incidences/malnutrition/loss of climate resilient crop and animal breeds/poverty/environmental degradation
	SDG: Goal 1: No Poverty; Goal 2: Zero Hunger; Goal 3: Good Health and Well-Being for People; Goal 5: Gender Equality; Goal 8: Decent Work and Economic Growth; Goal 9: Industry, Innovation, and Infrastructure; Goal 10: Reducing Inequalities; Goal 13: Climate Action; and Goal 15: Life on Land

Sub-sector	Climate Change Activity	Stakeholders	Indicators	Priority	Timeframe	Wards	Budget
Crop production	Diversification of crops	Department of Agriculture, Extension officers, Research institutions e.g., KARLO, Community, CSOs Farmers	Level of diversification	Urgent	Continuous	All wards	25M
	Enhance farmer access to farm inputs (adoption of fast maturing, highly nutritive and drought-resistant varieties, fertilizer, agro-chemicals, tractor services, water pumps, credit etc.)	Department of Agriculture, Extension officers, Research institutions e.g., KARLO; CSOs, Farmer Cooperatives, Farmers	Number of farmers engaged. Quantity of farm inputs supplied	Urgent	Continuous	All wards	40M
	Promote use of organic farming	Department of Agriculture, Extension officers, Research institutions e.g., KARLO and Egerton University, CSOs Farmers	Number of farmers trained and participating	Urgent	Continuous	All wards	15M
	Construction and installation of soil testing facility	Department of Agriculture, KARLO and Universities	No of soil testing facilities constructed	Urgent	Year 3	Madogo, Chewani and Garsen south	30M

Enhance soil testing as a means of improving soil fertility interventions	Department of Agriculture, KARLO and Universities	No of soil samples tested	Urgent	Continuous	All wards	5M
Enhance awareness on integrated soil fertility management, IPM, IDM	Department of Agriculture, KARLO and Universities	No of people reached	Urgent	Continuous	All wards	10M
Expand irrigation potential by establishing new minor irrigation schemes and repairing dilapidated ones while also promoting appropriate irrigation techniques such as drip irrigation	Department of Agriculture, Farmer cooperatives, CSOs,	No of irrigation schemes established No of schemes repaired Number of farmers using drip irrigation and other appropriate technologies.	Urgent	Continuous	All wards	120M
Promote the use of solar powered irrigation systems as alternatives to diesel powered systems	Department of Agriculture, Farmer cooperatives, CSOs, Department of Environment and Climate Change	No of farmers adopting green technology No of solar powered systems procured and distributed	Urgent	Year 3 and 4	Hirimani, Chewani and Garsen North	50M
Promote innovative water harvesting techniques	Department of Agriculture, Extension officers CSOs, WRA Farmers	Number of Earth dams excavated and in use for irrigation.	Urgent	Year 2 and 3	Wayu and Garsen West	50M
Invest in research on crop varieties, disease and pests	Department of Agriculture, Extension officers, Research institutions e.g., KARLO, CSOs Farmers	Percentage of budget used for research. Number of research initiatives supported.	Urgent	Continuous	All wards	50M

	Promote value addition of harvested crops	Department of Agriculture, Extension officers, CSOs, farmers	Number of value addition projects	Urgent	Continuous	All wards	40M
	Invest in early warning systems to determining cropping cycles and planting times.	Department of Agriculture, Extension officers, Met Department, CSOs, Research Institutions, Farmers	Early warning infrastructure in place and working	Very Urgent	Year 1	All wards	15M
	Promote indigenous knowledge in crop production	Department of Agriculture, Extension officers, Research institutions, CSOs, Farmers	Indigenous knowledge documented. Orphaned crops seed available	Urgent	Continuous	All wards	5M
	Enhanced adoption of certified seeds	Department of Agriculture, Extension officers, Research institutions, KEPHIS, CSOs, Farmers	Number of farmers using certified seeds	Urgent	Continuous	All wards	60M
	Engaging youth, women, and other vulnerable groups in appropriate commercial farming technologies	Department of Agriculture, Extension officers, Research institutions, CSOs, Farmers	Number of vulnerable groups supported	Urgent	Continuous	All wards	25M
	Awareness creation and information sharing	Department of Agriculture, Extension officers, Research institutions, CSOs, Farmers	Number of awareness meetings held. Level of awareness of climate change impacts on farming	Urgent	Continuous	All wards	30M
	Promote agroforestry activities	Department of Agriculture, Extension officers, KFS, KEFRI, Farmers	Number of farmers practicing agroforestry	Urgent	Continuous	All wards	35M

	Promote water harvesting for irrigated agriculture and conservation techniques	Department of Agriculture, Extension officers Farmers	Acreage under irrigated agriculture	Urgent	Continuous	All wards	30M
	Promote uptake of crop insurance	Department of Agriculture, Insurance companies, Banks and farmers	Number of farmers with insurance covers for crops	Very urgent	Continuous	All wards	10M
Reduction of post-harvest losses	Promote use of simple improved storage technologies e.g., hermitic bags and metal silos	Department of Agriculture, CSOs, Department. Public Health	No of HHs adopting the technology No of storage bags procured	Very urgent	Continuous	All wards	15M
	Awareness creation on post-harvest handling and management	Department of Agriculture, CSOs, Department. Public Health	No of meetings held No of people reached	Very urgent	Continuous	All wards	20M
	Training farmers on available grain storage technologies	Department of Agriculture, CSOs, Department. Public Health	No of meetings held No of people reached	Very urgent	Continuous	All wards	20M
	Setting up of revolving funds at cooperative level to improve farmer access to credits	Department of Agriculture, CSOs, directorate of cooperative, Dep of Finance and economic planning	Amount allocated to revolving fund	Urgent	Year 2	All wards	100M
	Improve market access information	Department of Agriculture, CSOs, directorate of cooperative, department of trade	Market linkages established	Very Urgent	Year 1	All wards	20M
	Enhance aflatoxin control	Department of Agriculture, Department of Public Health, KEPHIS	No of quality tests done	Very urgent	Year 1	All wards	10M

	Establishment of fruit drying facilities (bananas and Mangoes)	Department of Agriculture, CSOs, directorate of cooperative, Department of Trade, department of Finance	No of facilities established	Urgent	Year 3	All wards except Wayu, Bangale, and Hirimani	30M
	Establishment of Mango cold storage facility	Department of Agriculture, CSOs, Directorate of cooperative, Department of Trade, Department of Finance	No of cold storage facilities established	Urgent	Year 3	All wards except Wayu, Bangale and Hirimani	25M
	Enhance Mango marketing through product certification and branding	Department of Agriculture, CSOs, directorate of cooperative, Department of Trade, Department of Finance	No of relevant certifications attained	Urgent	Year 4	All wards	5M
	Enhance awareness levels and promote implementation of policies and legislations supportive of production	Department of Agriculture, CSOs, directorate of cooperative, Department of Trade,	No of policies supported	Urgent	Continuous	All wards	10M
	Installation of rice mills to enhance value addition (esp. in Hola and Bura schemes)	Department of Agriculture, CSOs, Directorate of Cooperative, Department of Trade, Department of Finance	No of Rice mills installed	Urgent	Year 2	Hirimani and Chewani	20M
	Construction of grain aggregation centres and storage facilities	Department of Agriculture, CSOs, directorate of cooperative, Department of Trade, Department of Finance	No of aggregation centers established No of storage facilities constructed	Urgent	Year 4	Hirimani and Chewani	35M

Enhance nutrition	Promote production of nutrition sensitive crops such as the green leafy vegetables, High Iron Beans (HIB), Orange Freshed, Sweet Potatoes.	Department of Agriculture, CSOs, directorate of cooperative, Department of trade, Department of Health	Acreage under nutrition sensitive crops	Urgent	Continuous	All wards	10M
	Promote demonstrations on utilization of local foods	Department of Agriculture, CSOs, directorate of cooperative, Department of trade, Department of Health	No of demonstrations held	Urgent	Continuous	All wards	10M
Livestock production and veterinary services	Establishment of Pastoral field schools for extension service provision	Livestock production, Veterinary, KALRO, CSOs, Livestock related cooperatives	No of PFS established	Urgent	Year 2	Wayu, Bangale, Chewele, Gasen West and Hirimani	5M
	Adoption of improved livestock breeds (*Boran* Bulls, Sahiwal, *Galla* goats, German Alpine dairy goats etc)	KALRO, Farmers, Veterinary Officers, Private feed and livestock drugs distributors, County Government	Number of farmers with improved breeds	Urgent	Year 2 and 3	All wards	15M
	Enhance adoption of Artificial Insemination (AI) technology for breed improvement	KALRO, livestock Farmers, Veterinary Officers, Department of livestock production, CSOs	No of AIs done	Urgent	Continuous	All wards	5M
	Facilitate setting up and surveillance of diseases (tsetse fly traps)	Vet Department, KALRO	No of traps set up	Urgent	Continuous	All wards	15M

Enhance surveillance and vaccination of livestock against endemic and sporadic, Zoonotic diseases	Vet Department, KALRO	No of vaccinations done No of livestock vaccinated Vaccination reports	Urgent	Continuous	All wards	35M
Construction of cattle dips 'crush" to solve issues of pests and diseases.	Vet Department, KALRO	No of vaccinations done No of livestock vaccinated Vaccination reports	Urgent	Year 1	All wards	15M
Enhance local poultry production (KALRO improved *Kienyeji* etc)	KALRO, Farmers, Veterinary Officers, Private feed and livestock drugs distributors, Department of Livestock production	No of chicken distributed No of farmers/ HHs benefiting from the enterprise	Urgent	Year 1	All wards	3M
Investing in production and storage of drought-resistant fodder crops, up scaling feedlots and enhancing area under irrigated fodder	KALRO, Farmers, Veterinary Officers, Private feed and livestock drugs distributors, County Government, CSOs	Amount of drought resistant fodder produced	Urgent	Continuous	All wards	35M
Purchase fodder harvesting, bailing, feed pelleting and feed mixer machines (grass cutters, bailing machines etc.)	Department of Livestock production, CSOs,	No of machines purchased and distributed	Not urgent	Year 5	All wards	50M

Establishment and protection of livestock watering points along major livestock movement routes	Department of Livestock production, CSOs, NDMA, Department of Finance, Department of Water	No of watering points established	Urgent	Year 1 through to Year 5	All wards	10M
Promote water harvesting and conservation techniques	Farmers, Veterinary Officers, Water Provision Service Providers, Research Institutions, WRA County Government, CSOs	Number of earth dams excavated Number of people engaged in water harvesting in their farms	Very Urgent	Continuous	All wards	70M
Promote timely culling and destocking	Farmers, Veterinary Officers, Health Department, County Government	Report on culling and stocking levels	Urgent	Continuous	All wards	7M
Enhancement of appropriate technologies in livestock production husbandly	Farmers, Health Department, Private feed and livestock drugs distributors, County Government, CSOs	Report on technology uptake Change in livestock production	Urgent	Continuous	All wards	15M
Enhance sensitisation, awareness creation, capacity enhancement and information sharing (trade fairs, shows and exposure tours/field visits)	Farmers, Veterinary Officers, County Government, CSOs	Number of sensitization/ awareness/ capacity building meetings/work shops	Urgent	Continuous	All wards	10M

	Introduce alternative livelihood options	Farmers, Veterinary Officers, County Government, CSOs	Diversity of livelihood options	Urgent	Continuous	All wards	15M
	Invest in value addition and research	Farmers, Veterinary Officers, County Government, CSOs	Change in farmer incomes due to value addition Number of ongoing research projects	Urgent	Continuous	All wards	10M
	Livestock insurance schemes	Farmers, Veterinary Officers, Insurance companies, Banks, County Government, CSOs	Number of farmers with insurance for livestock	Urgent	Continuous	All wards	30M
	Awareness creation and information sharing	Farmers, Veterinary Officers, County Government, CSOs	Number of awareness events, trainings etc.	Urgent	Continuous	All wards	15M
	Promote bee keeping as alternative IGA by training local youth and other artisans in production of bee hives	Department of Livestock production, Livestock Farmers, Department of Veterinary, Department of trade and investment	No of hives purchased and distributed No of HHs trained and benefiting from Bee keeping	Urgent	Continuous	All wards	10M
	Establish processing centres for honey, Milk, Meat, fodder, hides, horns and bones and other livestock by products	Department of Livestock production, Livestock Farmers, Department of Veterinary, Department of trade and investment	No of processing facilities established	Urgent	Year 2 through to year 5	All wards	40M

	Implementation and enforcement of Tana River Grazing Act	Department of Livestock Production, Department of veterinary, livestock and crop farmers, Department of Environment and Climate change	No. of programmes implemented	Urgent	continuous	All wards	5M
Fisheries production	Enhance adoption of sustainable modern fish farming technologies	County Government – Fisheries department CBOs, fish farmers	Number of fish farmers using modern technologies	Urgent	Continuous	All wards	10M
	Stock Natural water bodies with variety fingerlings	Fisheries department CBOs, fish farmers, CSOs	No of water bodies stocked No of fingerlings procured	Urgent	Continuous	All wards except Wayu, Bangale and Hirimani	10M
	Support operationalization of fish cold storage facilities in Kipini and surrounding areas	Fisheries department, fish cooperative, CBOs, fish farmers, CSOs	No of cold storage facilities operationalized	Urgent	Year 3	Kipini west and Kipini east	7M
	Enhance surveillance for illegal fishing activities and gears along the river channels and within the Ocean	Fisheries department, fish cooperative, CBOs, fish farmers, CSOs	No of enforcement actions taken	Urgent	Year 2	All wards except Wayu, Bangale and Hirimani	5M
	Enforcement of pollution control measures and standards	County Government, NEMA, WRA, WRUAs	Water quality reports Number of arrests, warnings and stop orders	Very Urgent	Continuous	All wards	5M
	Awareness creation, sensitization, and capacity building	County Government, Private sector, BMUs, CSOs, CBOs	Conflicting laws and regulations documented Number of patrols Number of arrests	Urgent	Continuous	All wards	7M

	Value addition and creation of enabling markets	County Government, Fisheries Department Private sector, KFS, WRUAs	Number of trainings conducted, Number of units/ individuals trained	Urgent	Continuous	All wards	8M
	Comprehensive stakeholder involvement-coordination	County Government, Private sector, CSOs, CBOs	Number of consultative for a conducted	Urgent	Continuous	All wards	8M
	Harmonization and enforcement of existing laws and policies	County Government, NEMA, WRA	Conflicting laws and regulations documented Number of patrols Number of arrests	Urgent	Year 1	All wards	5M
	Capacity building Beach management units	County Government, Private sector, BMUS	Number of trainings conducted, Number of units/ individuals trained	Urgent	Year 2	Kipini East and Kipini West	10M
	Develop appropriate legislative instruments to regulate fishing	County Government, County Assembly, CSOs	Legislative documents and regulations documented and ratified	Urgent	Year 2	All wards except Wayu, Bangale and Hirimani	3M
	Engaging youth, women and other vulnerable groups in fish production	County Government, County Assembly, CSOs	Number of members of vulnerable groups engaged	Urgent	Continuous	All wards	10M
SUB TOTAL							1.443B

Objective 2: Enhanced Water Security and Blue Economy

Tana River County has 76 km of pristine coastal strip that is rich in fisheries resources. A number of fresh water resources and water supply infrastructures also exist, yet the county still needs to do more to ensure greater benefits are derived from its fisheries sub-sector and the fresh water resources within its boundaries as well as enhance water supply capacity of the county to its residents. This objective seeks to enhance resilience of the Blue Economy and water sector by ensuring access to and efficient use of water for agriculture, manufacturing, domestic, wildlife, and other uses. Specifically, the county will seek to

a. Increase annual per capita water availability through increased investment and development of water supply infrastructure
b. Enhance investment in climate proof water harvesting and water storage infrastructure and improve flood control
c. Increase affordable water harvesting-based livelihood programmes
d. Promote water efficiency (monitor, reduce, re-use, and recycle)
e. Improve access to good quality water
f. Improve climate resilience of coastal communities
g. Climate proof coastal infrastructure

To take advantage and enhance the benefits of the resources found within the county, there is the need to take stock of all the available surface and ground water. Interventions that can help harvest and store rain water are particularly welcome. Interventions can be used to enhance water security in the county (Table 2) in the face of climate change revolve around ecosystem conservation, policy and legal frameworks and compliance, and exploring untapped water resources.

Table 4: Climate Change Action Plan for Water Security and Blue Economy in Tana River County

Objective 2: Enhanced Water Security and Blue Economy						
Issue/Problem: Water catchment degradation, Drought and Water scarcity, pollution, fragmented jurisdiction						
SDG: Primarily Goal 6: Clean Water and Sanitation but also Goal 1: No Poverty; Goal 2: Zero Hunger; Goal 3: Good Health and Well-Being for People; Goal 5: Gender Equality; Goal 9: Industry, Innovation, and Infrastructure; Goal 11: Sustainable Cities and Communities; Goal 13: Climate Action; Goal 14: Life Below Water; Goal 15: Life on Land; and Goal 17: Partnerships for the Goals						
Climate Change Activity	Stakeholders	Indicators	Priority	Timing	Wards	Budget
Invest in Construction and/or rehabilitation of climate proof infrastructure (Mega dams, sub surface dams, check dams and barkards) and water harvesting techniques	Department of Water, NDMA, CWWDA, TAWASCO	No of climate proof infrastructure constructed	Urgent	Continuous	All wards	50M
Drilling and solarisation of larger diameter boreholes in urban centres	Department of Water, CWWDA, TAWASCO	No of boreholes drilled and solarised	Urgent	Year 2 to Year 5	All wards	25M
Construction of solar powered desalination plants especially in the hinterlands	Department of Water, CWWDA, TAWASCO	No of desalination plants constructed	Urgent	Year 2	Bangale, Chewele, Sala, Wayu, Garsen West and Garsen South	35M

Enhance supply of safe and adequate water for marginalized groups through extension of water pipelines e.g from River Tana to Bangale	Department of Water, CWWDA, TAWASCO, CSOs	Proportion of marginalized people with access to safe water.	Urgent	Continuous	Bangale, Chewele, Sala, Wayu, Garsen West, Kipini West and Garsen South	40M
Restoration through indigenous tree planting along critical water catchment areas	Department of Water, Department of Environment and Climate Change, TAWASCO Water Towers Agency, KFS, WRA, CFAs, WRUAs, CSOs	Area Restored No. of trees planted.	Very Urgent	Continuous	All wards	6M
Enforcement of existing laws on water conservation	Department of Water, WRA, NEMA	Reports, No of Arrests, convictions.	Very Urgent	Continuous	All wards	3M
Enactment of the county water laws as necessary.	Department of Water, County Assembly, CSOs	No. of laws enacted.	Urgent	Year 1	All wards	8M
Conduct studies to monitor groundwater.	County Government, WRA, Research Institutions	Study report	Very Urgent	Year 1 and 2	All wards	10M
Domesticate national groundwater policy	County Government, WRA, CSOs	Domesticated policy document.	Urgent	Year 3	All wards	3M
Reforestation to achieve a 30% tree cover	County Government, KFS, CSOs, Private land Owners, CFAs WRUAs	Reports on tree cover	Urgent	Continuous	All wards	15M
Enforcement of relevant environmental laws and policies	NEMA, County Government, Public Health Department	Reports, No of Arrests, convictions.	Urgent	Continuous	All wards	3M
Restoration of wetlands (lakes, *laggas* and riparian zones)	County Government, NEMA, WRA, WRUAs, CFAs, CSOs, KFS	Acreage restored.	Urgent	Year 2 and 3	All wards	10M
Promote information sharing.	County government, NEMA, WRA CSOs,	Meetings, reports, magazines, newsletters.	Urgent	Continuous	All wards	15M
Conduct hydrological studies.	County Government, Research Institutions, CSOs	Study reports	Urgent	Year 2 and 3	All wards	10M

Spatial planning of wetlands and water catchments.	County Government, NEMA, Research Institutions, CSOs, Water towers Agency	Plan documents	Urgent	Year 2	All wards	10M
Promote appropriate water harvesting technologies for institutions and domestic use	County Government, WRA, WRUAs	Reports	Urgent	Continuous	All wards	15M
Engaging vulnerable groups (including youth, women and indigenous communities) in habitat restoration, water harvesting.	County Government, CSOs, KFS, WRUAs, WRA	Report on level of engagement of vulnerable groups.	Urgent	Continuous	All wards	10M
Enhance restoration of water filter systems in water pans	Department of Water, CDA, WRUAs, WRA,	No of water filter systems restored	Urgent	continuous	All wards	10M
	Department of Environment and Climate Change, TAWASCO					
SUB TOTAL						498M

Objective 3: Ecosystem Conservation and Sustainable Land Management

Sustainable and productive management of land and land resources are enshrined in Chapter 5 of the Constitution of Kenya, which among other things, stipulates that the State shall work to achieve and maintain a tree cover of at least 10% of total land area. Tana River County Climate Change Action Plan will contribute to restore, preserve, and sustainably manage forest and other ecosystems that play an essential role in Kenya's economy and therefore play its part in achievement of the national targets.

Deforestation and forest degradation is a significant problem in Kenya and is driven mainly by clearance for agriculture that is linked to rural poverty and rapid population growth, unsustainable utilisation of forest products (including timber harvesting, charcoal production, and grazing in forests), and past governance and institutional failures in the forest sector.

The negative impacts that result from deforestation (such as soil erosion and increased flooding) are exacerbated by climate change. Climate change is likely to affect the growth and development of tree species, resulting in reduced biodiversity and capacity to deliver important forest goods and services. Climate change also impacts biodiversity and wildlife, with subsequent impacts on tourism. Over the long term, climate change is expected to shift species distribution, reduce population size, and lead to extinction of some wildlife species.

Climate change has also created suitable conditions for the spread of invasive species such as *Prosopis juliflora*, a plant that has largely contributed to the loss of livelihoods by reducing the pasture areas, loss of farmlands and limited access to critical natural resource areas.

Tana River County through this climate change action plan will prioritize conservation and restoration actions especially within degraded landscapes. These actions are viewed as having potential in building the resilience of communities to climate change impacts. The County will prioritize conservation of water catchments to control the speed and the intensity of floods, thus protecting the downstream communities from the effects of flooding. Deliberate conservation and restoration actions will be prioritized to ensure healthy ecosystems that will provide residents with goods (fuel wood, timber, food) and alternative livelihood options even when primary economic activities are disrupted by climate change related hazards.

The County will also prioritize conservation and landscape restoration efforts for degraded areas to ensure that ecosystem services such as crop pollination, pest and disease control, and climate regulation are sustained even in the face of climate change.

Multiple Benefits of Sustainable Management of Forests

Actions to increase forest cover and prevent deforestation and forest degradation have important benefits for improving the livelihoods of a majority of Kenyans while enhancing the climate resilience of the country.

Forests provide ecosystem services that contribute to reducing the vulnerability of people and wildlife. Mangroves protect coastal areas against storms and waves, which are projected to become even more intense with climate change and climate-induced sea-level rise.

Forest products provide safety nets to local communities when climate variability causes crop failures. Women and forest resource users play a key role in managing forests and are crucial to integrating forest conservation activities in livelihood activities.

Forests also provide hydrological ecosystem services such as regulation of storm waters. Upper watersheds can increase infiltration of rainwater, reduce surface run-off, and control soil loss, thus decreasing the destructive impacts of floodwaters. By storing run-off, forests also act as natural water recharge areas by replenishing stream-flows. Any actions to combat deforestation and speed up restoration of degraded lands will contribute to economic growth, poverty reduction, and greater food security as well as help communities adapt to climate change. The forestry sector is the second largest contributor to Kenya's GHG emissions after agriculture, accounting for 32% of emissions largely due to deforestation. However, the sector offers the greatest potential of all mitigation sectors to reduce GHG emissions.

Most parts of Tana River County provide dry season refuge for both domestic and wild animals. The County will promote ecosystem conservation for its long-term climate change mitigation benefits and to also enable the county exploit its tourism potential over the long term. Effectively, Tana River County will prioritize ecosystem conservation as a strategy to help communities and the county's economy adapt to the impacts of climate change. Activities that promote ecosystem conservation for climate change adaptation and mitigation in Tana River County are listed in Table 3. The table also identifies relevant stakeholders for each of the activity and urgency (represented by the priority) for implementing the action.

It is important to note that ecosystem conservation in Tana River County will contribute to all the realization of most of the SDG goals (Table 3).

Table 5: Action Plan for Ecosystem Conservation and Sustainable Land Management

Objective 3: Promote Ecosystem Conservation and Sustainable Land Management through increasing tree cover to 30% of total land area; rehabilitate degraded lands, including rangelands; increase resilience of wildlife						
Issue/Problem: Ecosystem degradation due to climate change, pollution, deforestation, habitat fragmentation, encroachment of protected areas and riparian habitats, overexploitation, habitat conversion, invasive species, overgrazing among others/ limited information on biodiversity, climate change and diseases/increased human wildlife conflicts.						
SDGs: Primarily Goal 13: Climate Action but also Goal 6: Clean Water and Sanitation; Goal 1: No Poverty; Goal 3: Good Health and Well-Being for People; Goal 5: Gender Equality; Goal 9: Industry, Innovation, and Infrastructure; Goal 11: Sustainable Cities and Communities; Goal 14: Life Below Water; Goal 15: Life on Land; and Goal 17: Partnerships for the Goals						
Climate Change Activity	**Stakeholders**	**Indicators**	**Priority**	**Timing**	**Wards**	**Budget**
Restore degraded landscapes including riparian habitats, wetlands and water catchment areas with indigenous trees	Department of Environment and Climate change, KWS, KFS, NEMA, WRA, WRUAs, CFAs	Area Restored	Very urgent	Year 1 and Continuous	All wards	35M
Introduce annual County Tree Planting Day	Department of Environment and Climate change, KWS, KFS, NEMA, WRA, WRUAs, CFAs	No of seedlings planted	Very urgent	Continuous	All wards	10M
Revive Green Schools Programme to ensure at least 10% of school land areas planted with trees	Department of Environment and Climate change, KWS, KFS, NEMA, WRA, WRUAs, CFAs	% area of schools planted	Very urgent	Year 1 and Continuous	All wards	20M
Establish tree nurseries, enhance production capacity and ensure availability of seedlings	Department of Environment and Climate change, KWS, KFS, NEMA, WRA, WRUAs, CFAs	No of tree nurseries established	Urgent	Year 2	All wards	40M
Expansion and protection of mangrove forest cover (for coastal adaptation and blue carbon	Department of Environment and Climate change, KWS, KFS, NEMA, WRA, WRUAs, CFAs	Area expanded	Urgent	Year 1 and continuous	Kipini East and Kipini West	50M

sequestration) including implementation of the National Mangrove Ecosystem Management Plan						
Fast-tracking implementation of Transition Implementation Plans (TIPs)	Department of Environment and Climate change, KWS, KFS, NEMA, WRA, WRUAs, CFAs	Area expanded	Urgent	Year 1 and continuous	All wards	5M
Fast track the preparation/ implementation of Community/ participatory forestry management plans	Department of Environment and Climate change, KWS, KFS, NEMA, WRA, WRUAs, CFAs	Area expanded	Urgent	Year 1 and continuous	All wards	10M
Preventing disturbances through improved enforcement and monitoring	Department of Environment and Climate change, KWS, KFS, NEMA, WRA, WRUAs, CFAs	Area expanded	Urgent	Year 1 and continuous	All wards	16M
Developing alternative technologies to reduce demand for biomass (such as clean cooking and efficient charcoal production)	Department of Environment and Climate Change, KWS, KFS, NEMA, WRA, WRUAs, CFAs	Area expanded	Urgent	Year 1 and continuous	All wards	32M
Carbon stock enhancement (enrichment planting) in existing forests	Department of Environment and Climate Change, KWS, KFS, NEMA, WRA, WRUAs, CFAs	Area expanded	Urgent	Year 1 and continuous	All wards	20M
Financial innovations including payments through ecosystem services and carbon markets	Department of Environment and Climate Change, KWS, KFS, NEMA, WRA, WRUAs, CFAs	Area expanded	Very Urgent	Year 2	All wards	15M

Development of the REDD+ architecture through multi-stakeholder engagement	Department of Environment and Climate Change, KWS, KFS, NEMA, WRA, WRUAs, CFAs	Area expanded	Urgent	Year 2 and 3	All wards	10M
Implement the County Forest Policy and forest restoration action plans approved by the County	Department of Environment and Climate Change, KWS, KFS, NEMA, WRA, WRUAs, CFAs, CSOs	No of programmes implemented	Very Urgent	Year 1 and Continuous	All wards	10M
Develop and implement strategies & management plan to deal with invasive species e.g., *Prosopis juliflora*	Research Institutions, WRA, KEFRI, Department of Environment and Climate Change	Invasive species strategies and implementation reports	Urgent	Year 1 and 2	All wards	17M
Support biodiversity monitoring, knowledge management and information sharing	Research Institutions (National Museums of Kenya (NMK), Kenya Forestry Research Institute (KEFRI), KWS, universities, CSOs	Census and monitoring reports. Scientific papers.	Urgent	Continuous	All wards	15M
Monitor and control forest fires, including maintenance of fire breaks	KFS, CFAs, Department of Environment and Climate Change	Reports Control measures, awareness meetings.	Urgent	Continuous	All wards	10M
Invest in disaster preparedness	Department of Environment and Climate Change, National Government, Fire and Rescue Service Authority, Security agents (Police, KDF)	Reports on responses.	Very Urgent	Continuous	All wards	50M
Promote urban forestry	KFS, Department of Environment and Climate Change, Private Sector	Trees planted	Not Urgent	Continuous	All wards	30M

Promote agro-forestry practices within the farmlands	Department of Environment and Climate Change, Extension Officers, KFS	Acreage of farmland with forest cover	Urgent	Continuous	All wards	10M
Support adoption of Participatory Forest and Conservancy Management Plans and SCMPs	KFS, CFAs, Community Conservancies, WRUA, VNRLUCs	Signed Management Plans, agreements, reports	Urgent	Continuous	All wards	5M
Adopt innovative soil and water management techniques (gabions, terraces)	Department of Water, KFS, Agriculture extension workers,	Reports	Urgent	Continuous	All wards	18M
Promote access to meteorological information on weather forecast	MET Department, Department of Environment and Climate Change	Level of access to Meteorology Information	Urgent	Continuous	All wards	5M
Acquire and install automatic weather stations in each Sub- County	MET Department, County government	No. of weather stations with weather stations Timely weather data available	Very Urgent	Continuous	Chewani, Garsen North, Hirimani	50M
Promoting sustainable mining techniques and restoration of closed mining sites	NEMA, Department of Water, Industrialist KFS, CBOs, WRA	Reports Number of old mines restored.	Very urgent	Continuous	Chewele, Bangale and Kipini West	50M
Enforce application of EMCA regulations for discharge of effluents in water systems	NEMA, Department of Environment and Climate Change – Health Department	Number of Stop orders Water quality reports Audit reports	Very Urgent	Continuous	All wards	5M
Enforce EIA regulations through multi-agency cooperation	NEMA, Department of Environment and Climate Change, National Government	No of projects with EIA license	Urgent	Continuous	All wards	15M

Promote participation of youth, women, and indigenous communities in ecosystem conservation	Department of Environment and Climate Change, National Government, Department of Gender and Social Services, KFS, CSOs	Number of vulnerable people engaged.	Urgent	Continuous	All wards	10M
Gazette and protect tourist attractions	Department of Tourism, KWS, Ministry of Tourism and Wildlife	Tourist attractions gazette and protection documented.	Urgent	Year 2	All wards	7M
Identify and protect cultural sites	NMK, Department of Culture	Cultural sites and protection mechanisms documented.	Urgent	Year 3	All wards	10M
Develop standards for tourist facilities	Department of Tourism, KWS, Ministry of Tourism and Wildlife	Standards documented.	Urgent	Year 3	All wards	5M
Diversify and Market tourist attractions	Department of Tourism, KWS, Ministry of Tourism and Wildlife, private sector	Increase in diversity of tourism products	Urgent	Year 2	All wards	7M
Engaging vulnerable groups (including youth, women and indigenous communities) in habitat restoration.	Department of Gender and Social Services, KFS	Number of vulnerable people engaged	Urgent	Continuous	All wards	10M
Engaging vulnerable groups (including youth, women and indigenous communities) ecotourism activities.	Department of Gender and Social Services, KWS, KFS, CSOs	Number of vulnerable people engaged	Urgent	Continuous	All wards	10M

Enhance natural generation of degraded lands through conservation and sustainable management	Department of Environment and Climate Change, KWS, KFS, CSOs, CFAs	Area restored through natural regeneration	Urgent	Continuous	All wards	15M
Promote Ecosystem-based adaptation through rangeland and forest landscape restoration and sustainable management	Department of Environment and Climate Change, KWS, KFS, CSOs, CFAs, Department of livestock production	Area restored	Urgent	Continuous	All wards	12M
Conduct an economic analysis of restoration options and identify financing options to scale up landscape restoration	Department of Environment and Climate Change, KWS, KFS, CSOs, CFAs, Department of Finance and Economic Planning	Economic analysis report No of financing options identifies	Urgent	Year 2	All wards	16M
Promote and incentivize development of forests and creation of wildlife conservancies in public and private lands and ranches	Department of Environment and Climate Change, KWS, KFS, CSOs, CFAs, Ranchers, Community Conservancies	No of conservancies created	Urgent	Year 3 through to year 5	All wards	10M
Conserve at least 20% of terrestrial and inland water, and 15% of coastal and marine areas, especially areas of importance for biodiversity and ecosystem services	Department of Environment and Climate Change, KWS, KFS, CSOs, CFAs, Ranchers, Community Conservancies, Department of Fisheries	Area conserved	Urgent	Continuous	All wards	10M

Conserve 2,000 hectares of wildlife habitats to support a broad range of wildlife and plants under changed conditions	Department of Environment and Climate Change, KWS, KFS, CSOs, CFAs, Ranchers, Community Conservancies	Area conserved	Urgent	Year 2-4	All wards	10M
Put in place measures to reduce HWCs by 50%	Department of Environment and Climate Change, KWS, KFS, CSOs, CFAs, Ranchers, Community Conservancies	% decline in cases of HWCs reported	Urgent	Continuous	All wards	8M
Secure 20% of dispersal areas and migratory pathways for wildlife that have been identified in the National Wildlife Dispersal Corridor Report	Department of Environment and Climate Change, KWS, KFS, CSOs, CFAs, Ranchers, Community Conservancies, Department of Livestock production, Department of Lands and Physical Planning	% of dispersal areas secured	Urgent	Continuous	All wards	10M
Develop and implement standards and regulations, including social and environmental safeguards, for sustainable forestry management	Department of Environment and Climate Change, KWS, KFS, CSOs, CFAs,	No of regulations developed	Urgent	Year 1	All wards	8M
Develop guidelines and standards for establishment of green spaces as required by the Forest Conservation and Management Act 2016	Department of Environment and Climate Change, KWS, KFS, CSOs, CFAs, Ranchers, Community Conservancies, Department of Livestock production,	No of guidelines and standards developed	Urgent	Year 1	All wards	4M

	department of physical planning					
Develop adaptation strategy for tourism sector	Department of Environment and Climate Change, KWS, KFS, CSOs, CFAs, Ranchers, Community Conservancies, Department of Lands and Physical Planning	No of strategies developed	Urgent	Year 2	All wards	4M
Promote the adoption of existing land use plans and development of new ones to segregate and identify forest areas for conservation	Department of Environment and Climate Change, KWS, KFS, CSOs, CFAs, Ranchers, Community Conservancies, Department of Lands and Physical Planning	No of land use plans adopted/ developed	Urgent	Year 1	All wards	5M
Mainstream climate change into Environment Audits, Environmental Impact Assessments and Strategic Environmental Assessment	Department of Environment and Climate Change, KWS, KFS, CSOs, CFAs, Ranchers, Community Conservancies, Department of Lands and Physical Planning and all other county departments	Amount of money allocated to climate actions across other county departments	Urgent	Year 1	All wards	40M
Build the capacity of county level institutions for the efficient transfer and implementation of the devolved function with	Department of Environment and Climate Change, KWS, KFS, CSOs, CFAs, Ranchers, Community Conservancies,	No of individuals/ institutions trained	Urgent	Year 1	All wards	10M
respect to community forests	department of physical planning					

Formation and capacity building of Artisanal miners on ecosystem management through Associations and CBOs	NEMA, Department of Environment and Climate Change, Industrialist KFS, CBOs, WRA	No of associations and CBOs formed and capacity built	Urgent	Year 1 and 2	All wards	10M
Invest in Nature Based Enterprises	Department of Trade, Department of Environment and Climate Change, KFS, KWS, CBOs, CFAs	No. of Nature Based Enterprises identified and invested	Urgent	Continuous	All wards	15M
Introduce Innovative alternative livelihood options	Farmers, Department of Environment and Climate Change, Pastoralists, CFAs, WRUAs, CBOs, KFS, KWS	Diversity of livelihood options	Urgent	Continuous	All wards	9M
Formation and strengthening of forest/charcoal production associations	Department of Environment and Climate Change, KFS, KWS, CFAs, Association and CBOs	No of association formed and strengthened	Urgent	Continuous	All wards	10
Sustainable Charcoal production using Prosopis to produce charcoal	Department of Environment and Climate Change, KFS, KWS, CFAs, Association and CBOs	No of association formed and strengthened	Urgent	Continuous	All wards	10M
SUB TOTAL						838M

Objective 4: Climate Proof Infrastructure, Green Energy Production and Use

Climate change, including temperature increase, sea level rise, and a greater number and severity of extreme weather events – such as occasional heavy rains resulting in floods – damages energy and transport infrastructure. In Tana River County, these climatic changes increase the risk of delays, disruptions, damage, and failure across land-based and marine transportation systems. The floods in early 2018 caused extensive damage to the road networks.

Climate change impacts have consequences for the design, construction, location, and operations of energy and transport infrastructure. Climate-proofing, or proactive adaptation, can be cost-effective for energy and transport infrastructure with a long lifespan. Climate proofing is a key recommendation of Kenya's NAP as a means of addressing infrastructure related climate change impacts, and is necessary to maximise potential development benefits. Climate proofing of infrastructure requires factoring in an additional cost associated with the burden of climate change in the design, implementation, and maintenance of infrastructure.

Kenya's energy sector contribution to GHG emissions is expected to increase sharply from 2015 to 2030. The energy sector (excluding transport and industry) accounted for 7.1% of total emissions in 2015 and is projected to rise to 29.7% of total emissions in 2030. The transport sector is a significant source of GHG emissions, directly accounting for about 13% of Kenya's total GHG emissions in 2015. Transport emissions are increasing at a faster rate than other sectors and are projected to rise to 17% of total national emissions in 2030.

Opportunities for Transforming the Energy and Transport Sectors

The implementation of Tana River County Climate Change Action Plan will drive major transformations in the energy and transport systems and provide strong benefits for poverty reduction and sustainable development. Tana River County has a huge potential of renewable energy including solar, wind, biogas etc. This opportunity is however underutilized. Majority of the population in the county uses wood fuel for cooking; this has a major and direct impact on forests. In regard to energy demand, the transition to clean cooking is a priority action that presents an opportunity for technological leapfrogging with energy and GHG emissions savings, health and cost-saving benefits compared to the business-as-usual incremental improvements. Clean cooking is an opportunity for investment in innovation and technology development in the biomass energy sub-sector. A key action is to develop programmes that encourage product availability and affordability through a robust pipeline of businesses to manufacture products, sell products, and provide services at affordable prices

Women and children are disproportionally affected by this challenge, suffering from toxic smoke, poverty, and the consequences of deforestation. The use of clean cooking technologies should be integrated into community development initiatives and activities involving women. They are the most affected and have the potential to drive the achievement of the desired outcomes.

Although transport infrastructure and other critical assets and services such as water pans, power distribution and buildings are prone to climate – related hazards particularly to the impacts of floods, the use of ecosystem-based approaches can contribute significantly to climate-proofing these infrastructure and assets. Other strategies to address climate change impacts on infrastructure need to be mainstreamed in infrastructure development. There is need to ensure that all the applicable EMCA regulations including Environmental Impact Assessment (EIA), Strategic Environmental Assessment (SEA), and Environmental Audits are adhered to in infrastructure development. Additionally, the design of infrastructures like buildings can incorporate harnessing of solar power for lighting and water heating.

Table 4 summarizes the activities that can reduce the county's carbon footprint, and, therefore, increase the adaptive capacity of the county residents and their economy to the impacts of climate change. Addressing issues related to Climate proof infrastructure and Green Energy production will directly contribute to the realization of several SDGs including Goal 13 (Climate Action) Goal 3 (Good Health and Well-Being for People), Goal 1 (No Poverty), Goal 2 (Zero Hunger; Goal 7 (Affordable and Clean Energy), Goal 8 (Decent Work and Economic Growth), Goal 9 (Industry, Innovation, and Infrastructure), Goal 3 (Good Health and Well-Being for People), Goal 10 (Reduced Inequalities) and Goal 11 (Sustainable Cities and Communities) (Table 4).

Table 6: Action Plan for Climate proof Infrastructure, Green Energy Production and Use

Objective 4: Climate Proof Infrastructure, Green Energy Production and Use						
Issue/Problem: Climate change impacts/ High dependency on biomass, hydro power and fossil energy/ Unsuitable solid and liquid waste disposal/lack of policy framework to support adoption of clean energy/overreliance on road transport.						
SDGs: Primarily Goal 7: Affordable and Clean Energy but also Goal 8: Decent Work and Economic Growth, Goal 9: Industry, Innovation, and Infrastructure; Goal 3: Good Health and Well-Being for People; Goal 10: reducing Inequalities and Goal 11: Sustainable Cities and Communities						
Climate Change Activity	**Stakeholders**	**Indicators**	**Priority**	**Timing**	**Wards**	**Budget**
Introduce incentives for clean energy adoption such as solar systems and wind	Department of Environment and Climate Change, National Treasury	Number of households and institutions using clean energy	Urgent	Year 3	All wards	6M
Invest in off-grid solar systems for hard-to-reach villages and village clusters	County Department of Environment and Climate Change, CSOs, private sector	Number of households and institutions using renewable energy	Urgent	Continuous	All wards	60M
Train *jua kali* artisans to produce improved cook stoves, working with CSOs	Department of Environment and Climate Change, CSOs, private sector	Reports No of youth and artisans trained	Urgent	Year 2	All wards	4M
Training and public awareness programmes on climate change adaptation and mitigation mechanisms	Department of Environment and Climate Change, CSOs, private sector	No of awareness meetings held No of people reached	Urgent	Continuous	All wards	15M
Biogas technology scaled up to increase access to clean energy through the construction of 200 digesters for domestic use and 50 biogas systems in various schools and public facilities	Department of Environment and Climate Change, CSOs, private sector	No of digesters and biogas systems constructed	Urgent	Year 2 through to year 5	All wards	18M

Increase production of non-forest biomass fuel briquettes (such as agricultural waste, sawdust and human waste) with an emphasis on women and youth	Department of Environment and Climate Change, CSOs, private sector	Quantity of Non-Forest biomass fuel produced	Urgent	Year 2 through to year 5	All wards	10M
Conduct Strategic Environmental Assessments (SEA) for infrastructural programmes and EIAs Environmental audits for projects	NEMA, County Government, Private sector, CSOs	Number SEA, EIA and EA made	Very urgent	Continuous	All wards	17M
Climate-proof infrastructure using ecosystem-based approaches	County Government, KFS, NEMA, developers	Proportion of climate proofed infrastructure	Very urgent	Continuous	All wards	8M
SUB TOTAL						138M

Objective 5: Health, Sanitation and Human Settlements

Health Sector is one of the critical areas affected by climate change. In the recent decades, climate related ailments have increased exponentially due to human exposure to polluted environment, poor air quality, gradual increase in global temperatures etc. Poor sanitation especially in informal urban areas have also exacerbated effects of climate change by causing health problems to poverty-stricken households. In Tana River County floods displaces residents while destroying properties, community livelihoods such as farms and local infrastructures.

To address this, the action plan will recommend full implementation of Tana River County's "cluster village program" which guarantees better housing and good sanitation infrastructures in its vision of improving the health standards of its residents.

Relevant activities necessary to realize this objective, their priority, and their implementers are outlined in table 5. The objective has a direct bearing on various SDG goals including Goal 13 (Climate Action) Goal 3 (Good Health and Well-Being for People), Goal 1 (No Poverty), Goal 2 (Zero Hunger) and Goal 11 (Sustainable Cities and Communities).

Table 7: Action Plan for Health, Sanitation and Human Settlements

Objective 5: Health, Sanitation and Human Settlements						
Issue/Problem: Climate related health ailments, poor sanitation and lack of better housing						
SDGs: Primarily Goal 13: Climate Action; Goal 3: Good Health and Well-Being for People, Goal 1: No Poverty; Goal 2: Zero Hunger; Goal 9: Industry, Innovation, and Goal 11 Sustainable Cities and Communities						
Climate Change Activity	**Stakeholders**	**Indicators**	**Priority**	**Timing**	**Wards**	**Budget**
Promotion of tree planting exercise in the homestead to make it more habitable and liveable	Cluster Implementation Committee, Department of Environment and Climate Change, CSOs, NEMA, KFS, Community	Percentage of tree cover in the villages	Urgent	Continuous	All wards	10M
Awareness creation on the need to live in proper environment	Department of Environment and Climate Change, CSOs, NEMA, Department of PSM and Citizen participation	Number of public awareness meetings Number of people sensitize	Urgent	Continuous	All wards	15M
Carryout frequent air quality test in areas suspected to be polluted	Department of Environment and Climate Change, NEMA	Number of tests done	Urgent	Continuous	All wards	12M
Promote proper handling of solid waste by adopting integrated solid waste management techniques	Department of Environment and Climate Change, NEMA, CSOs	Adoption of ISWM techniques	Urgent	Year 2	All wards	15M
Designate, gazette and license (EIA) dumping sites for major towns	Department of Environment and Climate Change, NEMA	Number of dumping sites gazetted	Urgent	Year 1	All wards	25M
Purchase garbage collection trucks	Department of Environment and Climate Change	Number of garbage collection trucks purchased	Urgent	Year 1	Kipini East, Garsen South, Garsen West, Chewani, Hirimani, Bangale and Madogo	60M
Construct public sanitation facilities (PSF) in urban areas incorporating hand washing facilities	Hola Municipality, Department of Water, CSOs,	Number of PSF constructed	Urgent	Year 3	Kipini East, Garsen South, Garsen West, Chewani, Hirimani, Bangale and Madogo	20M

Carryout community-led total sanitation (CLTS) in all the villages of the county	Department of Health, Department of Environment and Climate Change, CSOs	Number of villages certified as ODF	Urgent	Continuous	All Wards	45M
Construct decentralised treatment facilities (DTF) in urban areas	Department of Water, CSOs	Number of DTFs constructed	Urgent	Year 1	Kipini East, Garsen South, Garsen West, Chewani, Hirimani, Bangale and Madogo	42M
Construct climate-proofed sewerage system infrastructure in all major towns in the county	Department of Water, CSOs	Number of sewer lines constructed Number of sewerage treatment facility installed	Not Urgent	Year 4	Kipini East, Garsen South, Garsen West, Chewani, Hirimani, Bangale and Madogo	75M
Construct better housing under cluster program	Cluster Implementation Committee, CSOs	Number of housing units constructed	Urgent	Year 2	All Wards	75M
Implementation of Twenty (20) Local Physical and Land Use development plans for clusters and urban settlements	Department of Lands and Physical Planning, Hola Municipality	Number of land use development plan implemented	Urgent	Year 2	All Wards	10M
Improvement of water supply in cluster villages	Department of Water, CSOs, CWWDA	Number of cluster villages connected with water	Urgent	Year 3	All Wards	40M
SUB TOTAL						444M

Objective 5: Capacity Building, Knowledge Management and Information Sharing

Awareness creation, knowledge management, and capacity building on climate change science and practice among the key stakeholders will be critical to successful implementation of this action plan. These stakeholders include the local community members, policy makers, civil society, and private sector players.

Capacity Building

It is the local community members including farmers, pastoralists, fishermen, and others who rely on nature for sustenance and are the first to be impacted on by climate change. There is the need to raise their awareness on the ways to cope with the effects of climate change. More important is for them to have the capacity to implement appropriate climate adaptation and mitigation tactics at the local level. At the same time, it is crucial for practitioners on climate change particularly agricultural and forestry sector, both in the government and non-government sectors have appropriate knowledge on climate change if they are to pass the same knowledge to the local people. The policymakers, especially the Members of the County Assembly are mandated to make laws and policies at the county level. They need to have the capacity to make appropriate contributions towards this end. Private sector practitioners need to understand the impacts of their actions on climate change. They also need to learn about the business opportunities that exist due to the need for climate change adaptation and mitigation. This includes the provision of goods (e.g., solar panels, heaters, lighting, energy stoves) and services (e.g., insurance for crops, livestock, and property). In addition, they can

understand their entry points for participation in Payment for Ecosystem Services and also in ways to focus their Corporate Social Responsibilities (CSR) towards conservation, as a way of helping communities cope with the impacts of climate change.

Knowledge Management

Various institutions and individuals have generated knowledge of climate change in Tana River County over the years. These include government research and academic institutions, civil society organizations, and private sector companies. However, this information is scattered and needs to be compiled into a comprehensive database for it to inform a coordinated approach to enabling stakeholders to adapt to climate change. Methods of passing timely information to users also need to be designed. Institutions involved in climate change information generation including research institutions and the Metrological Department need to be well-resourced to provide timely information. Stakeholders on climate change will need to invest in various ways of communicating climate change information including the use of:

- Print and electronic media.
- Social media.
- Barazas.
- Drama, songs, and Dance.
- Demonstrations.
- Short Message Service (SMS).
- Mobile phones application
- Workshops.

Table 8: Action Plan for Knowledge Management and Capacity Building

Objective 6: Capacity building, knowledge management and information sharing						
Issue/Problem: Limited Technical Capacity on Climate Change among Stakeholders/Lack of timely information on Climate Change/Limited Mainstreaming of Climate Change in County and Stakeholder Planning Processes						
SDGs: Goal 4: Quality Education; Goal 5: Gender Equality; Goal 10: Reduced Inequalities; Goal 16: Peace, Justice and Strong Institutions and Goal 17: Partnerships for the Goals						
Climate Change Activity	**Stakeholders**	**Indicators**	**Priority**	**Timing**	**Wards**	**Budget**
Develop a comprehensive County Strategy for public education and awareness creation on climate change	Department of Environment and Climate Change, Research institutions, CSOs	Launch of a county strategy on public education and awareness creation climate change	Very Urgent	Year 1	All Wards	5M
Assess the capacity of stakeholders in climate change	Department of Environment and Climate Change, Research institutions, CSOs	Capacity Assessment Report	Very Urgent	Year 1	All Wards	6M
Carryout climate change sensitization programs at ward level	Department of Environment and Climate Change, Research institutions, CSOs	Number of sensitization meetings held Number of people reached in during sensitization meeting	Urgent	Continuous	All Wards	30M
Provide capacity support to address identified gaps among stakeholders	Department of Environment and Climate Change, Research institutions, CSOs	No. of stakeholders trained	Urgent	Year 1 and Year 2	All Wards	6M

Develop and maintain an electronic and print climate change database	Department of Environment and Climate Change, Research institutions, CSOs	Working database in place	Urgent	Year 1 and continuous	Hirimani, Chewani and Garsen West	10M
Develop a Sub County climate change resource centre	Department of Environment and Climate Change, Research institutions, CSOs	Resource Centre established and equipped	Not Urgent	Year 3	Hirimani, Chewani and Garsen West	8M
Equipping of existing resource centres in the Sub County	Department of Environment and Climate Change, Research institutions, CSOs	Resource Centre equipped	Not Urgent	Year 3	Hirimani, Chewani and Garsen West	10M
Develop and implement a robust public awareness programme on climate change	Department of Environment and Climate Change, Research institutions, CSOs	No of climate change awareness campaigns, talks shows, events	Urgent	Continuous	All Wards	12M
Mainstream climate change education at all education levels	National Government, Department of Environment and Climate Change, CSOs	School, colleges, universities with climate change in curriculum	Urgent	Year 3	All Wards	5M
Provide early warning on climate change hazards	MET Department of Environment and Climate Change, Print and Electronic, Media	Radio, Print Media and socio media, public announcements	Very Urgent	Continuous	All Wards	5M
Establish County Climate Change Information Service (CCIS)	MET, Department of Environment and Climate Change	Climate Change Information Service established	Urgent	Year 2	All Wards	12M
Enhance indigenous knowledge systems through identification, documentation and capitalization of best practices for replication	Department of Culture & Gender, Department of Environment and Climate Change, CFAs, KWS, KFS, Department of Tourism	Indigenous Knowledge System documented and practised	Urgent	Continuous	All Wards	5M
SUB TOTAL						114M

Objective 7: Sustainable Financing for Climate Change Actions

The priority climate finance and resource mobilisation actions set out in Table 7 will help to implement this County Climate Change Action Plan 2023-2027. The actions emphasise designing and launching the County Climate Change Fund, developing a climate finance and resource mobilisation strategy, improving access modalities and efficiency of climate finance, and ensuring that climate finance is available to communities to deal with relevant impacts that are prioritized.

The actions help the county government effectively mobilise, manage, and track climate finance actions. A priority is the operationalisation of the County Climate Change Fund that will be overseen by the County Climate Change Steering Committee and will allocate funding for priority mitigation and adaptation actions. The action includes the establishment of the regulations, and management and oversight functions. Work will also be undertaken to link the National Climate Change Fund with County Climate Change Fund.

Climate finance includes all finance that targets low-carbon or climate-resilient development; and includes domestic budget allocations, public grants and loans from bilateral and multilateral agencies, and private sector investment. Important sources of international climate finance for Kenya include the Green Climate Fund (GCF), Adaptation Fund and the Global Environment Facility (GEF), which are the entities entrusted with the operation of the Financial Mechanism of the UNFCCC. Other mechanisms under the UNFCCC include the Special Climate Change Fund and REDD+ mechanism.

Tracking of and reporting on climate finance will include an alignment of climate finance (tracked by National Treasury and Planning) and adaptation and mitigation results (tracked by CCD). This will improve analysis, including identifying actions that provide value for money, determining how much climate finance reaches those most in need (such as women, youth and marginalised and minority communities), and the climate impact of that finance.

The Department of Finance and Economic Planning will adopt the climate finance resource mobilisation strategy developed by the National treasury. The capacity of the private sector to access climate finance will be built, recognising the critical role of private sector investment in implementing the priority climate actions. This includes developing bankable projects and accessing funding through Green Bonds.

Tana River County will position itself to show its potential to the emerging carbon markets and benefit from such opportunities.

Tana River County will thus ensure that it takes advantage of every opportunity for resource mobilization to finance its ambitious climate actions. The county will also mainstream climate change actions into the county budgeting and other planning processes. Efforts will be made to encourage other relevant stakeholders including the national government agencies, non-governmental organizations, community-based organizations, and private sector players to familiarise themselves with responsibilities that are relevant to them and mainstream them in their individual budgeting and fundraising activities.

The county will encourage private sector and business owners to take advantage of the many business opportunities in the field of climate change adaptation and mitigation. For example, insurance companies can insure assets and infrastructure including crops, livestock, equipment, and buildings against climate change hazards like drought, floods, and related hazards. Banks can invest in providing financing to businesses and individuals as they implement climate change adaptation and mitigation actions. Stakeholders can also explore innovative financing mechanisms including Payment for Ecosystem Services (PES) to fund some of the actions. Sustainable financing addresses the SDG goals 16 and 17 (Table 7). The activities, relevant stakeholders, prioritization and the M&E indicators are illustrated in Table 7.

Table 9: Action Plan for Sustainable Financing

Objective 7: Sustainable financing for climate change actions						
Issue/Problem: Limited funding for climate change activities						
SDGs: Goal 16: Peace, Justice and Strong Institutions and Goal 17: Partnerships for the Goals						
Climate Change Activity	**Stakeholders**	**Indicators**	**Priority**	**Timing**	**Wards**	**Budget**
Establish County Climate Change Fund	Department of Environment and Climate Change	County assembly approval	Very Urgent	Year 1	All Wards	120M
Fastrack the full implementation of the Tana River County Climate Finance Policy 2023	Department of Environment and Climate Change	No of policy interventions implemented	Urgent	Continuous	All Wards	30M
Establish Disaster Risk Management Fund	Department of Special Programs and Cohesion, National Government, CSOs	County assembly approval	Very Urgent	Year 1	All Wards	150M
Mainstreaming climate change adaptation and mitigation actions in budgetary and other planning processes	Department of Environment and Climate Change, all stakeholders	No. of government departments and policies that mainstream climate change No of stakeholders participating in implementation	Urgent	Continuous	All Wards	10M
Establishing partnerships with private sector players	County Government, Private sector players, CSOs	No of partnerships established	Urgent	Continuous	All Wards	8M

Design and implement Payment for Ecosystem Services schemes	County Government, Private Sector, CSOs e.g., CSO – WWF	Number of working PES schemes	Urgent	Continuous	All Wards	10M
Build the capacity of private sector and civil society to develop bankable projects and build the in-house capacity of financial institutions to assess climate risk and develop climate-related schemes	County Department of Environment and Climate Change, Department of Finance and Economic Planning, Department of Trade, CSO, private sector etc	No of bankable projects developed No of Training sessions held No of projects financed	Urgent	Continuous	All Wards	15M
SUB TOTAL						343M

Objective 8: Governance and Coordination of Climate Change Actions

This may require to be addressed last as it is cross-cutting and seeks to create an enabling environment. Implementing this action plan will involve many stakeholders but will be led and coordinated by the County Government of Tana River. Political will by the highest level at both the Executive and the Legislative Arms of the County Government is necessary. It is, therefore, recommended that the Governor's Office takes leadership in climate change affairs in the county and a county climate change secretariat established in the department responsible for Environmental affairs. This secretariat will implement climate change actions as advised by the County Executive Committee Member (CECM). The secretariat will work with relevant stakeholders to draw annual work plans that conform to the county budgetary process and timing. To actualize these processes and establish the recommended institutional framework, the county government through the county assembly will need to enact the necessary legislative instruments. To realize this objective, there is an urgent need for the establishment of an enabling institutional framework for climate change actions and the enactment of enabling policy and legal instruments (Table 8). There is also need to ensure the participation of vulnerable groups including women, youth, and, indigenous groups in climate change actions. The county climate change desk should be in the Directorate.

Table 10: Action Plan for Enhancing Governance and Coordination of Climate Change Actions

Objective 8: Governance and Coordination of Climate Change Actions						
Issue/Problem: Climate change impacts cuts across all sectors/diverse actors/Need for political will and coordination of action implementation at the highest county office.						
SDG: Goal 16 (Peace, Justice and Strong Institutions) and Goal 17 (Partnerships for the Goals)						
Activity	**Stakeholders**	**Indicators**	**Priority**	**Timing**	**Wards**	**Budget**
Strengthen the Directorate of Climate Change by seconding more staff and recruiting new ones	CECM Environment and Climate Change, County Public Service Board, Department of Finance and Economic Planning	Adequately staffed directorate of climate change	Very Urgent	Year 1	All Wards	4M
Ensure all climate change committees established in the Tana River County Climate Change Act 2021 are established	County Governor, CECM Environment and Climate Change, CCO Environment and Climate Change	Number of climate change committees established	Very Urgent	Year 1	All wards	4M
Enact appropriate county laws for climate change actions	County Assembly	Number of county climate change laws approved and adopted	Urgent	Year 1 and Year 2	All wards	8M
Prepare annual work plans	Department of Environment and Climate Change, all stakeholders	Departmental work plans with climate change actions	Very Urgent	Every year	All wards	8M
Prepare annual report on implementation and present it to County assembly	CECM – responsible for Climate Change	Annual report	Urgent	Every year	All wards	8M
SUB TOTAL						**32M**
GRAND TOTAL						**3.850B**

Cross-Cutting and Emerging Issues

Climate change has a greater impact on those sections of the population that are most reliant on natural resources for their livelihoods and/or who have the least capacity to respond to natural hazards, such as droughts and floods. Women commonly face higher risks and greater burdens from the impacts of climate change because

- Women have unequal participation in decision-making processes.
- Their household responsibilities such as childcare and the collection of firewood and water are particularly climate-sensitive
- They have to take up more agricultural work as men migrate for labour
- Have less access to agricultural resources such as land, extension services and inputs with which to adapt to variability and change
- Gendered social norms and roles can inhibit women's adaptive capacity

Other vulnerable groups include youth, the aged, children, the persons living with disability, indigenous and other vulnerable groups in the climate change actions. Specific actions targeting women and other vulnerable groups have been included in as many objectives as possible.

Health issues have also been considered as a cross cutting issue and its actions to deal with climate related health issues are in many of the objectives including food security, water security and blue economy, ecosystem conservation and sustainable land management. In addition, stakeholders need to be aware of emerging issues associated with climate change. This includes emerging diseases and spread of invasive species among others.

CHAPTER 4: DELIVERY MECHANISM FOR CCAP

4.1 Enabling Factors

4.1.1 Enabling Policy and Regulation

Having a supportive policy framework offers counties the means to respond effectively to the challenges of climate change. The Constitution of Kenya (2010), specifically in Articles 185 and 186, grants County Governments the authority to craft policies that enhance the execution of devolved functions. Furthermore, the national Climate Change Act (2016) imposes an obligation on counties to incorporate climate change strategies into their policies, plans, and financial allocations.

County Government of Tana River has taken steps to reinforce its climate governance efforts. These measures encompass several actions, such as integrating climate change considerations into the County Integrated Development Plan (CIDP) 2023-2027 and adopting various climate governance frameworks. Among them is the Tana River County Climate Change Act 2021 which created a framework and mechanisms to mobilize and facilitate the county government, communities and stakeholders to respond effectively to climate change through appropriate adaptation and mitigation measures. This has enhanced climate resilience through development, management, implementation, regulation and monitoring of adaptation and mitigation measures and actions.

The Climate Change Act establishes well defined key institutional structures to enhance community participation from planning to execution of climate change-related actions. Of particular importance, this Act establishes a climate change fund at the county level. This fund will receive financial support from various sources, including annual allocations by the County Assembly, funding from the National Climate Change Fund, resources from international climate finance mechanisms, and contributions from development partners. The Tana River County Climate Change Fund Regulations 2023 and the Tana River County Climate Finance Policy 2023 are policy frameworks formulated to administer and manage the County Climate Change Fund and guide climate finance in the county respectively.

4.1.2 Multi Stakeholder Participatory Process

Public participation is a recurring theme within the Constitution of Kenya (2010) and other relevant legislations, including the County Government Act (2012) and the Public Finance Management Act (2012). Given the critical nature of the climate crisis, it is imperative to engage all potential allies. Hence, it is essential to involve relevant stakeholders in identifying climate-related risks, prioritizing responses to climate change, implementing adaptation and mitigation programs, assessing program impacts, and adjusting response strategies based on lessons learned. It is particularly crucial to engage communities on the front lines of climate change, as they offer valuable insights into the design and execution of government response measures.

The following agencies will fulfill their assigned roles as outlined below:

National Government: Government Ministries, Departments, and Agencies are responsible for establishing standards and guidelines to integrate, prevent, and adapt to climate change, as well as offering technical support for implementing adaptation and mitigation strategies.

County Governments: The county's role is to create an enabling environment for all stakeholders to thrive. This includes establishing, promoting, and implementing standards and guidelines, devising and executing action plans, and facilitating public education on climate change. At both levels of government, partnerships with various development organizations will be fostered to provide financial, material, and technical support, as well as to enhance sustainability. County governments will also collaborate with research institutions and academia to facilitate research.

Development Partners: Development partners will play a supportive role in achieving the goals and objectives of this policy. Their contributions will primarily involve resource mobilization and capacity-building to enhance climate change resilience, prevention, and adaptation. Non-state actors will collaborate with the government to mobilize communities and resources, disseminate the policy, and participate in capacity-building initiatives for all stakeholders, with a particular focus on increasing awareness about various aspects of climate change.

Private Sector: The private sector has played a pivotal role in helping communities, including smallholder farmers, adapt to climate change while also promoting market integration. This policy emphasizes actions that align with the interests of the private sector, such as climate-smart agricultural technologies, value addition, and extension services.

Communities: Public policy is formulated with the aim of safeguarding communities. Citizens are the central pillars of this policy and must actively participate in its implementation, including engagement in monitoring, evaluation, and learning. Communities are expected to exercise their sovereignty by holding duty bearers and all other agencies accountable.

4.1.3 Finance – County Climate Change Fund

Devolution of Climate Fund in the Country has paved way for access of climate finance through a

variety of mechanism even to the neediest at the local level. The National Policy on Climate Finance provides a legal and institutional framework to guide and promote climate finance flows in Kenya and tracking of climate finance. County governments provide a good opportunity to create institutional linkages for devolving funds from the national to local level. This is a milestone in enabling the County to attaining the goals of the CIDP 2023-2027, Sustainable Development Goals (SDG), Vision 2030 Economic Blueprint, and the 2015 Paris Agreement.

In response to the challenges posed by climate change, Tana River County Climate Change Act has established the County Climate Change Fund (CCCF) to provide funding for priority climate change actions and interventions identified by communities and other stakeholders and approved by the Steering Committee. The specific use of a Fund may vary depending on local priorities, climate challenges, and the fund's available resources. The aim is to support actions that mitigate the causes of climate change and help communities adapt to its unavoidable impacts.

The County has also established Climate Change Finance Policy to be reviewed after every three years. The policy aims at overarching principles and framework to guide and promote climate finance flows, tracking of climate finance, engagement with county governments, private sector participation, technology transfer and equitable benefit sharing from climate change interventions in the county and country in general. Its objectives are to provide an overarching guidance framework for climate finance including putting in place coordination system for mobilizing and managing climate finance; enhance and streamline the implementation of public finance management in relation to climate financing; establish a framework for tracking, monitoring, accounting for, evaluating and reporting on sources, applications and impacts of climate finance; enhance the capacity of the county to mobilise climate change finance to support local climate adaptation and mitigation actions; and encourage and facilitate private sector participation in climate relevant financing opportunities.

4.1.4 Governance – Climate Change Planning Committees

The Act has established three committees for the coordination, planning and implementation of climate actions in the County.

4.1.4.1 County Climate Change Steering Committee

The County Climate Change Steering Committee comprises of eleven members appointed by the governor. They oversee and coordinate climate change response in the County. Their roles are as follows;

- Coordinate and oversee climate change response in the county
- Ensure mainstreaming of climate change into county planning and development processes;
- Coordinate formulation and monitor implementation of the County Climate Change Action Plan, County Climate Finance Framework and any other county climate change policies, plans and strategies;
- Mobilize funds into and administer the County Climate Change Fund
- Review, approve and monitor implementation, administration and management of the fund
- Advise the county government on legislative, policy and other measures necessary for climate change response
- Approve and oversee the implementation in the county a comprehensive programme of climate change education, awareness creation and capacity building.
- Provide policy direction on research, training and dissemination of information relating to climate change to the public and among the different stakeholders in the county;
- Ensure positive linkages, interactions and synergy between the county, neighbouring counties and national government in climate change response programming and action;
- Ensure a coordinated approach to climate change response programmes and action within the county government;
- Coordinate the formulation of a climate change reporting framework, preparation and dissemination of an annual report on climate change response activities in the county;

4.1.4.2 County Climate Change Planning Committee

The County Climate Change Planning Committee comprises of 11 members appointed by the County Executive Committee Member in charge of Climate Change. The following are their roles;

- Coordinate planning & implementation of projects and activities for climate change response
- Establishes guidelines to be used by the ward planning committee in formulating climate response projects for funding by the County Climate change fund
- Support ward planning committee in the development and implementation of the climate change response projects
- Coordinate development and implementation of the County Fund regulations
- Advise the steering committee on the

strategies priority programs, projects and activities for the climate change response in the County.

- Formulate and implement strategies actions to foster climate change education awareness creation and capacity in the County.
- To coordinate research and knowledge management on climate change, its impacts and strategies for responding thereto.
- Prepare and disseminate an annual report on climate change response activities in the County.
- Formulate and implement a County monitoring, evaluation and reporting framework for climate change response
- Perform any other functions assigned to it by the steering committee.

4.1.4.3 Ward Climate Change Planning Committee

This is a locally-led structure established at a ward level by the local communities as provided in the Tana River climate act. The committee spearhead the climate actions at ward level and their functions are as follows;

- To coordinate and mobilize the communities and other stakeholders in the ward to design and climate change response activities
- To facilitate research and knowledge management at the ward level on climate change, its impact and strategies for responding there too
- Facilitate public education, awareness creation and capacity building at the ward level on climate change, its impact and strategies for responding thereto
- To coordinate, facilitate and manage community consultation on priority climate change response activities
- Participate in county planning and budgeting processes with a view to ensuring the mainstreaming of climate change and prioritization of climate change response in county development plans
- Facilitate public participation in climate change governance, implementation of a grid climate change response activities and monitoring of those activities
- Co-ordinate and facilitate provision of technical support to communities in the ward in developing proposals on climate change response projects for funding by climate funding
- Oversee implementation of climate change response projects funded by the county climate fund and report thereon to the planning committee
- Perform any other functions that may be assigned to it by the planning committee.

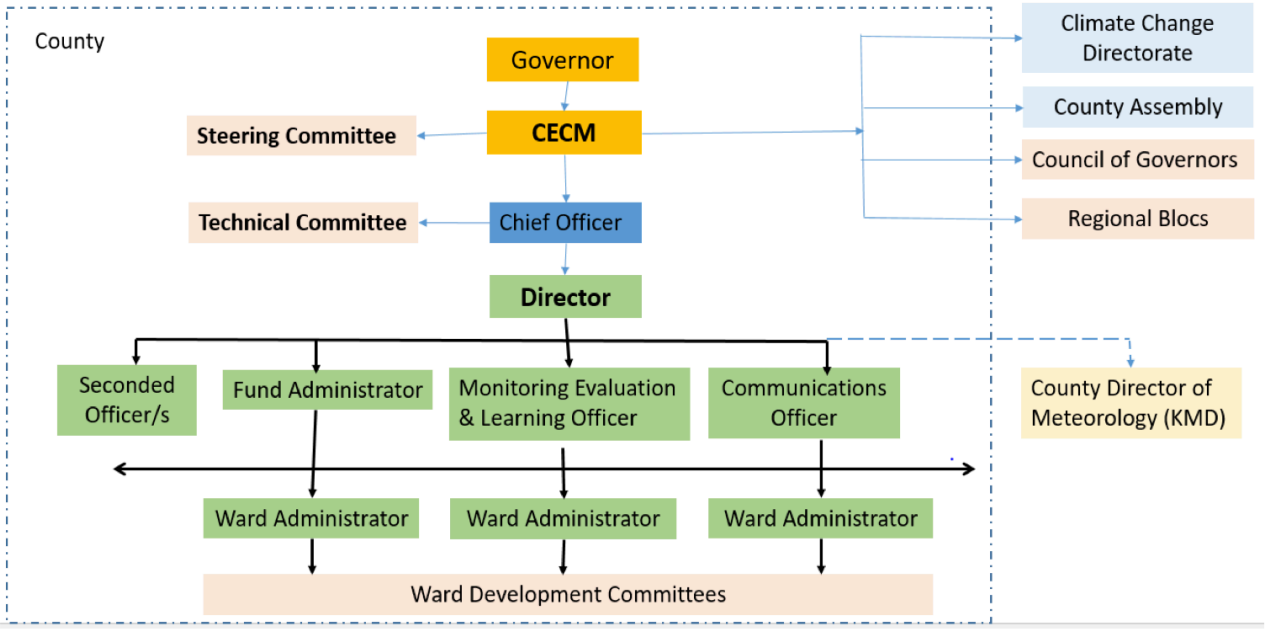

Table 10: Action Plan for Enhancing Governance and Coordination of Climate Change Actions

4.1.5 Climate Information Services and Climate Data Access

The Kenya Meteorological Department (KMD) has a longstanding history of sharing climate information with various stakeholders. However, the adoption of this information has been constrained by multiple factors, including the perceived relevance of climate services and the effectiveness of communication channels. To address these challenges, this Action Plan proposes the Establishment of County Climate Change Information Service (CCIS). The CCIS aims at providing Continuous dissemination of weather and climate information using innovative technologies such as mobile phones.

4.1.6 Resilience Planning Tools

Climate resilience planning is the process of developing strategies and actions to prepare for and respond to the impacts of climate change. It involves assessing vulnerabilities, identifying risks, and implementing measures to enhance a community's or organization's ability to withstand and adapt to changing climatic conditions. Climate resilience planning tools provide valuable data, modeling capabilities, and decision-support systems to enhance climate resilience planning efforts. There are several resilience planning tools in use by both state and non-state actors. Therefore, this Action Plan will use a mix of these planning tools, albeit within the county planning and budgeting cycle.

Planning and budgeting tools: The Tana River County Integrated Development Plan (CIDP) is a comprehensive strategic document that serves as the foundation for the allocation of resources and the overall development agenda within the County. This plan represents a key blueprint for the County, designed to engage the public, prioritize critical areas of development, and guide decision-making across various sectors and domains.

The CIDP is a multifaceted document that integrates economic, physical, social, environmental, and spatial considerations. It plays a fundamental role in informing the County's budget, ensuring that financial allocations align with the annual development priorities and performance targets outlined in the plan. Moreover, it serves as a crucial mechanism for involving the public in the county's planning and development processes, ensuring that the community's needs and aspirations are at the forefront of decision-making.

In contrast, the Annual Development Plan (ADP) outlines specific strategic priorities for the medium term, typically for the specified year. Once these priorities are evaluated in light of budget constraints, the subsequent step involves the development of the annual budget. This budgeting process aims to secure the necessary resources for the implementation of priority actions, including important initiatives related to climate change adaptation and mitigation within Tana River County.

Participatory Climate Risk Assessment: Participatory climate risk assessment is a valuable tool in the field of climate resilience planning. It involves actively engaging a wide range of stakeholders, including community members, local government officials, scientists, and other experts, in assessing and understanding the risks associated with climate change in a collaborative and inclusive manner. The Tana River PCRA results in the development of a county climate risk assessment report, which identifies the key climate risks for the county as well as strategic investment areas for climate resilience which informs the County Climate Change Action Plan.

Tana River County Climate Change Frameworks: The County established Climate Change Finance Policy to be reviewed after every three years. The policy aims at overarching principles and framework to guide and promote climate finance flows, tracking of climate finance, engagement with county governments, private sector participation, technology transfer and equitable benefit sharing from climate change interventions in the county and country in general. Its objectives are to provide an overarching guidance framework for climate finance including putting in place coordination system for mobilizing and managing climate finance; enhance and streamline the implementation of public finance management in relation to climate financing; establish a framework for tracking, monitoring, accounting for, evaluating and reporting on sources, applications and impacts of climate finance; enhance the capacity of the county to mobilise climate change finance to support local climate adaptation and mitigation actions; and encourage and facilitate private sector participation in climate relevant financing opportunities.

Community Managed Disaster Risk Management: Community-Managed Disaster Risk Reduction (CMDRR) is an empowering approach through which a community takes a systematic and proactive role in managing its disaster risks to enhance its resilience. This method revolves around placing the community at the core of participatory disaster risk assessment, planning, and implementation. It underscores the significance of empowering communities to prepare for and respond to localized hazards while also establishing connections between their efforts and government initiatives to ensure long-term sustainability. The contingency plans and development strategies derived from the CMDRR process frequently influence ward-level priorities established by the county government and are sometimes considered by development partners.

Geographic Information System: The County has GIS lab with software that allows users to map and analyze spatial data, helping to identify vulnerable areas and assets. It can be used to visualize climate-related risks, such as flooding, sea-level rise, and extreme weather events, and plan accordingly.

4.1.7 Measurement Reporting and Verification

Measurement, Reporting, and Verification of climate change finance implementation is a crucial process that ensures transparency, accountability, and the effectiveness of initiatives aimed at addressing climate change. It involves systematically monitoring and assessing the outcomes and impacts of these finance implementation, as well as reporting the results to relevant stakeholders.

The Public Finance Management Act, 2012 provides a framework for tracking and reporting on climate finance. Besides, the CIDP allows counties to develop SMART indicators on climate change to help track climate response. The Financing Locally-Led Climate Actions (FLLoCA) Monitoring and Evaluation Manual also helps program implementers (like Tana River County) to understand M&E procedures and processes for the program, decide how progress will be monitored to enable any adjustments where necessary and gather the necessary information to be used during various evaluation studies. Taken together, this Action Plan seeks to support a robust monitoring and evaluation system to track the impacts of climate investments in the county. The M&E System twill also track the effectiveness of climate actions being implemented, lessons learnt and necessary tweaks based on what is working and what is not working.

4.2 Implementation and Coordination Mechanism

Climate risk management strategies within Tana River County primarily rely on the cooperation of diverse stakeholders, including both government agencies and non-governmental entities. Government departments primarily offer technical support and policy guidance, while non-governmental actors contribute to research, funding, and the actual execution of adaptation and mitigation initiatives.

The Tana River County Climate Change Act 2021 established crucial institutions for effective implementation and coordination of climate change initiatives. Climate change is a multifaceted issue that necessitates the involvement of all sectors at various implementation stages. Leveraging the knowledge, expertise, and financial contributions of partners is vital for Tana River County to achieve its climate change objectives. When implementing policies and assigning roles to each implementing entity, it is imperative to uphold the designated distribution of responsibilities between the two levels of government, as outlined in the Fourth Schedule of the 2010 Constitution.

4.2.1 Directorate of Climate Change

Climate Change actions in the County are spearheaded by the Directorate of Climate Change which is in the department of Environment and Climate Change. The core mandate of the Directorate is to to mainstream climate actions in planning and budgeting across all sectors of the county government. It works closely in collaboration with other climate change coordination structures established under Tana River County Climate Change Act 2021 and provides the link across county departments.

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ANNEXES

Annex 1: Attendance List for the Multi-Stakeholder Meetings Held at Laza Leisure on 23rd and 24th March 2023

No	Name	Designation	Organization
1.	George K. Jilloh	County Chief Officer Environment and Climate Change	CGTR
2.	Abdullahi Omar	County Director Environment	CGTR
3.	Simon Mwangi	Deputy County Commissioner, Galedertu Sub-County	CGTR
4.	Philip Looniyo	Programme Policy Officer, Garissa Field Office	WFP
5.	Zipporah Joshua	Livestock Officer	CGTR
6.	Sharon M. Galana	Fisheries Officer	CGTR
7.	Kalu Nyale	County Director	KMD
8.	Jamal Shobe	Ward Administrator, Mikinduni Ward	CGTR
9.	Teresia Bonaya	Senior Water Analyst, CGTR	CGTR
10	Vincent Kiarie	GIS Officer	CGTR
11	George Odera	Project Manager	Nature Kenya
12	Juliana Jilloh	Community Engagement Officer	CISP
13	Maamun Abubakar	Resilience Officer	NDMA
14	Oyoko Omondi	Project Manager	World Vision Kenya
15	Sarah Maiyo	Project Manager	*Welthungerhilfe*
16	Mwanamisi Jillo	Manager	Lower Tana Delta Community Conservancy
17	Malika Dota	Manager	Ndera Community Conservancy
18	Jackbed Mugo	County Renewable Energy Officer	CGTR
19	Aldina Galugalu	Chairman	Chewani Conservancy
20	Komora Elias	Forest Officer	CGTR
21	Bakari Mghana	Forest Officer	CGTR
22	Koshi Riadha	Environment Officer	CGTR
23	Thomas Wambua	Project Manager	ADS Pwani
24	Mohammed Shambaro	Sub-County Administrator, Tana River Sub-County	CGTR
25	Amani Bawata	Assistant Director M/E	CGTR
26	Omara Moses	Field Officer, Special Program	CGTR
27	Kuso Iddi Ahmed	Deputy Regional Director	NRT - Coast

Annex 2: Multi-Stakeholder Technical Team Meeting Held at Ocean Beach Resort and Spa, Malindi from 18th to 20th May2023 to Develop First Draft of The Tana River County Climate Change Action Plan (CCCAP) 2023-2027

No	Name	Designation	Organization
1	George K. Jilloh	County Chief Officer Environment and Climate Change	CGTR
2	Kuso Hussein Kuso	Director Climate Change	CGTR
3	Odera George Joshua	Project Manager	Nature Kenya
4	Anthony Njengi	Project Manager	CISP Kenya
5	Maamun Abubakar	County Drought Resilience Officer	NDMA
6	Alphan Salim	Resilience Officer	CISP Kenya
7	Philip Looniyo	Programme Policy Officer	WFP
8	Komora Machafu	M/E Officer	CGTR
9	Mohamed A. Godana	Environment Officer	CGTR
10	Fatuma Hiribae	Project Officer	Nature Kenya
11	Jackbed Mugo	County Renewable Energy Officer	CGTR

Annex 3: Attendance List for Tana River Sub-County Community/Stakeholders' Validation Meeting Held at the Sub-County Administrator's Office Boardroom on 23rd May 2023

No	Name	Ward/Org	Vilage
1.	Fara M Hargamso	Mikinduni	Kyamnyaka
2.	Suleiman Funan	Wayu	Koticha
3.	Dadecha Khalif	Wayu	Wayu
4.	Lawrence Zablon	Kinakomba	Wenje
5.	Idris Tuna	Wayu	Gururi
6.	Mohamed Godhana	Kinakomba	Fanjua
7.	Bakari Jilo	Kinakomba	Majengo
8.	Yamajid Hussein	Kinakomba	Vukoni
9.	Lina Hadida Berhe	Chewani	Chewani
10.	Omar Hamisi	Kinakomba	Majengo
11.	Amina Hashora	Mikinduni	Bondeni
12.	Amina Kunyo	Wayu	Wayu
13.	Zubeda Mohamed	Chewani	Makere
14.	Ali Ndarami	Chewani	Mji wa wazee
15.	Ali Jillo Mohamed	Chewani	Hola
16.	Gwiyo Adhan	Chewani	Bula Salama
17.	Abdulaziz Swale	Chewani	Bula Salama
18.	Paul Luvo	Chewani	Hola Mission
19.	Asha Awadh	Mikinduni	Mikinduni
20.	Nasra Luli	Kinakomba	Hara
21.	Ibrahim Omar	Mikinduni	Chanani
22.	Shedrack Ade	Chewani	Hola Mission
23.	Ali Ramadhan	Chewani	Hola Mission
24.	Amir Dokota	Wayu	Wayu
25.	Osman Dara	Mikinduni	Kalkacha
26.	Bocha Jamal	CGTR	Mikinduni
27.	Omar Dhadho	Kipini East	Ozi
28.	Suleiman Sala	Kinakomba	Haroresa
29.	Idris Ahmed	Wayu	Dayate
30.	Fatuma Hiribae	Nature Kenya	Hola
31.	Mohamed Shambaro	CGTR	Hola
32.	Abubakar Racho	CGTR	Kinakomba
33.	Mohamed Bakari	Chief Ndura	Handampya
34.	Abdulaziz Guracho	Chewani	Hola
35.	Elizabeth Amos	Mikinduni	Kone
36.	Komora Elias Deye	CGTR	Dept. of Env't
37.	Dido A. Gwiyo	CGTR	Hola

Annex 4: Attendance List for Tana Delta Sub-County Community/Stakeholders' Validation Meeting Held at the Tana Delta Sub-County's Office on 23rd May 2023

No	Name	Ward/Org	Vilage
1.	Abdula M. Bocha	Garsen Central	Onkolde
2.	Dara A. Abubakari	Garsen South	Oda
3.	Hadana N. Chagaso	Garsen West	Garsen
4.	Frida Eliud	Garsen South	Idsowe
5.	Yona Kongwe	Garsen South	Idsowe
6.	Ridhisha H. Maua	Garsen South	Idsowe
7.	Kalil Abdullahi Hussein	Garsen West	Bora Imani
8.	Huko Abadada	Garsen West	Assa
9.	Ali Abdi Gure	Garsen Central	Danisa
10.	Hajila Fatuma Moroa	Garsen Central	Dumi
11.	Abio Bakari	Hurara	Hurara
12.	Hassan Farah	Garsen West	Garsen
13.	Salim G. Swaleh	Garsen North	Vumbwe
14.	Guyato M. Dhidha	Garsen South	
15.	Osman Adhan	Garsen West	Assa
16.	Adhan Gedi	Garsen North	Kitere
17.	Mary Gabriel	Garsen North	Mwina
18.	Ahmed Yusuf	Garsen North	Kurole
19.	Ndwari Maro	Garsen North	Sera
20.	Hashora Asusu	Kipini West	Hurara
21.	Godana Abarufa	Kipini West	Konemasa
22.	Ibrahim Jillo	CGTR-Forester	Minjila
23.	Khadija Salad	CGTR	Minjila
24.	Dakana Huko	Garsen West	Kone
25.	Gladys Hakofa	Garsen Wets	Garsen
26.	Nuru Mohamed Godana	Kipini West	Semikaro
27.	Ali Kalian	CGTR	Minjila
28.	Guyato Habiba	CGTR	Minjila
29.	Sighal Adhan	CGTR	Minjila
30.	Haigwo Jilo	CGTR	Minjila
31.	Odera George	Nature Kenya	Minjila
32.	Jillo Hiribae	CGTR	Minjila
33.	Dukale Omar	CGTR	Minjila
34.	Salim Nyara	Kipini East	Kipini
35.	Bahati Kenga	Kipini East	Kipini
36.	Taksan Omar	Kipini East	Kipini
37.	Hassan Dawa	Kipini East	Shaurimoyo

Annex 5: Attendance List for Tana North Sub-County Community/Stakeholders' Validation Meeting Held at Madogo Ward Administrator's Offices on 23rd May 2023

No	Name	Ward/Org	Vilage
1.	Adhan Mohamed	Bangale	Kanagoru
2.	Isnina Daud Kanchor	Bangale	Basahargesa
3.	Fartun Mohamed	Chewele	Gamano
4.	Hassan Boshe	Sala	Sombo
5.	Asha Mohamed	Bangale	Labile
6.	Rukia Farah Haro	Bangale	Bangale
7.	Fartun Abdi	Bangale	Sukule
8.	Maimuna Safia Madhobe	Sala	Maramtu
9.	Khadija Abdirahman	Hiriman	Hasingo
10.	Sadia Abdullahi	Madogo	Bulashekh
11.	Maimuna Chuchu	Madogo	Bulahuzuni
12.	Abubakar Salim	Madogo	Madogo
13.	Khadija Hassan	Madogo	Buwa
14.	Asil G. Ahmed	Chewele	Nanighi
15.	Maka Mohamed Noor	Chewele	Chardende
16.	Abdi Adhan	Madogo	Laghjilla
17.	Ambia Duri	Hirimani	Bura
18.	Abdi Karim Mogo	Chewele	Chardende
19.	Suleiman Rhoba	Hirimani	Hosingo
20.	Yusuf Bile Adow	Chewele	Bilbil
21.	Patrick Wamolo	Madogo	Madogo
22.	Tumbi Hebron	Madogo	Madogo
23.	Wadesa Mui	Sala	Mororo
24.	Mohamed Abdi	Hirimani	Iddi
25.	Abdulkadir Hussein	Hirimani	Bula Salama
26.	Dulo Balaga	Sala	Sala
27.	Abdullahi Salat	CGTR	Sala
28.	Jillo Seth Walichi	CGTR	Bangale
29.	Jibril Shune	CGTR	Bangale
30.	Shamsa Omar	CGTR	Chewele
31.	Abdikadir Lugumba	CGTR	Madogo
32.	George K. Jilloh	CGTR	Hola
33.	Kuso Hussein	CGTR	Hola
34.	Alii Tulicha	CGTR	Tana North
35.	Asilia Saadia	CGTR	Tana North
36.	Mohamed Godhana	CGTR	Tana North

Annex 6: Attendance List for Stakeholders' Meeting Held at Laza Leisure in Hola on 25th May 2023 to Review and Incorporate Community/Stakeholders Comments into the Action Plan

No	Name	Organization
1.	Kuso Hussein Kuso	CGTR - Department of Environment and Climate Change
2.	Maamun Abubakar	NDMA
3.	Aisha Maliyo	CGTR - Department of Environment and Climate Change
4.	Komora Elias	CGTR - Department of Environment and Climate Change
5.	Fatuma Hiribae	Nature Kenya
6.	Alphan Salim	CISP
7.	Salim Bashir	NEMA
8.	Thomas Wambua	ADS-Pwani
9.	David Obiero	*Welthungerhilfe*
10.	Jackbed G. Mugo	CGTR - Department of Water and Energy
11.	Benjamin B. Agasa	CGTR - Department of Agriculture
12.	Anthony Njenga	CISP
13.	Beatrice Hidavu	CGTR
14.	Collins Obale	World Vision Kenya
15.	Dr. Dan Adino	FLLoCA
16.	Phillip Looniyo	WFP
17.	Omar Mohammed	Hola Municipality
18.	Racheal Jilo	Hola Municipality
19.	Mohamed Salim	Hola Municipality