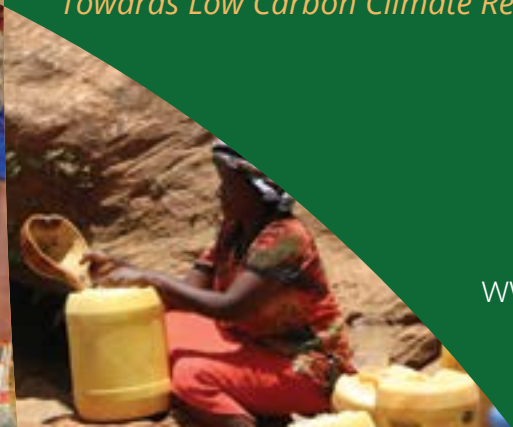
Republic of Kenya

Ministry of Environment,
Climate Change and Forestry







NATIONAL CLIMATE CHANGE ACTION PLAN (NCCAP) III 2023-2027 - VOLUME I

ADAPTATION TECHNICAL ANALYSIS REPORT (ATAR)

Towards Low Carbon Climate Resilient Development

www.environment.go.ke





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Acronyms and Abbreviations

AR6	Sixth Assessment Report
ASAL	Arid and Semi-Arid Land
ATAR	Adaptation Technical Analysis Report
BAU	Business as usual
BETA	Bottom-Up Economic Transformation Agenda
BEV	Burning ethanol vapours
BRT	Bus Rapid Transit
CBD	United Nations Convention on Biological Diversity
CCCF	County Climate Change Fund
CCD	Climate Change Directorate
CDM	Clean Development Mechanism
CEC	County Executive Committee
CIDP	County Integrated Development Plan
CIS	Climate Information Services
CO_2	Carbon dioxide
CoG	Council of Governors
CoP	Conference of the Parties
CORSIA	Convention on International Civil Aviation
COVID-19	Coronavirus 2019
CSA	Climate Smart Agriculture
DRM	Disaster Risk Management
EAC	East African Community
EDE	Ending Drought Emergencies
EPRA	Energy and Petroleum Regulatory Authority

Acronyms and Abbreviations

ERC	Energy Regulatory Commission
FAO	Food and Agriculture Organization
FAW	Fall armyworm
FLLOCA	Financing Locally-led Climate Action Program
GCF	Green Climate Fund
GDC	Geothermal Development Corporation
GDP	Gross domestic product
GEF	Global Environment Facility
GHG	Greenhouse gas
ICAO	International Civil Aviation Organisation
ICT	Information and communication technology
IGAD	Intergovernmental Authority on Development (in Eastern Africa)
ILRI	International Livestock Research Institute
IMO	International Maritime Organisation
IOM	International Organization for Migration
IPCC	Inter-Governmental Panel on Climate Change
KAA	Kenya Airports Authority
KALRO	Kenya Agriculture and Livestock Research Organization
KAM	Kenya Association of Manufacturers
KCAA	Kenya Civil Aviation Authority
KEBS	Kenya Bureau of Standards
KEFRI	Kenya Forestry Research Institute
KenGen	Kenya Electricity Generating Company Ltd.
KENHA	Kenya National Highways Authority

Acronyms and Abbreviations

KEPSA	Kenya Private Sector Alliance
KeRRA	Kenya Rural Roads Authority
KETRACO	Kenya Electricity Transmission Company
KFS	Kenya Forest Service
KIRDI	Kenya Industrial Research and Development Institute
KMA	Kenya Maritime Authority
KMD	Kenya Meteorological Department
KNBS	Kenya National Bureau of Statistics
KES	Kenya Shilling
KURA	Kenya Urban Roads Authority
KWS	Kenya Wildlife Service
LEAP	Low Emissions Analysis Platform
LPG	Liquified propane gas
LTLED	Long-term Low Emission Development Strategy
LULUCF	Land use, land-use change and forestry
M&E	Monitoring and evaluation
MALD	Ministry of Agriculture and Livestock Development
MAM	March–April–May
MECCF	Ministry of Environment, Climate Change and Forestry
MEPS	Minimum Energy Performance Standards
MITC	Ministry of Industrialisation, Trade and Cooperatives
MoEP	Ministry of Energy and Petroleum
MoH	Ministry of Health
MoTWH	Ministry of Tourism, Wildlife and Heritage

Acronyms and Abbreviations

MoYASA	Ministry of Youth Affairs, Sports and the Arts
MLPWH&UD	Ministry of Lands, Public Works, Housing and Urban Development
MMBEMA	Ministry of Mining, Blue Economy, and Maritime Affairs
MRT	Ministry of Roads and Transport
MRV	Measurement, Reporting and Verification
MSME	Micro, small and medium enterprise
MTAR	Mitigation Technical Analysis Report
MTP	Medium Term Plan
MWSI	Ministry of Water, Sanitation and Irrigation
NAP	National Adaptation Plan
NCCAP	National Climate Change Action Plan
NCCC	National Climate Change Council
NCCRC	National Climate Change Resource Centre
NCCRS	National Climate Change Response Strategy
NDA	National Designated Authority
NDC	Nationally Determined Contribution
NDE	National Designated Entity
NDEF	National Drought Emergency Fund
NDMA	National Drought Management Authority
NEMA	National Environment Management Authority
NIE	National Implementing Entity
NMT	Non-Motorised Transport
OND	October–November–December
REA	Rural Electrification Authority

Acronyms and Abbreviations

REDD+	Reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries
SDG	Sustainable Development Goal
SGR	Standard Gauge Railway
SIS	Safeguards Information System
TLU	Tropical Livestock Unit
TNTEP	The National Treasury and Economic Planning
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
WASH	Water, Sanitation and Hygiene
WMO	World Meteorological Organization
WRA	Water Resources Authority

Measurement Units

ha	Hectare
km	Kilometre
m^3	Cubic metre
mm	Millimetre
MCM	Million cubic metre
$MtCO_2e$	Million tons of carbon dioxide equivalent
MW	Megawatt

Executive Summary

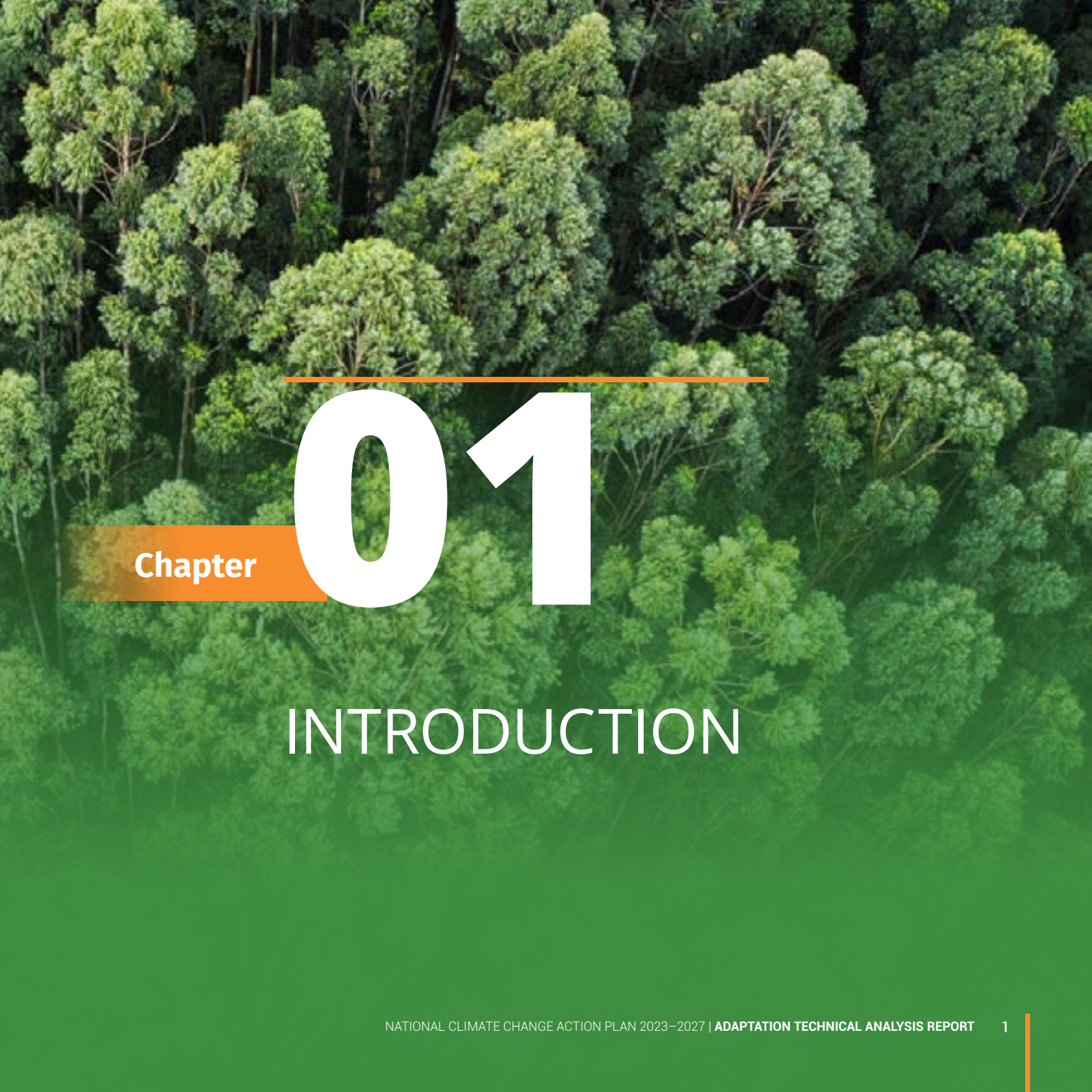
The Adaptation Technical Analysis Report (ATAR III) 2023–2027 explores the adaptation options available for Kenya and outlines the priority actions that inform the development of the National Climate Change Action Plan (NCCAP) 2023–2027. The ATAR III is one of the technical documents underlying the NCCAP 2023–2027 and encourages the mainstreaming of climate change adaptation in government plans, policies, and programmes in line with the Climate Change (Amendment) Act 2023. The development of the ATAR III was undertaken by the Adaptation Thematic Working Group in consultation with the third National Climate Change Action Plan (NCCAP III) Task Force, climate change experts, and other relevant stakeholders. The process to prepare this ATAR also benefited from several consultative sessions with sectors and stakeholders. The adaptation actions in this ATAR, which aims to build Kenya's climate resilience, will be delivered jointly by the national government and county governments. The adaptation actions contained herein address key issues that were identified during the situational analysis stage and through stakeholder consultations.

Sector-specific adaptation actions are set out for the following sixteen priority areas: Disaster Risk Management (Drought and Floods); Agriculture, Food and Nutrition Security (crops, livestock); Energy; Forestry; Health; Human Settlements, Urban Development, and Housing; Manufacturing; Transport and other Infrastructure; Water and Sanitation Management; Tourism and Wildlife; Blue Economy and Fisheries (maritime zone and coastal zone); Women and Vulnerable Groups; Indigenous Peoples; Youth and Children; Land; and Climate Security. The ATAR also includes enabling actions that will support the role of key institutions – Climate Change Directorate, Kenya Meteorological Department, National Environment Management Authority, Kenya Industrial Research and Development Institute, and the Council of Governors – in delivering on their mandates to facilitate adaptation action.

The adaptation actions aim to:

1. Address climate-related hazards in Kenya, including temperature rise and variability (with shifts in temperature belts); rainfall variability (in time and space); increased drought (desertification, including aridity and saline abstraction); floods; landslides; pests, and diseases; ocean acidification; sea level rise (including saline intrusion); and glacial melt (impacting the water cycle).
2. Respond to the climate risks that are caused by exposure to climate hazards and exacerbated by the vulnerabilities of communities and systems.
3. Improve adaptive capacities to address the impacts of climate change that include reduced food and nutrition security, displacements, water scarcity, loss of livelihood and increased vulnerability of infrastructure.





Chapter 01

INTRODUCTION

Climate change continued its advance, with the years from 2015 to 2022 being the eight warmest on record.[1] 2023 saw the hottest June–July–August period in over 170 years of record keeping.[2] The negative effects of the changing climate are impacting Kenya, and the country is experiencing rising temperatures, increasing variability in precipitation, rising sea levels, melting glaciers, and increasing frequency and severity of extreme weather events.

The negative effects of the changing climate are impacting Kenya, and the country is experiencing rising temperatures, increasing variability in precipitation, rising sea levels, melting glaciers, and increasing frequency and severity of extreme weather events. Climate change is an impediment to Kenya's sustainable development and the attainment of the goals of Vision 2030. Climate change is negatively impacting livelihoods and economic development, which are highly dependent on climate-sensitive sectors, such as agriculture, water, energy, tourism, wildlife, and health.

Kenya, being a signatory to the United Nations Framework Convention on Climate Change (UNFCCC) and its Paris Agreement, supports global efforts to slow the rate of temperature rise and implement the global goal on adaptation.[3] In addition, Kenya has a strong history of taking action at the national, county, and local levels to address climate change in a manner that prioritises adaptation, while limiting greenhouse gas emissions.

This Adaptation Technical Analysis Report (ATAR) explores the various adaptation options available and provides detail on the priority actions that are included in the National Climate Change Action Plan (NCCAP) 2023–2027. The ATAR supports the implementation of actions to deliver on the Kenya's National Adaptation Plan 2015–2030 (NAP) and the adaptation contributions in Kenya's Updated Nationally Determined Contribution (NDC).[4,5]

Chapter 2 provides background information including an updated analysis of vulnerability to climate risks and the impacts of climate change, and a review of the progress in the implementation of the priority adaptation actions under NCCAP 2018–2022. Chapter 3 is an overview of the regulatory and policy environment that guides adaptation action. Chapter 4 is the core of this ATAR, setting out the priority adaptation actions. Chapter 5 discusses the actions and institutional framework needed to deliver the priority actions. Chapter 6 sets out the implementation matrix to guide stakeholders in taking adaptation action.

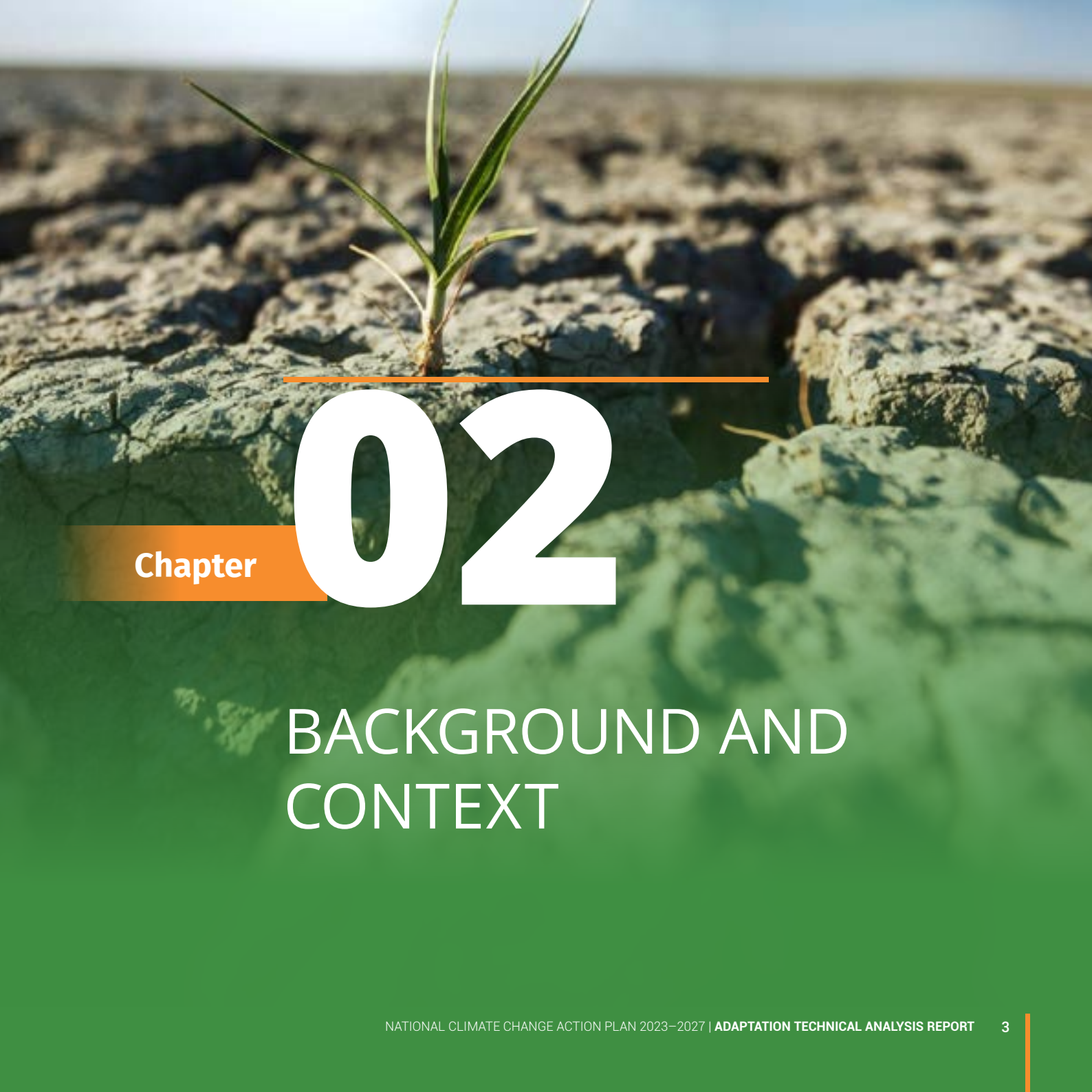
[1]World Metrological Organization (WMO). (2023). State of the Global Climate 2022. WMO-No. 1316. https://library.wmo.int/doc_num.php?explnum_id=11593

[2]Copernicus Climate Change Service. (2023). Summer 2023: The Hottest on Record. Newsflash: August Climate Bulletin. https://climate.copernicus.eu/summer-2023-hottest-record

[3]United Nations Climate Change. (2015). Paris Agreement. Article 7.1. https://unfccc.int/files/meetings/paris_nov_2015/application/pdf/paris_agreement_english_.pdf

[4]Government of Kenya (GoK). (2016). Kenya National Adaptation Plan: 2015–2030. Nairobi: Ministry of Environment and Forestry. https://www4.unfccc.int/sites/NAPC/Documents%20NAP/Kenya_NAP_Final.pdf

[5]GoK. (2020). Updated Nationally Determined Contribution. Nairobi: Ministry of Environment and Forestry. https://unfccc.int/sites/default/files/NDC/2022-06/Kenya%27s%20First%20%20NDC%20%28updated%20version%29.pdf



Chapter 02

BACKGROUND AND CONTEXT

This chapter provides information on Kenya's adaptation goal (see Box 2-1), national and international circumstances, and information on Kenya's adaptation response. A list of adaptation projects that were implemented to deliver on the priority actions in the second NCCAP 2018–2022 is included in this chapter.

Box 2-1 Kenya's Adaptation Goal

What is Adaptation?

Adaptation is the process taken to cope with an uncertain future. Adapting to climate change entails taking action to address the consequences or to take advantage of the positive effects. For example, when faced with increasing drought, we may change the crops we plant or improve rainfall capture and storage.

What is the Global Goal on Adaptation?

As stated in the Paris Agreement, Article 7(1), parties established "the global goal on adaptation of enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to contributing to sustainable development and ensuring an adequate adaptation response in the context of the temperature goal."

What is the Adaptation Goal of the NCCAP, 2023–2027?

The NCCAP aims to further Kenya's development goals by providing mechanisms and measures to achieve low carbon climate-resilient development. The adaptation goal is to enhance the resilience of communities, livelihoods, infrastructure, and natural systems to climate change impacts.

This ATAR will help further Kenya's achievement of low carbon climate-resilient development aspirations by:

- Aligning adaptation actions with the Government's development agenda outlined in the Bottom-Up Economic Transformation Agenda (BETA), Fourth Medium Term Plan (MTP IV), and Kenya Vision 2030;
- Aligning Kenya's adaptation actions with global and regional development agendas and agreements including the Paris Agreement, the Sustainable Development Goals (SDGs), and the Africa Agenda 2063;
- Providing a framework for mainstreaming climate change into sector and county-level functions;
- Encouraging private sector and non-state actors to participate in climate change actions and initiatives; and
- Supporting the implementation of the National Adaptation Plan 2015–2030 (NAP) and Nationally Determined Contribution (NDC) for the period 2023–2030.

2.1 Approach

This ATAR III is an update of the second ATAR 2018–2022. The format and much of the analysis is similar to ATAR II with relevant updates added.

Updating of the ATAR III was led by the NCCAP III Adaptation Technical Working Committee that was set up by the Ministry of Environment, Climate Change and Forestry (MECCF). The committee was comprised of technical experts from the national government, Council of Governors, civil society organisations (CSOs), and the private sector. This updated ATAR provides the technical assessments that underpin the adaptation actions for the five-year period 2023–2027. The technical analysis was spearheaded by the Climate Change Directorate (CCD), which is a directorate under MECCF, and extensive discussions were held with various stakeholders.

2.2 Situational Analysis

The situational analysis of climate change adaptation in Kenya examines the current state of climate change impacts, the strategies and initiatives in place to adapt to these changes, challenges, and opportunities. Climate change hazards in Kenya include temperature increases, changing rainfall patterns, and sea level rise; which have led to droughts and floods, affected food security and water resources, and created changes to Kenya's diverse ecosystems that impact biodiversity and natural resources. Kenya's approach to adaptation is influenced by numerous factors, such as existing and anticipated climate change and its effects on the economy, society, and environment. Adaptation measures are carried out in accordance with county, national, regional, and global legal and policy frameworks, which are discussed in Chapter 3.

2.3 Key Adaptation Issues

Like many other nations, Kenya's adaptation actions must deal with a variety of challenges and the impacts of climate change on its environment, economy, and society. Deliberations with stakeholders for this ATAR III identified several priority issues that need to be addressed through adaptation actions as listed below.

- **Climate hazards –** drought, floods, landslides, pests and diseases, wildfires, tsunamis, hailstorms, and unpredictable extreme weather patterns.
- **Food insecurity** – crops, livestock, fisheries, and aquaculture.
- **Water insecurity –** urban and rural.

- **Climate-induced insecurity –** threats to human security posed by climate change in the form of food insecurity, health insecurity, water insecurity, and personal insecurity such as conflicts due to heightened competition for natural resources such as water and rangeland resources.
- **Infrastructure vulnerability –** including water storage, energy and electricity supply infrastructure, and transportation.
- **Land degradation –** terrestrial (forests, wetlands, rangelands, and agricultural land) and encroaching deserts.
- **Marine and coastal ecosystem degradation –** mangrove forests, coral reefs, sea grass beds, beaches, deltas, salt intrusion, and coastal agriculture.
- **Health concerns –** vector-borne diseases like malaria, dengue fever, Kala-azar, Rift Valley Fever, and water-borne diseases such as cholera and other diarrhoeal illnesses, due to changes in temperature and precipitation patterns.
- **Rising water levels –** Lake Victoria and Great Rift Valley lakes that have recently experienced significant increases in their water levels.

2.4 The Climate of Kenya

Kenya is located at the equator in East Africa, and its climate is influenced by a variety of factors, including its topography, altitude, and proximity to the Indian Ocean. Kenya has a tropical climate modified in some instances by topography and altitude, and its climate varies greatly over time and space.[6,7] As a result, the country experiences a wide range of climatic conditions and is susceptible to climate extremes and impacts such as floods, sea level rise, tsunamis, migratory pests, landslides, and droughts.[8]

Kenya experiences various climatic conditions due to its diverse geography. The coastal regions have warm and humid climates, while some areas are arid or semi-arid. The mean annual rainfall in Kenya varies significantly across different regions (Figure 2-1). The northwestern and eastern parts of Kenya are among the driest regions, receiving approximately 200 mm of rainfall per year. These areas are characterised by low precipitation levels and limited water availability. More than two-thirds of the country receives less than 500 mm of rainfall per year. This indicates that a large portion of Kenya faces dry or semi-arid conditions, making water scarcity and drought significant challenges in these areas. Only 11% of the country receives more than 1,000 mm of rainfall annually. The regions bordering Lake Victoria and the Central Highlands, east of the Rift Valley receive higher amounts of rainfall, ranging from 1,200 to 2,000 mm per year. These areas are relatively wetter and may experience higher humidity levels than other parts of the country.

The spatial distribution of rainfall in Kenya plays a critical role in shaping the country's ecosystems, agriculture, water resources, and overall socio-economic development. Understanding these variations is vital for planning and implementing sustainable water management and agricultural practices to support the livelihoods of people living in different regions.

[6]Climate Change Knowledge Portal. (2022). Kenya: Current Climate – Climatology. World Bank Group. https://climateknowledgeportal.worldbank.org/country/kenya/climate-data-historical

[7]Potsdam Institute for Climate Impact Research (PIK). (2021). Climate Risk Profile: Kenya. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. https://www.adaptationcommunity.net/wp-content/uploads/2021/01/GIZ_Climate-risk-profile- Kenya_EN.pdf.

[8]Kenya Meteorological Department (KMD). (2023). State of the Climate – Kenya, 2022. [Nying'uro, P., Kimutai, J., Kiptum, C., & Ogutu, G (authors)].

[9]KMD. (2021). State of the Climate – Kenya, 2020. https://meteo.go.ke/sites/default/files/downloads/STATE%20OF%20THE%20%20CLIMATE%202020_14042021.pdf

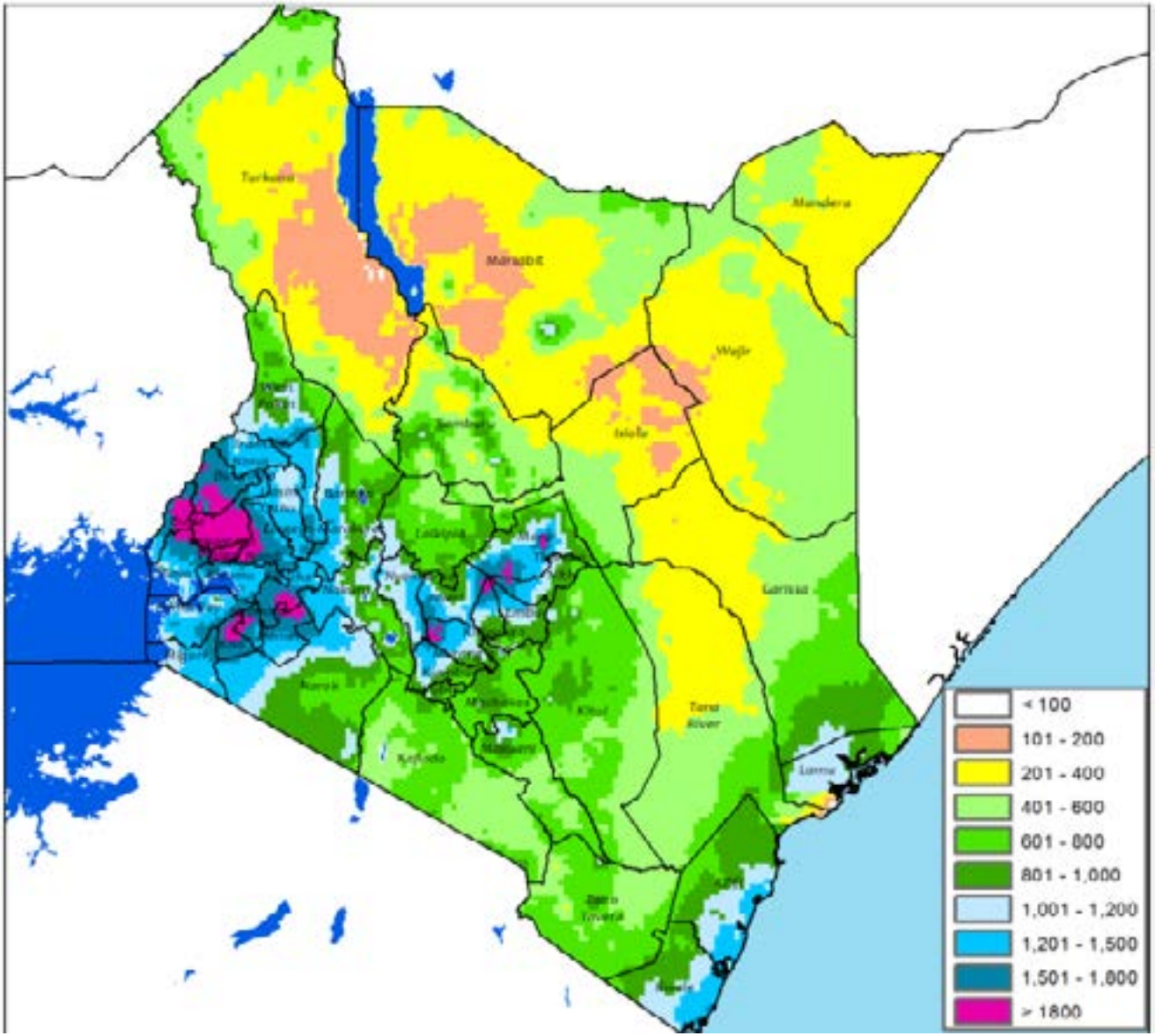


Figure 2-1: Rainfall climatological zones of Kenya based on annual total rainfall

Source: KMD. (2023). State of the Climate — Kenya 2022.

Rainfall in Kenya is seasonal and follows a bimodal distribution pattern. The long rains season occurs from March to May (MAM) and the short rains season from October to December (OND) (Figure 2-2). There is varied spatial distribution and amounts, the coastal region, the highlands west of the Rift Valley and the Lake Victoria Basin experience a third rainfall season between June and August (JJA) (Figure 2-2).

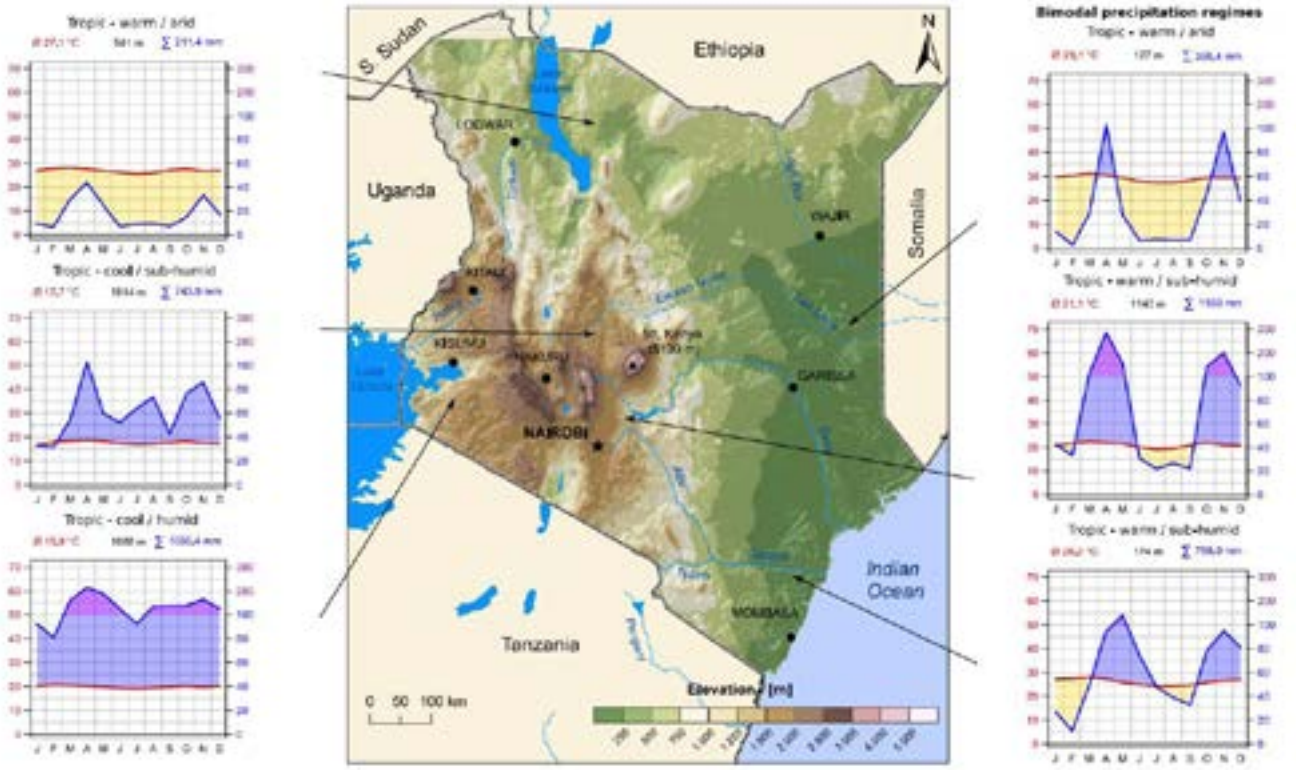


Figure 2-2: Topographical map of Kenya with existing precipitation regimes

Source: Potsdam Institute for Climate Impact Research (PIK) & GIZ. (2021). Climate Risk Profile: Kenya.

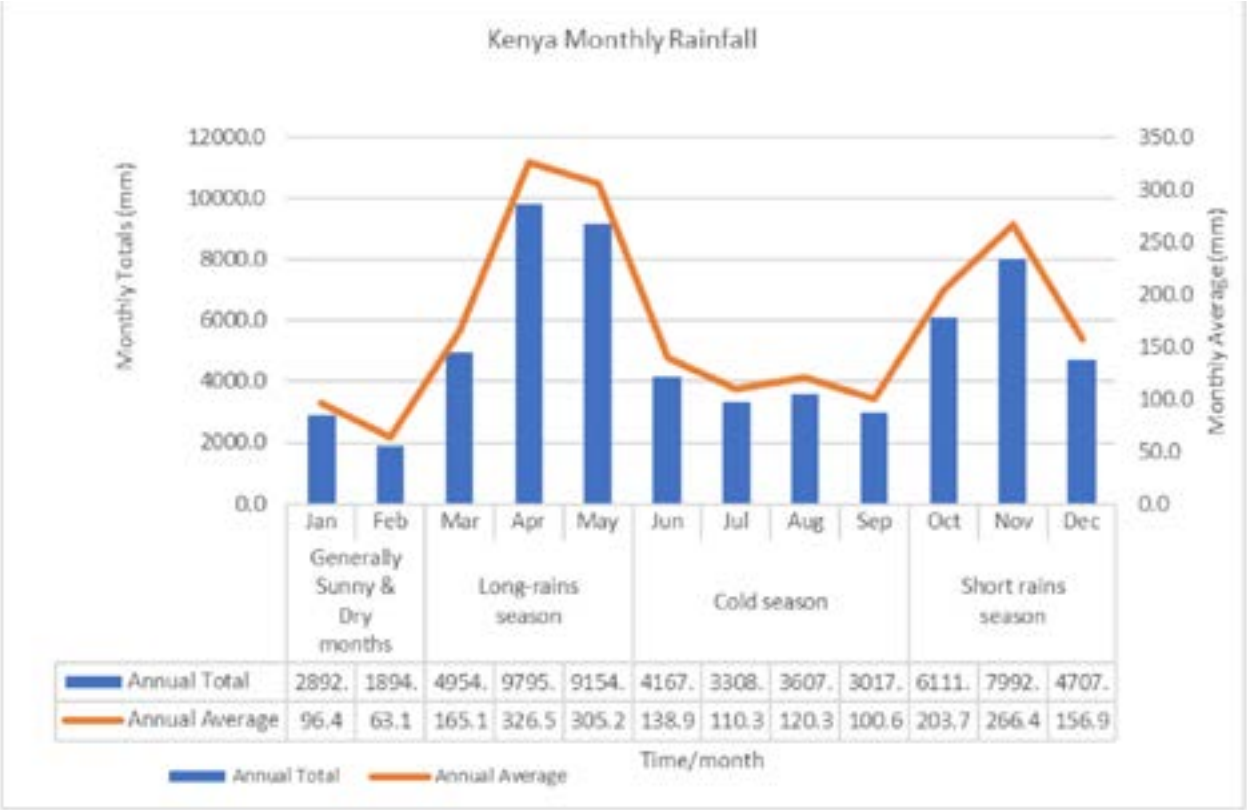


Figure 2-3: Monthly distribution of total rainfall across Kenya

Source: KMD. (2023). State of the Climate – Kenya 2022.

The long and short rains season variedly regarded as important for agricultural production in Kenya, with the agricultural sector accounting for 20% of the Gross Domestic Product (GDP) and 27% of GDP from indirect linkages with other sectors.[10] The agriculture sector in Kenya employs more than 40% of the total population and more than 70% of the rural population.[11]

[10]Central Bank of Kenya. (2023). Agriculture Sector Survey, January 2023. https://www.centralbank.go.ke/uploads/market_perception_surveys/1997478297_Agriculture%20Sector%20Survey%20January%202023.pdf

[11]Central Bank of Kenya. (2023). Agriculture Sector Survey, January 2023.

2.4.1 Climate Trends in Kenya

a) Temperature Trends

The East Africa region in general experienced an increase in temperature from the period 1901–1930 to the period 1991–2021; a similar trend was also observed in the other five sub-regions of the African continent (Figure 2-4).[12]

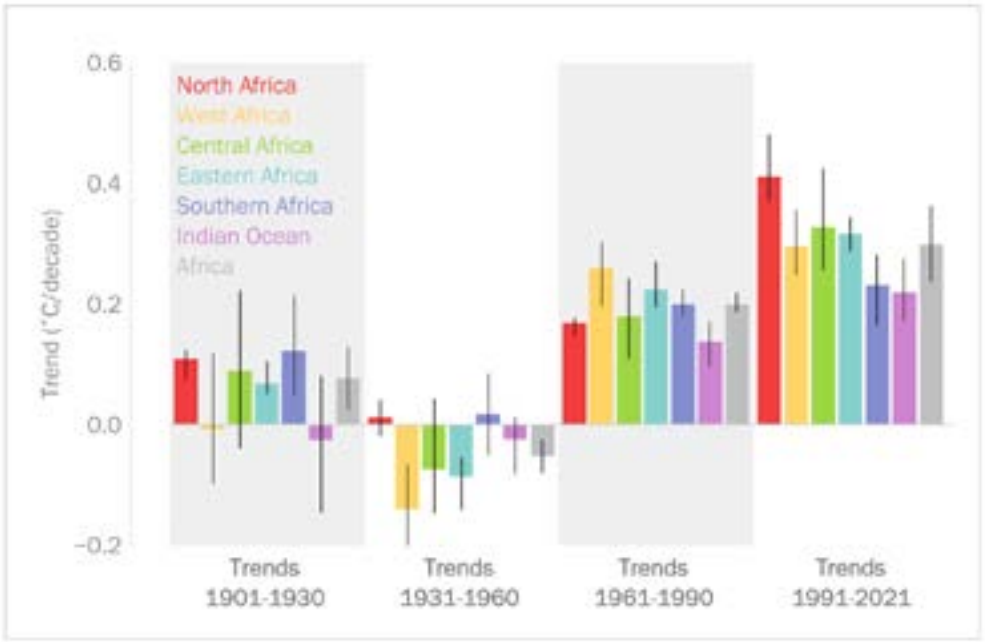


Figure 2-4: Trends in the area average temperature in °C/decade

Source: World Meteorological Organization. (2022). State of the Climate in Africa 2021.

Figure 2-4: Trends in the area average temperature in °C/decade for the six African sub-regions: North Africa (red), West Africa (yellow), Central Africa (green), East Africa (light blue), Southern Africa (dark blue), and Indian Ocean Island countries (purple), and the whole of Africa (grey) over four 30-year sub-periods: 1901–1930, 1931–1960, 1961–1990, and 1991–2021.

Kenya has experienced a warming trend, especially since the 1960s (Figure 2-5). This trend to 2021 was characterised by increasing temperatures, with some areas showing larger increases in both minimum and maximum temperatures. The annual mean temperature rose by approximately 1.0°C over this period, corresponding to an average rate of 0.21°C per decade.[13] The most significant temperature rise was observed during the start of the long rain and humid season, which occurs from March to May.[14,15]

[12] WMO. (2022). State of the Climate in Africa 2021. https://public.wmo.int/en/our-mandate/climate/wmo-statement-state-of-global-climate/Africa-2022

[13] KMD. (2023).

[14] Climate Change Knowledge Portal. (2022). Kenya: Current Climate – Climatology. World Bank Group. https://climateknowledgeportal.worldbank.org/ country/Kenya/climate-data-historical

[15] KMD. (2023).



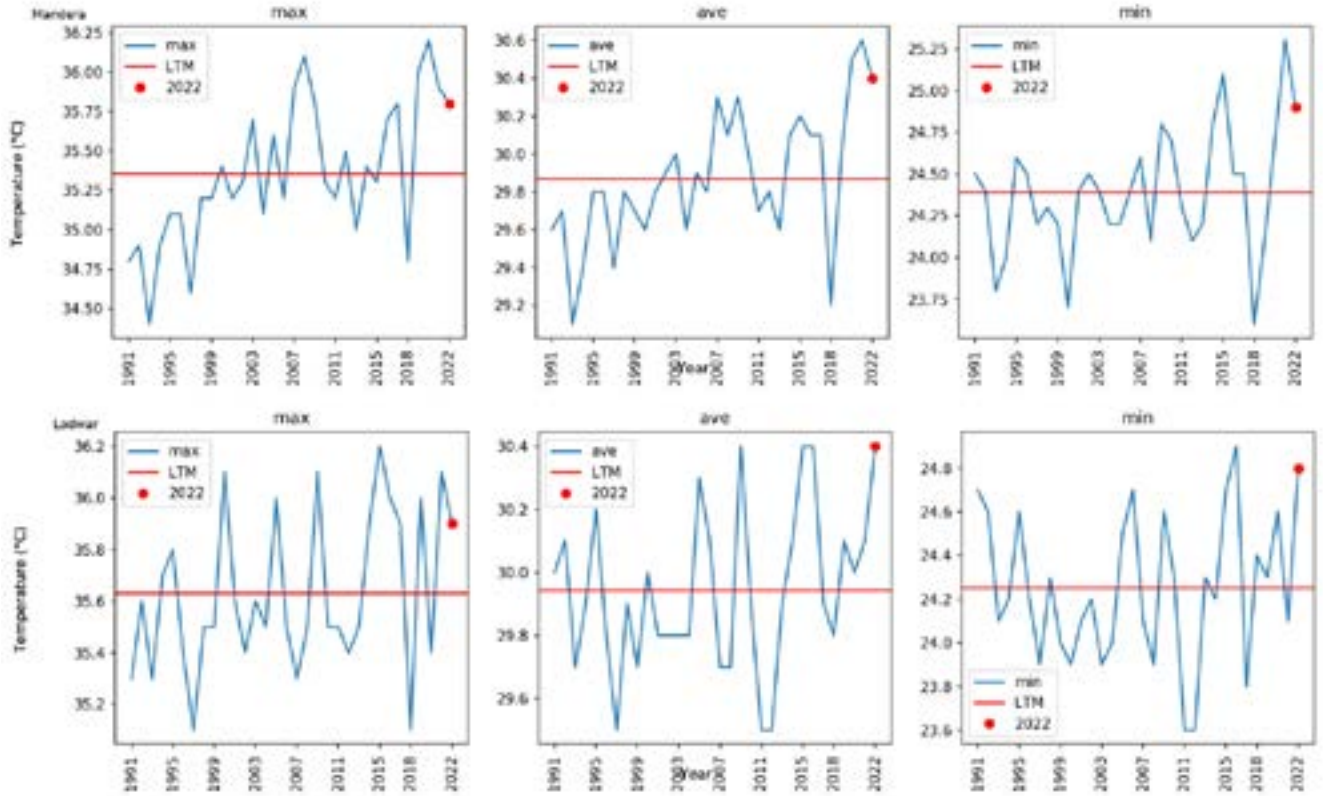
Figure 2-5: Observed average annual mean temperature of Kenya for 1901–2021

Source: Climate Change Knowledge Portal. (2022). Kenya: Current Climate – Climatology, World Bank Group.

The increase in temperature was significant in the ASAL regions of Kenya where temperatures rose dramatically. Annual average maximum temperature increases ranged from 0.58°C to 1.91°C between 1960 and 2013. Within the same time period, the mean annual lowest temperature increased from 0.58°C to 1.69°C, indicating more widespread warming.[16,17]

A KMD analysis of four homogenous climatological zones in Kenya in 2022 (represented by Mandera and Lodwar stations, Kakamega and Kisii, Nyeri and Dagoretti, and Lamu and Mombasa)[18] indicated that the Mandera and Lodwar stations were warmer than normal in terms of maximum, minimum, and average temperatures. From 1991 to 2022, there was a general upward trend in temperature that was more pronounced in Mandera (Figure 2-6).

[16]Climate Change Knowledge Portal. (2022).
[17]PIK & GIZ. (2021).
[18]KMD. (2023).

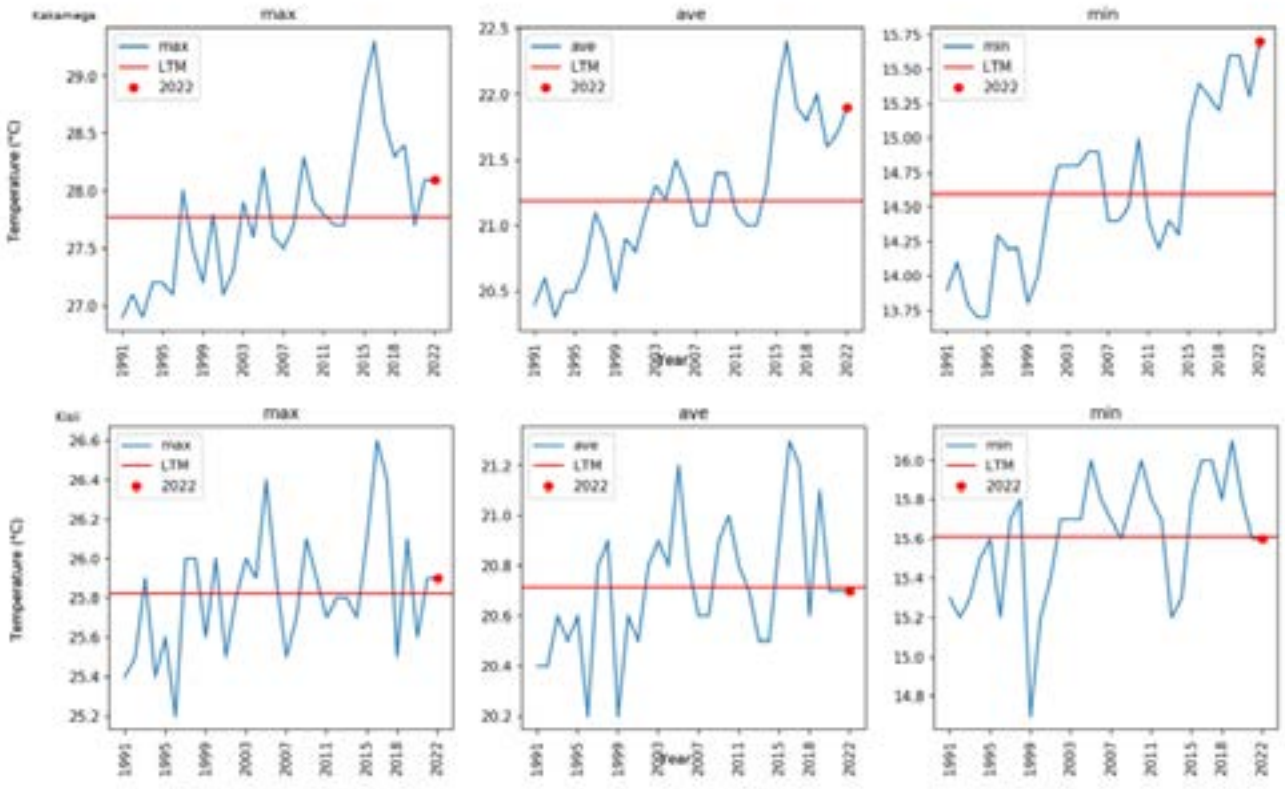


The red marker shows the 2022 temperature record

Figure 2-6: Trends in maximum and minimum temperatures in the Northern Kenya stations of Mandera and Lodwar

Source: KMD. (2023).

In Kakamega, a considerable increasing trend in maximum, minimum, and average temperature is seen throughout the climatological period. The year 2022 was warmer than normal, and the warmest year based on minimum temperature. Kisii, on the other hand, registered average temperature conditions in 2022 (Figure 2-7).

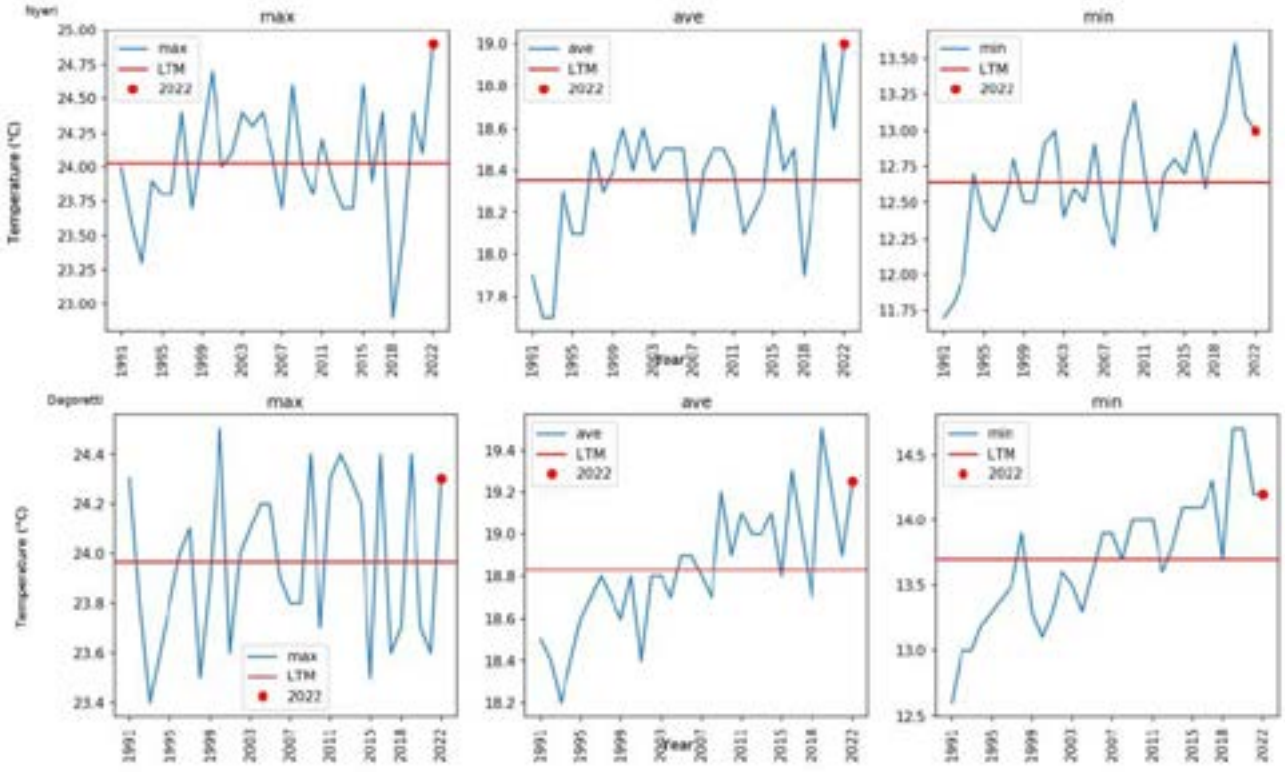


The red marker shows the 2022 temperature record

Figure 2-7: Trends in maximum, minimum temperatures in the western highlands of Kenya stations of Kakamega and Kisii

Source: KMD. (2023).

Despite recording warmer than normal conditions in 2022, stations in the central highlands such as Nyeri and Dagoretti did not exhibit consistent trends in maximum and minimum temperatures (Figure 2-8). Minimum temperatures showed a consistent upward trend while maximum temperatures exhibited less consistency.

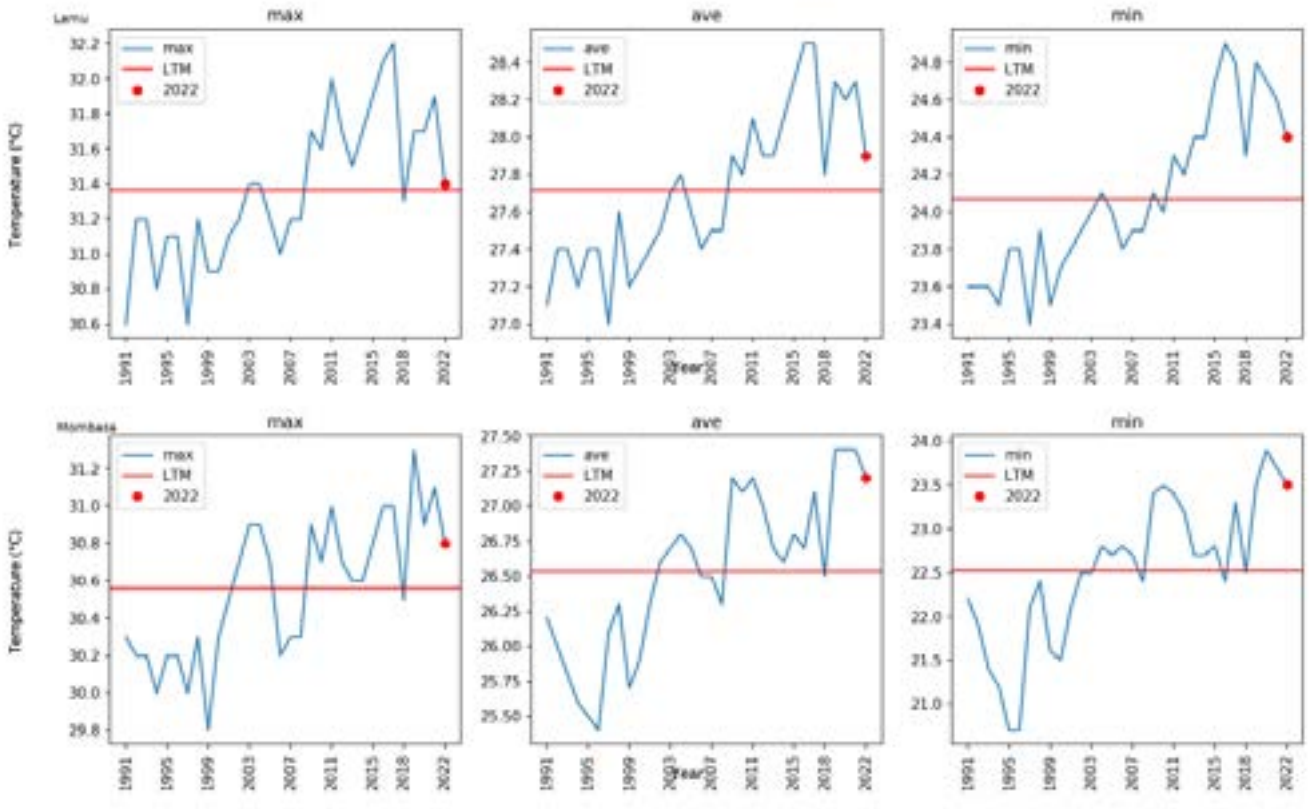


The red marker shows the 2022 temperature record

Figure 2-8: Trends in maximum and minimum temperatures in the central highlands of Kenya stations of Nyeri and Dagoretti

Source: KMD. (2023).

For Lamu and Mombasa, representative of the coastal strip, 2022 was warmer than normal, and trends in temperature (maximum, minimum, and average) demonstrate an increase since 1991 (Figure 2-9).



The red marker shows the 2022 temperature record

Figure 2-9: Trends in maximum, minimum temperatures in the coastal stations of Lamu and Mombasa

Source: KMD. (2023).

The average annual change throughout the country shows that the temperature rise was 0.5°C above average during 2022, using all the available station data. The spatial temperature anomaly (defined as departure from a long-period average) in 2022 in comparison to the climatological period 1991°C 2022 shows that the temperatures in 2022 were generally warmer than average. Temperatures were above normal in the northern, north-eastern, central, and south-eastern highlands. Temperatures were generally below normal along Garissa's coastal strip and inland regions, as well as in the Lake Victoria Basin (Figure 2-10).

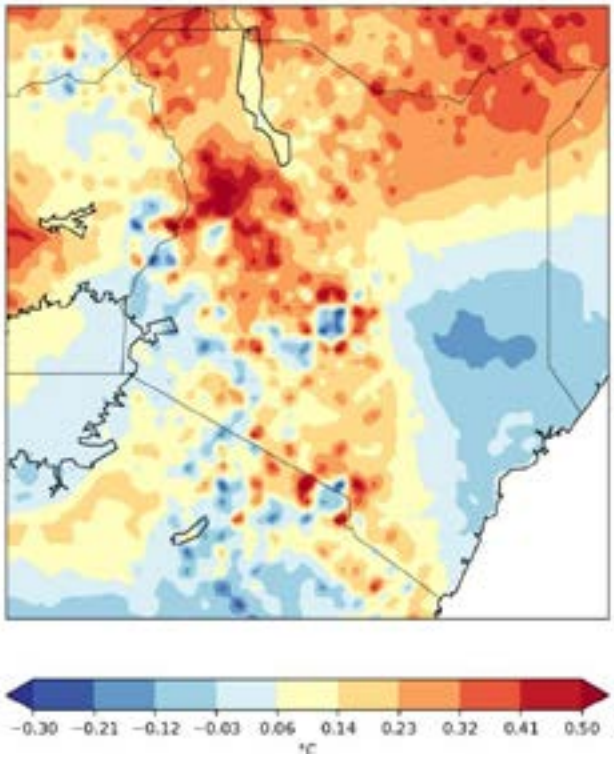


Figure 2-10: Annual average temperature anomaly for 2022 relative to the reference period 1991–2022

Source: KMD. (2023).

b) Precipitation Trends

Total annual and seasonal (MAM and OND) climatological trends in precipitation were analysed by KMD in 2022 for selected representative stations (Mandera and Lodwar stations, Kakamega and Kisii, Nyeri and Dagoretti, and Lamu and Mombasa). The KMD analysis showed high variability of rainfall across time with no consistent trend. The highest rainfall amounts were recorded in 1998 and 2018, both country-wide and over all stations. High seasonal variability also characterised the rainfall in MAM and OND seasons. The observed trends in the four representative stations are described below and illustrated in Figure 2-11 and Figure 2-12:

- Lodwar station showed an upward trend in rainfall until the end of the first decade of the 21st century after which a decline was observed. In 2022, annual rainfall was near equivalent to the long-term mean.
- For Mombasa station, a general decline in rainfall from late 1990s was observed. The highest rainfall amounts were recorded in 1997, while 2021 was the driest year. Rainfall in 2022 was somewhat equal to the long-term mean.
- Upward rainfall trends were observed in Kakamega station.
- No consistent pattern was seen in Dagoretti station, with a general upward trend in total annual rainfall.

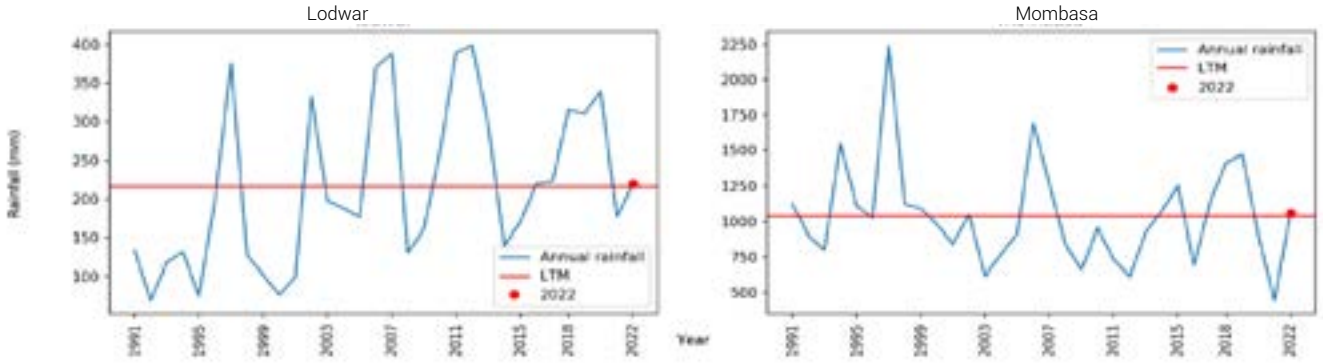


Figure 2-11: Trends in annual rainfall for Lodwar station, northern region and Mombasa station, coastal region

Source: KMD. (2023).

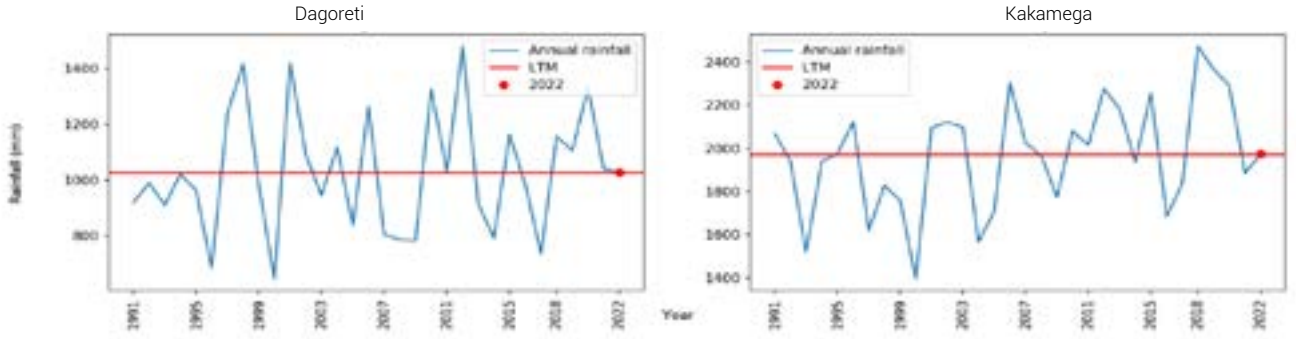
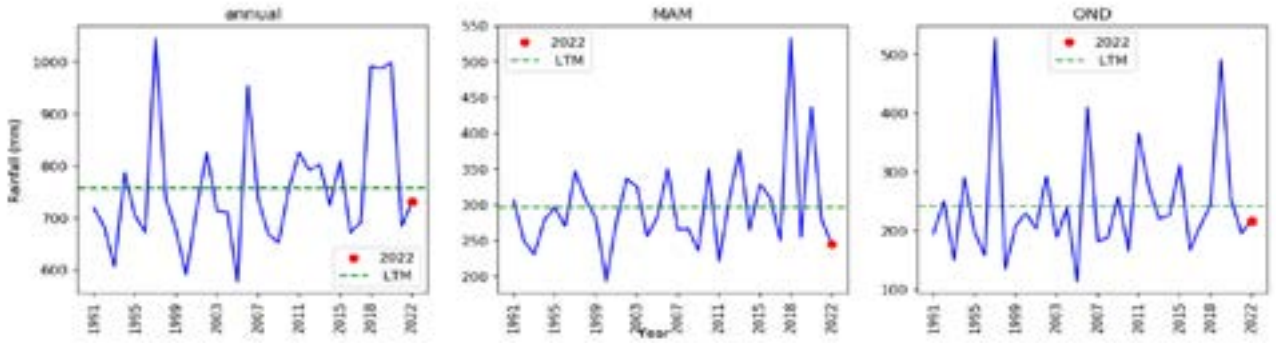


Figure 2-12: Trends in annual rainfall Dagoretti station, central region, and Kakamega station, western highlands region

Source: KMD. (2023).

Figure 2-13 indicates that 1997, 2018 and 2022 were the wettest years, while 2005 was the driest. Below normal rainfall was recorded in 2022. For MAM, a downward trend in rainfall from the early 2000s to mid-2015 dominates the pattern. Spikes are recorded in 2018 and 2020. The years 2000 and 2011 were the driest seasons in the climatological period. There was no significant trend in OND total rainfall. The OND seasons of 1997 and 2019 were the wettest on record, while 2005 and 1998 were the driest. The 2022 annual and seasonal totals were below the climatological mean (Figure 2-13).



The red marker indicates the 2022 value.

Figure 2-13: Trends in total annual: (a) seasonal MAM (b) OND, and (c) rainfall

Source: KMD. (2023).

Kenya experienced below average rainfall in areas and drought in Arid and Semi-Arid Lands (ASALs) between 2014 and 2023. In early 2023, Kenya (and other countries in the Horn of Africa) experienced the longest and most severe drought on record, the result of a culmination of five consecutive failed rainy seasons in most parts, the longest such sequence in 40 years.[19]The severe drought was alleviated with the onset of MAM rains, which were heavier than average and caused loss of life and significant damage to property.[20] Such extreme rainfall events are occurring with greater frequency and intensity.[21]

Annual rainfall patterns have become stochastic in Kenya, with interrupted spatial and temporal distributions. Rainfall increases have been observed during the OND short rains, particularly in northern Kenya, in parts of the Rift Valley, and in the western and eastern regions.[22] In northern and western Kenya, the short rains have been extending into the historically hot and dry months of January and February (Figure 2-15). The number of heavy rain days and the intensity of the events are increasing in the country, especially in the OND short rain season, and the number of consecutive dry days is on the increase.[23]

[19]UN High Commissioner for Refugees. (2023). The Horn of Africa Drought Situation Appeal (January – December 2023). https://reliefweb.int/report/ethiopia/horn-africa-drought-situation-appeal-january-december-2023

[20]Zachary, M., Onyango, L., & Anywayo, P. (2023). From Drought to Deluge: The Effects of Kenya's Onset 'Long Rains' Season 2023. Kenya Red Cross Society. https://reliefweb.int/report/kenya/drought-deluge-effects-kenyas-onset-long-rains-season-2023

[21]IGAD Climate Predictions and Applications Centre. (2022). Report on State of Climate, Peace and Security in the Horn of Africa. https://www.icpac.net/publications/report-on-state-of-climate-peace-and-security-in-the-horn-of-africa/

[22]PIK & GIZ. (2021).

[23]KMD. (2023).

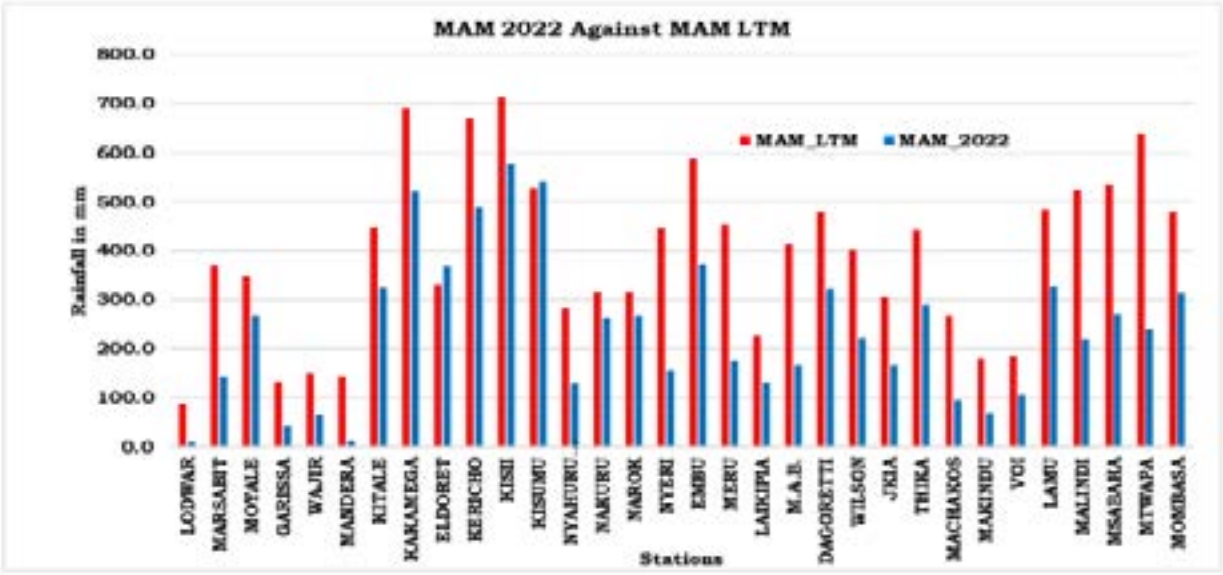


Figure 2-14: MAM 2022 rainfall totals against MAM long-term mean (1991–2020)

Source: KMD. (2023).

2.4.2 Climate Change Projections in Kenya

Projections of temperature and precipitation show that Kenya will continue to be affected by a changing climate. General Climate Modelling data indicates that the mean annual temperature is projected to increase by between 0.8°C and 1.5°C by the 2030s and 1.6°C to 2.7°C by the 2060s.[24] Figure 2-16 provides a visualisation of the trend that GCMs have suggested for increased temperatures for Kenya. There is a good model agreement of temperature increases of up to 3°C by 2100.[25]

[24]Government of Kenya. (2015). Second National Communication to the United Nations Framework Convention on Climate Change. National Environment Management Authority (NEMA, Kenya).

[25]Climate Chance Knowledge Portal. (2022).

Temperature

The degree of temperature increase will vary between regions; for example, the lowlands may experience a higher rate of temperature increase than the plateaus and highlands. By 2025, temperature increases are estimated to be between 0.9°C and 1.1°C in the western and northern regions of Kenya and slightly lower (0.5°C) in the southern coastal region.[26] In line with rising mean annual temperatures, the annual number of very hot days (days with daily maximum temperature above 35°C) is projected to rise substantially, particularly over central and eastern Kenya (Figure 2-15).

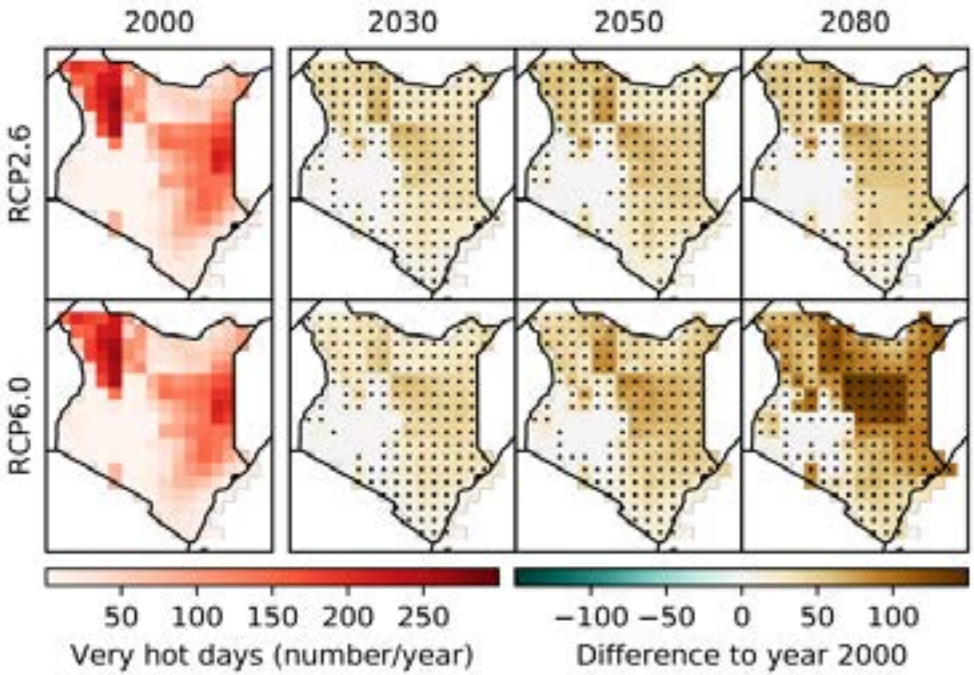


Figure 2-15: Projected annual number of very hot days in Kenya

Source: PIK & GIZ. (2021). p. 4.

[26]GoK. (2020). Updated Nationally Determined Contribution. Nairobi: Ministry of Environment and Forestry. https://unfccc.int/sites/default/files/NDC/2022-06/Kenya%27s%20First%20%20NDC%20%28updated%20version%29.pdf

Precipitation

The future projections of precipitation for Kenya modelled in the PIK/GIZ analysis indicate that precipitation will be subject to high natural year-to-year variability (Figure 2-16), and the projections are less certain than projections of temperature change. The Representative Concentration Pathway (RCP) 6.0 scenario, characterised as the Intergovernmental Panel on Climate Change's (IPCC) medium scenario, anticipates greenhouse gas emissions peaking around 2080 and subsequently declining.[27] According to this scenario, projections for Kenya suggest either no change or a slight decrease in mean annual precipitation up to the year 2050. However, after 2050, there is an expectation of intensified precipitation increases. Under an RCP 2.6 scenario (the low emissions scenario where human-caused climate change is limited), Kenya is expected to experience a slight increase in precipitation towards the year 2030, and an overall decrease in precipitation towards the end of the century.[28] KMD models project heavy declines in rainfall during the JJA period, except for a few areas in western Kenya and around Lake Victoria, where there may be slight increases in rainfall. In general, an increase in rainfall is projected in the OND short rains period and declines during the MAM long rains season for most parts of Kenya.[29]

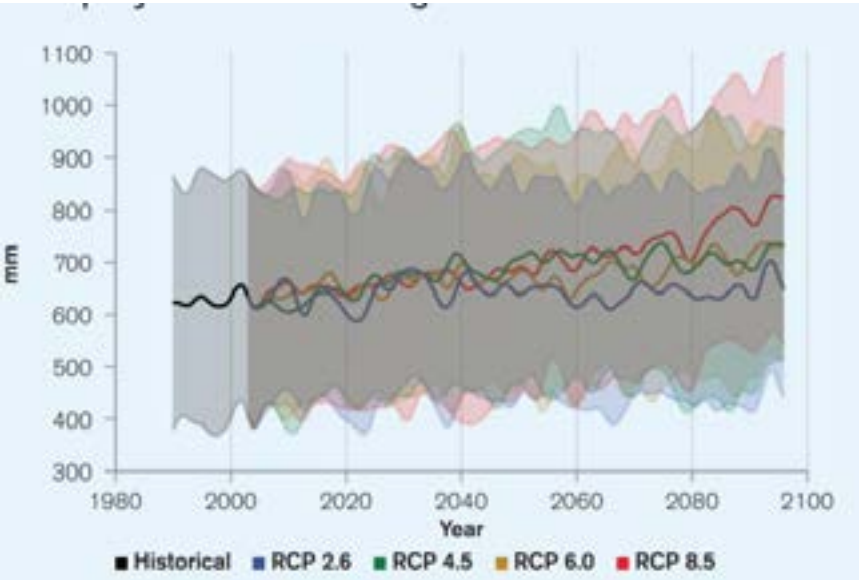


Figure 2-16: Annual average precipitation trends and projections for Kenya, for 1986 to 2099

Source: World Bank Group. (2021). Kenya Country Profile. https://climateknowledgeportal.worldbank.org/sites/default/files/2021-05/15724-WB_Kenya%20Country%20Profile-WEB.pdf

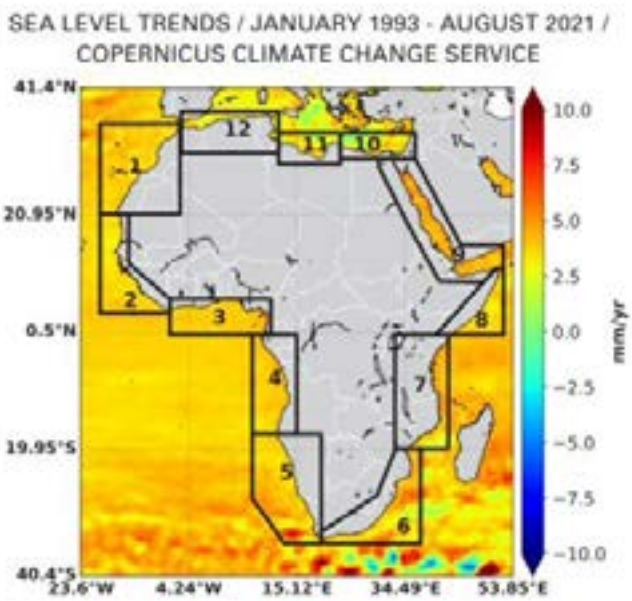
[27]IPCC. (2019). Scenario Process for AR5: Representative Concentration Pathways (RDPs.) Date Distribution Centre. https://sedac.ciesin.columbia.edu/ddc/ar5_scenario_process/RCPs.html

[28]PIK & GIZ. (2021).

[29]KMD. (2023).

Sea Level Rise

The World Meteorological Organization (WMO) in its State of the Climate in Africa report indicated that since "the early 1990s, sea level has been routinely measured globally and regionally by high-precision altimeter satellites. During this period, global mean sea level has risen at an average rate of 3.3 ± 0.4 mm/year (a total global increase of about 8 cm), and has even accelerated in response to ocean warming and land ice melt. The rate of rise is not geographically uniform, however, mostly due to non-uniform ocean thermal expansion and regional salinity variations."[30] Sea level rise is increasing along the African coastlines including the Kenyan coast on the Indian Ocean is at a higher rate than the global mean rate, where the rate is close to 4 mm/year (Figure 2-17).



Ocean	Box number	Rate of sea level rise (mm/yr)
North Atlantic	1	3.66 ± 0.1
Tropical Atlantic	2	3.31 ± 0.1
	3	3.64 ±0.1
South Atlantic	4	3.62 ± 0.1
	5	3.78 ± 0.1
Indian Ocean	6	3.92 ± 0.1
	7	3.98 ± 0.2
	8	3.66 ± 0.2
Red Sea	9	4.42 ± 0.2
Mediterranean Sea	10	3.06 ± 0.1
	11	3.13 ± 0.2
	12	2.47 ± 0.2
Global	-	**3.3 ± 0.4**

Figure 2-17: Sea level trends at the 12 coastal regions of Africa covering the period from January 1993 to August 2021: the Indian Ocean (6, 7, and 8), Right: Table indicating the sea level rise in mm/year for the 12 coastal regions of Africa and the global ocean.

Source: World Meteorological Organization. (2022). State of the Climate in Africa 2021. p. 16.

[30]WMO. (2022). State of the Climate in Africa 2021. p. 15.

Rising sea level is a concern for Kenya's coastal areas. Sea level rise along the Kenyan coast is anticipated to be greater than the average global projections. Currently, the annual rise is about 3.98 ± 0.2mm.[31] Figure 2-18 illustrates the expected increase under RCP 4.5, which is the moderate scenario in which greenhouse gas emissions peak around 2040 and then decline.

Increasing sea surface temperatures, marine heatwaves, and ocean acidification alongside rising sea levels and stronger storm surges impact marine life, and lead to coastal erosion and increased risk of flooding in the five coastal counties (Kwale, Mombasa, Kilifi, Tana River and Lamu).

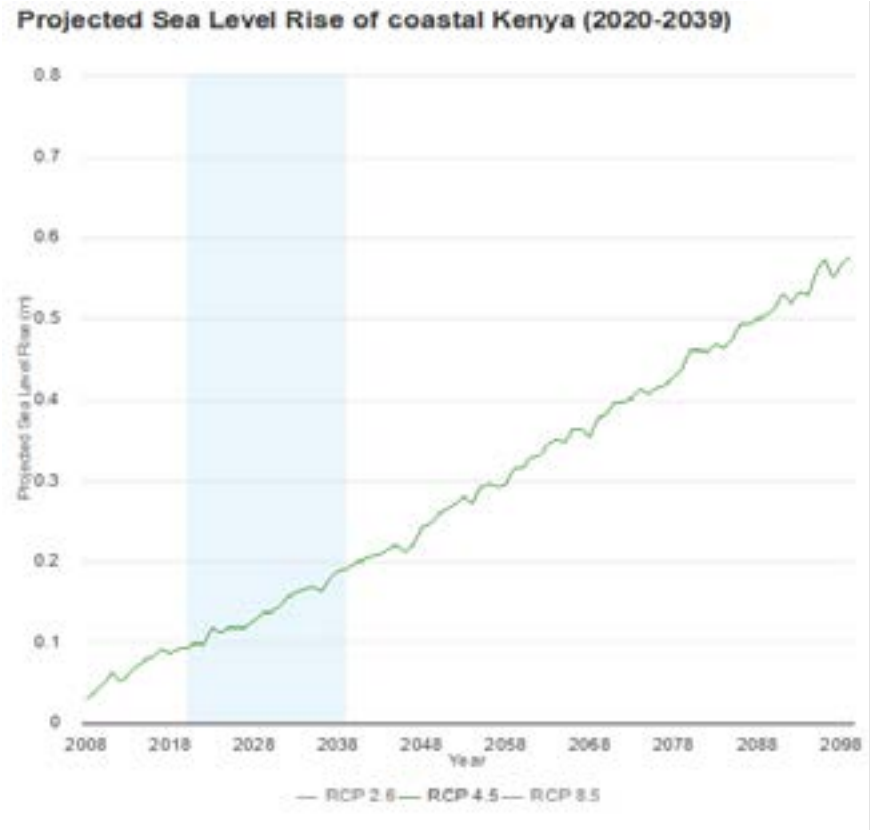


Figure 2-18: Projected sea level rise along the Kenyan coast between 2008–2098 (RCP 4.5)

Source: World Bank Group. (2021). Kenya Impacts – Sea Level Rise. Climate Change Knowledge Portal. https://climateknowledgeportal.worldbank.org/country/kenya/impacts-sea-level-rise

[31]WMO. (2022).

2.4.3 Vulnerability of Systems, Sectors and Populations

The IPCC defines vulnerability as "the propensity or predisposition to be adversely affected and encompasses a variety of concepts and elements, including sensitivity or susceptibility to harm and lack of capacity to cope and adapt."[32] Vulnerability, along with climate hazards and exposure, contribute to climate risks (see Box 2-2).

The high levels of climate vulnerability in Kenya can be attributed to a low-lying coastline; heavy dependence on rainfed agriculture; water scarcity; insecure land tenure; and environmental degradation and related conflicts over natural resources like water and pasture during the very dry seasons.[33] In addition, communities and systems in the ASALs – which constitute up to 89 percent of the land area and 38% of the country's total population[34] – are highly vulnerable to climate change because of high levels of poverty and recurring droughts.

Box 2-2 IPCC concepts: Components of climate risk

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."Vulnerability is determined, in part, by the capacity of industries and governments to adapt to the effects of climate change.



These flow directly from temperature increase, drought,precipitation, and sea level rise. These include both acute risks (e.g.: rarer hurricanes becoming more frequent) and chronic risks (e.g.: gradual decreases in crop yields as temperatures rise).

This is determined by the location of a business activity, asset, or human settlement, and whether this coincides with increased likelihood of climate hazards.

[32]IPCC. (2022). Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D. C. Roberts, M. Tignor, E. S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds). Cambridge and New York: Cambridge University Press. p. 43. https://report.ipcc.ch/ar6/wg2/IPCC_AR6_WGII_FullReport.pdf

[33]Marigi, S. N. (2017). Climate Change Vulnerability and Impacts Analysis in Kenya. American Journal of Climate Change, 6, 52–74 https://doi.org/10.4236/ajcc.2017.61004

[34]Ministry of East African Community (EAC), the ASALs and Regional Development. (2019). Message from the PS. https://www.asals.go.ke/#:~:text=The%20ASALs%20make%20up%20to,approximately%2038%25%20of%20Kenya%27s%20Population

Risk in this is defined as the potential for adverse consequences for human or ecological systems, recognising the diversity of values and objectives associated with such systems. In the context of climate change impacts, risks result from dynamic interactions between climate-related hazards with the exposure and vulnerability of the affected human or ecological system. In the context of climate change responses, risks result from the potential for such responses not to achieve the intended objective(s) or from potential trade-offs or negative side-effects. Risk management is defined as plans, actions, strategies or policies to reduce the likelihood and/or magnitude of adverse potential consequences, based on assessed or perceived risks.

Vulnerability is a component of risk, but also, independently, an important focus. Vulnerability is defined as the propensity or predisposition to be adversely affected and encompasses a variety of concepts and elements, including sensitivity or susceptibility to harm and lack of capacity to cope and adapt.

Exposure is defined as the presence of people; livelihoods; species or ecosystems; environmental functions, services and resources; infrastructure; or economic, social or cultural assets in places and settings that could be adversely affected. Potentially affected places and settings can be defined geographically, as well as more dynamically, for example through transmission or interconnections through markets or flows of people.

Adaptation is defined, in human systems, as the process of adjustment to actual or expected climate and its effects in order to moderate harm or exploit beneficial opportunities. In natural systems, adaptation is the process of adjustment to actual climate and its effects; human intervention may facilitate this. Adaptation planning in human systems generally entails a process of iterative risk management. Different types of adaptation have been distinguished, including anticipatory versus reactive, autonomous versus planned, and incremental versus transformational adaptation. Adaptation is often seen as having five general stages: (a) awareness, (b) assessment, (c) planning, (d) implementation, and (e) monitoring and evaluation.

Government, non-government, and private-sector actors have adopted a wide variety of specific approaches to adaptation that, to varying degrees, conform to these five general stages. Adaptation in natural systems includes autonomous adjustments through ecological and evolutionary processes. It also involves the use of nature through ecosystem-based adaptation. The role of species, biodiversity and ecosystems in such adaptation options can range from the rehabilitation or restoration of ecosystems (e.g., wetlands or mangroves) to hybrid combinations of so-called green and grey infrastructure (e.g., horizontal levees).

The WGII Sixth Assessment Report emphasizes the assessment of observed adaptation-related responses to climate change, governance and decision-making in adaptation and the role of adaptation in reducing key risks and global scale reasons for concern, as well as limits to such adaptation.

Resilience is defined as the capacity of social, economic and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganising in ways that maintain their essential function, identity and structure while also maintaining the capacity for adaptation, learning and transformation. Resilience is an entry point commonly used, although under a wide spectrum of meanings. Resilience as a system trait overlaps with concepts of vulnerability, adaptive capacity and, thus, risk, and resilience as a strategy overlaps with risk management, adaptation and transformation. Implemented adaptation is often organised around resilience as bouncing back and returning to a previous state after a disturbance.

IPCC. (2022). Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H. -O. Pörtner, D. C. Roberts, M. Tignor, E. S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem & B. Rama (eds.)]. Cambridge and New York: Cambridge University Press. p. 43. https://report.ipcc.ch/ar6/wg2/IPCC_AR6_WGII_FullReport.pdf

In 2020, Kenya was ranked 149th out of 181 nations in the 2020 Notre Dame Global Adaptation Initiative (ND-GAIN) index, which ranks countries on their level of vulnerability to climate change and readiness to implement adaptation solutions (see Figure 2-19).[35] In 2021, Kenya ranked 151 out of 181 countries, meaning that Kenya was the 41st most vulnerable country and the 152nd most ready country – meaning that it is very vulnerable to, yet unready to combat climate change effects.[36]

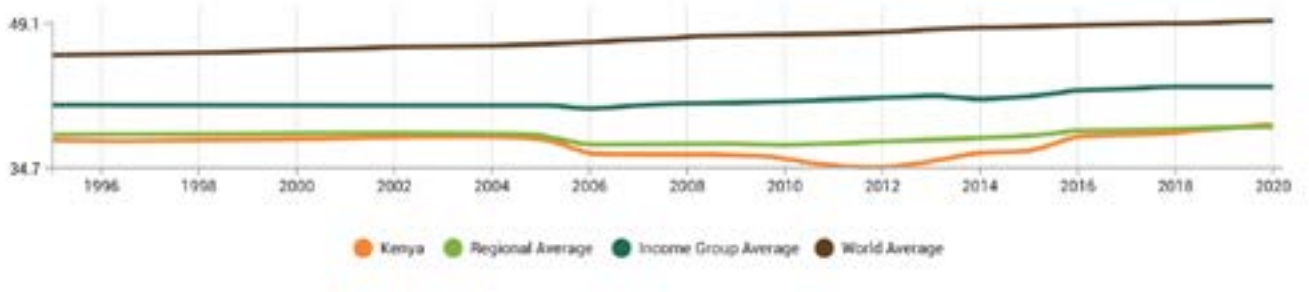


Figure 2-19: ND-GAIN Index for Kenya

Source: USAID Data Services. (n.d.). International Data and Economic Analysis: ND-GAIN Overall Country Index. https://idea.usaid.gov/cd/kenya/environmentand-global-climate-change

Various groups, locations and systems in Kenya are particularly vulnerable to climate change.

The water resources, agriculture, health, forestry, and wildlife sectors, as well as its coastal zones, are vulnerable to the impacts of climate change. Urban and rural infrastructure are vulnerable, especially for poor and marginalised groups. The IPCC sixth assessment report details some socio-economic and environmental features of the East African region (Kenya included) that increase vulnerability to future risks. These include:[37]

- Economic dependence on climate-sensitive sectors such as agriculture, livestock, fisheries and forestry, making them particularly vulnerable to climate change impacts.
- Rapid urbanisation and a rise in the number of people living in poorly serviced informal settlements that creates more hotspots for climate hazards.

[35]ND-GAIN (Notre-Dame Global Adaptation Index). (2021). Kenya | ND-GAIN Index. https:// gain-new.crc.nd.edu/country/Kenya.

[36]ND-GAIN Index. (2022). ND Gain Index: Rankings – Kenya. https://gain.nd.edu/our-work/country-index/rankings/

[37]IPCC. (2022). Climate Change 2022: Impacts, Adaptation, and Vulnerability.

- High population growth in low-lying coastal areas that will expose millions more in Kenya to the risks of sea-level rise. 108–116 million people in Africa are expected to be exposed to sea-level rise by 2030 as compared to 54 million people in the year 2000. Coastal cities of East, West, and North Africa are particularly vulnerable. Mombasa, for example, is home to the international seaport in East Africa, and harm to the city's infrastructure may have repercussions for trade throughout the region. More generally, critical ecosystems, food security, and water quality would all be impacted by sea level rise.[38]

Certain areas have increased vulnerability to climate change. The effects of drought are more devastating in the ASALs where livestock production through predominantly semi-nomadic pastoralism is the main source of livelihoods.[39] The Kano plains, Budalangi in western Kenya, and the low-lying coastal regions of the Tana delta are all hotspots for flooding. This is partly due to inadequate enforcement, planning and environmental management, especially in informal human settlements, where flash flooding often has devastating impacts.

Rising temperatures and changing precipitation patterns are disrupting water flows and affecting ecosystems, creating and worsening natural hazards and threatening livelihoods. Mountain ecosystems are more sensitive to climate change compared to other terrestrial ecosystems, and mountain dwellers have less income on average compared to people living downstream. As a result, the effects of climate change in the mountains fall disproportionately on both ecosystems and people. The five main Water Towers (Mt Elgon, Mau, Cherangany Hills, Aberdares, and Mt. Kenya) provide approximately 75% of Kenya's water resources. The major hydropower stations in the country are along rivers that originate from these ecosystems.[40]

Environmental degradation and increased competition for land and water further increases the vulnerability of pastoralist communities, hunters and gatherers, and fishing communities. For instance, high rates of cattle mortality were seen in several counties in March 2023 due to prolonged drought. The ASALs that were severely impacted by above-average livestock death rates (5%) during the 2021–23 drought episode were Marsabit, Kajiado, Isiolo, Samburu, Turkana, Wajir, and Mandera.[41] Pastoralists are vulnerable to climate change, whereby dwindling natural resources are exacerbated by drought. Shortage of water and fodder for livestock can lead to conflict because of competition for the scarce resources.[42]

The impacts of climate change are not gender neutral. They affect women and men differently given their traditional roles, societal expectations, and livelihoods. Women have increased vulnerability to many climate change impacts due to their lower incomes, less access to credit, limited decision-making authority, and limited control over resources.

The role of women as the primary caregivers and providers of food and fuel makes them more vulnerable when drought and flooding occurs. Women and girls often have to travel far to fetch water and firewood, which increases threats to their security, decreases productivity in other areas, and reduces time available for schooling in the case of girls. The UN Children's Fund reported that drought has increased gender-based violence, and issues that emerge during droughts include school drop-outs, teen pregnancies, teen marriages, transactional sex for basic needs including water, violence against children, child migration, and

[38]World Bank. (2021). "Kenya Moves to Locally Led Climate Action." World Bank Blogs, October 27. https://blogs.worldbank.org/nasikiliza/kenya-moves-locally-led-climate-action

[39]Mulwa, F., Li, Z. and Fangninou, F. F. (2021). Water Scarcity in Kenya: Current Status, Challenges and Future Solutions. Open Access Library Journal, 8, 1–15. doi: 10.4236/oalib.1107096.

[40]United Nations Environment Programme. (2022). Mountains ADAPT Solutions from East Africa.

[41]NDMA. (2023). National Drought Early Warning Bulletin, June 2023.

[42]Smith, G. (2021). Heading into the Worst: How drought drives conflict in Kenya. Aljazeera. https://www.aljazeera.com/ features/2021/12/22/how-drought-drives-conflict-in-Kenya

family separation.[43] Furthermore, women's and girls' health are endangered by climate change and disasters limiting access to services and healthcare, as well as increasing risks related to maternal and child health.

The main climate hazards and climate change vulnerabilities in Kenya are summarisedin Table 2-1 below.

Table 2-1: Climate Hazards and Climate Change Vulnerabilities in Kenya

Climate Hazards	Climate Change Vulnerability
Acute Increased frequency and severity of: • Heat stress • Extreme weather events • Floods • Landslides • Wildfires **Chronic / Slow onset** • Drought • Changes in precipitation patterns • Glacier retreat • Sea level rise and stronger storm surges • Ocean acidification	**Key sources of vulnerability** • High levels of multi-dimensional poverty in the ASALs; 18% of the population was considered extremely poor in 2022 (living on less than USD 1.90 per day) • Significant disparities between rural and urban areas, poverty rates in rural areas were 6.5 times higher than urban areas in 2022 • Population growth, with 75% of the population under the age of 35 in 2019 with no access to income • Gender inequality • High reliance of the national economy and local livelihoods on natural resources • High dependence on rainfed agriculture and insufficient irrigation systems; 98% of agriculture production is rainfed • Water scarcity and mismanagement of water resources • Environmental degradation, including loss of forest cover • Pastoral mobility that may lead to conflicts over resources • Insecure land tenure and land fragmentation • Migration to urban areas • Poor urban and land-use planning; rapid and haphazard urbanisation • Large number of informal settlements due to rural–urban migration • Limited access to quality healthcare, particularly in rural areas • Inadequate access to improved technologies • Inadequate finance to address climate change priorities
	Particularly vulnerable regions • Arid and semi-arid lands (ASALs) • Flood prone areas including low-lying coastal regions, floodplain and riverine areas like the Tana Delta, Kano Plains and Budalangi, • Mountainous regions

[43]UN Children's Fund. (2023). UNICEF Kenya Humanitarian Situation Report No. 6, 10 August 2023 (January to June 2023). https://reliefweb.int/report/kenya/unicef-kenya-humanitarian-situation-report-no-6-10-august-2023-january-june-2023

Climate Hazards	Climate Change Vulnerability
	Particularly vulnerable groups • Pastoralist communities, hunters and gatherers, and fisher communities • Women • Children/Youth • Persons with disabilities (PWDs) • Elderly • Livelihoods dependent on natural resources • People living in informal settlements • People inhabiting flood plains and riverine land • Indigenous peoples People (pastoralists and climate refugees) on the move with access to limited basic human needs

Source: ATAR Technical Working Group. (2023).

2.4.4 Climate Change Impacts in Kenya

Climate change is having an impact on Kenyans. People all around the country are being impacted by rising average temperatures, a rise in climatic extremes, unpredictable rainfall patterns, and an increase in the frequency of droughts and floods. Historically, extreme climatic events have caused significant loss of life and adversely affected the national economy, for example the tourism industry and rain-fed agriculture, two main drivers of Kenya's economy that are vulnerable to climate change and severe weather. Droughts and rising temperatures cause catastrophic agricultural and livestock losses that put people's health and well-being in danger by causing starvation, malnutrition, displacement, and relocation, among other problems. Sea level rise poses a threat to Kenya's primarily low-lying coastline and the nearby islands, with considerable ramifications for the fishing industry and storm surge defences.

In Kenya, the effects of climate change are already being seen, and they are seriously harming the country's socioeconomic situation. In the last ten years, socioeconomic losses brought on by climate change have cost between 3% and 5% of GDP. Modelling (RCP 8.5) predicts that between 2021 and 2050, Kenya could lose an additional 4% of GDP annually. Even under the most hopeful scenarios, the effects of climate change would worsen because agriculture and tourism are two sectors of the economy that rely significantly on them. Exposure to climate-related calamities will increase along with the economic and population growth. The health sector will bear the brunt of climate change's costs due to higher morbidity and mortality rates (Figure 2-20).[44] The main reason for the health sector's substantial proportion of damages is the inclusion of death in estimations. More than half of possible losses under RCP 8.5 are connected to elevated mortality. Numerous causes, such as malnutrition, lack of water, heat stress, and flooding, increase death. Agriculture and tourism are two high-risk industries, and they are particularly susceptible to the effects of drought and unpredictable extreme weather.[45]

[44]GoK. (2022). The National Long-Term Low Emission Development Strategy 2022–2050. Ministry of Environment and Forestry, Nairobi, Kenya

[45]GoK. (2023). Kenya's Adaptation Communication to the United Nations Framework Convention on Climate Change. Ministry of Environment, Climate Change and Forestry, Nairobi, Kenya

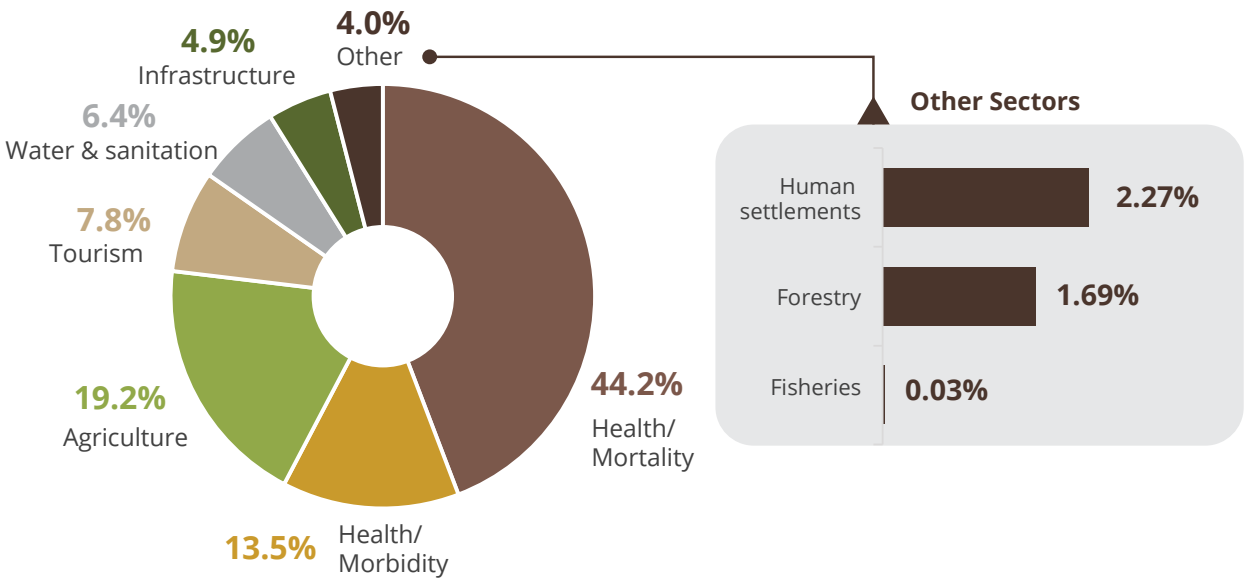


Figure 2-20: Distribution of losses by sector under RCP 8.5, 2050, %

Source: Government of Kenya. (2022). The National Long-Term Low Emission Development Strategy 2022–2050. Ministry of Environment and Forestry, Nairobi.

This section discusses the impacts that result from the climate hazards of drought, floods, sea level rise, ocean acidification and glacier melt.

Drought

The country has experienced intense droughts at various intervals in the past, which cause severe consequences such as crop and livestock losses, famine, and population displacement. These drought events have had a particularly significant impact in the ASALs, which constitute over 80% of the country's land area. The 1998 to 2000 drought cost an estimated USD 2.8 billion, principally due to crop failure and livestock deaths, as well as forest fires, damage to fisheries, reduced hydropower generation, reduced industrial production, and reduced water supplies.[46] Droughts have affected more people and had higher economic impact (8% of GDP every five years) in comparison to the various climate change impacts. Prolonged droughts occurred in 1983/84, 1991/92, 1995/96, 2004/2005, 2008/09, 2011/12, 2016/17, and 2021–2023.[47]

Kenya has been impacted by both droughts and floods over the past 20 years, ranking in the top 10 countries in Africa by total number of people affected (Figure 2-21).

[46]National Drought Management Authority (NDMA). (2023). National Drought Early Warning Bulletin: March 2023. https://www.ndma.go.ke/index.php/resource-center/national-drought-bulletin/send/39-drought-updates/6868-national-monthly-drought-updates-march-2023

[47]NDMA. (2023).

Table 2 2: Top 10 countries in Africa with droughts and floods, by total number of people affected (2002––2021)

Country	Affected by Drought	Country	Affected by Floods
Ethiopia	50,605,679	**Nigeria**	11,419,911
South Africa	30,450,000	**Somalia**	4,513,098
Kenya	29,250,000	**Sudan**	4,271,143
Somalia	26,335,624	**South Sudan**	3,954,591
Niger	21,319,429	**Kenya**	3,852,904
Malawi	17,049,435	**Ethiopia**	3,458,324
Zimbabwe	15,135,118	**Zambia**	3,124,880
Mali	11,925,000	**Niger**	2,961,489
Mozambique	9,899,500	**Malawi**	2,624,172
Burkina Faso	9,750,000	**Mozambique**	2,085,603

Source: Emergency Events Database, in Centre for Research on the Epidemiology of Disaster. (2023). The interplay of drought-flood extreme vents in Africa over the last twenty years (2002-2021). Issue No. 69, Cred Crunch. p. 2.

The most recent drought in Kenya occurred from 2021 to 2023. Approximately 4.5 million people were in desperate need of food by the end of 2022.[48] The 2022 short rains assessment conducted by Kenya Food Security Steering Group estimated livestock mortality at 2.6 million Tropical Livestock Units (TLUs) lost owing to the drought in 2022. The report also identified that 1,180 wildlife of mixed species perished due to drought. Due to the late onset and poor performance of October to December 2022 short rains, along with four prior consecutive failed rainfall seasons, the drought situation was critical in 22 of the 23 ASAL counties by December 2022. Kilifi, Mandera, Marsabit, Samburu, Turkana, Wajir, Isiolo, Kitui, and Kajiado counties were in the *Alarm* drought phase, while 13 counties were in the Alert drought phase, including Garissa, Lamu, Narok, Tana River, Makueni, and Tharaka-Nithi.[49]

[48]NDMA. (2023).

[49]Kenya Food Security Steering Group. (2023). The 2022 Sshort Rrains Sseason Aassessment Rreport. Nairobi: NDMA. http://knowledgeweb.ndma.go.ke/Public/Resources/ResourceDetails.aspx?doc=91a53d55-6861-4783-9f60-d487d711f1b3

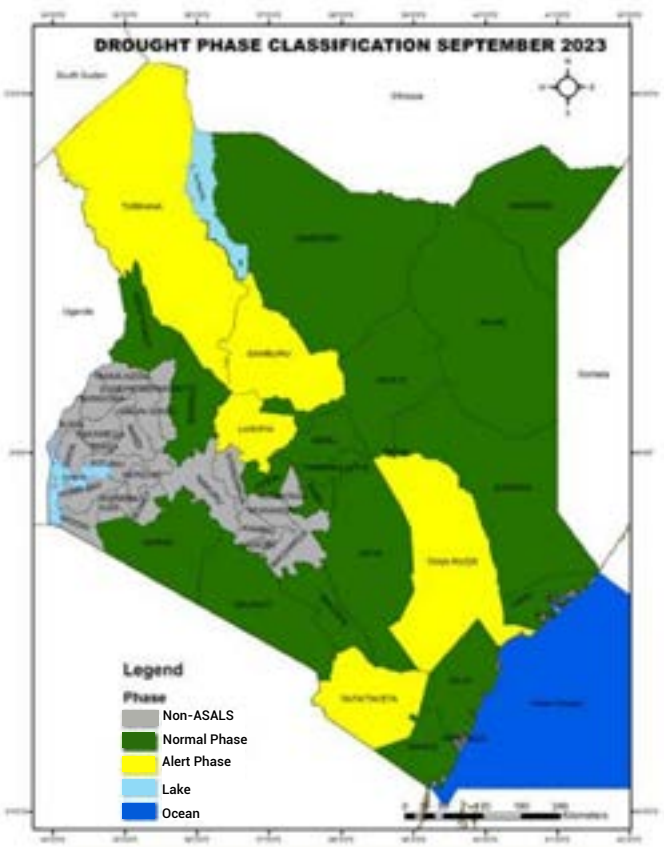


Figure 2-21: Drought phase classification – September 2023

Source: NDMA. (2023).

Droughts are typically large-scale disasters in Kenya, and the north and eastern regions of Kenya are particularly vulnerable to drought, with a more than 40% annual probability of moderate to severe drought during the rainy season.[50,51] The ASAL region of Kenya endured three severe droughts in the last decade (2010–2011, 2016–2017, and 2020–2023). The latest drought (2020–2023) was the most severe and longest with widespread livelihood losses and massive displacement of populations. More than 4.2 million people representing 24% of the ASAL population faced high levels of acute food insecurity with about 2.7 million people in the crisis phase and 785,000 people in the emergency state. This was a 10% increase from the same period in 2021 where 2.1 million people were categorised as being in an emergency and crisis state.[52] There were 77,616 households (estimated over 465,000 people) displaced in Kenya due to reasons associated with drought between the period of September 2022 and February 2023.[53]

The 2023 Economic Survey of the Kenya National Bureau of Statistics indicated that the Agriculture, Forestry and Fishing sector contracted by 1.6% in 2022 from a 0.4% contraction a year earlier. This was attributed to drought conditions that characterised the 2022 period. These sectors made up 21% of the overall GDP.[54] The two most significant economic sectors of Kenya that are impacted significantly by drought are agriculture and tourism. Damage from the drought that lasted from 2008 to 2011 is estimated to have cost USD 12.1 billion in losses. Between 2014 and 2022, 3.4 million individuals experienced food insecurity as a result of droughts, while 500,000 people in 2018 lost access to water. Kenya, which has a population of 48.5 million, has the biggest economy in East and Central Africa and acts as the region's centre for trade, diplomacy, and other activities. By 2030, the cost of economic losses brought on by climate change and extreme weather could reach 2.6% of GDP.[55]

[50]Office for the Coordination of Humanitarian Affairs (OCHA). (2023). Drought Response Plan Kenya.

[51]Government of Kenya. (2023). Kenya's Adaptation Communication to the United Nations Framework Convention on Climate Change. Nairobi: Ministry of Environment, Climate Change and Forestry.

[52]Kenya National Bureau of Statistics (KNBS). (2023). Economic Survey 2023. https://www.knbs.or.ke/download/economic-survey-2023/

[53]International Organization for Migration (IOM). (2023). Mobility Tracking and Multi-Sectoral Location Assessment in Samburu County, IOM Displacement Tracking Matrix. February 2023.

[54]KNBS. (2023).

Floods

Rainy seasons in Kenya increasingly have been characterised with heavy rainfall events, and sudden and/or late onsets producing floods and inundation. Major floods occur on a regular basis in Lake Victoria's Winam Gulf, the Lower Tana basin, and the coastal counties. Floods affect an estimated 75,000 Kenyans each year, with an increasing number living in informal urban areas. Floods are predicted to cost around 5.5% of GDP every seven years.[56] According to NCCAP progress reports, floods in early 2018 killed over 183 people, displaced over 225,000 people, including over 145,000 children, and closed over 700 schools. Forty counties were impacted by the inundation's floods. The floods also drowned an estimated 8,781.7 ha of agricultural land, destroying crops in the same regions afflicted by drought.[57]

The key adaptation strategy in flood risk management is to strengthen the capacity of the Water Resource Authority (WRA), National Water Harvesting and Storage Authority, and Water Resource Users Associations to monitor flood risk patterns, provide early warning, and prepare vulnerable communities and systems for response. A map of flood-prone areas in Kenya is presented in Figure 2-22.



Figure 2-22: River basins and floodplains of Kenya – River flooding regions in Kenya

Source: GoK. (2015). River Basins and Floodplains of Kenya.

[56]Ministry of Environment and Forests/CCD. (2021). National Climate Change Action Plan 2018–-2022: Second Implementation Status Report for the FY 2019–-2020. https://napglobalnetwork.org/resource/kenya-nccap-2018-2022-second-implementation-status-report/

[57]Ministry of Environment and Forests/CCD. (2021).

The flood hotspot areas by county is presented in Figure 2-23 below.

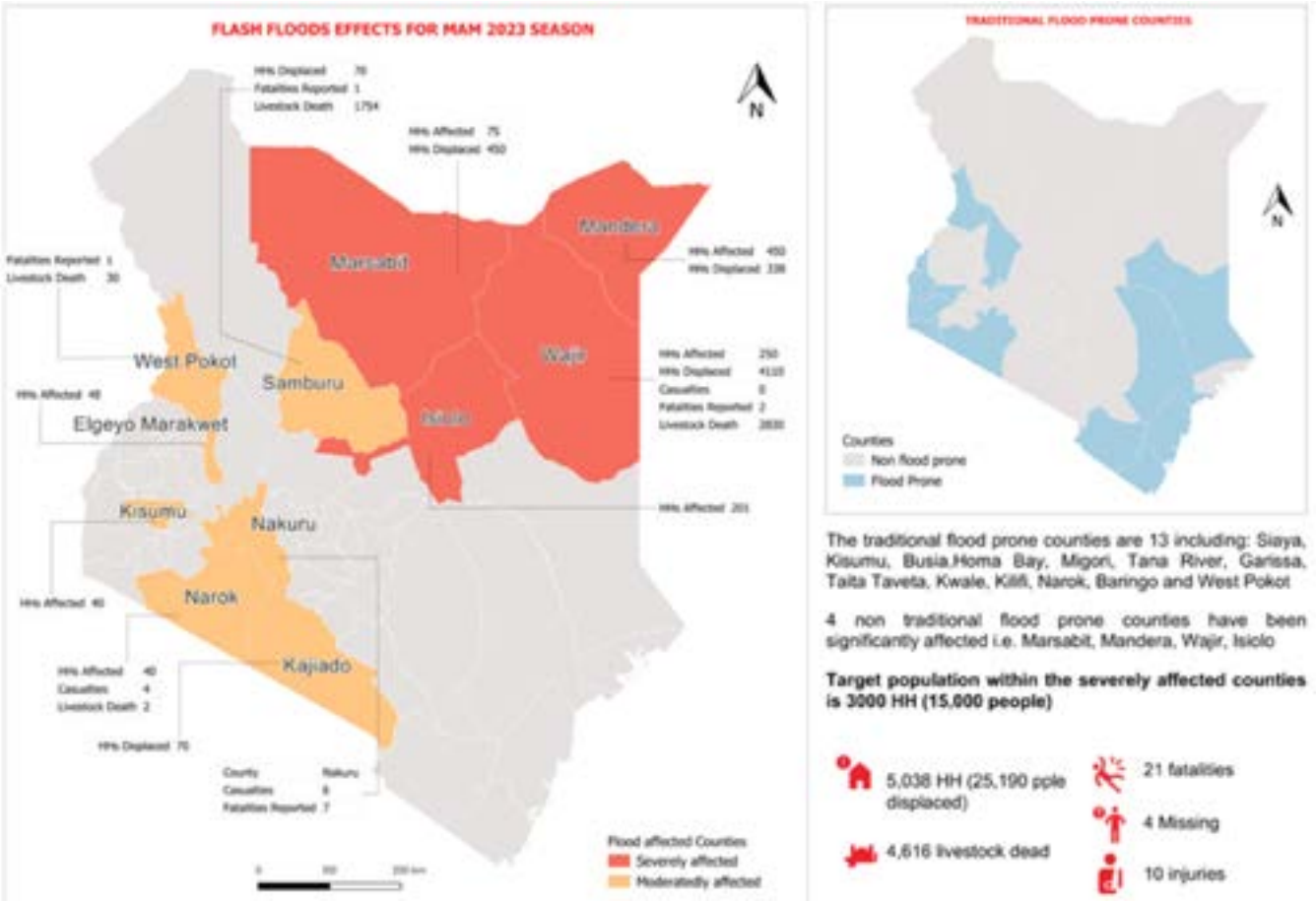


Figure 2-23: Flood hotspots of Kenya areas affected in 2023

The WRA developed Flood Management Plans for major river basins in the country. The plans provide for an integrated approach to flood management ensuring downstream, midstream and upstream cooperation. This approach places emphasis on structural and non-structural measures in consultation with stakeholders in planning and implementation. These plans highlight pro-active consideration of all the flood management phases i.e., preparedness, response, recovery, and reconstruction. Table 2-3 presents a compilation of the issues identified in the river catchment plans.

Table 2-3: Major Flood Issues by River Catchment Segment

Catchment	Major Issues
Upper	• Deforestation due to the lack of proper forest management. • Sediment-related disasters are likely to increase due to increased rainfall with higher short-time rainfall intensity. • Increase in sediment run-off is projected to cause sediment deposition in flood control reservoirs as it reaches to lower level.
Middle	• Flooding and inundation are projected to be more frequent due to dike breaches caused by heavier precipitation, higher short-time rainfall intensity, flooding from the upper reaches, and greater sediment runoff. • Land use in the flood plains, originally designed to serve as retarding basins and to help floodwaters flow back into the main streams, has been changed from agricultural to residential use. • Frequent large-scale floods and increased sediment runoff may destabilise riverbeds, causing the destruction of structures, such as bridges, and dike breaches, which may lead to more flooding.
Lower	• Flood water from the middle reaches is likely to cause more frequent inundation and flooding events due to the overflow/breaching of dikes. • Lower catchment is overpopulated with accumulation of property. • Drought due to climate change poses a danger for domestic, industrial and agricultural water use.

Source: Flood Management Plans for Awach Kano River Basin, Gucha Migori River Basin, Isiolo River Basin, Lumi River Basin and Nyando River Basin.

Sea Level Rise

The coastal areas of Kenya, which span 630 km, are experiencing coastal erosion, saltwater intrusion and increased salinity of coastal aquifers, and tidal/coastal flooding from sea level rise and storm surges, all of which are expected to increase. The coastal zone of Kenya contains the country's second-largest town, Mombasa, which is a significant port, and fisheries operations. The projected scenarios of sea level rise are expected to have negative repercussions on the way of life and general well-being of a considerable portion of the coastal population, with long-term economic consequences for the entire country.[58,59] One study estimated that 190,000 people and USD 470 million in assets in Mombasa were exposed to the impacts of sea level in 2012; with these numbers increasing to over 380,000 people and USD 15 billion in assets by 2080.[60]

[58]GoK. (2023). Adaptation Communication.

[59]Kebede, A. S., Nicholls, R. J., Hanson, S. & Mokrech, M. (2012). Impacts of Climate Change and Sea-Level Rise: A Preliminary Case Study of Mombasa, Kenya, Journal of Coastal Research 28(1A), 8–19. https://doi.org/10.2112/JCOASTRES-D-10-00069.1

[60]Kebede et al. (2012).

Ocean Acidification

Ocean acidification results from a reduction in the pH level (measure of how acid/basic water is) of the ocean over an extended period, caused mainly by the uptake of carbon dioxide (CO_2) from the atmosphere. As atmospheric levels of CO_2 increase, so do the levels of CO_2 in the ocean increase thus causing seawater to be more acidic. Ocean acidification is expected to impact many ocean species, leading to declines in fish stocks, with negative impacts on communities that rely on these resources for food and livelihoods.[61]

The International Union for Conservation of Nature (IUCN) indicated that rising CO_2 emissions cause ocean acidification and heat, which result in coral bleaching. This bleaching also stunts coral reef growth and diminishes coral reefs' capacity to provide both food and habitat to nearly one-third of marine fish species.[62] In addition, when the ocean becomes more acidic due to CO_2 emissions, many marine organisms and ecosystems become more vulnerable. The ability of marine creatures, such as corals, plankton, and shellfish to form their shells and skeletal structures is decreased by ocean acidification. Likewise, it lessens development and survival rates in some species' early life stages and exacerbates physiological challenges already present (such as impediments to respiration and reproduction). Many marine species are likely to suffer because of ocean acidification. This could have an impact on marine food chains and human food supplies. Acidification may also reduce storm protection from reefs, tourism potential, and other intangible benefits.[63]

Ogali (2022) reported that mean sea surface temperature and dissolved carbon dioxide along the Kenyan coastline had increased between the years 2000–2021, leading to a bleaching of coral reefs and a decline of more than 30% of the coral reef cover between 2000 and 2020.[64]

Glacier Melt

Mount Kenya, the second highest summit in Africa and one of the few equatorial mountains with an ice cover, attracts local and international tourists besides being a very important source of major rivers like Tana and the Ewaso Ng'iro . The glaciers of Mount Kenya are declining with the ice cover decreasing by approximately 44% between 2004 and 2016.[65] The local driver of the retreat of Mount Kenya's glacier is mainly due to reduced precipitation or a lack of snowfall, while the remote driver is the lack of a supply of atmospheric moisture from the Indian Ocean, which has been affected by warming temperatures.[66] The glaciers on Mount Kenya are projected to disappear by 2030, and will be one of the first mountains in the world to lose glaciers due to climate change.[67]

[61] Allemand, D., & Osborn, D. (2019). Ocean Acidification Impacts on Coral Reefs: From sciences to solutions. Regional Studies in Marine Science.

[62] IUCN. (2017). Ocean Acidification. Issues brief. https://www.iucn.org/sites/default/files/2022-07/ocean_acidification_issues_brief.pdf

[63] Doney, S. C., Busch, D. S., Cooley, S. R., & Kroeker, K. J. (2020). The impacts of ocean acidification on marine ecosystems and reliant human communities. Annual Review of Environment and Resources

[64] Ogali, S. C. (2022). Effects of Climate Change on the Kenyan Coral Reef Eco-systems. MSc thesis, University of Nairobi. News stream of the Ocean Acidification International Coordination Center. https://news-oceanacidification-icc.org/2023/03/06/effects-of-climate-change-on-the-kenyan-coral-reef-eco-system/#:~:text=Ocean%20Acidification,-a%20news%20stream&text=The%20coral%20reef%20ecosystem%20is,surface%20temperatures%20and%20ocean%20acidification

[65] WMO. (2022). State of the Climate in Africa 2021. WMO-No.1330. Geneva: WMO.

[66] WMO. (2022).

[67] WMO. (2021). State of the Climate in Africa 2020. WMO-No.1300.

2.4.5 Sectoral Climate Change Impacts

Agriculture – (Food and Nutrition Security)

Kenya's economy and food security depend heavily on the agricultural sector, which is also one of the most exposed to climate hazards. Agriculture remained the dominant sector, accounting for about 21.2% of the overall GDP in 2022. Industry-related activities accounted for 17.7%, while service activities accounted for 61.1% of the total GDP in 2022.[68]

The country's agriculture is 98% rain-fed and therefore highly vulnerable to extreme weather events, climatic shocks, climatic changes and variability. Key sources of vulnerability in agriculture are mainly due to changes in temperature regimes and precipitation patterns, extreme weather events which include droughts and floods, unsustainable natural resource management resulting in environmental degradation (soil and water), loss of forest cover, untenable fishing, land tenure, and fragmentation.

Climate change-related weather uncertainty and variability are a growing concern for Kenya's smallholder farmers. Since most agricultural practices are rain-fed, the availability of water from precipitation affects yields, and farmers are impacted by the length, severity and unpredictability of the rainy season. The use of irrigation infrastructure is still limited due to insignificant/inadequate extension services; inappropriate production technologies such as ecologically unsuitable varieties and breeds of crops and livestock; inadequate, inappropriate and poorly managed irrigation systems and infrastructure development; and inadequate financial and market support services.[69]

Kenya's 2023 economic survey indicated that the agriculture, forestry, and fishing sector performed less well in 2022 than in 2021. The production of crops and animals was negatively impacted by the extensive drought that occurred in 2022. Drought was the primary cause of the sector's low performance despite the occurrence of fall army worms and desert locusts. Real Gross Value Added for the industry fell by 1.6% in 2022 compared to a 0.4% decline in 2021.[70] The high prices for food staples in 2022 indicated that major food crops like maize, potatoes, and vegetables were not being produced in sufficient quantities.[71]

There are opportunities for agricultural transformation growth through embracing climate-smart agriculture for sustainable food systems and enhanced resilience of farming communities. Progress can be made by developing the estimated potential irrigation of over 1.4 million hectares based on available surface water, water harvesting and storage, and exploitation of groundwater resources.[72] In addition, recycling of wastewater and effective harnessing of storm water from roads, cities and towns can also contribute to water for irrigation in urban and peri-urban areas.

[68]KNBS. (2023).

[69]Autio, A., Johansson, T., Motaroki, L., Minoia, P. & Pellikka P. (2021). Constraints for adopting climate-smart agricultural practices among smallholder farmers in Southeast Kenya. Agricultural Systems, Volume 194, December 2021, 103284.

[70]KNBS. (2023).

[71]Okou, C., Spray, J. & Unsal, D. F. (2022). Staple Food Prices in Sub-Saharan Africa: An Empirical Assessment, IMF Working Papers, WP/22/135.

[72]Kanda & Lutta. (2022). The status and challenges of a modern irrigation system in Kenya: A systematic review. Irrigation and Drainage 71(3) DOI: 10.1002/ird.2700

Blue economy

Kenya's coastal ecosystems, estuaries, beaches, coral reefs, and marine biodiversity, especially its fisheries industry, are at risk as sea surface temperatures rise along with increasing sea levels and coastal erosion. Critical tourism assets, as well as ports and transportation infrastructure, are particularly vulnerable to flooding and erosion. The five coastal counties (Kwale, Mombasa, Kilifi, Tana River, and Lamu) and their populations are at risk because sea level rise in conjunction with intense weather events is anticipated to worsen floods in these mostly low-lying coastal areas. A sea level rise of just 30 cm would submerge an estimated area of 4-6 km^2 in Mombasa and 17% of coastal areas.[73]

Sea level rise is projected to increase the levels of salinity in coastal freshwater aquifers, which would exacerbate the current water supply issues. Crop production may be hampered by salt stress brought on by the waterlogging of the soils. Additionally, because saline water intrusion impacts coastal ecosystems, the health of coastal inhabitants is at stake.

Energy

The development of Kenya's geothermal resources, which has an installed capacity of 950 MW and ranks the nation eighth internationally, has changed the country's electricity generation mix, which formerly relied heavily on hydro and thermal base load sources. In the fiscal year ending in June 2022, geothermal and hydro power sources made up 45.5% and 21.8% of the electricity produced, respectively, while the other renewable energy sources, wind and solar, supplied 17.22% and 2.9% each. About 10.43% of the energy produced came from thermal sources.[74]

Extreme weather events such as heavy rains can damage infrastructure, roads, and communication networks and disrupt supply lines. An increase in the frequency of heat waves in urban centres like Nairobi or Mombasa could translate into higher demand for air conditioning and cooling systems, putting power plants under severe stress and reducing their efficiency. Consequently, lower temperatures would increase the demand for energy needs services at homes and in commercial places for heating. In coastal areas, sea level rise and storm surge threaten water and electricity infrastructure with inundation and salinity damage. Other concerns about the impact of climate change on Kenya's energy sector are largely due to the vulnerability of its hydroelectric power generation sector. A vulnerability assessment of hydroelectric energy resources impacted by climate change in the Seven Forks project found that the catchment temperature is rising by 0.02°C annually while the rains are declining by 3.9mm annually[75]. Extreme weather conditions, such as torrential rain, can harm transmission lines, and electricity generation infrastructure. Mudslides and heavy rains increase siltation in the country's hydro dams and reservoirs, reducing their capacities to operate optimally.[76]

Unpredictable extreme weather conditions affect the country's energy mix. For example, prolonged rainy seasons and clouds affect the solar irradiance and could reduce the energy generated by solar photovoltaic (PV) plants in the country; and extreme windy and stormy conditions affect wind turbines, hence reducing their efficiency.

[73]GoK. (2023)

[74]KPLC. (2022). Kenya Power and Lighting Company Annual report and financial statements for the year ended 30th June 2022. https://www.kplc.co.ke/img/full/KPLC%20ANNUAL%20REPORT%202021-2022%20FOR%20WEB.pdf

[75]Bunyasi, M. M. (2012). Vulnerability of Hydro-Electric Energy Resources in Kenya due to Climate Change Effects: The Case of the Seven Forks Project. Journal of Agriculture and Environmental Sciences.

[76]Bunyasi, M. M. (2012). Vulnerability of Hydro-Electric Energy Resources in Kenya due to Climate Change Effects: The Case of the Seven Forks Project. Journal of Agriculture and Environmental Sciences.

Declines in forest and agricultural productivity could have a knock-on impact on energy availability, particularly in rural areas and by the poor who rely on biomass for fuel. These ramifications are particularly important for women and children, who are often reliant on fuel wood for energy needs at the household level. The decline in forest and agricultural productivity will have impact on women, children and persons with disabilities (PWD) who will spend more time searching for biomass energy; firewood and other wood fuels and using dirtier fuels will have a negative impact on their health. The introduction of improved stoves will assist in reducing these impacts, as they are more efficient compared to other cooking methods.

Environment

Climate change is having significant impacts on the environment in Kenya, affecting various sectors such as agriculture, water resources, ecosystems, and human settlements. Climate change impacts ecosystems such as forests, grasslands, rangelands, and wetlands. Altered rainfall patterns can disrupt natural habitats, leading to habitat shifts, the loss of flora and fauna, biodiversity decline and loss, land degradation, and shifts in species distribution. For instance, Mount Kenya's glaciers are receding due to rising temperatures, impacting water availability downstream.[77] Deforestation, soil erosion, desertification, water scarcity and poor water quality, flooding, poaching, and home and industrial pollution are among the environmental problems in Kenya.

The Kenyan government is working with international organisations and other stakeholders to develop approaches that aim to lessen the effects of climate change in order to deal with these issues. These approaches consist of encouraging water management and conservation techniques, water catchment protection, reforestation, restoration, rehabilitation and reclamation of degraded ecosystems, disaster preparedness planning, and increasing local community understanding of climate change risks. Investments in adaptation and resilience building technologies and innovations is prioritised and implemented in collaboration with stakeholders and local communities taking the centre stage. To develop resilience and guarantee the sustainability of Kenya's environment in the face of a changing climate, however, continual and concerted efforts are required.

[77] IUCN. (2020). World Heritage Outlook: Mount Kenya National Park/Natural Forest – Conservation Outlook Assessment.

Forestry

Climate change can exacerbate existing challenges of deforestation and forest degradation in Kenya. Rising temperatures and changing precipitation patterns can lead to forest encroachment for agriculture, settlements, and fuel wood, resulting in deforestation and loss of biodiversity and ecosystem services including wildlife habitat and water catchment. Additionally, prolonged droughts can weaken forests, making them more susceptible to pests, diseases, and forest fires, further contributing to their degradation. Future climate change, with increasing temperature and altered rainfall patterns, is anticipated to increase these impacts. There has been notable increase of pests and pathogens in forests due to changes in climate with consequences on tree growth, survival, yield and quality of wood and non-wood products. Mangroves are significantly impacted by climate change consequences such as sea level rise, sedimentation, and floods.[78,79]

In addition, forests act as vital carbon sinks, sequestering carbon dioxide from the atmosphere. However, climate change can hinder this ability as stressed and damaged forests may release more carbon than they absorb, further exacerbating global warming.

Climate change is likely to affect the growth, composition, and regeneration capacity of forests resulting in reduced biodiversity and capacity to deliver important forest goods (both timber and non-timber) and services. Available evidence shows that species range are changing due to climate impacts. Climate change has a significant impact on plant species range and distribution. Some regions in the country will undergo changes in vegetation types and species composition, and more invasive species are projected to emerge. The emergence and spread of invasive species such as *Prosopis juliflora* in places like Tana River, Baringo and Garissa is partly linked to climate change.[80]

[78]AECOM. (2021). Climate Action in the Forestry Sector in Kenya: Status Review. https://publications.aecom.com/media/files/ClimateActionForestrySectorKenyaStatusReview.pdf

[79]WMO. (2022). State of the Climate in Africa 2021. WMO-No.1330. Geneva: WMO.

[80]GoK. (2020). Migratory and invasive pests and weeds management strategies, 2022–2027. Ministry of Agriculture, Livestock, Fisheries and Cooperatives, FAO, and World Bank. https://kilimo.go.ke/wp-content/uploads/2022/02/Migratory-and-Invasive-Pests-and-Weeds-Management-Strategy-2022.pdf

Health

According to the World Health Organization (WHO), climate change is indirectly and directly affecting many determinants of health including among others air quality, food security, access to clean water, and secure shelter.[81,82]

Climate change affects human health in Kenya by changing the severity or frequency of health threats that are already impacted by climate or weather factors; and by creating unanticipated health threats in places where they have not previously occurred. Figure 2-24 illustrates the various impact pathways.

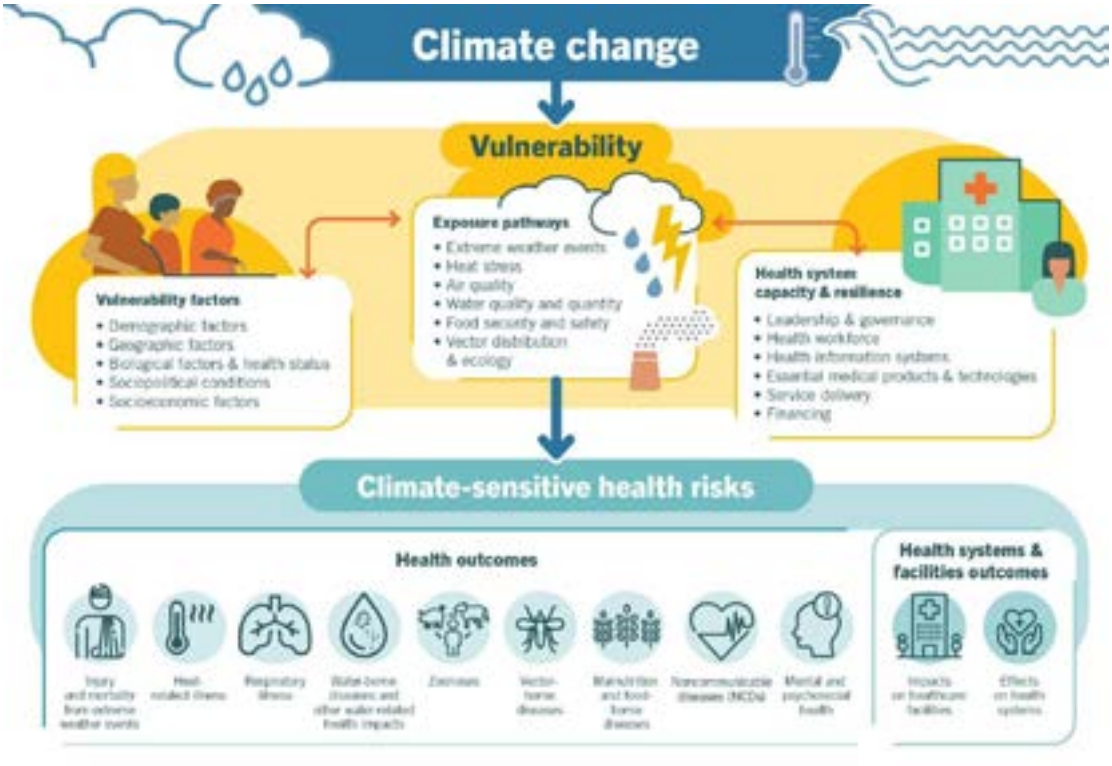


Figure 2-24: An overview of climate-sensitive health risks, their exposure pathways and vulnerability factors

Source: WHO. (2023).

[81]World Health Organization (WHO). (2020). Urgent Health Challenges for the Next Decade. https://www.who.int/news-room/photo-story/photo-story-detail/urgent-health-challenges-for-the-next-decade .

[82]WHO. (2021). Climate change. In: Compendium of WHO and other UN guidance on health and environment. Geneva: WHO.

Climate change impacts health both directly and indirectly, and is strongly mediated by environmental, social and public health determinants.

The risk of malaria and other vector-borne diseases are projected to increase in the future due to changing climatic conditions. Other climate-related health risks include upper respiratory tract infections, and indirectly, effects on non-communicable diseases like cancer and diabetes, among others.

The disruption of food systems, water and vector-borne diseases, mental health concerns, and an increase in the frequency of extreme weather events like heat waves, storms, and floods are just a few of the ways that climate change is already having an impact on health. Climate change is a main issue affecting the health of Kenyans, and many of the social factors that influence health, such as access to healthcare, equality, and livelihoods, are being undermined by climate change.[83] The most vulnerable and disadvantaged people, such as women, children, nomadic communities, poor populations, and those with underlying health issues, are disproportionately affected by these climate-sensitive health concerns.[84]

Vector-borne diseases like Chikungunya, Dengue Fever, Malaria and Rift Valley Fever have serious health consequences and are extremely susceptible to shifting climatic conditions in Kenya, such as changes in temperature, precipitation, and humidity. The risk of re-emergence and increased outbreaks is increasing due to the effects of climate change which have a significant impact on the life cycles of the diseases' vectors, such as mosquitoes.[85]

The main climate hazards in Kenya are drought and flooding, which have a detrimental effect on people's lives and livelihoods while putting their health in danger. Extreme weather conditions result in a large loss of life and have a negative impact on the economy due to a loss of agricultural livelihoods. In addition, they pose a security risk to Kenya. The disintegration of food systems will be brought on by rising temperatures, water and land scarcity, flooding, drought, and displacement. The most vulnerable people, who already struggle with hunger and food insecurity, will be disproportionately impacted by this. When exposed to extreme climate events, vulnerable communities run the risk of a decline in the availability of food and nutrition. Higher temperatures may lead to a rise in heat-related fatalities, especially in the elderly, and respiratory related complications in children and the elderly. More severe and frequent flooding may force populations to relocate and increase the risk of water-borne infections. Additionally, floods can wash away and damage hospitals and clinics, affecting accessibility of health services.

Housing and Settlements

Shifting climatic patterns and extreme weather events – such as more frequent and heavier rain events, water encroachment, over abstraction of groundwater, storm surges in coastal areas – can damage and increase the risk of collapse of buildings and infrastructure.[86] Climate change increases safety risks in existing buildings that do not meet standards and codes. For example, in higher temperatures, the poor design of housing and office buildings could exacerbate heat collection, thus affecting inhabitants' health. Adaptation will mean changes in the planning, design, operation, and use of the built environment, including housing; with an increase in costs to climate-proof infrastructure.[87] Coastal communities face rising sea levels that threaten not only homes and businesses but also property values. The rising sea level in our coastal regions has already begun to erode seagrass

[83]Red Cross Red Crescent. (2021). Climate Change Impacts on Health and Livelihoods: Kenya.

[84]Least Developed Countries Expert Group. (2018). Considerations Regarding Vulnerable Groups, Communities and Ecosystems in the Context of National Adaptation Plans. UNFCCC.

[85]International Federation of Red Cross and Red Crescent Societies. (2022). Integrated Vector Borne Diseases Outbreak – Emergency Plan of Action.

[86]KMD. (2020). Extreme Weather Events in Kenya between 2011 and 2020.

[87]Hall, J. W., Aerts, J. C. J. H., Ayyub, B. M., Hallegatte, S., Harvey, M., Hu, X., Koks, E. E., Lee, C., Liao, X., Mullan, M., Pant, R., Paszkowski, A., Rozenberg, J., Sheng, F., Stenek, V., Thacker, S., Väänänen, E., Vallejo, L., Veldkamp, T. I. E., van Vliet, M., Wada, Y., Ward, P., Watkins, G., & Zorn, C. (2019). Adaptation of Infrastructure Systems: Background Paper for the Global Commission on Adaptation. Oxford: Environmental Change Institute, University of Oxford.

cover, which is a natural form of flood protection. The impact on housing – in terms of its construction, cost, and longevity – is potentially devastating in Kenya, where prolonged drought has negatively impacted the supply of building materials such as timber, while also reducing water levels, which then impacts the cost of electricity.[88]

Manufacturing

The manufacturing sector is capital intensive, with long-life fixed assets and supply chains, and significant water requirements, which are negatively impacted by floods, droughts and extreme weather events. Rising sea levels and temperatures are expected to increase coastal winds and storms, which will affect ship navigation and other port operations. Motor vehicle assembly, machinery, electronics, and other industries that depend on export and import services are also likely to be negatively affected. If a manufacturing sector's input supply comes from vulnerable sectors like agriculture, forestry, or fisheries, for instance, that industry may also be harmed by climate change. Decelerated growth in the manufacturing sector in 2022 – a growth rate of 2.7% compared to 7.3% in 2021 – was partly blamed on low agricultural production, notably of food crops, which are the primary inputs for agro-processing. The low agricultural production in 2022 was partly a result of drought.[89]

Tourism and Wildlife

Climate change has a negative impact on ecosystems and the environmental products and services they supply, such as wildlife, biodiversity, and water levels and quality, which are important tourism attractions. Climate change is likely to be a major driver for the extinction of migratory and resident wildlife species, and it has the potential to cause far reaching consequences for tourism destinations that are mainly dependent on natural resources. Consequently, it can increase the socio-economic vulnerability of communities that depend on tourism activities and related income.

The Kenya Wildlife Service (KWS) revealed that in some years, drought kills more animals than poaching in Kenya.[90] The severe drought that ended with the arrival of rains in March 2023 resulted in the death of many wildlife species due to a shortage of water and pasture, as well as increased human–wildlife conflicts.

The combined effects of prolonged droughts, reduced water availability, high concentration of wildlife in a few places with permanent water, and an unprecedented spread of invasive species in national park habitats have resulted in severe and widespread ecosystem degradation, loss of biodiversity, reduced tourist appeal, and an increase in human–wildlife conflict.

[88]Ministry of Energy. (2020). Kenya National Energy Efficiency and Conservation Strategy.

[89]KNBS. (2023).

[90]GoK. (2022a). The Impacts of the Current Drought on Wildlife in Kenya. Wildlife Research and Training Institute.

Transport

Storms, rain, flooding, and increased temperatures all pose immediate and long-term risks and repercussions to the transportation sector's day-to-day operations. Specific concerns include the potential of port facility damage from increasingly severe storm occurrences and sea level rise, as well as the destruction of infrastructure such as roads and bridges during storms.[91]

Flooding caused by heavy rains endangers the maritime, road, rail, and air networks. In recent years, floods have been disastrous. For example, the 1997–98 El Nino floods are estimated to have caused at least 11% of GDP in destruction, including Ksh 62 billion in damage to the transportation infrastructure.[92] In May 2012, a section of the Mai Mahiu – Narok road was washed away by flash floods.[93,94] The storm water was from the eastern slopes of Mau Hills. Due to the depth of the wash away and the incessant rains on site, the road remained closed for one week. As temperatures rise, pavement softens and expands, resulting in rutting and potholes.

Waste Management Infrastructure

The environmental and health risks from a potential disaster related to waste management are high. Landfills and dumpsites, which are the dominant practice in most counties, were typically located at low levels and excavated with no consideration of climate risks. They are often vulnerable to flooding, blockage and collapse due to extreme rainfall events. Sanitation infrastructure is equally at risk from flooding and increased surface run-off into water sources and leaching from dumpsites and landfills to the groundwater resources.

Water and Sanitation

The National Water Master Plan 2030 estimated the amount of renewable water resources in Kenya at 42.1 billion cubic metres (BCM)/year, which consists of 20.6 BCM/year of surface water and 21.5 BCM/year of groundwater recharge. Assuming that the sustainable groundwater yield is 10% of the groundwater recharge, the available water resources are estimated at 22.5 BCM/year. The available per capita water resources were estimated to be 586 m^3/year/capita in 2013; with the amounts projected to decline to 393 m^3/year/capita and 293 m^3/year/capita in 2030 and 2050, respectively.[95] An area is considered to be experiencing water scarcity when annual supplies drop below 1,000 m^3/capita.[96]

Warming temperatures have heavily impacted the water cycle, leading to increased spatial-temporal variability in precipitation patterns worldwide. The effect on the water cycle has implications for increased risk of drought (including dry spells), increased intensity of extreme precipitation events (including flooding) and expanding the range of agricultural pests and diseases. Climate change has contributed to drying up of rivers, receding

[91] WMO. (2023). Early Warnings for All: Action Plan for Africa

[92] KEPSA. (2014). Climate Change and the Transport Sector.

[93] Mogaka, H., Gichere, S., Davis, R. & Hirji, R. (2009). Climate Variability and Water Resources in Kenya: The Economic Cost of Inadequate Management. Water P-Notes; No. 22. World Bank, Washington, DC. http://hdl.handle.net/10986/11736 License: CC BY 3.0 IGO.

[94] KeNHA. (2020). Geological Study, Feasibility Study, Environmental and Social Impact Study, Preliminary and Detailed Engineering Design of Suswa – Mai Mahiu (B7) Road Section.

[95] GoK. (2021). Annual Status Report on Water, Sanitation and Irrigation. Ministry of Water, Sanitation and Irrigation.

[96] UN Department of Economic and Social Affairs. (2014). International Decade for Action "Water for Life" 2005–2015. https://www.un.org/waterforlifedecade

and rising lake levels, siltation in dams and water pans, and deterioration of water quality. These impacts further reduce the availability/access to drinking water and for household purposes, for agriculture, for manufacturing, and for sanitation, among others. Climate-related water scarcity alone could cost Kenya up to 6% of its GDP, causing migration and conflict that will further affect farmers' and herders' livelihoods and lead to violent outbursts.[97]

Climate Security

Climate change is having profound and multifaceted impacts on agriculture, livestock, water, and global food systems worldwide (Figure 2-23). The disruptions in agriculture brought about by climate change have direct implications for stability and security, especially in countries that are heavily reliant on agriculture and natural resources, like Kenya. An estimated 71% of Kenya's population resided in rural areas in 2022,[98] where rain-fed agriculture is the primary economic activity. Alterations in precipitation patterns have a profound impact on the vegetation cover and composition, leading to detrimental occurrences such as erosion, ultimately resulting in land degradation. Floods lead to the displacement and loss of assets that contribute to livelihoods, including crops, animals, and machinery, thus affecting livelihood activities. Floods have the capacity to cause significant damage to crops at various phases of growth, exerting a detrimental impact on rural livelihoods. These climate impacts result in reduced crop yields, food and nutrition insecurity, and heightened competition for limited resources, such as water, pasture, and arable land. This competition can escalate into conflicts, both at the community and inter-ethnic levels, as communities vie to access these essential resources.

Climate change can exacerbate vulnerabilities in already marginalised groups, and deepen existing inequalities, creating an environment ripe for tensions and disputes.[99] Thus, climate change acts as a catalyst by directly affecting agricultural productivity, land quality, and livelihoods and as a risk multiplier by amplifying existing vulnerabilities and tensions in Kenya's agricultural sector, ultimately contributing to conflicts over vital resources.[100] The implications of climate change for peace and security are multifaceted and complex, driven by numerous interrelated factors. This includes mass displacement, diminishing freshwater supplies, changing crop, livestock and fisheries diseases, and escalating urbanisation. These factors not only exacerbate pre-existing security concerns but also increase their vulnerabilities to the impacts of conflict and instability. Mediating factors like governance, social interventions, and strength of institutions, which vary across communities, can influence the impact felt by communities.

In the absence of land-use planning in rangeland landscapes, land-use change is uncontrolled and pastoralist drop-outs (those who lose their livestock herds during drought, for example) as well as people relocating from other areas pursue alternative land uses that directly compete against pastoralism. This undermines pastoral coping strategies and increases the risk of resource-based conflict. At the same time, the traditional institutions that mediate in natural resource conflicts are under strain because of many social and economic factors, including changing competition for land and water, and the emergence of new state institutions with parallel or overlapping mandates. Climate change influences these factors by changing the patterns

[97]GoK. (2021).

[98]World Bank. (2023). Rural Population (% of total Population) – Kenya. Data. https://data.worldbank.org/indicator/SP.RUR.TOTL.ZS?locations=KE

[99]IPCC. (2022). Climate Change 2022: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H. -O. Pörtner, D. C. Roberts, M. Tignor, E. S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, & B. Rama (eds.)]. Cambridge and New York: Cambridge University Press. doi:10.1017/9781009325844.

[100]UNDP. (2022). New Threats to Human Security in the Anthropocene: Demanding Greater Solidarity. UNDP Special Report.

of resource use and access and affecting the seasonality of resource use. Competition and conflict over resources among pastoralists and farmers in traditional dryseason grazing areas further reduces the adaptive capacity of vulnerable pastoral communities, especially women and youth.

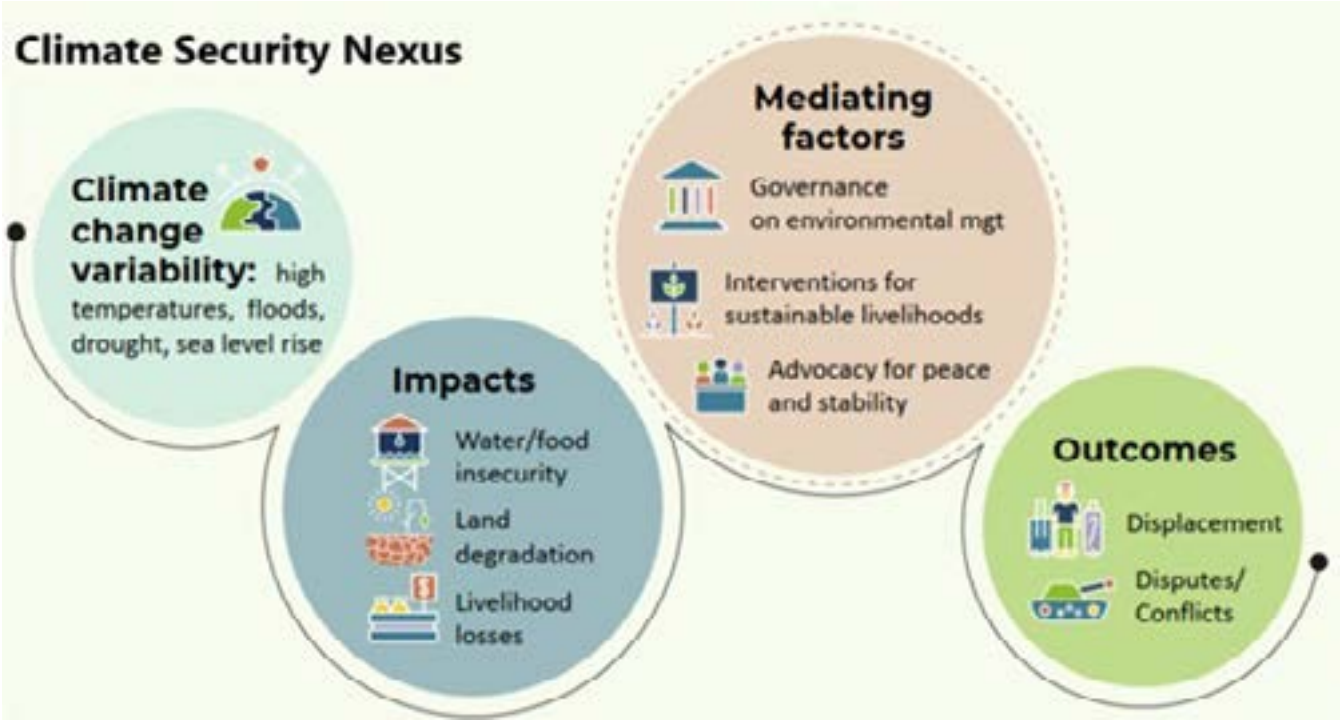


Figure 2-25: Impacts of climate change and variability that contribute to the climate security nexus

Source: Chilaka, F. C., & Odoh, S. I. (2012).

Social Protection

Climate change, once perceived as a long-term environmental issue, is now an immediate threat to safety and prosperity, especially for the most vulnerable people in society like children, older persons, women, and persons with disabilities. These groups of people are hit hardest by changing weather conditions that have resulted in an ever-increasing need for support through nutrition and cash transfers to cushion them from shocks and adverse effects resulting from climate change. Natural disasters, environmental degradation, and biodiversity loss can devastate agriculture leading to lack of enough food, cutting children off from nutritious foods, as well as reducing the life expectancy of older persons.

The Kenyan government and its development partners have provided billions of shillings through cash transfer programmes to vulnerable members of society. The drought-shock responsive cash transfers of KES 2,700 per month per household have improved the absorptive capacity of poor households in drought-affected countries to take protective measures to deal with impacts of drought or other shocks.[101]

The likely impacts of climate change by sector are summarised in Table 2-4.

Table 2-4: Sectoral Climate Change Impacts

Sector	Likely impacts of climate change
Agriculture	• Increased food insecurity due to reduced crop yields. • Increased drought occurrence leading to crop loss and yields. • Increased incidences of floods occasioning loss of livelihoods. • Increased soil degradation, salinity, and invasive species. • Increased severity and incidences of crop pests and diseases (fall army worm, locusts, and fungal diseases). • Loss of resistant/tolerant gene pool in crops and livestock.
Livestock	• Increased extreme events like droughts resulting in reduction of livestock production due to lack of pasture, reduced access to water and heat stress. • Increase the risk and occurrence of animal diseases (changes in disease patterns and disease occurrence).
Fisheries	• Possibility of fish species change in fisheries resources. • Inaccessibility to fisheries resources by small-scale fishers. • Increasing prices on fish and fish products. • Loss of biodiversity due to temperature changes. • Increased spread and establishment of alien species and the species becoming invasive.

[101] Hunger Net Safety Programme. (2023). About HNSP. https://www.hsnp.or.ke/index.php/as/objectives

Sector	Likely impacts of climate change
Coastal Zones and Blue Economy	• Submergence of low-lying areas and increase in waterlogged areas. • Increase in saltwater intrusion, particularly if accompanied by lower rainfall. • Damage to critical infrastructure such as the port of Mombasa. • Greater exposure to storm surges. • Negative impact on economic benefits of blue economy investments, including declining fisheries, damage to coastal ecosystems and tourism, and damage to ports due to sea level rise and storm surges. • Declines in fisheries and livelihoods due to ocean acidification and warming oceans.
Disaster Risk Management	• Increased frequency and intensity of droughts, especially in the ASALs, reduce people's ability to cope. • Increased number of food insecure and malnourished people. • Decreased access to water. • Increased natural resource-based conflicts. • Increased incidences of human and animal opportunistic diseases. • Declining school attendance and rising dropout rates. • Increased number of people migrating in search of food, water, pasture, and alternative livelihoods.
Energy	• Damage to infrastructure. • Disruptions to energy supply. • Interruptions to electricity transmission by increasing disasters. • Strain on the energy system due to extreme weather conditions. • Extreme weather conditions/patterns affecting the country's energy mix; solar PV efficiency during prolonged rainy season, siltation in dams and reservoirs.
Ecosystems	• Extinction of many species and a reduction in biodiversity. • Faster degradation of dry land, mountain, and wetland ecosystems. • Increases in contestation and the likelihood of conflict over diminishing natural resources. • Increases in invasive species, new pests, and diseases. • Increase in stagnant air days leading to worse air pollution. • Increase in frequency of wildfires.

Sector	Likely impacts of climate change
Forestry	• Change in phenological and flowering species patterns. • Species migration. • Decreasing resources for forest adjacent communities. • Disappearance of species and associated losses including medicinal trees, habitat, sources of honey, and reduced pollinators. • Reduced survival rates for the re-planted stocks. • Increase in frequency and intensity of forest fires. • Increased susceptibility of forest pests, diseases, and invasive species. • Loss of the mangrove ecosystem based on the geographical coverage and the ecosystem services. • Reduced productivity of commercial plantations – rotation, wood characteristics and volume and associated economic loss.
Health	• Changes in the prevalence and geographical distribution of food- and water-borne illnesses and other infectious diseases. • Increased injuries and premature deaths related to extreme weather events. • Increased respiratory and cardiovascular diseases.
Housing and Settlements	• Increased risk of collapse, declining health of buildings, and loss of value as a result of more frequent and heavier rain events, water encroachment, and storm surges in coastal areas. • Safety risk in existing buildings that do not meet standards and codes.
Manufacturing	• Power rationing/load-shedding due to energy supply interruptions resulting from reductions in the hydro-electricity generation. • Greater resource scarcity (such as water and raw materials) for inputs to manufacturing processes. • Greater risk of plant, product and infrastructure damage and supply chain disruptions from extreme weather events. • Higher costs to companies, including for insurance.
Tourism and Wildlife	• Declining wildlife populations and habitat loss due to rise in water levels in lakes, increased flooding, wildfires, and drought. • Declining space for wildlife and change of habitat conditions. • Proliferation of alien invasive species. • Increased human–wildlife conflict and bushmeat poaching/hunting. • Increased incident of zoonotic diseases water-borne diseases and pests. • Pollution of water bodies. • Change in wildlife distribution and movement patterns. • Destruction of tourists' infrastructure.
Transport	• Increased occurrence of flash floods, landslides and high temperatures damaging the infrastructure. • Change in flora and fauna affecting maritime activities, e.g., weeds like hyacinth blocking water ways. • Increased accidents and incidents due to visibility.

Sector	Likely impacts of climate change
Water	• Reduced availability of water for irrigation, livestock production, household use, wildlife, and industry. • Saltwater intrusion along the coast due to sea level rise, with implications for domestic, industrial, and agricultural uses as well as coastal ecosystems. • Continued retreat of glaciers on Mount Kenya that feed the Tana and Ewaso Ng'iro rivers, leading to lower water levels, particularly in the dry season. • Increased incidence of floods and extent of damage. • Increased number of people without access to water. • Increased water-related conflicts.
Climate Security	• Increased likelihood of conflict within and between countries, counties, and communities. • Heightened competitions of natural resources, i.e., pasture and water. • Increased food insecurity. • Loss of livelihoods. • Increased inequalities. • Mass displacement of people. • Increased health insecurity. • Increased personal insecurity – loss of lives. • Political and financial instability through supply line disruptions and increased risks of doing business.
Land	• Increased risk of land degradation and desertification. • Increased incidences of land-based disasters, e.g., land/mud slides. • Frequent incidences of drying of water bodies (rivers, springs, wetlands). • Increasing water levels in the Rift Valley lakes. • Increased deforestation. • Land contamination. • Increased land fragmentation and subdivision.
Social Protection	• Increased need for social protection mechanisms, e.g., cash transfers, nutrition. • Increased cases of elder and PWDs neglect. • Increased gender inequality, by reducing women's ability to be financially independent. • Increased level of gender-based violence. • Increased rural–urban migration leading to increased numbers of street families. • Increased stunting and malnutrition among children leading to government and partners interventions through nutrition improvement programmes.

2.5 Adaptation Actions under the NCCAP 2018–2022

NCCAP 2018–2022 included adaptation actions in seven priority climate areas, and enabling actions in five areas. Adaptations actions were prioritised in the second NCCAP, which was the five-year implementation plan for Kenya's NAP[102] and its updated NDC.[103]

2.5.1 Implementation of Adaptation Actions

Kenya with support of development partners have taken action to reduce vulnerability and build adaptive capacity. Interventions during 2018–2023 were directed towards disaster risk management and other priorities identified in the NCCAP and NAP. Adaptation actions supported by development partners focused on adaptation within the agricultural sector, including the climate resilience of pastoralism.

CCD undertook a review of the progress on implementation of the NCCAP 2018–2022 in 2020–2021, and a review of the progress on implementation of the NAP in the agriculture sector in 2022. These documents, which are available on the NAP Global Network website, provide an excellent overview of progress toward expected results, gaps in implementation, and the successes and challenges in implementing adaptation actions.[104]

Examples of adaptation actions undertaken during the timeframe of the second NCCAP (2018–2022) and identified as climate change successes by the Adaptation TWG are listed in Table 2-3.

Table 2-5: Successful Adaptation Actions Undertaken during the NCCAP 2018–2022 Period

Project name	Description	Partners
Emergency Locust Response Program (ELRP)	Preventing the spread of desert locust; responding to the threat to livelihoods posed by outbreaks; and strengthening Kenya's system for preparedness.	Ministry of Agriculture and Livestock Development (MALD), World Bank and FAO
Drought Resilience and Sustainable Livelihoods Programme (DRSLP)	Improving resilience to drought by communities in the ASALs of Kenya, the project covered six Arid and Semi-Arid counties namely Baringo, Isiolo, Marsabit, Samburu, Turkana and West Pokot.	MALD and African Development Bank (AfDB)

[102]GoK. (2016). National Adaptation Plan, 2015–2030. Nairobi: Ministry of Environment and Natural Resources.

[103]GoK. (2020). Updated Nationally Determined Contribution. Nairobi: Ministry of Environment and Forestry.

[104]Government of Kenya. (2021). National Climate Change Action Plan: Second Implementation Status Report for the FY2019/2020. Ministry of Environment and Forestry; and Government of Kenya. (2022). Review of the Implementation of Kenya's National Adaptation Plan 2015–2030. Ministry of Environment and Forestry.

Project name	Description	Partners
Small Scale Irrigation and Value Addition Project (SIVAP)	Increasing agricultural productivity and incomes; and food security. It aimed at increasing incomes, food security, and nutrition along the agriculture value chain by raising agricultural productivity and improving agricultural market access for poor and marginalised communities in 11 counties in arid and semi-arid regions.	MALD and AfDB
Regional Pastoral Livelihoods Resilience Project (RPLRP-Kenya)	Enhancing livelihoods resilience of pastoral and agro-pastoral communities in cross border drought prone areas.	MALD and World Bank
The Kenya Climate Smart Agriculture Project (KCSAP)	Increasing agricultural productivity and enhancing resilience/coping mechanisms to climate change risks in the targeted smallholder farming and pastoral communities, and in the event of an eligible crisis or emergency, to provide immediate and effective response.	MALD and World Bank
Kenya Cereals Enhancement Programme –Climate Resilient Agricultural Livelihoods Window (KCEP–CRAL)	Contributing to the reduction of rural poverty and food insecurity of smallholder farmers in the ASALs.	MALD
National Agricultural Rural Inclusive Growth Project (NARIGP)	Increasing agricultural productivity and profitability of targeted rural communities in selected counties, and in the event of an eligible crisis or emergency, to provide immediate and effective response.	MALD
The Green Army	Contributing to Kenya's National Tree Growing Restoration Campaign, which aims to plant 15 billion trees by 2032 and restore 10.6 million ha of degraded land.	Ministry of Tourism and Wildlife (MoT&W)
Kenya Marine Fisheries and Socio-Economic Development (KEMFSED)	Improving management of priority fisheries and mariculture and increase access to complementary livelihood activities in coastal communities.	Ministry of Mining, Blue Economy and Maritime Affairs and World Bank
Towards Ending Drought Emergencies: Ecosystem Based Adaptation in Kenya's Arid and Semi-Arid Rangelands	Increasing the resilience of the livestock and other land-use sectors through restored and effectively governed rangeland ecosystems in Kenya's arid and semi-arid lands.	Water Resources Authority, MALD, NDMA and IUCN

Project name	Description	Partners
The Kenya Off-Grid Solar Access Project (KOSAP)	Providing electricity and clean cooking solutions in the remote, low density, and traditionally underserved areas of the country.	Ministry of Energy and World Bank
Towards Ending Drought Emergencies: Ecosystem Based Adaptation in Kenya's Arid and Semi-Arid Rangelands (TWENDE)	Reducing the cost of climate change induced drought on Kenya's national economy by increasing resilience of the livestock and other land-use sectors in restored and effectively governed rangeland ecosystems.	NDMA and Green Climate Fund
The Dryland Climate Action for Community Drought Resilience Programme (DCADR)	Promoting greener more inclusive and resilient rural development in Kenya.	NDMA
Kenya Rangelands Ecosystem Services Productivity Programme (RangER)	Improving the livelihoods of communities and their landscapes by enhancing the productivity of ecosystem services provided by rangelands for food, feed, human and wildlife security in the Amaya Triangle counties of Laikipia, Samburu, Isiolo, and Baringo.	The Northern Rangelands Trust (NRT), European Union (EU) in Kenya, E4Impact, World Agroforestry (ICRAF), Jomo Kenyatta University of Agriculture and Technology (JKUAT), Community Safety Initiative (CSI) and AMAYA Triangle Initiative (ATI) in Baringo, Laikipia, Samburu and Isiolo counties
The Hunger Safety Net Programme (HSNP)	Delivering regular and emergency (including drought-responsive) cash transfers.	NDMA
Nutrition Improvement through Cash and Health Education (NICHE)	Improving the nutritional status of children in the first 1,000 days of life in drought prone areas to reduce malnutrition. The programme provides a top-up of KES 500 per target child under 24 months and/or pregnant woman, capped at KES 1,000 per household per month.	State Department for Social Protection and UNICEF

Project name	Description	Partners
GoBlue Project	Unlocking the potential of sea-land opportunities in coastal urban centres for sustained, inclusive and sustainable economic growth with employment impact, while conserving and sustainably using the coastal and marine environment as well as promoting effective and integrated maritime governance.	Government of Kenya and European Union
Kenya Water Security and Climate Resilience Project	Improving flood control structures and irrigation in the Lower Nzoia River.	World Bank, Ministry of Water, Sanitation and Irrigation and National Water Harvesting and Storage Authority

Source: Ministry of Agriculture and Livestock Development, Ministry of Energy, Ministry of Mining, Blue Economy and Maritime Affairs, Ministry of Water, Sanitation and Irrigation, and NDMA.

2.5.1 Challenges and Obstacles that Affected Adaptation Efforts

Kenya's National Climate Change Action Plan 2018–2022 Second Implementation Status Report for the FY 2019/2020 (NCCAP, 2022) highlighted several challenges to the effective implementation of adaptation actions. These challenges are listed below.

- Weak or non-existent climate change coordinating units in the reporting institutions.
- Poor coordination among the different actors leading to duplication of efforts and risk of double counting.
- Implementation and reporting process not fully streamlined.
- Inadequate financial resources to support implementation and reporting.
- The locust invasion and Covid-19 pandemic led to a diversion of resources to deal with the emergent challenges.
- Insufficient financial resources allocation for climate change activities at both national and county level.[105]

[105]Government of Kenya. (2021).

The Adaptation Technical Working Group deliberated on the challenges, and identified the following:

- Limited skills and technical expertise to support climate change adaptation activities.
- Lack of functional data, climate information management systems, and clear documentation make it difficult to carry out the monitoring, evaluation, learning and planning of adaptation activities.
- Inadequate climate adaptation technologies to address the identified national needs.
- Low productive base (natural and man-made capital assets) limiting capacity to adapt.
- Inadequate knowledge (poor understanding of adaptation concepts) of options to reduce climate risks and lack of means to implement options.
- Social/cultural and institutional rigidity, including cultural norms that discourage change and innovation, and an emphasis on traditional means of reacting to climate stress and shock.

The implementation status report also identified lessons to guide the preparation of NCCAP 2023–2027 and the implementation of priority actions, quoted below:

- Awareness creation and further sensitisation on the NCCAP priority actions is required to improve the buy-in and ownership of the priority climate change actions by stakeholders including private sector entities and CSOs.
- Institutions with functional climate change units or focal points are coordinating implementation and reporting better as they can access relevant information and support as necessary. National MDAs and county governments that have established CCUs do not view work on climate change as an additional load.
- Both government institutions and non-state actors need to be supported to mobilise additional financial resources for implementation of priority climate actions. Institutions that have low levels of implementation of climate action are reluctant to report.[106]

[106]Government of Kenya. (2021). p. 50.

The Adaptation Technical Working Group identified the following lessons learnt:

- An emphasis on priority sectors and identification of measurable actions could provide more focus and direction.
- Timely, effective, and reliable climate information is needed for decision-making,
- The development of funding proposals should be based on the actions in the NCCAP and mobilise funding for a desired outcome.
- The preparation of climate vulnerability and risk assessments should be designed to provide information about priority NCCAP actions.
- Closer collaboration between the national and county governments is required on the issues of capacity building, policy development, and implementation.
- Continue the efforts to enhance linkages and build stronger collaboration with all the stakeholders; particularly between the national and county governments to ensure sustainable food security and efficient service delivery.
- Support to counties is needed to improve the capacity to implement adaptation activities and to appreciate the challenge of climate change.
- Monitoring, evaluation and learning (MEL) of adaptation should be strengthened through development and implementation of a comprehensive framework to ensure effective and efficient utilisation of resources for data collection, timely assessment of the expected results of adaptation actions; and sharing information and learning.

2.6 Loss and Damage

Three main policy approaches are available to address climate change: loss and damage, adaptation, and mitigation. Impacts of climate change that are unavoidable by adaptation, mitigation, and other strategies like disaster risk reduction are referred to as **loss and damage**. It is focused on long-term, irreversible losses, like the loss of life and means of subsistence, biodiversity, culture, etc. It addresses effects that adaptation alone is unable to sufficiently address as a policy response.

The UNFCCC divides the overall costs of climate change into three categories: (a) mitigation costs, which involve reducing greenhouse gas emissions; (b) adaptation costs, which involve addressing the unavoidable consequences of climate change; and (c) loss and damage, which refers to the remaining costs that cannot be avoided even with adaptation and mitigation and can be further divided into: (i) economic loss; and (ii) non-economic loss. Loss and damage refer to the negative consequences that arise from the unavoidable risks of climate change, like rising sea levels, prolonged heat waves, desertification, the acidification of the sea and extreme events, such as bushfires, species extinction and crop failures. As the climate crisis unfolds, these events will happen more frequently, and the consequences will become more severe.



Figure 2-26: Economic and non-economic losses and damages

Source: UNFCCC. (2016). Loss and Damage: Online guide. https://unfccc.int/files/adaptation/cancun_adaptation_framework/loss_and_damage/application/pdf/online_guide_ld_nov_2016.pdf

Loss and damage in the context of climate change impact is commonly understood as the adverse effects of climate change that are not or cannot be avoided by mitigation and adaptation efforts. There are two types of loss and damage: those that exceed adaptation limits and those that can be minimised by ramping up adaptation efforts and finance. The limits to adaptation are the points at which adaptation fails to avert intolerable climate impacts. They are typically classified as being either hard or soft.[107]

- Hard limits are typically those associated with physiological responses to changing climates, and other than reducing GHG emissions, there are few options available to humans to avoid the points at which climate-sensitive systems are fundamentally damaged.
- Soft limits are those that arise from failures to implement adaptation actions that could effectively reduce vulnerability. This failure can be for cultural, economic and/or political reasons.

IPCC's 6th Assessment Report (2022) acknowledges that as the magnitude of climate change increases, so does the likelihood of exceeding adaptation limits. It differentiates between "soft" limits – when adaptation options exist, but communities don't have the financial resources needed to pursue them – and "hard" limits, where "there are no reasonable prospects for avoiding intolerable risks". These limits are particularly acute in vulnerable communities that lack the resources needed to implement effective adaptation options.[108]

Opportunities for averting, minimising, and addressing loss and damage can be found across a spectrum ranging from reducing GHG emissions to disaster risk management, climate change adaptation, and addressing residual loss and damage (Figure 4-4).[109]

[107]United Nations Environment Programme (UNEP). (2023). Adaptation Gap Report 2023: Underfinanced. Underprepared. Inadequate investment and planning on climate adaptation leaves world exposed. Nairobi. https://doi. org/10.59117/20.500.11822/43796. p. 18

[108]IPCC. (2022).

[109]UNEP. (2023)

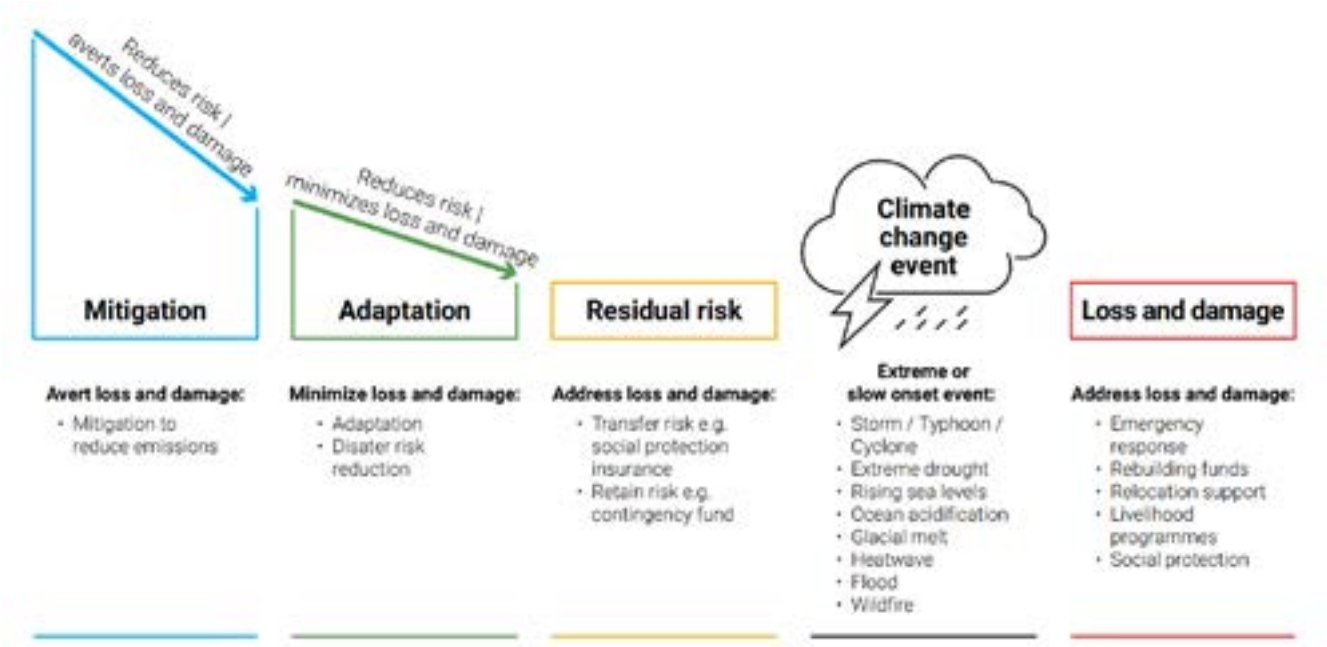


Figure 2-27: Averting, minimising and addressing losses and damages

Source: United Nations Environment Programme. (2023). Adaptation Gap Report 2023: Underfinanced. Underprepared. Inadequate investment and planning on climate adaptation leaves world exposed. Nairobi. p18. https://wedocs.unep.org/20.500.11822/43796

2.6.1 Loss and Damage in Kenya

Many natural disasters have struck Kenya causing enormous losses as well as significant harm to infrastructure, people's lives, and means of livelihood. The present estimate of economic losses resulting from climate change impacts is between 3% and 5% of GDP annually; by 2050, this amount is expected to increase to almost 9% of GDP annually.

An overview of Kenya's submission to the UNFCCC Secretariat on loss and damage is set out in Box 2-1.

Box 2-1 Overview of Loss and Damage in Kenya

Kenya's experiences with loss and damage

Kenya has experienced various natural hazards that have resulted in huge losses and caused serious damage to the existing infrastructure, lives and livelihoods. Economic losses due to climate change impacts are currently estimated at between 3% – 5% of the GDP per year and are projected to rise to about 9% of the GDP per year in 2050. In the livestock sector, the poor rains, combined with the effects of the prolonged dry spell and drought due to climate change have affected rangeland and water availability for pastoralists, resulting in very poor forage availability. This leads to livestock deaths, reduced household incomes, and increased food insecurity. A FAO mid-season assessment for October–December 2021 found that over 1.4 million livestock had died over the three months due to the impact of drought.

At the same time, the water levels of lakes in Kenya's Great Rift Valley increased significantly, hurting local communities and ecosystems. According to a survey undertaken by the Ministry of Environment and Forestry and UNDP, various losses and damages associated with the rising water levels in Kenyan lakes included:

More than 75,987 households displaced from 13 counties in the region.

About 1,106 square kilometres (110,600 hectares) of land within and adjacent to the lakes were submerged resulting in losses and a lot of damage to the surrounding properties.

The overflowing lakes submerged riparian vegetation with dire impacts on the existing fauna and flora. The change in water level rendered the lakes less aesthetic, hurting income from tourism.

The rising water levels led to loss of lives and livelihoods, injury, outbreak of diseases, legal issues, safety and security concerns, as well as ecological and environmental degradation.

The report proposed that the Government of Kenya should set aside a budget of USD 170 million to solve the challenges associated with rising lake water levels.

A global approach towards addressing loss and damage is key for ensuring sustainability of both the environment and livelihoods of vulnerable communities in Kenya. Strong global action would help address the needs of developing countries, such as Kenya, by scaling up efforts towards capacity building, provision of financial support, and technological advancement to avert impact of loss and damage associated with climate change. A global approach can help to build bridges of cooperation between different countries and through this, efforts can be directed to the most pressing issues of loss and damage emanating from climate change.

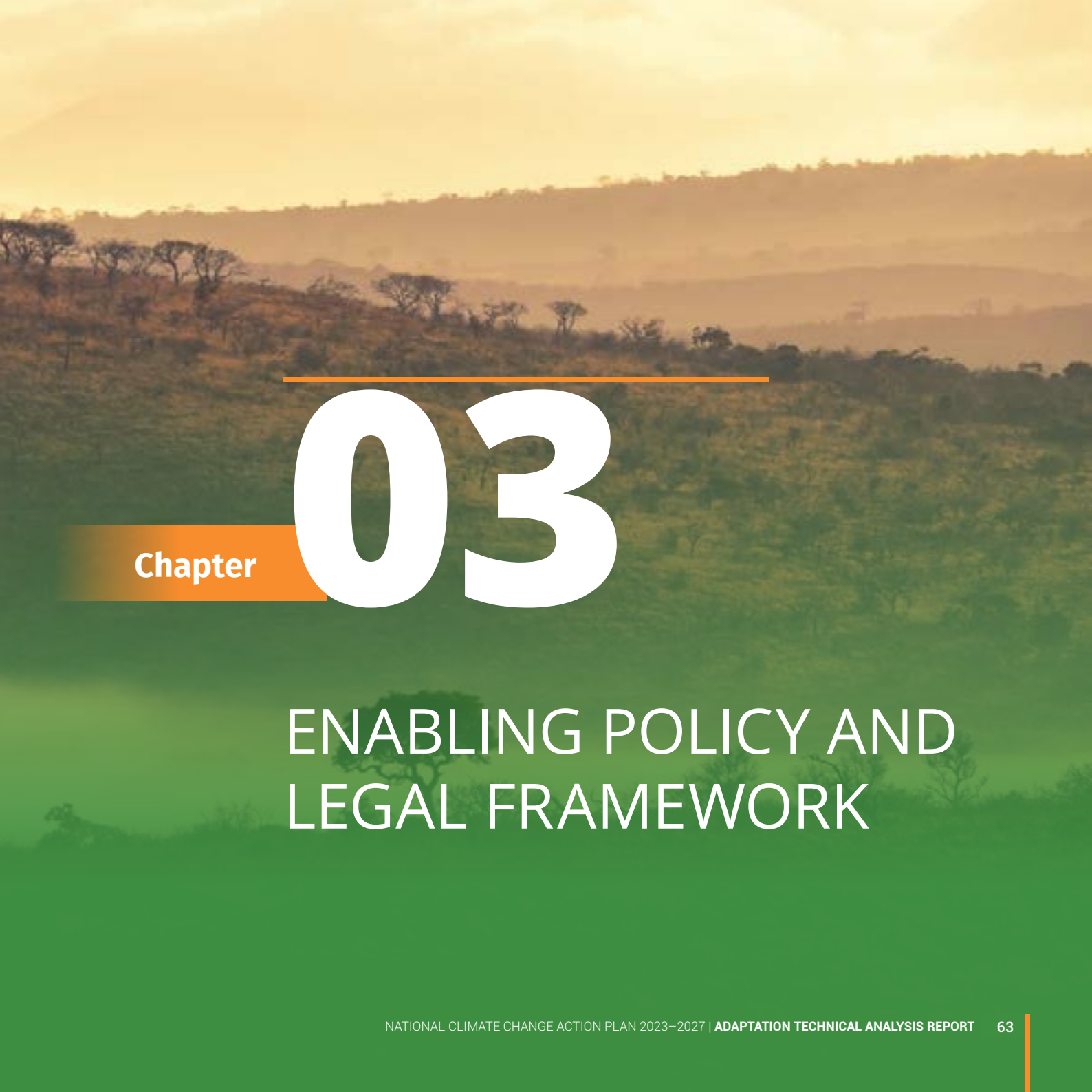
Loss and Damage National Focal Points

In response to the pressing need to tackle loss and damage, Kenya proposes the establishment of National Loss and Damage Focal Points (or Focal Institutions). These entities, with advice and guidance from the Technical Expert Group (TEG), would be responsible for ensuring the operationalization of loss and damage initiatives on the ground. These initiatives would be aligned with thematic areas agreed upon in Decision 2/CMA.2.

Quoted from: *Kenya's Submission on The Santiago Network for Loss and Damage*, 15 March 2022. https://www4.unfccc.int/sites/SubmissionsStaging/Documents/202204041458---Kenya%20Submission%20on%20Santiago%20Framework%20for%20Loss%20and%20Damage.pdf

Kenya will actively engage in negotiations and processes to establish the Loss and Damage Fund that is being established under the UNFCCC. Kenya will undertake research to clarify the costs of loss and damage, including economic and non-economic losses, in preparation for accessing finance from the Loss and Damage Fund.





Chapter 03

ENABLING POLICY AND LEGAL FRAMEWORK

3.1 The Global Context

Climate change is a global problem which demands a global solution. Kenya has engaged in international efforts to address climate change through the United Nations Framework Convention on Climate Change (UNFCCC). The Paris Agreement which further enhances the operationalisation of the UNFCCC entered into force on 4th November 2016. Kenya signed the Paris Agreement on 22nd April 2016 and ratified the Agreement on 28th December 2016.

The Paris Agreement (Article 2) aims "to strengthen the global response to the threat of climate change" by: keeping global temperature rise this century to below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5°C; "increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience"; and making finance flows consistent with a low greenhouse gas emission and climate-resilient development pathway. Parties are to submit NDCs every five years that set out their mitigation contribution toward the achievement of the global goal; and most countries have opted to include their adaptation contributions in their NDCs. Kenya submitted its updated NDC in 2020, which sets out its ambitious mitigation and adaptation actions, and indicates adaptation as its priority.[110]

Box 3-1 Kenya's Nationally Determined Contribution

- Adaptation contribution – ensure a climate-resilient society though by mainstreaming climate change adaptation into the Medium-Term Plans (MTPs) and County Integrated Development Plans and implementing adaptation actions.
- Mitigation contribution – seek to abate GHG emissions by 32% by 2030 relative to the business-as-usual scenario of 143 $MtCO_2eq$.
- An enhanced commitment to domestic contribution (subject to national circumstances) to the NDC cost from 0% to 13.2% compared to the initial NDC.
- Achievement of the NDC is subject to international support in the form of finance, investment, technology development and transfer, and capacity development.

Source: Government of Kenya. (2020). Updated NDC.

World Metrological Organization (WMO). (2023). State of the Global Climate 2022. WMO-No. 1316. https://library.wmo.int/doc_num.php?explnum_id=11593

Article 7 of the Paris Agreement establishes a global goal on adaptation – "of enhancing adaptive capacity, strengthening resilience, and reducing vulnerability to climate change". It recognises that adaptation is a key component of the global response to climate change; and that adaptation action should follow a country-driven, gender-responsive, participatory, and fully transparent approach. The Paris Agreement aims to strengthen national adaptation efforts, and recognises that all parties should engage in adaptation, including by preparing and implementing NAPs, and preparing and submitting adaptation communications. The adaptation efforts of developing countries should be recognised and international support provided to developing countries.[111]

3.1.1 Global Agreements Related to Climate Change Adaptation

Kenya is signatory to the *Convention on Biological Diversity* (1993) (CBD) and the *United Nations Convention to Combat Desertification* (1994) (UNCCD). Kenya ratified the CBD on 24th October 1994 and the UNCCD on 25th June 1997. The CBD's article 6 (a) and (b) calls for countries to "develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity or adapt existing strategies, plans or programmes that reflect the measures the Convention; and "integrate, the conservation and sustainable use of biological diversity into sectoral or cross-sectoral plans, programmes and policies." UNCCD's article 2.2 states that: "Achieving this objective will involve long-term integrated strategies that focus on improved productivity of land, and the rehabilitation, conservation and sustainable management of land and water resources, leading to improved living conditions, in particular at the community level". UNCCD's Land Degradation Neutrality further aims for "the amount and quality of land resources, necessary to support ecosystem functions and services and enhance food security, remains stable or increases within specified temporal and spatial scales and ecosystems".

Kenya is committed to the United Nations' 2030 Agenda for Sustainable Development and its 17 SDGs which became operational on 1st January 2016. Countries committed to mobilise efforts to end all forms of poverty, fight inequalities, and tackle climate change, while ensuring that no one is left behind. Kenya adopted the United Nations' Sendai Framework for Disaster Risk Reduction (2015–2030), which outlines seven targets and four priorities to prevent new and reduce existing disaster risks to minimise disaster deaths and economic losses.

[110]GoK. (2020). Updated Nationally Determined Contribution. Nairobi: Ministry of Environment and Forestry

[111]UN. (2015). Paris Agreement.

3.1.2 Regional Agreements Related to Climate Change

The African Union's Agenda 2063 seeks to accelerate the implementation of existing continental initiatives for growth and sustainable development.[112] It commits countries to build climate-resilient economies and communities, prioritise adaptation and implement the Programme on Climate Action in Africa, including a climate-resilient agricultural development programme.

The East African Community Climate Change Policy Framework of 2010 guides member states and stakeholders on the preparation and implementation of adaptation actions to reduce the vulnerability of the region, enhance adaptive capacity, and build socioeconomic resilience of vulnerable populations and ecosystems.[113] Other documents include the East African Community Climate Change Master Plan 2011–2031.[114] The Master Plan provides a long-term vision and a basis to operationalise a comprehensive framework for adapting to climate change in line with the EAC Protocol on Environment and Natural Resources Management, and with international climate change agreements.

Kenya signed the *Kampala Ministerial Declaration on Migration, Environment and Climate Change* in September 2023 during the Africa Climate Summit. The declaration is the first regional policy framework that comprehensively addresses the impacts of climate change on human mobility. The Declaration outlines 12 commitments by its signatory states to address the effects of climate change on human mobility in the East and Horn of Africa region as well as capitalise on the opportunities to further sustainable development. It aims to build and strengthen climate resilience and adaptive interventions of all communities living in fragile ecosystems, flood prone water basins, low-lying areas, and mountain slopes including enacting urgent regional and national legislation, policies, strategies and financing for action.

The Africa Climate Summit (ACS) called for urgent action to reduce carbon emissions and proposed a new financing mechanism to unlock climate funding. This was the inaugural Africa Climate Summit aimed at addressing climate change in an African context. It also provided a platform to inform, frame, and influence commitments, pledges, and outcomes for climate change adaptation and mitigation in Africa and resulted in the Nairobi Declaration. A total of 23 critical commitments and 20 calls to action were identified as important collective action at continental and global levels.[115,116] In regard to adaptation, the declaration called for urgent collective action to:

- Agree on a measurable Global Goal on Adaptation (GGA) with indicators and targets to enable assessment of progress against negative impacts of climate change" (p. 4)
- Integrate climate, biodiversity and ocean agendas into national development plans and processes to increase resilience of local communities and national economies (p. 6)
- Identify, prioritise, and mainstream adaptation into development policy-making and planning, including in the context of Nationally Determined Contributions (NDCs) (p. 6)
- Build effective partnerships between Africa and other regions, to meet the needs for financial, technical and technological support, and knowledge sharing for climate change adaptation (p. 7)
- Promote investments in urban infrastructure including through upgrading informal settlements and slum areas to build climate-resilient cities and urban centres (p. 7)

[112]African Union Commission. (2015). Agenda 2063: The Africa We Want. Final Edition, April 2015. Popular version. African Union Commission. ISBN: 978-92-95104-23-5

[113]EAC (2010) – East African Community. (2010). East African Community Climate Change Policy. EAC Secretariat. Arusha. May 2010.

[114]EAC (2011) – East African Community. (2011). East African Community Climate Change Master Plan 2011 – 2031. September 2011

[115]African Union. (2023). The African Leaders Nairobi Declaration on Climate Change and Call to Action.

[116]AfBD. (2023). An Overview of Agreed Commitments and Announcements from the Africa Climate Summit, Nairobi, September 4–6, 2023
https://www.afdb.org/sites/default/files/documents/africa_climate_summit_commitments_and_announcement_compilation_final_sept_7_2023.docx.pdf

- Strengthen early warning systems and climate information services, as well as taking early action to protect lives, livelihoods and assets and inform long-term decision-making related to climate change risks. It emphasises the importance of embracing indigenous knowledge and citizen science in both adaptation strategies and early warning systems (p. 7)
- Support implementation of the Africa Water Investment Programme (AIP), which aims to close the Africa water investment gap by mobilising US$ 30 billion by 2030 (p. 7)
- Enhance drought resilience systems to shift from crisis management to proactive drought preparedness and adaptation, to significantly reduce drought vulnerability of people, economic activities, and ecosystems (p. 7)
- Enhance the inclusive approach including through engagement and coordination with children, youth, women, persons living with disabilities, indigenous people, and communities in climate vulnerable situations (p. 7).[117]

Box 3-2 Kenya Declaration at the Africa Climate Week and Summit 2023

Government of Kenya

- Committed to Net Zero by 2050.
- Launched the Financing Locally-led Climate Action Program (FLLoCA) – USD 49.7 million investment announced by President Ruto to counties in the form of county climate change investment grants which, together with KES 3 billion (USD 20.7 million) of county own resource allocations will finance local climate action priorities in agriculture, water, and natural resources management in every county.
- Launched the New Green Hydrogen strategy and roadmap for Kenya which sets out a commitment to elevating green hydrogen to a pivotal cross-cutting factor in Kenya's development agenda and clarifies how hydrogen is deeply woven into Kenya's ambitious green economy agenda.
- Long-term Low Emissions Development Strategies (LT-LEDS) for 2050.
- Announced new National Climate Change Action Plan (2023–2027).
- Launched new Kenya Climate Change Act (Amendment) 2023.
- Launched a new programme, 'Building Resilience for the Urban Poor' (BCRUP).
- Announced Kenya would be the new site of the new Africa headquarters for the Global Centre for Adaptation.

Quoted from: AfBD. (2023). *An Overview of Agreed Commitments and Announcements from the Africa Climate Summit, Nairobi, September 4––6, 2023. https://www.afdb.org/sites/default/files/documents/africa_climate_summit_commitments_and_announcement_compilation_final_sept_7_2023.docx.pdf*

[117]African Union. (2023). The African Leaders Nairobi Declaration on Climate Change and Call to Action. https://media.africaclimatesummit.org/Final+declaration+1709-English.pdf?request-content-type=%22application/force-download

3.2 National-Level Climate Change-related Policies, Strategies and Plans

In 2008, Kenya launched **Vision 2030** to guide the country's development.[118] The goal of Kenya Vision 2030 is to make Kenya an industrialised, middle-income country that provides its citizens with a secure and clean environment by 2030. Climate change is identified in Vision 2030 as one of several potential environment-related risks that could slow the country's expected rate of economic growth. It specifically notes the risks associated with the country's dependence on climate-sensitive economic sectors and weak capacity to cope with climate hazards. Vision 2030 also points to the need to integrate climate change adaptation into national disaster management planning and, more generally, to shift from disaster response to disaster risk reduction.

Vision 2030 is implemented through a series of five-year plans. The **Fourth Medium Term Plan** (MTP IV) of 2023–2027 gives focus to climate change mitigation and adaptation; implementation and tracking of the Third National Climate Change Action Plan (NCCAP III); capacity building of MCDAs to support NCCAP implementation; development of early warning systems (crop yield forecast for food security, plant biomass monitoring for drought forecasting, and landslide risk mapping); and operationalisation and implementation of the Measurement, Reporting and Verification (MRV) system and registry; and coordination of climate adaptation and mitigation programmes.[119]

Article 42 of the Constitution, 2010 recognises Kenyans right to a clean and healthy environment, as well as the right to have the environment protected for present and future generations. A healthy environment necessitates the sustainable use of ecosystems and, as a result, continuing availability to ecosystem goods and services that are necessary for adaptation.

The National Climate Change Response Strategy, 2010, acknowledged the importance of coordinating efforts to address climate change challenges in Kenya. It advocated for the creation of a climate change policy and legislation to serve as the foundation for adaptation efforts. It called for and provided the foundation for the development of a standalone climate change act, as well as related governance structures and programmes (e.g., NCCAP and NAP).

In 2015, Kenya established its National Adaptation Plan (NAP) 2015–2030 drawing on the adaptation technical analysis of NCCAP 2013-2017. The NAP was submitted to the UNFCCC in early 2017. The NAP aims to consolidate the country's adaptation vision by supporting macro-level adaptation initiatives aligned with economic sectors and addressing county-level vulnerabilities to improve long-term resilience and adaptive capability. It is implemented through the five-year NCCAPs. The NAP identifies climate vulnerabilities as well as key areas for enhancing climate resilience. Furthermore, it serves as the foundation for Kenya's NDC's adaptation component.

The *Climate Change Act* Number 11 of 2016 and Climate Change Amendment Act 2023 establish the legal architecture to guide climate change planning and implementation at the national and county levels. It provides the legal basis for mainstreaming climate change in national and county planning and establishes the institutional structures for coordination of climate change

[118]Government of Kenya. (2007). Kenya Vision 2030: A Globally Competitive and Prosperous Kenya. Nairobi: Government of Kenya

[119]GoK. (2022). Fourth Medium Term Plan, 2023–2027. Government of Kenya. Nairobi

issues. It is a comprehensive legal framework for climate change governance, with the goal of enhancing climate-resilient development by, among other things, promoting the adoption of technologies that support low carbon and climate-resilient development; facilitating capacity development for public participation in climate change responses through awareness creation, consultation, representation, and access to information; and providing incessant access to information. Furthermore, the Act calls for and encourages the incorporation of climate adaptation measures into development planning, decision-making, and execution. It establishes guidelines for climate change planning and implementation and acknowledges the complementary roles of national and county governments. Given the local character of adaptation, the latter is crucial.[120]

The Climate Change Fund established under the Act is administered by the National Climate Change Council and managed by the Principal Secretary of the Ministry responsible for Climate Change Affairs. The National Treasury is the lead in developing regulations and modalities for the Fund in consultation with the Ministry responsible for Climate Change Affairs. The Act provides requirements to prepare NCCAPs every five years, and to mainstream climate change into National Development Plans and CIDPs. The Act requires that State Departments to establish climate change units.

The following Articles and Chapters of the *Constitution of Kenya* are implied in the spirit and intent of the *Climate Change Act 2016*:[121]

- *Article 2 (Sections 5 and 6):* International law and any convention ratified by Kenya shall form part of the law of Kenya
- *Article 19:* Recognise and protect human rights and fundamental freedoms and preserve the dignity of individuals
- *Article 21:* Address the needs of vulnerable groups within society
- *Article 42:* Economic and social rights, including health, housing, adequate food, clean and safe water, social security and education
- *Article 43 (d):* Right to clean and safe water is adequate
- *Article 48 (Section 23):* Right to access to justice
- *Article 50:* Right to a fair hearing
- *Article 118:* Role of parliament in facilitating public participation
- *Chapter 4:* Advances gender equality
- *Chapter 5:* Land and environment.

The National Spatial Plan (NSP) 2015–2045 provides a national spatial design framework for the integration of social, economic, and political policies.[122] The NSP indicates Kenya's intention to enhance disaster preparedness in all disaster-prone areas and improve the capacity for adaptation to global climatic change. Most Kenyan citizens depend directly or indirectly on environmental goods and services. In addition, environmental resources contribute directly and indirectly to the local and national economy through revenue generation and wealth creation in productive sectors.

The Green Economy Strategy and Implementation Plan (GESIP) 2016–2030 is Kenya's blueprint to advance toward a low carbon, resource efficient, equitable and inclusive socio-economic transformation.[123] The GESIP is meant to guide national and county governments, private sector, civil society, and communities in adopting different development pathways that encourage higher green growth, cleaner environment, and higher productivity. It will aid Kenya's transition to sustainable infrastructure, building resilience, sustainable natural resources management, resource

[120]GoK. (2016b). Climate Change Act, 2016. Government of Kenya.

[121]GoK. (2023). Climate Change (Amendment) Act, 2023. Government of Kenya.

[122]GoK. (2015). National Spatial Plan 2015–2045. Ministry of Devolution and Planning. Government of Kenya.

[123]GoK. (2016c). Green Economy Strategy and Implementation Plan (GESIP) 2016–2030: A low carbon, resource efficient, equitable and inclusive socio-economic transformation. Government of Kenya. Nairobi. August 2016.

efficiency, social inclusion, and sustainable livelihoods. The Green Growth and Employment Programme is designed to implement the GESIP and seeks to improve public policy for the private sector engagement in green growth, mainstream green growth in the CIDPs, and improve access and use of climate data to inform economic planning and disaster risk management.

The National Climate Change Framework Policy (NCCFP) approved by Parliament in 2018 ensures the integration of climate change considerations into planning, budgeting, implementation, and decision-making at the national and county levels and across all sectors.[124] The NCCFP complements the Climate Change Act 2016.

The National Climate Finance Policy approved by Parliament in 2018, establishes the institutional and reporting frameworks to access and manage climate finance.[125]

The National Biodiversity Strategy and Action Plan, 2019–2030 outlines approaches for resolving problems with dwindling biodiversity and related issues. It strives to lessen biodiversity loss, raise awareness of the significance of biodiversity, and enhance community livelihoods. Among the highlighted adaptation strategies are promoting gender equity in biodiversity management, strengthening institutional and community capacity and links, conserving agricultural biodiversity through increased support for local communities in the production and sustainable use of indigenous and/or traditional species for food and other uses, and supporting and promoting the use of indigenous knowledge, innovations, and practices, among others.

Kenya's 2023–2027 planning period focuses on the Bottom-Up Economic Transformation Agenda (BETA) themes of Agricultural Transformation; Micro, Small and Medium Enterprises (MSME) Economy; Housing and Settlement; Healthcare; and Digital Superhighway and Creative Economy.

Box 3-3 The Bottom-Up Economic Transformation Agenda

Agricultural Transformation and Inclusive Growth. This intervention aims at ensuring food security in the country through climate change mitigation and adaptation, thereby reducing the cost of living. The intervention also aims at creating jobs as agriculture has the highest employment multiplier effect owing to its strong forward and backward linkages to other sectors of the economy. It also focuses on developing Kenya's agricultural land through irrigation.

Micro, Small and Medium Enterprise (MSME). This entails correcting market and institution failure problems through schemes that will ensure that benefits of growth are fairly distributed. This will promote accessibility to affordable credit to most Kenyans at the bottom of the pyramid through the Hustlers Fund.

Housing and Settlement. This intervention aims at reducing proliferation of slums and hence preserving human dignity. Additionally, it aims to create quality jobs for over 100,000 youths. This will be done through, among other measures, facilitating delivery of 250,000 houses per annum and enabling low-cost housing mortgages.

Healthcare. This entails promoting access to quality and affordable healthcare through the Universal Health Coverage programme.

[124]GoK. (2018). National Climate Change Framework Policy – Government of Kenya

[125]GoK. (2018). National Climate Finance Policy – Government of Kenya.

Digital Superhighway and Creative Industry. Digitisation and automation will increase productivity and competitiveness through eliminating information asymmetry in market access and risk management.

The Official Website of the President (http://www.president.go.ke) sets out the BETA Action Plan.

3.3 National-Level Sectoral Actions

Many departments and agencies have established climate change desks as required by the *Climate Change Act 2016*. Most sectors already have policies, strategies, and plans that support adaptation actions. Some of the sector-based policy instruments are listed in Table 3-1.

Table 3-1: National Sector-based Adaptation-related Policies, Strategies and Plans

Sector	Climate Change/Adaptation/Related Plan	Ministry/Department
Agriculture	Kenya Climate Smart Agriculture Strategy (2017–2026) Agricultural Sector Transformation and Growth Strategy (2019–2029)	Ministry of Agriculture and Livestock Development
Disaster Risk Management	Kenya's Disaster Risk Financing Strategy for Catastrophe Deferred Drawdown Option (2018–June 2023)	National Treasury
Drought Management	Climate Risk Management Framework (2017) Ending Drought Emergencies (EDE) Common Programming Framework PFMA 2012 National Drought Emergency Funds (NDEF) 2021 regulations	National Drought Management Authority
Energy	Energy Act (2019) – Part 3, section 43; Part 4, section 74 (i), and Part 9 address climate change-related issues National Energy Efficiency and Conservation Strategy (2020–2027) Bio-energy Strategy (2020–2027) Green Hydrogen Strategy and Road Map for Kenya (2023)	Ministry of Energy and Petroleum

Source: United Nations Environment Programme. (2023). Adaptation Gap Report 2023: Underfinanced. Underprepared. Inadequate investment and planning on

Sector	Climate Change/Adaptation/Related Plan	Ministry/Department
Environment	Environmental Management and Coordination Act (No. 8 of 1999 and Amendment 2015) Biodiversity and Climate Change Strategy (2016) The National Biodiversity Strategy and Action Plan (NBSAP) 2019–2030	Ministry of Environment, Climate Change and Forestry
Finance	National Climate Finance Policy (2018)	National Treasury
Forestry	National Forest Programme (2017) – chapter on climate change REDD+ Readiness Plan and analysis (2013–2018)	Kenya Forest Service, Ministry of Environment and Climate Change and Forestry
Health	Health Act (No. 21 of 2017) – section on environmental health and climate change (part VII, sections 68 & 69)	Ministry of Health
Disaster Risk Management	Draft Disaster Risk Management Policy (2018) Draft Disaster Risk Management Bill (2018)	Department of Interior, National Disaster Operations Centre and National Treasury
Transport	Kenya National Aviation Action Plan for International Civil Aviation Organisation (ICAO) and International Maritime Organisation (IMO) (2017)	Ministry of Roads and Transport
Water	Water Harvesting and Storage Regulations (2021) National Irrigation Policy (2017) National Irrigation Services Strategy 2022–2026 Irrigation Act (2019) Water Act No. 43 of 2016 and (amendment) Bill (2023)	Ministry of Water, Sanitation and Irrigation
Land	The Land Act (2012)	Ministry of Lands, Public Works, Housing, and Urban Development
Investment	Guidance on climate-related risk management (2021)	Central Bank of Kenya

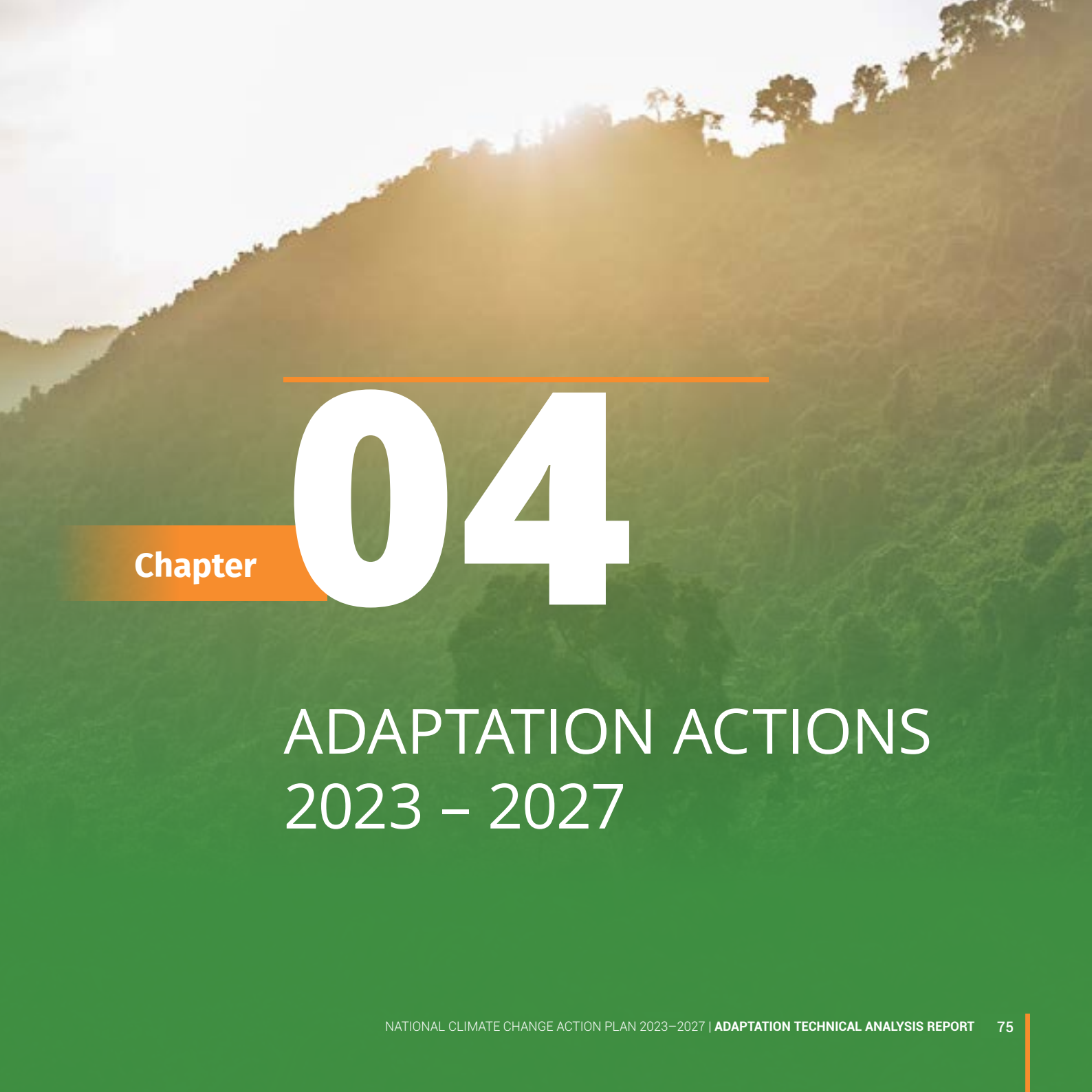
Source: Deliberations by Adaptation Thematic Working Group

3.4 County Government Adaptation Plans and Processes

The county governments have progressively been incorporating climate change initiatives into their plans and programmes as mandated by the Climate Change Act of 2016. Forty-five counties have created climate change-specific policies and legislation to advance this agenda and counties have also established County Climate Change Fund (CCCF) mechanisms, which aim to improve access and direct climate money to the grassroots level. Through the Financing Locally-Led Climate Action (FLLoCA) programme (2021–2026), the CCCF mechanism is being expanded countrywide. Through collaborative processes, 45 counties have identified their priority adaptation and resilience initiatives, which will be funded through grants for climate resilience investments over a three-year period starting in July 2023. The National Treasury and Planning Department oversees the FLLoCA programme, which is funded through county government development funds, a concessional loan from the World Bank, and grants from development partners.

County governments have established Climate Change Units that are led by a County Executive Committee (CEC) member in charge of coordinating implementation of climate change actions.





Chapter 04

ADAPTATION ACTIONS 2023 – 2027

This chapter highlights actions prioritised by the various sectors to adapt to the risks, vulnerabilities, and impacts of climate change. These actions are intended to enhance the resilience of vulnerable sectors, systems, livelihoods, and communities to climate change. The purpose of the actions is either to manage climate risks (avoid, prevent, reduce, transfer, or absorb) or to exploit beneficial opportunities created by climate change.

4.1 Priority Adaptation Actions

The process of developing the adaptation actions for the NCCAP 2023–2027 was led by the Adaptation TWG, which had a mandate to review and update the adaptation section of the NCCAP. This committee served as the Adaptation Technical/ Thematic Working Group (ATWG). The role of the ATWG was to facilitate development of the ATAR.

In prioritising adaptation actions, the ATWG used the NAP 2015–2030, the MTP IV, the Medium-Term Expenditure Framework (MTEF), the updated NDC, the CIDPs 2023–2027, and other climate change-related national and county policies and plans. Prioritised adaptation actions were adopted using a 'sector-institution' matrix, a tool for generating consensus on the best adaptation actions from among the list of proposed actions. The 'institution' in the matrix refers to the institution which originated the proposed action, and the 'sector' refers to the sector where the action falls. These actions were developed in consultation with various stakeholders including the national ministries departments and agencies, county governments, women, youth, marginalised groups, private sector, and civil society, and then subjected to gender analysis.

Sector-institution matrix involved identifying pertinent sectors (agriculture, water resources, infrastructure, health, etc.) and institutions (government agencies, NGOs, research institutions, etc.) involved in adaptation. The matrix helped facilitate the arrangement and ranking of adaptation measures according to their effects on various industries and the functions of various stakeholders. The guiding principle was for the sectors to come up with actions which are climate smart and targeted.

Adaptation actions identified by sectors for the 2023–2027 planning period focused on six broad issues listed below.

1. **Climate induced hazards/disasters –** drought, floods, climate security, landslides, pests and diseases.
2. **Food insecurity** – crops, livestock, and fisheries.
3. **Water insecurity –** urban and rural.
4. **Energy infrastructure vulnerability –** resilient energy mix, robustness to climate impacts.
5. **Land degradation and biodiversity loss** – terrestrial (forests, wetlands, rangelands, agricultural land), and wildlife.
6. **Marine and coastal ecosystem degradation –** mangrove forests, coral reefs, seagrass beds, beaches, deltas, sea water intrusion, and coastal erosion.

4.2 Sector Priority Adaptation Actions

The climate change priority actions are described in the matrices below. The tables describe the issue being addressed; alignment with the MTP IV, Bottom-Up Economic Transformation Agenda, and with SDGs; priority climate change actions; and relevant institutions to deliver the actions. Adaptation actions were generated from any combination of the described strategies/ options to respond to climate change impacts in the country. The overall strategy was to minimise irreversible investments and maximise reliance on win-win approaches – that is – approaches that yield benefits even if the projected risks do not materialise as expected. The actions were analysed and found to contribute significantly to Kenya's Bottom-Up Economic Transformation Agenda, global climate change commitments and the SDGs.

4.2.1 Disaster Risk Management

In the face of increasing climate variability and disasters especially those related to hydro-meteorological hazards in Kenya, there is need to develop interventions which effectively connect Disaster Risk Management (DRM) and climate change adaptation. DRM forms an important element of climate change adaptation that includes early warning systems, preparedness, strengthening coping mechanisms and reducing vulnerability, and all forms of adaptation that constitute DRM.

Kenya's disaster risk profile is dominated by drought and floods, as well as occurrence of landslides/mudslides, storm surges, pest and/or disease outbreaks, and extreme temperatures among others.[126,127] All the four major hazards occur in different regions of the country but at different levels of frequency and severity. Table 4-1 shows the regional spread of each hazard in the country.

[126]Climate Change Knowledge Platform. (2020).

[127]UNICEF Kenya. (2021). Year End Humanitarian Situation Report: 31 December 2021.

Table 4-1: Major Hazards/Risks by Region

Region	Drought	Floods	Landslides/Mudslides	Pest/Disease Epidemics
Nyanza	*	**	**	**
Western	*	**	**	**
Rift Valley	**	**	**	**
Central	*	**	**	**
Eastern	**	**	**	**
North Eastern	**	**	*	**
Coast	**	**	**	**
Nairobi	*	**	o	*

Note: ** More severe incidences; *Less severe incidences; oNo major incidences

Source: Adapted from Owuor (2015), Huho et al. (2016) and Styles and Cochran (2016).

4.2.1.1 Disaster Risk Management

In Kenya, climate change and its effects are a serious issue. Among the worsening effects are an increase in the frequency and intensity of droughts, occurrences of wildfires, illnesses associated with heat, and heat waves. Due to its inherent complexity and wide-ranging, cascading effects that influence, among other things, agricultural production, water supply, human health, biodiversity, and natural ecosystems, drought is probably the most severe and weather-related natural calamity.[128] Drought has become more frequent and severe in the 21st century in many parts of the world due to a changing climate. The Horn of Africa has seen three severe drought events since 2010, the worst of which occurred in the years 2021–2023. The first was in 2010–2011, followed by 2016–2017, and then 2020–2023.[129] Adaptation actions for Ending Drought Emergencies are presented in Strategic Action Area 1a.

[128]NDMA. (2023).

[129]The IGAD Climate Prediction and Applications Centre (ICPAC), the Famine Early Warning Systems Network (FEWS NET), the Food and Agriculture Organization Global Information and Early Warning System (FAO GIEWS), the World Food Programme (WFP) and the

Strategic Action Area 1a Drought Risk Management

STRATEGIC OBJECTIVE	**To reduce risks to communities, livelihoods, and infrastructure resulting from climate-related disasters and enhance institutional preparedness and response.**

Issue/ Problem

Incidence, frequency, and magnitude of drought disasters have increased, exacerbating the vulnerability of many populations around the country and eroding economic growth.

BETA Pillars

- Agricultural Transformation and Inclusive Growth
- Universal Healthcare
- Housing and Settlement

SUSTAINABLE DEVELOPMENT GOALS



Opportunity/Main Action	Sub Actions and Targets/Expected Results by 2027
Increase the number of households and entities benefiting from devolved adaptive services	• Expand best-practice social protection mechanisms (adaptive social safety nets) and measures to poor and vulnerable people countrywide by June 2027. • Beneficiaries under the National Safety Net Programme increased from 1,082,000 in 2022 to 1,972,000 by 2027. • Beneficiaries of social protection mechanisms and other safeguards under the Hunger Safety Net Programme increased from 101,800 to 132,000 (30% women and 10% youth) in 8 arid and semi-arid counties for regular cash transfer beneficiaries. • An additional 200,000 households through drought-shock responsive scalability, targeting those who may slide to the very poorest households as a result of loss of livelihood assets due to drought.
Strengthen the ability of people in Kenya to better cope with drought	• Increase the number of Disaster Risk Management Institutions and Centres of Excellence from 69 to 300 by 2027. • Increase the number of community-level resource centres for documentation and dissemination of DRM information from 10 to 50 centres by 2027. • Develop dedicated capacities in ten health facilities in 32 counties to enhance access to health services during emergency response, including prepositioning of requisite medical and non-medical supplies by 2027. • Develop early warning and anticipatory action and monitoring capacities for climate-related hazards tapping into relevant technologies and innovations in 32 counties and at the national level by 2027.
	• Develop storage infrastructure to reduce post-harvest losses. • Strengthen the integration of indigenous knowledge into climate information through facilitating community weather observers among others. • Improve drought early warning systems, including the promotion of people-centred systems at the national and county levels. Number of recipients of climate information services (CIS) who use the information in their risk management decisions increased from 1,000,000 to 2,000,000 starting from the already achieved.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by 2027
	• Develop hides and skins tanneries in four pastoral clusters of Kajiado and Narok; Turkana and Baringo; Marsabit, Samburu, and Isiolo; and Mandera, Wajir, Garissa, and Tana River. • Design and implement low-cost boarding facilities in pastoral areas. • Connect all learning and health facilities in the ASALs to water supply to reduce the cost of water trucking during drought episodes. • Operationalise the Kenya Anticipatory Action Strategy (strengthen the preparatory actions of participatory scenario and contingency planning).
	• Support the strengthening of community-based peace committees, strategies, and initiatives for conflict management and peace building in at least 23 drought-prone counties. • Support the county governments to strengthen the institutions for inter-communal conflict management at the county level.
Improve the coordination and delivery of disaster risk management	• Establish DRM Emergency Operation Centres (EOCs) and increase the number of EOCs from 7 to 25 and strengthen linkages between the national, county EOCs, and other key state and non-state agencies. • Develop capacity of the humanitarian regional hubs, displacement centres, transition centres, and evacuation centres and link to the relevant cluster counties for use during emergencies and disasters. • Strengthen coordination frameworks and mechanisms for mainstreaming disaster risk management at national and 32 county levels as well as increase community managed DRR committees (CMDRR) from 230 to 400. • Develop and maintain a robust Information and Knowledge Management system to track climate resilience building, response, and recovery investments at the national level. • Establish and maintain a database of all DRM activities within the country including preparedness, response, impacts, and recovery by 2025, within 12 months after the bill is passed and signed. • Establish and maintain a database of all DRM stakeholders both at the national and county level activities including preparedness, response, impacts, and recovery measures (to know who's doing what, where and when) by 2025. • Establish and operationalise an integrated multi-hazard early warning and profiling information systems at the national level linked with the 32 counties and establish an operational drought modelling, forecasting, preparedness, and response centre.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by 2027
Strengthen the climate risk financing instruments and mechanism	• Operationalise the National Disaster Risk Management Fund to support other climate-related risks outside the provision of National Drought Emergency Fund within 12 months after the regulations are passed by parliament after the bill is passed and signed. • Review the national climate risk financing strategy to include a strong component of risk transfers by 2027. • Create awareness among local communities in 32 counties on the need to enrol in available climate risk transfer products by 2027 and build the capacity of ward level community structures on resource mobilisation and partnerships.
Provide an enabling environment to integrate climate risk management	• Ensure coherence between the National Development Plan and the Peace-building and Conflict Management Policy on climate security, in recognition of the wider impact of climate change on food, livelihoods, and water security, incorporating indigenous knowledge and existing arrangements. • Conduct four engagement forums with legislatures to enact the Disaster Risk Management Bill into law and operationalise by 2025. • Establish the National Disaster Risk Management Authority within 18 months once the NDRMA Act bill is passed in parliament and signed. • Establish the National Disaster Risk Management Authority. • Undertake high-level advocacy and capacity building for policy makers in the National Assembly, 32 Senate and County Executive Committees, and County Assembly Disaster Committees to increase political goodwill, enhance allocation of county government resources to emergency responses, mainstream Disaster Risk Management (DRM) approaches into sector plans at the national level and in CIDPs at the county level to reduce risks and build more resilient societies, as well as to strengthen humanitarian and development actions. • Engage with 32 county governments and 6 sectors (water, education, agriculture and livestock, health, peace and security, special programmes) at the national level to integrate DRM into policies, strategies, and sector plans at both national and county levels.
	• Mainstream DRM approaches into sector plans at the national level and in CIDPs at the county level to reduce risks and build more resilient societies, as well as to strengthen humanitarian and development actions. • Develop and finalise the National Disaster Risk Management Framework and facilitate domestication in 47 counties by 2027.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by 2027
	• Incorporate human mobility aspects into County Disaster Risk Management Frameworks to prevent displacement, to ensure protection of displaced population are addressed in five counties. • Facilitate gazettement of DRM coordination structures at both national and county levels with clear Terms of Reference. • Mainstream DRM into development plans, policies, strategies, and sector plans at all levels of government. • Integrate mobility and displacement into climate action strategies. • Develop and strengthen coordination frameworks and mechanisms for mainstreaming DRM at national and county levels as well as community managed disaster risk reduction.
	• Mainstream issues of environmental conservation, climate change mitigation and adaptation, halt and reversal of deforestation, biodiversity loss, and land degradation in both levels of government. • Convene a policy dialogue on a sustainable balance of land-use in rangelands (for pastoralists, agro-pastoralists, ranchers, and conservationists), to determine the most sustainable range land-use model and to co-develop and implement robust grazing management plans, including contingency plans against catastrophic loss.
Improve the ability of people to cope with disasters caused by climate hazards	• Establish and operationalise an integrated multi-hazard Early Warning and profiling information systems at the national level that is linked with counties.
Enhance protection and role of children and youth in DRM	• Establish 47 Youth County Disaster Response Teams with a representative in the County DRM Coordination unit. Ensure there is gender and social inclusion (GESI) in the composition of the teams. • Develop a platform for weather-related indigenous knowledge and disaster risk information tailored for children and youth.
Relevant Institutions: MECCF, Ministry of Agriculture and Livestock Development, Ministry of Water, Sanitation and Irrigation, Ministry of Education, Ministry of Interior and National Administration, private sector, National Drought Management Authority, development partners, CSOs/NGOs, multilateral agencies, Council of Governors, county governments, Kenya Meteorological Department, Ministry of Devolution and ASALs, Ministry of Health, The National Treasury and Economic Planning, National Disaster Operations Centre	

4.2.1.2 Flood and Landslide Risk Management

Kenya experiences serious incidents of floods in different parts of the country, which cause major disturbances and destroy property and result in loss of life. For example, one of the lakes in the Eastern Rift Valley, Lake Naivasha, has seen an unexplained spike in water levels since 2018. Between 2010 and 2020, there was a 30% rise in the mean annual rainfall, and as a result, the town experienced devastating floods that lasted for almost a year. The calamity was most severely felt by the local populace, especially those living in Naivasha's Kihoto Settlement. As the waves surged, hundreds were forced to flee and countless buildings, amenities, and sources of income were destroyed.[130] The rising waters in the Rift Valley lakes are caused by water flowing from the lakes through underground channels that have reduced due to the movement of tectonic plates, as well as irresponsible land-use in farming that has led to silting of soil into the lakes, blocking the channels and causing the water to rise.

Adaptation actions for Flood Risk Management are presented in Strategic Action Area 1b.

Strategic Action Area 1b Flood, and Landslide Risk Management

STRATEGIC OBJECTIVE	**To reduce the vulnerability of the communities to flood-related disasters, through improved institutional resilience (preparedness and response) at all levels (national, county, community).**

Issue/ Problem

The incidence, frequency, and magnitude of flood disasters have increased, exacerbating the vulnerability of many communities in the country.

BETA Pillars

- Linked to Healthcare and Agricultural Transformation and Inclusive Growth

SUSTAINABLE DEVELOPMENT GOALS



[130] SEI. (2023). *Revisiting the Rising Rift Valley Lakes: A Glimpse into Kihoto's Struggles.* https://www.sei.org/features/revisiting-the-rising-rift-valley-lakes-a-glimpse-into-kihotos-struggles/

Opportunity/Main Action	Sub Actions and Targets/Expected Results by 30th June 2028
Support climate-proofing of all national and county flood and landslide control infrastructure (especially for water, energy, transport, and information and communications technology [ICT]) to facilitate resilience building	• Introduce nature-based solutions to flood control in 15 flood hotspot areas by 2027.
	• Conduct a climate risk and vulnerability assessment of building infrastructure to flooding and sea level rise.
	• Strengthen early warning and tailor-made climate information services through institutional strengthening of KMD and other information user institutions.
Increase the number of households able to cope better with flood-induced risks	• Operationalise the Kenya Anticipatory Action Strategy and roll out early action protocols for forecast-based financing for floods.
	• Strengthen early warning and tailor-made climate information services through institutional strengthening of KMD and other information user institutions.
	• Promote and support at least 100 (at least 2 per county) robust community-based institutions and organisations.
	• Promote insurance services and social protection services.
	• Strengthen the participation of community flood management institutions, mechanisms, and processes to enhance resilience to flood- and landslide-related risks.
	• Develop and implement a regulatory enforcement plan for flood situations.
	• Support an integrated ecosystem-based approach to watershed, drainage basin, flood, and landslide management through enhancement of such structural/mechanical designs as structural catchment protection in the upper catchments.
	• Develop a GIS-based tool for real-time mapping and monitoring of flood hazards.
	• Strengthen the institutional mechanisms for proactive community-based flood early warning systems in flood-prone areas in at least half of the flood-prone counties by June 2027.
	• Operationalise the Kenya Anticipatory Action Strategy
	• Enhance flood control measures through development and maintenance of flood control infrastructure (see section 10: water resources resilience and infrastructure):
	- Construction of 70 km of additional dykes in flood prone areas.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by 30th June 2028
	- Maintenance of 100 km of existing dykes.
	- Constructions of 20 check dams in flood prone areas.
	• Introduce nature-based solutions in flash flood control, especially around informal settlements in five urban areas. These include mangrove restoration along the coastline, restoring salt marshes and peat bogs, and building hedges near water bodies in inland areas.
	• Develop the capacity of at least 50 Water Resource Users Associations that are rights-based groups or community-based organisations that are gender sensitive in terms of membership composition, with female and male membership (see Section 10: Water resources resilience and infrastructure).
	• Mainstream climate change adaptation into, and implement, all existing Flood Management Plans.
	• Develop and implement climate-proofed flood- and landslide-control infrastructure codes and standards (see Section 10: Water resources resilience and infrastructure).
	• Rehabilitate 100 km of dykes and desilt 500 water pans and dams (see Section 10: Water resources resilience and infrastructure).
	• Establish a standing arrangement for routine maintenance of flood- and landslide-control structures countrywide.
	• Strengthen the capacity of counties to plan, contract, and supervise the implementation of climate-proofed infrastructure.
	• Improve flood early warning systems, taking advantage of widespread access to mobile technology that provides avenues for dissemination of information.
	• Establish Dam Safety Control Systems that can withstand climate extremes including a needs assessment and development of safety manuals and codes of practice.
	• Improve understanding of the dynamics of human mobility when floods occur using a Displacement Tracking Matrix to ensure the support reaches the displaced population.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by 30th June 2028
Strengthen the participation of local community flood management institutions, mechanisms and processes that build resilience to flood- and landslide-related risks	• Operationalise flood (and drought) modelling, forecasting, preparedness, and response centres.
	• Implement a regulatory enforcement plan for flood situations.
	• Support integrated ecosystem-based approaches to watershed, drainage basin, flood, and landslide management through enhancement of structural/mechanical design (e.g. structural catchment protection in the upper catchments).
	• Promote and support at least 100 (at least 2 per county) robust community-based institutions and organisations to strengthen community-led management of flood prone areas (flood risk preparedness and response initiatives).
Policy	• Develop one implementing guideline including standard operating procedures on shelter response aligning with the National Shelter Strategy.
Relevant Institutions: Ministry of Water, Sanitation and Irrigation, Water Resources Authority, Water Resource Users Associations, Council of Governors, flood-affected communities, county governments, development partners, CSOs/NGOs, multilateral agencies, Ministry of Health, The National Treasury and Economic Planning, National Water Harvesting and Storage Authority, Kenya Rural Roads Authority, State Department for Infrastructure.	

4.2.2 Agriculture, Food and Nutrition Security

The adaptation actions in the agriculture sector aim to increase food and nutrition security; increase incomes of value chain actors by ensuring that agricultural production and productivity are maintained or increased, climate-proof agriculture infrastructure, and enhance the value of agricultural products and produce despite the changing climate.

In order to achieve this, and in line with the BETA pillar of Agricultural Transformation and Inclusive Growth, the strategic actions over the next five years include measures that address: declines in crop and livestock production and productivity; post-harvest losses of livestock and crop products; livelihood losses by farmers, pastoralists, and value chain actors; reduced market access, value addition and distribution options; as well as inadequate nutrition (Strategic Action Area 2).

Strategic Action Area 2 — Agriculture, Food and Nutrition Security

STRATEGIC OBJECTIVE	**To increase food and nutrition security by enhancing productivity and resilience of the agricultural sector in a low-carbon manner.**

Issue/ Problem

Climate change is negatively impacting productivity and resilience of agricultural value chains due to:

- Increased frequency and intensity of drought and floods
- Increased soil degradation
- Invasive species
- Increased attacks by pest and diseases (e.g locusts and fungal diseases).

BETA Pillars

- Agricultural Transformation and Inclusive Growth
- Transforming the Micro, Small and Medium Enterprise (MSMEs) Economy

SUSTAINABLE DEVELOPMENT GOALS



Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
Enhance the uptake of Climate Smart Agriculture (CSA) technologies and practices in crop systems	**Crop Sub-Sector**
	• Support capacity building of stakeholders on climate risk management in agro-food systems in 47 counties.
	• Strengthen and cascade agro-weather and climate information services to sub-counties in 47 counties, while tapping on essential local traditional knowledge, and co-production of climate information with communities.
	• Increase the number of beneficiaries accessing index-based crop insurance from 1,600,000 to 3,500,000 (with at least 30% females and 10% youth).
	• Increase the number of farmers accessing socially inclusive appropriate inputs subsidies per year from 2,300,000 to 2,500,000 (with at least 30% females and 10% youth).
	• Link 100,000 farmers (30% females and 10% youth) to specialised markets for climate smart produced produce/products (e.g., organically produced).
	• Promote the uptake of climate information in the crop sub-sector for decision-making at national and county levels.
	• Promote the uptake of climate-oriented agricultural input subsidies and agricultural insurance in 47 counties.
	• Increase the adaption of crop insurance partnerships in 13 counties.
	• Support 2,000,000 farmers, with at least 30% females and 10% youth, to adopt climate-smart post-harvest technologies (such as green energy powered cold storage, solar crop dryers, etc.).
	• Increase area under rain-fed rice system from 44,255 ha to 140,677 ha for enhanced resilience and productivity.
	• Increase production of rice under intermittent irrigation system by 100,000 ha.
	• Increase efficiency of water resource management in rice production from 50% to 90%.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
Increase access to climate-related resilience and safety net programmes	• Support capacity building of county officials and local communities to improve technical services for climate risk management in agro-food systems in all counties.
	• Strengthen and cascade the downscaling of agro-climate information services to sub-counties in all counties, tapping on existing/essential local traditional knowledge, and co-production of climate information with communities.
	• Promote the uptake of climate information in agricultural (crop, livestock, and fisheries) decision-making at national and county levels.
	• Increase the number of beneficiaries accessing climate-oriented:
	• Agricultural inputs subsidies from 2,300,000 to 2,500,000 farmers with at least 30% females and 10% youth.
	• Crop insurance from 1,600,000 farmers to 3,500,000 farmers with at least 30% females and 10% youth.
	• Livestock insurance from 18,000 to 105,750 farmers with at least 30% females and 10% youth.
	• Strengthen government-supported advocacy for insurance products in the agriculture sector through sustainable public private partnerships at national level.
	• Establish a mechanism for guaranteed minimum returns for crop and livestock value chains.
	• Support restocking of agro-inputs (crop and livestock) for recovery of affected communities from climate-related risks in 23 counties.
Increase adoption of Sustainable Land Management (SLM)	**Crops sub-sector**
	• Increase area under integrated soil nutrient management by 2,500,000 ha.
	• Increase farm area under conservation agriculture from 53,200 ha to 100,000 ha by incorporating minimum/no tillage.
	• Enhance adoption of soil and water conservation measures in 1,000,000 ha of farmland by 2,500,000 farmers out of which 30% will be female and 10% youth.
	• Increase the agricultural land area under farm trees by 200,000 ha.
	• Promote sustainable land management through the National Land Policy and the Sustainable Land Management Policy to conserve, stabilise and strengthen the resilience of water catchments, including in rangelands in 22 counties.
	• Reclaim 100,000 ha of degraded land for climate-smart agricultural production, using agroecology approaches.
	• Increase the number of farmers adapting climate-resilient crop varieties by 100,000 farmers (at least 30% female and 10% youth).

Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
	• Conduct at least one adaptive research to strengthen understanding of adaptability of crop varieties.
	• Undertake, disseminate, and implement 35 land degradation assessments to inform reclamation of degraded lands vulnerable to climate extremes (drought and floods).
	• Establish the land degradation surveillance centre to monitor impacts of climate change on land.
	• Implement land reclamation programmes to reclaim 2,730 ha of degraded land in ten counties to increase community resilience to climate change impacts.
	Livestock sub-sector
	• Increase area under rehabilitated rangelands, with good soil health, to 5,000,000 ha through range planning, improvement, and re-seeding of 2,400,000 ha in 23 ASAL counties.
	• Implement sustainable grazing management and silvo-pastoralism in 1,200,000 ha of rangeland for pasture-based finishing and feed lotting.
	• Increase the number of communities with rangeland management plans.
	• Invest in rangeland health for sustainable pastoralism to supply products (meat, milk, fat, hides and fibre) in local and international markets.
	• Strengthen the sustainability of pastoralism through local institutions and social structures that govern the mobility of pastoral livestock: Facilitate the implementation of IGAD Protocol on Transhumance on mobility of pastoralists and their animals in the Horn of Africa; support the growing of Acacia for Gum Arabic in Dry lands.
	• Support integrated rangeland rehabilitation, including range reseeding, for 10,117 ha in 23 ASAL counties.
	• Strengthen rangeland use management systems such as maintenance of fodder banks and strategic reserves.
	• Develop pastoral product value chains and market linkages that provide economic opportunities to pastoralists through information, diversification, certification, and niche markets, payments for ecosystem services, sustainable tourism, and local and sub-regional marketing infrastructure.
	• Support farmers to establish apiaries as a way of diversifying farm enterprises and improving livelihoods and biodiversity.
Improve productivity in the livestock sector through the implementation of CSA interventions	**Livestock subsector:**
	• Strengthen the sustainability of pastoralism through local institutions and social structures that govern the mobility of pastoral livestock by facilitating implementation of the IGAD Centre for Pastoral Areas and Livestock Development Transhumance Protocol on mobility of pastoralists and their animals in the Horn of Africa.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
	• Conduct adaptive research, to strengthen understanding of the adaptability of livestock breeds.
	• National livestock vaccination coverage increased from 13 million Tropical Livestock Units (TLUs) to 26 million TLUs per year in five years for 45 counties to enhance productivity gains in ruminant livestock (cattle, sheep, and goats).
	• Support 500,000 dairy farming households, out of 1.8 million households, to adopt technologies, innovations, and management practices (TIMPS) on quality feeds, precision feeding, and breeding management and enhanced animal health for efficient dairy management. At least 30% and 10% households should be women- and youth-headed, respectively.
	• Support 1,000 farmer-facing MSMEs (cooperatives and CBOs), with at least 30% women- and 10% youth-headed, to install milk coolers and meat chilling facilities.
	• Reduce post-harvest losses of animal source foods from 15% to 7.5% through effective standards, food safety, and a Hazard Analysis and Critical Control Point Management System.
	• Support 400,000 pastoral households, with at least 30% women- and 10% youth-headed, to adopt Livestock Identification and Traceability system.
	• Adopt Livestock Identification and Traceability supports to off take 1,000,000 TLUs in 23 counties, to enhance access domestic and export livestock and livestock products markets.
	• Improve productivity of 400,000 TLUs in 23 ASAL counties over five years.
	• Support 500 new feed banks (at least one per ward in 500 wards) through the establishment and conservation of climate-resilient forages (fodder and pasture) varieties and densified livestock feeds.
	• Increase the number of community-based breeding programmes for multiplication and in-situ conservation of adaptable indigenous animal genetic resources for sheep, goats, and cattle by 500.
	• Establish one new national gene bank for ex-situ conservation strategic national animal genetic resources.
	• Increase number of pastoral households using index-based livestock insurance and other financial services from 21,000 to 800,000 pastoral households, with at least 30% being women-headed, using index-based livestock insurance through partnerships with the private sector enhancing insurance coverage from 110,000 to 2,400,000 TLUs in five years.
	• Support farmers and pastoralists through provision of 10,000 MT subsidised animal feeds to support production.
	• Develop pastoral product value chains and market linkages that provide economic opportunities to pastoralists, through information, diversification, certification, and niche markets, payments for ecosystem services, sustainable tourism, and local and sub-regional marketing infrastructure.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
Increase on-farm and rangeland water harvesting and storage, wastewater recycling, and area under irrigation to enhance agricultural productivity	• Increase the number of HH/value chain actors harvesting water for agricultural use/production to 1,000,000.
	• Increase the number of households harvesting water for agricultural production to 1,000,000, out of which at least 30% households will be female-headed and 10% youth-headed.
Linked to Action Area 10 – Water	• Increase annual ASALs water harvesting and storage by 25% from 16 million cubic metres (MCM) to 20 MCM through small dams, water pans and river drenching; and 700 MCM through large multipurpose dams (see Section 10: Water resources resilience and infrastructure).
	• Undertake water budgeting studies for agricultural enterprises in all counties.
	• Promote water harvesting and water storage, soil moisture conservation, climate-smart irrigation infrastructure, and efficient water use, through Sustainable Land Management, ecosystem-based adaptation, landscape approaches, and watershed conservation (for the first three bullets below see Section 10: Water resources resilience and infrastructure).
	• Promote community-managed small-scale irrigation systems in all counties.
	• Increase area under irrigation from 194,249 ha to 485,622 ha.
	• Increase efficiency from irrigated fields from 50% to 90% through precision/drip irrigation.
	• Promote water recycling in all counties.
	• Desalinise water for agricultural use in the coastal zone.
	• Utilise controlled flooding technology to improve production through floodplain farming.
	• Support the implementation of the Water Act, 2016 for food production in the agricultural sector.
	• Build capacity of institutions supporting water harvesting for agricultural use in 10 counties.
	• Increase households harvesting water for agricultural production from 300,000 to 1,000,000 out of which 30% will be female-headed and 10% youth-headed.
	• Increase annual water harvesting and storage in ASALs from 16 MCM to 20 MCM, through small dams, pans, and river dredging (see Section 10: Water resources resilience and infrastructure).
Increase crop productivity through improved irrigation	• Develop 228 community managed irrigation project for additional 68,797 ha.
	• Expand existing 300 irrigation schemes to command additional 80,937 ha.
	• Develop 22 large-scale irrigation projects to realise additional 161,064 ha.
	• Support farmer-led irrigation development initiative for additional 16,187 ha in partnership with the financial institutions for de-risking of the sector and building resilience to climate change.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
	• Promote use of efficient irrigation technologies and practices among 20 Irrigation Water Associations in irrigation schemes to enhance scheme performance.
	• Build capacity on diversification of irrigated enterprises, water use rights and scheme governance among at least 20 Irrigation Water Associations in Irrigation Schemes to enhance resilience to climate change (see Section 10: Water resources resilience and infrastructure).
Promote adoption of diversified adaptive enterprises/value chains for (including drought-tolerant value chains) sustained livelihoods and nutrition security	• Support at least 521,500 households (of which 30% are female-headed and 10% youth-headed) to adopt diversified adaptive enterprises/value chains.
	• Increase the number of households with adopting diversified enterprise mix for sustained livelihood and nutrition security by 100,000 farmers out of which at least 30% are females and 10% youth.
	• Support 500,000 small-scale farmers, pastoralists, and fisher folk to transition to specialised, market-oriented output in 13 priority commodity value chains under the Agricultural Sector Transformation and Growth Strategy by:
	• Lobbying for tax zero rating on development of traditional, climate-resilient crop value chains.
	• Increasing number of farmers and pastoralists practicing livelihood diversification and market access for products from camels, indigenous poultry, beekeeping, and rabbits, emerging livestock – quails, guinea fowls, and ostriches.
	• Establish price stabilisation schemes and strategic livestock-based food reserves in pastoral counties.
	• ·Support the strengthening of market systems and market infrastructure and market information to incentivise the pastoral economy and enhance off-take (sale of animals when in distress) for specialised and niche markets.
	• 500,000 farmer and pastoralist communities supported to transition to specialised and market-oriented output in 13 priority value chains, including drought-tolerant value chains.
	• Increase production of rain-fed rice from 44,255 to 140,677 ha to reduce emissions from paddy rice production systems.
Reduce agricultural losses along production and supply chains (pre- and-post-harvest)	• Reduce agricultural pre- andpost-harvest losses from 40% to 15%.
	• Promote Public Private Partnerships (PPPs) in post-harvest handling, marketing, and market distribution infrastructure to reduce losses.
	• Develop and promote adoption of effective, climate-smart post-harvest technologies (e.g., milk coolers, green energy powered cold storages, solar crop dryers, etc.) by at least 2 million farmers, including by developing at least ten post-harvest level SMEs and facilitating effective market linkages for at least two value chains.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
	• Strengthen commodity funding for adaptive crops by developing an inclusive warehouse receipt system at the national level.
	• Rehabilitate and equip cold storage facilities by providing milk coolers to dairy farming communities to reduce milk loss by 6%.
	• Add value to livestock products by preservation including canning of livestock products and expanding establishment of abattoirs and cold storage facilities.
	• Include drought-tolerant pulses/legumes in the gazette listed Strategic Food Reserves, and contract farmers and commercial off-takers for the targeted food commodities.
	• Develop fishponds.
Develop a platform for sharing up-to-date data and information on agriculture and nutrition, based on the Global Open Data for Agriculture and Nutrition	• Support research to reduce market inefficiencies along priority actions.
	• Strengthen networks and structures for data collection and information dissemination to enhance evidence-based decision-making, including decisions on cross-border mobility in all counties.
	• Develop and implement a policy on climate-smart agricultural data and statistics.
	• Support the development of agriculture advisory services, and innovation and multi-stakeholder dissemination platforms in 22 counties.
	• Support the development of climate-smart agriculture curricular in all agriculture faculties of learning in the education and training sector.
Support establishment of a decentralised, streamlined, and ring-fenced county-based climate risk funding mechanism for the agricultural sector as provided for in Kenya Climate Smart Agriculture Strategy 2016–2027	• Support development of agriculture advisory services, innovation, and multi-stakeholder dissemination platforms in additional seven counties.
	• Strengthen financial mobilisation and support to the priority actions at the national level.
	• Enhance access to credit and finance for smallholder farmers along the priority actions in 23 counties.
	• Support the harmonisation of the local legislations in favour of cottage industries in 22 counties.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
Streamline coordination and partnerships, and support the harmonisation and further decentralisation of climate-smart policies, strategies, legal guidelines and implementation frameworks	• Downscale and cascade the Kenya Climate Smart Agriculture Strategy 2017–2026, the Kenya Climate Smart Agriculture Implementation Framework 2018–2027, the Agricultural Sector Transformation and Growth Strategy 2019–2029, and the Climate Change Act, 2016, through NCCAP 2023–2027 and CIDPs.
	• Mainstream climate change adaptation in agricultural extension.
	• Develop and implement climate change adaptation-compliant design and construction codes, and standards for all infrastructures in agriculture.
Sustainable aquaculture production	• Increase aquaculture production from 21,000 MT to 30,000 MT by use of efficient fish feeds.
Enabling action (technology and knowledge management)	• Develop and implement Climate Information Service (CIS) plans in all 47 counties, an increase from 9.
	• Mainstream climate-smart agriculture into agricultural extension delivery and reporting.
	• Support the development of agriculture advisory services, and innovation and multi-stakeholder dissemination platforms.
	• Support the development of climate-smart agriculture curricular in all agriculture faculties of learning in the education and training sector.
	• Develop, promote, and transfer technologies to enhance milk production and product diversification for tea, cereals, fruits, tubers, roots, and nuts.
Enabling (climate finance)	• Support county agriculture sector stakeholders in 10 counties to access climate finance for implementation of CSA through capacity building on prioritisation of actions and development of bankable proposals.
Relevant Institutions: Ministry of Agriculture and Livestock Development; Agriculture and Food Authority, Kenya Agricultural and Livestock Research Organization, Council of Governors, county governments, universities, private sector, Kenya Forest Service, CSOs/NGOs, multilateral agencies, development partners, Kenya Forestry Research Institute, National Drought Management Authority, Ministry of Water, Sanitation and Irrigation, National Irrigation Authority, National Water Harvesting and Storage Authority, communities/water resource users associations, Ministry of Health, farmer organisations	

4.2.3 Energy

The achievement of Kenya's long-term development goals and medium-term BETA is dependent on sustainable and affordable energy. The energy supply chain is vulnerable to climate variability and extreme weather events that affect energy resources and supplies as well as seasonal demand.

Electricity generation in Kenya increased by 4.5% in the financial year ended 30th June 2022 to 12.7 TWh, with 87.4% generated by renewable energy sources. Geothermal was the largest source, generating 45.50% of electricity, hydro – 21.8%, wind – 17.22%, thermal – 10.43%, imports – 3%, and solar – 2%, according to the Energy and Petroleum Regulatory Authority (EPRA).[131]

Kenya has large potential in the generation of electricity from geothermal, wind and solar sources, providing opportunity for a more robust, resilient, and well thought out response options for addressing drought-induced electricity generation crises (e.g., reduction in hydro-generation because of low water levels). A diversified renewable energy system strengthens energy security, and climate-proofing of infrastructure increases system resilience.

The climate change strategic actions to promote adaptation in the energy sector over the next five years include measures that: enhance climate-proofing of energy infrastructure along the energy supply chain; promote environmentally sustainable practices in the energy sector; and diversify energy provision across sources and technologies (Strategic Action Area 3).

[131]EPRA. (2023). https://www.enerdata.net/publications/daily-energy-news/power-generation-kenya-rose-45-fy-2021 22.html#:~:text=Power%20generation%20in%20Kenya%20increased,Petroleum%20Regulatory%20Authority%20(EPRA)

Strategic Action Area 3 — A Climate Resilient Electricity Supply Mix

STRATEGIC OBJECTIVE

To enhance the electricity supply mix based on renewable energy that is resilient to climate change, and promote energy efficiency.

Issue/ Problem

Current mix of energy sources are climate sensitive. Affordable electricity supply needs to increase to meet the demands of a growing population and industrialising nation.

BETA Pillars

Linked to:

- Agricultural Transformation and Inclusive Growth
- Transforming the Micro, Small and Medium Enterprise (MSMEs) Economy
- Housing and Settlement
- Healthcare
- Digital Superhighway and Creative Economy

SUSTAINABLE DEVELOPMENT GOALS



Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
Enhance climate-proofing of energy infrastructure along the energy supply chain	Optimise existing hydropower plants, including:
	• Raise Masinga Dam by 1.5 m to increase water storage capacity: Review of previous feasibility studies, detailed engineering designs and Environmental and Social impact Assessment.
	• Incorporate emerging and projected climate scenarios and impacts on the design, construction, operation, and maintenance of energy infrastructure.
	• Establish and implement two climate change risk-based construction standards for energy infrastructure.
	• Use concrete poles to replace wooden poles.
	• Optimise existing hydropower plants.
	• Improve water management and conservation by 183 million cubic metres translating to 83 GHz hours.
Promote environmentally sustainable practices in the energy sector *Linked to Strategic Action Areas on Forestry, Wildlife and Tourism*	Continue the rehabilitation of water catchment areas and the restoration of wetlands to provide sustainable ecosystem services, for energy production:
	• Protect water catchment areas feeding rivers and hydropower reservoirs.
	• Conserve and rehabilitate 2,500 ha of water catchment areas and rehabilitate 20 km of riverines and tributaries serving the hydropower dams and reservoirs.
	• Distribute improved stoves and e-cooking; and work with partners to carry out household emissions studies on the positive impacts of the improved stoves and e-cooking.
	• Promote the household and institutional biogas demonstration programmes. Construct 1,500 domestic and 30 institutional biogas digesters by 2028.
	• Promote the solar lantern distribution and public-school energy audit and solar lighting programme; to 100 schools per year (as per the action plan in the National Energy Efficiency Strategy, 2020).
	• Promote at least three gender-responsive energy technologies.
Diversify energy provision across sources and technologies	Develop a diversified energy mix to enhance resilience, including:
	• Developing 589 MW of diversified electricity generation options by June 2027.
	• Increasing other climate change-resilient renewable energy technology networks to provide power to off-grid areas.
	• Promoting the use of captive renewable energy options.
	• Promoting the direct use of geothermal resources (heat and brine) in Menengai and Olkaria.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
	• Explore the use of new and alternative energy options like Power-to-X, green hydrogen and its derivatives, Small Modular Reactor Nuclear Technology.
Expand the electricity transmission infrastructure to enable exploitation of renewable energy sources	• Expand and modernise the electricity transmission grid to enable the uptake of more variable renewable energy.
	• Expand grid to connect renewable energy generation plants.
	• Improve grid reliability to have electricity as a viable option for cooking, e-mobility and cooling.
Use of electricity storage options to expand uptake of Variable Renewable Energy	• Undertake studies and define the regulatory framework for the use of Battery Energy Storage Systems and Pumped Storage Hydropower Projects.
Technology	• Undertake baseline study on use of sulphur hexafluoride in the power sector.
Capacity development	• Create awareness by training 500 industry owners on carbon footprint and emerging climate change issues to transition to energy efficient machines and cleaner energy sources in their operations (coordinated by KAM and MOEP).
	• Modernise the 16 energy centres and establish and equip another 31 energy centres per county, with the latest technologies and equipment.
Policy and regulations	• Develop regulations on Captive Power (one strategy and one action plan).
	• Develop regulations on Net Metering (one net metering strategy and policy).
	• Develop market rules for power trading in Kenya to promote renewable energy uptake (energy auctions, power wheeling).
	• Policy and regulatory framework for emerging technologies like green hydrogen, BESS, pumped storage hydropower projects, CCUS.
	• Review the Energy (Appliances, Standards and Labelling) Regulations, 2012.
	• Review the National Electrification Strategy
	• Review and update a policy to guide in the management of vegetation, wayleaves acquisition, and corridors for energy infrastructure.
Relevant Institutions: Ministry of Energy and Petroleum, The National Treasury and Economic Planning, Council of Governors, Climate Change Directorate, county governments, Kenya Electricity Generating Company (KenGen), Kenya Climate Innovation Centre, Kenya Industrial Research and Development Institute, private sector, Geothermal Development Corporation, Kenya Electricity Transmission Company, Kenya Power and Lighting Company, Kenya Forest Service, Rural Electrification Authority and other stakeholders, EPRA	

4.2.4 Forestry

Forest ecosystems in Kenya are impacted by climate change, mostly through drought and wildfires. Adaptation actions to address these impacts include adopting forestry practices and tree species that are less vulnerable to droughts and fires.

Actions to address adaptation priorities in the forest sector will help to achieve the Bottom-Up Economic Transformation Agenda as well as the SDG targets and include: increase forest cover per county; enhance forest landscape restoration initiatives with forest cover benefits; promote afforestation/reforestation potential in the counties; encourage sustainable timber production on privately-owned land; and promote non-wood forest products (Strategic Action Area 4).

The Kenya Forest Service has embarked on The National Tree Growing and Restoration Campaign targeting to plant 15 billion trees by 2032. The initiative requests each individual living in Kenya to plant 30 trees a year amounting to 300 trees per person in 10 years (2022–2032).

Strategic Action Area **4** Increased Forest Cover

STRATEGIC OBJECTIVE	**To strengthen the ability of forest and tree resources to respond to impacts of climate change, provide climate solutions, and improve resilience of social systems across various landscapes.**
Issue/ Problem	Current mix of energy sources are climate sensitive. Affordable electricity supply needs to increase to meet the demands of a growing population and industrialising nation.
BETA Pillars	Climate change has negatively impacted various forest ecosystem in the following ways: • Changes in phenological and flowering species patterns. • Decreasing resources for forest-adjacent communities. • Disappearance of species and associated losses including medicinal trees, habitat, sources of honey, and reduced pollinators. • Reduced survival rates for re-planted stocks. • Increase in frequency and intensity of forest fires.

- Increased susceptibility of forest to pests, diseases, and invasive species.
- Loss of the mangrove ecosystem.
- Reduced productivity of commercial plantations – rotation, wood characteristics and volume and associated economic loss.



Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
Enhance forest health for climate change resilience	• Establish monitoring, control, and surveillance systems for invasive forest tree species by 2027.
	• Establish monitoring, control, and surveillance systems for climate-induced forest fires by 2027.
	• Establish monitoring, control, and surveillance systems for pests, diseases, and invasive forest tree species by 2027.
	• Identify climate change risks to site species suitability.
Sustainable Climate Forest Financing	• Unlock forest finance by strengthening existing land tenure systems by 2027.
	• Develop and pilot frameworks for payment of ecosystem services by 2027.
	• Develop Forest Carbon Valuation mechanisms for Natural Capital Accounting by 2027.
	• Promote regenerative green and blue entrepreneurship across the 47 counties.
	• Implement the Green Fiscal Incentives Policy to enable and incentivise private sector investment in public forests for greater productivity.
Incentivise tree growing value chain enterprises	• Promote establishment of woodlots on private land across the 47 counties.
	• Incentivise and create an enabling environment for commercial forestry enterprises across the value chain by 2027.
	• Promote use of sustainable timber in the furniture and construction industry including the use of mass timber technologies.
	• Develop a framework for forest long-term lease of public industrial plantations for greater productivity by 2027.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
	• Develop a comprehensive strategy to align tree growing initiatives with carbon market incentives by 2027.
	• Incentivise production of one billion tree seedlings by the private sector (women, youth, community forest associations, nurseries).
Enhanced forest-based climate change research and technological development	• Improve access to high quality tree germplasm (indigenous and appropriate exotic species) in line with the five billion trees by 2027.
	• Generate a map for data on phenological species shift and species site matching.
	• Establish eight observatories on different agro-climatic zones for tracking impacts of climate change in the forest sector.
	• Refine cost effective methodologies for biomass and carbon estimation in forest landscapes.
	• Implement existing policies on benefit sharing arrangements in the forestry sector.
	• Incorporate tree-based forestry solutions in the KFS.
Capacity building and awareness creation on forest and tree-based climate solutions	• Incorporate a monitoring and evaluation tool to annually track the level of awareness of the science of climate change, mitigation and adaptation options, including, level of mainstreaming climate change into institutional curriculum.
	• Develop 75,000 planting materials for difficult to propagate indigenous tree species.
	• Enhance collaboration between KFS and KMD through at least four meetings annually to strengthen meteorological and climate data to inform tree planting activities.
	• Construct 18 seed processing units.
	• Maintain 450 ha of seed sources and establish 36 ha of new seed sources.
	• Develop quarterly information, education, and communication materials (infographics, booklets, leaflets and guidelines, among others) on design and implementation of carbon projects.
	• Conduct annual training of trainers from national ministries, departments and agencies and counties on climate change adaptation.
	• Nationally train and engage, women, youth, and children on issues of climate change through annual competitions on essays, creative arts, music festivals and poems.
Enhance contribution of youth to forestry and wildlife	• Establish 5,000 youth-owned tree seedling nurseries.
	• Develop and implement five streams of non-timber forest products by youth groups.
	• Rehabilitate 1,000 ha of mangrove land through youth-led initiatives.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
Operationalise climate change responsive forest policies, regulations and standards	• Conduct countrywide annual campaigns to create awareness on existing policy and regulations relating to climate change in the forestry sector.
	• Support annual policy and regulation review and monitoring forums to identify and address gaps precipitated by emerging national and global issues.
	• Develop/finalise policies and regulations on climate change adaptation for the forestry sector.
Relevant Institutions: Ministry of Environment, Climate Change and Forestry, Kenya Forest Service, Council of Governors, county governments, CSOs/NGOs, multilateral agencies, Kenya Forestry Research Institute, Community Forestry Associations, private sector, Ministry of Agriculture and Livestock Development, National Drought Management Authority, The National Treasury and Economic Planning, Ministry of Lands, Public Works, Housing and Urban Development, Kenya Wildlife Services and Kenya Wildlife Training Institute: DRSRS	

4.2.5 Health

Climate change affects health in three ways: directly through meteorological factors (such as heat waves and storms); indirectly through natural systems (like disease vectors); and severely through human systems (like under-nutrition).[132]

The climate change strategic actions in the health sector include climate sensitive diseases control and research to understand the shifts in disease transmission, and promoting climate-resilient and sustainable health infrastructure and technologies like adapting the designs of green health buildings and other infrastructure.

Other actions include scaling up financial investments to reduce the number of deaths related to household and institutional air pollution linked to biomass stoves; introducing appropriate measures for surveillance and monitoring of climate change-related diseases and preparing a sector-specific adaptation plan, which is key in creating an enabling environment for the sector to mainstream climate change actions.

Opportunities for adaptation in health include promoting preventive healthcare and treating diseases at the community level; and opportunities for human safety include early warning systems, public awareness programmes, avoidance, and preparedness campaign.

Adaptation Actions for the health sector are presented in Strategic Action Area 5.

[132] WHO. (2023). Climate Cchange. In: Compendium of WHO and other UN Gguidance on Hhealth and Eenvironment. Geneva: World Health Organization. https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health

Strategic Action Area 5 Climate Change Adaptation in the Health System

STRATEGIC OBJECTIVE

Mainstream climate change adaptation in the health system.

Issue/ Problem

Changing climate is expected to increase morbidity and mortality from climate-related diseases, heat stress, air pollution, unsafe drinking water, insufficient food, and insecure shelter.

BETA Pillars

- Housing and Settlements
- Healthcare
- Food and Nutrition Security

SUSTAINABLE DEVELOPMENT GOALS



Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
Enhance management of climate-sensitive diseases	• Health programmes, protocols, and guidance to identify and manage new climate change-related diseases and risks are developed and implemented.
Enabling – Develop and implement policies, guidelines and plans on climate change and health	• Develop and implement the Kenya Climate Change and Health Strategy 2023–2027.
	• Implement the Conference of the Parties (CoP) 26 Health Programme outcome/ resolutions.
	• Develop a Health National Adaptation Plan 2023–2027.
	• Develop health programmes, protocols, and guidance to manage new climate change-related diseases and risks.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
Enabling – Capacity building and healthcare financing	• Develop a training curriculum on climate change and health for healthcare workers and integrate that training in all health courses in all middle level colleges and universities in Kenya.
	• Develop the capacity of healthcare workers to develop proposals for funding from the GCF and other partners. Train Community Health Volunteers on clean cooking and health.
Enabling – Climate change-resilient WASH infrastructure	• Develop guidelines for climate change-resilient WASH infrastructure for health facilities, schools, and communities.
	• Develop standards for biodegradable sanitary pads.
	• Develop standards for disposal of sanitary pads for schools.
Improve response to climate-sensitive diseases	• Reduce incidence of malaria, other vector-borne health conditions.
	• Scale-up community-level interventions on climate-sensitive diseases and adaptation and mitigation through awareness and efficacious projects.
Enabling – Enhanced medical technology adoption	• Install clinical waste microwave equipment – a non-burn technology in the 47 counties in order to increase coverage of the non-burn technology.
	• Enable counties treat medical waste management through a pooled system (health facilities).
Enabling – Promote collaborative research	• Develop a National Climate-Health Research Network to promote multidisciplinary, collaborative working between researchers, policymakers, and other stakeholders to address the challenges presented by climate change to health. This will enable greater understanding of the causal pathways between climate-change related exposures and health outcomes.
Enabling – Capacity building	• A training curriculum for healthcare workers is developed to integrate climate change and health in all health courses in all middle level colleges and universities.
	• The capacity of healthcare workers to develop proposals for funding from the GCF and other partners is enhanced.
	• Community health volunteers are trained on clean cooking and health linkages.
Relevant Institutions: Ministry of Health, Council of Governors, county governments, The National Treasury and Economic Planning, medical and health research institutions, CSOs/NGOs, multilateral agencies, development partners, KEMRI	

4.2.6 Human Settlements, Urban Development and Housing

Climate change affects human settlements directly or indirectly through extreme climate conditions such as floods, landslides, droughts, and sea level rise. Human settlements can adapt using both infrastructure-based and nature-based strategies.[133] Vegetation cover expansion, coastal resource management, and ecosystem conservation are examples of nature-based solutions. Infrastructure-based initiatives include climate-proofing infrastructure, such as storm drainage systems, water supply and treatment facilities, and securing or moving energy or solid waste management facilities. Some coastal cities need to make plans for infrastructure expansion, defense, and/or relocation because of sea level rise. However, adaptation is more than simply climate-proofing physical structures; it is a dynamic, iterative, cross-sectoral planning and execution process that calls for institutional, financial, and political support as well as a shift in behaviour.

The requirement of climate-proof housing structures can benefit greatly from urban spatial planning. Design or building codes provide useful tools for doing this, including green building codes. Integration (e.g., networks of open spaces) will need to consider adapting the public realm and spaces between buildings and other developments into the overall, resilient mix.

The climate change strategic actions to improve resilience and adaptive capacities of urban areas and settlements include climate proofing and construction of green buildings, control of flooding in urban areas, and climate-proofed landfill sites. Actions to climate-proof urban infrastructure are presented in Strategic Action Area 7.

Environmental emergency response efforts, such as the safe and timely management of waste are an essential but often overlooked component in managing climate change-induced challenges in the waste management sector. The garbage needs to be collected early enough; of course, based on early warning on weather conditions, to protect human health, comply with regulations, conserve disposal capacity, reduce injuries, and prevent or minimise environmental impacts.

Supporting programmes to reduce waste, increase collection, and build and maintain climate-resilient disposal sites, can contribute to health and resource management objectives that promote lasting programme benefits.

Some of the adaptation measures that can be deployed to lessen the impacts of climate change on waste management in the waste sector include:

Relocation

Moving selected system components to positions more distant or protected from potential climate hazards; for flooding threats, this may involve elevations higher.

Flood control

Building one or more earthen structures (such as vegetated berms, vegetated swales, storm water ponds, levees or dams) or installing fabricated drainage structures (such as culverts or French drains) to retain or divert flood water away from dumpsites.

[133]UNFCCC. (2018). Adaptation in Hhuman Ssettlements: Kkey Ffindings and Wway Fforward. https://unfccc.int/resource/docs/2018/sbsta/eng/03.pdf

Preparation of waste management waste plans

The Sustainable Waste Management Act of 2023 provides for the establishment of waste recovery facilities to promote a circular economy. Implementable climate-sensitive waste management action plans may be developed by all sub-national governments to enhance solid waste management.

Strategic Action Area **6** Resilience and Adaptive Capacities of Housing, Human Settlement and Urban Infrastructure.

STRATEGIC OBJECTIVE

Improve resilience and adaptive capacities of urban areas by enforcing climate-proofing standards for housing and other urban infrastructure.

Issue/ Problem

Climate change induced hazards are negatively impacting urban environments, including housing and other infrastructure (roads, buildings, storm drainage facilities, dumpsites, landfills, etc.).

BETA Pillars

Linked to

- Affordable Housing
- Healthcare
- Manufacturing

SUSTAINABLE DEVELOPMENT GOALS



Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2027
Strengthen the management of control of urban flooding in major urban centres, towns, and cities	• Construct flood-ways to divert flood waters in major flooding urban centres, towns and cities.
	• Regularise tenure.
	• Rehabilitate the Nairobi River catchment to harness and store catchment run-off and reduce the flood incidences in Nairobi City by June 2027.
	• Prepare an Environmentally Sustainable Management Plan for the Nairobi River catchment.
	• Undertake clean up and restoration activities at the source; Ondiri Swamp landscaping and beautification activities in order to restore the riverine ecosystem.
	• Undertake land-use planning of the Nairobi River corridor.
	• Re-develop informal settlements abutting river basins.
	• Develop a linear market in selected sections of the corridor.
	• Recover, rehabilitate, and desilt the Nairobi Dam.
Improve the climate resilience of urban infrastructure	• Design affordable housing in constituencies and social housing units in Kibera Zone B, and other areas to be climate-smart; such as orientation to maximise sun exposure; rainwater harvesting roof designs and recharge systems; and green spaces.
	• Implement the Integrated Strategic Urban Development Plan in different slum developments.
	• Provide more non-motorised transport facilities.
	• Raise awareness of practices to improve climate resilience of infrastructure and provision of services, including climate-resilient housing for the urban poor, including implementation of the project, "Building Climate Resilience for the Urban Poor".
	• Prepare climate-resilient urban spatial plans to deter urban sprawl and proliferation of informal settlements.
	• Improve human settlements and infrastructure through efficient and resilient built environment, climate-proofed infrastructure.
	• Provide social amenities and services.
	• Enhancing disaster risk reduction.
	• Improve livelihoods and enhance safety nets through Green Urban Economy and Livelihoods programmes for the urban poor that enhance adaptive capacities through inclusive community-based adaptation plans, and the promotion of green job initiatives.
	• Implement three projects to reduce vulnerability of the incoming rural–urban migrants to ensure access to safe housing and sustainable livelihoods.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2027
Construct climate-proofed sanitary landfills in all major urban centres, towns and cities	• Develop 47 county waste management action plans and operationalise the waste circular economy.
	• Mainstream climate change adaptation into the National Waste Management Strategy and align ccounty-based waste management plans and other relevant policies to it.
	• Mainstream climate change adaptation into the 47-county waste recovery and disposal laws and regulations.
	• Construct at least one climate-proofed sanitary landfill in Nairobi, Mombasa and Kisumu.
	• Transform waste dumpsites into climate-proofed landfills in at least five county headquarters, based on the level of waste generated.
	• Relocate all waste management sites from flood prone sites.
	• Close all dumpsites that are along the coastlines and river flooding zone.
Relevant Institutions: State Department of Housing and Urban Development; Ministry of Water, Sanitation and Irrigation; National Construction Authority, Council of Governors, county governments, CSOs/NGOs/CBOs, multilateral agencies, private sector (building industry), communities, National Environment Management Authority, Ministry of Roads and Transport, Ministry of Lands, Public Works, Housing and Urban Development, WRA.	

4.2.7 Manufacturing

The manufacturing sector is vulnerable to climate change because it relies on infrastructure and services such as water, energy, and transport which can be disrupted by impacts of climate change. Agro-based industries also get their input from agricultural activities which are climate-sensitive. The trade sector depends on products and services created by other sectors of the economy, and any adverse climate change impacts of such sectors will affect trade.

The manufacturing sector is exposed to the impacts of climate change due to the effects on goods that are traded, and also directly through the transport of goods. Therefore, climate-proofing of industrial facilities and their value chain linkages is crucial.

Kenya's manufacturing sector contribution to GDP decreased from 9.3% in 2016 to 7.2% in 2021.[134] Despite this, manufacturing contributes about 17.30% of total tax revenue, implying that tax revenue from the sector can triple if a 20% GDP contribution is achieved by 2030.

A changing climate threatens the industrial supply chains of manufacturers, including disruptions to operations due to extreme weather events, damage to essential infrastructure and transport routes, and variations in water quality and availability as a result of extreme weather events. Adaptation actions taken depend on the location and nature of manufacturing facilities.

The business case for adaptation action on climate change includes enhanced resource use efficiency particularly in water, energy, and materials. This ensures that the industry can adjust effectively to any consequences of climate change by managing risk and exploiting opportunities.

Adaptation Actions for the manufacturing sector are presented in the Strategic Action Area 7.

[134] KNBS. (2022). Economic Survey 2022.

Strategic Action Area 7 Resilience of the Manufacturing Infrastructure and Systems.

STRATEGIC OBJECTIVE	**Promote the growth and resilience of the manufacturing industry to drive jobs in the manufacturing sector.**

Issue/ Problem

Inefficient use of resources and disruption of commodity supply chains from climate change impacts

BETA Pillars

- Transforming the Micro, Small and Medium Enterprise (MSMEs) Economy

SUSTAINABLE DEVELOPMENT GOALS



Opportunity/Main Action	Sub Actions and Targets/Expected Results by 30th June 2028
Opportunity/Main Action	**Sub Actions and Targets/Expected Results by 30th June 2028**
Improve water harvesting and use efficiency	• · Train 500 industry representatives on water use efficiency and recycling.
	• · Explore possibility of fiscal incentives to spur improved water harvesting and conservation.
	• · Promote adoption of smart water technologies among industries.
Enhance climate-proofing of all manufacturing infrastructure to create enabling environment for the resilience of private sector investment	• · Develop and implement climate change adaptation-compliant design and construction codes and standards for all manufacturing infrastructure.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by 30th June 2028
	• Build the capacity of the public and private sector (formal and informal) to enhance the resilience of their investments, e.g., through identification of new, more resilient products and services.
	• Demonstrate an operational business case for public and private sector investment in adaptation.
	• Develop fiscal incentive measures to encourage businesses to undertake investment in adaptation and resilience building measures.
	• Develop and domesticate best practices green labelling standards/frameworks to promote green procurement, especially by public procurement agencies.
Promote industrial symbiosis	• Conduct 15 trainings on Circular Economy models to enhance resources recouping and efficiency, and products and plan redesigns for efficient productivity, resilience, and sustainability.
	• Build the capacity of 47 industrial parks/clusters on the establishment and management of climate-proof material recovery facilities for waste exchange and set up 23 material recovery facilities.
	• Build the capacity of industrial parks/clusters on waste management facilities (effluent treatment plants establishment and management) and set up of common user facility effluent treatment plants in 47 counties).
	• Climate-proof waste management infrastructure for waste recovery, reuse, and recycling to create 20,000 decent green jobs (5% of jobs created under four sectors: leather, textiles and apparel, agro-processing, and fish processing).
Support research and innovation for productivity and competitiveness	• Strengthen academia-industry-government-civil society (quadruple helix) collaboration to boost research and innovation for productivity and competitiveness and to attract funding opportunities.
Relevant Institutions: Kenya Private Sector Alliance, Kenya Association of Manufacturers, private sector, Ministry of Investments, Trade and Industry, Ministry of Water, Sanitation and Irrigation, Kenya Industrial Research and Development Institute, county governments, academia, CSOs/NGOs, multilateral agencies.	

4.2.8 Transport and Infrastructure

Climate change has adverse effects on transport infrastructure, including maritime and inland waterways, aviation, roads, and railways. The bulk of adaptation measures related to transport infrastructure involve storm water management. Examples include increased use of permeable paving surfaces, open space preservation and landscaping to reduce storm runoff, measures to modify alleys and green roofs to reduce runoff.

Methods for adapting to more intense storms include armouring/reinforcing of ditches to prevent erosion, designing drainage systems (e.g., culverts and other hydraulic structures) and with anticipation of heavy flow volumes. Other actions include continually monitoring the condition of assets such as roads, bridges and culverts using geographic information systems (GIS) and other tools. Methods for adapting to hotter and drier climates include intensifying monitoring of pavement conditions during extreme heat periods.

Adaptation actions under transport and other infrastructure sector are presented in the Strategic Action Area 8.

Strategic Action Area **8** Climate-Proofing Transport Infrastructure.

STRATEGIC OBJECTIVE

Establish efficient, safe world-class transport systems and logistic services that can withstand the projected impacts of climate change.

Issue/ Problem

Need for resilience and adaptive transport infrastructure to reduce vulnerability to extreme weather conditions

BETA Pillars

- Agricultural Transformation and Inclusive Growth
- Transforming the Micro, Small and Medium Enterprise (MSMEs) Economy
- Housing and Settlement
- Healthcare
- Digital Superhighway and Creative Economy



Opportunity/Main Action	Sub Actions and Targets/Expected Results by 30th June 2028
Enhance climate-proofing of all infrastructure (especially for water, energy, transport, and ICT) to facilitate resilience building	• Mainstream climate change adaptation into the Integrated National Transport Policy to integrate climate risk information in infrastructure planning and development.
	• Develop and implement standards and guidelines for the design and climate-proofing of transport and other infrastructure (both existing and new).
	• Climate-proof at least 5,000 km of existing roads and, where feasible, upscale the construction of roads to systematically harvest water and reduce floods by June 2028.
	• Explore the feasibility of designing and constructing new roads to systematically harvesting water for agricultural purposes.
	• Support the climate-proofing of national and county infrastructure projects (especially for water, energy, transport, and ICT) to facilitate resilience building.
	• Strengthen the capacity of at least 23 counties to plan, contract, and supervise implementation of climate-proofed infrastructure.
Relevant Institutions: Ministry of Roads and Transport, Ministry of Lands, Public Works, Housing and Urban Development, Kenya National Highways Authority, Kenya Rural Roads Authority, Kenya Urban Roads Authority, Council of Governors, county governments, Kenya Bureau of Standards, Ministry of Water Sanitation and Irrigation, Kenya Institute of Highways and Building Technology, State Department of Physical Planning.	

4.2.9 Resilience of the Water Resources and Infrastructure

Access to safe, adequate, and reliable water supply is critical for socio-economic development. The climate change strategic actions to increase forest cover help the water sector by restoring and protecting watersheds and water-related ecosystems, including water towers. Other actions aim to increase water availability through water harvesting and storage, improved water efficiency, and improved water availability for domestic, agricultural and industrial use, as well as for wildlife.

The adaptation activities in the water sector include sector reforms related to groundwater abstraction, rainwater harvesting, building of water storage capacity, and the management of lakes, aquifers, and rivers. Opportunities for adaptation technologies in the water resources sector include groundwater abstraction, rainwater harvesting, development and implementation of policies and regulations to encourage water resources management and water conservation practices. The other opportunity is development of water desalination technology to make use of the country's seawater endowment and adapt to climate change induced sea water intrusion of groundwater along the coastal region.

Adaptation actions under the water, sanitation and irrigation sector are presented in the Strategic Action Area 9.

Strategic Action Area 9 — Resilience of the Water Resources and Infrastructure

STRATEGIC OBJECTIVE	**Enhance resilience of the water resources by ensuring adequate access to and efficient use of water for agriculture, manufacturing, domestic, wildlife and other uses.**

Issue/ Problem

Access to and quality of water is expected to decline because of climate change (drought, reduction of glaciers).

BETA Pillars

- Food Security
- Health
- Construction (Housing)
- Manufacturing



Opportunity/Main Action	Sub Actions and Targets/Expected Results by 30th June 2028
Increase annual per capita water availability through the development of climate-proofed water infrastructure (mega dams, small dams, water pans, and untapped aquifers)	• Fastrack implementation of multipurpose dams at advanced stage to completion (100%) by 2027: Thwake (72%), Mwache (6%), Soin Koru (5%), Siyoi Muruny (65%), and Ruiru II (7.5%) and implementation of water dams under PPP model.
	• Implement climate change adaptation-compliant design and construction codes and standards for all water resources infrastructure.
	• Increase national water storage from 4,136 to 13,177 MCM for domestic use (increasing per capita storage from 107 to 234 m3).
	• Increase capacity of water stored for irrigation from 55.4 in 2022 to 2,323.8 MCM by 2027.
	• Construct 300 climate-proofed underground water reservoirs in ASALs, each with a storage capacity of 1 million MCM constructed to store water for three seasons to mitigate water resources conflicts during droughts.
	• Enhance catchment areas conservation, protection and rehabilitation across all the basin areas – national and transboundary.
	• Enhance water resources monitoring through rehabilitation and upgrading of 350 hydrometeorological stations.
	Implement 256 sub-basin/catchment plans.
	Establish five national water quality monitoring stations.
	Map and assess groundwater resources in additional five counties.
	• Upscale exploration of Turkana aquifers to realise the potential of an additional 41 ha put under irrigation.
	• Pilot artificial aquifer recharge in two identified aquifers.
	• Maintain 100 km of existing dykes; 20 check dams and 70 km of dykes constructed in flood prone areas.
	• Enhance water harvesting and storage in 23 ASAL counties:
	3,000 water pans constructed to supply 29,672,000 m3 of water.
	1,150 water harvesting projects supported for irrigation.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by 30th June 2028
	6,450 water pans with a storage capacity of between 100,000 to 300,000 m3 constructed along Laghas.
Increase number of pro-poor water harvesting-based livelihood resilience programmes to enhance household water access, food security and boost groundwater recharge of the aquifers	• Establish at least 300,000 on-farm ponds in at least 15 counties for on-farm (in-situ) agricultural water harvesting.
	• Support improved, water harvesting-based livelihood systems on at least 60,000 ha through various methods of land reclamation.
	• Support and strengthen local communities to protect at least five water catchment areas.
	• Develop a water utility creditworthiness index as well as a financial instrument for adaptation.
Increase gender-responsive affordable water harvesting- based livelihood resilience programmes	• Promote deliberate gender-responsive actions to improve participation of at least 30% women and youth in applying appropriate water harvesting technologies.
	• Drill, equip, and solarise 465 boreholes and install greenhouses managed by youth organisations and 4K clubs.
Improve access to good quality water, increased sewerage coverage and onsite sanitation	• Increase proportion of people and entities accessing good quality water for domestic, agricultural, and industrial use increased from 58% to 65% through large-scale installation of water meters and regular inspection of water quality.
	• Increase sewerage coverage in cities and urban centres from 31% (2022) to 40% by 2027 to cope with flash floods.
	• Increase the proportion of the national population with access to sanitation from 66% to 70% (sewer urban 4,539,176 and rural 1,527,875).
	• Construct four climate-proofed holding stations for sewer management in Nairobi, Kisumu, Garissa, and Eldoret counties.
	• Construct 3,000 sanitation facilities near water infrastructures (water pans).
Promote efficient use of water	• Conduct and implement recommendations on risk assessments on water, sanitation and irrigation infrastructure.
	• Enhance governance systems and accountability for water service providers in all 47 counties.
	• Create public awareness in 47 counties on the need to conserve water and change of attitude and behaviour on water use.
	• Share of Non-Revenue Water (NRW) in all counties reduced to less than 25% from 45%.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by 30th June 2028
	• Manage water use through the installation of 100 bulk smart metres for domestic supply and irrigation.
	• Undertake 50 research studies on water allocation plans to promote water use efficiency.
	• Sensitise water consumers in all 47 counties undertaken to enhance water use efficiency and water resource management.
Improve water access for wildlife in national parks and reserves	• Prepare two reports that map and identify sites for water harvesting and storage in the national parks and rangelands for the development of water harvesting infrastructure to cushion wildlife against drought impacts, prevent animal–human water conflict, and protect downstream communities from flood water from the parks.
Enabling (Policy dialogue and capacity building)	• Develop policies and strategies that promote water harvesting, storm water management, water recycling and re-use by 2027.
	• Conduct national awareness and education to increase use of recycled water for secondary water uses including watering flower beds, kitchen gardens to increase water use efficiency in urban areas.
	• Implement the Irrigation Act 2019
	• Éstablish 47 County Irrigation Development Units.
	• Establish the Irrigation Research, Innovation and Training Institute by 2027.
	• Operationalise the Irrigation Licensing and Quality Assurance Unit.
	• Enact and approve the Land Reclamation Policy and Bill.
	• Approve the National Sanitation policy.
	• Operationalise the Water Act (No. 43 of 2016) and finalise the Water Amendment Bill 2023.
	• Implement the water resources, water services, and water harvesting and storage regulations (2023).
	• Review and update the National Water Master Plan 2030 to aid national/county water harvesting and storage infrastructure investments.
	• Develop and implement the National Lakes Management Strategy.
	• Develop and implement the National Irrigation Master Plan and National Irrigation Sector Investment Plan.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by 30th June 2028
Relevant Institutions: Ministry of Water, Sanitation and Irrigation, Water Resources Authority, National Water Harvesting and Storage Authority, Council of Governors, county governments, National Drought Management Authority, Water Sector Trust Fund, Centre for Training and Integrated Research in ASAL Development, local communities, Ministry of Tourism and Wildlife, Kenya Wildlife Service, Ministry of Education, private sector, CSOs/NGOs, multilateral agencies, The National Treasury and Economic Planning, State Law Office, water users associations, forest community associations; resident associations, State Department of Infrastructure; Ministry of Health; water service providers, water service boards, water service providers associations , Public Private Partnerships Unit, Regional Development Authorities, development partners, National Irrigation Authority, Kenya Association of Manufacturers, water consumers , Ministry of Environment and Forestry, Kenya Water Tower Agency, Kenya Forest Service, National Land Commission, National Environment Management Authority, Kenya Water Institute, Department of Mines and Geology.	

4.2.10 Tourism and Wildlife

Increasingly warmer temperatures are reducing plant and vegetation productivity in semi-arid environments, affecting wildlife diversity and distribution. This results in wildlife competing with domestic livestock and human beings for both water and other resources. In extreme cases, wild animals eventually die due to lack of water and fodder. KWS reported that the Amboseli ecosystem lost over 6,000 individual wildlife from 20 species in the 2020–2022 drought, the highest numbers recorded in that area.[135]

The tourism sector is climate-sensitive with both supply and demand-side, stakeholders directly affected by climate change and indirectly by climate change impact on a wide range of environmental resources.[136] Tourism is a highly diverse economic sector, comprising local, national and international stakeholders, those directly involved in the tourism sector or whose livelihoods are affected by tourism, and those in other sectors that might be affected by tourism adaptations, whose adaptations might affect tourism, or that have other relevant expertise. Components of the tourism value chain include tourists, tourism service suppliers, destination communities, and tour operators, among others.

Wildlife-based tourism represents about 80% of tourism revenue in Kenya;[137] however, climate change is impacting wildlife species and natural ecosystems, livelihoods and communities that depend on them. Adaptation actions under the tourism and wildlife sector are presented in the Strategic Action Area 11.

[135]IFAW. (2023). Despite Kenya's Wworst Ddrought in 40 years, Ccommunities are Rresilient. https://www.ifaw.org/ca-en/journal/kenya-drought-community-resilience

[136]Nyamwenge M. (2016). Impacts of Climate Change on Tourism in Kenya. Journal of Geography and Earth Sciences, Vol. 4, No. 2, pp. 1––10.

[137]KWCA. (2018). National Wildlife Strategy. https://kwcakenya.com/download/national-wildlife-strategy-2030/

4.2.10.1 Tourism Sub-Sector

Strategic Action Area 10a Resilience of the Tourism Value Chain

STRATEGIC OBJECTIVE

Enhance the resilience of the tourist attractions and tourist infrastructure.

Issue/ Problem

Climate change affects critical tourist attractions and related infrastructure.

BETA Pillars

Linked to:

- Agricultural Transformation and Inclusive Growth
- Transforming the Micro, Small and Medium Enterprise (MSMEs) Economy

SUSTAINABLE DEVELOPMENT GOALS



Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
Develop and implement a Climate Change Adaptation Strategy for tourism sector	• Review and update (within the context of climate change adaptation) tourism sector policy, laws and regulations and other quasi-regulatory guidelines and governance.
	• Develop and implement eight climate-resilient action plans for the tourism sector and coordinate the response to climate change at all levels of tourism management in the 8-tourism circuit.
	• Enhance diversification of five climate-resilient tourism products (agrotourism, sports, culture, adventure, and desert).

Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
	• Safeguard eight tourist sites by sensitising value chain actors on climate change as per eight tourism blocks.
	• Promote agrotourism as a strategy to showcase opportunities in the sector and a platform for experiential learning for youth interested in agriculture.
	• Provide training and support to tourism industry businesses and local communities to build their capacity to adapt to climate change.
	• Establish a monitoring system to track the progress of adaptation measures and evaluate their effectiveness in reducing climate-related risks.
Support climate-proofing of infrastructure in and/or leading to tourist attraction sites	• Support the improvement of drainage along roads in tourist attraction sites.
	• Support the construction of bridges that can withstand flooding events.
	• Put in place early warning systems and communication structures targeting value chain actors.
	• Integrate adaptive design principles into infrastructure projects, allowing for flexibility and adjustments as climate conditions change.
	• Implement measures to reduce the risk of damage or disruption during extreme weather events, such as installing flood barriers, backup power systems or fire-resistant materials.
Promote sustainable ecosystem-based adaptation	• Prepare and implement eight climate risk-based ecosystem management plans for all ecosystems supporting tourism and wildlife.
	• Support the enhancement of 47 water storage in tourist attraction sites to support wildlife during drought.
	• Promote and prioritise 24 nature-based tourism experiences that emphasise the conservation of natural ecosystems, such as wildlife safaris, birdwatching, and ecotourism.
	• Promote sustainable transportation options for tourists such as electric vehicles and cycling paths to reduce greenhouse gases.
Relevant Institutions: Ministry of Tourism, Wildlife and Heritage, Kenya Wildlife Service, Kenya Tourism Board, CSOs/NGOs, multilateral agencies, Council of Governors, county governments, private sector, KWRTI.	

4.2.10.1 Wildlife Sub-Sector

Strategic Action Area 10b Wildlife Sub-Sector

STRATEGIC OBJECTIVE	**Enhance the resilience of wildlife, habitats and ecosystems that sustain wildlife.**

Issue/ Problem

Decreasing wildlife species diversity, habitat connectivity and increased ecosystem degradation due to climate change impacts.

BETA Pillars

Linked to:

- Agricultural Transformation and Inclusive Growth
- Transforming the Micro, Small and Medium Enterprise (MSMEs) Economy

SUSTAINABLE DEVELOPMENT GOALS



Opportunity/Main Action	Sub Actions and Targets/ Expected Results by June 2028
Restoration of degraded wildlife habitats due to effects of climate change	• Establish three enclosures for natural regeneration of vegetation.
	• Reseed pastures in ASAL protected areas.
Conservation and sustainable management of marine ecosystems	• Increase number of programmes developed to protect marine ecosystems to ten.
	• Conserve at least 10% of coastal and marine areas.
	• Restore and rehabilitate 5,000 ha of degraded coastal and marine habitats.

Opportunity/Main Action	Sub Actions and Targets/ Expected Results by June 2028
Control and management of alien invasive species	• Review and implement the National Strategy and Action Plan for the management of invasive species in Kenya's protected areas.
	• Restore 30,000 ha of habitat.
Control and management of wildfires	• Establish 600 km of firebreaks, two fire control centres (one in Tsavo, one in Aberdare), two fire stations, and three watch towers.
Win space for wildlife conservation	• Protected areas and conservancies registered and gazetted.
Integrated national wildlife database	• Availability of climate change data and information in relation to wildlife.
Climate-proofing wildlife control fences and other barriers in protected areas and in strategic corridors and dispersal areas in community areas	• Maintain and rehabilitate 3,000 km of fences.
Provision of water for wildlife through boreholes, earth-dams, water pans and trucking during drought	• Rehabilitate five water pans, boreholes, and earth dams.
	• Provide 100% feed supplementation during droughts.
Provide forage for wildlife during drought	
10% reduction of climate change induced human–wildlife conflicts	• Enhance and strengthen capacity of wildlife stakeholders in the management of human–wildlife conflicts.
Create diversified community livelihoods for climate change adaptation & resilience	• Develop and adopt four diversified/complimentary livelihood options including nature-based enterprises (e.g., game farming).
Community conservation education, engagement, and empowerment on natural resource management	• Hold 20 sensitisation meetings/barazas.
Invest in green energy solutions for wildlife and communities (solar and water harvesting)	• Initiate green energy solutions and promote purchase of five electric vehicles.
Reducing plastic pollution in protected areas	• Enforce the ban on single use plastics in all protected areas.
Mainstream climate change actions in international/ transboundary collaborative framework	• Capture climate change actions in relation to transboundary wildlife conservation in MoUs and Areas of Cooperation developed with partners.
Establishment of breeding sanctuaries of endangered species populations	• Establish two sanctuaries and two recovery plans.
Enhance wildlife research, technology development, innovation, and knowledge management	• Publish five scientific reports.
	• Undertake evidence-based research and recommendations.
	• Establish a database of research.

Opportunity/Main Action	Sub Actions and Targets/ Expected Results by June 2028
Climate-induced wildlife diseases surveillance, monitoring and control	• Enhance and strengthen wildlife surveillance systems. • Develop and implement disease prevention and control strategies responding to 100% reported zoonotic diseases.
Finalise the National Wildlife Climate Change Adaptation Strategy	• Finalise report by 2025 and initiate implementation process.

4.2.11 Blue Economy and Fisheries

Kenya is endowed with blue economy resources which include the Indian Ocean, the coastline, lakes, rivers, dams, irrigation canals, water pans, and lake airspaces, and underground waters. These resources provide enormous opportunities for job and wealth creation, food and nutrition security, revenue generation, and processing industries which can spur economic growth.

Between latitudes 1°40S and 4°25S and longitudes 41°34E and 39°17E, the Kenyan coastline stretches for over 600 km, from the Kenya–Tanzania boundary in the south to the Kenya–Somalia border in the north. The administrative borders of the coastal counties, namely Kwale, Mombasa, Kilifi, Tana River, Lamu, and portions of Taita Taveta and Garissa counties, define the geographical area of coastal Kenya that extends inland.[138] A 200-nautical mile Exclusive Economic Zone with a water surface area of roughly 230,000 km^2 serves as the seaward boundary. The coastal region of Kenya is rich in natural resources and home to both important national and international landscapes and ecosystems. These ecosystems include estuaries, beaches, sand dunes, rivers, lakes, mangroves, woods, terrestrial forests, coral reefs, seagrass beds, and mudflats.[139]

The port of Mombasa is the gateway to Kenya, East and Central Africa, and Southern Sudan among other countries. Increases in ocean and air temperatures, the acidification of the oceans, rising sea levels, and shifts in ocean circulation are some of the key physical changes that will likely stress marine and coastal environments. Among the significant ecological impacts are coral bleaching (due to increased temperature and ocean acidification), species invasion, changes in species distribution and biodiversity, and reduced biological productivity.

Kenya is mainstreaming climate action into the blue economy through climate-resilient fishing technologies, green port initiatives, and related energy efficiency programmes. The main adaptation activities in the blue economy and fisheries sector are associated with fisheries, wildlife, tourism, energy, the environment, and agriculture. The existing opportunities for adaptation technologies in the coastal and marine resources sector in Kenya include disaster preparedness, building of coastal dykes, and seawater desalination.

Adaptation actions under the blue economy and fisheries sector are presented in the Strategic Action Area 11.

[138]GoK. (2023).

[139]WWF. (2023). Coastal Kenya Programme. https://www.wwfkenya.org/coastal_kenya_programme_/

Strategic Action Area 11 Blue Economy and Fisheries Sector

STRATEGIC OBJECTIVE

Climate change negatively affects the blue economy and fisheries resources.

Issue/ Problem

Climate change negatively affects the blue economy and fisheries resources.

BETA Pillars

Linked to:

- Agricultural Transformation and Inclusive Growth
- Transforming the Micro, Small and Medium Enterprise (MSMEs) Economy

SUSTAINABLE DEVELOPMENT GOALS



Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
Enhance sustainable development of the blue economy and fisheries through climate-smart actions and increase productivity in fisheries subsector	• Increase the number of climate-smart cages for fish farming from 6,000 to 8,000.
	• Develop national guidelines on climate-smart standards for cage fish farming.
	• Increase the number of fish ponds from 11,300 to 25,000.
	• Increase the number of fishers benefiting from safety nets interventions (insurance products, cash transfers and subsidies) from 9,496 to 20,600 (30% women and 10% youth).
	• Conduct adaptive research to strengthen understanding of the adaptability of fish breeds that are tolerant to changing climatic conditions.
	• Development of Kabonyo Aquaculture and Research Centre of Excellence.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
	• Increase the number of farmers using low-carbon aquaponics aquaculture systems from 20 to 100.
	• Increase fish production from aquaculture, inland and marine from 82,000 MT to 130,000 MT.
	• Develop ten fish landing sites and ten fish markets to reducing fish post-harvest losses.
	• Promote formulation of quality fish feeds.
	• Promote production of quality fingerlings.
	• Develop marine and inland water bodies spatial plans.
	• Fishers organised into 445 viable cooperative units.
	• Increase number of fishing crews trained on deep sea fishing skills from 618 to 2,000.
	• Increase seaweed farming beyond Kwale county to other coastal counties through, capacity building for 1,000 seaweed farmers.
	• Build the capacity of 2,000 youth on value addition, blue economy and fisheries.
	• Develop two fish processing plants (in Lamu and Turkana).
	• Restore and rehabilitate 809 ha of mangrove forests and seagrass.
	• Develop Liwatoni Ultra-Modern Hub.
Mainstream climate change adaptation into and implement integrated shoreline management strategy for inland, marine and coastal zone	• Include climate change considerations in the Environmental Impact Assessment of marine and coastal zone development projects and implement the recommendations of the climate-inclusive Environmental Impact Assessment.
	• Develop a systematic climate-resilient conservation plan for the transboundary marine and freshwater conservation areas between Kenya and Tanzania.
	• Strengthen early warning, disaster preparedness and response systems.
Promote integrated river delta planning and management	• Support implementation of two management plans to rationalise diversion and damming of rivers and flood control, and to ensure environmental flows are maintained.
Promote Integrated Water Resource Management (IWRM) strategies to safeguard water quality	• Develop and implement Integrated Water Resources Management WRM for Tana and Athi basins by 2027.
	• Design and implement a plan for sustainable extraction of groundwater to control the problem of saltwater intrusion into ten freshwater aquifers.
	• Promote suitable management strategies that protect water catchments and water supply in ten aquifers.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
Climate-proof all inland marine and coastal zone infrastructure development	• Develop and implement a strategy for protection of the shoreline against the impacts of climate change and other natural disasters.
	• Develop and implement climate change adaptation-compliant design, siting, and construction codes and standards for all marine and coastal infrastructures.
	• Climate-proof the Port of Mombasa.
	• Climate-proof and maintain roads, buildings, and drainage structures in road networks.
	• Enforce standards on setback lines to protect and conserve shoreline riparian areas.
Strengthen the implementation of marine risk and disaster management plans	• Strengthen early warning systems for tsunamis, droughts, floods, and other disasters.
	• Develop and implement Disaster Preparedness and Response Plans.
	• Raise public awareness on importance of shoreline protection.
	• Install wave monitoring systems in the coastal areas.
Mainstream climate change adaptation into and implement National Mangrove Ecosystem Management Plan	• Restore co-managed degraded mangrove forests and coastal terrestrial forests, using a multi-sectoral approach to guide and regulate the multiple activities carried out in these habitats.
	• Mainstream the management of mangroves and coastal forests and into coastal land-use planning.
Diversification of tourist packages	• Strengthen early warning systems and communication structures targeted toward tourism sector in terms of tsunami warnings and sea-related events.
	• Diversify tourism products to strengthen tourism resilience.
Strengthen implementation of the Wildlife Conservation and Management Act of 2013, and associated regulations, at the coast	• Strengthen the guidelines for management of wildlife to minimise human–wildlife conflicts.
	• Promote zoning schemes through land suitability mapping and integrated spatial planning that resolve space and on-water use conflicts.
	• Promote and support multiple uses of ecosystems to reduce selective pressure.
	• Support programmes to address human–wildlife conflicts.
	• Strengthen conflict resolution mechanisms.
	• Promote access and establish benefit sharing schemes.
	• Mainstream climate change adaptation into the Blue Economy Strategy to harness the potential of ocean and maritime assets and implement it.
Promote alternative livelihoods	• Integrate ecosystem-based and community-based adaptation approaches to reduce natural resource-based conflicts.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
	• Strengthen mechanisms for rehabilitation and co-management of coastal ecosystems and sharing of benefits.
	• Establish community managed areas in marine and terrestrial environment.
	• Develop and implement schemes for payment for environmental/ecosystem services.
	• Promote PPPs in the conservation and management of resources.
	• Expand the fishing zones in coastal waters.
Relevant Institutions: Jumuiya ya Kaunti za Pwani – Kenya's coast regional counties Economic Development Organization, The Blue Economy Secretariat, Ministry of Agriculture and Livestock Development, The Kenya Coast Guard Service, Ministry of Interior and Nation Administration, Ministry of Roads and Transport and Bandari Maritime Academy.	

4.2.12 Gender and Vulnerable Groups

Women and other vulnerable groups (including orphans, persons living with disabilities, the aged, widows, widowers, internally and externally displaced persons, marginalised persons, and pastoralists living in ASALs) are particularly vulnerable to a changing climate and often have the least access to and control of resources (such as capital, credit, and land). Some vulnerable groups live in areas exposed to climatic hazards and risks (such as arid lands and urban poor areas) and are less able to cope with climate shocks and stresses.

Adaptation Actions under the Gender and Other Vulnerable Groups sector are presented in the Strategic Action Area 12.

Strategic Action Area 12 Gender and Other Vulnerable Groups

STRATEGIC OBJECTIVE

Empower women, children, orphans, persons with disabilities, the marginalised, minorities and people displaced as a result of climate change to reduce their vulnerability to climate change issues.

Issue/ Problem

Climate change impacts exacerbate the vulnerabilities of women, children, orphans, people with disabilities, the marginalised, minorities and displaced people.

BETA Pillars

- An enabler to all the BETA pillars.

SUSTAINABLE DEVELOPMENT GOALS



Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
Strengthen the adaptive capacity of vulnerable groups	• Develop a National Gender and Climate Change Action Plan (2023–2027) and support all counties to implement it.
	• Conduct a gender analysis of climate change impacts and vulnerabilities and disseminate the findings in ten hotspot counties.
	• Build capacity of 500 officers in MDACs and other organisations to mainstream gender in sectoral climate change policies, plans, programmes, and projects.
	• Promote women's entrepreneurship in climate change adaptation including ventures in sustainable agriculture and renewable energy in at least 22 counties.
	• Articulate Kenya's position on gender and climate change in negotiations at regional and UNFCCC conferences.
	• Promote access to Climate Change Funds by vulnerable groups in at least 22 counties.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
	• Build skills and capacity of youth and children by establishing/operationalising environmental/climate change clubs/units in schools and institutions of learning.
	• Build the skills of youth relevant to climate adaptation, such as sustainable agriculture practices, disaster preparedness, and renewable energy technologies.
	• Strengthen support to 1,000 migrants and other people in vulnerable situations to contribute to the green transition by equipping them with skills to adapt to climate change.
Strengthen resilience of vulnerable groups to climate change disasters and risks	• Promote and support national and county level institutions and organisations to strengthen their gendered disaster risk reduction interventions in at least 23 counties.
Strengthen peace-building and resolution of climate change induced conflicts resolution in Kenya	• Develop and disseminate the Kenya National Action Plan on UN Security Council Resolution 1325 on Women, Peace and Security (2024–2028)
	• Localise the Kenya National Action Plan on UN Security Council Resolution 1325 on Women, Peace and Security (2020–2024) in 47 counties.
	• Promote the inclusion of vulnerable groups (such as women, youth, and persons with disabilities) in committees on peace and security in 47 counties.
Relevant Institutions: Ministry of Public Service, National Gender Commission, Council of Governors, county governments, development partners, private sector, Ministry of Education.	

4.2.13 Indigenous Peoples

The major characteristic of indigenous peoples is their inextricable attachment to the natural environment, not only for economic wellbeing but also for their social and spiritual nourishment.[140] Further, the livelihoods of indigenous peoples are pegged largely on natural resources and on natural elements of weather and climate variability. In Kenya, these people are predominantly pastoralists who keep livestock under a nomadic free-range system and depend on livestock for subsistence and cultural reverence.[141] They have been marginalised for decades from mainstream development with limited access to water and basic social amenities such as healthcare and schools. This has negatively impacted on the socioeconomic advancement of the community and subsequently reduced their adaptation abilities and thus the need for affirmative action in this area.

Strategic Action Area **13** Indigenous Peoples

STRATEGIC OBJECTIVE

To create awareness on adaptation issues of indigenous peoples and to include them in climate change actions.

Issue/ Problem

Low awareness of indigenous peoples issues related to climate change in Kenya. Slow implementation of the Community Land Act to recognise communal land tenure. Lack of rapid responses strategies in relation to floods, fires, and other natural disasters. Most of the current recovery strategies in place are reactive.

BETA Pillars

- Linked to Food Security

SUSTAINABLE DEVELOPMENT GOALS



[140]World Bank. (2011). Implementation of the World Bank's Indigenous Peoples Policy https://documents1.worldbank.org/curated/en/427941468163488772/pdf/647570WP0Box360s0review0august02011.pdf

[141]The International Work Group for Indigenous Affairs (IWGIA). (2023). The Indigenous World 2023.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
Awareness creation on indigenous peoples issues in relation to climate change	• Create awareness on climate change impacts among government officials and the implementing agencies.
	• Include indigenous peoples issues in relation to climate change in all sectors that target/work closely with indigenous peoples, including budget allocations.
Inclusion and meaningful participation of indigenous peoples in climate change planning	• Hold effective and inclusive consultations at all levels and in all the respective stages and phases of climate actions, as well as the free, prior and informed consent of indigenous peoples, especially at the local and county levels.
	• Improve the involvement of communities in forest and wildlife conservation.
Securing land tenure system of indigenous people	• Increase recognition of Communal Land Tenure as a key element in actions addressing climate change.
	• Improve communities' knowledge on blue economy and benefits coming from it.
Integration of human rights-based approach in climate change actions	• Respect human rights in the implementation of climate change strategies.
Pre-emptive and responsive actions to climate change	• Budget for pre-emptive and responsive climate change actions, e.g., hay banks at the local level.
	• Establish a fund for livestock off-take in pastoral lands before drought swipes all the livestock away.
Integration of indigenous knowledge and practices in climate change actions	• Integrate indigenous knowledge in weather forecasting.
Relevant Institutions: Ministry of Labour and Social Protection; Council of Governors, county governments; CSOs/NGOs. KENRIK; Indigenous Information Network, Seed Savers Network.	

4.2.14 Youth and Children

Children and young people are more vulnerable to climate change impacts due to their limited capacities to cope and lack of decision-making power.[142] However, this vulnerability can be reduced through implementing effective adaptation measures. Furthermore, climate change adaptation options have great potential for engaging young people in achieving effective adaptation outcomes and ensuring the sustainability of process-oriented adaptation measures. An example is an education and learning which can strengthen social learning and have a sustainable impact on long-term change. Therefore, involvement of children and young people ensure the future generations who are young today will build the resilience towards climate change impacts over the course of their lifetimes.

Strategic Action Area **14** Youth and Children

STRATEGIC OBJECTIVE	**Empower youth and children to reduce their vulnerability to climate change impacts.**

Issue/ Problem

Climate change impacts exacerbates the vulnerabilities of youth and children.

BETA Pillars

- Enabling all the BETA

SUSTAINABLE DEVELOPMENT GOALS



[142] UNICEF. (2023). Time to Act: African Children in the Climate Change Spotlight. https://www.unicef.org/esa/documents/time-to-act

Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
Develop inclusive policies, frameworks/strategies for integration of youth in climate change adaptation activities	• Develop and implement a youth and children climate change engagement strategy by 2027.
	• Institutionalise an annual youth and policy makers dialogue/kikao on matters of climate change (during the National Youth Week) beginning 2024–2027.
	• Educate youth on climate change-related policy making processes in at least 20 counties.
	• Collect youth views/voices for inclusion in decision-making and in designing climate change adaptation programmes and projects by conducting ten polls (two per year).
Build youth capacities for climate action through training and skills development in climate issues	• Develop at least two capacity building tools for youth in matters of climate change adaptation by 2025.
	• Provide online classes on climate action in all counties (in the Youth Empowerment Centres).
	• Conduct webinars/seminars and workshops to educate 4,700 youth (of which 30% are female) on climate change and adaptation strategies in all counties.
	• Build capacity of at least 470 youth groups on development of bankable projects.
	• Establish informal climate education programmes that utilise various formats, including workshops, storytelling, arts and culture, pamphlets and infographics, and relevant courses.
	• Train 350 youth development officers to build competence on integration of climate change adaptation in youth programming.
	• Reorient curricula in training to include learning outcomes that actualise green workforce (green graduates).
	• Equip educators with ability to train competencies for green jobs; include green skills in the youth training programmes.
	• Train youth in accessing the climate fund.
	• Support the mainstreaming of climate issues in the curriculum at all learning levels.
	• Strengthen extracurricular programmes for climate action, such as environmental and climate action clubs and societies, art, music, drama and science journalism including eco schools programmes.
	• Develop and diversify training programmes opportunities for students at all levels of learning.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
Enhance youth access to finance for climate change adaptation activities	• At least 250 youth groups provided with resources for locally-led climate adaptation, disaster risk reduction and/or mitigation measures.
	• Support 100,000 youth to access funding for climate change adaptation activities through various funding mechanisms.
	• Allocate 20% of climate financing within the country to youth-led climate actions.
	• Develop and operationalise the Climate Change Knowledge Portal with inclusion of a platform with information on climate finance and opportunities and initiatives for youth by 2025.
Support for youth innovations in climate change interventions towards entrepreneurship and creation of green jobs	• Promote youth innovation hubs to promote youth innovations and research on climate change in all counties.
	• Support at least 100 youth eco-based technologies and innovations scaled up across the country.
	• Institutionalise an annual youth innovation challenge and award programme on climate change interventions by 2024.
	• Support 40 exhibitions/bazaars for youth to showcase their innovations in climate change interventions.
	• Sensitise 23,500 youth (30% female) on waste management and conversion towards green entrepreneurship and job creation.
	• Support establishment of youth-led recycling centres.
	• Promote production by youth on non-forest biomass fuel briquettes such as agricultural waste, sawdust and human waste through incentives or incubation hubs.
	• Increase youth-led initiatives that promote the uptake of clean cooking solutions and clean cooking jiko innovation.
	• Register and recognise youth-led waste recycling centre, including support in accessing Annual Operating Licences.
	• Facilitate access to climate technology and innovation by the youth.
	• Create innovation hubs within the existing technology hubs exclusive economic zones in the country.
	• Promote youth engagement and inspire youth-led innovation.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
Advocacy/lobbying for intergenerational equity	• Host at least two national conferences/summits/conventions to advocate for integration of youth in climate action agenda by 2027.
	• Hold five media campaigns to advocate for intergenerational equity and governments commitment to climate action.
	• Hold 47 youth and county leadership dialogues on matters climate change.
	• Hold 47 community intergenerational engagements to facilitate intergenerational knowledge transfer on climate issues.
	• Support 1,000 youth to participate in local regional and international climate change summits/conventions/conferences.
	• Engage youth to create spaces to make their voices heard at global, national and local level climate change platforms (may include COPs, NAPs, planning local action plans, etc.).
	• Engage with youth in faith-based organisations to develop strategy to integrate climate action into their activities.
Youth volunteerism and community service	• Engage 4,700 youth in tree planting/growing.
	• Engage 4,700 youth in community clean ups.
	• Identify and recognise 94 youth (47 male: 47 female) climate champions/ambassadors.
	• Integrate Youth in County Disaster Response Team with a representative in the County DRM Coordination unit.
	• Develop community outreach youth-driven programmes to foster youth collaboration with communities.
Relevant Institutions: Ministry of Youth Affairs, Sports, and the Arts< Council of Governors, county governments, development partners, private sector, Ministry of Education.	

4.2.15 Sustainable Land Management

Land plays a key role in the climate system as an essential carbon sink. Land-based ecosystems have been shown to absorb around 30% of the carbon emissions generated by human activities. However, the impacts of climate change – including sea level rise, altered temperature and precipitation patterns, reduced water availability, natural disasters, and extreme weather occurrences – increase land stress. Increased strain has been placed on land that is used for both agricultural and settlement reasons in regard to resource productivity, resource scarcity, and land-use pattern change.[143] The effects of climate change have changed how land and natural resources are accessed, exploited, and contested since land-use, tenure, and climate change are tightly related. This has created instability of property rights and the institutions that control land and resources.

Kenya has experienced a wide range of tenure-related effects, such as increased rivalry for rights to use natural resources, increased likelihood of dispute over the validity of current property rights, forced relocation, both short- and long-term migration, deterioration of land and resources, and changes in the asset values of land and natural resources. Adapting to the effects of climate change can be facilitated by inclusive and sustainable land management.[144]

However, deforestation, urbanisation, industrial development, agricultural expansion, and unsustainable farming practices are rapidly degrading land in Kenya. A land degradation mapping revealed that almost all the counties in Kenya are at risk from one form of land degradation or other.[145] High incidences of land degradation are due to climate change impacts (high intensity storms, excessive runoff, and floods) especially in ASAL areas.

Strategic Action Area **14** Sustainable Land Management

STRATEGIC OBJECTIVE

Strengthening land governance for climate change adaptation, mitigation and resilience.

Issue/ Problem

- Loss of livelihoods, property, social capital, population displacement, reduced/loss of productivity.
- Loss of animal lives (wild and livestock), ecosystems and biodiversity loss.
- Low land productivity, food insecurity.

[143]IPCC. (2019). Climate Change and Land: Aan IPCC Sspecial report on Cclimate Cchange, Ddesertification, Lland Ddegradation, Ssustainable Lland Mmanagement, Ffood Ssecurity, and Ggreenhouse Ggas Ffluxes in Tterrestrial Eecosystems. https://landportal.org/library/resources/ecc26502/ipcc-special-report-climate-change-and-land

[144]IPCC. (2019).

[145]GoOK. (2016). Land Ddegradation Aassessment in Kenya. Ministry of Environment and Natural Resources

Issue/ Problem

- Increased migration/human mobility, resource conflicts.
- Increased diseases prevalence/morbidity, spread of diseases, poisoning, emotional damages including depression.

BETA Pillars

- Linked to Food Security

SUSTAINABLE DEVELOPMENT GOALS



Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
Coordinated and harmonised development on land	• Prepare and implement relevant plans, including:
	- National spatial plan and 47 county spatial plans.
	- National marine spatial/inland plan.
	- National airspace master plan.
	- National physical and land-use development plan.
	- Ten inter-county physical and land use plan – ecologically sensitive areas, wildlife/ human/livestock corridors.
	- Five local physical and land-use development plans per county.
	- 20 community land-use plans.
Secure land tenure and land rights	• Reserve public land:
	- National public land inventory in place.
	- 23 community land inventories.
	- 23 community land registration units.
	- Register all community land.
	- Establish community land management committees.
	- Increase land owned/co-owned by women from 5% to 20%.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
Mainstream climate change in land administration and management	• Issue land ownership documents with climate-smart conditions.
	• Undertake a study on the changing knowledge on land/ownership.
	• Support minority, marginalised, vulnerable and disadvantaged persons to obtain land ownership documents.
	• Map and secure ecologically sensitive areas.
	• Reclaim and restore ecologically sensitive areas reclaimed and restored.
Establish a land information management system	• Establish a functional land information management system.
Increase resilience from land-based disasters	• Map and inventory disaster prone areas.
	• Enhance adaptive capacities of affected communities.
Reduce land fragmentation and subdivision	• Map, reserve and secure all ecologically sensitive areas in the country.
	• Establish land banks.
	• Provide incentives for diversification of livelihoods.
	• Map area of land leased.
	• Prepare land fragmentation and subdivision regulations and guidelines.
	• Incentivise land defragmentation programmes.
	• Prepare land consolidation policy.
	• 47 county governments develop zoning and development control policies/standards and guidelines.
	• Establish maximum and minimum land policy.
	• Review Agricultural Policy/Act to address land fragmentation of food baskets in the country.
	• Mobilise goodwill and champions for sustainable land management.
Reduce and eliminate land contamination (oil spills, heavy metal poisoning, excessive farm chemicals)	• Enforce regulations on land contamination.
	• Encourage continuous and active surveillance by the state and communities.
	• Regulate vehicle-washing zones.
	• Promote climate-smart/sustainable agriculture.
	• Develop national regulations on riparian reserve management.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
Ethics and integrity on land	• Integrate land ethics in the curriculum.
	• Carry out sensitisation and trainings on ethical and moral standards on land governance.
	• Enhance whistle blowing and witness protection policy.
	• Mobilise goodwill and champions/change agents of land ethics agenda.
Sustainable land and land-use change	• Review land-use policy and implementation of physical and land-use plans.
	• Enforce regulations of change of use through development control and enforcement of plans.
	• Assess land capability and suitability.
	• Encourage citizenry participation and alertness in land-use planning.
	• Strengthen the land professional bodies.
	• Monitor land-use/cover and prepare monitoring status report.
Enabling (Policy/legal)	• National spatial plan guidelines.
	• National land policy.
	• Blue economy benefit sharing framework.
	• Review land valuation laws.
	• Develop regulations on land contamination.
	• Entrench climate-smart jurisprudence emerging from the courts.
Enabling (Technology)	• Establish one GIS lab per county for sustainable land management.
	• Digitise and digitalise land records.
	• Establish a land portal.
	• Purchase drones to support the land sector.
Enabling (Capacity building)	• Retool and training of professional bodies/land sector professionals.
	• Provide training on modern technologies on sustainable land management.
	• Create peer-peer learning spaces/learning on land sector.
Relevant Institutions: Ministry of Lands, Public Works, Housing, and Urban Development; State Department of Lands and Physical Planning; National Land Commission.	

4.2.16 Climate related insecurity

The frequency and intensity of extreme events due to climate change are projected to increase, with more severe and prolonged heat waves, droughts, floods, and cyclones. These devastating events have already adversely affected communities and disrupted their livelihoods, further exacerbating climate-related insecurity risks. Climate -related insecurity can be defined as human security and community conflict risks induced or affected, directly or indirectly, by changes in climate patterns and their interactions with environmental impacts, socioeconomic fragility, and other macro contextual trends.[146] There exists a bidirectional relationship between climate impacts and conflicts.

This means that climate change may influence the emergence and nature of conflict and violence, but the presence of conflict and fragility is likely to further compound climate vulnerabilities and erode the capacities of communities and households to cope with climate impacts in a cooperative and peaceful manner. While climate change continues to exert a destabilising influence on societies and communities throughout Kenya, the intricate linkages by which it exacerbates conflict risks remain partially unresolved. Recent stakeholders' consultations have emphasized five climate security pathways, which also help in identifying potential areas of intervention for the country, namely: competition over scarce natural resources, weakening of livelihood strategies, displacement and mobility, warrior culture, and increased mistrust in government. Drawing from the latter climate security pathways, climate adaptation strategies that integrate climate security considerations should prioritise the generation of new evidence, programmatic planning, policy dialogues, and financial investments to effectively address the climate, peace, and security interplay.

[146]Life & Peace Institute and UN Development Programme. (2023). Mapping of Climate Security Adaptations at Community Level in the Horn of Africa.

Strategic Action Area 16 Climate-related insecurity

STRATEGIC OBJECTIVE 1a

To reduce community conflict and internal migration that results from climate risks and hazards.

Issue/ Problem

Human security and community conflict risks induced or affected by changes in climate patterns and their interactions with environmental impacts, socio-economic fragility, and other macro contextual trends.

BETA Pillars

- Enabling all the BETA

SUSTAINABLE DEVELOPMENT GOALS



Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
Develop ready-to-finance integrated interventions with dual climate change adaptation and peace-building	• Increase climate-resilient investment programmes with a conflict sensitive lens targeting to influence at least one programme per county.
Establish inclusive, conflict-sensitive climate financing models.	• Build knowledge and practices to integrate conflict sensitivity in climate financing in both county and national governments by 2027.
	• Support integration of conflict sensitivity indicators in climate finance models and frameworks across all the 47 counties.
To review the National Policy for Peace-Building and Conflict Management to integrate climate security and also ensure it aligns to local county peace and conflict policies	• Integrate climate security into the National Peace Building and Conflict Management Policies and incorporate indigenous knowledge by 2027.
	• Integrate climate security into the new revised architecture for peace by the Ministry of Interior by 2027.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
Develop climate adaptation strategies and programmes for climate induced migrants, hosting communities and Internally Displaced Persons (IDPs) in alignment with national and sub-national strategies, that provide sustainable livelihoods solutions	• Strengthen at least two alternative livelihood adaptations for host communities, IDPs and climate-induced migrants (e.g., through agriculture, trading, etc.) by 2027.
	• Strengthen the integration of livelihood adaptation in at least four existing strategies (e.g., CIDPs, Garissa Integrated Socio-Economic Development Plan, Kalobeyei Integrated Socio-Economic Development Plan, Shirika Plan, etc.) by 2027.
	• Strengthen integration of peace and conflict management actions in livelihood and climate adaptation strategies (e.g., FLLoCA – County Adaptation Plans) in all the 47 counties.
Integrate community rights in natural resource and ecosystem management (e.g., pasture and water) to reduce resource-based conflicts	• Fastrack and allocate financial resources for registration of pending community lands in 47 counties in line with the provisions of the Community Land Act of 2016.
	• Integrate resource sharing strategies in line with the Community Land Act no. 27 of 2016 by 2027.
STRATEGIC OBJECTIVE 1b	**Expand, consolidate and share knowledge on climate security in Kenya**
Document and leverage indigenous and traditional experience and knowledge in areas prone to emerging climate-related security risks to co-produce knowledge	• Document relevant indigenous and traditional knowledge on climate resilience in Kenya by 2027 to co-produce research on climate change adaptation and mitigation.
Undertake research to assist in prioritising efforts and investments, and to re-orient the focus of the country's climate security agenda	• Develop climate security profiles in all the 47 counties.
Create an active and inclusive community of practice or working groups on climate security by leveraging on existing multi-stakeholder platforms or creating new spaces	• Create at least 48 national- and county-level climate security community of practice/working groups/multi-stakeholder platforms and attach a reward to the best performing group in combating the effects of climate change.
Strengthen capacity building for national government administrative officers and other security agencies to ensure knowledge sharing processes through training	• Develop and operationalise one national climate security training curriculum in collaboration with the Kenya School of Government (KSG) for training national government administrative officers.
	• Conduct bi-annual climate security training at national and county levels using the developed curriculum.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
	• Create awareness through community sensitisation forums on climate security in 47 counties.
	• Strengthen capacity of the national security operators of the National Police Service and other security officers on climate security to champion climate security actions in all the 47 counties.
STRATEGIC OBJECTIVE 1c	**Enhance climate security into early warning Artificial Intelligence decision support tools to strengthen climate resilience of local communities.**
Integrate climate security and indigenous knowledge into early warning tools to help decision makers with targeting, prioritising and overall programming that is sensitive to the climate security nexus	• Develop online decision support and early warning tools integrated with indigenous knowledge to aid actors' understanding and response to climate security related risks, e.g., CGIAR'S Climate Security Observatory.
	• Enhance the capacity of early warning systems to ensure that information generated from them reaches targeted population or people at risk including refugee populations (last mile).
	• Incorporate climate security early warning information into the Kenya Conflict Early Warning/|Emergency Response Unit and the IGAD Conflict Early Warning and Response Mechanism processes.
Implement county level climate security strategic plans indicating projected future climate exposure themes, assess climate vulnerability of both national and county level 20–50 years into the future and identify and evaluate climate preparedness and resilience measures.	• Generate 48 climate security strategic plans (for national and county) based on weather information and other data to aid a well-established resilience planning process in the country.
	• Integrate climate security strategic plans into county and ward adaptation plans by 2027.

STRATEGIC OBJECTIVE 1d	Strengthen interstate and intrastate collaboration on trans-boundary climate security
Opportunity/Main Action	**Sub Actions and Targets/Expected Results by June 2028**
Improve coordination mechanism and strengthen policies between counties and national government, and between national and regional partners on borderland states, on collective bargaining on climate finance, disarmament policies, transhumance, and human and livestock security	• Implement regional ratified transhumance protocols by 2027. • Use regional and continental forums (EAC, IGAD, COMESA, COPs, Refugee Forums, and African Union) to strengthen the collective bargaining power on climate finance by 2027. • Work on regional uniform disarmament policies by 2027. • Develop and implement at least one regional extradition policy to strengthen interdepartmental cooperation on climate security at county and national government levels by 2027. • Constitute 47 joint authorities/committees between national and county governments to strengthen interdepartmental cooperation on climate security at county and national government levels by 2027. • Conduct capacity building on humanitarian border management for Border Management Units and at five points of entries to protect rights of the vulnerable migrants who migrate due to climate change impacts. • Constitute at least 35 joint security and peace committees to address climate change related conflicts along the borders of Kenya.

STRATEGIC OBJECTIVE 1e	Facilitate inter-ethnic engagement and dependence through collaboration for natural resource management,
Opportunity/Main Action	**Sub Actions and Targets/Expected Results by June 2028**
Create synergy between traditional/informal conflict resolution mechanisms and formal government	• Incorporation of climate security into existing Alternative Dispute Resolution policies by 2027.
Implement landscape restoration programmes that engage young people in climate conflict hotspots	• Strengthen the involvement of women, youth, and persons with disabilities in climate change programmes for sustainability in at least 29 counties that are hotspots for climate-related conflicts.
Formalise an inter-ethnic collaborative resource management association and/or agreements	• Implement agreements and initiatives on inter-ethnic natural resource management at county and national levels by 2027.
	• Develop participatory land-use planning and water use framework tools targeting conflict areas and cross-border regions to generate future land-use profiles by 2027.
Relevant Institutions: Ministry of Interior and National Administration, Ministry of Public Service, Gender and Affirmative Action, Ministry of Environment, Climate Change and Forestry, National Steering Committee for Peace-Building and Conflict Management, Youth and Gender, Lands, Council of Governors, county governments, CSOs/NGOs, multilateral agencies, private sector, Ministry of Education, Ministry of Foreign and Diaspora Affairs.	

4.2.17 Cross-Cutting Actions (CCD, KMD, NEMA, KIRDI, CoG)

Climate Change Directorate Enabling Actions

Strategic Action Area **17** CCD Enabling Actions

STRATEGIC OBJECTIVE	**Coordinate the implementation of the NAP and the adaptation actions of the NCCAP, and mainstream climate change adaptation in the environment and climate change sector.**

Issue/ Problem

Lack of human and financial resources to implement responsibilities related to adaptation set out in the Climate Change Act. Upscale county climate change planning and finance mechanisms; strengthen community-based preparedness and response units.

BETA Pillars

- Enabling all the BETA

Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
Implement Climate Change (Amendment) Act, 2023	• Coordination of climate change activities and oversight of the implementation of the adaptation actions; including leading the work of the National Adaptation Coordination Committee, including at least three meetings per year.
Implement Climate Finance Policy of 2018	• Operationalise the climate change coordinating institutions stipulated in the Climate Change (Amendment) Act 2023.
	• Review and update the NAP.
	• Develop adaptation and resilience indicators.
	• Participate in negotiations on adaptation at the international level.
	• Develop and operationalise a MEL system for adaptation.
	• Strengthen the Climate Change Directorate and climate change units in the MCDAs.
	• Operationalise the National Climate Change Resource Centre and Portal.
	• Support the national and county financing systems for climate finance.
	• Build capacity particularly in fiduciary management skills, to enable institutions to disburse, absorb and manage large projects and large funds in a transparent and accountable manner.
	• Strengthen transparency and accountability.
	• Establish a platform for open and transparent stakeholder dialogue on climate finance.

Kenya Meteorological Department Enabling Actions

Strategic Action Area **18** KMD Enabling Actions

STRATEGIC OBJECTIVE	**To improve information about climate-related hazards leading to strengthened resilience and adaptive capacity in all counties.**

Issue/ Problem

Need for improved provision and uptake of Climate Information Services (CIS) relevant to livelihoods at county level to inform decision-making and strengthen community-based preparedness and response units.

BETA Pillars

- Enabling all the BETA

SUSTAINABLE DEVELOPMENT GOALS



Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
Provide Climate Information Services (CIS) that inform decision-making for governments, businesses and households	• Modernise KMD climate information systems and services. • Develop county CIS plans. • Expand climate monitoring data collection network and weather observation systems. • Strengthen the capacity of county meteorological directorates to improve CIS.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
	• Engage traditional weather forecasters and systems in national climate change adaptation initiatives: A partnership model by the traditional weather forecasters and KMD.
	• Strengthen early warning and CIS through improving the CIS providers network and enhancing integration of local/indigenous knowledge into early warning systems.
	• Enhance participatory scenario planning with communities.
	• Support the unpacking of meteorological language and the translation of downscaled climate information into Swahili and local languages.

National Environment Management Authority

Strategic Action Area **19** NEMA's Enabling Actions

STRATEGIC OBJECTIVE

Improve mobilisation of finance for adaptation and improved environmental assessments that consider adaptation.

Issue/ Problem

NEMA requires continued support to deliver on its roles in delivering the Climate Change Act and as a national implementing entity for climate finance.

BETA Pillars

- Enabling all the BETA

Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
Build capacities to deliver on adaptation responsibilities	• Conduct environmental research to generate climate change data.
	• Train 20 staff on the development of bankable proposals to securing climate finance.
	• Developing five bankable proposals on climate adaptation.
	• Enhance the capacity of NEMA to absorb and manage large funds from UNFCCC financing mechanism and other sources.
	• Conduct environmental/climate change education and awareness to at least 300 environmental experts.
Mainstream climate change adaptation in the environment sector	• Review the existing land use guidelines to incorporate climate change actions.
	• Conduct awareness on mainstreaming climate change risk and vulnerability into environmental assessments.
	• Mainstream climate change mitigation and adaptation in environmental assessments.
	• Develop guidelines for mainstreaming climate change risks and vulnerability into environmental assessments.
Monitor, report and enforce compliance with Climate Change Act № 11 of 2016	• Target at least five environmental research projects to generate climate change adaptation data. Train two NEMA staff on resource mobilisation for climate change research.
	• Train 20 staff on MEL for adaptation.
	• Train 20 Environment Inspectors on enforcement of Climate Change Act 2023 and associated regulations.

Strategic Action Area 20 KIRDI Enabling Actions – Technology and Innovation

STRATEGIC OBJECTIVE	**Operationalise the Science, Technology and Innovation (STI) Act of 2013: Support, accelerate, encourage, and enable innovation by promoting and facilitating enhanced action on technology development and transfer.**

Issue/ Problem

- Fragmented STI sector.
- Unclear national research agenda.
- Weak institutional frameworks for STI.
- Poor linkage between industry and research institutions.
- Inadequate funding/overreliance on external resources (STI Act 2013 stipulates 2% of GDP).

BETA Pillars

- Enabling all the BETA

SUSTAINABLE DEVELOPMENT GOALS



Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
Build capacity of KIRDI to enhance its National Designated Entity (NDE) role under the UNFCCC's Climate Technology Centre and Network (CTCN)	• Update the country's technology needs assessment that will help identify the country's technological priorities to be supported by the NDE work.
	• Mobilise resources for the NDE: Lobby for adequate funds from the exchequer to support the NDE functions.
	• Popularise KIRDI as a CTCN NDE among the private sector, academia, CSOs/NGOs and within government departments.
Support innovation and development of climate-smart technologies and capacity that promote climate-resilient development	• Support traditional food preservation technology particularly among the pastoralists who could keep meat for more than six months (marginalised groups).
	• Implement relevant actions set out in the NAP.
	• Support innovation and development of appropriate technologies and capacity that promote climate-resilient development.
	• Promote development of locally available technologies in support of adaptation to climate change.
	• Promote and facilitate transfer of appropriate technologies to the most vulnerable.
	• Upscale (and protect) successful climate change technologies and innovations.
Promote and facilitate transfer of appropriate technologies to the most vulnerable	• Ensure intellectual property laws protect climate innovation and technology.
Promote development of locally available technologies in support of adaptation to climate change	• Identify and promote climate change adaptation attributes in emerging technologies to support quality of life and overall socio-economic development.

Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
Promote a national innovation culture that facilitates access to information by all innovation stakeholders for purposes of supporting coordination and the identification of opportunities	• Operationalise fully the country's National Innovation System, to be informed by a systemic assessment of requisite linkages and connectivity of the system and the market context in which innovation stakeholders operate. This also includes strengthening the capacity of universities and research institutes in transforming their ideas into commercial scale innovations.
	• Promote dialogue sessions between the government, academia, civil society, and the business community, with the active participation of relevant experts.
	• Execute annual surveys of factors that hamper innovation and entrepreneurship with a special focus on the regulatory and administrative burden.
	• Prioritise for action the challenges faced by innovative start-ups and the innovation activity of MSMEs in general, differentiating between those challenges that have a regulatory character from those that require intervention in other areas, such as access to finance or specialised skill sets.

Strategic Action Area 21 Council of Governors' Enabling Actions

STRATEGIC OBJECTIVE	**Climate change policies, strategies, plans and programmes are national level.**

Issue/ Problem

NEMA requires continued support to deliver on its roles in delivering the Climate Change Act and as a national implementing entity for climate finance.

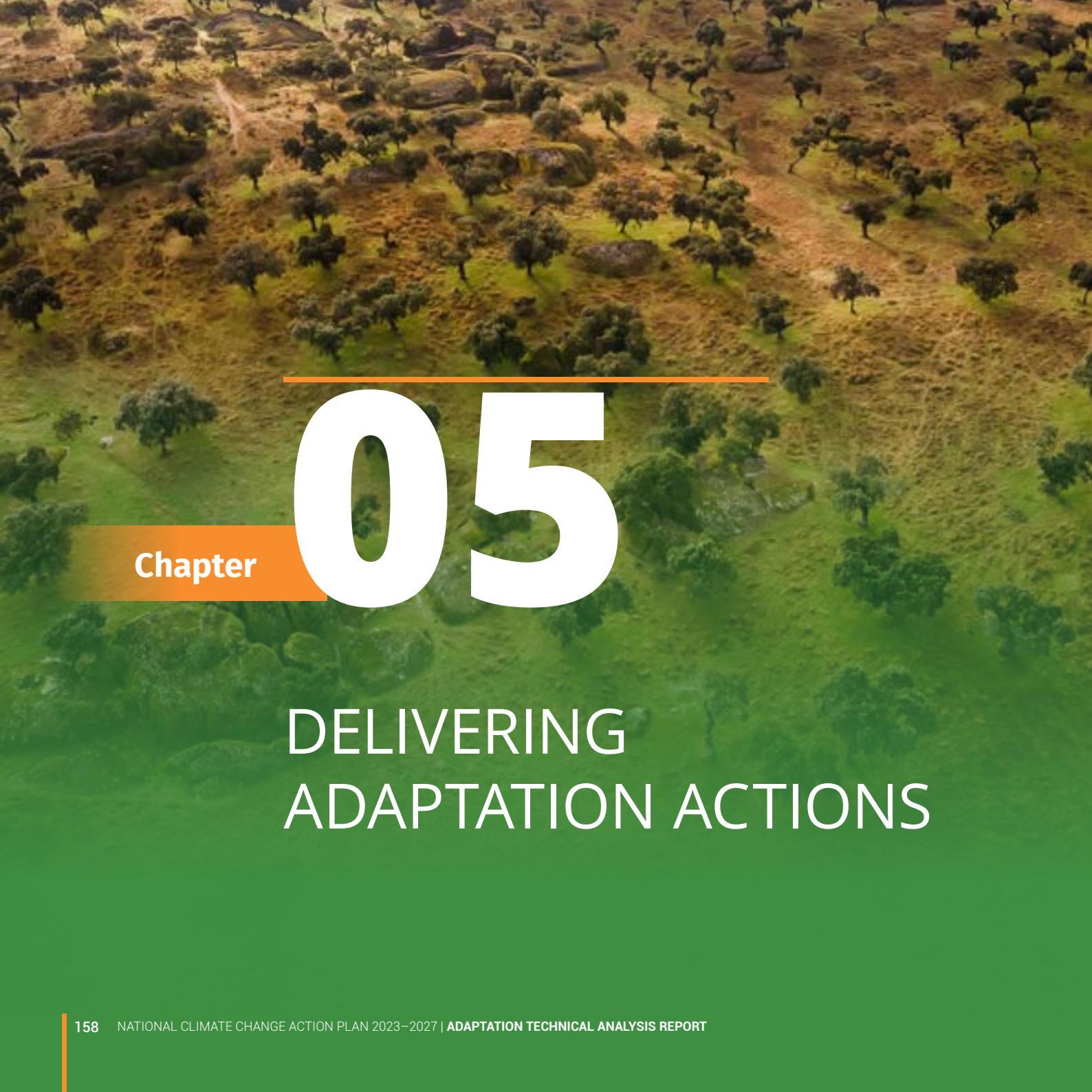
BETA Pillars

- Enabling all the BETA

Opportunity/Main Action	Sub Actions and Targets/Expected Results by June 2028
Mainstreaming climate change adaptation in CIDPs and sector plans	• Support counties to domesticate national policies, strategies, plans and programmes.
	• Support counties to implement prioritised actions in the domesticated county policies, strategies, plans and programmes.

Relevant Institutions: Council of Governors; county governments, State Department for Devolution, Climate Change Directorate, Ministry of Environment, Climate Change and Forestry, The National Treasury and Economic Planning, private sector, CSOs/NGOs, multilateral agencies.





Chapter 05

DELIVERING ADAPTATION ACTIONS

Adaptation is the priority of Kenya, with mitigation pursued as an additional benefit. The ATAR 2023–2027 is to guide implementation by both national government and county governments to build Kenya's resilience to climate change. It provides detailed information and further guidance and complements the Adaptation section of the NCCAP. The *Climate Change Act 2016* offers the opportunity for both levels of government to play a key role in delivering and coordinating adaptation actions in the country up to the community level. These actions will need to be developed into programmes, projects, and activities for implementation. The implementation of projects or programmes requires an implementation framework for all participating sectors, and a coordination mechanism.

Some county governments have passed legislation in accordance with matters contained in the Climate Change Act. Progress is underway at the county level with the support of the Financing Locally-Led Climate Action (FLLoCA) programme (2021–2026), which includes climate vulnerability and risk assessments and the establishment of County Climate Change Funds to address adaptation and mitigation priorities. ASAL counties including Garissa, Isiolo, Kitui, Makueni, and Wajir have created County Climate Change Funds (CCCFs), which are meant to identify, rank, and fund investments aimed at mitigating climate risk and achieving adaptation priorities. These county governments may improve and reinforce national climate change policies while addressing local adaptation goals through the CCCFs, which are in line with national priorities outlined in Kenya's National Adaptation Plan (NAP).[147]

At the national level, the Climate Change Act provides for establishment of regulations to guide implementation by the institutions, agencies, and structures the Act has created.

5.1 Technology Development, Innovation and Transfer

Attaining Kenya's adaptation goal will require development, transfer and dissemination of environmentally sound technologies, innovations and management practices (TIMPs) to reduce vulnerability to climate change and promote sustainable development. The specific technologies will be decided at the activity design and implementation stage due to the context-specific nature of adaptation needs.[148] The technology should support the actions identified in Chapter 4.

The Kenyan Climate Innovation Centre was cited as an effective illustration of national innovation systems.[149] The Centre supports sustainable development in Kenya and creative approaches to combating climate change. More than 1,800 firms have received help from its green entrepreneurship programme, which was launched more than ten years ago and has amassed more than USD 48 million. It also seeks to promote female entrepreneurs to take an inclusive and gender-balanced stance with women making up at least 30% of the clientele.

Some of the actions that need to be taken include strengthening the CTCN National Designated Entity (NDE) on technology, promoting local innovation, promoting research and development

[147]Murphy, D. & Orindi, V. (2017). sNAPshot Kenya's County Climate Change Funds. Country Brief 2B. https://napglobalnetwork.org/wp-content/uploads/2018/01/napgn-en-2017-snapshot-kenyas-county-climate-change-funds.pdf

[148]UNFCCC. (2023). Adaptation and Rresilience. https://unfccc.int/topics/adaptation-and-resilience/the-big-picture/introduction

[149]Sagar, A. (2010). Climate Innovation Centres: A Nnew Wway to Ffoster Cclimate Ttechnologies in the Ddeveloping Wworld? An infoDev publication in collaboration with UNIDO and DFID prepared by and Bloomberg New Energy Finance. Available at: www.infodev.org

in adaptation technology, and strengthening relevant adaptation technology institutions. These technologies should be responsive to gender and intergenerational equity.

The Kenya Industrial Research and Development Institute (KIRDI) is the NDE for Kenya under the CTCN, the operational arm of the UNFCCC technology mechanism. KIRDI has put in place plans for strengthening its NDE capabilities for technology development and transfer.[150] Other research institutions which will need to strengthen their capacity alongside KIRDI include Kenya Agricultural and Livestock Organisation (KALRO), Kenya Forestry Research Institute (KEFRI), and Kenya Marine and Fisheries Research Institute (KMFRI).

The MECCF installed 120 Automatic Weather Stations and 3 Automatic Weather Observing Systems for Moi Airbase, Laikipia Airbase, and Moi Airport under the category of Climate Change and Weather Information. Data for early warning systems was produced through automation. Also purchased was a cluster system for the climate diagnostic laboratory.[151]

5.2 Capacity Development

Institutional and technical capacity development will be required to deliver on the proposed adaptation actions. These include operationalisation and strengthening of the institutional structures established in the Climate Change (Amendment) Act, 2023, including the National Climate Change Council, CCD, NEMA, Climate Change Fund, Kenya Institute of Curriculum Development (KICD), Kenya School of Governance (KSG), CoG, and CCUs both at national and county level. It will also be critical to develop capacities of other relevant public and non-state actor institutions to deliver on the proposed actions, e.g., KMD. Capacity building approaches will ensure gender and intergenerational equity. There is a pressing need to enhance capacity in developing bankable adaptation project proposals and transforming adaptation actions into viable business cases to access available funding sources. This entails increasing the availability of sector-specific information and data on the costs of climate impacts, as well as quantitative information in general, to raise awareness and bolster capacity building efforts. This can be achieved through the publication and dissemination of scientific journal articles, book chapters, guidelines, policy briefs, technical and research notes, and improved public awareness campaigns on environmental management and protection.MECCF prepared the groundwork for 20 cultural shifts by educating students and developing curricula for schools that incorporated desirable skills and knowledge related to climate change.

[150]????????????????

[151]GoOK. (2023). Ministry oOf Environment, Climate Change and Forestry Draft Strategic Plan 2023––-2027. https://www.environment.go.ke/wp-content/uploads/2023/07/MECCF-FINAL-DRAFT-SP-4TH-JULY.pdf

5.3 Climate Finance and Resource Mobilisation

Kenya will require funds to implement the proposed adaptation actions, based on the estimates in the NCCAP 2023–2027 and aligned with the fourth medium term plan (MPT IV). This financing will be expected to come from public and private sources, both domestic and international. The key multilateral funding institutions include the operating entities of the UNFCCC financial mechanism, namely the Global Environment Facility (GEF) and GCF. The Adaptation Fund of the UNFCCC is an important source of funding for the adaptation actions.

The National Treasury and Economic Planning is Kenya's National Designated Authority (NDA) for the GCF. NEMA and KCB Bank Kenya LTD are currently the only Kenyan direct access entities accredited with the GCF. NEMA also serves as the NIE for the Adaptation Fund, while the MECCF is the NDA. The GEF also funds adaptation projects with MECCF being the national focal point. The accredited national, regional, and multilateral entities support implementing institutions to access financial support from the different funds. The Climate Change Act 2016 establishes a Climate Change Fund as a financing mechanism for priority climate change actions and interventions. Urgent action needs to be taken to operationalise the Climate Change Fund.

Counties also play an important role in implementation of adaptation actions. In this respect, several counties have already established County Climate Change Funds, which dedicate a specific proportion of the county revenue to address climate change. Other counties need to be encouraged to take similar actions. In addition, the Financing Locally-Led Climate Action (FLLoCA) programme is dedicated to supporting the delivery of locally-led climate action by strengthening the capacity of county and national governments to manage climate risk from the bottom-up. This has already taken root in 45 counties. The FLLoCA programme provides a bold and innovative, bottom-up decentralisation of climate financing, as well as decision-making, thereby empowering the lowest units, which are the grassroots-level communities in each of Kenya's 1,450 wards, to take charge of the processes of identification, planning and implementation of climate action, based on the existing climate risk.

Kenya has a vibrant private sector, which has continued to play an active role in climate change initiatives. There is a need to enhance public sector support to leverage private sector investments in climate change adaptation. There is need to build capacity to develop bankable adaptation project proposals and convert adaptation actions into business cases so as to tap into the available funding sources. Initiatives supported with climate finance should consider gender and inter-generational equity.

In order to market adaptation actions and attract investment and donor finance, MECCF has a framework in place for mobilising resources. Together with other government agencies, the Kenya Investment Authority is involved in this.

5.4 Coordination for Implementation of Adaptation

The delivery mechanism is anchored in the structures created by the Climate Change Act 2016. The Act establishes the National Climate Change Council (NCCC) chaired by the president whose key responsibility is to provide overarching national climate change coordination mechanism. The CCD is the lead agency of the government on national climate change plans and actions to deliver operational coordination mechanism. The CCD also is also the secretariat to the NCCC. The *Act* obligates state departments and national government public entities to establish Climate Change Units and allocate them adequate technical and financial resources.

MECCF has established a multi stakeholder cross-sectoral National Adaptation Coordination Committee to coordinate all adaptation issues and act as the Adaptation Technical Working Group for the NCCAP process. The Committee acts as the technical team that advises on the adaptation actions in Kenya. Among the tasks the committee performs are oversight, direction and guidance on adaptation issues, review of the NCCAP and NAP, and assessing the level of mainstreaming of adaptation issues in the Medium-Term Plans. The current Committee has representation from the following institutions.

National Government

1. Ministry of Agriculture and Livestock Development
2. Ministry of Energy and Petroleum
3. Ministry of Water, Sanitation and Irrigation
4. Ministry of Environment, Climate Change and Forestry (NEMA, KMD, KWS, KFS)
5. Ministry of Roads and Transport
6. Ministry of Health
7. State Department for Devolution
8. State Department for Gender and Affirmative Action
9. State Department for Youth Affairs
10. National Commission for Science, Technology and Innovation (NACOSTI) – KALRO, KEFRI, KEMRI, KIRDI, KMFRI
11. State Department for Social Protection and Senior Citizen Affairs

County Governments

12. Council of Governors

Non-Governmental Stakeholders

13. Private Sector (KEPSA)
14. Civil Society
15. Faith-Based Organisations
16. Academia/Technical Institutions and Universities
17. Disaster Preparedness (Kenya Red Cross)
18. Marginalised Communities

Figure 5-1 is an illustration of the coordination mechanism established in the Climate Change Act.

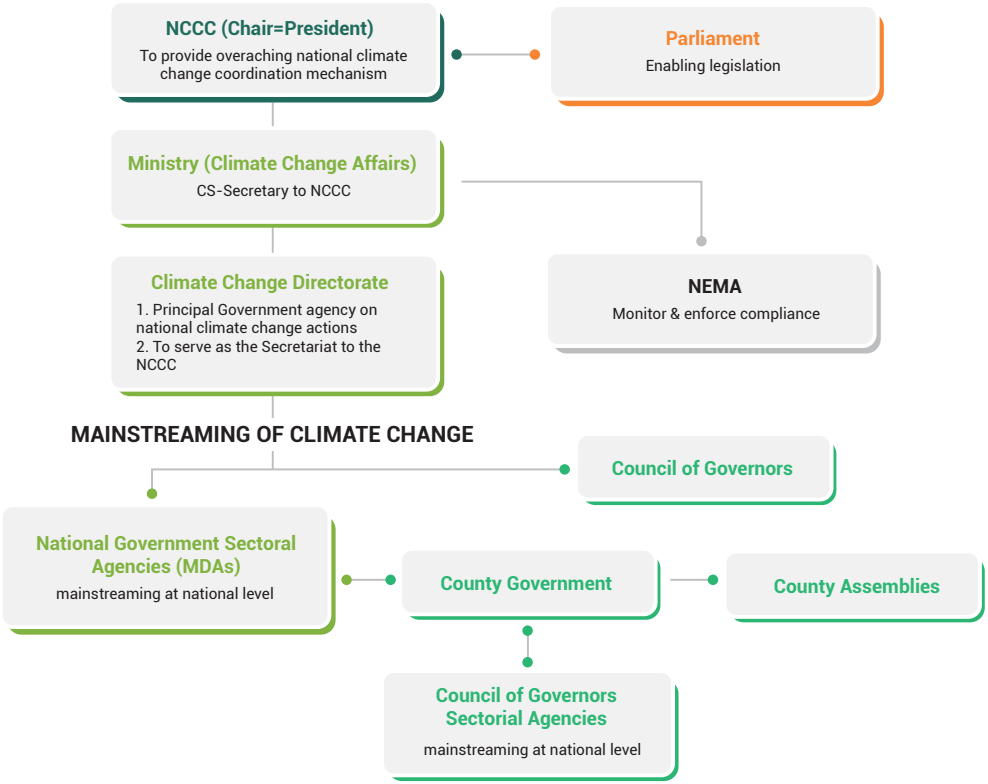


Figure 5-1: Climate change institutional coordination structures in the Climate Change Act 2016

Source: GoK. (2016). National Adaptation Plan.

5.5 Mainstreaming Adaptation

The Climate Change Act 2016 obligates mainstreaming of adaptation actions by national and county governments in development planning, budgeting, and implementation processes. Based on this, climate change is recognised as a cross-cutting thematic area in MTP IV. The Fourth Medium Term Plan (MTP) (2023–2027) has given focus to the environment conservation and management, forest conservation and management, protection and conservation of wetlands, restoration and protection of water towers, among others, that will facilitate adaptation actions. The climate change thematic working group has worked with sector working groups to mainstream climate change actions in all sectors.

5.6 Mainstreaming Adaptation

Monitoring, evaluation and learning (MEL) of adaptation is necessary to demonstrate that the benefits of adaptation interventions are being realised and that lessons learnt are assisting in the improvement of sector adaptation plans and programmes. The Climate Change Act 2016 provides for the coordination of Measurement, Reporting and Verification (MRV) processes by the CCD. The Directorate is required to coordinate adherence to the country's international obligations including reporting requirements. In addition, the Act establishes climate change duties for public and private entities and requires all entities to regularly report on climate change actions. Further, the Cabinet Secretary in charge of climate change affairs is required to make regulations to guide measurement, reporting and verification of climate change actions. The Cabinet Secretary is also required to biennially report to parliament on the status of implementation of international and national obligations to respond to climate change, and progress towards attainment of low carbon climate-resilient development.

NCCAP 2013–2017 provided a National Performance and Benefit Measurement Framework (NPBMF). The NPBMF was intended to be an integrated framework for MRV of mitigation action and monitoring and evaluating of adaptation actions, reporting on the synergies between them, and tracking support provided to undertake the actions. The system is also referred to as MRV+. Aspects of the system have been operationalised, including actions related to the MEL system for adaptation. CCD prepared two reports on progress on the implementation of NCCAP 2018–2022, and an evaluation of the progress of implementation of the NAP in the agriculture sector.[152]

[152]MoEF/CCD. (2021). National Climate Change Action Plan 2018–-2022: Second Implementation Progress Report, Nairobi: Ministry of Environment and Forestry. https://napglobalnetwork.org/resource/kenya-nccap-2018-2022-second-implementation-status-report/

MoEF/CCD. (2022). Review of the Implementation of Kenya's National Plan 2015–-2030 in the Agriculture Sector. NAP Global Net-work/IISD. https://napglobalnetwork.org/resource/review-implementation-kenya-adaptation-plan-agriculture-2015-2030/

The continued development of the adaptation MEL system under NCCAP 2023–2027 will require such actions as:

- Undertake a report on progress of implementation of NCCAP 2023–2028 in 2026.
- Continue to refine the processes for county and stakeholder reporting on adaptation action.
- Continue to work on tracking of flows of finance for adaptation.
- Provide adaptation information to inform MTP IV reporting.
- Focus progress reporting on actions taken by governments and use case studies to present examples of action by civil society and the private sector.
- Explore options to work with the State Department of Planning on joint requests for and reporting of data that pertains to the monitoring of progress on climate change priority actions and achievement of the SDGs.
- Assess the impacts of adaptation action on women, youth, and marginalised groups.
- Undertake an updated climate risk and vulnerability assessment to inform the MEL of adaptation, and to inform the identification of priority adaptation actions in the next NCCAP.

Some of the actions that need to be undertaken to ensure operationalisation are:

1. Undertake a report on progress of implementation of NCCAP 2023–2028 in 2026. Section 13(7) of the Climate Change Act, 2016 requires that progress on climate change action be reviewed biennially.
2. Continue to refine the processes for county and stakeholder reporting on adaptation action.
3. Continue to work on reporting on flows of finance for adaptation.
4. Provide adaptation information to inform MTP IV reporting.
5. Focus progress reporting on actions taken by governments and use case studies to present examples of action by civil society and the private sector.
6. Explore options to work with the State Department of Planning on joint requests for and reporting of data that pertains to the monitoring of progress on climate change priority actions and achievement of the SDGs.
7. Allocate resources to assess the impacts of adaptation action on women, youth, and marginalised groups.
8. Undertake an updated climate risk and vulnerability assessment to inform the MEL of adaptation, and to inform the identification of priority adaptation actions in the next NCCAP.





Chapter 06

ATAR 2023–2027 ADAPTATION IMPLEMENTATION MATRIX

6.1 Disaster Risk Management

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
Strategic Objective: Reduced risks to communities, livelihoods and infrastructure resulting from climate-related disasters and enhance institutional preparedness and response.					
National Indicators 1. Number of deaths, missing persons and directly affected persons attributed to drought. 2. Number of vulnerable members of society supported through cash transfers to reduce shocks and impacts resulting from the effects of climate change. 3. Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national strategies.					
Increase the number of households and entities benefiting from devolved adaptive services	• Beneficiaries of social protection mechanisms, and other safeguards under the Hunger Safety Net Programme increased from 101,800 to 132,000 (30% women and 10% youth) in eight ASAL counties for regular cash transfer beneficiaries. • An additional 200,000 households through drought-shock responsive scalability targeting those who may slide to the very poorest households as a result of loss of limited livelihood assets due to drought. • Beneficiaries under the National Safety Net Programme increased from 1,082,000 in 2022 to 1,972,000 by 2027. • Expand best-practice social protection mechanisms (adaptive social safety nets), and measures to poor and vulnerable people countrywide by June 2027.	Number of beneficiaries of social protection mechanisms (food and cash transfers) Number of households receiving benefit from Hunger Net Safety Programme	NDMA	Vulnerable groups	GoK
Improve the ability of people to cope with disasters	Develop dedicated capacities in 10 health facilities in 32 counties to enhance access to health services during emergency response, including prepositioning of requisite medical and non-medical supplies by 2027. Development of hides and skins tannery in four pastoral clusters of (Kajiado and Narok, Turkana and Baringo, Marsabit, Samburu and Isiolo, and Mandera, Wajir, Garissa and Tana River). Develop storage infrastructure to reduce post-harvest losses. Strengthen the integration of indigenous knowledge into climate information through facilitating community weather observers among others. Improve drought early warning systems, including the promotion of people-centred systems at the national and county levels. Number of recipients of climate information services who use the information in their risk management decisions increased from 1,000,000 to 2,000,000. Design and implement low-cost boarding facilities in pastoral areas.	No. of health facilities whose capacities are enhanced No. of hides and skins tanneries developed No. of storage infrastructure developed No. of integration reports No. of early warning systems developed	KMD, NDMA, National Disaster Management Unit (NDMU), MoALD, Kenya Agriculture and Livestock Research Organization (KALRO), Ministry of Health (MoH), Ministry of Water, Sanitation and Irrigation (Kenya Red Cross Society (KRCS), The National Treasury and Economic Planning (TNT&EP), MoH MoH, Attorney General (AG), NDMA	All Kenyans All Kenyans	GoK/ DPs

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
	Affirmative action to connect all learning and health facilities in the ASALs to water supply to reduce the cost of water trucking during drought episodes. Apply and integrate gender and human rights-based approaches in the design and implementation of policies relating to the climate change–migration nexus. Establish and operationalise an Integrated multi-hazard Early Warning, Information and Knowledge Management System at the national and county levels. Develop early warning, and anticipatory action and monitoring capacities for climate-related hazards tapping into relevant technologies and innovations in 32 counties and at national level by 2027 through operationalisation of the Kenya Anticipatory Action Strategy. Kenya Anticipatory Action Strategy operationalised. (strengthen the preparatory actions of participatory scenario and contingency planning). Establish Disaster Risk Management Emergency Operation Centres and linkage with National DRM Authority, NDOC, and other key state and non-state agencies. Establish Disaster Risk Management (DRM) Institutions and Centres of Excellence: Establish and promote DRM peer learning Centres of Excellence through creation of models in communities and learning institutions. Establish community-level resource centres for documentation and dissemination of DRM information. Strengthened of community-based peace committees, strategies and initiatives for conflict management and peace building in at least 23 drought-prone counties. County governments supported to strengthen the institutions for inter-communal conflict management at the county level.	No. of recipients of CIS No. of low-cost boarding facilities in pastoral areas developed No. of learning and health facilities in the ASALs connected to water supply No. of operational Integrated multi-hazard Early Warning, Information and Knowledge Management System No. of MoUs on data sharing No. of institutions trained on anticipatory action No. of data sharing MoUs signed No. of co-production forums and contingency planning forums conducted at county and national levels No. of users of Operational Geographic Information System (GIS) multi-hazard system platform and multi-hazard mobile app			

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
		Weekly/monthly/seasonal multi-hazard advisories from national to county to ward level No. of Emergency Operation Centres established No. of recipients of forest wildfire alerts, flood alerts, pest and disease alerts, droughts alerts No. of DRM institutions and Centres of Excellence established No. of DRM peer learning centres No. of community level resource centres established No. of community-based peace committees strengthened No. of county governments supported			
Improve the coordination and delivery of Disaster Risk Management	• Establish DRM Emergency Operation Centres and increase the number of Emergency Operation Centers (EOCs) from 7 to 25 and strengthen linkages between the national and county EOCs and other key state and non-state agencies. • Sustained capacity development of the 8 and monitor humanitarian regional hubs, displacement centres, transition centres, and evacuation centres and link to the relevant cluster counties for use during emergencies and disasters. • Continued strengthening of coordination frameworks and mechanisms for mainstreaming Disaster Risk Management at national and 32 counties levels as well as and increase community managed DRR committees (CMDRR) from 230 to 400. • Develop and maintain a robust information and knowledge management system to track climate resilience-building, response and recovery investments at the national level.	No. of EOCs established No. of CMDRR committees established			

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
	• Establish and maintain a database of all DRM stakeholders both at the national and county levels activities within the country including preparedness, response, impacts, and recovery measures (to know who's doing what where, when) 24 months into the implementation of the NCCAP 3. • Establish and operationalise an Integrated multi-hazard Early Warning and profiling information systems at national level linked with the 32 counties and establish an operational drought modelling, forecasting, preparedness, and response centre. • Strengthen use of climate information products in decision-making	Development of an information and knowledge management system Establishment of a DRM database Establishment of an Integrated multi-hazard Early Warning and profiling information system No. of institutions using climate products			
Incorporate human mobility aspect into County Disaster Risk Management Frameworks to prevent displacement to ensure protection of displaced population are addressed in five counties. **Develop one implementing guideline including standard operating procedures on shelter response aligning with the National Shelter Strategy.**	No. of counties adding human mobility aspect into County Disaster Risk Management Frameworks No. of implementing guideline of National Shelter Strategy	County government, Development partners, NDMA, SD ASALs SD ASALs, NDOC, NDMA, NDMU, development partners	County governments, vulnerable groups Vulnerable groups	GoK, development partners GoK, development partners	

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
Strengthen the climate risk financing instruments and mechanism.	• Operationalise the National Disaster Risk Management Fund to support other climate-related risks outside the provision of National Drought Emergency Fund (NDEF) within 12 months after the regulations are passed by parliament after the bill is passed and signed. • Review the National climate risk financing strategy to include strong component of risk transfers by 2027. • Awareness creation among local communities in 32 counties on the need to enrol in available climate risk transfer products by 2027 and build the capacity of ward level community structures on resource mobilisation and partnership.	Amounts of funding from Contingency Fund for climate-related disasters No. of strategies reviewed No. of persons taking up climate risk transfer products Payments through National Drought Emergency Fund	TNT&EP State departments		
Provide enabling environment to integrate climate risk management	• Ensure coherence between the National Development Plan and the Peace-building and Conflict Management Policy on climate security, in recognition of the wider impact of climate change on food, livelihoods, and water security, incorporating indigenous knowledge and existing arrangements. • Conduct four engagement forums with legislatures to enact the Disaster Risk Management Bill into law and operationalise within 24 months into the implementation of the NCCAP 3. • Establish the National Disaster Risk Management Authority within 18 months once the NDRMA Act bill is passed in parliament and signed to establish the National Disaster Risk Management Authority. • Undertake high-level advocacy and capacity building for policy makers in National Assembly, 32 Senate and County Executive Committees, County Assembly Disaster Committees to increase political goodwill, enhance allocation of county government resources to emergency responses, mainstream Disaster Risk Management approaches into sector plans at the national level and in CIDPs at the county levels to reduce risks and build more resilient societies, as well as to strengthen humanitarian and development actions. • Engage with the 32 county governments and 6 sectors (Water, Education, Agriculture and Livestock, Health, Peace and Security, and Special Programmes) at the national level to integrate mainstream DRM into policies, strategies and sector plans at both national and county levels. • Mainstream DRM approaches into sector plans at the national level and in CIDPs at the county levels to reduce risks and build more resilient societies, as well as to strengthen humanitarian and development actions.	Integration reports No. of recipients of CIS legal and policy frameworks developed National Disaster Bill enacted into law National Disaster Risk Management Authority formed National Disaster Risk Management Frameworks developed No. of counties domesticating the National Disaster Risk Management Frameworks	Ministry of Interior and National Administration (MINA), NDMA, KMD, TNT&EP, AG		

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
	• Develop and finalise the National Disaster Risk Management Frameworks and facilitate domestication in 47 counties by 2027. • Incorporate human mobility aspect into County Disaster Risk Management Frameworks to prevent displacement to ensure protection of displaced populations are addressed in five counties. • Facilitate gazettement of DRM coordination structures at both national and county levels with clear Terms of Reference. • Mainstream DRM into development plans, policies, strategies, and sector plans at all levels of government. • Integrate mobility and displacement into climate action strategies. • Develop and strengthen coordination frameworks and mechanisms for mainstreaming DRM at national and county levels as well as community managed DRR. • Mainstream issues of environmental conservation, climate change mitigation and adaptation, halt and reversal of deforestation, biodiversity loss and land degradation in both levels of government. • Convene a policy dialogue on a sustainable balance of land-use in rangelands (for pastoralists, agro-pastoralists, ranchers and conservationists), to determine the most sustainable range land-use model and to co-develop and implement robust grazing management plans, including contingency plans against catastrophic loss. • Integrate climate security into the National Peacebuilding and Conflict Management Policy and incorporate indigenous knowledge. • Develop and implement the early action protocols required to implement forecast-based financing.				
	Water harvesting and storage is enhanced in 23 ASAL counties. (see expected results under Climate Action 10: Water and the blue economy). Flood control measures enhance through development and maintenance of flood control infrastructure: • Construction of 70 km of additional dykes. • Maintenance of 100 km of existing dykes. • Construction of 20 check dams	No. of pans and dams constructed No of km constructed No. of check dams constructed No. of infrastructure maintained No. of WRUAs participating in training sessions	MoWI, National Water Harvesting & Storage Authority, county governments	Households, farmers, pastoralists,irrigation schemes, people living in floodplain and riverine areas	GoK

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
Strategic Objective: Increase food and nutrition security by enhancing productivity and resilience of the agricultural sector in as low-carbon manner as possible.					
National Indicators ● GDP growth of agricultural sector. ● Livestock deaths from drought/number of livestock slaughtered due to drought. ● Agricultural land under irrigation (hectare). GHG emissions in the agriculture sector.					
Enhance the uptake of climate-Smart agriculture technologies in crop production systems **Diversify livelihoods to adjust to a changing climate**	• Support capacity building of stakeholders on climate risk management in agro-food systems in 47 counties. • Strengthen and cascade agro-weather and climate information services to sub-counties in 47 counties, while tapping on essential local traditional knowledge, and co-production of climate information with communities. • Increase number of beneficiaries accessing index-based crop insurance from 1,600,000 to 3,500,000 out of which 30% are female and 10% youth. • Support 2,500,000 farmers to adopt new adaptive crop varieties out of which at least 30% will be female and 10% youth. • Increase farmers accessing sociallyinclusive appropriate input subsidies per year from 2,300,000 to 2,500,000 out of which at least 30% are female and 10% youth. • Support and link 100,000 farmers (at least 30% females and 10% youth) to access specialised markets for climate-smart produced produce/products (e.g. organically produced). • Promote the uptake of climate information in crop sub-sector for decision-making at national and county levels. • Promote the uptake of climate-oriented agricultural input subsidies and agricultural insurance in 47 counties.	• No. of counties with functioning climate information systems • No. of beneficiaries accessing CIS by sex and age • No. of farmers accessing/purchasing insurance by sex and age • No. of farmers accessing agricultural input subsidies that help to build adaptive capacity aggregated by sex and age • No. of farmers per specialised market aggregated by sex and age • No. of beneficiaries using agro-climate information services at all levels by sex and age - No. of farmers per subsidy type aggregated by sex and age - No. of insurance companies providing index-based insurance - No. of farmers accessing post-harvest technology aggregated by sex and age - Area under rainfed rice (ha) - % of lined canals in irrigation schemes - % of total rice area under efficient water resource management - Average % of post-harvest losses reduction - No. of MSMEs adopting post-harvest management technologies - % reduction in post-harvest losses	MOALD, KALRO, KFS, CBOs/NGOs, private sector investors, AFA, Disaster Risk Management Unit ICT providers	Farmers, private producers, cooperatives	GoK, DPs, county governments

6.2 Agriculture Food and Nutrition Security

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
	• Support 2 million farmers (out of which 30% are female and 10% youth) to adopt climate-smart post-harvest technologies (e.g., green energy powered cold storages, solar crop dryers, etc.). • Increase area under rain-fed rice system from 44,255 ha to 140,677 ha for enhanced resilience and productivity. • Increase production of rice under intermittent irrigation system by 100,000 ha. • Increase efficiency on water resource management in rice production from 50% to 90%. • Reduce climate-induced agricultural (pre- and post-harvest) losses from 40% to 15%. • Support 150 SMEs promoting post-harvest technologies in the crop sub-sector • 9,000 tonnes of climate-resilient crops included in the gazette-listed Strategic	- Type and volume of climate-smart food produce/products included in the strategic food reserve - No. of farmers contracted in the diversified food reserve strategy/offtake aggregated by sex and age - Area under rainfed rice • % increase in water management efficiency • % reduction in pre- and post-harvest losses			
Increase adoption of Sustainable Land Management (SLM)	Food reserves, and contract farmers and commercial off-takers for the targeted food commodities (sorghum, beans, millet, etc) at national and county levels			All Kenyans	GoK/ DPs
	Water harvesting and storage is enhanced in 23 ASAL counties (see expected results under Climate Action 3: Water and the blue economy). Flood control measures enhanced through development and maintenance of flood control infrastructure: • Construction of 70 km of additional dykes. • Maintenance of 100 km of existing dykes. • Construction of 20 check dams.	No. of pans and dams No. of km constructed No. of check dams constructed No. of infrastructure maintained No. of WRUAs participating in training sessions	MoWI, National Water Harvesting Storage Authority, county governments	Households, farmers, pastoralists, irrigation schemes	GoK

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
Increase adoption of Sustainable Land Management	• Increase area under SLM and restoration of degraded land • Increase area under integrated soil nutrient management by 2,500,000 ha. • Increase farm area under conservation agriculture from 53,200 ha to 100,000 ha incorporating minimum/no tillage. • Enhance adoption of soil and water conservation measures in 1,000,000 ha of farmland by 2,500,000 farmers of which at least 30% will be female and 10% youth. • Increase the agricultural land area under farm trees by 200,000 ha.	Area under integrated soil nutrient management in ha Area under conservation agriculture in ha No.of farmers by sex and age practicing conservation agriculture Area with enhanced soil and water conservation measure (ha) No. of farmers practicing enhanced soil and water conservation aggregated by sex and age Area (ha) of farmland under trees No. of farm trees established and grown	MOALD, MoWI, KALRO, KFS, ACN, NGOs, CSOs,	Farmer cooperatives, farmers	
Improve productivity in the livestock sector through the implementation of CSA interventions	• National livestock vaccination coverage increased from 13 million Tropical Livestock Units (TLUs) to 26 million TLUs per year in five years for 45 counties to enhance productivity gains in ruminant livestock (cattle, sheep, and goats). • 500,000 dairy farminghouseholds (HH), out of 1.8 million HH, supported to adopt technologies, innovations, and management practices (TIMPS[1]). • 1,000[2] farmer-facing SMEs (cooperatives and CBOs), with at least 30% women- and 10% youth-headed, supported to install milk coolers and meat chilling facilities. • 400,000 pastoral HH, with at least 30% women- and 10% youth-headed, adopt Livestock	No. of national livestock vaccination coverage increased No. of dairy farming households supported to adopt technologies, innovations, and management practices No. of farmer-facing SMEs supported to install milk coolers and meat chilling facilities No. of pastoral HH Adoption of LITS supports offtake No. of TLUs No. of operational grazing area plans gazetted No. of operational feed banks with stocks of conserved forages and locally available feeds, densified feed materials and drought feed supplements No. of pastoralist households adopting IBLI No. of operational LEZs	SDLD, SDARD, CGs SDLD SDLD,insurance providers, Kenya Development Corporation (KDC)	Farmers, pastoralists, FPOs Pastoralists, livestock farmers Farmers Farmers Pastoralists	GoK, DPs GoK, DPs GoK, DPs

[1]Quality feeds, precision feeding, breeding management and enhanced animal health for efficient dairy management.
[2]Post-harvest losses of animal source foods reduced from 15% to 7.5% through effective standards, food safety and Hazard Analysis and Critical Control Point (HACCP).

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
	Identification and Traceability system (LITS). • Adoption of LITS supports offtake 1,000,000 TLUs in 23 counties, to enhance access domestic and export livestock and livestock products markets. • Bachuma and Lamu Livestock Export Zone (LEZ) completed to support marketing to niche and export markets.		GoK	Pastoralists	GOK DPs KALRO GOK DPs GoK DPs
Enhance contribution of youth to food and nutrition security	• Ten youth led agri-hubs established to promote adoption of climate-smart agriculture practices. • 100,000 youth farmers across the country practicing climate-smart agriculture.	No. of youth-led hubs	MoALD, trade, private sector, NGOs, CSOs	Youth groups	GoK, DPs
Enabling (Policy)	Development/review/finalisation/operationalisation of climate resilient-related policies, strategies and regulations (Kenya Climate Smart Agriculture Strategy, of National Agricultural Mechanisation Policy, Kenya Climate Smart Agriculture Implementation Framework, Kenya Climate Smart Agriculture – multi-stakeholder platform, Strategic Plan 2022–2026, CSA-M&E online tool).	No. of climate-resilient related policies/strategies development reviewed/ finalised/operationalised			
Enabling climate finance	Support county agriculture sector stakeholders in ten counties at all levels to access climate finance for implementation of CSA through capacity building on prioritisation of actions and development of bankable proposals.	No. of actors capacity built in accessing climate finance No. of climate bankable proposals developed No. of stakeholders accessing climate finance	MoALD, Treasury, DPs, NGOs, CSA multi-stakeholder process	Counties, NGOs, farmer cooperatives	GoK (FLLoCA), DPs, counties

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
Strategic Objective: To strengthen the ability of forest and tree resources to respond to impacts of climate change, provide climate mitigation solutions and improve resilience of social systems across various landscapes.					
National Indicators ● Forest cover as a % of total land area. ● Tree cover as a % of total land area. ● Proportion of degraded lands as a % of total land area. ● GHG emissions in the LULUCF sector.					
Incentivise tree growing value chain enterprises	Enabling environment and incentives provided for 1,000 ha of commercial forestry enterprises and 300,000 ha of commercial forest plantation across the value chain. Develop a framework for forest long-term lease of public industrial plantations for greater productivity by 2027. Develop a comprehensive strategy to align tree growing initiatives with carbon market incentives by 2027.	No. of hectares of bamboo commercial forest established No. of hectares of commercial forest plantation established Framework for long-term lease of public industrial plantations Strategy to align tree growing initiatives with carbon market incentives	PPP, KEFRI, KFS, CGs, CBOS, NGOs	Private landowners, timber manufacturing industry	GoK DPs
	The production of high-quality tree seeds and seedlings at scale including by the private sector (women, youth, CFAs, nurseries) is incentivised.	1 billion metric tonnes of seeds 1 billion seedlings	KEFRI KFS	Youth, private landowners	GoK, DPs
Enhanced forest-based climate change research and technological development	• Access to high quality tree germplasm (both indigenous and fast-growing exotic species) for the changing agro-ecological zones and end market needs is improved. • Breeding drought tolerant tree species. • Generate a map for data on phenological species shift and species site matching. • Establishment of eight observatories in different agro-climatic zones for tracking impacts of climate change in the forest sector. • Refining cost-effective methodologies for biomass and carbon estimation in forest landscapes	Tree species improved (indigenous tree and dry land tree species) Data map on phenological species shift and species site matching. No. of observatories established No. of methodologies for biomass and carbon estimation in forest landscapes Policies implemented No. of tree-based forest solutions	KEFRI	Rangeland and wetlands inhabitants	GoK, DPs

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
Strategic Objective: Enhance the resilience of the blue economy, fisheries and the water sector ensuring adequate access to, and efficient use of, water for agriculture, manufacturing, domestic use, wildlife, and other uses.					
National Indicators ● Coverage of protected areas in relation to marine area. ● GDP growth through blue economy and fisheries development. ● National per capita fish consumption.					
Enhance sustainable blue economy and fisheries development	▪ Number of climate-smart cages for fish farming increased from 6,000 to 8,000. ▪ Number of fishponds increased from 11,300 to 25,000. ▪ Fish production from aquaculture increased from 27,000 MT to 50,000 MT. ▪ Increased marine fisheries production from 38,000 MT to 50,000 MT. ▪ Increased Lake Turkana fish landed from 17,000 MT to 30,000 MT. ▪ Number of fishers benefiting from social safety net interventions (insurance products, cash transfers and subsidies) increased from 9,496 to 20,600. ▪ Number of farmers using low-carbon aquaponics systems increased from 10 to 100. ▪ Ten fish landing sites and ten fish markets developed to reduce fish post-harvest losses. Establishment of cooperatives in fisheries and involve indigenous people and local communities: ▪ 445 cooperatives to be formed and operationalised to promote processing, marketing, and financial linkages. ▪ Adaptive research, to strengthen understanding of the adaptability of fish breeds that are tolerant in changing climatic conditions undertaken – Kabonyo Aquaculture and Research Centre of Excellence.	No. of climate-smart cages for fish farming No. of fishponds No. of fish in MT produced in aquaculture, inland and marine fisheries No. of fishers benefiting from social safety net interventions No. of farmers using low carbon aquaponics aquaculture system Fish landing sites and fish markets developed/ rehabilitated No. of cooperatives formed Kabonyo Aquaculture Research Centre of Excellence developed and operationalised	SDBEF, Kenya Fisheries Service (KeFS), KMFRI, Kenya Fish Marketing Authority (KFMA), KFIC, county governments, SDMA, private sector investors, CBOs, NGOs	Fisher communities, fish farmers	GoK, DP, PPP

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
	competitions on essays, creative arts, music festivals and poems.				
Enhance contribution of youth to forestry and wildlife	Establishment of 5,000 youth-owned tree nurseries.	No. of youth-owned tree nurseries	KFS	Youth, households, farmers, pastoralists	GoK, DPs
	Development and implementation of five streams of non-timber forest products by youth groups.	Streams of non-timber forest products	KFS, KEFRI	Youth, schools, tertiary institutes	GoK, DPs
	1,000 hectares of youth-led rehabilitation of 1,000 hectares of degraded mangrove forest.	Hectares of mangrove forest rehabilitated	KFS, KEFRI, KEMRI, KWS, MOTWH	Youth, conservation NGOs	GoK, DPs
Operationalise climate change responsive forest policies, regulations and standards	• Conduct countrywide annual campaigns to create awareness on existing policy and regulations relating to climate change in the forestry sector. • Support annual policy and regulation review and monitoring forums to identify and address gaps in climate change precipitated by emerging national and global issues for the sector • Develop/finalise policies and regulations on climate change adaptation for the forestry sector.	No. of annual campaigns No. of annual policy and regulation review and monitoring forums No. of policies developed	KFS, KEFRI, KEMRI, KWS, NEMA	County governments, youth, NGOs	GoK, DPs

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
Strategic Objective: Enhance the resilience of the blue economy, fisheries and the water sector ensuring adequate access to, and efficient use of, water for agriculture, manufacturing, domestic use, wildlife, and other uses.					
National Indicators ● Coverage of protected areas in relation to marine area. ● GDP growth through blue economy and fisheries development. ● National per capita fish consumption.					
Enhance sustainable blue economy and fisheries development	▪ Number of climate-smart cages for fish farming increased from 6,000 to 8,000. ▪ Number of fishponds increased from 11,300 to 25,000. ▪ Fish production from aquaculture increased from 27,000 MT to 50,000 MT. ▪ Increased marine fisheries production from 38,000 MT to 50,000 MT. ▪ Increased Lake Turkana fish landed from 17,000 MT to 30,000 MT. ▪ Number of fishers benefiting from social safety net interventions (insurance products, cash transfers and subsidies) increased from 9,496 to 20,600. ▪ Number of farmers using low-carbon aquaponics systems increased from 10 to 100. ▪ Ten fish landing sites and ten fish markets developed to reduce fish post-harvest losses. Establishment of cooperatives in fisheries and involve indigenous people and local communities: ▪ 445 cooperatives to be formed and operationalised to promote processing, marketing, and financial linkages. ▪ Adaptive research, to strengthen understanding of the adaptability of fish breeds that are tolerant in changing climatic conditions undertaken – Kabonyo Aquaculture and Research Centre of Excellence.	No. of climate-smart cages for fish farming No. of fishponds No. of fish in MT produced in aquaculture, inland and marine fisheries No. of fishers benefiting from social safety net interventions No. of farmers using low carbon aquaponics aquaculture system Fish landing sites and fish markets developed/ rehabilitated No. of cooperatives formed Kabonyo Aquaculture Research Centre of Excellence developed and operationalised	SDBEF, Kenya Fisheries Service (KeFS), KMFRI, Kenya Fish Marketing Authority (KFMA), KFIC, county governments, SDMA, private sector investors, CBOs, NGOs	Fisher communities, fish farmers	GoK, DP, PPP

6.3 Forestry

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
	• Implement existing policies on benefit sharing arrangements in the forestry sector. • Incorporate tree-based forestry solutions in the KFS app.				
Forest Research and Development	• Development of 100 forest research and allied natural resources technologies. • Incorporate a monitoring and evaluation tool to annually track the level of awareness of the science of climate change, mitigation and adaptation options, including, level of mainstreaming climate change into institutional curriculum. • Enhance collaboration between KFS and KMD through at least four meetings annually to strengthen meteorological and climate data to inform tree planting activities.	100 forest technologies to developed Monitoring and evaluation tracking tool No. of annual meetings	KEFRI,KMD	Conservation NGOs,CFAs	GoK, DPs
	Development of planting materials for difficult to propagate indigenous tree species.	75,000 planting materials	KEFRI, KFS	Farmers, CFAs	GoK, DPs
	Construction of 18 seed processing units.	18 seed centres	KEFRI	CFAs, youth, women	GoK DPs
	• Maintenance of 450 ha of seed sources and establishment of 36 ha of new seed sources. • Develop quarterly Information Education and Communication (IEC) materials (infographics, booklets, leaflets and guidelines, among others) on design and implementation of carbon projects. • Conduct annual Training of Trainers from MDAs and counties on climate change adaptation. • Train and engage women, youth and children on issues of	36 ha new seed sources and maintenance of 450 ha of existing seed sources Quarterly Information, Education and Communication materials No. of trainings No. of annual climate change-oriented competitions on essays, creative arts, music festivals, and poems	KEFRI	County governments, CFAs	GoK, DPs

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
	competitions on essays, creative arts, music festivals and poems.				
Enhance contribution of youth to forestry and wildlife	Establishment of 5,000 youth-owned tree nurseries.	No. of youth-owned tree nurseries	KFS	Youth, households, farmers, pastoralists	GoK, DPs
	Development and implementation of five streams of non-timber forest products by youth groups.	Streams of non-timber forest products	KFS, KEFRI	Youth, schools, tertiary institutes	GoK, DPs
	1,000 hectares of youth-led rehabilitation of 1,000 hectares of degraded mangrove forest.	Hectares of mangrove forest rehabilitated	KFS, KEFRI, KEMRI, KWS, MOTWH	Youth, conservation NGOs	GoK, DPs
Operationalise climate change responsive forest policies, regulations and standards	• Conduct countrywide annual campaigns to create awareness on existing policy and regulations relating to climate change in the forestry sector. • Support annual policy and regulation review and monitoring forums to identify and address gaps in climate change precipitated by emerging national and global issues for the sector • Develop/finalise policies and regulations on climate change adaptation for the forestry sector.	No. of annual campaigns No. of annual policy and regulation review and monitoring forums No. of policies developed	KFS, KEFRI, KEMRI, KWS, NEMA	County governments, youth, NGOs	GoK, DPs

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
Strategic Objective: Enhance the resilience of the blue economy, fisheries and the water sector ensuring adequate access to, and efficient use of, water for agriculture, manufacturing, domestic use, wildlife, and other uses.					
National Indicators ● Coverage of protected areas in relation to marine area. ● GDP growth through blue economy and fisheries development. ● National per capita fish consumption.					
Enhance sustainable blue economy and fisheries development	▪ Number of climate-smart cages for fish farming increased from 6,000 to 8,000. ▪ Number of fishponds increased from 11,300 to 25,000. ▪ Fish production from aquaculture increased from 27,000 MT to 50,000 MT. ▪ Increased marine fisheries production from 38,000 MT to 50,000 MT. ▪ Increased Lake Turkana fish landed from 17,000 MT to 30,000 MT. ▪ Number of fishers benefiting from social safety net interventions (insurance products, cash transfers and subsidies) increased from 9,496 to 20,600. ▪ Number of farmers using low-carbon aquaponics systems increased from 10 to 100. ▪ Ten fish landing sites and ten fish markets developed to reduce fish post-harvest losses. Establishment of cooperatives in fisheries and involve indigenous people and local communities: ▪ 445 cooperatives to be formed and operationalised to promote processing, marketing, and financial linkages. ▪ Adaptive research, to strengthen understanding of the adaptability of fish breeds that are tolerant in changing climatic conditions undertaken – Kabonyo Aquaculture and Research Centre of Excellence.	No. of climate-smart cages for fish farming No. of fishponds No. of fish in MT produced in aquaculture, inland and marine fisheries No. of fishers benefiting from social safety net interventions No. of farmers using low carbon aquaponics aquaculture system Fish landing sites and fish markets developed/ rehabilitated No. of cooperatives formed Kabonyo Aquaculture Research Centre of Excellence developed and operationalised	SDBEF, Kenya Fisheries Service (KeFS), KMFRI, Kenya Fish Marketing Authority (KFMA), KFIC, county governments, SDMA, private sector investors, CBOs, NGOs	Fisher communities, fish farmers	GoK, DP, PPP

6.4 Blue Economy and Fisheries

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
	▪ Development of Liwatoni Ultra-Modern Fishing Hub. ▪ Development of two fish processing plants (Lamu processing plant and Kaloko (in Turkana) processing plant). ▪ Coastal fisheries improved by increasing deep/offshore fishing fleet from 9 to 68. ▪ Seaweed farming is expanded (beyond Kwale county) to other coastal counties through, capacity building for 1,000 seaweed farmers. Development of marine and inland spatial plans. Restoration of mangroves, sea grass and coral reefs	Level of Liwatoni Ultra-Modern Hub developed Fish processing plants developed in Lamu and Kaloko- Turkana No. of acquired/ reflagged national fishing and merchant vessels/boats No. of seaweed farmers trained. No. of seaweeddrying racks constructed Marine and inland spatial plans developed Ha of mangroves and seagrass cover restored Area in ha of coral reefs restored			
Enhance contribution of youth to sustainable blue economy development	▪ 2,000 youth capacity built on fisheries and blue economy development. ▪ 1,000 youths trained on value addition in fisheries and blue economy.	No. of youth trained No. of youth-led initiatives fisheries and blue economy activities	SDBEF, KeFS, KMFRI, KFMA, KFIC, county governments, SDMA, private sector investors, CBOs, NGOs	Communities, youth	
Promote Integrated River Delta Planning and Management	• Support implementation of management plans to rationalise diversion and damming of rivers and flood control, and to ensure environmental flows are maintained.	No. of plans	State Department for Water and Sanitation, WRA		GoK, DPs
Promote Integrated Water Resource Management (IWRM) strategies to safeguard water quality	• Develop and implement IWRM for Tana and Athi basins by 2027. • Design and implement a plan for sustainable extraction of groundwater to control the problem of saltwater intrusion into 10 freshwater aquifers. • Promote suitable management strategies that protect water	No. of plans No. of aquifers	State Department for Water and Sanitation,WRA		GoK, DPs

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
	catchments and water supply in 10 aquifers.				
Enabling (Policy)	▪ Kenya Fisheries Policy finalised and implemented. ▪ National Blue Economy Strategy finalised and implemented. ▪ Aquaculture Policy finalised and implemented. ▪ National aquaculture guidelines on climate-smart standards for cage fish farming developed. ▪ Marine and inland spatial plans prepared.	No. of policies, strategies, and guidelines developed	SDBEF		
Enabling (Policy)	▪ Land Reclamation Policy and Bill approved and enacted. ▪ National Irrigation Master Plan and Investment Plan developed and implemented. ▪ National Land Reclamation Masterplan and Investment Plan developed and implemented. ▪ Irrigation and Drainage Management Information & Licensing System developed. ▪ Operationalisation of Water Act (No. 43 of 2016) and amendment Bill 2023 finalised: ● Proposed amendments on Public Private Partnerships in water harvesting and storage infrastructure (dams) approved and implemented. ● Amendment of the Act and enactment of regulations to fully operationalise the Water Tribunal. ▪ Water resources, water services, and water harvesting and storage regulations (2021) implemented. ▪ Rules and regulations of hydrologists regulation board developed and implemented. ▪ National Water Master Plan 2030 reviewed and updated to aid national/county water harvesting and storage infrastructure investments. ▪ National Lakes Management Strategy developed and implemented.	No. of developed policies No. of bills enacted No. of Irrigation Master Plans developed National Irrigation Sector Investment Plan developed	SDBEF, SDW&S, SDI, NIA		

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
Enabling (Technology)	▪ Support to develop, promote and transfer technologies to enhance value addition and product diversification for fish, fish feed and seaweed. ▪ Adaptive research to strengthen understanding of the adaptability of fish breeds that are tolerant in changing climatic conditions undertaken – Kabonyo Aquaculture and Research Centre of Excellence.	SDBEF			
Improve access to good quality water, increased sewerage coverage and onsite sanitation	Number of people and entities accessing good quality water for domestic, agricultural, and industrial use increased from 58% to 65% through: • Large-scale installation of water meters. • Regular inspection of water quality. For cities and urban areas, increase sewerage coverage from 31% (2022) to 40% by 2027 to cope with flash flood scenarios. National population with access to sanitation increased from 66% to 70% (sewer urban 4,539,176 and rural 1,527,875). Four climate-proofed holding stations constructed for sewer management in Nairobi, Kisumu, Garissa and Eldoret counties. Construct 3,000 sanitation facilities in water infrastructures (water pans).	No. of water projects No. of sanitation projects that assess climate impacts Percentage of population with water and sanitation services No. of sanitation facilities incorporated	State Department of Water and Sanitation, CGs	Household and industrial consumers Irrigation schemes Residents of ASALs	GoK DPs
Promote water efficiency (monitor, reduce, re-use, recycle and modelling)	Governance and accountability for water service providers enhanced in all counties. Create public awareness in 47 counties on the need to conserve water and change of attitude and behaviour on water use. Share of Non-Revenue Water (NRW) in all the counties reduced to less than 25% from 45%. Technology is utilised to manage water use through installation of 100 smart	% share of Non-Revenue Water Water Protection Unit in place No. of counties sensitised No. of intergovernmental agreements signed No. of research	State Department for Water and Sanitation, KEWI, WSTF, CGs, WRA, RCGW, KEWI, WSPs	Households, corporate buildings/business	GoK, DPs

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
	metres for domestic supply and irrigation. 50 research studies undertaken on water allocation plans to promote water use efficiency. Sensitisation of water consumers in all 47 counties undertaken to enhance water use efficiency and water resource management.	studies and innovations undertaken			
Increase gender- responsive affordable water harvesting-based livelihood resilience programmes	Promote deliberate gender responsive actions to improve participation of at least 30% women and youth in applying appropriate water harvesting technologies. Drilling, equipping and solarisation of 465 boreholes and installation of greenhouses managed by youth organisations and 4K clubs.	No. of water harvesting technologies No. of boreholes	State Department for Irrigation, State Department for Water and Sanitation, National Irrigation Authority, county governments	Women, youth	GoK DPs
Increase number of pro-poor water harvesting-based livelihood resilience programmes to enhance household water access, food security and boost groundwater recharge of the aquifers	▪ Establish at least 300,000 on-farm ponds in at least 15 counties for on-farm (in-situ) agricultural water harvesting. ▪ Support improved, water-harvesting-based livelihood systems on at least 60,000 ha through various methods of land reclamation. ▪ Support and strengthen local communities to protect at least five water catchment areas. ▪ Develop a water utility creditworthiness index as well as a financial instrument for adaptation.	No. of on-farm ponds No. of ha of land reclaimed No. of water catchment Index development progress	State Department for Irrigation, State Department for Water and Sanitation, NWHSA, WRA		GoK, DPs
Improve water access for wildlife in national parks and reserves	Map and identify sites for water harvesting and storage in the national parks and rangelands for the development of water harvesting infrastructures to cushion wildlife against droughts impacts, prevent wildlife–human water conflict and prevent community downstream against flood water from the parks (two reports).	No. of reports	KWS, State Department for Wildlife	Wildlife population	GoK, DPs
Enabling (Policy, research, capacity building, financing)	Develop policies and strategies that promote water harvesting, storm water management, water recycling and re-use by 2027. Conduct national awareness and	No. of developed policies No. of Bills enacted	State Department for Irrigation, State Department for Water and Sanitation		GoK, DPs

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
	education to increase uptake of recycled water for secondary water uses including watering flower beds, kitchen gardens to increase water use efficiency in urban areas. National sanitation policy approved. Implementation of Irrigation Act 2019: • County Irrigation Development Units established. • Irrigation Research, Innovation and Training Institute established. • Irrigation Licensing and Quality Assurance Unit operationalised. Land Reclamation Policy and Bill approved and enacted. National Irrigation Master Plan and National Irrigation Sector Investment Plan developed and implemented. Irrigation and Drainage Management Information and Licensing System developed. Operationalisation of Water Act (No. 43 of 2016) and Water Amendment Bill 2023 finalised. Water resources, water services and water harvesting and storage regulations (2023) implemented. National Water Master Plan 2030 reviewed and updated to aid national/county water harvesting and storage infrastructure investments. National Lakes Management Strategy developed and implemented.	No. of research institutions established Information system established No. of Irrigation Master Plans developed National Irrigation Sector Investment Plan developed			
Increase crop productivity through improved irrigation	Develop 228 community managed irrigation projects for an additional 6,880 ha. Expansion of existing irrigation schemes to command an additional 80,937 ha.	No. of community managed irrigation projects developed No. of existing irrigation schemes expanded	State Department for Irrigation, NIA, NWHSA, MOA&L	Households, farmers, farmer associations, irrigation schemes	GoK, DPs

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
	Develop 22 large-scale irrigation projects to realise an additional 161,065 ha. Increase area under irrigation from 268,711 ha in 2022 to 620,275 ha in 2027. Support farmer-led irrigation development initiative (FLID) for an additional 16,187.4 ha in partnership with the financial institutions for de-risking. Promote use of efficient irrigation technologies and practices among 20 Irrigation Water Association (IWUAs) in Irrigation Schemes. Capacity building on diversification of irrigated enterprises, water use rights and scheme governance among 20 Irrigation Water Association (IWUAs) in Irrigation Schemes.	No. of large-scale irrigation projects developed No. of hectares brought under irrigation No. of farmers linked Irrigation de-risking fund established No. of IWUAs formed and capacity built No. of farms adopting efficient irrigation technologies			
Increased on-farm water harvesting and storage, wastewater recycling and area under irrigation	Annual water harvesting and storage in ASALs increased by 25% from 16 million cubic metres (MCM) to 20 MCM, through small dams, trapezoidal bunds, semi-circular bunds, zai pits and water pans, and river drenching; and 700 m^3 through large multipurpose dams.	No. of water harvesting structures	Households and land users,farmers, pastoralist s, irrigation schemes		
Increase adoption of Sustainable Land Management (SLM)	Land degradation assessments undertaken, disseminated, and implemented: • Undertake, disseminate, and implement 35 land degradation assessments (LADAs) • Establishment of land degradation assessment centre. • Implement land reclamation programmes to reclaim 2,731.6 ha of degraded land in ten counties.	No. of reports No. of hectares of land reclaimed, rehabilitated and restored	State Department for Irrigation, county governments	Households and land users, farmers, pastoralist s, irrigation schemes	GoK
Enhance sustainable blue economy and fisheries development	▪ Number of climate-smart cages for fish farming increased from 6,000 to 8,000. ▪ Number of fishponds increased from 11,300 to 25,000.	No. of climate-smart cages for fish farming No. of fishponds	SDBEF, KeFS, KMFRI, KFMA, KFIC, county governments, SDMA, private sector investors, CBOs, NGOs	Fisher communities, fish farmers	GoK, DPs, PPPs

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
	▪ Fish production from aquaculture increased from 27,000 MT to 50,000 MT. ▪ Increased marine fisheries production from 38,000 MT to 50,000 MT. ▪ Increased Lake Turkana fish landed from 17,000 MT to 30,000 MT. ▪ Number of fishers benefiting from social safety net interventions (insurance products, cash transfers and subsidies) increased from 9,496 to 20,600. ▪ Number of farmers using low-carbon aquaponics systems increased from 10 to 100. ▪ Ten fish landing sites and Ten fish markets developed to reduce fish post-harvest losses. Establishment of cooperatives in fisheries and involve indigenous people and local communities: ▪ 445 cooperatives to be formed and operationalised to promote processing, marketing, and financial linkages. ▪ Adaptive research, to strengthen understanding of the adaptability of fish breeds that are tolerant in changing climatic conditions undertaken – Kabonyo Aquaculture and Research Centre of Excellence. ▪ Development of Liwatoni Ultra-Modern Fishing Hub. ▪ Development of two fish processing plants (Lamu processing plant and Kaloko (in Turkana) processing plant. ▪ Coastal fisheries improved by increasing deep/offshore fishing fleet from 9 to 68. ▪ Seaweed farming is expanded (beyond Kwale county) to other coastal counties. Through, capacity building for 1,000 seaweed farmers. Development of marine and inland spatial plans.	No. of fish in MT produced in aquaculture, inland and marine fisheries No. of fishers benefiting from social safety net interventions No. of farmers using low carbon aquaponics aquaculture system Fish landing sites and fish markets developed/ rehabilitated No. of cooperatives formed Kabonyo Aquaculture Research Centre of Excellence developed and operationalised Level of Liwatoni Ultra-Modern Hub developed Fish processing plants developed in Lamu and Kaloko- Turkana			

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
	Restoration of mangroves, sea grass and coral reefs.	No. of acquired/ reflagged national fishing and merchant vessels/boats No. of seaweed farmers trained No. of seaweed drying racks constructed Marine and inland spatial plans developed Hectares of mangroves and seagrass cover restored Area in hectares of coral reefs restored			
Enhance contribution of youth to sustainable blue economy development	▪ 2,000 youth capacity built on fisheries and blue economy development. ▪ 1,000 youth trained on value addition in fisheries and blue economy.	▪ No. of youth trained ▪ No. of youth-led initiatives fisheries and blue economy activities	SDBEF, KeFS, KMFRI, KFMA, KFIC, county governments, SDMA, private sector investors, CBOs, NGOs	Communities, youth	
Promote Integrated River Delta Planning and Management	Support implementation of two management plans to rationalise diversion and damming of rivers and flood control, and to ensure environmental flows are maintained.	No. of plans	State Department for Water and Sanitation, WRA		GoK, DPs
Promote Integrated Water Resource Management (IWRM) strategies to safeguard water quality	• Develop and implement IWRM for Tana and Athi basins by 2027. • Design and implement a plan for sustainable extraction of groundwater to control the problem of saltwater intrusion into ten freshwater aquifers. • Promote suitable management strategies that protect water catchments and water supply in ten aquifers.	No. of plans No. of aquifers	State Department for Water and Sanitation, WRA		GoK, DPs
Enabling (Policy)	▪ Kenya Fisheries Policy finalised and implemented.	No. of policies, strategies, and	SDBEF		

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
	▪ National Blue Economy Strategy finalised and implemented. ▪ Aquaculture Policy finalised and implemented. ▪ National aquaculture guidelines on climate-smart standards for cage fish farming developed. ▪ Marine and inland spatial plans prepared.	guidelines developed			
Enabling (Policy)	▪ Land Reclamation Policy and Bill approved and enacted. ▪ National Irrigation Master Plan and Investment Plan developed and implemented. ▪ National Land Reclamation Masterplan and Investment Plan developed and implemented. ▪ Irrigation and Drainage Management Information and Licensing System developed. ▪ Operationalisation of Water Act (No. 43 of 2016) and amendment Bill 2023 is finalised: ● Proposed amendments on Public Private Partnerships in water harvesting and storage infrastructure (dams) approved and implemented. ● Amendment of the Act and enactment of regulations to fully operationalise the Water Tribunal. ▪ Water resources, water services and water harvesting and storage regulations (2021) implemented. ▪ Rules and regulations of hydrologists regulation board developed and implemented. ▪ National Water Master Plan 2030 reviewed and updated to aid national/county water harvesting and storage infrastructure investments. ▪ National Lakes Management Strategy developed and implemented.	No. of developed policies No. of Bills enacted No. of Irrigation Master Plans developed National Irrigation Sector Investment Plan developed	SDBEF, SDW&S, SDI, NIA		
Enabling (Technology)	▪ Support to develop, promote and transfer technologies to enhance value addition and product diversification for fish, fish feed and seaweed.	SDBEF			

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
	▪ Adaptive research to strengthen understanding of the adaptability of fish breeds that are tolerant in changing climatic conditions undertaken – Kabonyo Aquaculture and Research Centre of Excellence.				

Sector	Actions	Expected Output(s)/ Outcomes	Key Performance Indicators	Responsible Agency	Target group	Source of funds
CCD	**Strategic Objective:** Mainstream climate change adaptation in the environment and climate change sector.					
	National Indicators:					
	Operationalise the *Climate Change Act № 11 of 2016*	Climate change coordination institutions functioning	No. of climate change coordinating institutions proposed in the *Climate Change Act 2016* operationalised No. of meetings of National Adaptation Coordination Committee	CCD		
	Review and update NAP	Adaptation actions updated	NAP reviewed and updated	CCD		
	Develop adaptation and resilience indicators	Adaptation and resilience indicators being tracked	Document in place detailing the adaptation and resilience indicators	CCD		
	Develop and operationalise an M&E system for adaptation	M&E system for adaptation functioning	Structures and systems in place for the adaptation M&E system	CCD		
	Develop subsidiary legislation on adaptation	Subsidiary legislation on adaptation being implemented	No. of instruments in place on subsidiary legislation on adaptation	CCD		
	Operationalisation of the National Climate Change Resource Centre and Portal	The National Climate Change Resource Centre and Portal functioning	Structures and systems in place for the National Climate Change Resource Centre and Portal	CCD		
	Operationalise the Climate Change Fund	The Climate Change Fund functioning	Structures and systems in place for the Climate Change Fund	CCD		
	Strengthening of the Climate Change Directorate and climate change units in the MCDAs	Climate Change Directorate and climate change units in the MCDAs functioning	Structures and systems in place for the Climate Change Directorate and climate change units in the MCDAs	CCD		
	Participate in negotiations on adaptation at the international level	Kenya uses experiences from the negotiations to improve national and county climate action processes	No. of negotiation forums Kenya participates in No. of participants attending the negotiations	CCD		
	Establish a platform for open and transparent stakeholder dialogue on climate finance	Platform for open and transparent stakeholder dialogue on climate finance functioning	Structures and systems in place for the open and transparent stakeholder dialogue on climate finance	CCD		
KMD	**Strategic Objective:** Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.					
	National Indicators:					
	Modernise KMD climate information systems and services	KMD climate information systems and services delivering improved climate information products: Precision, clarity and timeliness of downscaled climate early warning increased	Number, nature and type of inputs used to modernise KMD climate information services	KMD		
	Strengthen the provision of Climate Information Services (CIS) and Early Warning	Decisions being made are based on CIS and EW provided	Number and types of CIS and EW events and processes undertaken	KMD		

Sector	Actions	Expected Output(s)/ Outcomes	Key Performance Indicators	Responsible Agency	Target group	Source of funds
	Systems (EWS) that inform decision-making for governments, businesses and households					
	Develop County Climate Information Service Plans (CCISP)	Counties are implementing the CCISPs	No. of counties with CCISPs	KMD		
	Expand climate monitoring, data collection network and weather observing systems	KMD climate information systems and services delivering improved climate information products	Records of expansion done Physical facilities established	KMD		
	Strengthen the capacity of county meteorological directorates to improve CIS	CIS by county meteorological directorates improved	No. of counties with capacity of county meteorological directorates strengthened	KMD		
	Engage traditional weather forecasters and systems in national climate change adaptation initiatives through a partnership model by the traditional weather forecasters and the Kenya Meteorology Department	Provision and uptake of CIS improved	Number and type of collaboration and partnership events where traditional weather forecasters and systems are engaged in national climate change adaptation initiatives	KMD		
	Enhance integration of local/indigenous knowledge into Early Warning Systems to improve CIS providers network (CISPN)	Climate early warning and climate information services enhanced	Number and type of events used to improve networking and integration	KMD		
	Enhance participatory scenario planning with communities	Climate early warning and climate information services strengthened	No. of participatory scenario planning events done with communities	KMD KMD		
	Support the unpacking of meteorological language and the translation of downscaled climate information into Swahili and local languages		No. of events convened and no. of products released			
NEMA	**Strategic Objective:** Mainstream climate change adaptation in the environment sector.					
	National Indicators:					
	Monitor, report and enforce compliance with *Climate Change Act № 11 of 2016*	Reports of monitoring and enforcement	Compliance with *Climate Change Act № 11 of 2016* enforced	NEMA	GoK	
	Mainstream climate change and adaptation in Environmental Laws and regulations	Climate change risks and vulnerability assessments are mainstreamed into all forms of environmental assessments	● Mainstream climate change adaptation in environmental assessments ● Review the existing land-use guideline to incorporate climate change actions ● Conduct environmental research to generate climate change data	NEMA, Development partners	GoK, Development partners	

6.5 Cross-Cutting Actions (CCD, KMD, NEMA, KIRDI, CoG)

Sector	Actions	Expected Output(s)/ Outcomes	Key Performance Indicators	Responsible Agency	Target group	Source of funds
			● Train 20 staff on the development of bankable proposals to secure climate finance ● Target five bankable proposals on climate adaptation ● Enhance the capacity of NEMA to absorb and manage large funds from UNFCCC financing mechanism and other sources			
	Environmental research to generate climate change data	Climate change adaptation research conducted to generate data	▪ Capacity building of the stakeholders on the MRV tool ▪ Review the existing land-use guidelines to incorporate climate change actions ▪ Target at least five environmental research to generate climate change adaptation data ▪ Mobilisation of climate finance ▪ Formulate and train two NEMA staff on resource mobilisation for climate change research ▪ Conduct environmental/climate change risk and vulnerability mainstreaming to 300 environmental consultants/experts ▪ Develop the guidelines for mainstreaming climate change risks and vulnerability into environmental assessments	NEMA	GoK, Development partners	
	Environmental/climate change education and awareness	Incorporation of climate change education in learning	▪ No. of institutions trained on climate change, adaptation and mitigation ▪ Train 20 staff on climate change monitoring and reporting ▪ Conduct awareness on mainstreaming climate change risk and vulnerability into environmental assessments	NEMA	GoK	
KIRDI (for Science, Technology	**Strategic Objective:** Operationalise the *STI Act of 2013.*					
	National Indicators:					

Sector	Actions	Expected Output(s)/ Outcomes	Key Performance Indicators	Responsible Agency	Target group	Source of funds
and Innovation)	Update the country's technology needs assessment (TNA)	TNA updated	Updated TNA document in place	KIRDI		
	Support innovation and development of climate-smart technologies and capacity that promote climate-resilient development	Innovation and development of climate-smart technologies and capacity that promote climate-resilient development supported	Number and type of innovations supported	KIRDI		
	Support traditional food preservation technology particularly among the pastoralists who could keep meat for more than six months (marginalised groups)	Traditional food preservation technologies supported, particularly among the pastoralists	Number, nature and types of traditional food preservation technologies supported			
	Support innovation and development of appropriate technologies and capacity that promote climate-resilient development	Innovation and development of appropriate technologies and capacity that promote climate-resilient development supported	Number, nature and types of appropriate technologies innovated and developed Nature and types of capacity developed to promote climate resilient development			
	Promote development of locally available technologies in support of adaptation to climate change	Development of locally available technologies promoted in support of adaptation to climate change	Number, nature and types of locally available technologies whose development is promoted in support of adaptation to climate change			
	Promote and facilitate transfer of appropriate technologies to the most vulnerable	Transfer of appropriate technologies to the most vulnerable promoted and facilitated	Number, nature and types of appropriate technologies promoted and facilitated for transfer to the most vulnerable			
	Upscale (and protect) successful climate change technologies and innovations	Successful climate change technologies and innovations up scaled (and protected)	Number, nature and types of successful climate change technologies and innovations up scaled (and protected)			
	Ensure intellectual property laws protect climate innovation and technology	Climate innovation and technology protected through patents	Number, nature and types of climate innovation and technology protected through patents			
	Identify and promote climate change adaptation attributes in emerging technologies to support quality of life and overall socio-economic development	Climate change adaptation attributes are identified and promoted in emerging technologies to support quality of life and overall socio-economic development	Number, nature and types of climate change adaptation attributes identified and promoted in emerging technologies to support quality of life and overall socio-economic development			
	Popularise KIRDI as a CTCN NDE among the private sector, academia, CSOs/NGOs and within government departments	Reports of popularisation campaigns	Number and types of popularisation events/products	KIRDI		

Sector	Actions	Expected Output(s)/ Outcomes	Key Performance Indicators	Responsible Agency	Target group	Source of funds
	Operationalise fully the country's National Innovation System (NIS)	National Innovation System (NIS) fully operationalised	Structures and systems in place for the fully operationalised National Innovation System (NIS)	KIRDI		
CoG	**Strategic Objective**: Empower the vulnerable groups to reduce their vulnerability to climate change issues.					
	National Indicators:					
	Mainstreaming climate change adaptation in CIDPs and sector plans	Climate change adaptation mainstreamed in CIDPs and sector plans	No. of CIDPs and sector plans with climate change adaptation mainstreamed	CoG, county governments		
	Support counties to domesticate national policies, strategies, plans and programmes	Counties supported to domesticate national policies, strategies, plans and programmes	No. of counties supported to domesticate national policies, strategies, plans and programmes			
	Support counties to implement prioritised actions in the domesticated county policies, strategies, plans and programmes	Counties supported to implement prioritised actions in the domesticated county policies, strategies, plans and programmes	No. of counties supported to implement prioritised actions in the domesticated county policies, strategies, plans and programmes			

Tourism

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
Strategic Objective: Enhance the resilience of the tourist attractions and tourist infrastructure.					
National Indicators					
Develop and implement a Climate Change Adaptation Strategy for the tourism sector	Policy reviewed and implemented	No. of policies tabled and reviewed	SDT	General public	GoK, partners
	Tourism climate change resilient plan developed	Plan developed	SDT, Kenya Tourism Board (KTB)	General public	GoK, partners
	Tourism products diversified and promoted	No. of tourism products diversified	SDT, TPF	Tourism stakeholders	GoK, partners
	Sensitisation of stakeholders and capacity building in the tourism chain	No. of forums done	SDT, TPF, KTB	Tourism stakeholders	GoK, partners
Support climate-proofing of infrastructure in and/or leading to tourist attraction sites	Infrastructure developed to enable climate-proofing	No. of roads done	SDT, TPF, KTB	Tourism circuits	GoK, partners
	Develop and clear the existing drainage to reduce interruption of tourism by climate variability especially heavy rains	No. of drainage done	SDT, TPF, KTB	Tourism circuits	GoK, partners
	Early warning signs put in various sections of the tourism circuits	No. of signage done	SDT, TPF, KTB	Tourism circuits	GoK, partners
Promote sustainable ecosystem-based adaptation	Ecosystem management plans developed per tourism circuit	No. of ecosystem management plans	SDT, TPF, KTB	Tourism circuits	GoK, partners
	Water storage and water pans developed in various community conservancies and tourist destination run by MSMES	No. of water and water pans construction	SDT, TPF, KTB	Tourism circuits	GoK, partners

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
Strategic Objective: Enhance the resilience of wildlife, habitats and ecosystems that sustain wildlife. National Indicators • Population sizes and trends of key wildlife species. • Efforts to control and prevent the spread of invasive species. • Habitat quality including vegetation cover.					
Enhance the resilience of wildlife, habitats and their ecosystems	▪ Degraded wildlife habitats restored through reseeding of pasture in ASAL-protected areas is undertaken due to effects of climate change	Tree cover in protected areas increased by 30,000 ha	SDW, KWS	National and private reserves Farmers, private conservancies	GoK, DPs
	▪ Management and control of alien invasive species is undertaken in protected areas Review and implement the national strategy and action plan for the management of invasive species in Kenya's protected areas	30,000 ha of wildlife habitat restored annually and invasive species managed	SDW, KWS	-Conservation NGOs -National and private reserves	GoK, DPs
	Wildfires are controlled and managed	600 km fire breaks, 2 fire control centres, 2 fire stations and 3 watch towers constructed	SDW, KWS	Conservation NGOs, national and private reserves	GoK, DPs
	Climate-proofing wildlife control fences and other barriers in national parks and reserves and in strategic corridors and dispersal areas in community areas constructed or rehabilitated	3,000 km of wildlife control fences		National parks and reserves, households	GoK, DPs
	Rehabilitation and construction of five water pans, boreholes, and earth dams for provision of water for wildlife during drought	No. of water pans constructed and rehabilitated		National and private reserves	GoK, DPs
	Forage provided for wildlife for 100% feed supplementation during droughts	% of feed supplemented		Conservation NGOs, farmers	GoK, DPs
Wildlife training and research	Climate-proofing of Wildlife Research and Training Institute infrastructure at Naivasha	No. of infrastructure projects undertaken	Ministry of Tourism, Wildlife and Heritage (MOTWH), Wildlife Research & Training Institute (WRTI)	NGO conservancies	GoK, DPs
Wildlife conservation and management	Climate-proof construction and equipping of four wildlife research centres in Tsavo, Naivasha, Nyeri and Malindi	No. of wildlife research centres having climate-proof construction and equipped	MOTWH, WRTI		GoK, DPs

6.6 Tourism and Wildlife

Tourism

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
	Development of the National Integrated Wildlife Database	No. of reports	WRTI		GoK, DPs
	Restoring 1,000 ha of wildlife habitats	No. of wildlife habitats restored	KWS, KFS	National and private reserves/conservancies	GoK, DPs
	Climate-proof construction/rehabilitation/maintenance of 3,000 km fences in GoK parks and reserves	No. of fences rehabilitated in protected areas	KWS	National and private reserves, conservation NGOs	GoK, DPs
	Climate-proof 100 km, rehabilitate 200 km and maintain 7,200 km of the access roads in national parks and reserves; construct 49 airstrips in various parks; and maintain 150 km of runways and upgrade five runways to bitumen standards	No. of access roads climate-proofed	MOTWH, KWS, CGs	National and private reserves, conservation NGOs	GoK, DPs

Wildlife

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
Strategic Objective: Mainstream climate change adaptation into the health sector, and increase the resilience of human settlements, including through improved solid waste management in urban areas.					
National Indicators 1. Malaria incidence per 1,000 population. 2. Percentage of urban solid waste regularly collected and well managed. 3. Proportion of urban population living in slums, informal settlements, or inadequate housing.					
Enhance management of climate sensitive diseases	Health programmes, protocols, and guidance to identify and manage new CC related diseases and risks are developed and implemented Incidents of malaria and other vector-borne health conditions are reduced Community-level interventions on climate sensitive diseases and adaptation and mitigation through awareness and efficacious projects scaled-up	Programmes, protocols and guidance developed and implemented Malaria incidences per 1,000 population reduced to 225	MoH, county government, KNBS, partners	Marginalised communities, underprivileged women and children	GoK, partners county governments
Policy (Enabling)	Kenya Climate Change & Health Strategy 2023–2027 is implemented CoP 26 health commitments are implemented: Development of a Health National Adaptation Plan (HNAP) 2023–2027 A baseline assessment of GHG emissions of the health system and healthcare facilities (including supply chains) Develop an action plan setting out a roadmap to a sustainable low carbon health system (including supply chains) Implementation of WHO Air Pollution Roadmap. Development and implementation of a 5-year Household Air Pollution Strategy Guidelines for climate change resilient WASH infrastructure for health facilities, schools and communities developed and implemented Standards for biodegradable sanitary pads are developed and implemented Standards for disposal of sanitary pads for schools are developed and implemented	KCC&H strategy developed and implemented HNAP developed Baseline assessment carried out HAP strategy developed CC&H WASH guidelines developed Standards developed	MoH, county governments, partners Ministry of Education	Vulnerable communities, women, children, school-going girls	GoK, partners
	A training curriculum for Health Care Workers (HCWs) is developed: Training in climate change and health integrated in all health courses in all middle level colleges and universities in Kenya	Capacity developed	MoH, Ministry of Education, partners		GoK, partners

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
	The capacity of HCWs to develop proposals for funding from the Green Climate Fund (GCF) and other partners enhanced Community Health Volunteers are trained on clean cooking and health linkages	Community Health Workers trained			GoK, partners
Enabling	A National Climate-Health Research Network is developed and implemented Causal pathways between climate-change related exposures and health outcomes are understood	Research network created	MoH, partners, researchers		

6.7 Health

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
Strategic Objective: Improve resilience and adaptive capacities of urban areas by enforcing climate-proofed standards for housing and other urban infrastructure.					
National Indicators 1. Percentage of urban solid waste regularly collected and well managed. 2. Proportion of urban population living in slums, informal settlements or inadequate housing.					
Promotion of research in the use of sustainable low-cost housing building materials and technologies	45 constituency ABMT centres established	No. of centres established	SDHUD	Local communities and project affected persons (PAPs)	GoK
	13,000 new trainees on ABMT	No. of trainees	SDHUD	Local communities and project affected persons (PAPs)	GoK
	Regional ABMT centre completed	% completion	SDHUD	Local communities and project affected persons (PAPs)	GoK
Construction of affordable housing units	700,000 affordable units constructed	% completion	SDHUD, county governments, strategic partners	General public	GoK
	100,00 prison and police housing units constructed	% completion	SDHUD	Prison and Police officers	GoK
	200,000 social housing units constructed	% completion	SDHUD, county governments	People living in slums	GoK
Development and management of government pool houses	2,500 government estates refurbished, DC residential, county commissioners residential and state lodges	No. of units refurbished	SDHUD, MDAs Tenants		GoK
Facilitation of civil servant access, affordable and adequate housing	Granting of loans to civil servants to 1,150 beneficiaries	No. of mortgage beneficiary	SDHUD, mortgage financing institutions	Civil servants	GoK
Coordination and participation in national and international Forums on human settlements	15 reports prepared	No. of reports	SDHUD		GoK
Tenure regularisation in selected informal settlements	36,000 title deeds processed	No. of household with regularised tenure (titled)	KISIP	Local communities and project affected persons (PAPs)	
	100 prepared and approved plans	No. of plans approved	KISIP	Local communities and project affected persons (PAPs)	
Markets development	500 markets constructed	No. of modern markets constructed	SDHUD		GoK
Development of social infrastructure and public amenities	1,000 high mast flood lighting installed (SUD)	No. of high mast flood lighting	SDHUD		GoK
	200 additional classrooms constructed	No. of additional classrooms constructed	SDHUD		GoK
	50 ablution blocks constructed	No. of ablution blocks	SDHUD		GoK

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
		constructed			
	20 km sewer lines constructed	Km of sewer lines constructed	SDHUD		GoK
	10 social halls constructed	No. of social halls constructed	SDHUD		GoK
	5 dispensaries constructed	No. of dispensaries constructed	SDHUD		GoK
	20 footbridges constructed	No. of footbridges constructed	SDHUD		GoK
	10 boreholes dug	No. of boreholes dug	SDHUD		GoK
	50 kmaccess roads upgraded to bitumen standards	Km of access roads upgraded to bitumen standards	SDHUD		GoK
	Implementation of three projects to reduce vulnerability of the incoming rural–urban migrants to ensure access to safe housing and sustainable livelihoods.	No. of projects	SDHUD	Slum dwellers	Developm partners
Preparation of urban and metropolitan development plans and designs	Three metropolitan spatial development plans prepared	No. of metropolitan spatial plans prepared	SDHUD		GoK
	One metropolitan spatial plans reviewed	No. of metropolitan development plans reviewed	SDHUD		GoK
	Preparation of four integrated strategic development plans and designs	No. of strategic development plans and designs	SDHUD		GoK
Traffic management	100 plans and designs	No. of plans and designs/reports	SDHUD		GoK
	Construction of 600 m of Migori Bridge		SDHUD		GoK
	Construction of 25 km of Greater Eastern Bypass	km constructed	SDHUD		GoK
	Construction of 38.5 km of alternative traffic (bypass)	km constructed	SDHUD		GoK
	Construction of 83 km of NMTs	km constructed	SDHUD		GoK
Building Climate Resilience for the Urban Poor (BCRUP)	Climate risk and vulnerability assessment in ten municipalities conducted	No. of municipalities climate risk and vulnerability assessment conducted	SDHUD		GoK
	Ten climate resilient integrated urban spatial plans prepared	No. of climate resilient integrated urban spatial plans prepared	SDHUD		GoK
	Ten green solid waste management facilities constructed	No. of green solid waste management facilities constructed	SDHUD		GoK
	Footpaths (non-motorised transport) 10 km in ten municipalities constructed	km	SDHUD		GoK
	Street lighting: 1,000 poles installed	No. of poles installed	SDHUD		GoK
	30 km of storm water drainage in ten municipalities	No. of km	SDHUD		GoK
	30 km of sewerage system in ten municipalities constructed	km of sewerage systems	SDHUD		GoK

6.8 Human Settlements, Urban Development and Housing

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
Draft regulations for UACA	Reports	Reports	SDHUD		GoK
Establishment of municipalities	12 municipalities formed	Municipalities formed	SDHUD		GoK
Delineation of urban boundaries in counties	Report on 30 boundaries in counties	No. of boundaries	SDHUD		GoK

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
Strategic Objective: Enhance resilience of the water resources by ensuring adequate access to and efficient use of water for agriculture, manufacturing, domestic, wildlife and other uses.					
National Indicators ● Water storage per capita. ● Water coverage. ● Per capita water availability.					
Improve access to good quality water, increased sewerage coverage and onsite sanitation	Number of people and entities accessing good quality water for domestic, agricultural, and industrial use increased from 58% to 65% through: ● Large-scale installation of water meters ● Regular inspection of water quality For cities and urban areas increase sewerage coverage from 31% (2022) to 40% by 2027 to cope with flash flood scenarios National population with access to sanitation increased from 66% to 70% (sewer urban 4,539,176 and rural 1,527,875) Four climate-proofed holding stations constructed for sewer management in Nairobi, Kisumu, Garissa and Eldoret counties. Construct 3,000 sanitation facilities in water infrastructures (water pans).	No. of water projects No. of sanitation projects that assess climate impacts Percentage of population with water and sanitation services No. of sanitation facilities incorporated	State Department of Water and Sanitation, CGs	Household and industrial consumers, irrigation schemes, residents of ASALs	GoK, DPs
Promote water efficiency (monitor, reduce, re-use, recycle and modelling)	Governance and accountability for water service providers enhanced in all counties. Create public awareness in 47 counties on the need to conserve water and change of attitude and behaviour on water use Share of Non-Revenue Water (NRW) in all the counties reduced to less than 25% from 45%. Technology is utilised to manage water use through installation of 100 smart meters for domestic supply and irrigation 50 research studies undertaken on water allocation plans to promote water use efficiency Sensitisation of water consumers in all 47 counties undertaken to enhance water use efficiency and water resource management	% share of non-revenue water Water Protection Unit in place No. of counties sensitised No. of intergovernmental agreements signed No. of research studies and innovations undertaken	State Department for Water and Sanitation, Kenya Water Institute (KEWI), WSTF, CGs, WRA, Regional Centre on Groundwater Resources (RCGW), Water Safety Plans (WSPs)	Households, corporate buildings/business	GoK, DPs

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
Increase gender-responsive affordable water harvesting-based livelihood resilience programmes	Promote deliberate gender responsive actions to improve participation of at least 30% women and youth in applying appropriate water harvesting technologies Drilling, equipping and solarisation of 465 boreholes and installation of greenhouses managed by youth organisations and 4K clubs	No. of water harvesting technologies No. of boreholes	State Department for Irrigation, State Department for Water and Sanitation, National Irrigation Authority, county governments	Women, youth	GoK, DPs
Increase number of pro-poor water harvesting-based livelihood resilience programmes to enhance household water access, food security and boost groundwater recharge of the aquifers	▪ Establish at least 300,000 on-farm ponds in at least 15 counties for on-farm (in-situ) agricultural water harvesting ▪ Support improved, water harvesting-based livelihood systems on at least 60,000 ha through various methods of land reclamation ▪ Support and strengthen local communities to protect at least five water catchment areas ▪ Develop a water utility creditworthiness index as well as a financial instrument for adaptation	No. of on-farm ponds No. of ha No. of water catchment Index development progress	State Department for Irrigation, State Department for Water and Sanitation, NWHSA, WRA		GoK, DPs
Improve water access for wildlife in national parks and reserves	Map and identify sites for water harvesting and storage in the national parks and rangelands for the development of water harvesting infrastructures to cushion wildlife against droughts impacts, prevent animal–human water conflict and prevent community downstream against flood water from the parks (two reports)	No. of reports	KWS, State department for Wildlife	Wildlife population	GoK, DPs
Enabling (Policy, research, capacity building, financing)	Develop policies and strategies that promote water harvesting, storm water management, water recycling and re-use by 2027 Conduct national awareness and education to increase uptake of recycled water for secondary water uses including watering flower beds, kitchen gardens to increase water use efficiency in urban areas National Sanitation policy approved Implementation of Irrigation Act 2019: • County Irrigation Development Units established • Irrigation Research, Innovation and Training Institute established • Irrigation Licensing and Quality Assurance Unit operationalised	No. of developed policies No. of bills enacted Research institutions established Information system established No. of irrigation master plans developed National Irrigation Sector Investment Plan developed	State Department for Irrigation, State Department for Water and Sanitation		GoK DPs

6.9 Resilience of Water Resources & Infrastructure

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
	Land Reclamation Policy and Bill approved and enacted National Irrigation Master Plan and National Irrigation Sector Investment Plan developed and implemented Irrigation and Drainage Management Information and Licensing System developed Operationalisation of Water Act (No. 43 of 2016) and Water Amendment Bill 2023 finalised Water resources, water services and water harvesting and storage regulations (2023) implemented National Water Master Plan 2030 reviewed and updated to aid national/county water harvesting and storage infrastructure investments National Lakes Management Strategy developed and implemented				
Increase crop productivity through improved irrigation	Develop 228 community managed irrigation project for an additional 68,797 ha Expansion of existing irrigation schemes to command an additional 80,937 ha Develop 22 large-scale irrigation projects to realise an additional 161,064 ha Increase area under irrigation from 268,711 ha in 2022 to 620,274 ha in 2027 Support farmer-led irrigation development initiative (FLID) for an additional 16,187 ha in partnership with the financial institutions for de-risking Promote use of efficient irrigation technologies and practices among 20 Irrigation Water Association (IWUAs) in irrigation schemes Capacity building on diversification of irrigated enterprises, water use rights and scheme governance among 20 Irrigation Water Association (IWUAs) in irrigation schemes.	No. of community managed irrigation projects developed No. of existing irrigation schemes expanded No. of large-scale irrigation projects developed No. of ha brought under irrigation No. of farmers linked No. of irrigation de-risking fund established No. of IWUAs formed and capacity built No. of farms adopting efficient irrigation technologies	State Department for Irrigation, NIA, NWHSA, MOA&L	Households, farmers and farmer associations, member of irrigation schemes	GoK, DPs
Increased on-farm water harvesting and storage, wastewater recycling and area under irrigation	Annual water harvesting and storage in ASALs increased by 25% from 16 million cubic metres (MCM) to 20 MCM, through small dams, trapezoidal bunds, semi-circular	No. of water harvesting structures	Households and land users; Farmers and		

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
	bunds, zai pits and water pans, and river drenching; and 700 m^3 through large multipurpose dams		pastoralist s; Irrigation schemes		
Increase adoption of Sustainable Land Management (SLM)	Land degradation assessments undertaken, disseminated, and implemented: Undertake, disseminate, and implement 35 land degradation assessments (LADAs) Establishment of land degradation assessment centre Implement land reclamation programmes to reclaim 2,731 ha of degraded land in ten counties	No. of reports No. of ha of land reclaimed, rehabilitated and restored	State Department for Irrigation, county governments	Households and land users, farmers, pastoralist s, irrigation schemes	GoK

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
Strategic Objective: Promote energy and resource efficiency in the manufacturing sector.					
National Indicators 1. Number of manufacturing facilities adopting energy efficiency processes. 2. GHG emissions in the manufacturing sector.					
Enhanced energy efficiency	Implementation of Minimum Energy Performance Standards (MEPS): • SIx devices put under MEPS • Study on adoption and impact of MEPS conducted • Adoption of MEPS increased by an additional 20%	No. of MEPS adopted % of adaptation of MEPS	MoEP, KEBS, EPRA, KAM, KEPSA	Manufacturers, households	GoK, DPs
	Energy audits increased from the current 2,000 audits to at least 3,000 audits	No. of energy audits	MoEP, EPRA, KAM	Manufacturers, designated facilities	GoK, DPs, private sector
	50 cleaner production process optimisation audits	No. of process audits	MoEP, EPRA, KAM, KNCPC	Manufacturers & Designated Facilities	GoK, DPs, private sector
	Support 100 companies to map out their carbon footprint emissions	No. of assessments	KAM, KEPSA	Manufacturers	GoK, DPs, private sector
	Formation of Energy Service Companies (ESCOs) for increased implementation rates of audit recommendation among designated facilities from 50% to 75% of energy efficiency in the designated facilities	No. of ESCOs % implementation	MoEP, KPLC, EPRA, KAM, ESCOs	Manufacturers	GoK, DPs, private sector
Promote resource use efficiency and circular economy in industrial processes	Implementation of Extended Producer Responsibility (EPR) and formation of five Producer Responsibility Organisations (PRO)	No. of PROs formed	KAM, KEPSA	Manufacturers	Private sector
	Implementation of cleaner production mechanisms in industries	No. of green industrial parks/clusters	KNCPC, KIRDI, KAM, county governments	Manufacturers	Private sector
	Promote industrial symbiosis in 3 Special Economic Zones	No. of Special Economic Zones	KNCPC, KIRDI, KAM, county Governments	Manufacturers	
	Increase more buildings to certified to green building standards at least 30% of all projects to be certified	% of buildings	KGBS	Buildings	Private sector
Expansion on adaptation to green building design and construction	Increase more buildings to certified to green building standards at least 30% of all projects to be certified	% of buildings	KGBS	Buildings	Private sector

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
Strategic Objective: To enhance the electricity supply mix based on renewable energy that is resilient to climate change. Ensure an electricity supply mix that is based mainly on renewable energy, is resilient to climate change, and promotes energy efficiency and, encourage transition to clean cooking to reduce the emission of greenhouse gases and household air pollution.					
National Indicators ▪ Share of renewable energy in the total electricity generation mix. ▪ Percentage of households using clean cooking fuels and technologies. ▪ Percentage of freight moved by rail.					
Promote clean, affordable, and quality alternative renewable energy sources	Energy centres increased from 16 to 47 for increased dissemination of renewable energy technologies	No. of centres	MoEP, KENGEN REREC, Kenya Power	Local communities	GoK
	- Alternative energy for electricity generation - Alternative energy and technologies for clean cooking: 195 energy efficient charcoal kilns developed, 1,500/year biogas digesters (from bioenergy strategy action plan); Waste to energy (briquettes) and institutions ethanol production plants, small hydro plants, biofuel plants, wind masts, and data loggers, ethanol production plants, clean cooking solutions Develop a national clean cooking strategy	No. of alternative technologies Enabling policy developed	MoEP		GoK, development partners
	589 MW new renewables developed, including:	MW installed	KenGen, IPPs, GDC	KTDA, citizens,residents	GoK
	Geothermal (208 MW) and prioritised as baseload generation that is climate-resilient				GoK
	▪ Solar – 174 MW				KenGen, development partners, IPPs
	▪ Wind – 161 MW				KenGen, development partners, IPPs
	▪ Two biofuel plants developed for value chain addition by the private sector	No. of biofuel plants	Citizens, residents	Citizens, residents	GoK
Enhance power network expansion and improvement, as well as last mile electricity access in both on-grid and off-grid areas	▪ 2.3 million additional customers	No. of customers	Kenya Power, REREC	Citizens, residents	GoK, Kenya Power, development partners
	▪ 30,000 public facilities	No. of public facilities	Kenya Power, REREC	Citizens, residents	GoK, Kenya Power, development partners
	▪ 90,000 transformers installed and maximised	No. of transformers	Kenya Power, REREC	Citizens, residents	GoK, Kenya Power, development partners
	▪ 75,000 lanterns installed under the Public Lighting Project	No. of lanterns	Kenya Power, REREC, county governments	Citizens, residents	GoK, Kenya Power,

6.10 Manufacturing

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
					development partners
	▪ 200 solar powered mini-grids developed in off-grid areas	No. of minigrids	MoEP, REREC	Citizens, residents	GoK, development partners, private sector
	▪ 50,473 standalone systems installed	No. of systems	MoEP, REREC	Citizens, residents	GoK, development partners, private sector
	▪ Transmission grid expanded by 2,930 km	No. of km	KETRACO	Citizens, residents	GoK, development partners, private sector
	▪ Losses in electricity transmission and distribution reduced from 23% to 16.5%	% losses	Ketraco, Kenya Power, REREC	Citizens, residents	GoK, development partners
Promote clean cooking fuels and technologies	▪ About 75% of households have adopted modern cooking energy services (LPG, e-cooking, biogas, and bioethanol)	% of households	MoEP, REREC, KIRDI	Citizens, residents	GoK, development partners
	▪ 23% (3,450,000 households) of Kenya households cooking with improved cooking (biomass) solutions	% of households	MoEP, REREC, KIRDI	Citizens, residents	GoK, development partners
	Subsidised mwananchi gas project implemented in Nairobi and its environs for urban and peri-urban households	No. of households	SDoP	Citizens, residents	GoK, development partners
	Global cooking Coalition (GECCO) implemented to have electricity as a primary cooking fuel for additional 10% of the population of Kenya by 2030	% level	MoEP, REREC	Citizens, residents	GoK, development partners
	5,000 public secondary schools transition to LPG Installation of the infrastructure 2-ton LPG storage bullet and piping from bullet to gas burners and the gas burners Training and capacity building on use and risk management	No. of schools	MoEP, REREC, EPRA	Citizens, residents	GoK, development partners
	Production of non-forest biomass fuel briquettes such as agricultural waste, sawdust and human waste through youth-led programmes increased	No. of youth-led programmes	Private players	Citizens, residents	GoK, development partners, private sector
Promote geothermal energy for alternative use	The Menengai grain dryer Is commercialised	Grain dryer commercialised	GoK, GDC	Industries	GoK, development

6.11 Energy

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
	Steam and brine supplied to industries in the KenGen Green Energy Park	Steam and brine supplied	KenGen	Industries	GoK, development partners
Climate-proofing energy infrastructure	50% of new poles either concrete or eco-poles	% of poles	Kenya Power	Citizens, residents	GoK, development partners, private sector
	2,500 hectares of water catchment areas conserved and rehabilitated by protecting the areas feeding hydro-generation reservoirs	No. of hectares	Kenya Power, KENGEN	Citizens, residents	GoK, development partners, private sector
	Existing hydropower plants optimised, and water management and conservation improved:	% Optimisation	MoEP, KENGEN	Citizens, residents	KenGen
	Raising of Masinga Dam by to enhance capacity storage capacity:		MoEP, KENGEN	Citizens, residents	KenGen
	Conduct Environmental Social Impact Assessment	Environmental Social Impact Assessment Report	MoEP, KENGEN	Citizens, residents	KenGen
	Resettlement Action Plan	RAP	MoEP, KENGEN	Citizens, residents	KenGen
	Detailed feasibility study and designs	Feasibility Study report	MoEP, KENGEN	Citizens, residents	KenGen
	Enhance dam capacity	% capacity increased	MoEP, KENGEN	Citizens, residents	KenGen

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
Strategic Objective: Establish efficient, safe world-class transport systems and logistic services that can withstand the projected impacts of climate change. Ensure an electricity supply mix that is based mainly on renewable energy, is resilient to climate change, and promotes energy efficiency and, encourage transition to clean cooking to reduce demand for fuelwood.					
National Indicators: • Percentage of freight moved by rail instead of by road. • Expansion of NMT infrastructure • Expansion of Bus Rapid Transportation infrastructure. • Implementation of e-mobility options to boost efficiency and reduce GHG emissions from transport sector. • GHG emissions in the transport sector.					
Reduce traffic congestion	Intelligent Transport Systems (ITS) including Traffic Management Centre (TMC) designed and implemented – 81 junctions	No. of junctions	KURA/Ministry of Roads and Transport	Citizens, residents	GoK
	70 km of the Bus Rapid Transit (BRT) for Nairobi Metropolitan Area (BRT design, infrastructure, equipping and operation)	No. of km	NaMATA, sDoT	Citizens, residents	GoK, development partners
	Matatu operations/public transport operations upgraded through fleet upgrading	% upgrade	Private operators, Amata		GoK, development partners
Efficient public transport operations	Intermodal connectivity for rail, road, air and NMT improved:	% improvement	MoR&T, all transport and road agencies	Citizens, residents	GoK, development partners
	Improved transportation to and from airports and rail stations (e.g., BRT and rail connection to the JKIA, BRT connection to the commuter rail, commuter rail line to JKIA)			Citizens, residents	GoK, development partners
	Commuter rail in cities (including in Nairobi and Mombasa) expanded – 52 km	No of km	KRC, sDoT	Citizens, residents	GoK, development partners
	Increase number of passengers using commuter rail from 3.1 million to 6 million	No. of passengers	KRC, sDoT	Citizens, residents	GoK, development partners
Develop, improvement Non-Motorised Transport (NMT) facilities	500 km of NMT (walkways, cycle lanes) designed, constructed, and maintained	No. of km	KURA, KeRRA, KeNHA, counties	Citizens, residents	GoK, donors
Transition to Electric mobility to improve air quality	Electric vehicles deployed:				
	1000 electric buses	No. of e-buses	MoRT, MITI, private sector, MoEP, county governments, NaMATA	Citizens, residents	Private sector
	50 Government of Kenya passenger cars	No. of E-GK	MoRT, MITI, private sector, MoEP, county governments, NaMATA	Citizens, residents	GoK, development partners

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
	Electric vehicle charging infrastructure deployed	No. of public charging stations	MoRT, MITI, private sector, MoEP, county governments, NaMATA	Citizens, residents	GoK, development partners
	Local manufacture and use of electric vehicles including 2- and 3-wheelers promoted	No. of assembly plants	MoRT, MITI, private sector, MoEP, county governments, NaMATA	Citizens, residents	GoK, development partners
	Standards for electric/hybrid vehicles in Kenya developed and implemented	No. of standards	MoRT, MITI, private sector, MoEP, county governments, NaMATA	Citizens, residents	GoK, development partners
Climate-proofed sustainable transportation systems	Climate-proofing of roads, including through:				
	5,000 km of road climate proofed	No. of km	KURA, KeRRA, KeNHA, counties	Citizens, residents	GoK, development partners
	Pavement design, drainage structures and use of sustainable materials undertaken	No. of designs	KURA, KeRRA, KeNHA, counties	Citizens, residents	GoK, development partners
	Green road corridors (landscaping and tree planting and growing)	No. of corridors	KURA, KeRRA, KeNHA, counties	Citizens, residents	GoK, development partners
Improve rail sector contribution to environmental sustainability and climate change resilience	Extension of SGR from Naivasha – Kisumu – Malaba: Naivasha –Kisumu 2B (262 km)	No. of km	Kenya Railways, SDoT, KRA, KRC KPA, cargo operators, county governments, PPP	Citizens, residents	GoK, development partners
	Kisumu – Malaba 2C (107 km)	No. of km	Kenya Railways, SDoT, KRA, KRC KPA, cargo operators, county governments, PPP	Citizens, residents	GoK, development partners
	30% freight shifted from road to rail	% freight	Kenya Railways, SDoT, KRA, KRC KPA, cargo operators, county Governments, PPP	Citizens, residents	GoK, development partners
	Increase long distance passengers from 2.5 million to 2.8 million	No. of passengers	Kenya Railways, SDoT, KRA, KRC KPA, cargo operators, county governments, PPP	Citizens, residents	GoK, development partners
	Development of integrated climate-resilient rail cities (Eldoret and Nairobi)	No. of rail cities	Kenya Railways, SDoT, KRA, KRC KPA, cargo operators, county governments, PPP	Citizens, residents	GoK, development partners

6.12 Transport and Infrastructure

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
	Modernisation, upgrading and rehabilitation of the meter gauge railway system	No. of modern stations	Kenya Railways, SDoT, KRA, KRC KPA, cargo operators, county governments, PPP	Citizens, residents	GoK, development partners
	Construction of 20 stations in Nairobi	No. of stations	Kenya Railways, SDoT, KRA, KRC KPA, cargo operators, county governments, PPP	Citizens, residents	
	Modernisation of railway fleet: locomotives, wagons, Diesel Multiple Units (DMUs)	No. of rolling stock	Kenya Railways, SDoT, KRA, KRC KPA, cargo operators, county governments, PPP	Citizens, residents	GoK
	Development of cooling logistics for movement of fresh produce through railway and sea	No. of cold stores/centres/facilities No. of plug in points at all ICDs No. of wagons with cold facilities	Kenya Railways, SDoT, KRA, KRC KPA, cargo operators, county governments, PPP	Citizens, residents	GoK, development partners
	Greening rail corridors	No. of greened rail corridors	Kenya Railways, SDoT, KRA, KRC KPA, cargo operators, county governments, PPP	Citizens, residents	GoK
Explore alternative propulsion technologies	Promote adoption of energy efficient technologies and uptake of low carbon fuels for vessels operating in Kenya waters, e.g., green hydrogen, nitrogen and ammonia	No. of vessels using alternate fuels	KMA, private operators	Citizens, residents	GoK, development partners
Greening and climate-proofing airport infrastructure to facilitate efficient aviation operations	Modern terminal buildings with natural light, smart lighting, more parking spaces for aircrafts, solar panels, fixed electric ground power units constructed at JKIA	% level	GoK, development partners	Citizens, residents	KAA, AFD
	JKIA runway upgraded to reduce occupancy time	% level	GoK, development partners	Citizens, residents	KAA, AFD
	Solar power plants installed at JKIA and other major airports to reduce grid energy demand	No. of solar power plants	GoK, development partners	Citizens, residents	KAA, AFD
	Rainwater harvesting implemented at international airports through development of infrastructure:		GoK, development partners	Citizens, residents	KAA, AFD
	15 million litres of rainwater harvested at JKIA	No. of litres harvested	GoK, development partners	Citizens, residents	KAA, AFD
	8 million litres rainwater harvested at Moi International Airport	No. of litres harvested	GoK, development partners	Citizens, residents	KAA, AFD
Improve air sector contribution to environmental sustainability and climate change resilience	Air traffic management enhanced through:				
	Modernisation of aircraft fleet through purchase of 3 Q400 Series	No. of modern fleet acquired	748 ASL, KAA, KCAA, ANSP	Citizens, residents	Private sector
	Acquire aircrafts with more fuel-efficient engines – 8 ERJ145 and *ERJ135 aircrafts to replace the ageing 18 Dash-8	No. of modern fleet acquired	ALS, KAA, KCAA, ANSP	Citizens, residents	Private sector

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
	Implementation of *Carbon Offsetting and Reduction Scheme for International Aviation* (*CORSIA*) and report to ICAO	% implementation and timely reports to CCD and ICAO	KQ, ASTRAL AVIATION, air operators, KCAA	Citizens, residents	Private sector
	Development of Sustainable Aviation Fuels (SAF) with lower life cycle CO_2 emissions and capacity building	Production, distribution, utilisation and piloting of green hydrogen reduction of aviation carbon emission	Ministry ofEnergy, MoPetroleum, MoTransport, Treasury KAA, KCAA, KPC, EPRA, OMC(s), air carriers	Citizens, residents	GOK, OMCs, EU, WB
	Implementation of measures to ensure efficient pre-departure planning and arrival planning (departure management (DMAN) and arrival management (AMAN)	% level	ANSP, KAA, KCAA, air operators, KMD	Citizens, residents	KCAA, ANSP, KMD
Improve maritime sustainability and decarbonisation	Increasing the number of water buses as a means of transport from five	No. of water buses	Private operators, maritime agencies	Citizens, residents	GoK, development partners
	Domestication and implementation of Annex 6 of the International Convention for the Prevention of Pollution from Ships	Annex 6 domesticated and % level of implementation	MoBE, Mort, maritime agencies	Citizens, residents	GoK, development partners
	Installation of shore power at the Port of Mombasa, including determination whether to use solar or wind power (berth 1)	%	SDoT, KPA	Citizens, residents	GoK, development partners
	E-Mobility Policy and requisite frameworks developed and implemented	E-mobility policy and frameworks	MoRT, relevant players	Citizens, residents	GoK, development partners

Priority Actions	Expected Outputs Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
Strategic Objective: Empower men, women, men, children, orphans, persons with disabilities, the marginalised, minorities and people displaced as a result of climate change to reduce their vulnerability to climate change issues.					
National Indicators: • Number of gender-responsive planning and implementation for the ATAR. • Number of climate change policies that reflect a commitment to gender equality at all levels. • 3. Gender is institutionalised through gender committees and/or gender units.					
Strengthen the adaptive capacity of vulnerable groups*	A National Gender and Climate Change Action Plan (2023–2027) developed and all counties supported to implement it	· National Gender and Climate Change Action Plan (2023–2027) · No. of counties supported to implement the National Gender and Climate Change Action Plan (2023–2027)	State Department of Gender, CD	Vulnerable groups	GoK, DP
	A gender analysis of the climate change impacts and vulnerabilities conducted and findings disseminated in ten hotspot counties	A national report on Gender and Climate Change Hotspot Mapping in Kenya No. of counties where the findings of the hotspot mapping report is disseminated	State Department- of Gender, DP, CSOs	Vulnerable groups	GoK, DP
	500 officers in MDAC and other organisations capacity built to mainstream gender in sectoral climate change policies, plans, programmes and projects	No. of women and men capacity built to mainstream gender in sectoral climate change policies, plans, programmes and projects	State Department of. Gender, CCD	Vulnerable groups	GoK, DP
	2,500 women entrepreneurs' capacity built on sustainable agriculture and renewable energy in at least 22 counties	No. of women entrepreneurs capacity built on sustainable agriculture and renewable energy No. of counties in which women and men have been capacity built	State Department of. Gender, State Department of Crop Development, Ministry of Energy	Vulnerable groups	GoK, DP
	Kenya's position on gender and climate change negotiations articulated in four regional and UNFCCC conferences	No. of meetings participated in on gender and climate change negotiations	State Department of Gender, CCD	Vulnerable groups	GoK, DP
	Climate Change Funds easily accessed by vulnerable groups in 22 counties	No. of women and men capacity built on Climate Change Funds No. of counties in which women and men have been capacity built	State Department of Gender, National Treasury	Vulnerable groups	GoK, DP
	1,000 migrants and other people in vulnerable situations supported to contribute to the green transition by equipping them with the skills to adapt to climate change	No. of migrants and people from the host communities supported	State Department of Gender, Ministry of Interior, State Department of Labour, NEMA, IOM, UN Women	Migrants, host communities	GoK, DP

Priority Actions	Expected Outputs Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
Strengthen resilience of vulnerable groups to climate change disasters and risks	Institutions and organisations at national and county level supported to strengthen their gendered Disaster Risk Reduction (DRR) interventions in 23 counties	No. of institutions and organisations supported at national and county level on gendered Disaster Risk Reduction (DRR)	State Department of Gender, NDMA	Vulnerable groups	GoK, DP
Strengthen peace-building and resolution of climate change induced conflicts	Kenya National Action Plan on UNSCR 1325 on Women, Peace and Security III (2024–2028) developed and disseminated in all counties	Kenya National Action Plan on UNSCR 1325 on Women, Peace and Security III (2024–2028) No. of counties in which the Action Plan is disseminated	State Department of Gender	Vulnerable groups	GoK, DP
	All counties supported to develop county specific Action Plans on UNSCR 1325 on Women, Peace and Security (2024–2028)	No. of counties with county specific Actions Plans on Women, Peace and Security	State Department of Gender	Vulnerable groups	GoK, DP
	Vulnerable groups (Women, youth and PWDs) included in county committees on peace and security	No. of women and men sensitised on peace and security No. of counties with gender inclusive committees on peace and security	State Departement of Gender, State Department of Interior	Vulnerable groups	GoK, DP
Strengthen the adaptive capacity of vulnerable groups	Adaptive capacity of vulnerable groups strengthened	▪ 2,733,669 number of elderly orphans and vulnerable children and persons with disabilities to cover upscaled	State Department for Social Protection	Older persons, orphans, vulnerable children, PWDs	GoK
	Rights and welfare of persons with disabilities promoted and protected	▪ 190,000 number of persons with disabilities registered and issued with disability cards	State Department for Social Protection, NCPWD	PWDs	GoK, developme nt partners
		920 number of PWDs trained in market-oriented skills for self-reliance	SDf SP, NCPWD	PWDs	GoK, developme nt partners
		1,160 number of PWDs self-help groups supported with cash transfers for economic empowerment	SDf SP, NCPWD	PWDs	GoK, developme nt partners
		650 PWD graduates from VRCs supported with start-up capital and tools of trade	SDf SP, NCPWD	PWDs	GoK, developme nt partners
		13,500 persons with albinism supported for eye and skin care through provision of sunscreen lotions	SDf SP, NCPWD	PWDs	GoK, developme nt partners
Support the strengthening of	Resilience of communities in drought-prone areas strengthened	No. of pregnant women in five drought prone counties of Kitui,	SDf SP, UNICEF	Pregnant women	GoK, UNICEF

6.13 6.13 Gender, and Vulnerable Groups

Priority Actions	Expected Outputs Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
resilience of communities in drought-prone areas		Kilifi, Marsabit, West Pokot and Turkana supported with nutritional cash transfer			
		No. of children under 2 years in five drought prone counties of Kitui, Kilifi, Marsabit, West Pokot and Turkana supported with nutritional cash transfer	SDf SP, UNICEF	Children under 2 years	GoK, UNICEF

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
Strategic Objective: Children and youth rights are safeguarded from the impacts of climate change including through active and continuous involvement in climate action and related policy and decision-making.					
National Indicators • School completion rates. • No. of children attending school from highly disadvantaged areas. • Proportion of national and local DRR and climate policies and actions that integrate child-specific interventions. • Proportion of children and youth that have access to climate and environment education and are prepared for and resilient to disasters and climate change impacts. • Growth of financial investment and resources in DRR and climate change adaptation measures centred on children and youth and their communities.					
Build capacity of children and youth on climate change and risk management education and practice	Increased focus on mainstreaming climate change in teaching and dissemination through skills-based curriculum At least 16 counties have child-sensitive risk management plans that address risks related to education challenges in extreme climate shocks At least 22,300 vulnerable children able to access school education in areas highly disadvantaged by extreme climate events Increased climate change and risk management education and practice	No. of counties with child sensitive risk management plans No. of children accessing school from highly disadvantaged areas	MoE, NACONEK University, development partners, CCD, MoEF, Social Protection, Ministry of Education, county governments, NDMA, NDMU	Children, youth	GoK, private sector, CSOs, development partners
Build the capacity of children and youth on climate action	At least 100,000 children and youth taking climate action through schools, arts, competitions, among others	No. of children engaged in climate actions in schools	MECCF, Ministry of Education	Children, youth	GoK, CSOs, development partners
Development of inclusive policies, frameworks and strategies for integration of youth in climate action	A national strategy developed to engage children and youth across the country on climate change actions	Strategy document	MOYAS, MoE, County Assemblies National Assembly, CSOs, development partners	Youth, children	GoK, CSOs, private sector, academia, development partners
	Annual youth and policy makers dialogue/*kikao* on matters climate change during the National Youth Week	No. of dialogues held			
	County youth and children forums on climate-related policy making processes in all counties	No. of county forums held Youth and child friendly/ sensitive policies			
	Youth inclusion in decision-making and in designing climate action programmes and projects by conducting ten polls (two per year)	No. of polls conducted			
Build youth capacities for climate action through training and skills development in climate issues	At least two capacity building tools for youth in matters of climate change by 2025	No. of tools developed	MOYAS, MOE, TVET, universities, CCD, development partners	Youth and children	GoK, CSOs, private sector, academia, development partners
	Online classes on climate action in all counties (in the Youth Empowerment Centres (YECs))	No. of classes held in YECs			
	Webinars/seminars and workshops to educate youth on climate change and	No. of webinars No. of workshops			

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
	adaptation strategies in all counties. (participatory approaches)	No. of seminars No. of youth (disaggregated by sex)			
	470 youth groups trained in development of bankable climate change proposals	No. of youth groups trained			
	350 youth development officers trained on integration of climate change adaptation in youth programming	At least 350 youth officers trained			
	Reorient curricula in training to include learning outcomes that actualise green workforce (green graduates)				
	Equip educators with competencies for green jobs	No. of educators trained			
	Mainstreaming of climate issues in curriculum at all learning levels				
	Extracurricular programmes for climate action	No. of extracurricular programmes			
	Environmental and climate action clubs/societies for art, music drama and science including eco schools programmes	No. of clubs, societies			
Enhance youth access to finance for climate action	250 youth groups provided with resources for locally-led climate adaptation, disaster risk reduction and/or mitigation measures	No. of youth groups funded	MOYAS, MoEF, MoICT, KENIA, KICD, NITA, TVETA university, MoE, CCD, civil society organizations, private sector, development partners	Youth	GoK Civil Society Organizations, Private Sector Development Partners
	100,000 (30% female) youth access climate change funding through various funding mechanisms	No. of youth funded Climate focused products in government affirmative funds			
	Climate Change Knowledge portal with inclusion of a platform with information on climate finance and opportunities and initiatives for youth by 2025	Functional portal			
	20% of climate financing within the country dedicated for youth-led climate change adaptation actions	% of funds allocated for youth-led climate change adaptation actions			
Support youth innovations in climate change interventions towards entrepreneurship and creation of green jobs	County youth innovation hubs to promote youth innovations and research on climate change	No. of innovation hubs	Ministry of Youth Affairs, KIRDI, MoEF, KICD, NITA, TVETA university, MoE, CCD, NEMA, civil society organizations, private	Youth, children	GoK Development Partners CSOs
	100 youth eco-based technologies and innovations scaled up across the country	No. of innovations scaled up			
	Annual youth innovation challenge and award programme on climate change interventions by 2024	Guidelines Programme pipelined in GoK budget			

6.14 Youth and Children

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
			sector, development partners		
	40 exhibitions/bazaars for youth to showcase their innovations in climate change interventions	No. of exhibitions/bazaars			
	23,500 youth trained on waste management and conversion towards green entrepreneurship and job creation	No. of youth sensitised			
Advocacy/lobbying for intergenerational equity	At least two national conferences/summits/conventions to advocate for integration of youth in climate action agenda	No. of national conferences/summits held	MOYAS, CCD, COG, county governments, CBOs, FBOs, CSOs, media	Youth, children	GoK CSOs Development Partners Media
	Five media campaigns to advocate for intergenerational equity and governments commitment to climate action	No. of campaigns held			
	47 youth and county leadership dialogues on matters climate change	No. of dialogues held			
	47 community intergenerational engagements to facilitate intergenerational knowledge transfer on climate issues	No. of engagements			
	1,000 youth participate in local, regional and international climate change summits/conventions/conferences	No. of youth participating in conferences/conventions			
	Engage youth to create spaces to make their voices heard at global, national and local level climate change platforms (may include CoPs, NAPs, planning local action plans, etc.)				
	Engage with faith-based organisations. Youth to develop strategy to integrate climate action into their activities	No. of strategies developed by FBOs			
Youth volunteerism and community service	4,700 youth/children engaged in tree planting/growing	No. of youth /children engaged	MOYAS, MOE, KFS, F& CC, NDOC	Youth, children	GoK CSOs Development Partners
	4,700 youth/children engaged in community clean ups	No. of youth/children engaged			
	Identification and recognition of 94 youth climate champions/ambassadors	No. of champions			
	Integration of Youth in County Disaster Response Teams (YDRT) with a representation in the County DRM Coordination unit	No. of youth engaged			
	Development of community outreach youth-driven programmes to foster youth collaboration with communities	No. of programs implemented			

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
	Establish knowledge sharing hub for data and lessons learnt sharing experience and knowledge management				

Priority Actions	Expected Output(s) / Outcomes	Key Performance Indicators	Responsible Agency	Targeted Groups	Source of funds
Strategic Objective: Increased engagement of indigenous peoples Issues in climate change adaptation planning and implementation.					
National Indicators:					
Inclusion and meaningful participation of indigenous peoples in climate change planning Citizen consultation and participation in planning and decision-making processes is in the heart of the Kenyan constitution, 2010 however many indigenous communities continue to face exclusion from decision-making processes, often lacking recognition and institutional support	- Effective and inclusive consultations at all levels and in all the respective stages and phases of climate actions, as well as the Free, Prior and Informed Consent of indigenous peoples, especially at the local and sub-national levels - Improve the involvement of communities in forest and wildlife conservation				
Securing land tenure system of indigenous people The country's REDD+ strategy recognises marginalised/indigenous communities as strategic rightsholders (on public and communal land) who must be proactivelyengaged in forest conservation, management and in access to benefits and calls for their integration in decision-making arrangements	- Increased recognition of communal land tenure as a key element in the actions in addressing climate change - Improve communities' knowledge on the blue economy and benefits coming from it - Benefit sharing with indigenous peoples conserving water from resources related to the blue economy				
Integration of human rights-based approach in climate change actions It is important to examine the issue of indigenous peoples and climate change from a human rights perspective, given that, at the international level, the rights of indigenous peoples have been recognised and the links between climate change and human rights have been clearly established. The Paris Agreement, has for example underscored the need to protect human rights, including the rights of indigenous peoples in all climate change actions	Respect to human rights in the implementation of climate change strategies				
Pre-emptive and responsive actions to climate change Most of the existing responsive actions to climate change in IPs territories are more reactive	- Budgeting for pre-emptive and responsive climate change actions, e.g., hay banks at the location level - Fund for livestock off take in pastoral lands before drought swipes all the livestock away				
Integration of indigenous knowledge in climate change actions Promotion and capacity building in indigenous knowledge systems (National Adaptation Plan 2016, p. 31)	- Integrating indigenous knowledge in weather forecasting - Increase food and nutrition security by enhancing productivity and resilience of the agricultural sector				

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
Strategic Objective 1: To increase financial investment related to integrated climate adaptation and peace-building.					
National indicators: • Number of community conflicts in ASAL lands. • Number of deaths per annum from community conflicts. • Number of IDPs.					
Develop ready-to-finance integrated interventions with dual climate change adaptation and peace-building.	Interventions integrated with climate change adaptation and peace-building	No. of interventions with climate adaptation and peace-building	Ministry of Interior, Ministry of Environment	All Kenyans	GoK, private sector, developme nt partners
Establish inclusive, conflict-sensitive climate financing models	Inclusive and conflict-sensitive climate financing models	No. of inclusive climate financing models	Ministry of Interior, Ministry of Environment	Vulnerable groups, all Kenyans	GoK, private sector
Integrate climate security into National Policy for Peace-building and Conflict Management and ensure it aligns to local county peace and conflict policies	Reviewed National Policy for Peace-building and Conflict Management to integrate climate security	Presence of climate security in National Policy for Peace-building and Conflict Management	Ministry of Interior	All Kenyans	GoK
Develop climate adaptation strategies and programmes for climate induced migrants, host communities and IDPs in alignment with national and sub-national strategies, that provide sustainable livelihoods solutions	Climate adaptation strategies for climate induced migrants and IDPs	No. of climate induced migrants, host communities and IDPs with alternative livelihoods	Ministry of Interior, Ministry of Foreign Affairs, Ministry of Environment	Climate induced migrants, host communities and IDPs	GoK, private sector, NGOs
Integrate community rights in natural resource and ecosystem management (e.g., pasture and water) to reduce resource-based conflicts	Registered community lands Resource sharing strategies	No. of registered community lands No. of resource-based conflicts	Ministry of Lands, Ministry of Interior, Ministry of Environment	Community landowners, i.e., pastoralists like the Maasai	GoK, CSOs, NGOs
Strategic Objective 2: Expand, consolidate and share knowledge on climate security in Kenya.					
National Indicators: ▪ Number of research outputs with indigenous knowledge. ▪ Number of climate security curriculums, training and awareness programmes. ▪ Number of county climate security profiles. ▪ Number of community sensitisation forums. ▪ Number of climate security working groups.					
Document and leverage indigenous and traditional experience and knowledge in areas prone to emerging climate-related security risks to co-produce knowledge	Documented indigenous knowledge in form of research outputs, i.e., reports	No. of research outputs with indigenous knowledge	Ministry of Interior, Ministry of sports, culture and heritage	Indigenous groups	GoK, Private Sector

6.15 Indigenous People

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
Undertake research to assist in prioritising efforts and investments, and to re-orient the focus of the country's climate security agenda	Counties climate security profiles	No. of counties with climate security profiles	Ministry of Interior, Ministry of Environment	All Kenyans	CSOs, GoK
Create an active and inclusive community of practice or working groups on climate security by leveraging existing multi-stakeholder platforms or creating new spaces	Climate security working groups Comprehensive multi-sectoral and multi-stakeholder frameworks	No. of climate security working groups No. of multi-stakeholder frameworks	Ministry of Interior, Ministry of Environment	All Kenyans	Private sector, GoK
Strengthen capacity building for NGAO officers and other security agencies to ensure knowledge sharing processes through training	National Climate Security training curriculum Climate security trainings	No. of climate security curriculums No. of trainings and workshops No. of awareness programmes	Ministry of Interior, Ministry of Public Service	All Kenyans	GoK, private sector
Strategic Objective 3: Enhance climate security into early warning AI decision support tools (DSST) to strengthen climate resilience of local communities.					
National Indicators: ▪ Number of persons displaced by floods.					
Integrate climate security and indigenous knowledge into AI early warning systems	AI early warning systems integrated with indigenous knowledge Efficient early warning systems reaching target populations	No. of integrated early warning systems No. of people receiving early warning messages	Ministry of Interior	All Kenyans	GoK, private sector
Strategic objective 4: Strengthen interstate and intrastate collaboration on trans-boundary climate security					
National Indicators: ▪ Number of extradition policies. ▪ Number of transhumance protocols. ▪ Number of joint committees between national and county governments. ▪ Number of border management trainings.					
Improve coordination mechanism and strengthen policies between counties and national government, and between national and regional partners on borderland states, on collective bargaining on climate finance, disarmament policies, transhumance, and human and livestock security	- Regional transhumance protocols - Extradition policies - Strong national and county cooperation	- No. of extradition policies - No. of transhumance protocols - No. of joint committees between national and county governments	Ministry of Interior	All Kenyans	GoK, private sector

6.16 Climate Security

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
Strategic Objective 5: Facilitate inter-ethnic engagement and dependence through collaboration for natural resource management.					
National Indicators: ▪ Number of resource-based conflicts. ▪ Number of deaths caused by conflicts. ▪ Number of youths involved in landscape restoration programmes.					
Create synergy between traditional/ informal conflict resolution mechanisms and formal government	Climate security integrated into alternative dispute resolution policies	- No. of conflicts resolved - No. of deaths caused by conflicts	Ministry of Interior	All Kenyans	GoK, private sector
Implement landscape restoration programmes that engage young people in climate conflict hotspots	Restored landscapes	- No. of restored landscapes - No. of youth involved in landscape restoration programmes - No. of resource-based conflicts	Ministry of Interior, Ministry of Youth	Youth	GoK, private sector
Formalise an inter-ethnic collaborative resource management association and/or agreements	Inter-ethnic resource-sharing agreements	No. of inter-ethnic resource-based conflicts	Ministry of Interior	All Kenyans	GoK

Actions	Expected Output(s) /Outcomes	Key Performance Indicators	Responsible Agency	Target groups	Source of funds
Strategic Objective: Strengthening land governance for climate change adaptation, mitigation, and resilience.					
Coordinated and harmonised development on land	National and county spatial maps	▪ Prepare and implement a National Spatial Plan and 47 County Spatial Plans (CSPs) ▪ A National Marine Spatial/Inland Plan ▪ A National Airspace Masterplan ▪ A National Physical and Land-Use Development Plan ▪ Ten inter-county physical and land-use plan – ecologically sensitive areas, wildlife/human/livestock corridors ▪ Local physical and land use development plans per county ▪ 20 community land-use plans	Planned land-use	MoLPWHUD, 47 county governments, CoG, professional bodies, academia, NLC, local communities, development partners	
Secure land tenure and land rights	Establish community land management committees Increase land to be owned/co-owned by women from 5% to 20% No. of community land registered	▪ No. of public land reserved ▪ A national public land inventory in place ▪ 23 community land inventories ▪ 23 community land registration units ▪ Register all community land ▪ Establish community land management committees ▪ Increase land to be owned/co-owned by women	Strengthening of the land tenure and land rights	MoLPWHUD, 47 county governments, CoG, professional bodies, academia, NLC, local communities, development partners	
Mainstreaming climate change in land administration and management	No. of climate-smart condition incorporated in land ownership document issued No. of ecologically sensitive areas mapped and reclaimed	Land ownership documents issued with climate-smart conditions Ecologically sensitive areas mapped and secured Ecologically sensitive areas reclaimed and restored	Climate-smart condition incorporated in land ownership document issued Mapping of ecological sensitive areas	MoLPWHUD, 47 county governments, CoG, professional bodies, academia, NLC, local communities, development partners	
Establish a land information management system	Development of land information management system	Functional land information management system	Improved land information management	MoLPWHUD, 47 county governments, CoG, professional bodies, academia, NLC, local communities, development partners	
Increased resilience from land-based disasters	No. of disaster-prone areas	Disaster-prone areas mapped and inventoried	Reduction of losses during disaster	NEMA, WRA, KWTA, KFS, MoLPWHUD, NLC, MDACs, communities, non-state actors, development partners	

Actions	Expected Output(s) /Outcomes	Key Performance Indicators	Responsible Agency	Target groups	Source of funds
Reduced land fragmentation and subdivision	No. of counties with zoning and development control policies Review of land policy Review of agricultural Policy/Act	▪ Land consolidation policy ▪ 47 county governments zoning and development control policies/standards and guidelines ▪ Maximum and minimum land policy ▪ Review of agricultural Policy/Act to address land fragmentation of food baskets in the country ▪ Mobilising goodwill and champions for sustainable land management	Reduced land fragmentation and subdivision	MoLPWHUD, 47 county governments, CoG, professional bodies, academia, NLC, local communities, development partners	
Reduced and elimination of land contamination (oil spills, heavy metal poisoning, excessive farm chemicals)	No. of surveillance by the state and communities No. of smart/sustainable agriculture adopted by farmers	▪ Enforcement of regulations on land contamination ▪ Continuous and active surveillance by the state and communities ▪ Regulating vehicle-washing zones ▪ Climate-smart/sustainable agriculture	Management of land contamination	MoLPWHUD, 47 county governments, CoG, professional bodies, academia, NLC, local communities, development partners	
Ethics and Integrity on land		Curriculum integration in land ethics Sensitisation and trainings on ethical and moral standards on land governance Enhancement of whistle blowing and witness protection policy		MoLPWHUD, 47 county governments, CoG, professional bodies, academia, NLC, local communities, development partners	
Sustainable land and land-use change	No. of policies on land-use reviewed	Review of land-use policy and land policy Implementation of physical and land-use plans Regulations of change of use through development control and enforcement of plans Land capability and suitability Citizenry participation and alertness in land-use planning Retooling land professionals Strengthening the land professional bodies Land-use/cover monitoring status report	Sustainable land	MoLPWHUD, 47 county governments, CoG, professional bodies, academia, NLC, local communities, development partners	

6.17 Sustainable Land Management

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
Strategic Objective: Reduced risks to communities, livelihoods and infrastructure resulting from climate-related disasters and enhance institutional preparedness and response.					
National Indicators 1. Number of deaths, missing persons and directly affected persons attributed to drought. 2. Number of vulnerable members of society supported through cash transfers to reduce shocks and impacts resulting from the effects of climate change. 3. Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national strategies.					
Increase the number of households and entities benefiting from devolved adaptive services	• Beneficiaries of social protection mechanisms, and other safeguards under the Hunger Safety Net Programme increased from 101,800 to 132,000 (30% women and 10% youth) in eight ASAL counties for regular cash transfer beneficiaries. • An additional 200,000 households through drought-shock responsive scalability targeting those who may slide to the very poorest households as a result of loss of limited livelihood assets due to drought. • Beneficiaries under the National Safety Net Programme increased from 1,082,000 in 2022 to 1,972,000 by 2027. • Expand best-practice social protection mechanisms (adaptive social safety nets), and measures to poor and vulnerable people countrywide by June 2027.	Number of beneficiaries of social protection mechanisms (food and cash transfers) Number of households receiving benefit from Hunger Net Safety Programme	NDMA	Vulnerable groups	GoK
Improve the ability of people to cope with disasters	Develop dedicated capacities in 10 health facilities in 32 counties to enhance access to health services during emergency response, including prepositioning of requisite medical and non-medical supplies by 2027. Development of hides and skins tannery in four pastoral clusters of (Kajiado and Narok, Turkana and Baringo, Marsabit, Samburu and Isiolo, and Mandera, Wajir, Garissa and Tana River). Develop storage infrastructure to reduce post-harvest losses. Strengthen the integration of indigenous knowledge into climate information through facilitating community weather observers among others. Improve drought early warning systems, including the promotion of people-centred systems at the national and county levels. Number of recipients of climate information services who use the information in their risk management decisions increased from 1,000,000 to 2,000,000. Design and implement low-cost boarding facilities in pastoral areas.	No. of health facilities whose capacities are enhanced No. of hides and skins tanneries developed No. of storage infrastructure developed No. of integration reports No. of early warning systems developed	KMD, NDMA, National Disaster Management Unit (NDMU), MoALD, Kenya Agriculture and Livestock Research Organization (KALRO), Ministry of Health (MoH), Ministry of Water, Sanitation and Irrigation (Kenya Red Cross Society (KRCS), The National Treasury and Economic Planning (TNT&EP), MoH MoH, Attorney General (AG), NDMA	All Kenyans All Kenyans	GoK/ DPs

Priority Actions	Expected Outputs/ Outcomes	Key Performance Indicators	Responsible Institutions	Targeted Groups	Source of Funds
Strategic Objective: Reduced risks to communities, livelihoods and infrastructure resulting from climate-related disasters and enhance institutional preparedness and response.					
National Indicators 1. Number of deaths, missing persons and directly affected persons attributed to drought. 2. Number of vulnerable members of society supported through cash transfers to reduce shocks and impacts resulting from the effects of climate change. 3. Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national strategies.					
Increase the number of households and entities benefiting from devolved adaptive services	• Beneficiaries of social protection mechanisms, and other safeguards under the Hunger Safety Net Programme increased from 101,800 to 132,000 (30% women and 10% youth) in eight ASAL counties for regular cash transfer beneficiaries. • An additional 200,000 households through drought-shock responsive scalability targeting those who may slide to the very poorest households as a result of loss of limited livelihood assets due to drought. • Beneficiaries under the National Safety Net Programme increased from 1,082,000 in 2022 to 1,972,000 by 2027. • Expand best-practice social protection mechanisms (adaptive social safety nets), and measures to poor and vulnerable people countrywide by June 2027.	Number of beneficiaries of social protection mechanisms (food and cash transfers) Number of households receiving benefit from Hunger Net Safety Programme	NDMA	Vulnerable groups	GoK
Improve the ability of people to cope with disasters	Develop dedicated capacities in 10 health facilities in 32 counties to enhance access to health services during emergency response, including prepositioning of requisite medical and non-medical supplies by 2027. Development of hides and skins tannery in four pastoral clusters of (Kajiado and Narok, Turkana and Baringo, Marsabit, Samburu and Isiolo, and Mandera, Wajir, Garissa and Tana River).	No. of health facilities whose capacities are enhanced	KMD, NDMA, National Disaster Management Unit (NDMU), MoALD, Kenya Agriculture and Livestock Research Organization (KALRO), Ministry of Health (MoH), Ministry of Water, Sanitation and Irrigation (Kenya Red Cross Society (KRCS), The National Treasury and Economic Planning (TNT&EP), MoH	All Kenyans	GoK/ DPs
	Develop storage infrastructure to reduce post-harvest losses. Strengthen the integration of indigenous knowledge into climate information through facilitating community weather observers among others. Improve drought early warning systems, including the promotion of people-centred systems at the national and county levels. Number of recipients of climate information services who use the information in their risk management decisions increased from 1,000,000 to 2,000,000. Design and implement low-cost boarding facilities in pastoral areas.	No. of hides and skins tanneries developed No. of storage infrastructure developed No. of integration reports No. of early warning systems developed	MoH, Attorney General (AG), NDMA	All Kenyans	



Chapter 07

GLOSSARY OF TERMS USED IN THE REPORT

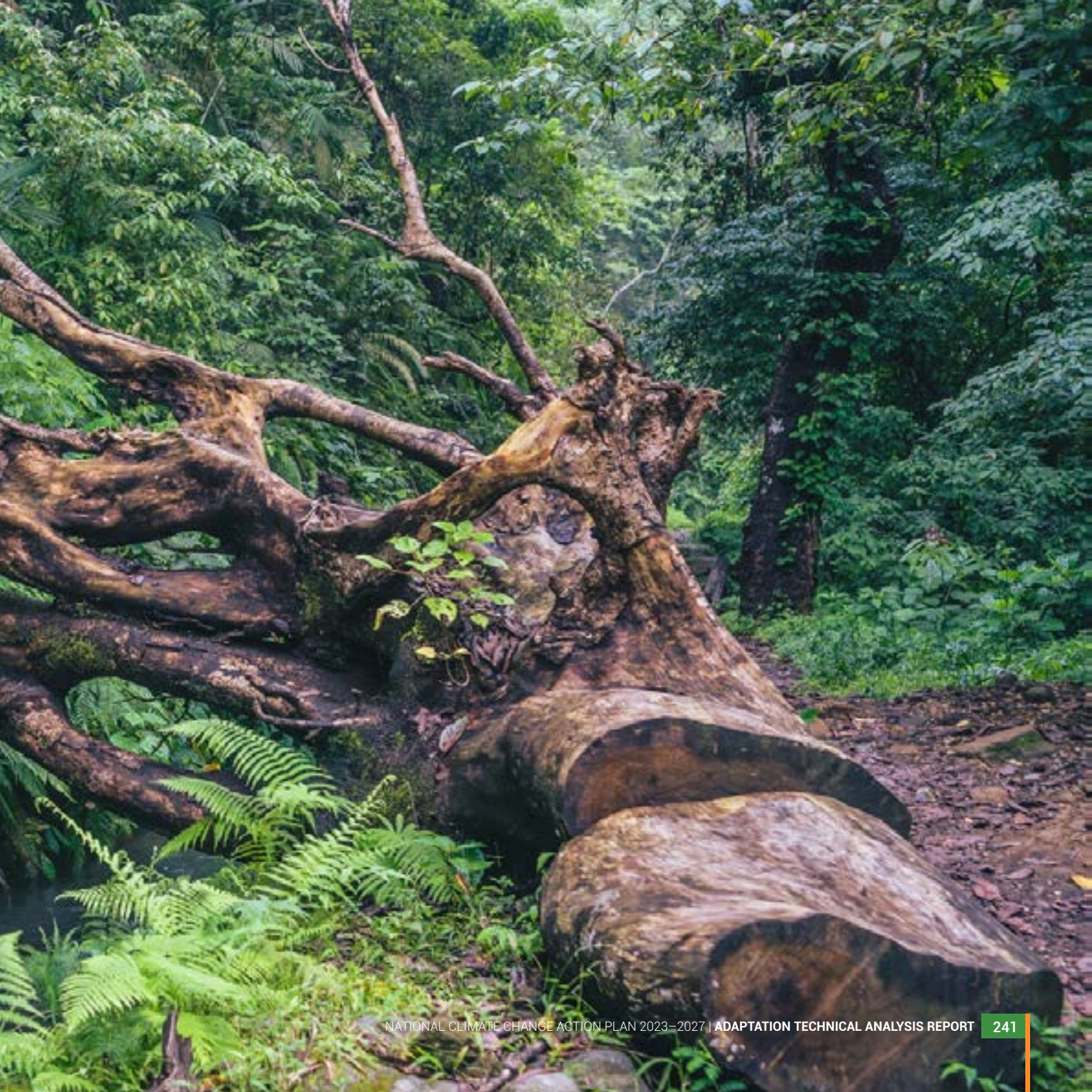
Term	Definition
Adaptation	Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. Various types of adaptation can be distinguished, including anticipatory, autonomous and planned adaptation.
Adaptation – Anticipatory	Adaptation that takes place before impacts of climate change are observed. Also referred to as proactive adaptation.
Adaptation – Autonomous	Adaptation that does not constitute a conscious response to climatic stimuli but is triggered by ecological changes in natural systems and by market or welfare changes in human systems. Also referred to as spontaneous adaptation.
Adaptation – Benefits	The avoided damage costs or the accrued benefits following the adoption and implementation of adaptation measures.
Adaptation – Costs	Costs of planning, preparing for, facilitating, and implementing adaptation measures, including transition costs.
Adaptation – Planned	Adaptation that is the result of a deliberate policy decision, based on an awareness that conditions have changed or are about to change and that action is required to return to, maintain, or achieve a desired state
Adaptation options	The array of strategies and measures that are available and appropriate for addressing adaptation needs. They include a wide range of actions that can be categorised as structural, institutional, or social.
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. The combination of the strengths, attributes, and resources available to an individual, community, society, or organisation that can be used to prepare for and undertake actions to reduce adverse impacts, moderate harm, or exploit beneficial opportunities.
Agricultural drought	An agricultural drought is the impact of meteorological droughts and hydrological droughts on crop yields. This kind of drought is associated with extreme heat. It occurs when extended dry periods and general lack of rainfall result in a lack of moisture in the root zone of the soil. This severely damages the plants that live in the area.
Capacity building	In the context of climate change, capacity building is developing the technical skills and institutional capabilities in developing countries and economies in transition to enable their participation in all aspects of adaptation to, mitigation of, and research on climate change.

Climate change	Climate change refers to 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 decades or longer. Climate change may be due to natural internal processes or external forcing, or to persistent anthropogenic changes in the composition of the atmosphere or in land use.
Climate sensitivity	The equilibrium temperature rise that would occur for a doubling of CO2 concentration above pre-industrial levels.
Climate threshold	The point at which external forcing of the climate system, such as the increasing atmospheric concentration of greenhouse gases, triggers a significant climatic or environmental event which is considered unalterable, or recoverable only on very long timescales, such as widespread bleaching of corals or a collapse of oceanic circulation systems.
Climate variability	Climate variability refers to variations in the mean state and other statistics (such as standard deviations, the occurrence of extremes, etc.) of the climate on all spatial and temporal scales beyond that of individual weather events. Variability may be due to natural internal processes within the climate system (internal variability), or to variations in natural or anthropogenic external forcing (external variability).
Disaster	A serious disruption of the functioning of the society causing widespread human, material or environmental damage and losses which exceed the ability of the affected community to cope using their own resources.
Downscaling	A method that derives local- to regional-scale (10 to 100 km) information from larger-scale models or data analyses. Two main methods are distinguished: dynamical downscaling and empirical/statistical downscaling. The dynamical method uses the output of regional climate models, global models with variable spatial resolution or high-resolution global models. The empirical/statistical methods develop statistical relationships that link the large-scale atmospheric variables with local/regional climate variables. In all cases, the quality of the downscaled product depends on the quality of the driving model.
Drought	the naturally occurring phenomenon that exists when precipitation has been significantly below normal recorded levels causing a serious hydrological imbalance that adversely affects land resource production systems.
Ecosystem services	Ecological processes or functions having monetary or non-monetary value to individuals or society at large. There are: (i) supporting services such as productivity or biodiversity maintenance, (ii) provisioning services such as food, fibre, or fish, (iii) regulating services such as climate regulation or carbon sequestration, and (iv) cultural services such as tourism or spiritual and aesthetic appreciation.

Extreme weather event	An extreme weather event is an event that is rare at a particular place and time of year. Definitions of rare vary, but an extreme weather event would normally be as rare as or rarer than the 10th or 90th percentile of the observed probability density function.
Hazard	A potentially damaging physical event, human activity or phenomenon with a potential to cause loss of life or injury, property damage, social and economic disruption, environmental degradation, among other effects.
Hydrological drought	Occurs when there are critically low groundwater tables and reduced river and stream flow. Low wintertime snow accumulation in higher elevations can result in this type of drought in nearby lowlands. Hydrological droughts are distinguished by a reduction in water resources in reservoirs, lakes, rivers, underground aquifers and streams.
Impacts	Specific effects of hazards or disasters also referred to as consequences or outcomes. The effects of climate change on natural and human systems. Depending on the consideration of adaptation, one can distinguish between potential impacts and residual impacts.
Impacts – Potential	Impacts that may occur given a projected change in climate, without considering adaptation.
Impacts – Residual	The impacts of climate change that would occur after adaptation.
Meteorological drought	A reduction in rainfall over a specific period of time, for example a day, month, season or year. There is no agreement on what the lack of rain or the time without rain should be before it is considered a drought. Usually, the area affected determines these especially in non-arid regions. Meteorological drought leads to depletion of soil moisture and this almost always has an impact on crop production.
Mitigation	Actions, programmes or policies implemented in advance of a natural hazard or in its early stages, to reduce the degree of risk to the people, property, and productivity capacity.
Preparedness	Pre-disaster activities designed to increase the level of readiness or improve operational capabilities for responding to an emergency.
Resilience	The ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning; or the capacity for self-organisation, and the capacity to adapt to stress and change. Refers to the capacity of social, economic and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganising in ways that maintain their essential function, identity and structure.
Response	Actions taken immediately before, during or directly after a disaster to reduce impacts and improve recovery from disaster effects.

Risk	Combination of the probability (likelihood) of an event and its consequences: the probability of harmful consequences or loss resulting from the interaction between natural hazards and vulnerable conditions of property and people.
Sensitivity	Sensitivity is the degree to which a system is affected, either adversely or beneficially, by climate variability or change. The effect may be direct (e.g., a change in crop yield in response to a change in the mean, range or variability of temperature) or indirect (e.g., damages caused by an increase in the frequency of coastal flooding due to sea-level rise).
Threshold	The level of magnitude of a system process at which sudden or rapid change occurs. A point or level at which new properties emerge in an ecological, economic or other system, invalidating predictions based on mathematical relationships that apply at lower levels.
Uncertainty	An expression of the degree to which a value (e.g., the future state of the climate system) is unknown. Uncertainty can result from lack of information or from disagreement about what is known or even knowable. It may have many types of sources, from quantifiable errors in the data to ambiguously defined concepts or terminology, or uncertain projections of human behaviour. Uncertainty can therefore be represented by quantitative measures, for example, a range of values calculated by various models, or by qualitative statements, for example, reflecting the judgement of a team of experts.
Vulnerability	A set of conditions resulting from physical, social, economic and environmental factors, which increase the susceptibility of a community to the impact of disasters. May also refer to the characteristics of a person or group in terms of capacity to anticipate, cope with, resist and recover from the impact of natural hazards. The degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity.







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ADAPTATION TECHNICAL ANALYSIS REPORT (ATAR)

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